**COMMONWEALTH OF VIRGINIA**
**Department of Environmental Quality**
**Tidewater Regional Office**

## STATEMENT OF LEGAL AND FACTUAL BASIS

Western Refining Yorktown, Inc.- Western Yorktown Refinery
Grafton, Virginia
Permit No. TRO-60116

Title V of the 1990 Clean Air Act Amendments required each state to develop a permit program to ensure that certain facilities have federal Air Pollution Operating Permits, called Title V Operating Permits. As required by 40 CFR Part 70 and 9 VAC 5 Chapter 80, Western Refining Yorktown, Inc. has applied for a Title V Operating Permit for its Western Yorktown Refinery facility. The Department has reviewed the application and has prepared a draft Title V Operating Permit.

Engineer/Permit Contact:_____ Date: October 4, 2007

Air Permit Manager:_____ Date: October 4, 2007

Regional Director:_____ Date: October 4, 2007

## I. FACILITY INFORMATION

Permittee
Western Refining Yorktown, Inc.
2201 Goodwin Neck Road
Grafton, VA 23692

Facility
Western Yorktown Refinery
2201 Goodwin Neck Road
Grafton, VA 23692

County-Plant Identification Number: 51-199-00004

## II. SOURCE DESCRIPTION

NAICS Code: 324110 – Petroleum Refineries
The facility contains approximately thirteen different process units that are involved in one of the following four processes in converting crude oil into useable products: separation, conversion, treating, and blending. Process units can make a product that is immediately ready for retail, ready for blending into finished products, or requires further processing at another process unit. In addition to gasoline, the refinery manufactures propane, butane, jet fuels, furnace oils, distillate fuels, petroleum coke, and sulfur.

Western Yorktown Refinery operates 24 hours per day, 365 days per year with an employee base of over 200 people. The throughput, or manufacturing capacity, is set by a combination of economic factors and physical equipment capacities. In 2004, the refinery processed an average of 58,000 barrels (2,436,000 gallons) of crude oil per day. The refinery in the past has refined up to 65,000 barrels of crude oil per day, however, the refinery's maximum capacity has not yet been demonstrated.

The facility is a Title V major source of PM-10, $SO_2$, NOx, CO, VOC, and HAPs. This source is located in a marginally non-attainment area for ozone and an attainment area for all other pollutants, and is a PSD major source. The facility was started before 1972, hence many of the combustion equipment and process units do not have NSR permits. Nevertheless, the facility is currently permitted under several Minor NSR permits, and a State Operating Permit as listed below. The initial Title V permit issued on 11/13/01 has never been amended prior to this renewal. Any NSR permits that had been superseded prior to the initial Title V permit issuance are not listed.

| Permit Date and Type | Permitted Process | Comment |
|---|---|---|
| 12/20/77 NSR | Crude Unit | |
| 4/12/90 NSR | Coker Unit- Furnaces | |
| 12/26/90 NSR | Coker Unit- Coke crushers | |
| 2/25/97 NSR | Wastewater Treatment Plant | |
| 8/19/98 NSR | Ether Unit | |
| 4/22/02 NSR | Naphtha Desulfurization Unit/ Ultra Former - Furnaces | Superseded 9/28/90 NSR permit |
| 10/10/02 NSR | Gasoline Truck Loading Rack | |
| 3/13/06 NSR | Ultra-Low Sulfur Diesel Unit and Hydrogen Plant | Superseded 4/15/05 NSR permit and 8/08/05 NSR permit |
| 9/28/06 NSR | Gasoline Desulfurization Process(GDU Process) | |
| 11/01/06 SOP | Fluidized Catalytic Cracking Unit and Sulfur Recovery Units. | Superseded 8/22/02 SOP, pursuant to the Consent Decree entered in *United States et al. v. BP Exploration and Oil Co. et al.*, Civil No. 2:96 CV 095 RL (Northern District of Indiana, Lozano J., August 29, 2001) discussed below. |

**III. COMPLIANCE STATUS**

The last full compliance evaluation of this facility, including a site visit, was conducted on September 14, 2006. In addition, all reports and other data required by permit conditions or regulations, which were submitted to DEQ, were evaluated for compliance. Based on these compliance evaluations, the facility has not been found to be in violation of any state or federal applicable requirements at this time. However, there is the matter of a Consent Decree entered in *United States et al. v. BP Exploration and Oil Co. et al.*, Civil No. 2:96 CV 095 RL (Northern District of Indiana, Lozano J., August 29, 2001) between the US EPA and BP Amoco, the owner/operator of the facility at the time, that needs to be discussed below.

An SOP dated 8/22/02 was issued at the request of the facility to incorporate specific requirements from the Consent Decree on several process heaters and boilers, the Sulfur Recovery Unit (SRU), and the Fluidized Catalytic Cracking Unit (FCCU). For examples, NSPS Subpart J was specified as applicable to the SRU even though it would not have applied based on the SRU construction date. Following the SOP issuance, a new SRU-2 was proposed with a tail gas unit as control (TGU). The SRU in the 8/22/02 SOP becomes SRU-1, and shall be used as a backup for SRU-2. All SRU-1 and 2 and TGU were permitted in the 4/15/05 NSR permit which was amended on 8/08/05 and then on 3/13/06. On the other hand, the FCCU have not

been addressed in another permit beside the SOP. Also, the Consent Decree does not specify NSPS Subpart J. Standards of Performance for Petroleum Refineries for the FCCU; hence, the latter is not subject to the NSPS by virtue of its construction date. However, it is subject to the new MACT Subpart UUU which addresses CO and PM, but not $SO_2$. As a result, the latter was the subject of a demonstration study required by the Consent Decree, and the $SO_2$ emission limits for the FCCU were established by EPA on February 14, 2006. The SOP was amended on 11/01/06 to incorporate those limits and ensure the federal enforceability of all the requirements once the Consent Decree is terminated.

## IV. EMISSION UNIT AND CONTROL DEVICE IDENTIFICATION

The emissions units at this facility consist of the following:

The refinery has several process units that contain emission units such as fuel burning equipment, loading racks and oil/water separators, tanks, and other equipment that emit pollutants via stacks and vents (some with air pollution control device), as well as fugitive emissions. The following key defines the prefix for the equipment identification:

| | |
|---|---|
| P | Process unit that may have F, R, T, S and A as subparts. |
| F | Fuel burning equipment |
| R | Loading rack and oil/water separators |
| T | Tanks |
| S | Stack/vent |
| A | Air pollution control device |

| Emission Unit ID or Process Unit ID | Stack ID | Emission Unit Description | Size/Rated Capacity* | Pollution Control Device (PCD) Description | PCD ID | Pollutant Controlled | Applicable Permit Date |
|---|---|---|---|---|---|---|---|
| **Fuel Burning Equipment** | | | | | | | |
| F1 | S001 | Utility Boiler B-1701A, Babcock & Wilcox (before 1972) | 138 MMBTU/hr, burning refinery fuel gas (NSPS Subpart J) (May remove those) | N/A | N/A | N/A | 11/01/06 SOP |
| F2 | S002 | Utility Boiler B-1701B, Babcock & Wilcox (before 1972) | 138 MMBTU/hr, burning refinery fuel gas (NSPS Subpart J) | N/A | N/A | N/A | 11/01/06 SOP |
| F3 | S003 | Coker Furnace BA-101 (1990) | 97 MMBTU/hr, burning refinery fuel gas (NSPS Subpart J) | N/A | N/A | N/A | 4/12/90 NSR permit and 11/01/06 SOP |

