

**ALLEGHENY COUNTY HEALTH DEPARTMENT
AIR QUALITY PROGRAM**

June 28, 2011

SUBJECT: Review of Application
Sun Partners Marketing & Terminals, L.P., Title V Operating Permit

Sunoco Logistics Blawnox Terminal
701 Freeport Road
Pittsburgh, PA 15238

RE: Operating Permit File No. 0011
Bulk petroleum distribution terminal and pipeline breakout station

TO: Sandra L. Etzel, Chief Engineer

FROM: David D. Good, Air Quality Engineer

FACILITY DESCRIPTION:

Sunoco Partners Marketing & Terminals, LP's (Sunoco), Blawnox terminal is an aboveground bulk material storage tank distribution facility and pipeline breakout station for petroleum products, with an allowable terminal throughput of 246,000,000 gallons distillate product per year. The Blawnox terminal receives bulk petroleum products, such as low sulfur diesel, kerosene and biodiesel from the distribution pipeline and tanker trucks and stores them in one of the eight Aboveground Storage Tanks (ASTs). Distillate products are transferred from the ASTs to the Truck Loading Rack (TLR) for the loading of tanker trucks. Hydrocarbon vapors are transferred from the tanker trucks through the TLR to the Vapor Combustion Unit (VCU) for destruction.

The facility has a physical throughput limitation of 246,000,000 gallons distillate product per year to remain a synthetic minor source of volatile organic compounds (VOCs) and the facility is not permitted to store or distribute gasoline. However, the emissions from the truck loading racks have been calculated assuming the worst case scenario of 100% gasoline loading in lieu of the gasoline vapors present during 'switch loading'.

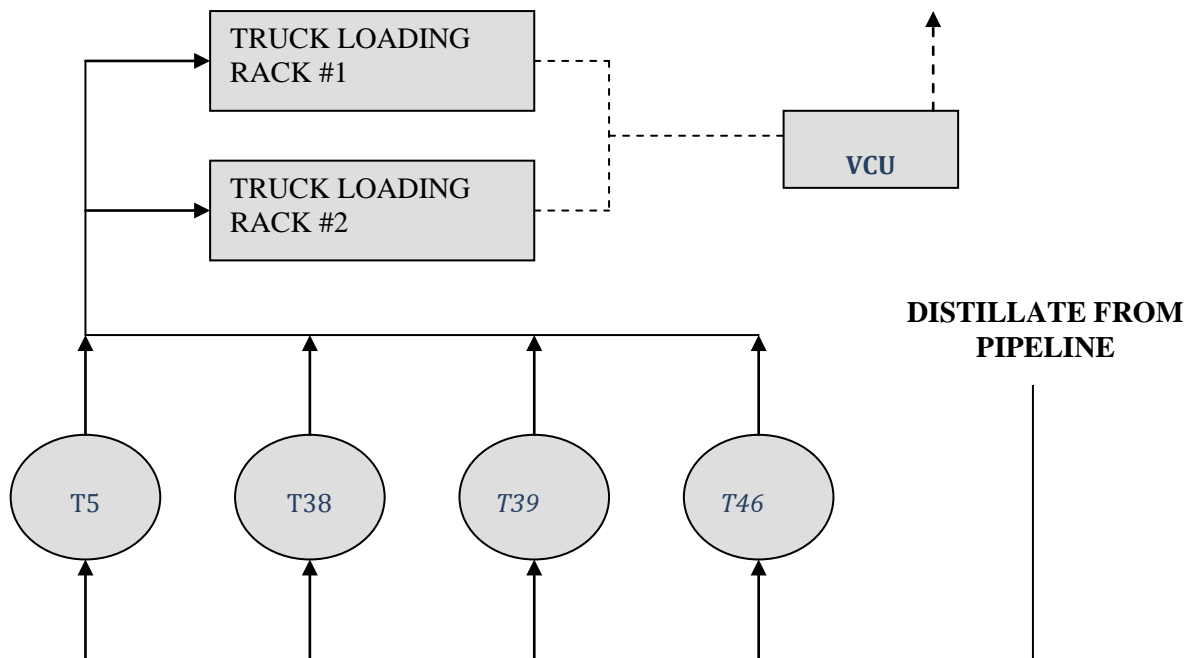
The facility is a synthetic minor source of volatile organic compounds (VOCs) and hazardous air pollutants (HAPs) and is a minor source of total particulate matter (PM), particulate matter < 10 microns in diameter (PM-10), sulfur dioxide (SO₂), nitrogen oxides (NO_x) and carbon monoxide (CO) as defined in section 2101.20 of Article XXI.

