NORTH CAROLINA DIVISION OF
AIR QUALITY

Application Review

Issue Date:

Region: Fayetteville Regional Office
County: Scotland
NC Facility ID: 8300027
Inspector's Name: Taijah Hamil
Date of Last Inspection: 12/07/2022
Compliance Code: W / Violation - procedures

Facility Data

Applicant (Facility's Name): Pilkington North America, Inc.

Facility Address:
Pilkington North America, Inc.
13121 South Rocky Ford Road
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

Permit Applicability (this application only)

SIP: 02D .0501, 0515, 0516, 0521, .0530(u), .1100, .1111, 02Q.0317
NSPS: IIII
NESHAP: ZZZZ
PSD: 02D .0530(u)
PSD Avoidance: Yes (02Q .0317)
NC Toxics: Yes
112(r): No
Other:

Contact Data

Facility Contact	Authorized Contact	Technical Contact
Michael Woodhead Assistant Plant Manager (910) 277-2246 13121 South Rocky Ford Road Laurinburg, NC 28352	Christopher Markotich Plant Manager (910) 277-2100 13121 South Rocky Ford Road Laurinburg, NC 28352	Pamela Rygalski Sr. Environmental Mgr., NA (419) 247-3715 140 Dixie Highway Rossford, OH 43460

Application Data

Application Number: 8300027.22A
Date Received: 05/16/2022
Application Type: Modification
Application Schedule: TV-Sign-501(b)(2) Part II
Existing Permit Data
Existing Permit Number: 03873/T36
Existing Permit Issue Date: 03/31/2023
Existing Permit Expiration Date: 07/31/2023

Total Actual emissions in TONS/YEAR:

CY	SO2	NOX	VOC	CO	PM10	Total HAP	Largest HAP
2022	503.95	3359.44	36.32	113.98	178.19	29.11	21.83 [Hydrogen chloride]
2021	362.63	3095.59	25.25	186.73	142.28	23.25	18.16 [Hydrogen chloride]
2020	395.57	3320.57	36.62	32.76	208.44	25.01	19.22 [Hydrogen chloride]
2019	414.48	3551.53	35.94	32.65	219.51	28.01	21.78 [Hydrogen chloride]
2018	384.66	3697.05	37.17	31.31	223.67	30.03	23.57 [Hydrogen chloride]

Review Engineer: Joseph Voelker

Review Engineer's Signature: **Date:**

Comments / Recommendations:
Issue 03873/T37
Permit Issue Date:
Permit Expiration Date:

I. Introduction and Purpose of Application

Pilkington North America, Inc. (PNA) owns and operates a glass manufacturing facility in Laurinburg, NC. The facility currently operates under Title V permit No. 03873T36, issued on March 31, 2023

In accordance with 15A NCAC 02Q .0504 and Section 2.1 C.1 in Permit No. 03873T35, PNA has submitted this Part 2 application within 12 months of beginning operations after completion of the Cold Repair Project on the Furnace (ID No. ES-02) and installation of two new emergency engines (EG-11 and EG-12).

PNA submitted the Part 1 application No. 8300027.20A pursuant to requirements in 02Q.0300 as indicated by 02Q.0504(a) on July 1, 2020 which resulted in issuance of permit No. 03873T35 on February 16, 2021. This current application contains all applicable elements of the Part 1 application plus additional updates submitted to DAQ during review of the Part 1 application. Applicable documents from the Part 1 application like the PE Certification Form D5 and the Consistency Determination documentation were incorporated into this application by copy as these initial documents were determined to be valid for the Part 2 application.

As a Part 2 application submitted pursuant to 02Q .0504, this application will be processed as a significant modification pursuant to 15A NCAC 02Q .0516.

II. Chronology

Date	Description
05/16/2022	Application was received and assigned Application No. 8300027.22A.
05/18/2022	An acknowledgment letter was sent to PNA via email stating the application was complete as application submittal did contain all the required elements (except the ePayment) and has been accepted for processing.
05/23/2022	Application fee of $1002 received via ePayments.
11/21/2023	An ADD INFO email was sent to PNA asking the following questions: Have you produced LI glass in furnace No. 2 since the issuance of permit no. T35? If so, have you completed the testing requirements at • Section 2.1 B.1.b.ii(B) – PM test for LI glass • Section 2.1 B.2.b.ii – SO2 test for LI glass • Section 2.1 B.5.b.ii – multiple pollutant test for LI glass • Section 2.1. B.7 – This is the NSPS Modification testing requirement. It appears you have completed the PM testing at 2.1 B.1.b.ii. Did you do the t-test to see if NSPS was triggered?
11/30/2023	Response to email sent on 11/21/2023 was received from PNA stating the following: Answers to your questions below: 1. PNA has not produced LI glass on LB2 since the issuance of the permit No. T35, thus additional testing has not been required. 2. Section 2.1. B.7 – This is the NSPS Modification testing requirement: PNA did perform the PM testing on LB2 on July 29, 2021. The report for that test was sent electronically (as this was during peak pandemic period) to daq.reports-applications@ncdenr.gov and to Heather Carter at NCDEQ Fayetteville regional Office on August 26, 2021. Attachment A to that report contained the NSPS statistical analysis demonstrating there was no statistically significant increase in lb/hr PM emission as a result of the LB2 project.
11/30/2023	An ADD INFO email was sent to PNA asking the following question: I am sending you an excerpt of the 1st half 2023 semiannual report. Perhaps there was a typo/mistake on page 4. Note it says, “low iron glass.” Please let me know one way or the other.

Date	Description
12/1/2023	Response to email sent on 11/30/2023 was received from PNA stating the following: Having a look at the semi-annual report attached, it does appear to by a typo. LB1 was running LI glass at the s[t]ated time, but LB2 was running tint and not LI so this was a typo in the report.
01/10/2024	ADD INFO email was sent stating the following: A review of our compliance records show that Pilkington has one unresolved NOV. The NOV was dated 09/21/2023. It appears you responded in a letter dated 10/27/2023. I included as attachments for your convenience. As such, to proceed to public notice, we will need current E4 and E5 forms to address this NOV that is currently considered "unresolved." * * * Please complete sign and PDF back to me at your earliest convenience and we can proceed to public notice.
01/12/2024	Revised E4 and E5 forms received in response to ADD INFO email dated 01/10/2024. See Section VI below for further discussion.

III. Modification Description

The implications with respect to applicable regulations will be addressed in Section IV below.

Modification - Cold Repair Project on Furnace 2 (ID No. ES-02)

As discussed in Section I above, this Part 2 application was submitted as required pursuant to 15A NCAC 02Q .0504 and will be processed consistent with 15A NCAC 02Q .0516 "Significant Modifications." At this time, the modifications incorporated into the permit (revision no. T35) in response to the Part 1 application will be reviewed to ensure the permit correctly includes all applicable requirements and appropriate testing, monitoring, recordkeeping, and reporting requirements consistent with the TV permitting requirements at 15A NCAC 02Q .0508.

The Part 1 application addressed a cold repair project on the glass melting furnace (ID No. ES-02). Certain maintenance and repair activities can only take place when the furnace is cold and drained of glass. During this planned repair project on the furnace, PNA planned to make some changes to the furnace to improve energy efficiency, furnace durability and to accommodate a limited amount of low-iron (LI) glass production as an addition to then current production mix capability on the furnace. Also, during the repair project, PNA proposed to add two 2,000 kW emergency back-up generators to provide increased protection to the furnaces in the event of any unexpected power outages.

Permit No. 03873T35 was issued as result of this Part 1 application on February 16, 2021. As stated in the current Part 2 application, the cold repair project started on March 10, 2021, and the furnace began producing glass (i.e., started up) on June 29, 2021.

Upon review of DAQ inspection reports and discussions with the Permittee, the facility was modified as requested in the Part 1 application. Thus, the current permit does accurately reflect the "as-built" configuration of the facility. However, a few updates and changes to some of the testing and monitoring, recordkeeping and reporting requirements are necessary and will be discussed below.

The original permit review is included as Attachment A to this review document. It contains the exhaustive regulatory review of the original project and is still applicable except on the topics addressed explicitly below. For current purposes, the discussion below will be focused on the changes necessary to the existing permit. In general, if not explicitly discussed below, the testing and monitoring, recordkeeping and reporting requirements in the existing permit are adequate to meet the TV permitting requirements pursuant to 15A NCAC 02Q .0508.

IV. Regulatory Review

15A NCAC 02D .0515 PARTICULATES FROM MISCELLANEOUS INDSUTRIAL SOURCES
This rule applies to stacks, vents, or outlets emitting particulates from industrial processes with no other applicable standards. The allowable emission rate is in terms of pounds per hour and is calculated using the following equations:

For process rates up to 30 tons per hour: $E = 4.10(P)^{0.67}$
For process rates greater than 30 tons per hour: $E = 55.0(P)^{0.11} - 40$

Where: E = Allowable emission rate in pounds per hour
P = Process weight in tons per hour, (tph)

This rule applies to all aspects of the furnace including the melter refiner and annealing lehr. However, the majority of the emissions are from the melter stack.

Permit revision No. T35 was issued with the following testing requirements at Section 2.1 B.1.b.

Testing

b. i. If emissions testing is required, the testing shall be performed in accordance with General Condition JJ.
ii. Under the provisions of NCGS 143-215.108:
(A) The Permittee shall demonstrate compliance with the emission limit in Section 2.1 B.1.a above by testing furnace melter stack (**ID No. ES-02**). Testing shall be completed within 180 days after the initial startup of the furnace after the completion of the modifications addressed in application no. 8300027.20A, unless an alternate date is approved by the DAQ.
(B) If the furnace is not scheduled to produce LI glass within 180 days of after the initial startup of the furnace after the completion of the modifications addressed in application no. 8300027.20A, the Permittee shall conduct an additional source test when producing LI glass within 30 days of starting production of LI glass, unless an alternate date is approved by the DAQ.
(C) The Permittee shall demonstrate compliance with the emission limit in Section 2.1 B.1.a above on an annual basis by testing the furnace melter stack (**ID No. ES02**). The testing shall be conducted within 13 months of the previous source test. This testing requirement becomes effective after the testing under (A) or (B) above has been satisfied. If the results of this test are less than 80 percent of the emission limit in Section 2.1 B.1.a above, the Permittee shall only be required to stack test once every five years (within 61 months) following the previous source test.

The Permittee satisfied the testing requirement in b.ii.(A) on July 29, 2021. The test memo (tracking no. 2021-260ST) issued on September 21, 2021, by the SSCB states that "the emissions test results demonstrate compliance with the applicable regulations." This testing requirement will be removed from the revised permit.

Test requirement b.ii.(B) has not been satisfied. Per correspondence with Pilkington, the furnace to date has not produced LI glass. Thus, this testing requirement will remain in the revised permit.

