

**NORTH CAROLINA DIVISION OF AIR QUALITY**

**Air Permit Review including RACT Requirements**  
(In conformance with Section 172(c) of the CAA)

Permit Issue Date: **XX XX, 2010**

**Region:** Mooresville Regional Office  
**County:** Cabarrus  
**NC Facility ID:** 1300048  
**Inspector's Name:** Denise Hayes  
**Date of Last Inspection:** 08/04/2009  
**Compliance Code:** 3/In Compliance - Inspection

<b>Facility Data</b>			<b>Permit Applicability (this application only)</b>		
<p><b>Applicant (Facility's Name):</b> Philip Morris USA Inc., Cabarrus Manufacturing Facility</p> <p><b>Facility Address:</b> Philip Morris USA Inc., Cabarrus Manufacturing Facility 2321 Concord Parkway South Concord, NC 28027</p> <p><b>SIC:</b> 2111 / Cigarettes <b>NAICS:</b> 312221 / Cigarette Manufacturing</p> <p><b>Facility Classification: Before:</b> Title V <b>After:</b> Title V <b>Fee Classification: Before:</b> Title V <b>After:</b> Title V</p>			<p><b>SIP:</b> 2D .0902, .0951, .1402 .1404, .1407, .1412, .1414, .1415 <b>NSPS:</b> <b>NESHAP:</b> <b>PSD:</b> <b>PSD Avoidance:</b> <b>NC Toxics:</b> <b>112(r):</b> <b>Other: RACT Review</b></p>		
<b>Contact Data</b>			<b>Application Data</b>		
<b>Facility Contact</b>	<b>Authorized Contact</b>	<b>Technical Contact</b>	<p><b>Application Number:</b> 1300048.08A <b>Date Received:</b> 11/02/2006 <b>Application Type:</b> Modification <b>Application Schedule:</b> TV- Significant <b>Existing Permit Data</b> <b>Existing Permit Number:</b> 03717/T36 <b>Existing Permit Issue Date:</b> 12/02/2003 <b>Existing Permit Expiration Date:</b> 11/30/2012</p>		
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<p><b>Review Engineer:</b> Charles F. Yirka</p> <p><b>Review Engineer's Signature:</b> _____ <b>Date:</b> <b>XX XX, 2010</b></p>			<p style="text-align: center;"><b>Comments / Recommendations:</b></p> <p><b>Issue</b> 03717/T37 <b>Permit Issue Date:</b> <b>XX/XX/2010</b> <b>Permit Expiration Date:</b> 11/30/2012</p>		

**I. Introduction and Purpose of Application**

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

Philip Morris USA Inc., Cabarrus Manufacturing Facility (Philip Morris) operates a cigarette manufacturing facility. The complex (Philip Morris Cabarrus Manufacturing Center, Cabarrus County, North Carolina) is located in the greater Charlotte, NC area on 2,100 acres with 2.4 million square feet under one roof.

Philip Morris had planned to end production by the end of July. It was the DAQ's Raleigh Central Office's intent to rescind the permit at that time. A recent inspection (8/4/09) by Ms. Denise Hayes of MRO indicates, however, the facility has ended production but wants to retain the permit in its entirety. It is likely the plant would be fully decommissioned in mid-2010. If however prospective buyers are found the extent and timing of the decommissioning of emissions sources would depend on the needs of the prospective buyers.

Some tobacco treatment emissions sources have been moved to the Philip Morris Virginia facility while remaining sources remain idle but on site. One boiler remains in operation to maintain building conditions and fire suppression systems while the two other large boilers are "moth-balled" (started-up and operated for maintenance purposes). Philip Morris would like to maintain the permit in its entirety in case the need arises to move operations from Virginia back to North Carolina and start production again or a buyer is found.

Philip Morris is located in the Metrolina ozone non-attainment area. The area is classified as Moderate. As such major sources of NOx and VOCs are required to apply RACT to both new and existing sources. Major sources are defined as having potential emissions exceeding 100 tpy of NOx and/or VOC. These pollutants are considered ozone precursors leading to the formation of ground-level ozone.

Philip Morris has the potential to emit over 100 tons per year of NOx and VOC. NOx emissions result from the firing of No. 2 and No. 6 fuel oils and natural gas in boilers and other dryers and tobacco treatment operations. The VOC emissions are predominantly from VOCs associated with tobacco processing and the added flavorings and treatments. As a result, the application addresses RACT applicability to existing sources.

The primary source of information used to develop this permit is the air permit application. This permit review is for the application of existing source RACT<sup>1</sup> requirements and intends to convey all pertinent emissions data, rules, policies, and engineering assumptions used to create the Title V operating permit.

## **II. Background Information**

### **A. Strategy for NOx RACT Compliance**

The RACT analysis considers the cost effectiveness of purchasing and operating emission control devices for the compliance date of April 1, 2009 to a facility closure date of mid-2010. NOx emissions at the facility are primarily from three mixed-fuel fired boilers (84% of facility wide NOx emissions). A number of smaller process heaters and other combustion sources make up the rest of the NOx sources. Each NOx emissions source was evaluated to determine the applicability of the 15A NCAC 2D .1400 (NOx RACT rules). A complete list of sources, emission rates and their RACT compliance status may be found in Table 2 of the application.