The facility presently consists of the following emission units:

1. One TLR with two bays and six loading arms.
2. Three vertical ASTs with internal floating roofs, T-05 (525,000 gallons), T-38 (1,260,000 gallons) and T-39 (630,000 gallons) in transmix and distillate service.
3. One vertical, fixed roof AST, T-46 (630,000 gallons) in distillate product service.

4. Two small horizontal storage tanks, T-08 (1,000 gallons) and T-109 (500 gallons) in distillate additive service.
5. Three underground oil/water separators, one 8,000 gallons at the Centre Avenue storage tank farm and one 10,000 gallons and one 12,000 gallons at the TLR.
6. Two 20,000 gallon franc tanks.
7. Four vertical fixed roof, heated and insulated ASTs, T-09, T-10, T-11 and T-12 (30,000 gallons, each) in biodiesel service.
8. Three natural gas fired boilers for comfort heating, one Patterson-Kelly, N-700 with a maximum output capacity of 595,000 Btu/hr (South Building) and two Weil McLain, LGB-8 with a maximum output capacity of 737,000 Btu/hr (North and South Buildings).

Facility Process Diagram:



Storage Tank Data:

| Sunoco Blawnox Terminal Aboveground Storage Tank Technical Information | | | | | |
|-------------------------------------------------------------------------------|---------------------------|-------------------|----------------------------------------------|-----------------------------------------------|-------------------------------------------|
| Tank I.D. | Capacity [Gallons] | Year Built | Type | Controls | Normal storage |
| T-05 | 525,000 | 1936 | Vertical fixed roof AST | Internal floating roof with a mechanical shoe | Transmix @ ambient temperature |
| T-38 | 1,260,000 | 1955 | Vertical fixed roof AST | Internal floating roof with a mechanical shoe | Distillate @ ambient temperature |
| T-39 | 630,000 | 1957 | Vertical fixed roof AST | Internal floating roof with a mechanical shoe | Distillate @ ambient temperature |
| T-46 | 630,000 | 1974 | Vertical fixed roof AST | None | Distillate products @ ambient temperature |
| T-09 | 30,000 | 2010 | Vertical fixed roof heated and insulated AST | Emergency Vent | Biodiesel @ ambient temperature |
| T-10 | 30,000 | 2010 | Vertical fixed roof heated and insulated AST | Emergency Vent | Biodiesel @ ambient temperature |
| T-11 | 30,000 | 2010 | Vertical fixed roof heated and insulated AST | Emergency Vent | Biodiesel @ ambient temperature |
| T-12 | 30,000 | 2010 | Vertical fixed roof heated and insulated AST | Emergency Vent | Biodiesel @ ambient temperature |
| T-008 | 1,000 | 2006 | Horizontal AST | None | Distillate additive @ ambient temperature |
| T-109 | 500 | 2001 | Horizontal AST | None | Distillate additive @ ambient temperature |

Truck Loading Rack Data:

Maximum throughput: 144,000 gallons per hour and 246,000,000 gallons per year of distillate products

Number of bays: two

Number of arms: six

Product transferred: Bay #1 and #2: three sulfur diesel (*red or clear*) and kerosene (*red or clear*) loading arms each