Test requirement b.ii.(C) is the testing frequency component of the testing requirement. Thus, this requirement will remain in the revised permit.

b.ii (B) and (C) will be revised to reflect the removal of the testing requirement in (A) and will appear in the revised permit as follows:

Testing [15A NCAC 02Q .0508(f)]

b. The following testing requirements apply:
i. If emissions testing is required, the testing shall be performed in accordance with General Condition JJ.
ii. The Permittee shall demonstrate compliance with the emission limit in Section 2.1 B.1.a above by testing furnace melter (**ID No. ES-02**) when producing LI glass within 30 days of starting production of LI glass, unless an alternate date is approved by the DAQ.
iii. The Permittee shall demonstrate compliance with the emission limit in Section 2.1 B.1.a above on an annual basis by testing the furnace melter **(ID No. ES-02**). The testing shall be conducted within 13

months of the previous source test. If the results of this test are less than 80 percent of the emission limit in Section 2.1 B.1.a above, the Permittee shall only be required to test once every five years (within 61 months) following the previous source test. The testing requirement in ii above supersedes this requirement.

If the results of a test are above the limit given in Section 2.1 B.1.a above, or are not conducted as described above, the Permittee shall be deemed in noncompliance with 15A NCAC 02D .0515.

No other substantial changes are necessary to the existing permit condition.

15A NCAC 02D .0516: SULFUR DIOXIDE EMISSIONS FROM COMBUSTION SOURCES

This regulation applies to any combustion source that emits sulfur dioxide formed by the combustion of sulfur in fuels, wastes, ores, and other substances. Emissions of sulfur dioxide from these sources shall not exceed 2.3 pounds per million Btu heat input. Sulfur dioxide formed by the combustion of sulfur in fuels, wastes, ores, and other substances shall be included when determining compliance with this standard.

Permit revision No. T35 was issued with the following testing requirements at section 2.1 B.2.b:

Testing

b. i. If emissions testing is required, the testing shall be performed in accordance with General Condition JJ.
   ii. Under the provisions of NCGS 143-215.108:
      (A) The Permittee shall demonstrate compliance with the emission limit in Section 2.1 B.2.a above by testing furnace melter (**ID No. ES-02**). Testing shall be completed within 180 days after the initial startup of the furnace after the completion of the modifications addressed in application no. 8300027.20A while producing LI glass, unless an alternate date is approved by the DAQ.
      (B) If the furnace is not scheduled to produce LI glass within 180 days of after the initial startup of the furnace after the completion of the modifications addressed in application no. 8300027.20A, the Permittee shall conduct the source test within 30 days of starting production of LI glass, unless an alternate date is approved by the DAQ.

The above testing requirements were to be triggered upon the production of LI glass. Per correspondence with Pilkington, the furnace to date has not produced LI glass. As 180 days have passed since the "completion of the modifications addressed in application no. 8300027.20A," paragraph (A) will be removed and b will be revised to read:

Testing [15A NCAC 02Q .0508(f)]

b. The following testing requirements apply:
   i. If emissions testing is required, the testing shall be performed in accordance with General Condition JJ.
   ii. The Permittee shall demonstrate compliance with the emission limit in Section 2.1 B.2.a above by testing the furnace melter (**ID No. ES-02**). The Permittee shall conduct the source test within 30 days of starting production of LI glass, unless an alternate date is approved by the DAQ.

If the results of a test are above the limit given in Section 2.1 B.2.a above, or are not conducted as described above, the Permittee shall be deemed in noncompliance with 15A NCAC 02D .0516.

No other substantial changes are necessary to the existing permit condition.

It is noted that a source test was conducted on September 14, 2021, for SO2. The test memo (tracking no. 2021-258st) issued on August 12, 2022, by the SSCB states that "the emissions test results demonstrate compliance with the applicable regulations." However, this test was not conducted while producing LI glass. It does however memorialize that the SO2 emissions while producing "non-low iron glass" was 0.3 lb/mmBtu or equivalently, 62.88 lb/hr or 2.08 lb/ton glass pulled.

15A NCAC 02D .0521: CONTROL OF VISIBLE EMISSIONS

This regulation applies to fuel burning operations and industrial processes where visible emissions (VE) can be reasonably expected to occur. As this furnace was manufactured after July 1, 1971, the visible emissions from these sources shall not be more than 20 percent opacity when averaged over a six-minute period except for the following exceptions:

Six-minute averaging periods may exceed 20 percent opacity if:
(1) no six-minute period exceeds 87 percent opacity;
(2) no more than one six-minute period exceeds 20 percent opacity in any hour; and

(3) no more than four six-minute periods exceed 20 percent opacity in any 24-hour period.

Permit revision No. T35 was issued with the following testing requirements at section 2.1 B.3.b:

Testing

b. i. If emissions testing is required, the testing shall be performed in accordance with General Condition JJ. If the results of this test are above the limit given in Section 2.1 B.3.a. above, the Permittee shall be deemed in noncompliance with 15A NCAC 02D .0521.

ii. Under the provisions of NCGS 143-215.108, the Permittee shall demonstrate compliance with the emission limit(s) above by testing the furnace stack (ID No ES-02) for visible emissions. Testing shall be completed and the results submitted within 180 days after the initial startup of the furnace after the completion of the modifications addressed in application no. 8300027.20A, unless an alternate date is approved by the DAQ. If the results of this test are above the limit given in Section 2.1 B.3.a above, the Permittee shall be deemed in noncompliance with 15A NCAC 02D .0521.

The Permittee satisfied the testing requirement in b.ii on July 29, 2021 (concurrent with the PM test discussed under 02D .0515 above). The test memo (tracking no. 2021-260ST) issued on September 21, 2021, by the SSCB states that "the emissions test results demonstrate compliance with the applicable regulations." Visible emissions were noted to be 8.8%. This testing requirement will be removed from the revised permit.

Section 2.1 B.3.c requires:

> The Permittee shall establish "normal" for this source in the first 30 days after the initial startup of the furnace after the completion of the modifications addressed in application no. 8300027.20A.

This requirement has been met. The requirement will be removed from the revised permit. No other substantial changes are necessary to the existing permit condition.

15A NCAC 02D. 0530(u): USE OF PROJECTED ACTUAL EMISSIONS TO AVOID APPLICABILITY OF PREVENTION OF SIGNIFICANT DETERIORATION REQUIREMENTS

This condition exists in the current permit at Section 2.1 B.5 and provides a mechanism for Pilkington to demonstrate through testing and recordkeeping that the "cold repair project" is not subject to PSD review. This is fully explained in Attachment A.

Permit revision No. T35 was issued with the following testing requirements at section 2.1 B.5.b:

Testing

b. i. If emissions testing is required, the testing shall be performed in accordance General Condition JJ.

ii. Under the provisions of NCGS 143-215.108:

(A) The Permittee shall test the furnace (**ID No. ES-02**) within 180 days after the initial startup of the furnace after the completion of the modifications addressed in application no. 8300027.20A, unless an alternate date is approved by the DAQ. The testing shall be used to establish post-project emission factors for PM , PM10, PM2.5, and SO2 for LI glass.

(B) If the furnace is not scheduled to produce LI glass within 180 days of after the initial startup of the furnace after the completion of the modifications addressed in application no. 8300027.20A, the Permittee shall conduct these source tests when producing LI glass within 30 days of starting production of LI glass, unless an alternate date is approved by the DAQ.

The above testing requirements were to be triggered upon the production of LI glass. Per correspondence with Pilkington, the furnace to date has not produced LI glass. As 180 days have passed since the "completion of the modifications addressed in application no. 8300027.20A," paragraph (A) and (B) will be combined and b will be revised to read:

Testing [15A NCAC 02Q .0508(f)]

b. The following testing requirements apply:

i. If emissions testing is required, the testing shall be performed in accordance General Condition JJ.

ii. The Permittee shall test the furnace (**ID No. ES-02**) within 30 days of starting production of LI glass, unless an alternate date is approved by the DAQ. The testing shall be used to establish post-project emission factors for PM, PM10, PM2.5, and SO2 for LI glass.

> The Permittee shall be deemed in noncompliance with 02D .05030 if these testing requirements are not met.

No other substantial changes are necessary to the existing permit condition.

15A NCAC 02Q .0317: AVOIDANCE CONDITIONS for 15A NCAC 02D. 0530: PREVENTION OF SIGNIFICANT DETERIORATION

This condition exists in the current permit at Section 2.1 B.6 and provides a mechanism for Pilkington to avoid PSD review for the cold repair project by meeting NOx and CO emission limitations by the use of NOx and CO CEMS. Note that this PSD avoidance limit only applies in a consecutive 12-month period in which LI glass is produced; starting with that month LI glass is produced plus the preceding 11 months of furnace operation and ending with that month and the following 11 months of furnace operation. This is fully explained in Attachment A.

Per correspondence with Pilkington, the furnace to date has not produced LI glass. Thus, to date this PSD avoidance limit has not been in effect. However, the monitoring, recordkeeping and reporting requirements apply at all times. Based on a review of the semiannual reports the Permittee has been meeting monitoring, recordkeeping and reporting requirements generally but had some technical issues. See discussion in Section VI below.

No substantial changes are necessary to the existing permit condition.

15A NCAC 2D .0524 NEW SOURCE PERFORMANCE STANDARDS

At Section 2.1 B.7 the permit contains the following requirement:

> Pursuant to NCGS 143-215.108(c) the Permittee shall, in order to determine if the modifications associated with application no. 8300027.20A are a "modification" as defined under 40 CFR Part 60 Subpart A, conduct source testing on the melter section of furnace (ID No. ES-02) for filterable particulate matter consistent with 40 CFR 60.14 and 40 CFR 60 Appendix C. The Permittee shall test the melter stack according to the schedule found at Section 2.1 B.1.b.ii. The testing shall be conducted in accordance with General Condition JJ. If the testing indicates that a "modification" has occurred using the procedures in 40 CFR 60 Appendix C, the Permittee shall submit a permit application to incorporate the requirements of 40 CFR Subpart CC into the air permit.

40 CFR 60.14 "Modifications" references 40 CFR 60 Appendix C, which details the method that shall be used to determine whether an increase in emission rate has occurred by comparing pre and post modification source test results using a statistical comparison (i.e., the "Student's t- test"). 60.14 requires:

> Tests shall be conducted under such conditions as the Administrator shall specify to the owner or operator based on representative performance of the facility. At least three valid test runs must be conducted before and at least three after the physical or operational change. All operating parameters which may affect emissions must be held constant to the maximum feasible degree for all test runs.

The report addressing this analysis is included as Attachment B to this review. The Permittee conducted the post modification test on July 29, 2021 (i.e., the same test discussed under 02D .0515 and 02D .0521 above). The pre modification test is described in the report as follows:

> The most representative pre-project PM test with conditions close to those of the July 2021 test was performed on March 30, 2013. The 2013 test was done during similar furnace conditions and while producing the same type of glass at close to the same draw rate and raw material feed rate as the post-project test performed in July 2021, so results from that test were used as the pre-project data set ln the emission rate increase analysis.

Each test consisted of three sampling runs. Each of the three post modification sampling runs were less than each of the three pre-modification sampling runs. In summary, no emissions increase had occurred and hence using the procedures in 40 CFR 60.14, the cold repair project as defined in the Part 1 application is not considered a modification as defined under NSPS.

