

**Air Permit Review**

**Region:** Wilmington Regional Office  
**County:** New Hanover  
**NC Facility ID:** 6500179  
**Inspector's Name:** Lynette Bryan  
**Date of Last Inspection:** 09/30/2005  
**Compliance Code:** 3/In Compliance - Inspection

**Permit Issue Date:**

<b>Facility Data</b>			<b>Permit Applicability (this application only)</b>		
<b>Applicant (Facility's Name):</b> Vopak Terminal  <b>Facility Address:</b> Vopak Terminal 1710 Woodbine Street Wilmington, NC 28402  <b>SIC:</b> 4226 / Special Warehousing & Storage <b>NAICS:</b> 49319 / Other Warehousing and Storage  <b>Facility Classification: Before:</b> Title V <b>After:</b> Title V <b>Fee Classification: Before:</b> Title V <b>After:</b> Title V			<b>SIP:</b> N/A <b>NSPS:</b> N/A <b>NESHAP:</b> N/A <b>PSD:</b> N/A <b>PSD Avoidance:</b> N/A <b>NC Toxics:</b> N/A <b>112(r):</b> N/A <b>Other:</b> N/A		
<b>Contact Data</b>			<b>Application Data</b>		
<b>Facility Contact</b>	<b>Authorized Contact</b>	<b>Technical Contact</b>	<b>Application Number:</b> 6500179.06A and 6500179.06C <b>Date Received:</b> 02/02/2006 and 07/20/2006 <b>Application Type:</b> TV Renewal and Modification <b>Application Schedule:</b> TV-Significant <b>Existing Permit Data</b> <b>Existing Permit Number:</b> 02567/T20 <b>Existing Permit Issue Date:</b> 07/31/2006 <b>Existing Permit Expiration Date:</b> 11/30/2006		
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<b>Review Engineer:</b> Fern Paterson  <b>Review Engineer's Signature:</b> _____ <b>Date:</b> _____			<b>Comments / Recommendations:</b> Issue 02567/T21 <b>Permit Issue Date:</b> _____ <b>Permit Expiration Date:</b> _____		

**I. Introduction and Purpose of Application:**

Vopak Terminal Wilmington Inc. (Vopak) operates a storage and distribution terminal at Woodbine Street in Wilmington, New Hanover County, North Carolina. The facility consists of barge loading and unloading operations, tank truck and railcar loading operations, and multiple vertical fixed roof and internal floating roof storage tanks. The facility is operating under Title V Air Quality Permit No. 02567T20, issued on July 31, 2006.

Vopak submitted Application No. 6500179.06A, received by DAQ on February 2, 2006, for a Title V permit renewal.

Vopak also submitted Application No. 6500179.06C, received by DAQ on July 20, 2006, for a "second part" significant modification of the Title V permit in accordance with 15A NCAC 2Q .0501(c)(2). The purpose of the application is to incorporate the conditions related to the equipment authorized for construction and operation in Permit No. 02567T20 in the the Title V permit shield, as described in General Condition R of the permit, including the following:

- Five new truck tank loading racks (**ID Nos. ES-TLA21 through ES-TLA25**) associated with the enclosed flare No. 1 (**ID No. CD-FL1**);

- Modification of enclosed flare No. 1 (**ID No. CD-FL1**) to increase the product throughput capacity from 1,000 gallons per minute (gpm) to 2,000 gpm;
- Six new railcar loading arms (**ID Nos. ES-RLA20 through ESRLA-25**) associated with the enclosed flare No. 1 (**ID No. CD-FL1**);
- Ten new railcar loading arms (**ID Nos. ES-RLA26 through ESRLA-35**) associated with the NEW enclosed flare No. 2 (**ID No. CD-FL2**);
- New carbon adsorption system (**ID No. CD-ST04**) on existing Tank No. 3 (**ID No. ES-ST04**); and,
- Add miscellaneous fugitive equipment, including pipeline footage, pumps, valves, sampling connections, etc. (**ID No. FL1**).

The DAQ is consolidating the applications for the Title V permit renewal and the significant modification into a single permit action.

**II. Changes to Existing Title V Air Permit No. 02567T20:**

Old Page No.	New Page No.	Condition No.	Changes
Cover	Cover	-	Amend permit revision numbers and issuance/effective dates.
Pages 3-4	Pages 3-4	Section 1 – Source Summary Table	Remove all asterisks and footnotes from the table. This modification will undergo USEPA Review and Public Comment. Federally-enforceable Title V permit conditions will be included under the permit shield described in General Condition R.
Page 8	Page 8	Sec. 2.1 C. – Table	Add reference to 15A NCAC 2D .0948 applicability. <i>NOTE: This standard, which requires submerged fill loading, shall only be applicable when 2D .0927 is <u>not</u> applicable (i.e., during non-gasoline organic liquid loading).</i>
Page 43	Page 9	Sec. 2.1 C.1. c.	Move NSPS notification requirements for new truck loading arms from Part II of the permit, which will be removed as part of this permit action, to Section 2.1 C.1.
Page 25	Page 25	Sec. 2.2 A.	Add reference to the controlled truck tank loading arms ( <b>ID No. ES-TLA1, ES-TLA21, ES-TLA22, ES-TLA23, ES-TLA24, and ES-TLA25</b> ). These sources are affected when loading <i>non-gasoline</i> organic liquids.

**III. Statement of Compliance**

The DAQ has reviewed the compliance demonstration information provided in this permit application and anticipates that new emission sources and control devices authorized for construction in this permit will be in compliance with all applicable requirements upon commencement of operation, as detailed in the following regulatory review.

**IV. Regulatory Review – Emission Source Specific Limitations:**

**A. Two Natural Gas/ No. 2 Fuel Oil-fired Boiler (ID Nos. B1 and B2)**

1. Description – Vopak has requested that authorization to fire No. 5 fuel oil be removed from the Title V permit. Under the revised permit, the boilers are only authorized to fire natural gas and/or No. 2 fuel oil.
2. 15A NCAC 2D .0503 – Particulates from Fuel Burning Indirect Heat Exchangers – This regulation limits PM emissions from the firing of fuel in indirect heat exchangers (in lb/MMBtu) based on the facility-wide heat input. Currently, the emission limit pursuant to this regulation is 0.438 lbs PM/MMBtu. The standards and associated monitoring/recordkeeping/reporting requirements were not changed with the removal of No. 5 fuel oil firing capabilities.
3. 15A NCAC 2D .0516– Sulfur Dioxide Emissions From Combustion Sources – This regulation limits SO<sub>2</sub> emissions to no greater than 2.3 lb/MMBtu of heat input for combustion sources that are unaffected by SO<sub>2</sub> limits in other state or Federal regulations. All monitoring/recordkeeping requirements associated with demonstrating compliance with this standard during No. 5 fuel oil firing have been removed.

