ALLEGHENY COUNTY HEALTH DEPARTMENT
AIR QUALITY PROGRAM

June 30, 2011

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

Sunoco Logistics Pittsburgh Terminal
5733 Butler Street
Pittsburgh, PA 15201

RE: Operating Permit File No. 0007
Bulk petroleum distribution terminal

TO: Sandra L. Etzel, Chief Engineer

FROM: David D. Good, Air Quality Engineer

FACILITY DESCRIPTION:

Sunoco Partners Marketing & Terminals, L.P. Pittsburgh Terminal is an aboveground bulk material storage tank distribution facility for petroleum products, with an average daily, design throughput of 1,250,000 gallons/day. The Pittsburgh terminal receives bulk petroleum products, such as gasoline and ethanol from their distribution pipeline and rail tank car off-loading facility and stores them in one of five Aboveground Storage Tanks (ASTs) with internal floating roofs. Gasoline and Ethyl Alcohol (ethanol) are transferred from these ASTs, to the Truck Loading Rack (TLR) for loading of tanker trucks. Hydrocarbon vapors are transferred from the tanker trucks through the TLR to the Vapor Recovery Unit (VRU).

The facility is a major source of Volatile Organic Compounds (VOCs) and a minor source of Particulate Matter (PM), Particulate Matter < 10 microns in diameter (PM-10), Sulfur Dioxide (SO_2), Nitrogen Oxides (NO_X), Carbon Monoxide (CO) and Hazardous Air Pollutants (HAPs) as defined in section 2101.20 of Article XXI.

The terminal presently consists of the following emission units:

1. One TLR with four bays and eleven loading arms.

2. Five vertical ASTs with internal floating roofs, T001 (3,439,800 gallons), T002 (2,268,000 gallons), T003 (2,809,900 gallons), T004 (168,000 gallons) and T321 (126,830 gallons), three in gasoline service (T001, T002 and T003) and two in ethanol service (T004 and T321).

3. Two small horizontal storage tanks, T005 (20,000 gallons) and T007 (10,000 gallons) one in gasoline additive service and one in diesel fuel service.