In general, the smaller sources are exempt from the RACT rule due to their status as insignificant sources [15A NCAC 2D .1402(h)(1)], emissions control devices [15A NCAC 2D .1402(h)(2)], or emergency use only units [15A NCAC 2D .1402(h)(3)]. The remaining five non-exempt

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<sup>1</sup> "Reasonably available control technology" (also denoted as RACT) means the lowest emission limit, which a particular source is capable of meeting by the application of control technology that is reasonably available considering technological and economic feasibility. It may require technology, which has been applied to similar, but not necessarily identical, source categories.

sources are all considered Boilers and Indirect-Fired Process Heaters which are subject to 15A NCAC 2D .1407- NO<sub>x</sub> Limits for Boilers and Indirect Heat Exchangers.

The two furnaces (indirect-fired process heaters) have a heat input of less than 50 million Btu/hr and therefore are not required to meet a specific NO<sub>x</sub> emission limit [15A NCAC 2D .1407(a)]. Instead these smaller units are required to comply with the annual tune-up requirements outlined in 15A NCAC 2D .1414. It appears a program has been established to ensure that annual tune-ups are performed and records describing the actions taken during the tune-ups are kept.

The remaining NO<sub>x</sub> sources are the three mixed-fuel boilers. Boiler #3 (ID No. BO-03-001) is currently in compliance with the RACT standards. Source testing conducted in December 1997 indicated that Boiler #3 emits 0.077 lbs NO<sub>x</sub>/MMBTU when firing natural gas and 0.10 lbs NO<sub>x</sub>/MMBTU when firing No. 2 fuel oil. The RACT requirements for these two fuel sources are 0.2 lbs NO<sub>x</sub>/MMBTU and 0.3 lbs NO<sub>x</sub>/MMBTU, respectively. Boilers #1 and #2 have not been tested and are presumed to emit NO<sub>x</sub> greater than the NO<sub>x</sub> standard. A technical and economic evaluation was undertaken to determine if an appropriate RACT control system could be put in place to control the NO<sub>x</sub> emissions from these two boilers. Details of the evaluation are presented on Page 2 and Table 3 of the application.

NO<sub>x</sub> control can be achieved by: 1) boiler combustion controls; 2) post combustion control; or 3) a combination of these techniques. It is generally accepted that boiler combustion controls utilizing low-NO<sub>x</sub> burners are the most cost effective technology for boilers of the size considered here. Therefore, low NO<sub>x</sub> burners were evaluated to determine the total annualized cost (TAC) of the installation to determine if it is reasonably cost-effective control for the facility's two boilers.

The TAC is a function of the total capital investment (TCI) annualized over the functional life of the equipment and the operation and maintenance (O&M) costs. Once the TAC is established it is then divided by the estimated number of tons of NO<sub>x</sub> removed during the year to determine the price per ton of NO<sub>x</sub> removed. Those prices per ton figures are then compared to a standard cost-effectiveness ratio to determine if installing controls is cost-effective and can be considered RACT.

TCI represents all costs required to purchase the equipment needed for the control system, including the cost of labor and material for installing the equipment, the costs for site preparation, and indirect installation costs such as those for engineering, construction and field expenses, contingencies, contractor fees, and start-up and performance test costs. To compute an annualized cost, the TCI was multiplied by the cost recovery factor (CRF). The CRF is determined by the useful life of the device at a pretax marginal rate of return on private investment. Philip Morris has announced that it will close the Cabarrus Manufacturing facility in its entirety by 2010 which is less than two years from the RACT compliance date of April 1, 2009. Therefore, the CRF was calculated based on two years and conservatively high discount rate of 10%, which gives a CRF of 0.5762. A capital cost for the installation of low-NO<sub>x</sub> burners was estimated by the facility engineer. The costs in this application are increased by the fact that the burners have previously been retrofitted to allow the firing of natural gas by allowing the oil gun to run through the gas gun. Each boiler has four burners of that design. In addition the boiler controls would require a significant upgrade.

For this assessment O&M costs were not included. Based on the capital cost and the shortened useful life of the equipment (less than two years), it was estimated that the installation of low-NOx burners would cost \$14,000 per ton of NOx removed (in 2007 dollars). The cost of this option is not considered “reasonable”. The USEPA states that the costs of \$160 to \$1,300 (in 1994 dollars) are considered reasonable for purposes of RACT determinations (70 Federal Register 71652, November 9, 2005).

It should be noted that the above strategy for NOx RACT compliance is based on a shortened useful life of the equipment (two years from the compliance date of April 1, 2009) coupled with the announced plant decommissioning in 2010. The validity of the RACT demonstration will be compromised if Philip Morris anticipates operating either of these affected units (Boilers #1 and #2) beyond March 31, 2011. **The basis of the RACT demonstration compels the DAQ to write the permit condition requiring the plant to again address RACT before either affected units (Boilers #1 and # 2) operate for more than periodic maintenance testing purposes in the future.**

### B. NOx RACT Regulatory Review

The applicability of NOx RACT to all sources at the facility is discussed above. The majority of sources are subject to 2D .1402 and are exempt (insignificant activities, control devices or emergency use). The remaining five non-exempt sources are all considered Boilers and Indirect-Fired Process Heaters which are subject to 15A NCAC 2D .1407- NOx Limits for Boilers and Indirect Heat Exchangers (which refers to 2D .1412 and 2D .1414). See the following summary tables:

**Summary of Non-Exempt RACT Sources from Permit 03717T36**

<b>Emission Source I.D. No.</b>	<b>Emission Source Description</b>	<b>Control Device I.D. No.</b>	<b>Control Device Description</b>
<b>Utilities</b>			
BO-01-01 (Boiler #1)	One natural gas/No. 2 fuel oil/No. 6 fuel oil/coal <sup>1</sup> -fired boiler (112 million Btu per hour heat input for oil and coal and 121 million Btu per hour input for natural gas)	PE-01-01 (Coal-fired only <sup>1</sup> )	<b>Inactive</b> - one electrostatic precipitator <sup>1</sup>
BO-02-01 (Boiler #2)	One natural gas/No. 2 fuel oil/No. 6 fuel oil/coal <sup>1</sup> -fired boiler (112 million Btu per hour heat input for oil and coal and 121 million Btu per hour input for natural gas)	PE-02-01 (Coal-fired only <sup>1</sup> )	<b>Inactive</b> - one electrostatic precipitator <sup>1</sup>
BO-03-01 (Boiler #3) <b>NSPS Subpart Dc</b>	One natural gas/No. 2 fuel oil/No. 6 fuel oil-fired boiler (96 million Btu per hour heat input)	NA	NA

<b>Emission Source I.D. No.</b>	<b>Emission Source Description</b>	<b>Control Device I.D. No.</b>	<b>Control Device Description</b>
<b>Expanded Tobacco</b>			
<u>ET Line 1</u> FU-03-01 <u>ET Line 2</u> FU-02-01	Two natural gas/No. 2 fuel oil fired indirect heat exchanger furnaces (6.6 and 6.5 million Btu per hour heat input)	NA	NA

<sup>1</sup> Combustion of coal in Boilers (ID Nos. BO-01-01 and BO-02-01) is prohibited until the Permittee submits an application documenting compliance with 15A NCAC 2D .0503 (Particulates from Fuel Burning Indirect Heat Exchanges) and the DAQ issues a modification to this Title V permit. Pursuant to 40 CFR 64 the application must also include a compliance assurance monitoring (CAM) plan.

### Summary of NOx RACT Applicability

<b>NOx Emissions Source Description</b>	<b>Max Heat Input Rate (oil/gas MMBTU per hr)</b>	<b>Applicable RACT Sip Rules 15A NCAC</b>	<b>RACT Emissions Limit (lb/MMBTU/hr)</b>		<b>RACT Work Practice</b>	<b>Compliance with Emissions Limit Indicated?</b>	<b>2D .1412 Petition for Alternative Limitation Applies? /Case by Case RACT Determination</b>
			<b>Gas</b>	<b>Oil</b>			
Boiler #1 <sup>1</sup>	112/121	2D .1407 2D .1412 2D .1414	0.2	0.3	Annual tune-up (waived)	No	Yes/No control
Boiler #2 <sup>1</sup>	112/121	2D .1407 2D .1412 2D .1414	0.2	0.3	Annual tune-up (waived)	No	Yes/No control
Boiler #3 <sup>2</sup>	96	2D .1407 2D .1414	0.2	0.3	Annual tune-up	Yes	No
Furnace <sup>3</sup>	6.6	2D .1407 2D .1414	NA	NA	Annual tune-ups	NA	No
Furnace <sup>3</sup>	6.5	2D .1407 2D .1414	NA	NA	Annual tune-ups	NA	No

1. These boilers are not operating (in "moth-balled" condition) but started-up for periodic maintenance testing. Add on NOx RACT equipment is not economically reasonable due to high cost of equipment annualized over short period of use. Alternative limitation proposed as per 2D .1412. Source testing per 2D .1407 and annual tune-ups per 2D .1407 and 2D .1414 are waived. Before operation of either of the Boilers (**ID Nos. BO-01-01 or BO-02-01**) beyond periodic maintenance testing, a permit application including a RACT assessment and a permit modification shall be required. The Permittee shall submit an application within 60 days of beginning operation documenting compliance with NOx RACT e.g., 2D .1407 or 2D .1412.
2. This boiler remains in operation. Application indicates this unit was tested in Dec. 1997. Emissions were 0.077lb/mmBtu/hr. Annual source testing is required as per 2D .1407 and annual tune-ups are required as per 2D .1407 and 2D .1414.
3. These furnaces are not operating. Annual tune-ups are required as per 2D .1407 and 2D .1414, however, tune-ups are waived while the furnaces are not operating.

**For Boilers #1 and #2:**

The Rule 2D .1407 allows Philip Morris to apply 2D .1412 - Petition for Alternative Limitation to the Boilers #1 and #2 and show through the case by case RACT process that additional controls are not RACT. It appears that the cost of low-NOx burners are not RACT therefore no combustion modifications or additional controls are required at this time.