The existing section 2.1 B.7 condition will be removed from the revised permit.

State Enforceable Only

15A NCAC 02D .1806: CONTROL AND PROHIBITION OF ODOROUS EMISSIONS

This rule requires that 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.

To date odors have not been an issue at the facility. Continued compliance is expected.

General Conditions Discussion
EPA has promulgated a rule (88 FR 47029, July 21, 2023), with an effective date of August 21, 2023, removing the emergency affirmative defense provisions in operating permits programs, codified in both 40 CFR 70.6(g) and 71.6(g). EPA has concluded that these provisions are inconsistent with the EPA's current interpretation of the enforcement structure of the CAA, in light of prior court decisions[1]. Moreover, per EPA, the removal of these provisions is also consistent with other recent EPA actions involving affirmative defenses[2] and will harmonize the EPA's treatment of affirmative defenses across different CAA programs.

As a consequence of this EPA action to remove these provisions from 40 CFR 70.6(g), it will be necessary for states and local agencies that have adopted similar affirmative defense provisions in their Part 70 operating permit programs to revise their Part 70 programs (regulations) to remove these provisions. In addition, individual operating permits that contain Title V affirmative defenses based on 40 CFR 70.6(g) or similar state regulations will need to be revised.

The DAQ has not adopted these discretionary affirmative defense provisions in its Title V regulations (15A NCAC 02Q .0500) nor other state regulations. Hence, no changes to its Title V or other state regulations are necessary. Instead, DAQ had chosen to include them directly in individual Title V permits as General Condition J. Therefore, as discussed above, the DAQ is required to promptly remove such impermissible provisions, from individual Title V permits, after August 21, 2023, through the normal course of permit issuance. General Condition J will therefore be removed from the revised permit.

V. NSPS, NESHAPS, PSD, Attainment Status, 112(r), Toxics and CAM

NSPS
Implications of the modifications with respect to NSPS is discussed in Section IV above and in Attachment A and B.

NESHAP/MACT
The facility is a major source of HAP emissions. No major source NESHAPS apply to this category of glass furnaces, nor did this modification trigger applicability of CAA 112(G) Case-by-Case MACT.

40 CFR 63, Subpart ZZZZ "National Emissions Standards for Hazardous Air Pollutants for Stationary Reciprocating Internal Combustion Engines" applies to the new emergency generators.

See discussion in Attachment A.

PSD
Scotland County is in attainment for all pollutants.

For major stationary sources located in areas designated as attainment with respect to a specific regulated NSR pollutant, the requirements of the PSD program (40 CFR Part 51.166, as incorporated into 15A NCAC 02D .0530) apply. Major stationary sources are those sources with a potential to emit (as defined at 40 CFR 51.166(b)(4)) of a regulated New Source Review (NSR) pollutant of either: 100 tons per year or more if the source is listed in 51.166(b)(1)(i)(a); or 250 tons per year or more otherwise. The subject facility is not one of the stationary sources listed under 51.166(b)(1)(i)(a) and is therefore in the "250 ton" source category. It is considered a major stationary source under PSD.

The cold repair project did not trigger PSD review. See Section IV and Attachment A for full discussion of PSD.

[1] NRDC v. EPA, 749 F.3d 1055 (D.C. Cir. 2014).
[2] In newly issued and revised New Source Performance Standards (NSPS), emission guidelines for existing sources, and NESHAP regulations, the EPA has either omitted new affirmative defense provisions or removed existing affirmative defense provisions. See, e.g., National Emission Standards for Hazardous Air Pollutants for the Portland Cement Manufacturing Industry and Standards of Performance for Portland Cement Plants; Final Rule, 80 FR 44771 (July 27, 2015); National Emission Standards for Hazardous Air Pollutants for Major Sources: Industrial, Commercial, and Institutional Boilers and Process Heaters; Final Rule, 80 FR 72789 (November 20, 2015); Standards of Performance for New Stationary Sources and Emission Guidelines for Existing Sources: Commercial and Industrial Solid Waste Incineration Units; Final Rule, 81 FR 40956 (June 23, 2016).

Scotland County has triggered the minor source baseline date for PM_{10} and SO_2. See Attachment A for discussion.

CAM
The modifications addressed in this application do not trigger a CAM review. See discussion in Section VI of Attachment A.

112r - Risk Management Program (RMP) (15A NCAC 2D .2100)
The Permittee is subject to Section 112(r) of the Clean Air Act requirements as implemented via 15A NCAC 02D .2100 for the chemicals identified in Form A3 of the submitted application. The existing permit at section 2.2 C.1 contains a specific permit condition addressing its 112(r) obligations.

Toxics
See discussion in Section IV of Attachment A for the applicability of 02D .1100 and 02Q .0700 (state enforceable only toxics rules) to this modification.

VI. Compliance History

As stated in the most recent compliance inspection report conducted by Taijah Hamil of the FRO on December 07, 2022:

> Pilkington North America, Inc. appeared to be ***IN VIOLATION*** for failure to complete annual inspection for insignificant engines and failure to maintain adequate records of engine run time and reason for operation.

The five-year violation history as included in the inspection report is as follows:

Five Year Violation History:

Date	Letter Type	Rule Violated	Violation Resolution Date
04/29/2022	NOV/NRE	2Q .0317 Avoidance Conditions	09/06/2022
01/28/2020	NOV	2D .0515 Particulates from Miscellaneous Industrial Processes	02/12/2020
01/28/2020	NOV	2D .0530 Prevention of Significant Deterioration	02/12/2020

DAQ records also show the following violations since the previous inspection:

Letter Date: 09/21/2023
Letter Type: NOV/NRE
Rule Violated: 02Q .0317 Avoidance Conditions - % monitor downtime
Status: Response to NOV received 10/27/2023; at the time of this review a penalty is being considered/assessed for this violation, which was not an emission standard violation. Pilkington supplied a revised E4 form entitled "Emission Source Compliance Schedule" addressing this NOV on January 12, 2024. The Permittee also submitted a revised E5 form certifying that "the facility is not currently in compliance with all applicable regulations." No further action items are necessary on behalf of Pilkington. Until the penalty is assessed and paid, the compliance status with respect to this NOV will be considered "unresolved." The DAQ recommends the permit proceed to public notice.

Letter Date: 03/20/2023
Letter Type: NOV
Rule Violated: 02Q .0508 Permit Content, 02D .0530 Prevention of Significant Deterioration – Late Reporting
Status: RESOLVED – 07/17/2023

Letter Date: 03/10/2023
Letter Type: NOV/NRE
Rule Violated: 02Q .0317 Avoidance Conditions - % monitor downtime
Status: RESOLVED – 12/19/2023

Letter Date: 01/25/2023
Letter Type: NOV
Rule Violated: MACT ZZZZ- recordkeeping
Status: RESOLVED – 02/20/2023

VII. Changes Implemented in Revised Permit

The following changes were made to the existing Air Permit No. 03873T36:*

Page No.	Section	Description of Changes
NA	Cover letter	• Updated to current responsible official, dates, permit revisions ,etc.
1	Permit Page 1	• Updated revision numbers, dates, etc.
4	Section 1	• Restored to the equipment list the following: Batch charging operation (Doghouse; ID No. ES-06) with fabric filter (ID No. CD-06). This source and control device was inadvertently removed from Section 1 during the issuance of revision no. T36. All other references to ES-06 and CD-06 had remained in the permit and were unaffected.
9	2.1 B	• Revised all permit conditions as necessary to make consistent with current permitting shell standards. No changes in intent were made unless addressed specifically below.
9	2.1 B.1	• 02D .0515 condition • Removed testing requirement at existing permit Section no. 2.1 B.1.b.ii.(A) as it has already been satisfied • Revised and renumbered remaining testing requirements. See permit review.
10	2.1 B.2	• 02D .0516 condition • Revised and renumbered testing requirements to reflect that 180 days since startup have elapsed. See permit review.
10	2.1 B.3	• 02D .0521 condition • Removed initial testing condition at existing permit Section no. 2.1 B.3.b.ii as it has already been satisfied. • Removed the establishment of "normal" visible emissions from the monitoring requirement at existing permit Section no. 2.1 B.3.c as it has already been satisfied.
11	2.1 B.5	• 02D .0530(u) condition • Revised and renumbered testing requirements to reflect that 180 days since startup have elapsed. See permit review.
12	2.1 B.6	• 02Q .0317 condition • Removed the following language at existing section no. 2.1 B.6.a.ii as it no longer applies: *"A consecutive 12-month period does not include any operation prior to the issuance of Permit No. 03873T35."* • Removed the following language at existing section no. 2.1 B.6.c.iv(B) as it no longer applies since the furnace has started up as of June 29, 2021. *For purposes of (iv)(A), monitoring and recordkeeping shall begin upon startup of the furnace after the issuance of Permit No. 03873T35. The 12-month rolling total periods will not include any month of operation prior to the issuance of Permit No. 03873T35.*
NA	2.1 B.7 (existing permit)	• This NSPS modification determination testing requirement has been satisfied. No NSPS modification was determined to have occurred. See permit review. This testing requirement was removed.
14	2. B.7 (revised permit)	• 02D .0501(c) condition • No substantial changes; just simple renumbering
51	Section 4	• Revised General Conditions from version 6.0, 01/07/2022 to version 7.0, 08/21/2023) Changes include: -GC J – the emergency provisions were removed. See discussion in Section IV of permit review.

* This list is not intended to be a detailed record of every change made to the permit but a summary of those changes.

VIII. Public Notice/EPA and Affected State(s) Review

A notice of the DRAFT Title V Permit shall be made pursuant to 15A NCAC 02Q .0521. The notice will provide for a 30-day comment period, with an opportunity for a public hearing. Consistent with the agreement between the DAQ and the EPA, the EPA will have a concurrent 45-day review period. Copies of the public notice shall be sent to persons on the Title V mailing list and EPA. Pursuant to 15A NCAC 02Q .0522, a copy of each permit application, each proposed permit, and each final permit pursuant shall be provided to EPA.

Also pursuant to 02Q .0522, a notice of the DRAFT Title V Permit shall be provided to each affected State and local program at or before the time notice provided to the public under 02Q .0521 above. Current NC permitting policy is to provide notice to all local programs in NC and all contiguous states regardless of their status as an affected state under 02Q .0522.

IX. PE Seal

Pursuant to 15A NCAC 02Q .0112 "Application requiring a Professional Engineering Seal," specifically 02Q .0112(a), a professional engineer's seal (PE Seal) is required to seal technical portions of air permit applications for new sources and modifications of existing sources as defined in 15A NCAC 02Q .0103 that involve:

(1) design;
(2) determination of applicability and appropriateness; or
(3) determination and interpretation of performance of air pollution capture and control systems.

A Form D5 (Technical Analysis to Support Permit Application) was submitted with the application sealed by Jeffery H Twaddle, PE, license no.023231. A review of the NC Board of Examiners for Professional Engineers and Surveyors website shows the license to be "current."

