TECHNICAL EVALUATION
&
PRELIMINARY DETERMINATION

APPLICANT

Ardagh Glass, Inc.
2121 Huron Street
Jacksonville, FL 32254

Jacksonville Facility
Facility ID No. 0310005

PROJECT

Project No. 0310005-015-AC
Application for Minor Source Air Construction Permit

No. 4 Glass Melting Furnace (After the Fact Modification to Permit No. 0310005-012-AC)

No. 3 Glass Melting Furnace (After the Fact Permit for Burner Tip Changes)

COUNTY

Duval County, Florida

PERMITTING AUTHORITY

Florida Department of Environmental Protection
Northeast District Office
Waste and Air Resource Management Program
8800 Baymeadows Way West, Suite 100
Jacksonville, Florida 32256

COMPLIANCE AUTHORITY

Florida Department of Environmental Protection
Northeast District Office
Compliance Assurance
8800 Baymeadows Way West, Suite 100
Jacksonville, Florida 32256

November 22, 2013

1. GENERAL PROJECT INFORMATION

1.1. Air Pollution Regulations

Projects at stationary sources with the potential to emit air pollution are subject to the applicable environmental laws specified in Section 403 of the Florida Statutes (F.S.). The statutes authorize the Department of Environmental Protection (Department) to establish regulations regarding air quality as part of the Florida Administrative Code (F.A.C.), which includes the following applicable chapters: 62-4 (Permits); 62-204 (Air Pollution Control – General Provisions); 62-210 (Stationary Sources – General Requirements); 62-212 (Stationary Sources – Preconstruction Review); 62-213 (Operation Permits for Major Sources of Air Pollution); 62-296 (Stationary Sources - Emission Standards); and 62-297 (Stationary Sources – Emissions Monitoring). Specifically, air construction permits are required pursuant to Rules 62-4, 62-210 and 62-212, F.A.C.

In addition, the U. S. Environmental Protection Agency (EPA) establishes air quality regulations in Title 40 of the Code of Federal Regulations (CFR). Part 60 specifies New Source Performance Standards (NSPS) for numerous industrial categories. Part 61 specifies National Emission Standards for Hazardous Air Pollutants (NESHAP) based on specific pollutants. Part 63 specifies NESHAP based on the Maximum Achievable Control Technology (MACT) for numerous industrial categories. The Department adopts these federal regulations on a quarterly basis in Rule 62-204.800, F.A.C.

1.2. Facility Description and Location

The Jacksonville Facility is an existing container glass manufacturing plant, which is categorized under Standard Industrial Classification Code No. 3221. The existing Jacksonville Facility is located in Duval County at 2121 Huron Street, Jacksonville, Duval County, FL 32254. The UTM coordinates of the existing facility are Zone 17, 431.500 km East and 3357.500 km North. This site is in an area that is in attainment (or designated as unclassifiable) for all air pollutants subject to state and federal Ambient Air Quality Standards (AAQS). The site is located in an air quality maintenance area for the pollutant ozone and is located in the area of influence of an air quality maintenance area for particulate matter.

1.3. Facility Regulatory Categories

- The facility is a not major source of hazardous air pollutants (HAP).
- The facility does not operate units subject to the acid rain provisions of the Clean Air Act.
- The facility is a Title V major source of air pollution in accordance with Chapter 213, F.A.C.
- The facility is a major stationary source in accordance with Rule 62-212.400, F.A.C. for the Prevention of Significant Deterioration (PSD) of Air Quality.

1.4. Project Description

This project involves 1): The revision of existing Air Construction Permit No. 0310005-012-AC for the No. 4 Glass Melting Furnace at the Jacksonville Facility. Permit No. 0310005-012-AC was issued on August 5, 2011 as an after the fact permit for modifications made to the No. 4 Glass Melting Furnace in 2009. The project included the complete replacement of the furnace glass contact and superstructure refractory bricks; the rearrangement of the furnace regenerator system from 4 passes to 2 passes; the relocation of the furnace binding steel to allow installation of additional insulation; widening of the combustion air ports; and changes in the furnace superstructure to allow future installation of oxy/fuel burners. Not disclosed to the City of Jacksonville (Permitting Authority at that time) in the application for permit No. 0310005-012-AC and additional information submitted regarding that application was that the burner tips configuration were changed from four burner tips (two per side) rated at 21 MMBtu per hour each to six burner tips (three per side) rated at 11 MMBtu per hour each. This project will modify permit No. 0310005-012-AC authorizing (after the fact) the installation of the alternate burner tip configuration for the No. 4 Glass Melting Furnace and;

2): After the fact permitting for the No. 3 Glass Melting Furnace at the Jacksonville Facility. Ardagh Glass, Inc. notified the City of Jacksonville in October 2012 of the intention to replace/repair the regenerator crown and forehearth in the No. 3 Glass Melting Furnace in November 2012. This action itself did not require an air

construction permit since the air pollutant emissions would not change and the change is considered rebricking which is not considered a modification itself. Not disclosed to the City of Jacksonville (Permitting Authority at that time) in the notification was the change to the burner tip configuration on the No. 3 Glass Melting Furnace coinciding with the construction activity repairing/replacing the regenerator crown and the forehearths in the No. 3 Glass Melting Furnace. The change of the burner tips configuration is a physical change which requires an air construction permit. This part of the project addresses this issue.