**15A NCAC 2D .1412 PETITION FOR ALTERNATIVE LIMITATIONS**

- a. Sources subject to the requirements of Rule .1407 of this Section that;
  - i. cannot achieve compliance with the applicable limitation after reasonable effort to satisfy the requirements of Rule .1407 of this Section or if the requirements of Rule .1407 of this Section are not RACT for the particular sources; and
  - ii. cannot provide reasonable assurance for overall compliance at a facility through the implementation of an emissions averaging plan as provided for in Rule .1410 of this Section;
  - iii. These sources shall petition the Director for an alternative limitation according to Paragraph (b) or (c) of this Rule and submit;
    - (1) the name and location of the facility;
    - (2) information identifying the source for which an alternative limitation is being requested;
    - (3) the maximum heat input rate for the source;
    - (4) the fuel or fuels combusted in the source;
    - (5) the maximum allowable NOx emission rate proposed for the source for each fuel;
    - (6) demonstrate that the sources have satisfied the requirements to apply for an alternative limitation under Paragraph (a) of this Rule; and
    - (7) demonstrate that the proposed alternative limitations are RACT for these sources:

Alternative Limitations are as follows:

<b>Emissions Source ID Nos.</b>	<b>Description</b>	<b>Alternative Limitation or Standards</b>
BO-01-01 and BO-02-01	Boilers #1 and #2	RACT is No Additional Control /Based on limited life-cycle of 2 years (through 3/31/2011)

These units are not in operation but started-up for periodic maintenance testing. A permit application including a RACT assessment and operating permit modification shall be required before operating either of these affected units beyond periodic maintenance testing.

**Boiler #1 and #2 are NOT required to be tested nor be subject to tune-up requirements at this time. A permit application and permit however shall be required within 60 days of commencing production and operation (beyond periodic maintenance).**

**Testing** [15A NCAC 2D .2600]

- b. If emissions testing is required, the testing shall be performed in accordance with 15A NCAC 2D .2601 and General Condition JJ.

**Monitoring/Recordkeeping/Reporting** [15A NCAC 2Q .0508(f)]

- c. No monitoring/recordkeeping/reporting is required for these sources.

***For Boilers #1, #2, and #3:***

Boilers #1 and #2 NOx RACT No Control alternative limitations applies therefore annual stack tests or boiler tune-ups are waived. Boiler #3 is operating and will be required to conduct annual stack tests and do annual tune-ups.

**15A NCAC 2D .1407 BOILERS AND INDIRECT PROCESS HEATERS**

- a. The owner or operator of a fossil fuel-fired boiler (ID No. BO-03-01) with a maximum heat input rate less than or equal to 250 million Btu per hour but greater than 50 million Btu per hour shall comply by:
  - i. Installation of, if necessary, combustion modification technology or other NOx control technology and maintenance, including annual tune-ups and recordkeeping; and
  - ii. demonstration through source testing or continuous emission monitoring that the source complies with the following applicable limitation:

**MAXIMUM ALLOWABLE NOX EMISSION RATES FOR BOILERS AND INDIRECT PROCESS HEATERS (POUNDS PER MILLION BTU)**

<u>Fuel/Boiler Type</u>	<u>Firing Method</u>
Oil	Wall 0.30
Gas	0.20

**Testing** [15A NCAC 2D. 2600]

- b. Compliance with the limitation established for a boiler under Rule .1407 shall be determined:
  - i. using **annual source testing** according to Rule .1415 for boilers with a maximum heat input rate less than or equal to 250 million Btu per hour but greater than 50 million BTU per hour with the exception allowed under Paragraph (f) of this Rule [15A NCAC 2D .1407].
- c. If a source covered under this rule can burn more than one fuel, the owner or operator of the source may chose not to burn one or more of these fuels during the ozone season. If the owner or operator chooses not to burn a particular fuel, the source testing required under 2D .1407(e)(2) shall not be required for that fuel. [15A NCAC 02D .1407(f)]
- d. The testing shall be performed in accordance with 15A NCAC 2D .2600 and General Condition JJ. If the results of this test are above the limit given in a. above, the Permittee shall be deemed in noncompliance with 15A NCAC 2D .1407
- e. The Permittee shall **complete the annual testing and submit the results on or by March 31st** for the previous calendar year unless an alternate date is approved by the DAQ.
- f. If two consecutive annual source tests show compliance, the Director may reduce the frequency of testing up to once every five years. In years that a source test is not done, the boiler shall comply with the annual tune-up requirements of Rule .1414 of this Section. If after the Director reduces the frequency of testing, and a source test shows that the emission limit under this Rule is exceeded, the Director shall require the boiler to

be tested annually until two consecutive annual tests show compliance. Then the Director may again reduce the frequency of testing. [15 NCAC 2D 1407(g)]

**Monitoring** [15A NCAC 2D .1414(b), 15A NCAC 2Q .0508(f)]

- g. To assure compliance the Permittee shall perform an annual tune-up of the boiler on or by March 31<sup>st</sup> for the previous calendar year. Boiler tune-ups shall be in accordance with the manufacturer's recommendations including the following [15A NCAC 2D .1414(b)]:
- i. inspect each burner and clean or replace any component of the burner as required;
  - ii. inspect the flame pattern and make any adjustments to the burner, or burners, necessary to optimize the flame pattern to minimize total emissions of NO<sub>x</sub> and carbon monoxide;
  - iii. inspect the combustion control system to ensure proper operation and correct calibration of components that control the air to fuel ratio and adjust components to meet the manufacturer's established operating parameters; and
  - iv. inspect any other component of the boilers and make adjustments or repairs as necessary to improve combustion efficiency.