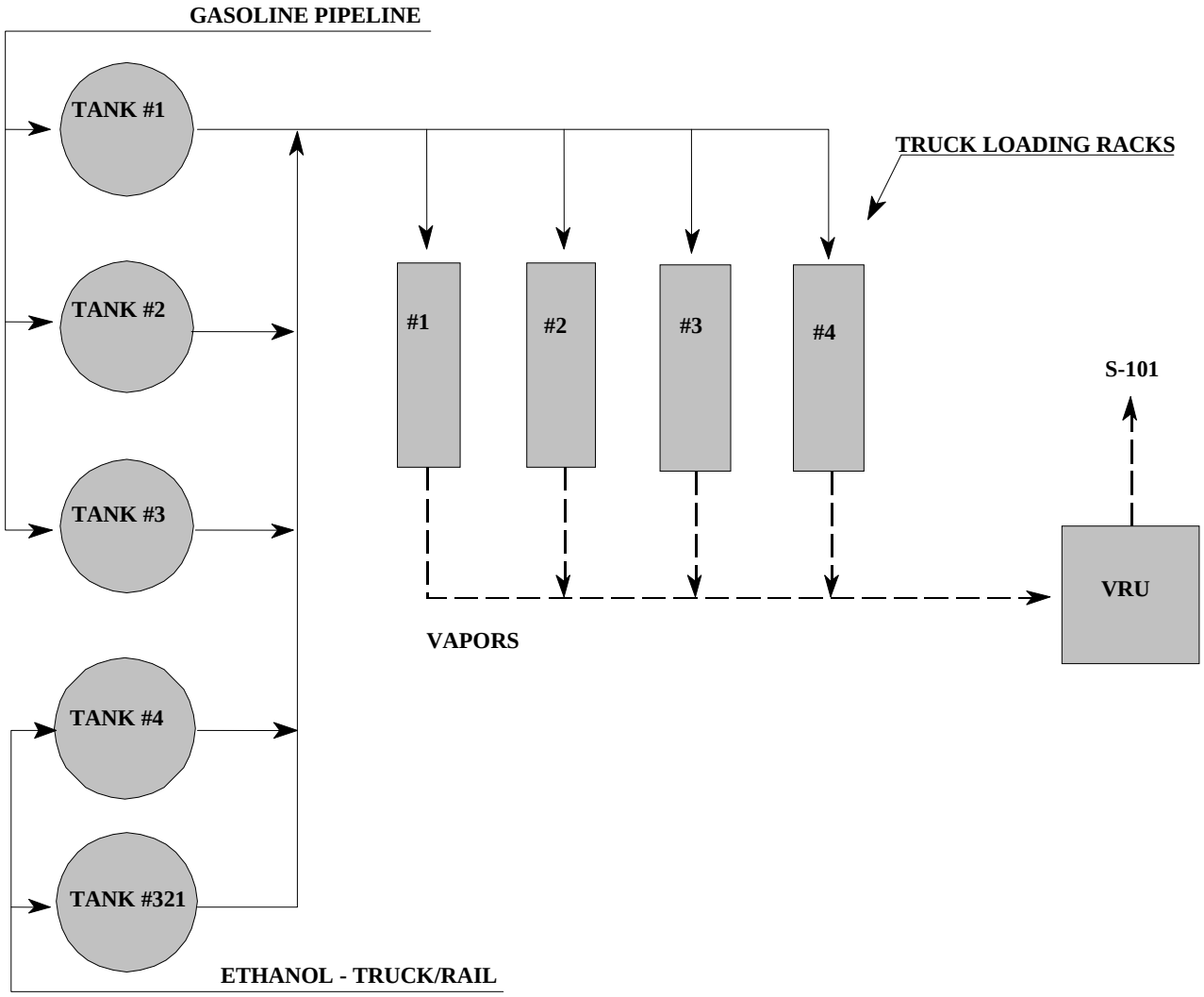
4. Two 20,000 gallon frac tanks

5. Two oil water separators, one underground 10,000 gallon and one 120,000 gallon opened top.

6. One Weil McLain, 2.01 MMBtu/hr boiler fired with natural gas

7. Two soil vapor extraction units, general operating permits 0554a and 0556a, for recovery of Benzene, Toluene, Ethylbenzene and Xylene (BTEX).

Facility Process Diagram:



Storage Tank Data:

Tank I.D	Capacity (gal.)	Year built	Type	Controls	Normal storage
T001	3,439,800	1968	Vertical above ground storage tank	Internal floating roof with a vapor mounted primary seal	Gasoline @ ambient temperature
T002	2,268,000	1978	Vertical above ground storage tank	Internal floating roof with mechanical shoe seal	Gasoline @ ambient temperature
T003	2,809,900	1994	Vertical above ground storage tank	Internal floating roof with mechanical shoe seal	Gasoline @ ambient temperature
T321	126,830	2000 [**Modified**]	Vertical above ground storage tank	Internal floating roof with mechanical shoe seal	Ethanol @ ambient temperature
T004	168,000	2000	Vertical above ground storage tank	Internal floating roof with mechanical shoe seal	Ethanol @ ambient temperature
T005	20,000	1968	Horizontal above ground storage tank	None	Gasoline additive @ ambient temperature
T007	10,000	1968	Horizontal above ground	None	Diesel fuel @ ambient temperature

Truck Loading Rack Data:

Maximum throughput:	1,250,000 gallons/day of gasoline and ethanol
Number of bays:	four (4)
Number of loading arms:	eleven (11)
Product transferred:	Bay #1: two ethanol loading arms; and bays #2, #3 and #4: three gasoline loading arms each
Controls:	Attached to an activated carbon adsorption/gasoline absorption VRU

Vapor Recovery Unit Data:

Name and Model:	John Zink Company, L.L.C., Tulsa. Oklahoma
Installation Date:	1992
Type:	Activated carbon adsorption/gasoline absorption
Number of carbon columns:	Two alternating absorber vessels (every fifteen min) filled w/ activated carbon
Regeneration:	High levels of vacuum (25.0" Hg to 28.5" Hg) and purged air stripping