| Emission Unit ID or Process Unit ID | Stack ID | Emission Unit Description | Size/Rated Capacity* | Pollution Control Device (PCD) Description | PCD ID | Pollutant Controlled | Applicable Permit Date |
|---|---|---|---|---|---|---|---|
| F4 | S004 | Crude Atmospheric/CO Furnace B-101 (1978) | 311 MMBTU/hr, burning refinery fuel gas (NSPS Subpart J) | N/A | N/A | N/A | 11/01/06 SOP |
| F5 | S004 | Crude Vacuum Furnace B-102 (1978) | 79 MMBTU/hr, burning refinery fuel gas (NSPS Subpart J) | N/A | N/A | N/A | 11/01/06 SOP |
| F6 | S005 | Ultra Furnace F-101 (before 1972, modified 2002) | 64 MMBTU/hr, burning refinery fuel gas (NSPS Subpart J) | N/A | N/A | N/A | 4/22/02 NSR permit and 11/01/06 SOP |
| F8 | S005 | Ultra Furnace F-201 (before 1972) | 28 MMBTU/hr, burning refinery fuel gas (NSPS Subpart J) | N/A | N/A | N/A | 11/01/06 SOP |
| F9 | S005 | Ultra Furnace F-301 (before 1972) | 38 MMBTU/hr, burning refinery fuel gas(NSPS Subpart J) | N/A | N/A | N/A | 11/01/06 SOP |
| F10 | S005 | Ultra Furnace F-302 A & B(1990) | 79 MMBTU/hr each, burning refinery fuel gas (NSPS Subpart J) | N/A | N/A | N/A | 9/28/90 NSR permit which is superseded by 4/22/02 NSR permit and 11/01/06 SOP |
| F11 | S005 | Ultra Furnace F-303 (before 1972) | 50 MMBTU/hr, burning refinery fuel gas (NSPS Subpart J) | N/A | N/A | N/A | 11/01/06 SOP |
| F12 | S005 | Ultra Furnace F-304 (before 1972) | 35 MMBTU/hr, burning refinery fuel gas (NSPS Subpart J) | N/A | N/A | N/A | 11/01/06 SOP |

| Emission Unit ID or Process Unit ID | Stack ID | Emission Unit Description | Size/Rated Capacity* | Pollution Control Device (PCD) Description | PCD ID | Pollutant Controlled | Applicable Permit Date |
|---|---|---|---|---|---|---|---|
| F13 | S005 | Ultra Furnace F-305/6 (1990) | 20 MMBTU/hr, burning refinery fuel gas (NSPS Subpart J) | N/A | N/A | N/A | 9/28/90 NSR permit which is superseded by 4/22/02 NSR permit and 11/01/06 SOP |
| F14 | S005 | Ultra Furnace F-307 (before 1972) | 13 MMBTU/hr, burning refinery fuel gas (NSPS Subpart J) | N/A | N/A | N/A | 11/01/06 SOP |
| F15 | S006 | ULSD process heater F-561 (2006) | 11.4 MMBTU/hr, burning natural gas/refinery fuel gas (NSPS Subpart J and MACT Subpart DDDDD) | N/A | N/A | N/A | 3/16/06 NSR permit |
| F16 | S006 | ULSD process heater F-562 (2006) | 7.1 MMBTU/hr, burning natural gas/refinery fuel gas (NSPS Subpart J and MACT Subpart DDDDD) | N/A | N/A | N/A | 3/16/06 NSR permit |
| F17 | S006 | ULSD process heater F-563 (2006) | 18.6 MMBTU/hr, burning natural gas/refinery fuel gas (NSPS Subpart J and MACT Subpart DDDDD) | N/A | N/A | N/A | 3/16/06 NSR permit |
| F18 | S007 | $H_2$ Plant reaction furnace H-101A (2006) | 64.6 MMBTU/hr, burning natural gas/refinery fuel gas (NSPS Subpart J and MACT Subpart DDDDD) | N/A | N/A | N/A | 3/16/06 NSR permit |

| Emission Unit ID or Process Unit ID | Stack ID | Emission Unit Description | Size/Rated Capacity* | Pollution Control Device (PCD) Description | PCD ID | Pollutant Controlled | Applicable Permit Date |
|---|---|---|---|---|---|---|---|
| F19 | S007 | $H_2$ Plant reaction furnace H-101B (2006) | 64.6 MMBTU/hr, burning natural gas/refinery fuel gas (NSPS Subpart J and MACT Subpart DDDDD) | N/A | N/A | N/A | 3/16/06 NSR permit |
| F20 | S020 | GDU Process heater (F-675, 2007)- gasoline charge heater. | 37.7 MMBTU/hr, burning natural gas/ refinery fuel gas-fired (NSPS Subpart J and MACT Subpart DDDDD) | N/A | N/A | N/A | 9/28/06 NSR permit |
| F21 | S021 | GDU Process heater (F-676, 2007)- gasoline stabilizer reboiler, 2007 | 51.2 MMBTU/hr, burning natural gas/ refinery fuel gas (NSPS Subpart J and MACT Subpart DDDDD) | N/A | N/A | N/A | 9/28/06 NSR permit |
| **Process Units** | | | | | | | |
| P1 | S004 | Crude Unit (before 1972)- Crude distillation unit that separates crude oil by boiling fractions. Includes distillation towers, pressure vessels, heat exchangers, pumps, valves, flanges, etc. | 3.2 MB/hr | N/A | N/A | N/A | 12/20/77 NSR permit for two furnaces (B-101 and B-102) now covered in 11/01/06 SOP, and 8/19/98 NSR permit for two electric compressors (J-135 A and J-135B) |

| Emission Unit ID or Process Unit ID | Stack ID | Emission Unit Description | Size/Rated Capacity* | Pollution Control Device (PCD) Description | PCD ID | Pollutant Controlled | Applicable Permit Date |
|---|---|---|---|---|---|---|---|
| P2 | S004 | Fluidized Catalytic Cracking Unit (FCCU, before 1972)- Upgrades high boiling range oil into gasoline and distillate blending components. Includes distillation towers, furnaces, regenerator, pumps, valves, flanges, etc. | 1.5 MB/hr | Hamon Research Cottrell Electrostatic Precipitator | A1 | PM | 11/01/06 SOP |
| P3 | N/A | Polymer Unit (before 1972)- The polymerization unit upgrades gaseous hydrocarbons into high octane, lower vapor pressure gasoline blending components, and the oxygenation unit produces oxygenated ethers for gasoline blending from alcohols and gaseous hydrocarbons. Includes distillation towers, pressure vessels, heat exchangers, pumps, valves, flanges, etc. | 0.31 MB/hr | N/A | N/A | N/A | N/A |
| P4 | N/A | Ether Unit (1986)- Converts hydrocarbons and methanol to MTBE. Includes distillation towers, pressure vessels, heat exchangers, pumps, valves, flanges, etc. | 1.2 MB/hr | N/A | N/A | N/A | 8/19/98 NSR permit |

| Emission Unit ID or Process Unit ID | Stack ID | Emission Unit Description | Size/Rated Capacity* | Pollution Control Device (PCD) Description | PCD ID | Pollutant Controlled | Applicable Permit Date |
|---|---|---|---|---|---|---|---|
| P5 | N/A | Coker (before 1972)- Converts heavy hydrocarbons, sludge, and resins into petroleum coke and lighter gasoline and distillate boiling range hydrocarbons. Includes distillation towers, pressure vessels, heat exchangers, pumps, valves, flanges, etc. | 1.1 MB/hr | N/A | N/A | N/A | 4/12/90 NSR permit for coker furnace, and 12/26/90 NSR permit for coke crusher |
| P6 | S008 | Naphtha Desulfurization Unit and Ultra Former (NDU/UF, before 1972) that catalytically upgrades low octane naphtha to high octane gasoline blending components. Includes distillation towers, pressure vessels, heat exchangers, pumps, valves, flanges, etc. | 0.6 MB/hr | Ceilcote wet gas scrubber | A2 | HCl | 9/28/90 NSR permit which is superseded by 4/22/02 NSR permit |
| P7 | N/A | Distillate Desulfurizing Unit (DDU, before 1972)- Removes sulfur from gas oil, distillate, and heavy hydrocarbons. Includes distillation towers, pressure vessels, heat exchangers, pumps, valves, flanges, etc. | 1.1 MB/hr | N/A | N/A | N/A | 9/28/90 NSR permit which is superseded by 4/22/02 NSR permit |
| P8 | N/A | Ultra-Low Sulfur Diesel Unit (ULSD, 2006)- Removes sulfur from diesel. Includes distillation towers, pressure vessels, heat exchangers, pumps, valves, flanges, etc. | 0.5 MB/hr | N/A | N/A | N/A | 3/13/06 NSR permit |