X. Zoning

A zoning consistency determination is required pursuant to 15A NCAC 02Q .0304(b) if the air permit application involves a new facility or the expansion of an existing facility. A determination was received with application signed by the Scotland County Zoning Agency stating that the "proposed operation is consistent with applicable zoning ordinances."

XI. Recommendations

This permit application has been reviewed by NC DAQ to determine compliance with all procedures and requirements. NC DAQ has determined that this facility appears to be complying with all applicable requirements with exceptions as noted in Section VI described above.

The Fayetteville Regional Office has received a copy of the draft permit and had minor typographical comments.

Further comments based on public notice to be determined.

Attachment A

Permit Review
for the part 1 application no 8300027.20A

NORTH CAROLINA DIVISION OF AIR QUALITY

Application Review

Issue Date: **February 16, 2021**

Region: Fayetteville Regional Office
County: Scotland
NC Facility ID: 8300027
Inspector's Name: Gregory Reeves
Date of Last Inspection: 01/21/2020
Compliance Code: 3 / Compliance - inspection

Facility Data

Applicant (Facility's Name): Pilkington, North America, Inc.

Facility Address:
Pilkington, North America, Inc.
13121 South Rocky Ford Road
Laurinburg, NC 28352

SIC: 3211 / Flat Glass
NAICS: 327211 / Flat Glass Manufacturing

Facility Classification: Before: Title V **After:**
Fee Classification: Before: Title V **After:**

Permit Applicability (this application only)

SIP: .02D .0515, ;0516, .0521, .0524, .0530, .1100, .1111 - 02Q .0317
NSPS: IIII
NESHAP: ZZZZ
PSD: 02D .0530(u)
PSD Avoidance: YES
NC Toxics: YES
112(r): NO
Other: NSPS Subpart CC applicability

Contact Data

Facility Contact	Authorized Contact	Technical Contact
Rolland Waters Environmental Manager (910) 277-2240 13121 South Rocky Ford Road Laurinburg, NC 28352	Christopher Miller Plant Manager (910) 277-2103 13121 South Rocky Ford Road Laurinburg, NC 28352	Pamela Rygalski PNA, Environmental Manager (419) 247-3715 Pilkington Float Plant Rossford, OH 43460

Application Data

Application Number: 8300027.20A
Date Received: 07/07/2020
Application Type: Modification
Application Schedule: TV-Sign-501(b)(2) Part I
Existing Permit Data
Existing Permit Number: 03873/T34
Existing Permit Issue Date: 08/09/2018
Existing Permit Expiration Date: 07/31/2023

Total Actual emissions in TONS/YEAR:

CY	SO2	NOX	VOC	CO	PM10	Total HAP	Largest HAP
2019	414.48	3551.53	35.94	32.65	219.51	28.01	21.78 [Hydrogen chloride (hydrochlori]
2018	384.66	3697.05	37.17	31.31	223.67	30.03	23.57 [Hydrogen chloride (hydrochlori]
2017	382.70	3614.21	35.71	35.13	228.86	29.50	23.51 [Hydrogen chloride (hydrochlori]
2016	393.02	3727.60	36.93	35.02	230.10	28.62	22.76 [Hydrogen chloride (hydrochlori]
2015	396.96	3646.24	40.47	40.06	232.78	31.99	25.88 [Hydrogen chloride (hydrochlori]

Review Engineer: Joseph Voelker

Review Engineer's Signature: **Date: February 16, 2021**
Joseph Voelker

Comments / Recommendations:
Issue 03873/T35
Permit Issue Date: 02/16/21
Permit Expiration Date: 07/31/23

I. Introduction and Purpose of Application

As described in the application:

> By this letter and the attached application, Pilkington North America, Inc. (PNA) is hereby requesting a permit-to-construct and a revision to the Title V operating permit for a cold repair project on the ES02 glass melting furnace that is scheduled to begin in January 2021. Cold repair events regularly occur on float glass furnaces about once every 10 to 16 years to allow the completion of certain maintenance and repair activities that can only take place when the furnace is cold and drained of glass.
>
> During this planned repair project on ES02, PNA plans to make some changes to the furnace to improve energy efficiency, furnace durability and to accommodate a limited amount of low-iron glass production as an addition to the current production mix capability on ES02.
>
> Also, during the repair project, PNA proposes to add two 2,000 kW emergency back-up generators to provide increased protection to the furnaces in the event of any unexpected power outages.

It will be shown that this project is a significant modification as defined under the TV permitting rules (15A NCAC 02Q .0500). This current application will be processed under the state only permitting rules (15A NCAC 02Q .0300) and consistent with 15A NCAC 02Q .0501(c)(2) and 02Q .0504.

II. Chronology

Date	Description
07/07/2020	Hardcopy application received and assigned application no. 8300027.20A
07/21/2020	$988 application fee received via ePay. Application clock starts
08/27/2020	ADD INFO email sent requesting non-confidential emission calculations
08/31/2020	information requested on 08/27/2020 received via email
09/21/2020	ADD INFO sent requesting: 1. clarification on emission calculations 2. clarification if the emergency engine project is separate from the furnace project for PSD purposes.
09/21/2020	ADD INFO email sent requesting clarification on the H2SO4 and NOx baseline emissions calculations.
10/05/2020	ADD INFO email sent requesting revised baseline emission estimates, increase in utilization discussion, project aggregation discussion and information regarding any previous NOx modeling
10/22/2020	Email sent to Permittee requesting a modeling demonstration with respect to the NO2 NAAQS
11/23/2020	Information requested on 09/21/2020 and 10/05/2020 received via email which included a revised baseline to projected actuals analysis to reflect two anticipated operating scenarios.
12/21/2020	NO2 modeling requested 10/22/2020 received via email
01/27/2021	Draft Permit and review sent to supervisor and regional office
02/01/2012	Comments received from supervisor
02/02/2021	Memo issued by the AQAB stating, in summary: " *The modeling adequately demonstrates compliance with the 1-hour and annual National Ambient Air Quality Standards (NAAQS) for NO_2."*

Date	Description
02/02/2021	Second draft submitted to supervisor and regional office.
02/05/2021	Response received from supervisor for second draft. No comments were received.
02/05/2021	Draft submitted to Permittee for review.
02/15/2021	Permittee responded via email *"We are good with the revised permit. No changes of any substance are required at this point."*

III. Modification Description

Two new emergency generators project:

As stated in Section 1 above, PNA proposes to add two 2,000 kW emergency back-up generators to provide increased protection to the furnaces in the event of any unexpected power outages. The engines will appear in the revised permit as follows:

Emission Source ID No.	Emission Source Description	Control Device ID No.	Control Device Description
EG11 **NSPS IIII, MACT ZZZZ**	One diesel fuel-fired emergency generator (2900 brake horsepower)	N/A	N/A
EG12 **NSPS IIII, MACT ZZZZ**	One diesel fuel-fired emergency generator (2900 brake horsepower)	N/A	N/A

It will be shown elsewhere in this review that the Permittee claims that the installation of the two new emergency generators can be considered a separate project for PSD applicability. Thus, the "furnace project" and the "emergency generators project" will be discussed separately.

The regulatory applicability will be described in Section IV below:

Furnace (ES02) project

The application describes this project as follows:

> The proposed Cold Repair Project is a routine maintenance activity that is generally completed every 12 - 16 years on flat glass furnaces at PNA. A cold repair includes replacement of damaged and worn furnace refractory parts of the glass furnace as well as other routine repairs that can only take place when the furnace is cold and drained of molten glass and can include work upstream and downstream of the furnace itself.
>
> Most of the repair activities on the furnace itself will involve replacement of worn refractory and constitute "rebricking" as that term is defined in 40 CFR 60 Subpart CC, but there will be some minor changes made while the furnace is cold to improve the furnace energy efficiency, stability and durability and to accommodate future product mix requirements.
>
> Importantly, however, while there are projected changes in product mix for this furnace after the repair, the overall design production capacity of the furnace is not expected to increase because of the Project. A summary of the changes (excluding basic replacement and repair activity) that will be implemented as a part of this project are described in Table A-1 which PNA considers Confidential Business Information (CBI) pursuant to 15A NCAC 2Q.0107.

Thus, the Permittee will be making some changes that perhaps could qualify as being exempt from categorization as a modification under NSPS and ultimately PSD as well. However, other changes are not and hence NSPS and PSD applicability analyses will be required (as well as other regulatory applicability review).

Table A-1 of the application presents a listing of all the activities and changes claimed to be confidential business information and hence will not be discussed here. At the time of this review a final determination on whether this information truly qualifies as confidential has not been made.

The main concern of this project with respect to air emissions is the changes made to "accommodate future product mix requirements." As stated in the application:

> This furnace is projected to produce a product mix consisting of dark-tinted glass, light-tinted glass and regular clear glass as it currently does, but the project will enable the furnace to make a small percentage of low-iron clear glass (LI glass) in addition to the current mix. Although low-iron glass production is generally produced at a lower draw rate, the NOx emissions per ton of draw is higher on LI glass than the other glass products.

The Permittee projects that the higher NOx emissions resulting from the production of LI glass would result in PSD review. Thus, the Permittee plans to install the "3R" process (discussed below) to reduce NOx emissions on an annual basis to avoid PSD review, not necessarily at all times when the NOx emission rates would be higher otherwise when producing LI glass.

The Pilkington 3R^{tm} process stands for "Reduction Reaction in Regenerators" - This is not an "add-on control device", but involves the injection of natural gas into the exhausts of the furnace prior to the regenerators to reduce NOx emissions to N2 and water prior to the stack and discharge to the atmosphere. The details of the process are claimed as confidential but its impact with respect to pollutants is fully discussed in this review.

The use of "3R" has some additional consequences. As stated in the application:

> The use of 3R has the potential to cause higher lb/ton CO emissions and this potential increase was factored into the future projected actual annual average emission factor used to calculated maximum future projected actual emissions. When 3R is not used, the maximum daily emission factor is 0. 17 lb/ton which is consistent with the CO baseline. When 3R is on, then the maximum projected daily emission factor can rise to 1.32 lb/ton.

Thus, when the "3R" is in use, the maximum CO emissions would be expected. The Permittee does not "expect" the production of LI glass to result in higher emissions of any other pollutants other than NOx (and CO from the 3R process use) on a lb/ton of glass drawn basis. Further discussion of the furnace project will be discussed in context of the applicable regulations under Section IV below.

IV. Regulatory Review

Furnace Project

15A NCAC 02D .0501 COMPLIANCE WITH EMISSION CONTROL STANDARDS

At (c) this rule states:

> (c) In addition to any control or manner of operation necessary to meet emission standards in this Section, any source of air pollution shall be operated with such control or in such manner that the source shall not cause the ambient air quality standards pursuant to 15A NCAC 02D .0400 to be exceeded at any point beyond the premises on which the source is located. When controls more stringent than those named in the applicable emission standards in this Section are required to prevent violation of the ambient air quality standards or are required to create an offset, the permit shall contain a condition requiring these controls.