4. 15A NCAC 2D .0521 – Control of Visible Emissions – VE standards provided in this regulation are applicable to potential VE emissions from any stack, vent, or outlet for which no other emission control standards are applicable. This regulation limits visible emissions to no more than 20 percent opacity when averaged over a 6-minute period, except that 6-minute periods averaging more than 87 percent opacity may occur not more than once in any hour nor more than four times in any 24-hour period. All monitoring/recordkeeping requirements associated with demonstrating compliance with this standard during No. 5 fuel oil firing have been removed.
5. 15A NCAC 2D .1111 – 40 CFR 63, Subpart DDDDD: Industrial, Commercial, and Institutional Boiler and Process Heater MACT (“Boiler MACT”)
  - Boiler No. 1 (**ID No. B1**) is an “existing, large liquid fuel” boiler that is authorized to fire natural gas and/or No. 2 fuel oil and has a maximum heat input rate of 10.5 MMBtu/hr. Pursuant to 40 CFR 63.7506(b)(2), this boiler is only subject to the initial notification requirements. The boiler is not subject to emission limits, work practice standards, performance testing, monitoring, SSMP, site-specific monitoring plans, recordkeeping and reporting requirements of this subpart. Permit Application No. 6500179.06B meets the initial notification requirements. No further compliance demonstration is required for Boiler No. 1.
  - Boiler No. 2 (**ID No. B2**) is an “existing, small liquid fuel” boiler that is authorized to fire natural gas and/or No. 2 fuel oil and has a maximum heat input rate of 6.4 MMBtu/hr. Pursuant to 40 CFR 63.7506(c)(2), this boiler is not subject to the initial notification requirements or emission limits, work practice standards, performance testing, monitoring, SSMP, site-specific monitoring plans, recordkeeping and reporting requirements of this subpart.

As currently permitted, the Permittee has no further obligations to comply with the requirements of 40 CFR 63, Subpart DDDDD.

**B. Enclosed Flare (ID No. CD-FL1) with a maximum heat input of 7.5 MMBtu/hr; and, Enclosed Flare (ID No. CD-FL2) with two burners with a maximum heat input of 4.5 MMBtu/hr.**

1. Description – Vopak modified one enclosed flare (**ID No. CD-FL1**) to increase the maximum product load input from 1,000 gallons per minute (gpm) to 2,000 gpm. The modified enclosed flare is used to control emissions from five (5) new tank truck loading arms (**ID Nos. ES-TLA21 through ES-TLA25**) and five new railcar loading arms (**ID Nos. ES-RLA20 through ES-RLA25**). Vopak is also installing one additional enclosed flare (**ID No. CD-FL2**) with a maximum product load input of 2,000 gpm to control emissions from ten new railcar loading arms (**ID Nos. ES-RLA26 through ES-RLA35**).

The hydrocarbon emission rate from the enclosed flares (**ID Nos. CD-FL1 and CD-FL2**) is guaranteed to be no greater than 10 milligrams per liter (mg/L), and the control devices are guaranteed to have a minimum hydrocarbon destruction efficiency of 98 percent by weight.

2. 15A NCAC 2D .0516 – Sulfur Dioxide Emissions From Combustion Sources – This regulation limits SO<sub>2</sub> emissions to no greater than 2.3 lb/MMBtu of heat input for combustion sources that are unaffected by SO<sub>2</sub> limits in other state or Federal regulations. There are no new combustion sources in Section 2.1 C as a part of this modification.

Due to the low concentrations of sulfur in natural gas and the vapors that will be controlled by the enclosed flares, the DAQ will not require any monitoring, recordkeeping, or reporting to demonstrate compliance with this standard.

3. 15A NCAC 2D .0521 – Control of Visible Emissions – VE standards provided in this regulation are applicable to potential VE emissions from any stack, vent, or outlet for which no other emission control standards are applicable. This regulation limits visible emissions to no more than 20 percent opacity when averaged over a 6-minute period, except that 6-minute periods averaging more than 87 percent opacity may occur not more than once in any hour nor more than four times in any 24-hour period.

Due to the low potential for visible emissions from the combustion of natural gas and the vapors that will be controlled by the enclosed flares, the DAQ will not require any monitoring, recordkeeping, or reporting to demonstrate compliance with this standard.

4. 15A NCAC 2D .1111 – 40 CFR 63, Subpart EEEE: NESHAP for Organic Liquid Distribution Facilities – Organic liquid<sup>1</sup> loading at the new/modified storage tanks, loading racks, and control devices are affected as NEW sources under the Organic Liquid Distribution MACT. The enclosed flares are being used to comply with the emission and work practice standards for transfer racks as provided in 40 CFR 63.2346(b)(1), which include the following:
  - Use a closed vent system and add-on control device to reduce organic HAP emissions from loading by 98 percent by weight;
  - Ensure the closed vent system and control devices meet the applicable requirements of 40 CFR 63, Subpart SS; and,
  - Maintain daily average firebox or combustion zone temperatures greater than or equal to the reference temperature established during the design evaluation or performance test that demonstrated compliance with the emission limit; and,
  - Ensure transfer vehicles are leak-tight in accordance with the procedures of 40 CFR 60, Subpart XX.

While most of these requirements are specifically delineated in the loading portions of the permit [i.e., Section 2.1. C. (trucks) and D. (railcars)], requirements associated with the closed vent systems are included in the Section 2.1 B. (enclosed flares).

The permit includes requirements for closed vents systems as they are provided in 40 CFR 63, Subpart SS (§63.983), including design and operating standards, requirements for securing and monitoring any bypasses in the system that could route emissions away from the enclosed flares, and initial and annual leak inspection and repair requirements. Recordkeeping requirements associated with the closed vent system leak inspection program are also provided in §63.998(d).

Start-up, shutdown, and malfunction requirements, Notification of Compliance Status requirements, and periodic reporting requirements associated with 40 CFR 63, Subpart EEEE are provided in Section 2.2. C.1 of the permit, and are explained in Section V of this permit review.

**C. Six (6) Tank Truck Loading Arms (ID Nos. ES-TLA1, ES-TL21, ES-TL22, ES-TL23, ES-TL24, and ES-TL25) with an associated enclosed flare (ID No. CD-FL1).**

1. Description – Vopak added five new truck tank loading arms (ID Nos. ES-TLA21 through TLA25) with an associated enclosed flare (ID No. CD-FL1).

The new truck tank loading arms are affected by the following rules:

- 15A NCAC 2D .0524 (40 CFR 60, Subpart XX)
  - 15A NCAC 2D .0927
  - 15A NCAC 2D .0932
  - 15A NCAC 2D .0948
  - 15A NCAC 2D .1100
  - 15A NCAC 2D .1111 (40 CFR 63, Subpart R – Gasoline Distribution MACT)
  - 15A NCAC 2D .1111 (40 CFR 63, Subpart EEEE – Organic Liquid Distribution MACT)
  - 15A NCAC 2Q .0705 (“Last MACT” demonstration – requirements fulfilled)
  - 15A NCAC 2Q .0711
2. 15A NCAC 2D .0524 – 40 CFR 60, Subpart XX: NSPS for Bulk Gasoline Terminals – The existing tank truck loading arm (ID No. ES-TLA1) with emissions control has been classified as an “existing” source

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<sup>1</sup> “Organic liquid” is defined in 40 CFR 63, Subpart EEEE as any non-crude oil liquid or liquid mixture that contains 5% by weight or greater of the organic HAP listed in Table 1 of the subpart, excluding gasoline, kerosene, diesel, asphalt, and heavier distillate oils and fuel oils, any fuel consumed or dispensed on the plant site directly to users, hazardous waste, wastewater, ballast water, or any non-crude oil liquid with an annual average true vapor pressure less than 0.1 psia.

under NSPS-Subpart XX. However, because the terminal added truck tank loading arms with emissions control and gasoline loading capabilities, the gasoline loading operations at the terminal are now affected under 40 CFR 60, Subpart XX as a “modified” source.