| Emission Unit ID or Process Unit ID | Stack ID | Emission Unit Description | Size/Rated Capacity* | Pollution Control Device (PCD) Description | PCD ID | Pollutant Controlled | Applicable Permit Date |
|---|---|---|---|---|---|---|---|
| P9 | N/A | Hydrogen plant (H2, 2006)- Generates hydrogen from fuel gas and natural gas. Includes distillation towers, pressure vessels, heat exchangers, pumps, valves, flanges, etc. | 658 MSCFH | N/A | N/A | N/A | 3/13/06 NSR permit |
| P10 | N/A | Utilities- Refinery boilers that generate steam for use in the refinery. Includes boilers, pressure vessels, heat exchangers, pumps, valves, flanges, etc. | N/A | N/A | N/A | N/A | N/A |
| P11 | S009 | Sulfur Recovery Units (SRU-1, pre-1972, and SRU-2, 2006)- Remove sulfur from the refinery gas stream and fuel gas. Includes contact towers, pressure vessels, heat exchangers, pumps, valves, flanges, etc. The associated Sour Water Stripping System is rated at 15,000 gal/hour through tank T-700 | 2.3 LT/hr | Tail Gas Unit (TGU, 2006) | A3 | $SO_2$, TRS | 3/13/06 NSR permit |
| P12 | S010 | Refinery flare (Flare 1, before 1972)- For pollution control and processing of excess refinery fuel gas, supporting process units P1-P7 and P10-P11. | N/A | N/A | N/A | N/A | N/A |
| P13 | S011 | Refinery flare (Flare 2, 2006)- For pollution control, supporting new process units P8, P9, and P18. | N/A | N/A | N/A | N/A | 3/13/06 NSR permit |

| Emission Unit ID or Process Unit ID | Stack ID | Emission Unit Description | Size/Rated Capacity* | Pollution Control Device (PCD) Description | PCD ID | Pollutant Controlled | Applicable Permit Date |
|---|---|---|---|---|---|---|---|
| P14 | S012 | Auxiliary flare (before 1972)- For pollution control and processing of excess refinery fuel gas when Flare 1 or Flare 2 is out of service. | N/A | N/A | N/A | N/A | N/A |
| P15 | N/A | Storage tanks (various construction dates)- Store products and/or blend to make final products. Includes heat exchangers, pumps, valves, flanges, etc. | Various | N/A | N/A | N/A | A few tanks are permitted in NSR for process units:<br>Wastewater treatment tanks in 2/25/97 NSR; tanks 700, 503 and 504 in 3/13/06 NSR; tanks 623 and 624 in 9/28/06 NSR. |
| P16 | S018 | Wastewater Treatment Plant (WWTP, before 1972, modified 1997)- Recovers hydrocarbons and wastewater. Includes tanks, oil/water separators (R5 through R9), sewers (ISBL and OSBL), sumps (WWTP sump L-1650 and Exchange Pad Sump L-1651). | N/A | Carbon canisters | A12 | VOC, benzene | 2/25/1997 NSR permit |
| P18 | S019 | GDU process unit (2007)- Gasoline desulfurization process with reactor, separator, stabilizer, regenerator, reducer, other miscellaneous process equipment, and multiple valves, pumps, connectors, flanges, process vents, etc. | 1.25 MB/hr | Regenerator Caustic Scrubber | A13 | $SO_2$ | 9/28/06 NSR permit |

| Emission Unit ID or Process Unit ID | Stack ID | Emission Unit Description | Size/Rated Capacity* | Pollution Control Device (PCD) Description | PCD ID | Pollutant Controlled | Applicable Permit Date |
|---|---|---|---|---|---|---|---|
| **Loading Racks and Oil/Water Separators** | | | | | | | |
| R1 | S013 | Gasoline truck loading rack, modified 2002. | 85,600 gal/hr | John Zink Vapor Combustion Unit (VCU) | A7 | VOC, benzene | 10/10/02 NSR permit |
| R2 | N/A | Petroleum marine loading | 420,000 gal/hr | N/A | N/A | N/A | N/A |
| R3 | N/A | LPG/Butane truck loading rack | 10,000 gal/hr | N/A | N/A | N/A | N/A |
| R4 | N/A | LPG/Butane railcar loading rack | 50,000 gal/hr | N/A | N/A | N/A | N/A |
| R5 | S014 | Oil/Water Separators- Recover hydrocarbons from DDU, NDU, UF, Utilities, and ULSD. | 60,000 gal/hr | Carbon canister | A8 | VOC, benzene | 2/25/97 NSR permit |
| R6 | S015 | Oil/Water Separators- Recover hydrocarbons from Crude Unit and FCCU. | 60,000 gal/hr | Carbon Canister | A9 | VOC, benzene | 2/25/97 NSR permit |
| R7 | S016 | Oil/Water Separators- Recover hydrocarbons from Coker. | 60,000 gal/hr | Carbon canister | A10 | VOC, benzene | 2/25/97 NSR permit |
| R8 | S017 | Oil/Water Separators- Recover hydrocarbons from WWTP CPI separators, and induced gas flotation (IGF) units. | 120,000 gal/hr | Carbon Canister | A11 | VOC, benzene | 2/25/97 NSR permit |
| R9 | S017 | Oil/Water Separators- Recover hydrocarbons from WWTP IGF units. | 120,000 gal/hr | Carbon canister | A11 | VOC, benzene | 2/25/97 NSR permit |

*The Size/Rated capacity is provided for informational purposes only, and is not an applicable requirement.
MM= million; M= thousand; MB= 1000 barrels; LT= long ton

## V. EMISSIONS INVENTORY

A copy of the 2005 annual emission update is attached. Emissions from the non-VOC non-PM HAP perchloroethylene are in the report. Additional information on VOC-HAP emissions is provided in the Title V permit application. Emissions are summarized in the following tables.

2005 Actual Emissions

| Total 2005 Criteria Pollutant Emissions in Tons/Year | | | | | |
|---|---|---|---|---|---|
| Pb | VOC | CO | $SO_2$ | $PM_{10}$ | $NO_x$ |
| 0.012 | 1,088.2 | 23,370.9 | 1,830.0 | 967.4 | 592.2 |

2005 Facility Hazardous Air Pollutant Emissions

| Pollutant | 2005 Hazardous Air Pollutant Emissions in Tons/Yr |
|---|---|
| Perchloroethylene (non-VOC non-PM) | 0.006 |
| 1,3-Butadiene | 0.01 |
| 2,2,4-trimethylpentane | 0.07 |
| Benzene | 2.1 |
| Biphenyl | 0.02 |
| Cumene | 0.04 |
| Ethylbenzene | 0.5 |
| Methanol | 0.2 |
| MTBE | 23 |
| n-Hexane | 8.8 |
| Naphthalene | 0.2 |
| Toluene | 4.1 |
| Xylene | 3.1 |
| Carbon Disulfide | 4.2 |
| Carbonyl Sulfide | 4.4 |
| Nickel | 0.53 |
| Vanadium | 2.0 |

## VI. EMISSION UNIT APPLICABLE REQUIREMENTS

Emission units at the facility (Table in IV. Emission Unit and Control Device Identification) are addressed in various sections of the Title V permit as described below.

All fuel burning equipment from different process units are pulled from different NSR permits and addressed under the Fuel Burning Equipment Requirements section. Note that the flares (Flare 1, Flare 2, and Auxiliary flare) are considered process units (P12, P13, and P14, respectively). Hence, they are addressed in a separate section even though they also burn fuel.

Beside fuel burning equipment, process units (identified as P1 through P16 and 18) also have subparts such as tanks, loading racks and oil-water separators (R), etc. Those subparts are addressed with the process units when they are permitted in the same NSR permit. For example, the sour water tank T-700 is addressed with the Sulfur Recovery Units as permitted in 3/13/06 NSR permit. Otherwise, tanks are addressed under process unit P15 which covers all tanks at the facility. Several oil/water separators are permitted in the Wastewater Treatment Plant permit dated 2/25/97; hence, they are addressed in the same WWTP process section (P16). On the other hand, the gasoline truck loading rack (R1) has its own NSR dated 10/10/02, hence, it is covered under its own section.

More than one process units may be addressed together in one section when they are permitted in the same NSR permit, for example, the crude unit (P1) and the ether unit (P4).

Applicable federal requirements from NSPS (40 CFR 60), NESHAP (40 CFR 61) and MACT (40 CFR 63), if not already in NSR or SOP permits, are added to the appropriate sections covering the affected equipment or process.

Requirements on Miscellaneous Process Vents and Equipment Leaks, mainly from MACT Subpart CC- National Emission Standards for Hazardous Air Pollutants from Petroleum Refineries are addressed as facility-wide conditions in separate sections. Facility may also have facility-wide site remediation activities subject to MACT Subpart GGGGG which has compliance date of October 9, 2006 for existing source.