A review of the NOx emissions from the furnace and the facility overall are relatively high based on the reported emission inventories and the application itself. The modification, although not triggering PSD, is expected to result in actual hourly increases of NOx emissions when LI glass is being produced.

The facility has not modeled previously for the current NO2 NAAQS so it is unclear whether or not this project could result in a violation of the NO2 NAAQS. Given this concern the Permittee has been required to conduct a modeling analysis to show the facility will not cause a NO2 exceedance.

The Permittee supplied the modeling demonstration to the DAQ via email on December 21, 2020. A memo was issued by the DAQ's Air Quality an Analysis Branch on February 02, 2021 stating in summary:

" *The modeling adequately demonstrates compliance with the 1-hour and annual National Ambient Air Quality Standards (NAAQS) for NO_2."*

The following table shows the expected maximum emission rates of NOx on a lb/hr basis in all scenarios for all sources included in the model as well as emission rates for the two furnaces optimized to obtain impacts that achieve 95% of the NO2 NAAQS.

Source ID No.	**Description**	**Estimated Maximum 1-hour Emission Rate, lb/hr**	**Allowable Emission Rate, lb/hr**
ES01	Natural gas-fired float glass melting furnace	628	2009.6
ES02	Natural gas-fired float glass melting furnace	634	2028.8
B1	Line #1 image automation natural gas-fired boiler	0.08	0.08
B3	Line #2 Low E process natural gas-fired boiler	0.32	0.32
B4	Line #2 Image automation natural gas-fired boiler	0.06	0.06
IK1	Natural gas-fired glass heat soak oven	0.12	0.12
IEG8	Emergency use diesel fuel-fired compressor	0.62	0.62
IEG9	Emergency-use gasoline-fired generator	0.09	0.09
CD06d	thermal oxidizer	0.87	0.87
EG-11	Diesel fuel-fired emergency generator	2.41	2.41
EG-12	Diesel fuel-fired emergency generator	2.41	2.41
FS01a	Natural gas Lehr burners	0.04	0.04
FS01b	Natural gas Lehr burners	0.04	0.04
*IEG1 through IEG7 were not modeled based on less than 100 hrs per year historical operation			

The maximum expected one-hour emission rates for NOx above resulted in the following impacts:

Maximum Baseline NO_2 Impacts
Pilkington North America, Inc. – Laurinburg, NC

Pollutant	Averaging Period	Maximum Impact ($\mu g/m^3$)	Background Concentration ($\mu g/m^3$)	NAAQS ($\mu g/m^3$)	% of NAAQS
Nitrogen Dioxide	1-hour	105.6	Note 1	188	56%
	Annual	7.4	2.6	100	10%

Note 1: Temporally varying (by season and hour of day) background values added to modeled concentrations within model.

The emission rates for the furnaces were then optimized to result in impacts of 95% of the hourly NO2 NAAQS as shown in the table below.

Maximum Optimized NO_2 Impacts
Pilkington North America, Inc. – Laurinburg, NC

Pollutant	Averaging Period	Maximum Impact (µg/m³)	Background Concentration (µg/m³)	NAAQS (µg/m³)	% of NAAQS
Nitrogen Dioxide	1-hour	178.6	Note 1	188	95%
	Annual	18.8	2.6	100	21%

Note 1: Temporally varying (by season and hour of day) background values added to modeled concentrations within model.

Note that for the furnaces, the emission rates required to result in impacts of 95% of the hourly NO2 NAAQS are over three times greater than the expected potential emission rates. These emission rates will be included in the permit as allowable emission rates.

Since the rates modeled are will above the maximum expected NOx emission rates and the impacts associated with the modeling results are well below the hourly NO2 NAAQS, the only monitoring that will be required will be to use the NOx CEMS installed on furnace (ID No. ES-02) for PSD purposes to be used here to keep track of the maximum 1hour values.

15A NCAC 02D .0515: PARTICULATES FROM MISCELLANEOUS INDUSTRIAL PROCESSES
The Permittee is required under the current permit to test for total PM every two years. The most recent source test was conducted 3/14/2018 and the results were 28.1 lb/hr and the allowable under 02D .0515 for that process rate 42.9 lb/hr. The previous test was conducted on 08/31/2015 and the results were 37.4 lb/hr and the allowable under 02D .0515 for that process rate 40.2 lb/hr.

The furnaces (ES01 and ES02) each have different testing frequencies, ES01 has no recurring testing whereas ES 02 tests every two years. Current DAQ policy is to have default testing for all PM uncontrolled furnaces on an annual basis unless, however, if results of a given test are less than 80 percent of the allowable emission limit, then the testing frequency is reduced to once every five years. The Permit will be revised to reflect this testing frequency for both ES 01 and ES 02.

While producing glass the furnace has historically produced continued compliance is expected. When producing the LI glass, it is unclear what the effect on the short-term PM (lb/hr) emissions will be since the application generally presented the lb/hr data on an annual average. In any case, the Permittee will be required to do a PM test while producing LI glass within 180 days of restarting the furnace and within 30 days of producing LI glass if it occurs after 180 days.

15A NCAC 02D .0516: SULFUR DIOXIDE EMISSIONS FROM COMBUSTION SOURCES
The allowable emissions under this rule are 2.3 lb/MMBtu heat input.

Using the March 14, 2018 test data, the ratio of draw rate to process rate (material input) was approximately 0.83. The Permittee estimates the maximum SO2 emissions factor on a 1-hour basis will 1.8 lb/ton drawn glass. The current estimate is 1.67 lb/ton.

The maximum heat input of the furnace is 300 MMBtu/hr and the maximum process rate is 45.8 tons per hour. Thus, 1.8 lb/ton can be estimated to be 0.23 lb/ MMBtu(i.e., 1.8 lb SO2 /ton glass * 0.83 ton glass/ton input *45.8 tons input/hr / 300 MMBtu /hr).

Given that the basis of the SO2 emission estimate is unknown and there is an expected increase, the Permittee will be required to do a SO2 test while producing LI glass within 180 days of restarting the furnace or within 30 days of producing LI glass if it occurs after 180 days.

15A NCAC 2D .0521: CONTROL OF VISIBLE EMISSIONS
Under this rule, visible emissions from this furnace shall not be more than **40 percent opacity** when averaged over a six-minute period.

The current permit required opacity testing under the 02D .0515 condition which is applicable only to PM emissions not opacity. The highest reading during the last test was 16.3%. This will be removed from the revised permit. The highest reading during the last test (03/14/2018) was 16.3%. However, the current 02D .0521 condition will be revised to conduct an initial VE test after the modifications are completed and to reestablish a "normal" VE reading for ongoing once per week VE monitoring requirements.

15A NCAC 2D .0524: NEW SOURCE PERFORMANCE STANDARDS
The Permittee states in the application:

> The Project will not trigger 40 CFR Part 60, Subpart CC (i.e., the NSPS for Glass Manufacturing Plants because the project will not cause a modification nor will it meet the definition of a reconstruction under NSPS rules.
>
> An NSPS modification will not take place because there will be no increase in the potential-to-emit hourly filterable particulate emissions due to the repair project. The potential-to-emit of filterable PM for ES-02 is 42.9 lb/hr as indicated in Permit 03873T34 per 15A NCAC 02D.0530 and will not change after this project. Maximum actual hourly emissions will remain essentially the same: Maximum Filterable PM 31.7 lbs/hr before the project and the projected maximum Filterable PM after the project is 31.21lb/hr.
>
> Additionally, reconstruction will not take place during the Project as defined by the NSPS. According to 40 CFR § 60.l5(b)(l), reconstruction occurs when "[t]he fixed capital cost of the new components exceed 50 percent of the fixed capital cost that would be required to construct a comparable entirely new facility. For this project, two important factors are relevant. First, the "facility" for purposes of the ES-02 repair project is the "glass melting furnace," which is defined at 40 CFR § 60.291. Second, the costs of rebricking are excluded from the reconstruction analysis pursuant to 40 CFR § 60.292(c). Rebricking is defined a 40 CFR § 60.291 and "means replacement of damaged or worn refractory parts of the glass melting furnace."
>
> Table B-1, which contains Trade Secret information under North Carolina law and Confidential Business Information under federal law (and is discussed below), provides an NSPS reconstruction analysis demonstrating that the non-rebricking cost of the repair project on the affected furnace is less than 50% of the cost for a "comparable entirely new facility," therefore demonstrating that NSPS reconstruction will not take place.

This engineer agrees with the submitted reconstruction analysis. However, it is unclear if a modification will have occurred as defined under NSPS at 40 CFR 60.2. The pollutant of concern under NSPS Subpart CC is filterable PM. The Permittee states above that no increase in PM emissions will occur because the existing permit contains a PM emissions limit of 42.9 lb/hr in the PSD condition at Section 2.1 B.4 and the Permittee is not requesting any changes to this. However, NSPS addresses actual increases in PM emissions. Based on the information submitted, it is unclear to this engineer if the conclusion of the applicant is correct. That is, if the PM filterable emissions will not increase as a result of the described changes.

40 CFR 60.14 addresses how to determine modifications as well as some exemptions. Based on the application the Permittee is not availing itself of any of the exemptions at 40 CFR 60.14(e). Since the application, which relies on emission factors, does not seem conclusive to this engineer, the approach under 40 CFR 60.14 (b)(2) will be taken. The Permittee shall determine if a modification occurred by comparing before and after source tests on the furnace using a statistical t-test. 40 CFR 60.14(b)(2) and Appendix C explain how to do this.

Note that this approach was taken to address NSPS applicability at another glass furnace at another facility (EGFA-Lexington, facility ID No. 2900109, permit no. 02688T43, Section 2.1 G.4.) . The following language will be included in the draft permit.

> Pursuant to NCGS 143-215.108(c), the Permittee shall, in order to determine if the modifications associated with application no. 8300027.20A are a "modification" as defined under 40 CFR Part 60 Subpart A, conduct source testing on the melter section of furnace (ID No. ES-02) for filterable particulate matter consistent with

40 CFR 60.14 and 40 CFR 60 Appendix C. The Permittee shall test the melter stack according to the schedule found at Section 2.1 B.1 The testing shall be conducted in accordance with General Condition JJ. If the testing indicates that a "modification" has occurred, the Permittee shall submit a permit application to incorporate the requirements of 40 CFR Subpart CC into the air permit.

15A NCAC 2D .0530: PREVENTION OF SIGNIFICANT DETERIORATION
This furnace has the following current BACT limits:

Emission Source	Pollutant	BACT Limits
float glass melting furnace **(ID No. ES-02)**	particulate matter	42.9 pounds per hour
	sulfur dioxide	0.5 pounds per million Btu heat input from the firing of natural gas

The Permit requires compliance with the PM BACT limit concurrent with 02D .0515 testing. Note that this language is not necessary since a source test for a given pollutant is evaluated for compliance with all applicable regulations per standard DAQ procedures. In any case, compliance with this 42.9 lb/hr limit will be reevaluated for all future PM tests, including the initial testing required after the modifications as found at Section 2.1 B.1 for PM.