The NSPS standards are ONLY applicable to the affected sources during gasoline loading operations, and include the following:

- Displaced vapors from gasoline loading shall be controlled so that emissions not exceed 35 mg/L of gasoline loaded;
- Gasoline tank trucks shall be vapor-tight;
- Leak standards for equipment in gasoline service.

In most cases, the requirements of the Gasoline Distribution MACT, which are also applicable to gasoline loading operations at Vopak and which are included in Section 2.2. B.1. of the permit, are more stringent than the NSPS requirements. To avoid repetition and improve permit clarity, compliance demonstration requirements for the tank truck vapor-tightness, equipment leaks, enclosed flare testing, and temperature monitoring in the combustion zone of the enclosed flare reference the Gasoline Distribution MACT requirements. These requirements are discussed in more detail in Section V of this permit review.

3. 15A NCAC 2D .0927 – Bulk Gasoline Terminals – These are the State Implementation Plan (SIP) standards for bulk gasoline terminals, and they have been applicable to Vopak prior to the proposed modification. This section of the permit has been modified as follows:
  - A statement has been added prohibiting uncontrolled loading arms (**ID Nos. ES-TLA2 through ES-TLA20**) from loading gasoline;
  - Standards have been reorganized to improve permit clarity;
  - A requirement to test the enclosed flare (**ID No. CD-FL1**) has been added to demonstrate compliance with the emission standard following planned modifications to the device to increase potential product throughput;
  - Additional detail has been added to the recordkeeping requirement associated with the monthly external inspections of the enclosed flare for improved permit clarity;
  - A recordkeeping requirement to retain leak-tight certifications of the gasoline tank trucks loaded has been added to the permit.
4. 15A NCAC 2D .0932 – Gasoline Tank Trucks and Vapor Collection Systems – These are the State Implementation Plan (SIP) standards for gasoline tank trucks and vapor collection systems. Language in the permit was updated to include more detail and to be consistent with the most recent version of the rule. Note that this rule was amended, effective April 1, 2003. The amendment requires that gasoline tank trucks be tested at certified facilities.
5. 15A NCAC 2D .1111 – 40 CFR 63, Subpart EEEE: NESHAP for Organic Liquid Distribution Facilities – Organic liquid<sup>2</sup> loading at the new/modified storage tanks, loading racks, and control devices will be affected as NEW sources under the Organic Liquid Distribution MACT. The enclosed flares are being used to comply with the emission and work practice standards for both tank truck and railcar transfer racks as provided in 40 CFR 63.2346(b)(1), which include the following:
  - Use an add-on control device to reduce organic HAP emissions from loading by 98 percent by weight;
  - Ensure control devices meet the applicable requirements of 40 CFR 63, Subpart SS;
  - Maintain daily average firebox or combustion zone temperatures greater than or equal to the reference temperature established during the design evaluation or performance test that demonstrated compliance with the emission limit; and,
  - Ensure transfer vehicles are leak-tight in accordance with the procedures of 40 CFR 60, Subpart XX.

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<sup>2</sup> “Organic liquid” is defined in 40 CFR 63, Subpart EEEE as any non-crude oil liquid or liquid mixture that contains 5% by weight or greater of the organic HAP listed in Table 1 of the subpart, excluding gasoline, kerosene, diesel, asphalt, and heavier distillate oils and fuel oils, any fuel consumed or dispensed on the plant site directly to users, hazardous waste, wastewater, ballast water, or any non-crude oil liquid with an annual average true vapor pressure less than 0.1 psia.

To achieve compliance with this standard, Vopak shall route all organic liquid vapors from the truck loading racks (**ID Nos. ES-TLA1 and ES-TLA21 through ES-TLA25**) to enclosed flare No. 1 (**ID No. CD-FL1**).

The permit requires that a performance test of the enclosed flare be conducted within 60 days of achieving the maximum production rate, but not later than 180 days after modifying the flare to increase product throughput. The minimum combustion temperature required to achieve the required emissions reductions shall be established during the performance test.

The permit also requires that Vopak install, calibrate, maintain, and operate a continuous temperature monitor at the enclosed flare. The Permittee shall be required to maintain the daily average combustion temperature at or above the minimum temperature established during the performance test.

To avoid repetition and improve permit clarity, requirements associated with ensuring leak-tight loading vessels references the requirements of the Gasoline Distribution MACT requirements in Section 2.2. B.1. of the permit, which are discussed in more detail in Section V of this permit review.

Start-up, shutdown, and malfunction requirements, Notification of Compliance Status requirements, and periodic reporting requirements associated with 40 CFR 63, Subpart EEEE are provided in Section 2.2. C.1 of the permit, and are explained in Section V of this permit review

**D. Six (6) Railcar Loading Arms (ID Nos. ES-RLA20 through ES-RLA25) with an associated enclosed flare (ID No. CD-FL1); and, Ten (10) Railcar Loading Arms (ID Nos. ES-RLA26 through ES-RLA35) with an associated enclosed flare (ID No. CD-FL2).**

1. Description – Vopak is routing emissions from six existing loading arms (**ID Nos. ES-RLA20 through ES-RLA25**) to enclosed flare No. 1 (**ID No. CD-FL1**). Vopak is also proposing to install ten new railcar loading arms (**ID Nos. ES-RLA26 through ES-RLA35**), which shall be associated with a new enclosed flare (**ID No. CD-FL2**).

The railcars with emissions control shall be affected by the following rules:

- 15A NCAC 2D .1100
- 15A NCAC 2Q .0711
- 15A NCAC 2Q .0705 (“Last MACT” demonstration – requirements fulfilled)
- 15A NCAC 2D .1111 (40 CFR 63, Subpart R – Gasoline Distribution MACT)
- 15A NCAC 2D .1111 (40 CFR 63, Subpart EEEE – Organic Liquid Distribution MACT)
- 15A NCAC 2D .0948

NOTE: The following regulations are applicable specifically to tank truck loading operations, and do not apply to the railcar loading arms: 15A NCAC 2D .0927, 15A NCAC 2D .0932, and 40 CFR 60, Subpart XX.

2. 15A NCAC 2D .1111 – 40 CFR 63, Subpart EEEE: NESHAP for Organic Liquid Distribution Facilities – Organic liquid<sup>3</sup> loading at the new/modified storage tanks, loading racks, and control devices will be affected as NEW sources under the Organic Liquid Distribution MACT.

To achieve compliance with this standard, Vopak shall route all organic liquid vapors from the railcar loading racks as follows:

- Six existing railcar loading arms (**ID Nos. ES-RLA20 through ES-RLA25**) shall be routed to enclosed flare No. 1 (**ID No. CD-FL1**).

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<sup>3</sup> “Organic liquid” is defined in 40 CFR 63, Subpart EEEE as any non-crude oil liquid or liquid mixture that contains 5% by weight or greater of the organic HAP listed in Table 1 of the subpart, excluding gasoline, kerosene, diesel, asphalt, and heavier distillate oils and fuel oils, any fuel consumed or dispensed on the plant site directly to users, hazardous waste, wastewater, ballast water, or any non-crude oil liquid with an annual average true vapor pressure less than 0.1 psia.