### A. Fuel Burning Equipment Requirements

#### 1. Limitations

The following Virginia Administrative Codes that have specific emission requirements have been determined to be applicable to pre-1972 units B-1701A, B-1701B, B-101, B-102, F-201, F-301, F-303, F-304, and F-307:

| | |
|---|---|
| 9 VAC 5 Chapter 40 | Existing Stationary Sources |
| 9 VAC 5 Chapter 40 | Article 8: Emission Standards for Fuel Burning Equipment<br>9 VAC 5-40-900. Standard for particulate matter |

9 VAC 5-40-930. Standard for Sulfur Dioxide
9 VAC 5-40-940.B. Standard for Visible Emissions

As the facility is now allowed to burn natural gas and refinery fuel gas only, and all fuel combustion equipment is considered subject to NSPS Subpart J- Standards of Performance for Petroleum Refineries (11/01/06 SOP Conditions 4 and 5, respectively), $SO_2$ emissions is controlled by limiting the $H_2S$ concentration in refinery gas to 0.10 grains/dscf and 160 ppmvd.

Other units are subject to NSR permitting for construction or modification. Note that furnace F-101 (ID # F6) is allowed to fire at a maximum rate of 44 MMBTU/hr even though its rated capacity is 64 MMBTU/hr pursuant to Condition 6 of 4/22/02 NSR permit.

Beside NSPS Subpart J- Standards of Performance for Petroleum Refineries, boiler MACT 40 CFR 63 Subpart DDDDD- National Emission Standards for Hazardous Air Pollutants for Industrial, Commercial, and Institutional Boilers and Process Heaters also applies to F-561, F-562, F-563, H-101A, H-101B, F-675, and F-676.

The permitted visible emission limits are all more stringent than those in the following applicable Virginia Administrative Codes:

| | |
|---|---|
| 9 VAC 5 Chapter 50 | New and Modified Stationary Sources |
| 9 VAC 5 Chapter 50 | Article 1: Visible Emissions and Fugitive Dust/Emissions |

Several limitations that are repeated through various NSR and SOP permits are consolidated into common conditions in the Title V permit. For example, see the fuel limitation (Condition III.A.1), the $H_2S$ concentration limit (Condition III.A.7), and the visible emission limit (Condition III.A.8). It was made sure that all relevant NSR and SOP conditions are cited under each common condition.

**2. Monitoring**

The monitoring and recordkeeping requirements in the NSR permits have been modified to meet Part 70 requirements.

Units B-101 and B-102 have COMS for continuous monitoring of opacity as initially required by the Consent Agreement with EPA.

Periodic monitoring of other units to demonstrate continuing compliance with visible emission limits is separated into three groups depending on the applicable opacity limits and its use:

- Units with 5% opacity limit (BA-101, F-101, F-302 A & B, F-305/6, F-675 and F-676)
- Units with 10% opacity limit except for 6 minutes in an hour with 20% opacity limit (F-561, F-562, F-563, H-101A and H-101B) and existing units (other than refinery boilers B-1701A and B-1701B) with 20% opacity limit except for 6 minutes in an hour with 60% opacity limit (F-201, F-301, F-303, F-304, F-307)
- Refinery boilers (B-1701A and B-1701B)

The first two groups are monitored monthly and the last group is quarterly. All use a tiered approach to determine compliance but the procedure for the first group is different because at 5% opacity limit, any visible emissions constitute non-compliance and trigger corrective action.

Note that the 9 VAC 5 Chapter 50 opacity limits (20% with 30% exception for 6-minutes in an hour) were not given to any of the new or modified units; more stringent limits are required instead.

In addition to operation logbooks, equivalent records are permitted for recording visible emission evaluations and related information as requested by the facility (in 6/08/07 comments on draft permit) because some data are stored via electronic means or other files.

### 3. Recordkeeping

The permit compiles all requirements for maintaining records of all monitoring and testing to demonstrate compliance with the permits.

### 4. Testing

Stack tests for CO are required for boilers F-675 and F-676 pursuant to MACT DDDDD as specified in 9/28/06 NSR permit. The same are applicable to boilers F-561, F-562, F-563, H-101A, and H-101B even though the testing was not specified in the 3/23/06 NSR permit to demonstrate compliance with the CO emission limit of 400 ppmvd at 3% $O_2$. Hence, the tests are also required for those units.

### 5. Notification and Reporting

The new process heaters in the new GDU (P18) process unit are to submit notifications of construction date, start-up date, performance test, and compliance status report as required by 9/28/06 NSR permit.

Semi-annual reports on the process heaters (MACT Subpart DDDDD), $H_2S$ continuous monitoring system and $H_2S$ analysis, excess emission, COMS, and opacity are required.

## B. Fluidized Catalytic Cracking Unit Requirements (FCCU, Process Unit ID# P2)

### 1. Limitations

The FCCU is subject to MACT Subpart UUU- National Emission Standards for Hazardous Air Pollutants for Petroleum Refineries: Catalytic Cracking Units, Catalytic Reforming Units, and Sulfur Recovery Units; most applicable requirements have been addressed in the 11/01/06 SOP together with those derived from the consent decree. Note that the FCCU regenerator vents through the Crude Furnace B-101 to the same combined stack. The furnace, as addressed under fuel burning equipment, has a COMS for opacity monitoring of the combined stack. Opacity is the monitoring parameter for PM for determination of continuous compliance to the

PM emission limit of 1 lb per 1000 lbs of coke burn-off by the FCCU as required by the consent decree. The PM emission limit is the same as the PM limit option in the MACT for compliance with metal HAP standards (option 2 of 40 CFR 63.1564.a(1)). However, the facility is currently complying with the Ni limit option of the metal HAP standards of the MACT (0.029 lbs/hour, option 3 of 40 CFR 63.1564.a(1)). All applicable limitations are listed except the existing source visible emission limits of 9 VAC 5-40-940.B because the opacity operating limits are established by the COMS performance evaluation and the initial performance test to determine compliance with the emission limits.

**2. Monitoring**

PM emissions from FCCU, limited to 1 lbs/1000 lbs coke burned, are controlled by electrostatic precipitator (ESP). Pre-controlled PM emissions are greater than major source threshold as determined by the facility. Therefore, the FCCU is subject to Compliance Assurance Monitoring (CAM) requirements of 40 CFR Part 64. CAM plan was submitted by the facility on 5/12/06. Flue gas leaving the ESP is conveyed through the Crude Unit furnace B-101 to aid flow and provide heat before it is emitted with the furnace flue gas in a combined stack. PM emissions at the stack mainly represent FCCU emissions as the Crude Unit furnaces are fired exclusively by refinery fuel gas which results in negligible PM emissions. Therefore, the opacity from the stack, being continuously monitored by a COMS, is suitable as the performance indicator for the PM emissions from FCCU. Applicable CAM conditions are included in the permit.

**3. Recordkeeping, and Testing**

Records required in Condition 24 of the 11/01/06 SOP are expanded to ensure compliance with CAM and MACT Subpart UUU.

**4. Notification and Reporting**

Additional reporting requirements beyond Condition 23 of 11/01/06 SOP are added to ensure compliance with CAM and MACT Subpart UUU.

## C. Crude Unit (Process Unit ID# P1) Compressors and Ether Unit (Process Unit ID# P4)

The Ether Unit (P4) was permitted for construction and operation by the 8/19/98 NSR permit. The compressors J-135 A and J-135 B from the existing Crude Unit (P1) were also permitted by the same permit. Therefore, they are addressed together, all subject to NSPS Subpart GGG- Standards of Performance for Equipment Leaks of VOC in Petroleum Refineries which references NSPS Subpart VV- Standards of Performance for Equipment Leaks of VOC in the Synthetic Organic Chemicals Manufacturing Industry. Applicable requirements are covered in 8/19/98 NSR permit and carried over except for general conditions. The following changes are made:

- Condition 8 of the 8/19/98 permit is split into two parts, one for limitation and one for monitoring

- Records of seal design for the compressors are added to recordkeeping requirements to demonstrate compliance with the emission control requirements for the units.
- Other minor changes to monitoring, recordkeeping and reporting to meet Part 70 requirements.

## D. Coker (Process Unit ID# P5)

The coke crusher was permitted by the 12/26/90 NSR permit. Emission control by wet suppression was reiterated to clarify compliance determination. Monitoring requirements are added to meet Part 70 requirements. Recordkeeping and reporting requirements are modified and added, respectively, for the same purpose.

## E. Naphtha Desulfurization Unit and Ultraformer Unit (NDU/UF, Process Unit ID# P6)

The depentanizer distillation column was added to the Ultraformer Unit as permitted by the 4/22/02 NSR permit. The latter is primarily a permit for construction and modification of furnaces which are addressed under Fuel Burning Equipment Requirements section; it contains only one condition (Condition 5) for the depentanizer distillation column by referencing the applicability of NSPS Subpart GGG- Standards of Performance for Equipment Leaks for VOC in Petroleum Industries.