Controls: Attached to a VCU

Vapor Recovery Unit Data:

Name and Model: John Zink Company, L.L.C., Tulsa Oklahoma, VCU, ZFT-3-6-35-X-2/6-X-X
Date of Installation: 2007
Design throughput: 2,400 gallons per minute of gasoline distillate products
Type: VCU (*enclosed ground flare*) with a direct flame temperature control.
Maximum outlet concentration: VOC: 35 mg/l; NO_x: 4 mg/l; and CO: 10 mg/l
Actual outlet concentration: 13.47 mg/l on 11.16.2007 while loading 82,000 gallons of gasoline in six hours.
Actual control efficiency: 97.06% on 11.16.2007 while loading 82,000 gallons of gasoline in six hours.
Instrumentation: Continuous combustion chamber temperature thermocouple

Frac Tanks Data:

Number of tanks and volume: Two 20,000 gallons tanks
Annual Throughput: 60,000 gallons of pipeline purge water laden with gasoline

Oil/Water Separators Data:

Type: Three horizontal below ground oil/water separators
Capacity: One 8,000 gallon at the tank farm and one 10,000 gallons and one 12,000 gallons at the truck loading rack.

Boiler Data:

Manufacturer and model: Two Weil-McLain, LGB-8, Michigan City, Indiana and one Harsco Industrial Patterson-Kelly, Thermific N700, East Stroudsburg, Pennsylvania
Maximum heat input: 0.91 mmBtu/hr and 0.7 mmBtu/hr
Fuel: Natural gas only

Fugitive Emissions from Valves, Flanges and Pumps Data:

Annual Throughput: 246,000,000 gallons of distillate

EMISSION SOURCES OF MINOR SIGNIFICANCE:

1. Paved and unpaved areas are a source of minor significance with negligible emissions of PM and PM-10 as per US EPA, AP-42, Section 13.2.1, "Paved Roads," March 2007 and Section 13.2.2, "Unpaved Roads," November 2006.
2. The three oil/water separators, two frac tanks and two storage tanks T-109 and T-008 have negligible emissions of VOCs and HAPs
3. The two Weil-McLain, LGB-8 and one Harsco Industrial Patterson-Kelly, Thermific N700 boilers fired with natural gas have negligible emissions of criteria pollutants and HAPs

EMISSION CONTROLS:

ASTs T-05, T-38 and T-39 are equipped with internal floating roofs and the TLR is equipped with a VCU (*enclosed ground flare*) with a direct flame temperature control.

EMISSION CALCULATIONS:

Loading rack potential emissions:

Gasoline and distillate VOC emissions:

1. The maximum allowable throughput for the loading racks is 246,000,000 gallons of distillate in any consecutive twelve-month period. The maximum short term loading rate for the loading rack is 144,000 gal/hr, i.e. the maximum capacity of the VCU.
2. The maximum VOC emissions from the VCU are 35 mg/l as specified in the John Zink guarantee in Installation Permit Application 0011-I002, dated April 4, 2007.
3. The estimated maximum fugitive emissions from the tanker trucks during distillate loading is 9 mg/l calculated using 0.5% as the average leakage of gasoline vapors from a truck passing the 3-inch pressure decay test (USEPA, 1980: Bulk Gasoline Terminals - Background Information for Proposed Standards, Table C-4).
4. Maximum potential annual VOC emissions from gasoline vapors during distillate truck loading:

VCU and loading fugitives:

$$2.46 * 10^8 \text{ gals/yr} * (35 \text{ mg/l} + 9 \text{ mg/l}) * 8.346 * 10^{-6} \text{ lb-l/mg-gal} = 90,337 \text{ lbs or } \mathbf{45.17 \text{ tons}}$$

VCU only:

$$2.46 * 10^8 \text{ gal/yr} * 35 \text{ mg/l} * 8.346 * 10^{-6} \text{ lb-l/mg-gal} = 71,859 \text{ lbs or } = 35.93 \text{ tons}$$