- Ten new railcar loading arms (ID Nos. ES-RLA26 through ES-RLA35) shall be routed to enclosed flare No. 2 (ID No. CD-FL2).

**E. Nineteen Railcar Loading Arms (ID Nos. ES-RLA1 through ES-RLA19) without add-on emissions control; and,**

**Nineteen Truck Loading Arms (ID No. ES-TLA2 through ES-TLA20) without add-on emissions control.**

1. Description – Because the transfer racks are not equipped with emissions control, they are prohibited from loading certain materials, as provided below:
2. 15A NCAC 2D .1111 (40 CFR 63, Subpart R) & 15A NCAC 2D .0927 Uncontrolled Racks may not load gasoline.
3. 15A NCAC 2D .1111 – 40 CFR 63, Subpart EEEE: NESHAP for Organic Liquid Distribution Facilities – Uncontrolled Racks may not load organic liquids, as defined in 40 CFR 63.2406:

*“Organic liquid” is defined in 40 CFR 63.2406 as any non-crude oil liquid or liquid mixture that contains 5% by weight or greater of the organic HAP listed in Table 1 of the subpart, excluding gasoline, kerosene, diesel, asphalt, and heavier distillate oils and fuel oils, any fuel consumed or dispensed on the plant site directly to users, hazardous waste, wastewater, ballast water, or any non-crude oil liquid with an annual average true vapor pressure less than 0.1 psia.*

4. 15A NCAC 2D .0948 – VOC EMISSIONS FROM TRANSFER OPERATIONS  
See discussion in Section V.A. of this Permit Review Document.

**F. Nine Barge Loading Arms (ID Nos. ES-BLA1 through ES-BLA9).**

1. Description – Vopak currently operates nine barge loading arms, used to load various products into ships and barges at the terminal. References to 15A NCAC 2D .0948 have been removed from the barge loading section of the permit. The text of this rule clearly states that it is applicable to, “operations that transfer volatile organic compounds from a storage tank to tank-trucks, trailers, or railroad tank cars.” This regulation is not applicable to marine loading operations.

*Note on 40 CFR 63, Subpart EEEE Applicability.* Organic Liquid Distribution MACT is applicable to “each transfer rack” loading organic liquids, as defined in §63.2406, at an affected facility. “Transfer rack” is defined in the rule as, “a single system used to load organic liquids into transport vehicles.” “Transport vehicles” is defined as, “a cargo tank or tank car.” “Cargo tank” is defined as, “a liquid-carrying tank permanently attached and forming an integral part of a motor vehicle or truck trailer,” and “tank car” is defined as, “a car designed to carry liquid freight by rail.” The rule DOES NOT include marine loading operations in the definition of “transfer racks”. Therefore, Organic Liquid Distribution MACT requirements do not apply to the barge loading operation.

*Note on 40 CFR 63, Subpart Y Applicability.* 40 CFR 63, Subpart Y is potentially applicable to marine loading operations. The standard applies to marine loading operations that are IN THEMSELVES major sources of HAP emissions. The Permittee shall comply with the 63-Subpart Y standards **prior** to increasing the potential HAP emission rate from the marine loading operations above the 10 tpy /25 tpy major source thresholds.

**G. Twenty (20) Fixed Roof Storage Tanks (ID Nos. ES-ST01 through ES-ST03, ES-ST09, ES-ST11, ES-ST12, ES-ST13, ES-ST14, ES-ST15, ES-ST18, ES-ST20, ES-ST21, ES-ST22, ES-ST101 through ES-ST103, ES-ST105, ES-ST106, ES-ST120, and ES-ST1201);**

**One (1) Fixed Roof Storage Tank (ID No. ES-ST04) with a carbon adsorption system (ID No. CD-ST04); and,**

**Seven (7) Internal Floating Roof Storage Tanks (ID No. ES-ST06 through ES-ST08, ES-ST10, ES-ST16, ES-ST17, and ES-ST19) with internal pan floating roofs.**

1. Description – Vopak has twenty-eight (28) storage vessels with different capacities, construction dates, and control devices. A summary of the tanks and rule applicability of each tank is provided in the table

attached to the end of this Permit Review Document. Many of the tank standards have similar requirements and any one tank may have identical requirements (e.g., annual tank inspections) from multiple emissions standards.

2. 15A NCAC 2D .0949: Storage of Miscellaneous Volatile Organic Compounds – This standard only applies to storage vessels with a capacity greater than 50,000 gallons, which excludes eight (8) Vopak tanks from applicability (**ID Nos. ES-ST13, ES-ST22, ES-ST101, ES-ST102, ES-ST103, ES-ST105, ES-ST106, and ES-ST120**).

All other tanks are potentially affected by the standard, which requires that any vessel storing an organic material with a vapor pressure of greater than or equal to 1.5 psia must be a pressure tank, equipped with a floating roof, or equipped with a control device (e.g., vapor recovery system) with at least 90% emissions control.

Vopak has twelve (12) storage vessels that do not meet the control standards of 15A NCAC 2D .0949, and therefore are not permitted to store organic liquids with a vapor pressure of greater than or equal to 1.5 psia (**ID Nos. ES-ST01, ES-ST02, ES-ST03, ES-ST09, ES-ST11, ES-ST12, ES-ST14, ES-ST15, ES-ST18, ES-ST20, ES-ST21, ES-ST1201**).

Vopak has seven (7) storage vessels with internal floating roofs (IFR) that meet the control standards of 15A NCAC 2D .0949, and therefore may store organic liquids with a vapor pressure of greater than or equal to 1.5 psia (**ID Nos. ES-ST06 through ES-ST08, ES-ST10, ES-ST16, ES-ST17, and ES-ST19**). These tanks MAY NOT store organic liquids with a vapor pressure of greater than or equal to 11.0 psia. The permit specifies a periodic inspection program for these tanks to ensure that the floating roofs continue to meet the standards of this rule.

Vopak has one (1) storage vessel (**ID No. ES-ST04**) with a carbon adsorption system (**ID No. CD-ST01**) that meet the 90% emission control standard of 15A NCAC 2D .0949, and therefore may store organic liquids with a vapor pressure of greater than or equal to 1.5 psia. The permit requires that Vopak monitor the concentration of VOC in the exhaust from the control device to ensure it achieves at least a 90% emission control.

3. 15A NCAC 2D .1111 – 40 CFR 63, Subpart EEEE: NESHAP for Organic Liquid Distribution Facilities – Organic Liquid Distribution MACT provides design and operating standards for tanks that store “organic liquid”, as it is defined in 40 CFR 63.2406

*“Organic liquid” is defined in 40 CFR 63.2406 as any non-crude oil liquid or liquid mixture that contains 5% by weight or greater of the organic HAP listed in Table 1 of the subpart, excluding gasoline, kerosene, diesel, asphalt, and heavier distillate oils and fuel oils, any fuel consumed or dispensed on the plant site directly to users, hazardous waste, wastewater, ballast water, or any non-crude oil liquid with an annual average true vapor pressure less than 0.1 psia.*

A tank with a storage capacity of less than 50,000 gallons may store “organic liquid” with a vapor pressure up to 4.0 psia without requiring a floating roof or add-on control device. Vopak has eight (8) tanks that may store “organic liquid” with a vapor pressure up to 4.0 psia without add on control (**ID Nos. ES-ST13, ES-ST22, ES-ST101, ES-ST102, ES-ST103, ES-ST105, ES-ST106, and ES-ST120**).