Beginning 4/11/2005, the Ultraformer has to comply with MACT Subpart UUU- National Emission Standards for Hazardous Air Pollutants for Petroleum Refineries: Catalytic Cracking Units, Catalytic Reforming Units, and Sulfur Recovery Units.

Therefore, this section of the Title V permit provides details of the applicable requirements of NSPS Subpart GGG to the depentanizer and of MACT Subpart UUU to the Ultraformer. Compliance options to the MACT have been provided by the facility.

### 1. Limitations

Components of the depentanizer distillation column are subject to the equipment leak emission control requirements by NSPS Subpart GGG.

The Ultraformer regenerator is subject to requirements of MACT Subpart UUU on the flare, HCl emission standards, and bypass lines.

The flare meeting the requirement of 40 CFR 63.11(b) is addressed in details under the section on Refinery Flares (Process Unit ID# 12 and 13).

HCl emission limit of 10 ppmvd corrected to 3% excess oxygen, operating limits for the scrubber, and work practice standards for the bypass lines are included.

**2. Monitoring, Testing, and Recordkeeping**

Applicable monitoring requirements are listed:

- Leak detection and repair requirements of NSPS Subpart VV as referenced by NSPS Subpart GGG
- Continuous parameter monitoring for the Ultraformer regenerator, and
- Visible inspection of the bypass line.

Performance test as required by MACT UUU, and recordkeeping of monitoring and testing are addressed.

**3. Reporting**

Semiannual report of equipment leak and compliance report for the Ultraformer are required.

## F. Ultra Low Sulfur Diesel and Hydrogen Plant (Process Unit ID# P8 and P9, respectively)

The two processes are permitted for construction and operation by Part I of the NSR permit dated 3/13/06. However, the majority of the equipment is fuel burning equipment which is addressed under Fuel Burning Equipment Requirements section. Remaining are two diesel storage tanks (T-503 and T-504), miscellaneous process equipment in VOC and HAP service, a flare, and a wastewater management system.

**1. Limitations**

The diesel storage tanks T-503 and T-504 are not subject to NSPS Subpart Kb because of the low vapor pressure. However, they are subject to a throughput limit.

Equipment in VOC service is subject to NSPS Subpart GGG- Standards of Performance for Equipment Leaks of VOC in Petroleum Refineries that references NSPS Subpart VV- Standards of Performance for Equipment Leaks of VOC in the Synthetic Organic Chemical Manufacturing Industry.

Group 1 storage vessels in HAP service are subject to MACT Subpart CC- National Emission Standards for Hazardous Air Pollutants from Petroleum Refineries.

Group 1 miscellaneous process vents in HAP service are controlled by a flare meeting the requirement of 40 CFR 63.11(b). The flare is addressed under Refinery Flares section.

NSPS Subpart QQQ- Standards of Performance for VOC emissions from Petroleum Refinery Wastewater Systems, NESHAP 40 CFR 61.Subpart FF- National Emission Standards for Benzene Waste Operation, and MACT 40 CFR 63 Subpart CC- National Emission Standards for Hazardous Air Pollutants from Petroleum Refineries are all applicable depending on the waste stream content. The facility wastewater system (Process Unit ID# P16) is addressed in

more details in a separate section.

The Requirements by Reference condition cites all above applicable standards. Note that the reference to NSPS Subpart J and MACT DDDDD as in Condition 19 of the 3/13/06 NSR permit has been removed because the fuel burning units are not addressed in this section.

**2. Monitoring, Recordkeeping, and Reporting**

Applicable Conditions from Part I of the 3/13/06 NSR permit are included.

## G. Sulfur Recovery Units (SRU-1 and SRU-2, Process Unit ID# P11) and Sour Water Stripping System with Tank T-700

The units are addressed in Part II of the NSR permit dated 3/13/06. The new SRU-2 is permitted for construction and operation and the existing SRU-1 becomes a back-up unit. $SO_2$ emissions from the SRUs are controlled by the tail gas unit (TGU). The associated sour water stripping system upgrade is also permitted here. The SRUs are also addressed in the SOP dated 11/01/06 for the requirements from the Consent Decree

**1. Limitations**

The SRUs are subject to NSPS Subpart J- Standards of Performance for Petroleum Refineries, and MACT Subpart UUU- National Emission Standards for Hazardous Air Pollutants for Petroleum Refineries: Catalytic Cracking Units, Catalytic Reforming Units, and Sulfur Recovery Units. As stated in the Requirements-by-Reference Condition 32 of 3/13/06 NSR permit, SRU-2 is subject to NSPS Subpart J due to its construction date while SRU-1 is subject to NSPS Subpart J in accordance with the Consent Decree. This explanation is deemed not necessary to be carried over to the Requirements by Reference Condition IX.A.9 in the Title V permit which is based on both the 3/13/06 NSR permit and the 11/01/06 SOP.

The SRUs are also addressed in the SOP dated 11/01/06 concerning the requirements of an Optimization Study, and Maintenance and Operation Plan from the Consent Decree.

Note that tank T-700, part of the sour water stripping system, is not subject to NSPS Subpart Kb due to its construction date. It has VOC emission limit and throughput limit in this permit.

Condition 25 of 3/13/06 NSR permit is split into two parts, one is a limitation and the other is a monitoring requirement.

Condition 27 is streamlined because it is the same as already addressed under Requirements by Reference condition.

### 2. Monitoring

$SO_2$ CEMS is required for the SRUs common stack via the TGU as required by Condition 25 of 3/13/06 NSR permit. Periodic visible emissions monitoring of the TGU stack is added to demonstrate compliance with the opacity limits in the 3/13/06 NSR permit. A tiered approach is used.

### 3. Recordkeeping, Testing, and Reporting

Applicable Conditions from Part II of the 3/13/06 NSR permit and 11/01/06 SOP are included.

## H. Gasoline Desulfurization Process (GDU, Process Unit ID# P18)

This new process is permitted for construction and operation by the 9/28/06 NSR permit. Note that the process name has been changed from SZorb ™ as in the NSR permit to GDU as requested by the facility (in 6/08/07 comments on draft permit). Conditions related to the process heaters (F-675 and F-676) associated with this process are placed in the Fuel Burning Equipment Requirements section.

### 1. Limitations

The SZorb ™ process (GDU) is not subject to Subpart UUU- National Emission Standards for Hazardous Air Pollutants for Petroleum Refineries: Catalytic Cracking Units, Catalytic Reforming Units, and Sulfur Recovery Units because it does not meet the definition of those regulated units. It is subject to MACT Subpart CC- National Emission Standards for Hazardous Air Pollutants from Petroleum Refineries, as well as other regulations for its associated equipment. The tanks are subject to NSPS Subpart Kb, the flare is subject to NSPS Subpart J- Standards of Performance for Petroleum Refineries, equipment leaks are subject to NSPS Subpart GGG- Standards of Performance for Equipment Leaks of VOC in Petroleum Refineries, the wastewater treatment is subject to NSPS Subpart QQQ-Standards of Performance for VOC Emissions from Petroleum Refinery Wastewater system, and NESHAP Subpart FF-National Emission Standards for Benzene Waste Operations. MACT Subpart CC addresses the overlapping issue at 40 CFR 63.640 and can be the sole regulation in some cases depending on the HAP concentration. The flare and the wastewater treatment plant have been permitted by other NSR permits (3/13/06 permit and 2/25/97 permit, respectively) which are discussed in other sections. Requirements by reference are utilized as in the 9/28/06 NSR permit.

$SO_2$ emissions from the sorbent regenerator are controlled by a caustic scrubber to meet BACT. This emission unit is also subject to CAM for $SO_2$ because pre-controlled emissions are >100 tons/year and there is no applicable $SO_2$ standards from other federal regulations.

### 2. Monitoring

$SO_2$ CEMS with flow monitor are required in the NSR permit dated 9/28/06 Conditions 31 and 32 to monitor $SO_2$ emissions from the caustic scrubber to determine compliance with the permitted control efficiency and emission limits (Conditions 6 and 20, respectively). The $SO_2$ concentration is also the operating parameter for CAM as proposed in the revised CAM plan dated 3/02/07, and outlined in the permit. Indicator range will be set from CEMS data, reduced to hourly averages, obtained during performance tests at a low and a high operating rate. The flow monitor provides the flow rate for the calculation of mass emission rates in lbs/hr and tons/yr.