Design Criteria:

Loading:	8,400 gpm (Instantaneous)
Outlet concentration:	Less than 35 mg/l [Actual: 3.18 mg/liter on 09.28.2007 while loading 122,200 gallons of gasoline in six hours]
Control efficiency:	Greater than 99.0% [Actual: 99.65% on 09.28.2007 while loading 122,200 gallons of gasoline in six hours]

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:

Number and type of tanks:	One open-top and one Underground Storage Tank (UST)
Volume:	120,000 gallons and 10,000 gallons

Boiler Data:

Manufacturer and model:	Weil-McLain, Michigan City, Indiana
Max. Heat input:	2.01 MMBtu/hr
Fuel:	Natural gas only
Controls:	None

Fugitive Emissions from Valves, Flanges and Pumps Data:

Annual Throughput:	456,000,000 gallons of gasoline and 30,000,000 gallons of ethanol

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 two oil/water separators, two frac tanks and two storage tanks T005 and T007 have negligible emissions of VOCs and HAPs

3. Fugitive VOCs and HAPs from valves, pumps and flanges are negligible

4. The 2.01 MMBtu/hr boiler has insignificant levels of emissions.

5. The two soil vapor extraction units in have insignificant levels of emissions.

EMISSION CONTROL:

ASTs T-001, T-002, T-003, T004 and T-321 are equipped with internal floating roofs and the TLR is equipped with a VCU.

EMISSION CALCULATIONS:

Loading rack potential emissions:

Gasoline VOC emissions:

1. The maximum allowable gasoline throughput for the loading racks is 456,000,000 gallons in any consecutive 12 month period, as specified in Installation Permit 0007-I001, issued June 15, 1998.

2. The maximum hourly loading rate for the racks is 180,000 gallons/hr, being limited by the capacity of the VRU.

3. The maximum allowable VOC emissions from the VRU are 35 mg/l as specified in the above referenced installation permit (guaranteed emission level provided by the manufacturer of the VRU (i.e. John Zink Company) of 35 mg/l).

4. The estimated maximum fugitive emissions from the tanker trucks during gasoline loading is 9 mg/l (calculated using 0.5% as the average leakage from a truck passing the 3-inch pressure decay test (USEPA, 1980: Bulk Gasoline Terminals - Background Information for Proposed Standards, Table C-4).

5. Maximum potential annual VOC emissions from gasoline tanker truck loading:

   $(4.56 * 10^8$ gals/yr * (35 mg/l + 9 mg/l)) * 8.346 *10^{-6} lb-l/mg-gal = 167,454 lbs/yr = **83.7 tons/yr** (VRU and TLR)
   $(4.56 * 10^8$ gals/yr * 35 mg/l) * 8.346 * 10^{-6} lb-l/mg-gal = 133,202 lbs/yr = **66.6 tons/yr** (VRU)

6. Maximum potential hourly VOC emissions from gasoline tanker truck loading:

   (180,000 gals/hr * (35 mg/l + 9 mg/l)) * 8.346 * 10^{-6} lb-l/mg-gal = **66.1 lbs/hr (**VRU and TLR)
   (180,000 gals/hr * 35 mg/l) * 8.346 * 10^{-6} lb-l/mg-gal = **52.6 lbs/hr (**VRU)

Ethanol emissions:

1. Ethanol is loaded into the tanker trucks before the loading of gasoline. The mixture is blended as the tanker truck travel to the Gasoline Dispensing Facility (GDF). Ethanol is also loaded into tanker trucks for transfer to the Sunoco Logistics terminals in Delmont and Altoona, Pennsylvania. All ethanol will be assumed to be gasoline and the allowable gasoline throughput of 4.56 x 10^8gal/yr will be a limitation on the combined gasoline and ethanol throughput. The theoretical potential to emit will remain as above with 100% of the throughput assumed to be gasoline.