Vopak has twelve (12) tanks with a capacity equal to or greater than 50,000 gallons and without floating roofs or add-on emissions control (**ID Nos. ES-ST01, ES-ST02, ES-ST03, ES-ST09, ES-ST11, ES-ST12, ES-ST14, ES-ST15, ES-ST18, ES-ST20, ES-ST21, and ES-ST1201**). These tanks are not permitted to not store any organic liquid, as it is defined in 40 CFR 63.2406.

Vopak has seven (7) storage vessels with internal floating roofs (IFR) that meet the Organic Liquid Distribution MACT standards, and therefore may store “organic liquids” (**ID Nos. ES-ST06 through ES-**

**ST08, ES-ST10, ES-ST16, ES-ST17, and ES-ST19**). The permit specifies a periodic inspection program for these tanks to ensure that the floating roofs continue to meet the standards of this rule.

Vopak has one (1) storage vessel (**ID No. ES-ST04**) with a carbon adsorption system (**ID No. CD-ST01**) that shall reduce emissions from the tank by at least 98% by weight, in accordance with the Organic Liquid Distribution MACT standards. This tank may therefore store “organic liquids”. Pursuant to the rule (which references the tank standards provided in 40 CFR 63, Subpart SS), the Permittee is required to develop and implement a site-specific monitoring plan for the carbon adsorption device and associated closed vent system. The Permittee shall monitor exhaust from the control device in accordance with this plan to ensure it achieves at least a 98% emission control.

Start-up, shutdown, and malfunction requirements, Notification of Compliance Status requirements, and periodic reporting requirements associated with 40 CFR 63, Subpart EEEE are provided in Section 2.2. C.1 of the permit, and are explained in Section V of this permit review.

4. 15A NCAC 2D .0524 – 40 CFR 60, Subpart K: NSPS for Storage Vessels for Petroleum Liquids Constructed Between June 11, 1973 and May 19, 1978 – The rule requires that affected tanks that store a petroleum with a true vapor pressure, as stored, of equal to or greater than 1.5 psia be equipped with a floating roof or vapor recovery system. Vopak only has five (5) tanks that were constructed (or modified/reconstructed) between the trigger dates for this rule applicability (**ID Nos. ES-ST18, ES-ST20, ES-ST16, ES-ST17, and ES-ST19**).

Two of these tanks (**ID Nos. ES-ST18 and ES-ST20**) do not meet the required design standards and are not permitted to store a petroleum with a true vapor pressure, as stored, of equal to or greater than 1.5 psia.

The remaining three tanks (**ID Nos. ES-ST16, ES-ST17, and ES-ST19**) are equipped with internal floating roofs with double seal systems on the floating decks. These tanks meet the control standards of 40 CFR 60, Subpart K and are permitted to store a petroleum with a true vapor pressure, as stored, of equal to or greater than 1.5 psia.

5. 15A NCAC 2D .0925 – Petroleum Liquid Storage Fixed Roof Tanks – This regulation provides design standards for internal floating roof tanks that store petroleum liquids with a true vapor pressure of greater than 1.52 psia. The standard applies to seven (7) storage vessels with internal floating roofs (**ID Nos. ES-ST06 through ES-ST08, ES-ST10, ES-ST16, ES-ST17, and ES-ST19**). The permit specifies a periodic inspection program for these tanks to ensure that the floating roofs continue to meet the standards of this rule.
6. 15A NCAC 2D .0927 – Bulk Gasoline Terminals – This regulation provides design standards for internal and external floating roof tanks that store gasoline. The standard applies to seven (7) storage vessels with internal floating roofs (**ID Nos. ES-ST06 through ES-ST08, ES-ST10, ES-ST16, ES-ST17, and ES-ST19**). The permit specifies a periodic inspection program for these tanks to ensure that the floating roofs continue to meet the standards of this rule.

This standard also requires that emissions from degassing of affected tanks in gasoline service be collected and controlled by at least 90 percent by weight. Liquid balancing may not be used to degas gasoline storage tanks. Bulk gasoline storage tanks containing not more than 138 gallons of liquid gasoline or the equivalent of gasoline vapor and gasoline liquid are exempted from this limit if the vapors are vented for at least 24-hours. Documentation of the tanks must be made according to 15A NCAC 2D .0903.

7. 15A NCAC 2D .1111 – 40 CFR 63, Subpart R: NESHAP for Gasoline Distribution Facilities – This rule provides design and operating standards for gasoline storage tanks. The rule essentially requires that tanks with a storage capacity of greater than 19,813 gallons meet the design and operating standards of 40 CFR 60, Subpart Kb (i.e., internal or external floating roof tank or control device with a 95% control efficiency) to store gasoline.

Vopak has nineteen (19) tanks with a capacity equal to or greater than 19,813 gallons and without floating roofs or add-on emissions control (**ID Nos. ES-ST01 through ES-ST03, ES-ST09, ES-ST11, ES-ST12, ES-ST13, ES-ST14, ES-ST15, ES-ST18, ES-ST20, ES-ST21, ES-ST101, ES-ST102, ES-ST103, ES-ST105, ES-ST106, ES-ST120, and ES-ST1201**). These tanks are not permitted to store gasoline.

Vopak has seven (7) storage vessels with internal floating roofs (IFR) that meet the Gasoline Distribution MACT standards, and therefore may store gasoline (**ID Nos. ES-ST06 through ES-ST08, ES-ST10, ES-ST16, ES-ST17, and ES-ST19**). The permit specifies a periodic inspection program for these tanks to ensure that the floating roofs continue to meet the standards of this rule.

Vopak has one (1) storage vessel (**ID No. ES-ST04**) with a carbon adsorption system (**ID No. CD-ST01**) that shall reduce emissions from the tank by at least 95% by weight, in accordance with the Gasoline Distribution MACT standards. This tank may therefore store gasoline. The permit references monitoring requirements for the Organic Liquid Distribution MACT (i.e., monitor according to the site-specific monitoring plan) for permit clarity. The Permittee shall monitor exhaust from the control device in accordance with this plan to ensure it achieves at least a 95% emission control.

#### **H. Miscellaneous Fugitive Sources, including pipelines, pumps, valves, and sampling connections (ID No. FL1).**

1. Description – Emissions source **ID No. FL1** was originally described as the fugitive pipeline. In the proposed permit, the description of **ID No. FL1** has been expanded to include all “Miscellaneous Fugitive Sources”, including the pipelines, pumps, valves, and sampling connections. This description has been expanded to better accommodate equipment leak standards in 40 CFR 63, Subpart EEEE (Organic Liquid Distribution MACT).
2. 15A NCAC 2D .1111 – 40 CFR 63, Subpart EEEE: NESHAP for Organic Liquid Distribution Facilities – Organic Liquid Distribution MACT requires initial leak inspections and periodic leak inspections of each pump, valve, and sampling connection that operates in organic liquid service for at least 300 hours per year according to any of the following, referenced standards:
  - 40 CFR 63, Subpart TT – NESHAP for Equipment Leaks, Control Level 1;
  - 40 CFR 63, Subpart UU – NESHAP for Equipment Leaks, Control Level 2; or
  - 40 CFR 63, Subpart H – Hazardous Organic NESHAP (HON) for Equipment Leaks.