### 3. Recordkeeping, Testing, Notification and Reporting

Applicable Conditions from 9/28/06 NSR permit are included. Minor changes are made as necessary to remove requirements on the process heaters which are addressed under Fuel Burning Equipment Requirements section.

## I. Gasoline Truck Loading Rack (Process Unit ID# R1)

This new loading rack was permitted for construction and operation by the 10/10/02 NSR permit. The unit is subject to MACT Subpart CC- National Emission Standards for Hazardous Air Pollutants from Petroleum Refineries which references MACT Subpart R- National Emission Standards for Gasoline Distribution Facilities (Bulk Gasoline Terminals and Pipeline Breakout Stations).

### 1. Limitations

Conditions 10 through 13 of the 10/10/02 NSR permit were presented as limitation conditions but they are actually for testing, monitoring, recordkeeping and reporting requirements, hence they are relocated as such in the Title V permit, and discussed below. Limitation conditions 3 through 6 of the NSR permit are transferred without significant changes. Both Conditions 7 and 8 of the NSR permit are Requirements By Reference, hence they are combined into one. Note that VOC Emission Limitations from NSR Condition 9 are expanded to describe in detail all the references cited in NSR Condition 8.

### 2. Monitoring, Recordkeeping and Testing

An initial performance test is required to demonstrate compliance with the VOC emission limit of 10 mg/1liter of gasoline loaded. The minimum operating temperature for the vapor combustion unit is to be established from the test. Condition 10 of 10/10/02 NSR permit was modified to reflect this. Additionally, the continuous monitoring requirement for the temperature by Condition 12 of the 10/10/02 NSR permit is clarified in terms of daily averaging procedure to demonstrate compliance, based on the letter dated May 5, 2006, from the facility on the performance test results.

Recordkeeping requirements in Conditions 13 and 14 are consolidated and made more explicit without having to repeat the references to MACT sections. Records of truck tightness testing required in Condition 11 of the 10/10/02 NSR permit is also added.

### 3. Reporting

Reporting requirements from Condition 13 of the 10/10/02 NSR permit are separated out and clearly identified rather than just referencing MACT sections.

## J. Wastewater Treatment Plant (Process Unit ID# 16)

The wastewater treatment plant was permitted for modification and operation by the NSR permit dated 2/25/97. Most applicable requirements of NSPS Subpart Kb- Standards of Performance for Volatile Organic Liquid Storage Vessels (Including Petroleum Liquid Storage Vessels) for which Construction, Reconstruction, or Modification Commences After July 23, 1984, NSPS Subpart QQQ- Standards of Performance for VOC emissions From Petroleum Refinery Wastewater Systems, and NESHAP Subpart FF- National Emission Standard for Benzene Waste Operation were included in the permit. However, MACT Subpart CC- National Emission Standards for Hazardous Air Pollutants from Petroleum Refineries which is also applicable to the process was not in the NSR permit. The initial Title V permit dated 11/13/01 addressed the requirements to the wastewater treatment plant in several separate parts under NSPS Subpart Kb, NSPS Subpart QQQ, and MACT Subpart CC headings. It is decided in this permit renewal that all applicable requirements are consolidated into one section named for the process.

### 1. Limitations

Note that the identification numbers of the equipment have been changed from those in the NSR permit, as already shown in the initial Title V permit. Additionally, the two sumps have been further changed from J-1527 and J-1596 in the initial Title V permit to L-1650 and L-1651, respectively, as confirmed by the facility.

Similar to the initial Title V permit, applicable requirements of MACT Subpart CC and NESHAP Subpart FF are added to the NSR permit conditions for waste streams in HAP and benzene services. Requirements on the sewers ISBL and OSBL, the activated sludge system, and Group 1 wastewater stream (as defined in MACT Subpart CC) which were not in the NSR permit are also added. The overlap provisions of MACT Subpart CC Section 40 CFR 63.640(o)(1) are detailed in the conditions.

Requirements by Reference conditions are also added.

### 2. Monitoring, Recordkeeping, Testing, Notification and Reporting

Besides the requirements from the 2/25/97 NSR permit, additional requirements are added as

required by the various regulations and indicated by the facility in the Title V permit application. Note that annual seal inspection is added to the initial inspection requirement in Condition 13 of the 2/25/97 NSR permit. Similarly, the monthly inspection frequency is required for the flow indicator of the closed vent system of oil water separators.

## K. Refinery Flares (Flare 1 and Flare 2, Process ID# P12 and P13)

The flares are considered process units; however, they support many other processes at the facility by pollution control as well as processing of excess refinery gas. As a results, sections on Crude Unit (Process ID# P1), Naphtha Desulfurization Unit and Ultra Former (NDU/UF, Process Unit ID # P6), Ultralow Sulfur Diesel Unit (ULSD, Process Unit ID #P8), Gasoline Desulfurization Process (GDU, Process Unit ID#18) contain some conditions on the flares from NSR permits that are specific to the process, for example, citation that the flare from the Ultraformer regenerator is subject to MACT Subpart UUU, flare emission limits as related to the GDU process, etc. However, comprehensive requirements on the flares not specific to any supported processes are consolidated in this section, including those that have not been spelled-out in any NSR or SOP permits. Note that Auxiliary Flare (Process Unit ID # P14) is a ground level flare, only used when Flare 1 or Flare 2 is out of service; there are no applicable requirements as it is considered part of MACT Start-up Shutdown and Malfunction Plan.

### 1. Limitations

$SO_2$ emissions from the flares are limited by the $H_2S$ content in refinery fuel gas in accordance with NSPS Subpart J- Standards of Performance for Petroleum Refineries. This limitation also applies to fuel burning equipment as discussed in that section which will be referred to when appropriate to avoid repetition.

Flare 1 and Flare 2 are subject to MACT Subpart CC- National Emission Standards for Hazardous Air Pollutants from Petroleum Refineries which references NSPS Subpart VV- Standards of Performance for Equipment Leaks of VOC in the Synthetic Organic Chemicals Manufacturing Industry, and NSPS Subpart A- General Provisions. They are also subject to MACT Subpart UUU- National Emission Standards for Hazardous Air Pollutants for Petroleum Refineries: Catalytic Cracking Units, Catalytic Reforming Units, and Sulfur Recovery Units which references MACT Subpart A- General Provisions.

For visible emissions, Flare 1 would be subject to the opacity limits for existing source at 9 VAC 5-40-940.B (20% opacity except for a 6-minute period out of any one hour, opacity limit is 60%, as determined by Method 9 of 40 CFR 60 Appendix A) while Flare 2 would be subject to the opacity limits for new source at 9 VAC 5-50-80 (20% opacity except for a 6-minute period out of any one hour, opacity limit is 30%, as determined by Method 9 of 40 CFR 60 Appendix A). However, the flares are also subject to MACT Subpart UUU requirement that visible emissions shall not exceed a total of 5 minutes during any 2-hour operating period (as determined by Method 22 of 40 CFR 60 Appendix A). This is determined to be the most stringent requirement, hence, it is the only one included.

**2. Monitoring, Recordkeeping, and Testing**

Annual inspection of the flare RV headers in HAP service is required by MACT Subpart CC.

Continuous monitoring requirements on the flare pilot flame are as described in the applicable MACT Subpart UUU.

There is no continuing monitoring frequency for visible emissions in MACT Subpart CC or UUUU to meet the operating limits. Hence, initial and periodic monitoring for visible emissions by Method 22 is added to meet Part 70 requirements. A tiered approach is used for the monthly monitoring, similar to the case of Method 9 for boilers and furnaces.

Continuous monitoring for $H_2S$ in refinery fuel gas is referenced to the Fuel Burning Equipment Requirements section.

Recordkeeping to demonstrate compliance is required.

**3. Notification and Reporting**

Applicable notification and reporting requirements from MACT Subparts CC and UUU are included.

## L. Tanks (Process ID# P15)

This section includes tank requirements that have not been included in other process units with NSR permits.

**1. Limitations**

Except for tank 110 in the Crude Unit, all other tanks listed here are pre-1972, hence, not subject to NSPS Subpart K or Kb. Tank 110 is subject to NSPS Subpart K due to its construction date (after June 11, 1973, and prior to May 19, 1978)

Tanks in VOC service are subject to 9 VAC 5-40-5220 B- Standards for volatile organic compounds- Petroleum liquid storage-floating roof tanks. Tanks in HAP service are also subject to the more stringent MACT Subpart CC- National Emission Standards for Hazardous Air Pollutants from Petroleum Refineries. The two groups as listed in Table XIV.A are identical except that tank 409 is not on the list as subject to 9 VAC 5-40-5220 B because it does not store petroleum liquid. MACT Subpart CC references several sections in MACT Subpart G- National Emission Standards for Organic Hazardous Air Pollutants from the Synthetic Organic Chemical Manufacturing Industry for Process Vents, Storage vessels, Transfer Operations, and Wastewater.