1.5. Processing Schedule

- September 6, 2013: Received complete application for a minor source air pollution construction permit.

2. PSD APPLICABILITY

2.1. General PSD Applicability

The Department regulates major stationary sources in accordance with Florida's PSD program pursuant to Rule 62-212.400, F.A.C. PSD preconstruction review is required in areas that are currently in attainment with the state and federal ambient air quality standards (AAQS) or areas designated as "unclassifiable" for these regulated pollutants. Commonly addressed PSD pollutants for container glass furnaces such as the Jacksonville Facility include: nitrogen oxide (NO_X), PM, PM with a mean diameter of 10 microns or less (PM_{10}), PM with a mean diameter of 2.5 microns or less ($PM_{2.5}$), sulfur dioxide (SO_2), and carbon monoxide (CO).

Additional PSD pollutants that are more common to certain other industries include: lead (Pb), mercury (Hg), hydrogen sulfide (H_2S), TRS including H_2S, reduced sulfur compounds (RSC) including H_2S, municipal waste combustor (MWC) organics measured as total tetra- through octa-chlorinated dibenzo-p-dioxins and dibenzofurans (dioxin/furan), MWC metals measured as PM; MWC acid gases measured as SO_2 and HCl, and municipal solid waste (MSW) landfill emissions as non-methane organic compounds (NMOC).

As defined in Rule 62-210.200(Definitions), F.A.C., a stationary source is a "major stationary source" (major PSD source) if it emits or has the potential to emit (PTE):

- 250 tons per year (tons/year) or more of any PSD pollutant; <u>or</u>
- 100 tons/year or more of any PSD pollutant <u>and</u> the facility belongs to one of the 28 listed PSD major facility categories.

The Jacksonville Facility is a major stationary source based on potential to emit 250 tons/year of an individual PSD pollutant.

For major stationary sources such as the Jacksonville Facility, PSD applicability for modification projects is based on thresholds known as the significant emission rates (SER) as defined in Rule 62-210.200(Definitions), F.A.C. Any "net emissions increase" as defined in Rule 62-210.200(Definitions), F.A.C. of a PSD pollutant from the project that equals or exceeds the respective SER is considered "significant". SER also means any emissions rate or any net emissions increase of a PSD pollutant associated with a major stationary source or major modification which would construct within 10 km of a Class I area and have an impact on such area equal to or greater than 1 gram per cubic meter, 24-hour average.

Although a facility may be "major" (i.e. emits or has the potential to emit 100 or 250 TPY as applicable) for only one PSD pollutant, a project must include BACT controls for any PSD pollutant that exceeds the corresponding significant emission rates given in the Table 1 below.

Table 1 - List of SER by PSD-Pollutant.

Pollutant	SER (TPY)	Pollutant	SER (TPY)
CO	100	NO_X	40
$PM/PM_{10}/PM_{2.5}$	25/15/10	Ozone (VOC) [1]	40
$PM_{2.5}$ (NO_X)	40	$PM_{2.5}$ (SO_2)	40

Pollutant	SER (TPY)	Pollutant	SER (TPY)
Ozone (NO_X) [1]	40	SAM	7
SO_2	40	Pb	0.6
Hg	0.1	GHG (CO_2e)	75,000 [2]

1. Ozone (O_3) is regulated by its precursors (VOC and NO_X). PSD for $PM_{2.5}$ can be triggered by its precursors (NO_X and SO_2).
2. Federal SER of 75,000 TPY for GHG (as CO_2e) for PSD sources and has not been incorporated into Department rules.

According to 40 CFR 52.21, six greenhouse gases (GHG), are also subject to regulation at new stationary sources that will emit or have the potential to emit 100,000 tons/year or more, or a modification at a major GHG facility with a significant Emission Increase (SER) of 75,000 tons/year or more expressed as the carbon dioxide equivalent emissions (CO_2e). This requirement has not been incorporated into Department rules but is a separate requirement of the EPA.