The permit references applicable standards and inspection/repair requirements in the three potential applicable standards (i.e., Subparts TT, UU, and H)

The Permittee shall be required to submit detailed information, including the number of affected sources, which leak standard is being used to comply with the Organic Liquid Distribution MACT, and information on the periodic inspection and repair program must be submitted as part of the semiannual periodic report, which is specifically detailed in Section 2.2. C.1 of the permit.

#### **V. Regulatory Review – Multiple Emission Sources:**

##### **A. 15A NCAC 2D .0948 – VOC EMISSIONS FROM TRANSFER OPERATIONS**

###### Affected Sources:

**Six (6) Railcar Loading Arms (ID Nos. ES-RLA20 through ES-RLA25) with an associated enclosed flare (ID No. CD-FL1); and,**

**Ten (10) Railcar Loading Arms (ID Nos. ES-RLA26 through ES-RLA35) with an associated enclosed flare (ID No. CD-FL2);**

**Nineteen Railcar Loading Arms (ID Nos. ES-RLA1 through ES-RLA19) without add-on emissions control; and,**

**Nineteen Truck Loading Arms (ID No. ES-TLA2 through ES-TLA20) without add-on emissions control.**

This Rule applies to transfer operations to tank trucks, trailers, and/or railcar tank that ARE NOT covered by 15A NCAC .0926, .0927, or .0928. This rule does NOT apply to the barge loading operations, nor is it applicable to the truck loading operations with emission control because these operations are affected by 15A NCAC 2D .0927.

The remaining transfer operations, including uncontrolled tank truck loading arms and all railcar loading arms must comply with either of the following standards:

1. The TOTAL QUANTITY of volatile organic compound with a vapor pressure of 1.5 psi or greater loaded out of the facility by tank trucks, trailer, and/or railcar tank car shall be limited to no greater than 20,000 gallons per day. The “total quantity” includes material loaded from both controlled and uncontrolled transfer racks: OR,
2. All tank truck loading arms and railcar loading arms shall extend down into the compartment being loaded (i.e., be equipped with submerged-fill loading booms).

Vopak is complying with the second option listed above. To demonstrate compliance with the standard, the Permittee is required to conduct an annual inspection of the submerged-fill booms to ensure structural integrity and to create and retain a record of any inspection and maintenance activities at the loading arms.

#### **B. 15A NCAC 2D .1111 – 40 CFR 63, Subpart R: NESHAP for Gasoline Distribution Facilities**

##### **Affected Sources:**

**Six (6) Tank Truck Loading Arms (ID Nos. ES-TLA1, ES-TL21, ES-TL22, ES-TL23, ES-TL24, and ES-TL25) with an associated enclosed flare (ID No. CD-FL1);**

**Six (6) Railcar Loading Arms (ID Nos. ES-RLA20 through ES-RLA25) with an associated enclosed flare (ID No. CD-FL1);**

**Ten (10) Railcar Loading Arms (ID Nos. ES-RLA26 through ES-RLA35) with an associated enclosed flare (ID No. CD-FL2); and,**

**Miscellaneous Fugitive Sources, including pipeline, pumps, valves, and sampling connections (ID No. FL1)**

*\* 63-Subpart R standards for tanks are discussed in Section IV.G.7 of this Permit Review Document.*

The Gasoline Distribution MACT (40 CFR 63, Subpart R) requires that gasoline loading to truck tanks and railcars be controlled so that maximum emissions from the operation do not exceed 10 milligrams per liter of gasoline loaded (mg/L). The standard does NOT apply to barge loading operations. Vopak is controlling loading operations with the potential to be used in gasoline service as follows:

- Tank truck loading arms (ID Nos. ES-TLA1, ES-TLA21, ES-TLA22, ES-TLA23, ES-TLA24, and ES-TLA25) shall be routed to enclosed flare No. 1 (ID No. CD-FL1);
- Railcar loading arms (ID Nos. ES-RLA20 through ES-RLA25) shall be routed to enclosed flare No. 1 (ID No. CD-FL1); and,
- Railcar loading arms (ID Nos. ES-RLA26 through ES-RLA35) shall be routed to enclosed flare No. 21 (ID No. CD-FL2).

**To demonstrate compliance with the control standard, the permit requires a performance test of both enclosed flares.** The permit also requires that the combustion zone temperature in the enclosed flares be continuously monitored to demonstrate that the minimum temperature required to limit VOC emission to no greater than 10 mg/L (as established in the performance test) is achieved.

In addition, the Gasoline Distribution MACT requires that all gasoline-service transport vessels (i.e., tank trucks and railcars) loaded at the facility be leak-tight, and that the Permittee obtain, review, and maintain “Vapor-Tightness Documentation” verifying that all loaded gasoline vessels meet the required standard.

Finally, the Gasoline Distribution MACT requires monthly equipment leak inspections of all fugitive sources, vapor collection systems, and control devices in gasoline service. The inspection must be conducted while gasoline-loading is in progress. Leak repair requirements and general work practices related to the handling of

gasoline are also specified.

**C. 15A NCAC 2D .1111 – 40 CFR 63, Subpart EEEE: NESHAP for Organic Liquid Distribution Facilities**

**Affected Sources:**

**Six (6) Tank Truck Loading Arms (ID Nos. ES-TLA1, ES-TL21, ES-TL22, ES-TL23, ES-TL24, and ES-TL25) with an associated enclosed flare (ID No. CD-FL1).**

**Six (6) Railcar Loading Arms (ID Nos. ES-RLA20 through ES-RLA25) with an associated enclosed flare (ID No. CD-FL1);**

**Ten (10) Railcar Loading Arms (ID Nos. ES-RLA26 through ES-RLA35) with an associated enclosed flare (ID No. CD-FL2);**

**One (1) Fixed Roof Storage Tank (ID No. ES-ST04) with a carbon adsorption system (ID No. CD-ST04);**

**Seven (7) Internal Floating Roof Storage Tanks (ID No. ES-ST06, ES-ST07, ES-ST08, ES-ST10, ES-ST16, ES-ST17, and ES-ST19) with internal pan floating roofs; and,**

**Miscellaneous Fugitive Sources, including pipeline, pumps, valves, and sampling connections (ID No. FL1)**

Emission source-specific requirements (i.e., emission and operating standards and work practices) are discussed in Section IV of this Permit Review Document, as provided below:

- Enclosed flares and closed vent systems – Section IV.B.4
- Controlled tank truck loading arms – Section IV.C.5
- Controlled railcar loading arms – Section IV.D.2
- Uncontrolled tank truck and railcar loading arms – Section IV.E.3
- Storage tanks – Section IV.G.3
- Equipment leaks – Section IV.H.2

General requirements associated with the Organic Liquid Distribution MACT are included in the “Multiple Emission Sources” portion of the permit.