5. Maximum potential hourly VOC emissions from gasoline vapors during distillate truck loading:

VCU and loading fugitives:

$$144,000 \text{ gal/hr} * (35 \text{ mg/l} + 9 \text{ mg/l}) * 8.346 * 10^{-6} \text{ lb-l/mg-gal} = \mathbf{52.88 \text{ lbs/hr}}$$

VCU only:

$$144,000 \text{ gal/hr} * 35 \text{ mg/l} * 8.346 * 10^{-6} \text{ lb-l/mg-gal} = 42.06 \text{ lbs/hr}$$

6. Maximum potential annual VOC emissions from distillate during distillate truck loading:

Loading Fugitives:

$$0.01429 \text{ lb/1000 gal} * 246,000,000 \text{ gal} * 1 \text{ ton}/2000\text{lb} = \mathbf{1.76 \text{ tons}}$$

$$12.46 * [(1.0 * 0.0045 \text{ psi} * 130 \text{ lb/lb-mole}) / (510^{\circ}R)] = 0.01429 \text{ lbs}/1000 \text{ gal}$$

7. Maximum potential hourly VOC emissions from distillate during distillate truck loading:

Loading Fugitives:

$$0.01429 \text{ lb}/1000 \text{ gal} * 48,000 \text{ gal/hr} = \mathbf{0.69 \text{ lbs/hr}}$$

Gasoline HAP emissions:

| Calculation Methodology for the Maximum Potential Emissions of Hazardous Air Pollutants | | | | | |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------|---------------------------------------------|--------------------------|-----------------------------------------------|--------------------------|
| Pollutant | Vapor Weight Fraction [%] | Short Term Emission Rate [Lbs/hr] | | Long Term Emission Rate [Tons/Year] | |
| | Gasoline | VCU | Loading Fugitives | VCU | Loading Fugitives |
| VOCs | 100 | 42.06 | 10.82 | 35.93 | 9.24 |
| HAPs | | | | | |
| Isooctane | 11.59 | 4.875 | 1.254 | 4.164 | 1.071 |
| Toluene | 8.76 | 3.685 | 0.948 | 3.147 | 0.809 |
| Xylene | 8.7 | 3.660 | 0.941 | 3.126 | 0.804 |
| Ethylbenzene | 1.52 | 0.639 | 0.164 | 0.546 | 0.140 |
| Benzene | 0.94 | 0.395 | 0.102 | 0.338 | 0.087 |
| N-Hexane | 0.8 | 0.337 | 0.087 | 0.287 | 0.074 |
| Naphalene | 0.15 | 0.063 | 0.016 | 0.054 | 0.014 |
| Cumene | 0.12 | 0.050 | 0.013 | 0.043 | 0.011 |
| MTBE | 0.09 | 0.038 | 0.010 | 0.032 | 0.008 |
| Subtotal | 32.67 | | | 11.738 | 3.018 |
| HAP Total | | | | | 14.757 |
| Notes: HAP vapor weight percentages taken from installation permit 0011-I002, dated July 13, 2007. All truck loading is assumed to be 'switch loading' that processes 100% gasoline vapors from tanker trucks. | | | | | |

Distillate HAP emissions:

| Calculation Methodology for the Maximum Potential Emissions of Hazardous Air Pollutants | | | |
|-----------------------------------------------------------------------------------------------------------|-------------------------------------|---------------------------------------------|-----------------------------------------------|
| Pollutant | Vapor Weight Fraction [%] | Short Term Emission Rate [Lbs/hr] | Long Term Emission Rate [Tons/Year] |
| | Distillate | VCU | |
| VOCs | 100 | 0.69 | 1.76 |
| HAPs | | | |
| Naphalene | 3 | 0.0207 | 0.0528 |
| Xylene | 0.9 | 0.0062 | 0.0158 |
| Toluene | 0.4 | 0.0028 | 0.0070 |
| Ethylbenzene | 0.2 | 0.0014 | 0.0035 |
| Benzene | 0.2 | 0.0014 | 0.0035 |
| N-Hexane | 0.1 | 0.0007 | 0.0018 |
| Cumene | 0.1 | 0.0007 | 0.0018 |
| Subtotal | 4.9 | 0.0338 | 0.0862 |
| HAP Total | | | 0.172 |
| Notes: HAP vapor weight percentages taken from installation permit 0011-I002, dated July 13, 2007. | | | |