The Permittee shall perform the tune-up according to a unit specific protocol approved by the Director. The Director (or designee) shall approve the protocol if it meets the requirements of this Rule. The protocol shall be submitted to the Regional Office for approval. If tune-ups and inspections are not conducted as per g.i. through iv. above, the Permittee shall be deemed to be in noncompliance with 15A NCAC 2D .1407.

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

- h. The owner or operator shall maintain records of tune-ups performed to comply with Rule .1414 according to Rule .1404. The following information shall be included for the boiler:
- i. identification of the boiler;
  - ii. the date and time the tune-up started and ended;
  - iii. the person responsible for performing the tune-up; and
  - iv. the checklist for inspection of the burner, flame pattern, combustion control system, and all other components of the boiler identified in the protocol, noting any repairs or replacements made;
  - v. any stack gas analyses performed after the completion of all adjustments to show that the operating parameters of the boiler have been optimized with respect to fuel consumption and output; at a minimum these parameters shall be within the range established by the equipment manufacturer to ensure that the emission limitation for nitrogen oxides has not been exceeded; and
  - vi. any other information requested by the Director (or designee) to show that the boiler is being operated and maintained in a manner to minimize the emissions of nitrogen oxides.

The Permittee shall be deemed in noncompliance with 15A NCAC 2D .1407 if these records are not maintained.

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

- i. The Permittee shall submit the results of the annual boiler tune-up within 30 days of receipt of a written request by the DAQ.
- j. The Permittee shall submit a summary report of monitoring and recordkeeping activities postmarked on or before January 30 of each calendar year for the preceding six-month

period between July and December and July 30 of each calendar year for the preceding six-month period between January and June. All instances of deviations from the requirements of this permit must be clearly identified.

***For Furnaces 1 and 2:***

The two furnaces would be required to do tune-ups only, however this is not required at this time as they are not operating.

*RACT Application and Permit Required within 60 days of Resuming Production and Operation:*

**15A NCAC 2D .1414 TUNE-UP REQUIREMENTS**

The owner or operator of indirect-fired process heaters (**ID Nos. FU-02-01 and FU-03-01**) with maximum heat input rate of less than or equal to 50 million Btu per hour shall comply with the annual tune-up requirements of 2D .1414. [15A NCAC 2D .1407]

**Testing** [15A NCAC 2D. 2601]

- a. If emission testing is required, the testing shall be performed in accordance with 15A NCAC 2D. 2600 and General Condition JJ.

**Monitoring** [15A NCAC 2D .1414(b), 2Q .0508(f)]

- b. Primary Monitoring Scenario: Furnaces operating. To assure compliance, the Permittee shall perform an annual tune-up of the furnaces on or by March 31<sup>st</sup> for the previous calendar year according to the manufacturer's recommendations including the following [15A NCAC 2D .1414(b):
  - i. inspect each burner and clean or replace any component of the burner as required;
  - ii. inspect the flame pattern and make any adjustments to the burner, or burners, necessary to optimize the flame pattern to minimize total emissions of NO<sub>x</sub> and carbon monoxide;
  - iii. inspect the combustion control system to ensure proper operation and correct calibration of components that control the air to fuel ratio and adjust components to meet the manufacturer's established operating parameters; and
    - a. inspect any other component of the boilers and make adjustments or repairs as necessary to improve combustion efficiency.

The Permittee shall perform the tune-up according to a unit specific protocol approved by the Director. The Director (or designee) shall approve the protocol if it meets the requirements of this Rule. The protocol shall be submitted to the Regional Office for approval.

If tune-ups and inspections are not conducted as per c.i. through iv. above, the Permittee shall be deemed to be in noncompliance with 15A NCAC 2D .1407 [15A NCAC 2Q .0508(f)].

- c. Alternate Monitoring Scenario: Furnaces not operating. Annual tune-ups of the furnaces are waived. **Therefore, no additional monitoring, recordkeeping or reporting is required.**

**Recordkeeping** [15A NCAC .1414(d), 2Q .0508(f)]

- d. The owner or operator shall maintain records of tune-ups performed to comply with Rule .1404. The following information shall be included for each furnace:
  - i. identification of the furnace;

- ii. the date and time the tune-up started and ended;
- iii. the person responsible for performing the tune-up; and
- iv. for indirect-fired process heaters the checklist for inspection of the burner, flame pattern, combustion control system, and all other components of the furnace identified in the protocol, noting any repairs or replacements made;
- v. any stack gas analyses performed after the completion of all adjustments to show that the operating parameters of the furnace, have been optimized with respect to fuel consumption and output; at a minimum these parameters shall be within the range established by the equipment manufacturer to ensure that the emission limitation for nitrogen oxides has not been exceeded; and
- vi. any other information requested by the Director (or designee) to show that the furnace is being operated and maintained in a manner to minimize the emissions of nitrogen oxides.