**Startups, Shutdowns, and Malfunctions**

Vopak is required to develop and implement a written startup, shutdown, and malfunction (SSM) plan according to the provisions in 40 CFR 63.6(e)(3). [40 CFR 63.2350(c)]

During periods of SSM, Vopak must follow the applicable provisions of the SSM plan and the requirements in 40 CFR 63.6(e)(1) and (3), in addition to the following rule-specific requirements:

1. The Permittee shall not shut down control devices or monitoring systems required for compliance with 40 CFR 63, Subpart EEEE during periods of startup or shutdown, EXCEPT when the shut down of the control device or monitoring systems is to avoid damage due to a contemporaneous SSM of an affected source.
2. During SSM, implement reasonably available measures to prevent or minimize excess emissions. The measures to be taken must be identified in the SSM plan, and may include, but are not limited to, air pollution control technologies, recovery technologies, work practices, pollution prevention, monitoring, and/or changes in the manner of operation of the affected source. Back-up control devices are not required, but may be used if available.  
[40 CFR 63.2378]

**Notification of Compliance Status**

Vopak is required to submit a Notification of Compliance Status within 60 days of completing a performance test of either enclosed flare (ID No. CD-FL1 or CD-FL2). The Notification of Compliance Status shall include the following information:

1. A copy of the Site-Specific Monitoring Plan required for the carbon adsorption system (ID No. CD-ST04), as well as a design evaluation of the control device;
2. The minimum temperature established at the enclosed flares (ID No. CD-FL1 or CD-FL2) during the performance test, including any data and calculations used to establish the minimum temperature and a description of why the minimum temperature indicates proper operation of the control; and,

3. A definition of the source's operating day for purposes of determining daily average values of the monitored temperature. The definition shall specify the times at which an operating day begins and ends (e.g., midnight-to-midnight, 6am-6am, etc.).

Periodic Reports.

Vopak is required to submit detailed, semiannual reports summarizing monitoring and recordkeeping activities associated with Organic Liquid Distribution MACT compliance activities. A detailed list of contents required in the period report is provided in Section 2.2 C.e. of the draft permit.

**D. STATE-ENFORCABLE ONLY – Toxic Air Pollutant (TAP) Standards**

As part of this application, the Permittee submitted a facility-wide toxics demonstration, including an analysis of potential toxic air pollutant (TAP) emissions from all new, modified, and existing sources to comply with the following state-enforceable only TAP requirements:

- 15A NCAC 2Q .0711 – Toxic Pollution Exemption Rates (TPERs)
- 15A NCAC 2D .1100 – TAP Emissions Required a Permit
- 15A NCAC 2D .0706 – “Last MACT” TAP Compliance Demonstration

**1. 15A NCAC 2Q .0711: TOXIC AIR POLLUTANT EMISSIONS LIMITATION REQUIREMENT –**

Pursuant to 15A NCAC 2Q .0711 “Emission Rates Requiring a Permit,” for each of the below listed toxic air pollutants (TAPs), the Permittee has made a demonstration that facility-wide actual emissions do not exceed the Toxic Permit Emission Rates (TPERs) listed in 15A NCAC 2Q .0711. The Permittee has existing limitations on gasoline storage and loading operations to demonstrate compliance with TPER limits for benzene, toluene, and n-hexane. The modification of the facility proposed in this permit application shall not affect gasoline service operations, and these permit requirements will not be modified. No additional TPER compliance demonstrations are required in the permit as a result of the proposed modifications.

**2. 15A NCAC 2D .1100: TOXIC AIR POLLUTANT EMISSIONS LIMITATION AND REPORTING REQUIREMENT –**

As a result of the proposed modifications, maximum emissions of acetic acid, p-dichlorobenzene, p-xylene, and mixed xylenes will be greater than the TAP Permit Exemption Rates (TPERs) provided in 15A NCAC 2Q .0711. Maximum emission rates of the affected TAP are provided below:

<b>Emission Sources</b>	<b>Toxic Air Pollutant(s)</b>	<b>EMISSION LIMIT(S)</b>
Facility Wide	acetic acid	69.91 lb/hr
Facility Wide	p-dichlorobenzene	354.87 lb/hr
Facility Wide	xylenes	22.94 lb/hr 550.56 lb/day

The Permittee submitted a Toxics Compliance Demonstration, including air dispersion modeling, to demonstrate that the maximum emission rates of the affected TAP will not result in an exceedance of the Acceptable Ambient Levels (AALs). The modeling analysis was reviewed and approved by Ms. Jamie Sellman with the DAQ’s Air Quality Analysis Branch (AQAB). Ms. Sellman detailed her review in a Memorandum to Ms. Fern Paterson (DAQ – Permitting Section) dated April 26, 2006. The modeling analysis indicated that the maximum impacts were 97% (acetic acid), 67% (p-dichlorobenzene), 59% (24-hour xylene), and 17% (1-hour xylene) of the AALs.

The draft permit specifies limitations and standards to demonstrate that the Permittee is operating in accordance with the emissions analysis included with the Toxics Compliance Demonstration. In particular, the limitations are provided to limit *annual* material throughputs at the storage and distribution operations and to dictate which equipment is authorized to handle the affected materials. The DAQ determined using an *annual* throughput limitation to demonstrate compliance with an *hourly* emission limitation was acceptable in this case because of

the following reasons:

- Storage operations do not lend themselves to short-term throughput limitations.
- Modeled hourly emission rates from the distribution operations are based on maximum hourly emissions from the loading operations (i.e., based on maximum short-term pump rates). In particular, the Permittee uses a maximum tank truck pump rate of 49,000 gallons per hour and a maximum railcar pump rate of 57,000 gallons per hour for xylene and acetic acid. The Permittee uses a maximum railcar and tank truck pump rate of 350 gallons per minute (21,000 gallons per year) for p-dichlorobenzene. Potential hourly emissions at the barge loading operations are based on a maximum pump rate of 101,000 gallons per hour.

**3. 15A NCAC 2Q .0705: EXISTING SOURCES AND SIC CALLS - “Last MACT” Air Toxics Demonstration**

In accordance with 15A NCAC 2Q .0705(b) -“Existing Sources and SIC Calls,” facilities subject to a MACT standard, excluding the MACT for combustion sources, are required to submit a permit application demonstrating compliance with 15A NCAC 2D .1100 by the same deadline that the facility is required to comply with the last MACT applicable to the facility.

Vopak is required to be in compliance with the “last MACT”, 40 CFR 63, Subpart EEEE – Organic Liquid Distribution, upon startup of the new, affected sources proposed in this permit application. The Permittee submitted a “last MACT” air toxics demonstration, as described above, as part of Application No. 6500179.06B on April 6, 2006. A condition has been added to the permit (Section 2.2. D.3; Page 33) to verify that the Permittee has fulfilled the requirements of 15A NCAC 2Q .0705.

**VI. PSD Applicability**

The Vopak Terminal is located in New Hanover County, North Carolina, which is a designated attainment area for all pollutants regulated under the Prevention of Signification Deterioration program pursuant to 15A NCAC 2D .0530. Potential emissions (including federally-enforceable emissions controls) are less than major source thresholds for all regulated PSD pollutants.