Distillate tanks T-05, T-38, T-39 and T-46 potential emissions:

1. Maximum potential emissions are conservatively based on each tank's maximum throughput and number of turnovers. The combined throughput for all five tanks is much greater than the allowable 246,000,000 gallons of distillate for the loading racks. VOC emissions were calculated using the US EPA TANKS 4.0 program. HAP emissions were again calculated by applying the vapor weight percent to the total VOCs from each tank. All transmix was assumed to be gasoline.
2. Tank data and emissions:

| Calculation Methodology for the Maximum Potential Emissions of Volatile Organic Compounds | | | |
|--------------------------------------------------------------------------------------------------|-------------------------------|--------------------------|------------------------|
| Aboveground Storage Tanks in Distillate Service | | | |
| Tank Number | Capacity [gallons] | Maximum Turnovers | VOCs [Tons] |
| T-46 [Transmix] | 630,000 | 145 | 0.27 |
| T-38 [Distillate] | 1,260,000 | 112.0 | 0.21 |
| T-39 [Distillate] | 630,000 | 244.0 | 0.12 |
| Landings | | | 0.000 ⁽¹⁾ |
| Cleanings | | | 0.000 ⁽²⁾ |
| Total [Transmix/Distillate] | | | 0.60 |
| Aboveground Storage Tanks in Transmix Service | | | |
| T-05 | 525,000 | 7.70 | 1.45 |
| Total [Transmix] | | | 1.45 |
| Total [Transmix/Distillate] | | | 2.05 |
| Notes: | | | |
| (1) Tank landings emissions are negligible. | | | |
| (2) Tank cleaning emissions are negligible. | | | |

**Calculation Methodology for the Maximum Potential Emissions of
Hazardous Air Pollutants**

| HAPs | Vapor Weight [Lbs HAP/lbs total vapor] | | Aboveground Storage Tank VOC Emissions [Tons] | | |
|-------------------|-------------------------------------------|------------|--------------------------------------------------|---------|-------------------|
| | Transmix (gasoline) | Distillate | T-38, T-39 & T-46 | T-05 | Land and Clean |
| | VOC | 100 | 100 | 0.6 | 1.45 |
| Isooctane | 11.59 | 0 | 0 | 0.16806 | 0 |
| Toluene | 8.76 | 0.4 | 0.0024 | 0.12702 | 0 |
| Xylene | 8.7 | 0.9 | 0.0054 | 0.12615 | 0 |
| Ethylbenzene | 1.52 | 0.2 | 0.0012 | 0.02204 | 0 |
| Benzene | 0.94 | 0.2 | 0.0012 | 0.01363 | 0 |
| N-Hexane | 0.8 | 0.1 | 0.0006 | 0.01160 | 0 |
| Naphalene | 0.15 | 3 | 0.018 | 0.00218 | 0 |
| Cumene | 0.12 | 0.1 | 0.0006 | 0.00174 | 0 |
| MTBE | 0.009 | 0 | 0 | 0.00013 | 0 |
| Subtotal: | 32.67 | 4.9 | 0.0294 | 0.47254 | 0 |
| Total HAPs | | | 0.502 | | |

Fugitive emissions from valves, fitting & pumps:

Method: U.S. EPA factors EPA-453/R-95-017
 1995 Protocol for Equipment Leak Emission Estimates
 (also listed in API publication 1673, May 1998 - Table 3-7)

| Source Category | Service | Emission Factor (lbs/hr-source) | Total Number of Sources[1] | Fugitive VOC Emissions (tons/yr)[2] |
|------------------------|----------------|----------------------------------------|-----------------------------------|--------------------------------------------|
| | | | | |
| Valves | Gas | 0.0000286 | 0 | <i>0.0000</i> |
| | Light Liquid | 0.0000946 | 365 | <i>0.1512</i> |
| | | | | |
| Fittings | Gas | 0.0000924 | 0 | <i>0.0000</i> |
| | Light Liquid | 0.0000176 | 1548 | <i>0.1193</i> |
| | | | | |
| Pumps | Light Liquid | 0.001188 | 4 | <i>0.0208</i> |
| | | | | |
| Other | Gas | 0.000264 | 0 | <i>0.0000</i> |
| | Light Liquid | 0.000286 | 106 | <i>0.1328</i> |
| Total | | | 2023 | <i>0.4242</i> |

[1] # of fugitive components have been taken from 2003 Air Emissions Statement.

[2] VOC (tpy) = Total # of Sources x Emission Factor (lbs/hr-source) x (8,760 hr/yr) x (1 ton/2,000 lb)

| Calculation Methodology for the Maximum Potential Emissions of Hazardous Air Pollutants | | |
|------------------------------------------------------------------------------------------------|----------------------------------|--------------------------------------------|
| Pollutant | Vapor Weight Fraction [%] | Long Term Emission Rate [Tons/Year] |
| | Distillate | |
| VOCs | 100 | 0.424 |
| HAPs | | |
| Naphalene | 3 | 0.0127 |
| Xylene | 0.9 | 0.0038 |
| Toluene | 0.4 | 0.0017 |
| Ethylbenzene | 0.2 | 0.0008 |
| Benzene | 0.2 | 0.0008 |
| N-Hexane | 0.1 | 0.0004 |
| Cumene | 0.1 | 0.0004 |
| Subtotal | 4.9 | 0.0208 |
| HAP Total | | 0.0416 |

Notes: HAP vapor weight percentages taken from installation permit 0011-I002, dated July 13, 2007.

Nitrogen Oxides and Carbon Monoxide Emissions

NOx guarantee is 4 mg/liter product loaded and CO is 10 mg/liter product loaded.

NOx: emissions = 4.81 lb/hr and 4.11 tons/yr (annual emissions based on 246,000,000 gallons distillate throughput per year)

CO emissions = 12 lb/hr and 10.27 tons/yr. (annual emissions based on 246,000,000 gallons distillate throughput per year)

MAXIMUM POTENTIAL EMISSIONS SUMMARY:

| Maximum Potential VOC and HAP Emission Summary | | | | | |
|-------------------------------------------------------|------------------------------|-------------|----------------------|---------------------------------|--------------|
| Pollutant | Loading Racks and VCU | | Storage Tanks | Misc. Fugitive Emissions | Total |
| | [Lbs/hr] | [Tons/year] | [Tons/year] | [Tons/year] | [Tons/year] |
| VOCs | 53.57 | 46.93 | 2.05 | 0.42 | 49.40 |
| HAPs | | | | | |
| Isooctane | 6.150 | 5.288 | 0.0528 | 0.013 | 5.353 |
| Toluene | 4.639 | 3.973 | 0.01584 | 0.004 | 3.992 |
| Xylene | 4.603 | 3.937 | 0.00704 | 0.002 | 3.945 |
| Ethylbenzene | 0.805 | 0.690 | 0.00352 | 0.001 | 0.694 |
| Benzene | 0.498 | 0.428 | 0.00352 | 0.001 | 0.432 |
| N-Hexane | 0.424 | 0.363 | 0.00176 | 0.000 | 0.365 |
| Naphalene | 0.080 | 0.070 | 0.00176 | 0.000 | 0.072 |
| Cumene | 0.097 | 0.140 | 0.08624 | 0.021 | 0.247 |
| MTBE | 0.048 | 0.213 | 0 | 0.000 | 0.213 |
| Total HAPs | 17.34 | 15.10 | 0.17 | 0.042 | 15.32 |