The Permittee shall be deemed in noncompliance with 15A NCAC 2D .1407 if these records are not maintained [15A NCAC 2Q .0508(f)]

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

- e. The Permittee shall submit the results of the annual furnace tune-ups within 30 days of receipt of a written request by the DAQ.
- f. The Permittee shall submit a summary report of monitoring and recordkeeping activities postmarked on or before January 30 of each calendar year for the preceding six-month period between July and December and July 30 of each calendar year for the preceding six-month period between January and June. All instances of deviations from the requirements of this permit must be clearly identified.

**B. Strategy for VOC RACT Compliance**

VOC emissions are primarily from flavor cylinders and steam dryers (approximately 65 % of total emissions) and separation processes (approximately 20% of VOC emissions). The remaining emissions are from combustion sources, solvent use, and other similar operations. Each of these sources was evaluated to determine the applicability of the 15A NCAC 2D .0900 (VOC RACT rules). A complete list of sources and their compliance status is included as Table 4 in the application.

The RACT rule provides an exemption from the control requirements for sources that emit less than 15 pounds per day [15A NCAC 2D .0902(B)(1)]. As a first step in the analysis, the sources were evaluated against this standard. The exempt sources included all the largest combustion units (Boilers #1, #2 and #3). Those sources that emitted more than the exempt quantity of VOCs were evaluated for additional control.

The after cut flavor cylinders and the tobacco dryers are currently equipped with thermal oxidizers which is considered to provide RACT control according to the application. The thermal oxidizers were being operated on an as-needed basis to comply with the permitted facility wide VOC emissions limits. The operation of these control devices is “RACT” and they shall be operated during the operation of the steam dryers and flavor cylinders after April 1, 2009.

The remaining sources that were evaluated for RACT control are presented in Table 5 of the permit application. These sources were grouped into “exhaust groups” based on the stacks that

they are currently exhausted through. The result was four exhaust groups (I through IV) and a fugitive emissions source group.

It is presumed to be both technically and economically unfeasible to capture the fugitive emissions from the sources comprising the fugitive emissions source group. The only solution would be to convey all the workplace air to a thermal oxidizer or carbon absorption system with would be prohibitively expensive (>\$70,000/ton of VOC removed-engineering judgment). For this reason RACT for fugitive emissions is no control.

The initial assessment of control technologies for the four exhaust groups (I through IV) was based on a RACT analysis recently completed for the Richmond, Virginia Philip Morris facility which is similar to the Cabarrus facility. After screening other control technologies the Virginia assessment proceeded to perform a cost evaluation of the remaining two technologies (catalytic oxidation and thermal oxidation) which identified thermal oxidation as the cost effective control technology for this application. Therefore only thermal oxidation was considered for a detailed assessment for the Cabarrus County facility.

Similar to the NO<sub>x</sub> control device assessment discussed above, the cost of purchasing and operating a new thermal oxidizer was evaluated to estimate the total annualized cost (TAC) to determine if thermal oxidation is a reasonably cost-effective control for the facility's sources. As previously indicated the RACT is a function of the capital and O&M costs of the control equipment. Capital and O&M cost estimates were made for three sizes of oxidizers (size varies with air flow), one for Exhaust Group IV (treating 20,000 CFM), one for Exhaust Group III (treating 40,000 CFM), and one for Exhaust Group I and II (treating 65,000 CFM for each group). The costs were derived by scaling the costs developed for the Philip Morris Virginia facility RACT analysis. The Virginia RACT costs were based on engineering judgment, vendor data, and standard percentages based on EPA estimates published in the 4<sup>th</sup> Edition of the OAQPS Control Cost Manual of 1990. These estimates were used wherever actual figures were unknown. In all cases, estimates were based upon December 1991 dollars with an accuracy of +/- 30%. Due to the announced closure of the Cabarrus Manufacturing facility, the CRF was conservatively calculated based on two years of operating life.

The control technology was evaluated with respect to price per ton of VOC removed per year at 95% removal efficiency. The results of this analysis, which are summarized in Table 5, indicate a cost per ton VOC removed of \$21,159 to \$103,782. The costs far exceed RACT criteria.

It should be noted that the above strategy for VOC RACT compliance (four exhaust groups (I through IV)) is based on a shortened useful life of the equipment (two years from the compliance date of April 1, 2009) coupled with the announced plant decommissioning in 2010. The validity of the RACT demonstration will be compromised if Philip Morris proposes operating the affected units beyond March 31, 2011. This premise of the RACT demonstration compels the DAQ to write the permit condition requiring the plant to again address RACT before any affected units begin operation in the future.

### **VOC RACT Regulatory Review**

The applicability of VOC RACT to all sources at the facility is discussed above. The majority of sources are subject to 2D .0902 and are exempt (less than 15 lb/day). The remaining non-exempt sources were 1) fugitive sources and could not be controlled economically; 2) sources controlled

by the existing control device considered to be RACT; 3) sources that could be controlled with a new thermal oxidizer but due to the shortened useful life of the equipment could not be controlled economically.