**VII. CAM Applicability**

Pursuant to 40 CFR 64.2, the provisions of the Compliance Assurance Monitoring (CAM) rule are applicable to emission units that meet all of the following criteria:

- Criteria #1: The unit is subject to an emission limitation AND uses a control device to achieve compliance with the limit;
- Criteria #2: The unit has pre-control potential emissions that are equal to or greater than 100% of the amount (in tpy) required for a source to be classified as a major source (i.e., 100 tpy of any criteria pollutant or 10 tpy of any HAP); and,
- Criteria #3: The unit is not exempt under 40 CFR 64.2(b).

As shown in the following table, the CAM requirements are not applicable to any emissions sources at the Vopak Terminal in Wilmington, North Carolina:

Control Device	Controlled Emission Source(s)	Applicable Emission Standards	Potential Pre-Control Emissions (tpy)	CAM Applicable? (Yes/No)
CD-FL1 (VOC/HAP Control)	Truck Tank Transfer Racks (ID Nos. ES-TLA1, ES-TLA21 through -TLA25)	VOC (gasoline): 15A NCAC 2D .0524 (40 CFR 60, Subpart XX)	64.84 tpy <sup>1</sup>	No
		VOC (gasoline): 15A NCAC 2D .0927	64.84 tpy <sup>1</sup>	No
		VOC (gasoline): 15A NCAC 2D .0932	64.84 tpy <sup>1</sup>	No
		VOC: 15A NCAC 2D .0948	Control Not Req'd for Compliance <sup>2</sup>	
		HAP: 15A NCAC 2D .1111 (40 CFR 63, Subpart R)	Exempt under 40 CFR 64.2(b) <sup>3</sup>	No
		HAP: 15A NCAC 2D .1111 (40 CFR 63, Subpart EEEE)	Exempt under 40 CFR 64.2(b) <sup>3</sup>	No

Control Device	Controlled Emission Source(s)	Applicable Emission Standards	Potential Pre-Control Emissions (tpy)	CAM Applicable? (Yes/No)
CD-FL1 (VOC/HAP Control)	Railcar Transfer Racks (ID Nos. ES-RLA20 through -RLA25)	VOC: 15A NCAC 2D .0948	<i>Control Not Req'd for Compliance<sup>2</sup></i>	
		HAP: 15A NCAC 2D .1111 (40 CFR 63, Subpart R)	<i>Exempt under 40 CFR 64.2(b)<sup>3</sup></i>	No
		HAP: 15A NCAC 2D .1111 (40 CFR 63, Subpart EEEE)	<i>Exempt under 40 CFR 64.2(b)<sup>3</sup></i>	No
CD-FL2 (VOC/HAP Control)	Railcar Transfer Racks (ID Nos. ES-RLA26 through -RLA35)	VOC: 15A NCAC 2D .0948	<i>Control Not Req'd for Compliance<sup>2</sup></i>	
		HAP: 15A NCAC 2D .1111 (40 CFR 63, Subpart R)	<i>Exempt under 40 CFR 64.2(b)<sup>3</sup></i>	No
		HAP: 15A NCAC 2D .1111 (40 CFR 63, Subpart EEEE)	<i>Exempt under 40 CFR 64.2(b)<sup>3</sup></i>	No
CD-ST04 (VOC/HAP Control)	Fixed Roof Tank (ID No. ES-ST04)	VOC: 15A NCAC 2D .0949	40.18 tpy <sup>4</sup>	No
		HAP: 15A NCAC 2D .1111 (40 CFR 63, Subpart R)	<i>Exempt under 40 CFR 64.2(b)<sup>3</sup></i>	No
		HAP: 15A NCAC 2D .1111 (40 CFR 63, Subpart EEEE)	<i>Exempt under 40 CFR 64.2(b)<sup>3</sup></i>	No

NOTES:

- 1.) 15A NCAC 2D .0524 (NSPS XX) and 15A NCAC 2D .0932 are only applicable to *gasoline loading operations* at the truck tank transfer racks. Pre-control VOC emissions from loading 31.4 MMgal/yr are estimated using AP-42-recommended methodologies, as shown below:

From AP-42, Chapter 5, Section 2, Equation 1:

$$L_L = 12.46 \frac{SMP}{T}$$

Where,

- $L_L$  = 4.13; Loading losses (in lbs/10<sup>3</sup> gal loaded);
- S = 0.6; saturation factor for dedicated gasoline service, Table 5.2-1;
- P = 4.31; true vapor pressure of liquid loaded (psia) (RVP 7 gasoline);
- M = 68; molecular weight of vapors (lb/lb-mole) (RVP 7 gasoline);
- T = 531; temperature of bulk liquid loaded, °R (°F + 460)

Vopak has a practically enforceable gasoline throughput limitation of 31.4 million gallons per year (MMgal/yr). Therefore, estimated pre-control VOC emissions from gasoline loading are estimated to be 64.84 tpy [Calc: (4.13 lbs/10<sup>3</sup> gal) \* (31,400 10<sup>3</sup> gal/yr) / (2,000 lb/ton) = 64.84 tpy]

- 2.) 15A NCAC 2D .0948 requires that loading arms extend into the compartment being loaded (i.e., submerged fill loading booms) when facility-wide volatile organic liquid throughput is greater than 20,000 gallons per day. The booms are integral to the design of the transfer racks. Enclosed flares (control devices) are not required to comply with this standard. Therefore this standard is not affected by the CAM requirements.
- 3.) Emission limitations or standards proposed by the Administrator after November 15, 1990 pursuant to Section 111 or 112 of the Act are exempt from the CAM requirements [40 CFR 64.2(b)(1)(i)]. Subpart R was proposed in February 1994. Subpart EEEE was proposed in April 2002.
- 4.) Vopak is complying with the VOC standard pursuant to 15A NCAC 2D .0949 by using an add-on carbon adsorption control device when Tank 4 (ID No. ES-ST04) stores any organic liquid with a vapor pressure, as stored, of equal to or greater than 1.5 psia. To estimate "worst-case" VOC emissions from the tank, the DAQ assumes the tank is storing aviation gasoline (RVP 7) throughout the year with a practically-enforceable throughput of 31.4 MMgal/yr. Using U.S. EPA's TANKS program (Version 4.090b), maximum annual emissions are estimated to be 40.9 tpy.

**VIII. Other Regulatory Considerations:**

- An application fee of \$834.00 is required for the significant modification (Application No. 6500179.06C) and was received by the DAQ on August 21, 2006. No application fee is required for the permit renewal application (Application No. 6500179.06A).
- The application contained the Reduction and Recycling Form.
- Both permit applications were signed by an authorized official as defined by 15A NCAC 2Q .0304(j).
- A Professional Engineers Seal is required for the significant modification and was received by the DAQ.
- A zoning consistency determination is required for the significant modification and was received by the DAQ.
- Public notice and U.S. EPA review is required for both of the Title V permit renewal and the significant modification.

**IX. Recommendations**

This permit modification application for the Vopak Terminal, located in Wilmington, New Hanover County, North Carolina, has been reviewed by NC DAQ to determine compliance with all procedures and requirements. NC DAQ has determined that this facility is complying or will achieve compliance as specified in the permit with all applicable requirements.

**Issue Permit No. 02567T21**