The current permit does not require testing to comply with the SO2 BACT limit. However, since the 02D .0516 SO2 condition is being revised to require an initial test after the modifications, compliance with the SO2 BACT limit will also be revaluated when testing is conducted pursuant to 02D .0516.

The permit will be revised to include the standard DAQ shell test requirement. No other changes are necessary to the existing permit condition. However, PSD applicability needs to be addressed for the current furnace project. See the discussion below.

15A NCAC 02D .0530(u): USE OF PROJECTED ACTUAL EMISSIONS TO AVOID APPLICABILITY OF PREVENTION OF SIGNIFICANT DETERIORATION REQUIREMENTS

Furnace project PSD applicability

On November 23, 2020, the Permittee re submitted a baseline to projected actual emissions analysis to address PSD applicability. Scenario #1 represents annual emissions assuming no LI glass production. Scenario #2 included some LI glass production. The following table was created based on that information.

Increase Analysis									
	NOx	**TPM**	**FPM**	**PM10**	**PM2.5**	**SO2**	**VOC**	**CO**	**H2SO4**
Significant Threshold	**40**	**25**	**NA**	**15**	**10**	**40**	**40**	**100**	**7**
Baseline Emissions(BAE)	1999	138	121	133	128	220	13	21	34
Operating Scenario #1	(no LI production and current production mix)								
Projected Actuals (PAE)	1970	145	131	139	133	240	13	22	37
Exludable Emissions	22	0	0	0	0	3	0	0	0
PAE - BAE	-29	7	10	6	5	20	0	0	3
(PAE-EE)-BAE	-51	7	10	6	5	17	0	0	3
Increase	0	7	10	6	5	17	0	0	3
Significant?	no	no	NA	no	no	no	no	no	no
Operating Scenario #2	(with LI production and selected use of 3R during non-LI production)								
Projected Actuals (PAE)	2017	145	131	139	133	240	13	117	37
Exludable Emissions	0	0	0	0	0	3	0	0	0
PAE - BAE	19	7	10	6	5	20	0	96	3
(PAE-EE)-BAE	19	7	10	6	5	17	0	96	3
Increase	19	7	10	6	5	17	0	96	3
Significant?	no	no	NA	no	no	no	no	no	no
threshold that triggers revised PSD applicability analysis	**2039**	**163**	**NA**	**148**	**138**	**260**	**53**	**121**	**41**

Baseline Actual Emissions (BAE)
The application contains an exhaustive discussion on the methodology used. Upon review of the application and with follow-up explanations from the Permittee, the baseline actual emissions were determined consistent with 02D .0530.

Excludable Emissions (EE, aka "Demand Growth or "Could Have Accommodated" Emissions)
Excludable emissions (EE) represent the portion of the future projected actual emissions above the baseline that the source could have accommodated before the project and that are unrelated to the current project. The bases for these values are included in the application at Table C-3 and appear to be reasonable.

It should be clarified however the since the furnace is not capable of producing LI glass prior to the modification, the Permittee will not be able to avail itself of EE after the modification during periods when it is producing the LI glass.

Projected Actual Emissions (PAE)
The application contains an exhaustive discussion on the methodology used. Upon review of the application and with follow-up explanations from the Permittee, the projected actual emissions appeared to be determined consistent with 02D .0530.

PSD applicability - 02D .0530(u) discussion
Note that based on the submitted information the PSD applicability threshold for any pollutant is not anticipated by the Permittee to be exceeded. However, since the Permittee is relying on a "baseline to projected actuals" analysis to avoid PSD review, a "02D .0530(u)" condition will be placed into the permit. Typical 5-year recordkeeping of actual emissions will be required for all pollutants of concern. As no data is available from this source for the LI glass, testing will be required post modification to obtain emission factors to enforce the recordkeeping requirements and to assess that actual emissions are below PSD applicability thresholds. Note that testing is required for PM10

and PM2.5, as reliance on AP-42 size distribution data to extrapolate their emission estimates from total PM emissions for this source has been unverified. Testing is also required for PM, SO2. Testing for Fluorides is not required as the glass formulations used in the furnace only contain trace amounts of Fluoride. The Permittee claims that most of the fluoride emissions are in the form of HF, which are not considered a PSD pollutant. According to the Permittee, previous emission inventories have assumed total Fluorides included the HF component. H2SO4 estimates are based off chemistry considerations . Testing for NOx and CO is not required as the Permittee will be operating CEMS for these sources. Reasonable emission factors appear to exist for other glass formulations besides the LI glass formulation.

To simplify the enforcement of this recordkeeping requirement, a table for all pollutants of concern will be included in the permit. It consists of each pollutant's baseline emissions with the addition of the specific pollutant's PSD applicability threshold limit. The Permittee will use its best available emission factor for a given product formulation and calculate its annual emissions as a sum of all these formulation specific estimates. These emissions will be compared to the values in the table. These emissions will be reported at the end of each year (as defined at Section 2.1 B.5.c). If the values are all less than the values in the table, the Permittee has no additional requirements. If the emissions of a pollutant(s) are greater than a value in the table, the Permittee will be required to submit a revised PSD applicability analysis with the annual report. PSD applicability will be revaluated based on this revised submittal. The Permittee has projected relatively low increases for many of the pollutants. Past experience has shown that a source test resulting in greater emission factors may result in emissions greater than original projections and require additional explanation in the report. Reviewing and understanding why the actual emissions are greater than the original projections and assessing if the explanations are valid can be burdensome on the regional compliance staff as the original analysis is conducted by the central office permitting staff. By including relatively "bright lines" (although not enforceable limitations), additional scrutiny of the annual reports will only be necessary if the actual emissions approach PSD applicability thresholds.

Unique concerns with NOx and CO
See discussion below.

15A NCAC 02Q .0317: AVOIDANCE CONDITIONS for 15A NCAC 02D. 0530: PREVENTION OF SIGNIFICANT DETERIORATION

As discussed in Section III above, the Permittee is installing the "3R" process in the furnace to help reduce NOx emissions on an annual basis by controlling NOx emissions from glass formulations other than LI glass to accommodate higher NOx emissions when producing the LI glass. The use of the 3R also has the potential to cause higher CO emissions while in use. To facilitate managing the CO and NOx emissions the Permittee is installing NOx and CO CEMS.

Unlike the pollutants addressed in the 02D .0530(u) condition, the Permittee is applying active "controls" to avoid triggering PSD review for NOx as a result of producing LI glass. If the Permittee was not going to produce LI glass, it would not implement the use of the 3R, and the NOx emissions would be consistent (at least as expected by the Permittee) with its current level of emissions (lb/ton draw basis). And if the 3R was not to be used, the CO emissions likewise are also expected to be consistent with its current level of emissions (lb/ton draw basis).

In principle, during the 5-year period when the 02D .0530(u) recordkeeping requirements are in effect, the Permittee could operate the 3R to avoid triggering PSD but then shut it off after the 5-year period since there would be no other enforceable condition in the permit to require it. In short circumvention of PSD would be possible. If it was not for implementing the 3R, NOx and CO could be solely addressed under 02D .0530(u).

Because of this situation, the increase in NOx emissions resulting from this project will be addressed in a permanent PSD avoidance condition. As PSD applicability is based on annual emissions the permittee will be limited only during the years that it is producing the LI glass, to the baseline (1999 tpy) plus the NOx significance level (40 tpy). Per standard DAQ policy, PSD avoidance conditions are based on 12-month rolling totals. Thus, the PSD avoidance limit will apply in any 12-month rolling period in which LI glass is produced, starting with the first month in which the LI glass is produced.

Likewise, CO will also be addressed in the PSD avoidance condition as the CO increase is a strong function of the use of 3R.

Typical QA/QC requirements for these types of CEMS will be incorporated into the permit as well as typical PSD avoidance monitoring, recordkeeping and reporting. Note that although the limit only applies during the 12-month periods in which LI glass is produced, the monitoring, recordkeeping, and reporting is required at all times.

State Enforceable Only

15A NCAC 02D .1100 - CONTROL OF TOXIC AIR POLLUTANTS

The Permittee provided an estimate of its maximum TAP emissions in Form B. In all cases, the emissions are below each TAPs respective TPER or below the allowable emission rate found in Section 2.2 A.1or 2.2 A.2. No changes will be made to the existing permit conditions.

Two new emergency generators project:

15A NCAC 02D .0516: SULFUR DIOXIDE EMISSIONS FROM COMBUSTION SOURCES

02D .0516 states:

> *(b) A source subject to an emission standard for sulfur dioxide in Rules .0524, .0527, .1110, .1111, .1205, .1206, .1210, or .1211 of this Subchapter shall meet the standard in that particular rule instead of the standard in Paragraph (a) of this Rule.*

These engines are subject to 2D .0524 NSPS Subpart IIII which has a sulfur standard. Thus, this rule does not apply to these emergency engines.

15A NCAC 02D .0521: CONTROL OF VISIBLE EMISSIONS

Under this rule, each source is subject to a 20 percent opacity limit when averaged over a 6-minute period (with some exceptions).

02D .0521(b) states (paraphrased):

> *(b) Scope. This Rule shall apply to all fuel burning sources and to other processes that may have a visible emission. However, sources subject to a visible emission standard in Rules .0506, .0508, .0524, .0543, .0544, .1110, .1111, .1205, .1206, .1210, .1211, or .1212 of this Subchapter shall meet that standard instead of the standard contained in this Rule.*

These engines are subject to 02D .0524 NSPS Subpart IIII but Subpart IIII does not have an opacity standard applicable to these engines. Thus 02D .0521 applies to these engines. Consistent with current DAQ policy no M/R/R applies to these engines.

15A NCAC 02D .0524: NEW SOURCE PERFORMANCE STANDARDS
40 CFR Part 60, Subpart IIII, Standards of Performance for Stationary Compression Ignition Internal Combustion Engines

These two engines are expected to be able to deliver approximately 2000 kW of power each. The engines are being requested to operate for emergency purposes (with other certain allowances under this rule) only. Although the final engines have not been specified, the Permittee has assumed the maximum engine horsepower will be approximately 2922 brake horsepower.

Emergency engines of this size are required to meet Tier 2 emission limits pursuant to 89.112 and 89.113 via 60.4202(a)(2).

The Permittee will be required to purchase an engine that is certified by the manufactures to meet these emission standards and to operate and maintain the engine as required by the manufacturer for the life of the engine.
The Permittee will be required to only combust fuel that meets the requirements of 80.510(b)which includes fuel with:

i. a maximum sulfur content of 15 ppm; and

ii. a minimum cetane index of 40 or a maximum aromatic content of 35 volume percent.

The engines shall be equipped with a non-resettable hour meter to track emergency and non-emergency operation.

Associated recordkeeping and reporting will also be required.

15A NCAC 02D .1111: MAXIMUM ACHIEVABLE CONTROL TECHNOLOGY
40 CFR Part 63, Subpart ZZZZ, National Emissions Standards for Hazardous Air Pollutants for Stationary Reciprocating Internal Combustion Engines.