**See the Permit: Section 1 - Emissions Source Table Footnote 3 and 5.** Footnote 5 sources are fugitive sources and could not be controlled economically. RACT is considered no control. This determination was NOT based on a 2 year life-cycle and plant closing in 2010. Footnote 3 sources could be controlled with new thermal oxidizer but due to the shortened useful life of the equipment RACT is considered no control however an application addressing RACT will be required if production is resumed. It is important to note that Rule 2D .0951 allows the applicant to demonstrate RACT is no control if the economic costs are unreasonable:

**Analysis:**

**15A NCAC 2D .0951 MISCELLANEOUS VOLATILE ORGANIC COMPOUND EMISSIONS**

(a) With the exceptions in Paragraph (b) of this Rule, this Rule applies to *all facilities that use volatile organic compounds as solvents, carriers, material processing media, or industrial chemical reactants, or in other similar uses, or that mix, blend, or manufacture volatile organic compounds for which there is no other applicable emissions control rule in this Section except Rule .0958 of this Section*. If the only other applicable emissions control rule for the facility in this Section is Rule .0958, then *both* this Rule and Rule .0958 apply.

(b) This Rule does not apply to architectural or maintenance coating.

(c) The owner or operator of any facility to which this Rule applies shall:

**(1) install and operate reasonable available control technology**

(d) If the owner or operator of a facility chooses to install reasonable available control technology under Subparagraph (c)(1) of this Rule, the owner or operator shall submit:

(1) the name and location of the facility;

(2) information identifying the source for which a reasonable available control technology limitation or standard is being proposed;

(3) a demonstration that shows the proposed reasonable available control technology limitation or standard satisfies the requirements for reasonable available control technology; and

(4) a proposal for demonstrating compliance with the proposed reasonable control technology limitation or standard.

**Permit Condition (See the Permit; See Section 1- Emissions Source Table Footnote 4).**

Sources controlled by the existing control devices (thermal oxidizers) are considered to have RACT control:

**15A NCAC 2D .0951 MISCELLANEOUS VOLATILE ORGANIC COMPOUND EMISSIONS**

1. This Rule applies to all facilities that use volatile organic compounds as solvents, carriers, material processing media, or industrial chemical reactants, or in other similar uses, or that mix, blend, or manufacture volatile organic compounds for which there is no other applicable emissions control rule in this Section except Rule .0958 of this Section [15A NCAC 2D .0951(a)].

i. The owner or operator of any facility to which this Rule applies shall install and operate reasonably available control technology.

*For Foot note 3 designated sources (Section 1):*

2. Add on VOC RACT equipment not economically reasonable due to high cost of equipment annualized over short period of use. Before any production begins and operation of the designated sources (inactive or brought back on site) a permit application for permit modification and a permit shall be required. The Permittee shall submit an application 60 days before beginning production and operation documenting compliance with VOC RACT and the DAQ issues a modification to this Title V permit.

*For Foot note 4 designated sources (Section 1):*

3. The owner operator has successfully demonstrated RACT is no additional control. The existing thermal oxidizers (**ID Nos. IN-01-01 or IN-01-02**) shall be operated as of the compliance date of April 1, 2009 whenever the affected sources are operating and emitting VOCs.
4. For the Footnote 5 designated sources above (and in Section 1), the owner operator has successfully demonstrated RACT is no additional control. Add on VOC RACT equipment not economically reasonable due to high cost of equipment installed on fugitive sources.

**Testing** [15A NCAC 2D .0501(c)(8)]

5. If emissions testing is required, the testing shall be performed in accordance with 15A NCAC 2D .0501(c)(8) and General Condition JJ.

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

6. For the thermal oxidizers, the Permittee shall monitor and record the temperature plus will record any time that process exhausts are being emitted directly to atmosphere. In addition, the control system will alarm whenever the combustion chamber temperature drops below 1400 degrees F.

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

7. For the thermal oxidizers, the Permittee shall maintain records of actions taken as a result of an alarm condition; and maintain records of the daily temperature readings on site and available to the DAQ for inspection.

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

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

### III. Changes to Existing Title V Permit

The following table provides a summary of changes made to the permit 03717T36:

EXIST PAGE	NEW PAGE	Section	Change
Cover letter	Cover letter	N/A	-New cover letter; remove any reference to Part I and II. -Change Responsible Official title, permit and application number, indicate permit is significant modification -Insert non-attainment added fee requirement and cc: Vickie Woods
Attachment Insig List	Attachment Insig List	N/A	-Revise table insert explanatory footnotes re RACT exemptions for these sources
Permit Cover	Permit Cover	N/A	-Update permit number, language and dates
Table of Contents	Table of Contents	N/A	Remove all references to Part I and Part II according to SOP-policy.
3	4	NA	-Revise introductory paragraph to remove references Part I and II
3-8	4-9	Emission Source Table	-Add RACT designations -Add explanatory footnotes to sources that are subject to RACT with conditional statement indicating that a permit application and permit modification are required before resuming production.
8-9	10-11	2.1 A.	- Insert new rows in table indicating applicability of NOx RACT SIP rules - Insert new row in table indicating applicability of VOC RACT SIP rule
NA	11-12	2.1 A.3.	- Insert NOx RACT rule title V permit condition for 2D .1412.
NA	12-13	2.1 A.4.	- Insert NOx RACT rule title V permit condition for 2D .1407.
12	15-16	2.1 B.	- Insert new row in table indicating applicability of NOx RACT rule
14	17	2.1 C.	- Insert new rows in table indicating applicability of VOC RACT rule
18	21	2.1 D.	- Insert new rows in table indicating applicability RACT NOx and VOC rules
NA	24-25	2.1 D. 5.	-Insert RACT title V permit conditions for 2D .1414.
21	25	2.1 E.	- Insert new row in table indicating applicability VOC RACT rule
29	33	2.2 B.7.b.	-Correct typographical error 2D .0530 reporting of hours of operation now required semi-annually
NA	34-36	2.2 C.	-Insert RACT title V permit conditions for 2D .0951.
30	36	2.2 E.	Correct MACT Subpart ZZZZ applicability date for area source.
30-39	37-46	3.0	- Replace General Conditions and acronyms with v 3.1