Tank 110 is also subject to MACT Subpart CC for Group 1 storage vessels. Due to the overlap provisions in MACT Subpart CC Section 40 CFR 63.640(n)(5), tank 110 has to comply only with the MACT. There are numerous requirements for Group 1 storage vessels; therefore, it is thought to be important to repeat its definition in one limitation condition in the permit.

**2. Monitoring, Recordkeeping, Testing, and Reporting**

Applicable requirements from MACT Subpart CC and MACT Subpart G are included in detail. Note that monitoring requirements 40 CFR 63.120(a)(3) and 120(b)(1)(ii) are skipped over because the facility does not have any internal floating roof tanks or external floating roof tanks, respectively, that meet the equipment description for the requirements.

## M. Facility-Wide Group 1 Miscellaneous Process Vents

Miscellaneous process vents are defined and addressed in MACT Subpart CC- National Emission Standards for Hazardous Air Pollutants from Petroleum Refineries. Those vents are subdivided into Group 1 and Group 2 miscellaneous vents which are also defined in the MACT.

**1. Limitations**

MACT Subpart CC requires Group 1 miscellaneous process vents to be routed to a flare that meets the requirements of 40 CFR 63.11(b), or other control device as required by 40 CFR 63.643. Note that Flare 1 and Flare 2 at the facility meet the requirements.

**2. Monitoring**

MACT Subpart CC Section 40 CFR 63.644 addresses monitoring requirements for Group 1 miscellaneous process vents when either a flare or other device is used for control.

**3. Testing**

MACT Subpart CC Section 40 CFR 63.645 addresses testing requirements for miscellaneous process vents, referring to sections in MACT Subpart G- National Emission Standards for Organic Hazardous Air Pollutants from the Synthetic Organic Chemical Manufacturing Industry for Process Vents, Storage vessels, Transfer Operations, and Wastewater.

**4. Recordkeeping and Reporting**

MACT Subpart CC Section 40 CFR 63.654 addresses reporting and recordkeeping requirements.

## N. Facility-Wide Equipment Leaks

This section addresses requirements on equipment leaks for components in organic HAP service as defined in MACT Subpart CC Section 40 CFR 63.640.

### 1. Limitations

MACT Subpart CC Section 40 CFR 63.648 applies to equipment leaks in HAP service. Equipment leaks that are also subject to 40 CFR Parts 60 and 61 will need to comply only with MACT CC in accordance with the overlap provisions in MACT Subpart CC Section 40 CFR 63.640 (p). However, with some exceptions, 40 CFR 63.648 refers back to NSPS Subpart VV- Standards of Performance for Equipment Leaks of VOC in the Synthetic Organic Chemicals Manufacturing Industry. Applicable requirements are laid out in detail.

### 2. Monitoring

A Leak Detection and Repair (LDAR) program complying with 40 CFR 63.648 is required. Again, the MACT section refers to NSPS Subpart VV; applicable requirements are listed in detail.

### 3. Recordkeeping, Testing, and Reporting

Requirements are in accordance with 40 CFR 63.654.

## O. Facility-Wide Site Remediation

MACT Subpart GGGGG- National Emission Standards for Hazardous Air Pollutants: Site Remediation is applicable to remediation activities at the site. Requirement by reference is deemed sufficient at this time to ensure compliance should the facility conduct a site remediation that meets the definition in the rule.

## P. Streamlined Requirements from All Permits

Each NSR or SOP permit may relate to more than one process unit, for example, the 4/22/02 NSR permit contain conditions for furnaces in Fuel Burning Equipment Requirements section as well as conditions on the Naphtha Desulfurization Unit and Ultraformer Unit. Therefore, streamlined requirements from each permit are addressed here rather than under each process unit section.

The following conditions in the 12/20/77 NSR permit have not been included for the reasons provided:

- All conditions: this permit is the first NSR permit for the facility for the construction and operation of the Crude Unit furnaces B-101 and B-102. Even though the permit has never been formally superseded, all conditions are either outdated or have been substituted with more stringent requirements by the Consent Agreement and the subsequent SOPs.

The following conditions in the 4/12/90 NSR permit have not been included for the reasons provided:

- Part I, Condition 7: Initial performance test, completed.
- Part II, Conditions - General Conditions

The following conditions in the 12/26/90 NSR permit have not been included for the reasons provided:

- Condition 10, and 12 through 14: General Conditions

The following conditions in the 2/25/97 NSR permit have not been included for the reasons provided:

- Part II- General Conditions

The following conditions in the 8/19/98 NSR permit have not been included for the reasons provided:

- Conditions 14 through 16, and 19 through 21: General Conditions

The following conditions in the 4/22/02 NSR permit have not been included for the reasons provided:

- Condition 12: Initial opacity determination, completed
- Condition 17: Initial Notifications, completed
- Conditions 18 through 25: General Conditions

The following conditions in the 10/10/02 NSR permit have not been included for the reasons provided:

- Conditions 15: Initial Notifications, completed
- Conditions 16 through 25: General Conditions

The following conditions in the 3/13/06 NSR permit have not been included for the reasons provided:

- Condition 21: Initial Notifications, completed
- Condition 27: Emission Limitations, redundant, repeating the requirements by reference of Condition 32, and the emission limits and monitoring requirement in Condition 25 of the same permit, both of which are carried over in the Tile V permit.
- Conditions 36 through 45: General Conditions

The following conditions in the 9/28/06 NSR permit have not been included for the reasons provided:

- Conditions 46 through 54: General Conditions

The following conditions in the 11/01/06 SOP permit have not been included for the reasons provided:

- Conditions 25-29: General Conditions

General conditions in NSR or SOP permits are streamlined because they are covered under general conditions of the Title V permit.

Note also that many conditions are virtually identical but present in different permits; to avoid lengthening the permit unnecessarily, they are consolidated, whenever suitable, in Title V permit but clearly referenced in each condition. Those are not considered streamlined. See examples in Section VI.A.1 above on fuel burning equipment limitations.

The following existing source emission standards are applicable to the facility, however, they have been replaced by the more stringent requirements in NSR permits based on NSPS Subpart J, MACT Subparts CC and UUU:

9 VAC 5-40-1340 et seq. Petroleum Refinery Operations
9 VAC 5-40-2980 et seq. Sulfur Recovery Operations
9 VAC 5-40-5200 et seq. Petroleum Liquid Storage and Transfer Operations

The overlap provisions in MACT Subpart CC Section 40 CFR 63.640 (n) on storage vessels, Section 40 CFR 63.640 (o) on wastewater, and Section 40 CFR 63.640 (p) on equipment leaks have been discussed in the individual process sections above.

## VII. GENERAL CONDITIONS

The permit contains general conditions required by 40 CFR Part 70 and 9 VAC 5-80-110 that apply to all Federal-operating permitted sources. These include requirements for submitting semi-annual monitoring reports and an annual compliance certification report. The permit also requires notification of deviations from permit requirements or any excess emissions.

## Comments on General Conditions

### B. Permit Expiration

This condition refers to the Board taking action on a permit application. The Board is the State Air Pollution Control Board. The authority to take action on permit application(s) has been delegated to the Regions as allowed by §2.1-20.01:2 and §10.1-1185 of the *Code of Virginia,* and the "Department of Environmental Quality Agency Policy Statement No. 2-2003".

This general condition cites the Article that follows:
Article 1 (9 VAC 5-80-50 et seq.), Part II of 9 VAC 5 Chapter 80. Federal Operating Permits for Stationary Sources.

This general condition cites the sections that follow:
9 VAC 5-80-80. Application

9 VAC 5-80-140. Permit Shield
9 VAC 5-80-150. Action on Permit Applications

**F. Failure/Malfunction Reporting**

Section 9 VAC 5-20-180 requires malfunction and excess emission reporting within four hours of discovery. Section 9 VAC 5-80-250 of the Title V regulations also requires malfunction reporting; however, reporting is required within two days. Section 9 VAC 5-20-180 is from the general regulations. All affected facilities are subject to section 9 VAC 5-20-180 including Title V facilities. Section 9 VAC 5-80-250 is from the Title V regulations. Title V facilities are subject to both sections. A facility may make a single report that meets the requirements of 9 VAC 5-20-180 and 9 VAC 5-80-250. The report must be made within four daytime business hours of discovery of the malfunction. In order for emission units to be relieved from the requirement to make a written report in 14 days the emission units must have continuous monitors meeting the requirements of 9 VAC 5-50-410 or 9 VAC 5-40-41.