2.2. PSD Applicability for Project

The project is located in Duval County which is in an area that is currently in attainment with the AAQS or is otherwise designated as unclassifiable. According to the applicant, the proposed project is not expected to increase emissions for any PSD pollutant. The Department will address PSD preconstruction review below.

3. DEPARTMENT REVIEW

3.1. No. 4 Glass Melting Furnace: Final Air Construction Permit No. 0310005-012-AC was issued on August 5, 2011 as an after the fact permit for modifications made to the No. 4 Glass Melting Furnace in 2009. The project included the complete replacement of the furnace glass contact and superstructure refractory bricks; the rearrangement of the furnace regenerator system from 4 passes to 2 passes; the relocation of the furnace binding steel to allow installation of additional insulation; widening of the combustion air ports; and changes in the furnace superstructure to allow future installation of oxy/fuel burners. Not disclosed to the Permitting Authority, at the time of the application for permit No. 0310005-012-AC and additional information submitted regarding that application, was that the burner tips configuration were changed from four burner tips (two per side) rated at 21 MMBtu per hour each to six burner tips (three per side) rated at 11 MMBtu per hour each.

The Department has reviewed the information regarding the issuance of permit No. 0310005-012-AC. N**ow also included in the review** is the change of the burner tips configuration. Rule applicability changes including New Source Performance Standards (NSPS), National Emission Standards for Hazardous Air Pollutants (NESHAP), and Prevention of Significant Deterioration (PSD) were again reviewed to determine if a different conclusion would be determined in light of the change in burner tip configuration change. The Department arrived at the same conclusions as the original determinations regarding the above referenced rule applicability (i.e., NSPS and NESHAPS applicability was not determined as applicable by the changes made, and PSD significant emission rates (SER) and significant net emission increases threshold were not exceeded.

In light of the above review the following changes are required in permit No. 0310005-012-AC:

Subsection A. Project and Facility Description (Paragraph 1)

From: This permit is for the modification of Glass Melting Furnace No. 4. The project includes the complete replacement of the furnace glass contact and superstructure refractory bricks; the rearrangement of the furnace regenerator system from 4 passes to 2 passes; the relocation of the furnace binding steel to allow installation of additional insulation; widening of the combustion air ports; and changes in the furnace superstructure to allow future installation of oxy/fuel burners.

To: This permit is for the modification of Glass Melting Furnace No. 4. The project includes the complete replacement of the furnace glass contact and superstructure refractory bricks; the rearrangement of the furnace regenerator system from 4 passes to 2 passes; the relocation of the furnace binding steel to allow installation of

additional insulation; widening of the combustion air ports; and changes in the furnace superstructure to allow future installation of oxy/fuel burners, and the reconfiguration of the burner tips from four burner tips (two per side) rated at 21 MMBtu per hour each to six burner tips (three per side) rated at 11 MMBtu per hour each. Either burner configuration may be used depending upon operational needs of the facility.

A new condition under **Record-keeping and Reporting Requirements** is required as follows:

16. Notify the Permitting Authority in writing (or email at john.d.phillips@dep.state.fl.us) a minimum of seven days prior to reconfiguration of the burner tips. It is noted that the burner tip reconfiguration may be changed to either configuration described in **Subsection A. Project and Facility Description (Paragraph 1).** [Rule 62-4.070(3), FAC, and Rule 2.1401, JEPB]

3.2. A. No. 3 Glass Melting Furnace: After the fact permitting for the No. 3 Glass Melting Furnace at the Jacksonville Facility -- Ardagh Glass, Inc. notified the City of Jacksonville (Permitting Authority at the time) in October 2012 of the intention to replace/repair the regenerator crown and forehearth in the No. 3 Glass Melting Furnace in November 2012. This action itself did not require an air construction permit since the air pollutant emissions would not change and the change is considered rebricking which is not considered a modification itself. Not disclosed to the Permitting Authority during the October 2012 notification were the proposed changes to the burner tip configuration on the No. 3 Glass Melting Furnace coinciding with the construction activity repairing/replacing the regenerator crown and the forehearths in the No. 3 Glass Melting Furnace. The replacement of the burner tips configuration is a physical change which requires an air construction permit.

Furnace and Project Description: Glass Melting Furnace No. 3 is an existing end port regenerative glass melting furnace fired by natural gas or propane with a currently permitted maximum process weight rate of 14.70 tons per hour (equivalent to 312.26 tons per day (TPD) of glass production).