The facility is a major source for HAP. As such, these new emergency engines with a brake horsepower greater than 500 are subject to 40 CFR 63, Subpart ZZZZ, " National Emissions Standards for Hazardous Air Pollutants for Stationary Reciprocating Internal Combustion Engines.

63.6590(b) states:

(b) Stationary RICE subject to limited requirements.
(1) An affected source which meets either of the criteria in paragraphs (b)(1)(i) through (ii) of this section does not have to meet the requirements of this subpart and of subpart A of this part except for the initial notification requirements of §63.6645(f).
(i) The stationary RICE is a new or reconstructed emergency stationary RICE with a site rating of more than 500 brake HP located at a major source of HAP emissions that does not operate or is not contractually obligated to be available for more than 15 hours per calendar year for the purposes specified in §63.6640(f)(2)(ii) and (iii).

§63.6640(f)(2)(ii) and (iii) contains the now vacated emergency demand response provisions. Thus, these new engines are only subject for the initial notification requirements of §63.6645(f).

§63.6645(f). states:
(f) If you are required to submit an Initial Notification but are otherwise not affected by the requirements of this subpart, in accordance with §63.6590(b), your notification should include the information in §63.9(b)(2)(i) through (v), and a statement that your stationary RICE has no additional requirements and explain the basis of the exclusion (for example, that it operates exclusively as an emergency stationary RICE if it has a site rating of more than 500 brake HP located at a major source of HAP emissions).

The permit application states the engines are to be used exclusively as an emergency engine.

§63.9(b)(2)(i) through (v) require:
(i) The name and address of the owner or operator;
(ii) The address (i.e., physical location) of the affected source;
(iii) An identification of the relevant standard, or other requirement, that is the basis of the notification and the source's compliance date;
(iv) A brief description of the nature, size, design, and method of operation of the source and an identification of the types of emission points within the affected source subject to the relevant standard and types of hazardous air pollutants emitted; and

Since the application submitted included all this information, it fulfills the initial notification requirements as allowed at 40 CFR 63.9(b)(1)(iii).

15A NCAC 2D .0530: PREVENTION OF SIGNIFICANT DETERIORATION
The facility is an existing PSD major source. To avoid PSD review, the proposed project must have potential emissions for each NSR regulated pollutant less than PSD significance thresholds for major modifications. The original application aggregated the engine project and the furnace project together. However, on October 05, 2020, the Permittee submitted the following in an email to the DAQ:

> The emissions increases associated with the addition of the two new emergency RICEs were added to the furnace emission analysis only because they are being installed at the same time that the repair project on the furnace will take place. For this reason, the emissions from the emergency RICE were included together in the PTI application. The two new emergency RICE will be installed to back-up critical systems (including those servicing ES02) in the event of an unexpected power outage. This installation would be necessary regardless of the status of the repair project and are not substantially related to the repair project in function. They were included in the permit with the repair only because the timing of the installation is contemporaneous with the repair on the furnace itself. The installation of the RICE engines are not linked in any way to the proposed changes on the furnace to allow LI production. The emergency RICE would back-up the same systems regardless of the type of glass being produced and regardless of the status of the repair project. They are not necessary to the completion of the repair project on the furnace and vice versa.

This engineer finds this explanation reasonable. Although the engine project and the furnace project are contemporaneous, they are not substantially related (i.e., technically or economically dependent). Thus, for PSD applicability purposes the projects can be considered separate.

Using the DAQ emission estimation spreadsheet which is based on AP-42 emission factors, the potential emission estimates for the new emergency engines based on 500 hours per year operation are as follows:

Emissions Output for Diesel Engines

Criteria Pollutants

Pollutant		lb/hr	lb/yr	tpy
PM		4.06	2,030.00	1.02
PM-10		4.06	2,030.00	1.02
PM-2.5		4.06	2,030.00	1.02
NO_x, uncont.		139.20	69,600.00	34.80
NO_x, cont.		75.40	37,700.00	18.85
TOC (as CH_4)		4.09	2,044.50	1.02
NMTOC		3.72	1,860.50	0.93
CO		31.90	15,950.00	7.98
SO_x		0.070	35.19	0.02
Total HAP		7.12E-02	35.59	0.018
Largest HAP (benzene)		3.15E-02	15.75	0.008

Since all estimates are below the PSD significance thresholds, the engine project does not represent a significant emission increase and therefore does not trigger PSD review. Since the analysis was based on potential emission estimates, no monitoring recordkeeping or reporting will be required in the permit.

PSD applicability for the furnace project will be evaluated separately elsewhere in this review.

State Enforceable Only

15A NCAC 02D .1100 - CONTROL OF TOXIC AIR POLLUTANTS

As these engines are subject to MACT Subpart ZZZZ, they are exempt from toxics review pursuant to 02Q .0702(a)(27)(B). However, pursuant to 02Q .0706(c), these sources shall be reviewed to determine if they pose an unacceptable risk pursuant to NCGS 143-215.107(a)(5)b.

A review of the TAP emissions from these engines in conjunction with the other sources of TAP s at the facility were reviewed based on 500 hours per year of operation. The only TPER that was exceeded was for benzene which has an annual AAL. The facility modeled for benzene in 2006 as memorialized in Section 2.2 A.1. of the permit. The facility-wide allowable emissions of benzene are approximately 52,000 pounds per year. The most recent inventory data available was for 2019 and it shows approximately 10 pounds per year of Benzene emitted. Thus, an exceedance of the Benzene AAL resulting from the operation of the two new emergency engines is highly unlikely and therefore do not pose an unacceptable risk to human health. No further analysis is necessary.

V. Permitting history since last renewal

The current permit, permit no. T34 which was issued August 09, 2018 was issued in response to a permit renewal application.

VI. NSPS, NESHAPS, PSD, Toxics, Attainment Status, 112(r), and CAM

NSPS

See discussion in Section IV for the applicability of NSPS Subparts CC and IIII to this modification.

NESHAPS/GACT/MACT

See discussion in Section IV for the applicability of MACT Subpart ZZZZ to this modification.

PSD

The facility is a major source. The proposed project however is not a significant modification for PSD purposes. See Section IV.

Toxics

See discussion in Section IV for the applicability of 02D .1100 and 02Q .0700 (state enforceable only toxics rules) to this modification.

Attainment status

Scotland County is in attainment for all pollutants. It has triggered increment tracking for PM10 and SO2. For purposes of tracking emissions, there are two projects. The engine project consists of the two new engines: Based on the B forms the expected actual emissions are as follows for the sum of the two engines: PM10 = 0.5 lb/hr and SO2 = 0.06 lb/hr.

The furnace is a little more confusing to estimate hourly emissions given the various operating scenarios. To keep things simple, the assumption will be that the emissions can increase by just below PSD significance levels; 15 tpy for PM10 and 40 tpy for SO2 which over 8760 hours converts to 3.4 lb/hr PM 10 and 9.1 lb/hr SO2.This is very conservative. Therefore, the sum totals are PM10: 3.9 lb/hr and SO2: 9.16 lb/hr.

112(r)

This facility is subject to Section 112(r) of the Clean Air Act with requirements in Section 2.3 A.1 of the permit.

CAM

This modification is not subject to CAM. For the new engines, each has emissions less than the applicable thresholds at §64.2. For the furnace modification, controls are only implemented for NOx. However, NOx CEMS will be used for monitoring, which meets the continuous compliance determination method exemption to CAM at §64.2(b)(1)(vi).

VII. Compliance History

The most recent compliance inspection report dated 01/21/2020 by Greg Reeves, "noted the following:

> Pilkington North America, Inc. appeared to be ***IN VIOLATION*** of permit requirements, as noted above in sections 7.C.2 and 7.E.1.
>
> I recommend sending the facility a **NOTICE OF VIOLATION** for these violations of the permit requirements. Violations were as follows:
>
> a. Monthly inspections were not conducted in December for fabric filters ID Nos. CD-22 and CD-18, as required by permit condition 2.1.C.2.c.
>
> b. Monthly inspections were not conducted in December for fabric filters ID Nos. CD-08, and CD-17, as required by permit condition 2.1.E.1.c.

VIII. Changes Implemented in Revised Permit

Existing Condition No.	New Condition No.	Changes
Cover Letter	Cover Letter	• Used current shell language, permit numbers, dates, etc.
insignificant activities list	same	• Corrected IEG5 IEG6, IEG7 and IEG9 to natural gas-fired
Permit page one	Same	• Revised dates, permit numbers, etc. using current shell standards
Section 1	Same	• Removed reference to Case-by-Case MACT for ES-B1 , -B3 and -B4. The requirements have been superseded by MACT 5D and hence no longer apply. • To ES-02, revised descriptor to include "supplemental oxygen burners" • Added reference to two new emergency engines (EG-11 and EG-12) • Added reference to the 3R process (CD-02-3R) • Added a 02Q .0501(b)(2) footnote for the furnace (ID No.ES-02), "3R" process, and two new emergency generators. • Corrected CD-03ca to 3,360 square feet
Section 2.1 A.1	same	• Revised the testing frequency requirements to be consistent with other similar source types (i.e., 1 or 5-year test frequency as a function of compliance margin) • Added 180-day testing after permit issuance requirement. • Revised monitoring recordkeeping and reporting to be consistent with new testing requirements and similar sources. • Removed the opacity testing requirement as it belongs under 02D .0521
Section 2.1 B.1	same	**02D. 0516 condition**
a	same	• Removed the following phrase as it is redundant with current shell language and not consistent with current permit shell language. "combustion of fuel combined with the decomposition of sulfates in the batch.
Section 2.1 B.2	same	**02D. 0515 condition**
	same	• Revised the testing frequency requirements to be consistent with other similar source types (i.e., 1 or 5-year test frequency as a function of compliance margin) • Added 180-day testing after startup requirement. • Added testing requirement for LI glass. • Revised monitoring recordkeeping and reporting to be consistent with new testing requirements and similar sources.
Section 2.1 B.2	same	**02D. 0516 condition**
a	same	• Removed the following phrase as it is redundant with current shell language and not consistent with current permit shell language. "combustion of fuel combined with the decomposition of sulfates in the batch. •
Section 2.1 B.3	same	**02D .0521 condition**
b	same	• Added initial VE testing requirement
c	same	• Revised language to current shell standards • Added the establishment of "normal" language
Section 2.1 B.4	same	**02D .0530 condition**
b and c	b	• Removed the existing language and replaced with standard permit shell language. Per DAQ policy, whenever a pollutant is tested, compliance with all applicable emission standards is evaluated.
d	c	• Added reference to PM emissions as it appeared to be missing
NA	**Section 2.1 B.5**	**02D .0530(u) condition**