#### IV. Application Chronology

A chronology of events pertinent to this application follows:

- December 17, 2007 – Permit was renewed for 5 years.
- June 4, 2007 – The DAQ provided notification to Philip Morris that RACT may apply and indicating the company has announced it will close in three years and **the RACT analysis would be based on the cost effectiveness of controls with a limited lifecycle** .
- July 27, 2007 – Compliance strategy letter submitted by Philip Morris. Considered as applicability determination request #1040. Permit was required.
- December 21, 2007 – Report submitted regarding compliance strategy including RACT analysis considered as permit application.
- January 2, 2008 – Acknowledgement letter sent indicating the information submitted including the report were considered as an permit application for significant modification of the Title V permit.
- January 14, 2008 - Regional technical review completed and mailed
- July 2009 – Projected facility shut-down as a viable business with lay-offs, some production equipment moved of site and boilers moth-balled or operating for maintaining conditioned space.
- August 4, 2009 - Inspection report from Denise Hayes of MRO indicating the company would like to retain the permit
- August 31, 2009 – Draft permit forwarded to DAQ Supervisor for review.
- September 20, 2009 – Draft redone before Supervisor review.
- September 21, 2009 – Draft permit forwarded to DAQ Supervisor for review.
- September 24, 2009 – Draft permit for review approved by DAQ Supervisor.
- January 06, 2010 – Comments received from applicant.
- January 22, 2010 – Draft permit forwarded to applicant and MRO for review.
- January 29, 2010 – Additional comments received from applicant.
- XX XX, 2010 – Proposed permit sent to Public Notice and EPA.
- XX XX, 2010 –Permit issued.

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

##### NSPS

Not applicable for this modification.

##### NESHAPS

Not applicable for this modification.

##### PSD

Based on potential VOC emissions this facility is classified as a PSD major source. In the past, the facility has taken limits to avoid PSD review. The existing limits are carried over to this permit. Note the thermal oxidizers must be operated at all times for RACT purposes, not intermittently as needed for PSD avoidance.

##### Attainment Status

Cabarrus County is in the Charlotte-Gastonia-Rock Hill area. This area is in non-attainment for the 8-hour ozone standard. Pursuant to the 15A NCAC 2D .0900 and .1400 a RACT application was required and RACT applied to this permit.

### 112(r)

According to the renewal application, this facility does not store any chemicals regulated under 112(r) above the applicable thresholds.

### CAM

Not applicable for this modification.

## **VI. Facility-wide North Carolina Air Toxics**

Not applicable for this modification..

## **VII. Facility Compliance Status**

The DAQ has reviewed the compliance status of this facility. The facility was last inspected on August 4, 2009 by Ms. Denise Hayes (MRO). At the time of inspection, the facility appeared to be operating in compliance with the air permit however the thermal oxidizer was not operating **because the sources controlled by the thermal oxidizer were not in operation.** The thermal oxidizer control is considered to be RACT and should be operated at all times any affected source is operating.

## **VIII. Public Notice/EPA and Affected States Review**

Pursuant to 15A NCAC 2Q .0521, a notice of the draft Title V permit will be placed in the legal classified section of *The Charlotte Observer* and *The Concord Tribune* both newspapers of general circulation in the area where the facility is located. The notice will provide for a 30-day comment period, with an opportunity for a public hearing. Copies of the public notice will be sent to persons on the Title V mailing list and EPA. Pursuant to 15A NCAC 2Q .0522, a copy of each permit application, each proposed permit and each final permit will be provided to EPA. Also pursuant to 2Q .0522, a notice of the draft Title V permit will be provided to each affected State at or before the time notice is provided to the public under 2Q .0521 above. South Carolina is an affected state for this facility.

## **IX. Conclusions, Recommendations, and Comments**

The RACT - Title V application for Philip Morris USA, Inc. Cabarrus Manufacturing Facility has been reviewed by the DAQ to determine compliance with all procedures and requirements under 15A NCAC 2Q .0500 and 40 CFR Part 70. Public comment and EPA review periods will expire on **XX XX, 2010** . **XX** comments were received. The DAQ Permits Section recommends issuance of the permit.

## **IX. Miscellaneous Requirements**

### PE Seal

Pursuant to 2Q .0112, no PE Seal was not required because the permit does not involve the determination of applicability and appropriateness or performance of air pollution capture and control systems [15A NCAC 2Q .0112(b)(2) and (3)].

### Zoning

A request for zoning consistency determination is not required for this permit.

Fee Classification

Based on potential to emit, this facility has been classified as **Title V Major**. The facility's current IBEAM status is **Title V Major**. This permit **will not** change the fee classification.