This project involves an after the fact air construction permit for burner tip changes which were made to the furnace in December 2012 without prior notification to the permitting authority and without application for an air construction permit. The burner tip configuration prior to the change was four burner tips (two per side) rated at 21 MMBtu per hour each. It is noted that firing alternates periodically from side to side. The burner tip configuration was changed to six burner tips (three per side) rated at 15 MMBtu per hour each. It is noted that this is a potential heat capacity increase of three MMBtu per hour (45 MMBtu - 42 MMBtu) increase which is approximately 7.1%. Since furnace heat input requirements are dependent on many variables including furnace efficiency, material input quantities, product requirements, etc., and the furnace is already permitted at a higher heat input capacity, the change in burner tip capacity is not considered significant. This change in burner tip configuration and capacity is not expected to result in additional firing of natural gas, an increase in the emission of air pollutants, nor result in an increase in the production rate of the furnace.

The modified furnace shall **not** be subject to 40 CFR 60, Subpart CC, Standards of Performance for Glass Manufacturing Plants and 40 CFR 60, Subpart A, General Conditions, ((The existing furnace No. 3 was constructed before June 15, 1979 and the physical and operational changes did not result in a Particulate Matter (PM) emission rate increase (NSPS Modification, 40 CFR 60.14) or a fixed capital cost that exceeds 50 percent of the fixed capital cost that would be required to construct a comparable entirely new furnace (NSPS Reconstruction, 40 CFR 60.15)). Furnace No. 3 is not subject to 40 CFR 61, Subpart N, National Emission Standard for Inorganic Arsenic Emissions from Glass Manufacturing Plants (The facility does not use commercial arsenic as a raw material) nor to 40 CFR 63 Subpart SSSSSS, National Emission Standards for Hazardous Air Pollutants for Glass Manufacturing Area Sources (The facility does not use metal HAP compounds as a raw material).

3.2. B. Department PSD Applicability Review

Table 1. Comparison of Baseline Actual Emission to Projected Actual Emissions

Pollutant	Baseline Actual[1]	Future Actual[2]	Demand Growth Exclusion[3]	Projected Actual[4]	Net Increase[5]	PSD (SER)	Subject to PSD?
NOx	269.1	225.6	5.7	219.9	0	40	No
SO_2	93.3	92.1	2.3	89.8	0	40	No
PM	42.5	53.4	1.3	52.1	9.6	25	No
PM_{10}	42.5	53.4	1.3	52.1	9.6	15	No
$PM_{2.5}$	42.5	53.4	1.3	52.1	9.6	10	No
CO	10.4	10.9	0.3	10.6	0.2	100	No
VOC	10.4	10.9	0.3	10.6	0.2	40	No

Notes:

1. The baseline actual emissions were calculated using a consecutive 24-month period within the last 10 years (i.e., avg. of 2010/2011 CY).
2. The future actual emissions are the maximum estimated emission rate expected based upon emission factors and the maximum expected production rate within the next five years which is 109,000 tons of glass pulled.
3. The demand growth exclusion/capable of accommodating emissions are based upon the prior reasonable unrealized capacity of the emissions unit prior to the project and unrelated to the project. This capacity was determined to be 106,464 TPY of glass pulled. It is based upon the highest monthly output of glass which occurred during the baseline averaging period which was 8872 tons, that has been annualized (8872 tpm x 12 months = 106,464 tpy).
4. The projected actual emissions are based on the maximum projected glass pull rate (production rate) of 109,000 tons, emission factors, and includes demand growth exclusion/capable of accommodating emissions.
5. Net Increase is the Projected Actual – Baseline Actual. If the net increase~~s~~ is projected to be a negative value, zero is reported.

When comparing the net increase (decrease) from the project to the significant net emissions increase levels listed in 40 CFR 52.21(b)(23)(i), Rule 62-204.800, F.A.C. and Rule 2.201, JEPB, it is determined that no significant net increase was triggered. Therefore, this construction project is not subject to the applicable PSD preconstruction review requirements of Rule 62-212.400, F.A.C. for the Prevention of Significant Deterioration of Air Quality.

Pursuant to Rule 62-212.300(1)(e), F.A.C., and Rule 2.401, JEPB the applicant shall provide reports in summarizing actual emissions of all pollutants listed in Table 1 above computed in accordance with the requirements of Rule 62-210.370, F.A.C., and Rule 2.301, JEPB for each year during the 5-year period following completion of the project.

4. PRELIMINARY DETERMINATION

The Department makes a preliminary determination that the proposed project will comply with all applicable local, state, and federal air pollution regulations as conditioned by the draft permit. Jerry Woosley is the project specialist responsible for reviewing the application and drafting the permit. Additional details of this analysis may be obtained by contacting him at 904-256-1700, by email at jerry.woosley@dep.state.fl.us or by mail at the Department's Northeast District Office, Waste and Air Resource Management program, 8800 Baymeadows Way West, Suite 100, Jacksonville, FL 32256.