This general condition cites the sections that follow:

9 VAC 5-40-41. Emissions Monitoring Procedures for Existing Sources
9 VAC 5-40-50. Notification, Records and Reporting
9 VAC 5-50-50. Notification, Records and Reporting

This general condition contains a citation from the Code of Federal Regulations as follows:
40 CFR 60.13 (h). Monitoring Requirements.

**J. Permit Modification**

This general condition cites the sections that follow:
9 VAC 5-80-50. Applicability, Federal Operating Permit For Stationary Sources
9 VAC 5-80-190. Changes to Permits.
9 VAC 5-80-260. Enforcement.
9 VAC 5-80-1100. Applicability, Permits For New and Modified Stationary Sources
9 VAC 5-80-1790. Applicability, Permits For Major Stationary Sources and Modifications Located in Prevention of Significant Deterioration Areas
9 VAC 5-80-2000. Applicability, Permits for Major Stationary Sources and Major Modifications Locating in Nonattainment Areas

**U. Malfunction as an Affirmative Defense**

The regulations contain two reporting requirements for malfunctions that coincide. The reporting requirements are listed in sections 9 VAC 5-80-250 and 9 VAC 5-20-180. The malfunction requirements are listed in General Condition U and General Condition F. For further explanation see the comments on general condition F.

This general condition cites the sections that follow:
9 VAC 5-20-180. Facility and Control Equipment Maintenance or Malfunction

9 VAC 5-80-110. Permit Content.

### Y. Asbestos Requirements

The Virginia Department of Labor and Industry under Section 40.1-51.20 of the Code of Virginia also holds authority to enforce 40 CFR 61 Subpart M, National Emission Standards for Asbestos.

This general condition contains a citation from the Code of Federal Regulations that follow:
40 CFR 61.145, NESHAP Subpart M. National Emissions Standards for Asbestos as it applies to demolition and renovation.
40 CFR 61.148, NESHAP Subpart M. National Emissions Standards for Asbestos as it applies to insulating materials.
40 CFR 61.150, NESHAP Subpart M. National Emissions Standards for Asbestos as it applies to waste disposal.

This general condition cites the regulatory sections that follow:
9 VAC 5-60-70. Designated Emissions Standards
9 VAC 5-80-110. Permit Content

## VIII. STATE-ONLY APPLICABLE REQUIREMENTS

The following Virginia Administrative Codes have specific requirements only enforceable by the State and have been identified as applicable by the applicant:

9 VAC 5-40-1380. Standard for hydrogen sulfide
9 VAC 5-40-140. Standard for odor
9 VAC 5-60-220. Standard for Toxic Pollutants

## IX. FUTURE APPLICABLE REQUIREMENTS

There are no future applicable requirements.

## X. INAPPLICABLE REQUIREMENTS

The startup, shut down, and malfunction opacity exclusion listed in 9 VAC 5-40-20 A 3 cannot be included in any Title V permit. This portion of the regulation is not part of the federally approved state implementation plan. The opacity standard applies to existing sources at all times including startup, shutdown, and malfunction. Opacity exceedances during malfunction can be affirmatively defended provided all requirements of the affirmative defense section of this permit are met. Opacity exceedances during startup and shut down will be reviewed with enforcement discretion using the requirements of 9 VAC 5-40-20 E, which state that "At all

times, including periods of startup, shutdown, soot blowing and malfunction, owners shall, to the extent practicable, maintain and operate any affected facility including associated air pollution control equipment in a manner consistent with air pollution control practices for minimizing emissions."
The following requirements have also been identified as not applicable:

| Citation | Title of Citation | Description of Applicability |
|---|---|---|
| 40 CFR 63 Subpart Y | National Emission Standards For Marine Tank Vessel Tank Loading Operations | Subpart Y does not apply to the Western Yorktown Refinery marine loading operations that meet the definition of offshore loading which is exempt from the MACT under 40 CFR 63.560(d)(6). |
| 40 CFR 60 Subpart RRR | Standards Of Performance For VOC Emissions From SOCMI Reactor Processes | None of the units in the refinery, including the Ether unit, are SOCMI chemical units. None of the reactors have vents direct to the atmosphere, which are regulated under Subpart RRR. |
| 40 CFR 60 Subpart NNN | Standards Of Performance For VOC Emissions From SOCMI Distillation Operations | None of the units in the refinery, including the Ether unit, are SOCMI chemical units. None of the distillation units have vents direct to the atmosphere, which are regulated under Subpart NNN. |
| 40 CFR 60 Subpart XX | Standards Of Performance For Bulk Gasoline Terminals | The loading rack at the refinery is not a bulk gasoline terminal and is not an affected facility under Subpart XX. It is regulated under 40 CFR 63 Subpart CC. |
| 40 CFR 61 Subpart BB | National Emission Standard For Benzene Emissions From Benzene Transfer Operations | The permittee is not an affected facility as it is not involved in benzene transfer operations. |
| 40 CFR 63 Subpart Q | National Emission Standards For Hazardous Air Pollutants For Industrial Process Cooling Towers | The rule only applies to industrial cooling towers that operated with chromium-based water treatment chemicals on or after September 8, 1994. Use of chromium-based chemicals was terminated prior to that date. |
| 9 VAC 5 Article 25 (Rule 25) | Emission Standards For Volatile Organic Compound Storage And Transfer Operations | The refinery does not store or transfer VOL compounds. It is instead regulated under Rule 4-37 for Petroleum Liquid Storage and Transfer Operations and 40 CFR 63 Subpart CC |
| 40 CFR 60 Subpart IIII | Standards of Performance for Stationary Compression Ignition Internal Combustion Engines | The facility does not have any internal combustion engines that are subject to the rule. |
| 40 CFR 63 Subpart ZZZZ | National Emission Standards For Hazardous Air Pollutants for Stationary Reciprocating Internal Combustion Engines | The facility does not have any internal combustion engines that are subject to the rule. |

## XI. INSIGNIFICANT EMISSION UNITS

The insignificant emission units are presumed to be in compliance with all requirements of the Clean Air Act as may apply. Based on this presumption, no monitoring, recordkeeping or reporting shall be required for these emission units in accordance with 9 VAC 5-80-110.

Insignificant emission units include the following:

| Emission Unit No. | Emission Unit Description | Citation [1] | Pollutant(s) Emitted (9 VAC 5-80-720 B) | Rated Capacity (9 VAC 5-80-720 C) |
|---|---|---|---|---|
| P15 | All fixed roof tanks less than 40,000 gallons capacity or storing hydrocarbons with a vapor pressure less than 1.5 psi | 9 VAC 5-80-720 B.2 | VOC | |
| P15 | All floating roof tanks storing hydrocarbons with a vapor pressure less than 1.5 psi and no applicable requirements | 9 VAC 5-80-720 B.2 | VOC | |
| P15 | LPG truck and railcar loading | 9 VAC 5-80-720 B.2 | VOC | |
| P15 | LPG storage | 9 VAC 5-80-720 B.2 | VOC | |
| N/A | Diesel fueled portable generators with 259,000 BTU/hour heat input or less | 9 VAC 5-80-720 C.1.a | | ≤ 259,000 BTU/hr |
| N/A | Lube oil tanks and reservoirs and storage tanks less than 1000 gallons capacity | 9 VAC 5-80-720 C.3 | | < 1,000 gallons |
| N/A | Emergency diesel engines operating less than 500 hours per year | 9 VAC 5-80-720 C.4.b | | ≤ 645 horsepower |
| N/A | Insignificant activities listed by emission units in 9 VAC 5-80-720 A | 9 VAC 5-80-720 A | | |
| F7 | Process heater F-102 in DDU process, using gas | 9 VAC 5-80-720 B.1 | $SO_2$, NOx, CO | |

[1]The citation criteria for insignificant activities are as follows:
9 VAC 5-80-720 A - Listed Insignificant Activity, Not Included in Permit Application
9 VAC 5-80-720 B - Insignificant due to emission levels

9 VAC 5-80-720 C - Insignificant due to size or production rate

## XII. CONFIDENTIAL INFORMATION

The permittee did not submit a request for confidentiality. All portions of the Title V application are suitable for public review.

## XIII. PUBLIC PARTICIPATION

The proposed permit will be placed on public notice in the Virginian-Pilot on August 7, 2007.