OPERATING PERMIT APPLICATION COMPONENTS:

1. Updated Operating Permit Renewal Application No. 0011, dated March 15, 2011
2. Installation Permit No.0011-I002, issued July 13, 2007
3. Updated potential to emit data, April 12, 2011

TESTING REQUIREMENTS:

The permittee shall test the loading process and VCU for compliance with the requirements of the permit, Section 40 CFR 60.503, and Article XXI, §2105.13, every five years or after a modification to the TLR or VCU. Testing shall be conducted according to the procedures of 40 CFR 60.503 and Article XXI, §2105.13 and shall follow the requirements of Article XXI, §2108.02.

APPLICABLE REQUIREMENTS:

Article XXI, Requirements for Issuance:

The requirements of Article XXI, Parts B and C for the issuance of major operating permits have been met for this facility. Article XXI, Part D, Part E and Part H will have the necessary sections addressed individually.

40 CFR Part 63 “National Emissions Standards for Hazardous Air Pollutants”:

Installation permit 0011-I002 limited the hazardous air pollutants from the source to less than major source limits.

40 CFR 60, Subpart XX, “Standards of Performance for Bulk Gasoline Terminals”:

Provisions of this regulation were incorporated into Installation Permit No. 0011-I002 as BACT and are incorporated into the Operating Permit by reference..

NON-APPLICABLE REQUIREMENTS:

40 CFR Part 63 Subpart BBBBBB, “National Emission Standards for Hazardous Air Pollutants for Source Category: Gasoline Distribution Bulk Terminals, Bulk Plants, and Pipeline Facilities”:

The facility is a synthetic minor source of HAP’s and does not meet the definition of a ‘bulk gasoline terminal’ and is thus exempt from 40 CFR part 63 subpart BBBBBB.

40 CFR Part 64, “Compliance Assurance Monitoring”:

The requirements of 40 CFR Part 64, “Compliance Assurance Monitoring,” were found not to be applicable to this facility. The facility is a synthetic minor source of VOC’s.

40 CFR Part 60, Subpart K, “Standards of Performance for Storage Vessels for Petroleum Liquids for Which Construction, Reconstruction, or Modification Commenced After June 11, 1973, and Prior to May 19, 1978”:

No AST is subject to this standard due to the age of the tanks, date of any modifications or sizes.

40 CFR Part 60, Subpart Ka, “Standards of Performance for Storage Vessels for Petroleum Liquids for Which Construction, Reconstruction, or Modification Commenced After May 11, 1978, and Prior to July 23, 1984”:

No AST is subject to this standard due to the age of the tanks, date of any modifications or sizes.

40 CFR Part 60, Subpart Kb, “Standards of Performance for Volatile Organic Liquid Storage Vessels (Including Petroleum Liquid Storage Vessels) for Which Construction, Reconstruction, or Modification Commenced After July 23, 1984”:

No AST is subject to this standard due to the age of the tanks, date of any modifications or sizes.

METHOD OF COMPLIANCE DETERMINATION:

Compliance with the emission standards set in this permit will be demonstrated by compliance with the above applicable regulations, testing of the TLR and VCU every five years, monitoring of the VCU exhaust gas temperature and observing the burner for the presence of a flame and the exhaust stack for visible emissions and record keeping and reporting requirements.

See the Operating Permit No. 0011 for specific compliance methods, record keeping and reporting requirements for the facility.

RECOMMENDATIONS:

The facility is in compliance with all applicable regulations of Article XXI and it is recommended that Operating Permit No. 0011 be issued.