Existing Condition No.	New Condition No.	Changes
		• Added a condition to address 02D .0530(u) for the furnace project. • Testing to establish post-project emission factors for LI glass for a number of pollutants is required. • See review for full explanation of monitoring, recordkeeping and reporting requirements.
NA	**Section 2.1 B.6**	**02Q .0317 (PSD Avoidance) Condition**
		• Added a condition to address PSD avoidance for NOx and CO for the furnace project given the unique concerns which could not be addressed under 02D .0530(u) • NOx and CO CERMS are required. • Continuous monitoring and recordkeeping are required BUT the emission limitation only applies in the rolling 12-month periods in which LI glass is produced. • See review for full explanation of monitoring, recordkeeping and reporting requirements.
NA	**Section 2.1 B.7**	**NSPS modification applicability testing requirement**
		• Added a testing requirement for the permittee to determine if a NSPS modification has occurred pursuant to 40 CFR 60 Appendix C.
NA	**Section 2.1 B.8**	**02D .0501condition**
		• Added an NO2 NAAQS condition with emission limitations, monitoring recordkeeping and reporting.
Section 2.1 E.1.c	same	• Corrected sentences to read eight instead of nine bagfilters
Section 2.1 G.4	**NA**	• Removed 112(j) condition as the sunset date has already passed.
Section 2.1 G.5	**Section 2.1 G.4**	**MACT DDDDD condition**
General	Same	• Revised condition in general to current DAQ standards. No changes in intent were made unless specifically addressed in the changes noted elsewhere in this table.
a ii.	NA	• Removed reference to 112(j) sunset language as this date has passed
NA	**Section 2.1 H**	• Added section to address the two new emergency generators. • Specific permit conditions were added for 02D .0521, .0524(NSPS Dc), 02D .1111 (MACT ZZZZ)
NA	**Section 2.2 C.1**	• Added the 02Q .0501(b)(2) requirement pursuant to 02Q .0504 to file an amended application following the procedures of Section 15A NCAC 02Q .0500 within one year from the date of beginning operation of any of the sources in Table 2.2 C. • Startup notification for each source was also included
Section 3 General Conditions	Same	Updated from version 5.2 04/03/2018 to version 5.5, 08/25/2020. Changes include: • Condition Y – fixed typographical spacing error • Condition BB - corrected regulatory reference from 02Q .0507(d)(4) to (d)(3) • Condition CC – corrected regulatory reference from 02Q .0501(e) to (d) • Condition JJ – clarified the applicable requirements for sources required to test pursuant to .0524, .1110, and .1111. • Condition NN – corrected regulatory references from 02Q .0501(c)(2) to (b)(2) in paragraph 1. and from 02Q .0501(d)(2) to (c)(2) in paragraph 2.
Attachment - List of Acronyms	Same	• Revised substantially

IX. Public Notice/EPA and Affected State(s) Review

Not applicable to this application. Modification will be subjected to TV public notice procedures when the amended application is processed pursuant to 02Q .0500 as required under 02Q .0501(b)(2) and 02Q .0504.

X. Recommendations

Issue permit no. 03873T35.

Attachment B

NSPS Modification Analysis

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Pilkington North America, Inc.
13121 South Rocky Ford Road
Laurinburg, NC 28352

August 26, 2021

NCDEQ – DAQ
Heather Carter
Heather.carter@ncdenr.gov
Regional Air Quality Supervisor
225 Green Street, Suite 714
Fayetteville, NC 28301-5094

Electronic Submittals to:
Heather.carter@ncdenr.gov
Deq.reports-applications@ncdenr.gov

Re: Pilkington North America, Inc.
Facility ID: 8300027
Permit No. 03873T35
Compliance Stack Test Reports
ES01 and ES02

By this letter and the attached reports, the Pilkington North America, Inc. (PNA) Laurinburg, NC facility is submitting the results from the compliance stack testing that took place on ES01 on July 28, 2021 and ES02 on July 29, 2021. Both furnaces were tested for filterable and condensable PM using Methods 5/202. Regular clear, non-low iron glass was being produced on both furnaces during the tests.

Source ES01 Compliance with Particulate Limits

(1) Permit Condition 2.1.A.1.a - 15A NCAC 02D.0515

The process weight rate (P) during the test was 33.4 tons/hour and > 30, so the PM limit for this process weight is calculated by $(55.0*P^{0.11}) - 40$

PM Limit	40.9 lb/hr
TPM Results	10.028 lb/hr
FPM Results	0.387 lb/hr

The test results demonstrate compliance with 15A NCAC 02D.0515 for ES01.

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(2) Consent Decree: *United States v. Pilkington North America, Inc.*, No. 21-00040 (M.D.N.C. filed 04/26/21) Paragraph IV.C.11 – Interim PM Emissions Controls and Limits for Furnace 1.

The interim limits for PM in the above referenced CD are for Filterable PM only. The Draw rate during the stack test was 29.6 tons/hr.

CD FPM Limit	1.1 lb/ton draw
FPM Test Results	9.387 lb/hr FPM ÷ 29.6 tons/hr draw = 0.317 lb/ton draw

The ES01 source is in compliance with the interim filterable PM limits in the Consent Decree and the stack test which demonstrated compliance was conducted within 180-days of the effective date of the orders (effective Date: April 24, 2021) as required.

Source ES02 Compliance with Particulate Limits

(1) Permit Condition 2.1.B.1.a - 15A NCAC 02D.0515

The process weight rate (P) during the test was 36 tons/hour and > 30, so the PM limit for this process weight is calculated by $(55.0*P^{0.11}) - 40$

PM Limit	41.57 lb/hr
TPM Results	29.56 lb/hr
FPM Results	25.57 lb/hr

The ES02 source is in compliance with 15A NCAC 02D.0515 and tests demonstrating compliance with the emission limits was conducted within 180-days after initial start-up of the furnace after repair was completed. Initial start-up (sheet pull – begin glass draw) occurred on June 29, 2021.

(2) Permit Condition 2.1.B.3.a - 15A NCAC 02D.0521

Method 9 Opacity observations were performed on ES02 during the PM tests.

Opacity Limit	40%
3-hour Average Test results	8.8%
Average, Highest 6-minute	10.8%
Highest 6-minute average whole test period	11.3%

Testing on source ES02 has demonstrated compliance with the opacity limits.

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(3) Permit Condition 2.1.B.4.a - 15A NCAC 02D.0530 PSD

PSD Limits for ES02 for FPM	42.9 lb/hr
FPM test results	25.57 lb/hr
TPM test results	29.56 lb/hr

This test on ES02 demonstrates compliance with the permit PSD limits for PM.

(4) Permit Condition 2.1.B.7 – NCGS 143-215.108(c) Determination of "modification" under NSPS 40 CFR 60 for filterable PM.

The above condition in Permit No. 03873T35 requires that PNA demonstrate that there was no increase in lb/hr filterable PM emissions as a result of the cold repair project and thus no "modification" as that term is defined in 40 CFR 60 Subpart A. This demonstration is required to be performed consistent with the procedure set out in 40 CFR 60 Appendix C.

PNA is making this demonstration based on PM tests performed on regular clear glass as this production scenario represents the potential worst-case PM emission rates for both pre-project and post-project scenarios.

The emission rate increase procedures in Appendix C were applied in order to isolate the effects of changes made in the project while keeping all other process parameters the same. This stack test represents the post-project conditions reflecting the changes implemented on the ES02 furnace during the repair project. Since some of the changes made during the project were physical, the process conditions representing the pre-change scenario could not be achieved in July after the project. Therefore, in order to isolate the emission-rate change due to the changes made during the repair, PNA selected a PM stack test performed prior to the repair which was done under process and production conditions close to those of the July test.

The most representative pre-project PM test with conditions close to those of the July 2021 test was performed on March 30, 2013. The 2013 test was done during similar furnace conditions and while producing the same type of glass at close to the same draw rate and raw material feed rate as the post-project test performed in July 2021, so results from that test were used as the pre-project data set in the emission rate increase analysis.

The procedure in 40 CFR 60 Appendix C was applied to the individual test runs for each test. There were three runs per test. PNA completed the analysis between the two test sets three ways: (1) Analysis on the straight lb/hr values pre and post project, (2) analysis of the normalized emission rates in lbs/ton glass draw for each set and (3) comparison of the lb/hr results from the 2013 test at 750 tons/day draw and the adjusted July 2021 lb/hr results. July's test was performed at around 732

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tons/day draw. An emission factor was calculated from this test and used to adjust the post-project lb/hr test results up to 750 tons/day draw.

In all three cases, the post project emission rate was lower than the pre-project emission rate and so the changes implemented on the ES02 furnace as part of the repair project did not result in an increase in emission rate of FPM to the atmosphere and the project does not meet the NSPS definition of a "modification".

The emission rate change analyses are included in Attachment A to this letter.

If there are any questions regarding these reports, please contact Pamela Rygalski, Sr. regional Environmental Manager on mobile at 419-574-3989 or email at pamela.rygalski@nsg.com or Jonathan Collins, site Environmental Manager on mobile at 910-280-5745 or email at jonathan.collins@nsg.com .

Regards,

Chris Markotich
PNA Laurinburg
Plant Manager

Attachments:
(1) Attachment A – Emission Rate Increase Analysis
(2) Attachment B – ES01 Test Report M212910A
(3) Attachment C – ES02 Test Report M212910B

cc: P.Rygalski PNA Regional files
J. Collins PNA Site Files

Filterable PM test run data *set up to compare PM tests consisting of three-one hour runs each*

Student t test

Pre- and Post- Project Test/Process Conditions

		a	***b***
Furnace Tested		Lb2	Lb2
Test Date		3/20/2013	7/29/2021
Type of glass		reg-clear	reg-clear
Draw rate	tons/day	750	734.4

Case 1: Test at straight lb/hr results pre and post

	Run #1	**Run #2**	**Run #3**	**Mean E**	**Sample Variance (S2)**
Pre-Condition "a"	30.168	30.303	29.166	30	0.39
Post-Condition "b"	23.472	27.884	25.359	26	4.90

Pooled Estimate Sp	1.63	
Test Statistic t	-3.24	Criteria for statistical increase is Eb> Ea AND t > tcrit
Degrees of freedom	4	(na+nb-2)
t crit @ 95% confidence level	2.132	
Is there a significant increase?	**no**	

Case 2: Emission factor test

	Run #1	Run #2	Run #3	Mean E	Sample Variance (S2)
Pre-Condition "a"	0.96	0.98	0.93	0.96	0.00
Post-Condition "b"	0.77	0.91	0.83	0.84	0.00

Pooled Estimate Sp	0.05	
Test Statistic t	-2.79	Criteria for statistical increase is Eb> Ea AND t > tcrit
Degrees of freedom	4	
t crit @ 95% confidence level	2.132	
Is there a significant increase?	**no**	

Case 3: Test with post condition results adjusted for draw up to 750 tons/day

	Run #1	Run #2	Run #3	Mean E	Sample Variance (S2)
Pre-Condition "a"	30.168	30.303	29.166	30	0.39
Post-Condition "b"	24.06	28.44	25.94	26	4.83

Pooled Estimate Sp	1.61	
Test Statistic t	-2.83	Criteria for statistical increase is Eb> Ea AND t > tcrit
Degrees of freedom	4	
t crit @ 95% confidence level	2.132	
Is there a significant increase?	**no**	