Gasoline HAP emissions:

1. Table 4.3 of API Publication 347, October 1998 supplies an accepted methodology for estimating emissions of HAPs from carbon VRUs, based on empirical studies. The emissions of an individual HAP are determined by the carbon control efficiency for that HAP and the liquid wt% of the HAP in the gasoline, by the following equations:

   980 * (liquid wt% of HAP/100) * (1- (carbon efficiency for HAP/100)) = mg HAP/liter of gasoline loaded.

   mg of HAP/liter of gasoline * (3.79 liters/454 x 10^3 mg) * 180,000 gal/hr = maximum potential lbs/hr of HAP

   mg of HAP/liter of gasoline * (3.79 liters/454 x 10^3 mg) * (456 x 10^6gal/yr/2000) = maximum potential tons/yr of HAP.

HAP	Liquid wt%	Carbon Efficiency	mg/liter	lbs/hr	Tons/yr
Benzene	4.9	99.97	0.014406	0.0216	0.027
MTBE	15	99.85	0.2205	0.3313	0.42
Toluene	30	99.93	0.2058	0.3092	0.392
Xylene	25	99.55	1.1025	1.6567	2.098
Ethyl Benzene	5	99.66	0.1666	0.2503	0.317
Isooctane	6	99.62	0.22344	0.3357	0.425
N-Hexane	5	99.88	0.0588	0.0883	0.112
Total				**2.9931**	**3.791**

2. Where no data exists for a particular HAP in the above referenced API study, the vapor weight fraction for each HAP presented below was used to calculate emissions.

   (Vp of HAP/Vp of product) x (liquid wt %/100) x (MW of HAP/MW of product) = lbs Hap/lbs total vapor exiting the VRU

3. These vapor weight fractions were then applied to the total VOC tpy and lbs/hr calculated above, to determine the maximum potential emissions of each HAP.

HAP	Vapor Wt (lbs HAP/lbs total vapor)	lbs/hr	Tons/yr
Cumene	0.0002	0.013	0.017
Total		**0.013**	**0.017**

4. Total HAPs from gasoline loading = 2.01 lbs/hr and 3.81 tons/yr

<u>Gasoline and ethanol tanks T-001, T-002, T-003, T-004 and T-321 potential emissions</u>:

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 456 x 10^6gal/yr for the loading racks. This approach was taken in lieu of attempting to determine the worst-case emission scenario for 456 x 10^6gal/yr of ethanol and gasoline going through all five tanks. 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.

2. Tank data and emissions:

Tank no.	Size	Max Turnovers	VOCs (tons/yr)
T-001	3.15×10^6	100	5.96 - gasoline
T-002	2.268×10^6	100	3.69 - gasoline
T-003	2.8099×10^6	100	3.90 - gasoline
T-004	168,000	500	0.42 - ethanol
T-321	126,830	500	0.36 - ethanol
Total - gasoline			**13.55**
Total - ethanol			**0.78**

3.

HAP	Vapor Wt (lbs HAP/lbs total vapor)	T003 Tons/yr	T001/T002 Tons/yr
Benzene	0.0144	0.056	0.139
Cumene	0.0002	0.001	0.002
MTBE	0.1121	0.437	1.082
Toluene	0.0219	0.085	0.211
Xylene	0.0088	0.034	0.085
Ethyl Benzene	0.0015	0.006	0.014
Isooctane	0.0143	0.056	0.138
N-Hexane	0.0208	0.081	0.201
Total		**0.76**	**1.87**

Fugitive emissions (valves, fitting & pumps):

Source Category	Service	Emission Factor (lbs/hr-source)	Total Number of Sources[1]	Fugitive VOC Emissions (tons/yr)[2]
Valves	Gas	0.0000286	412	0.0516
	Light Liquid	0.0000946	62	0.0257
Fittings	Gas	0.0000924	1232	0.4986
	Light Liquid	0.0000176	204	0.0157
Pumps	Light Liquid	0.001188	18	0.0937
Other	Gas	0.000264	18	0.0208
	Light Liquid	0.000286	8	0.0100
Total			1954	**0.7161**

[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)

MAXIMUM POTENTIAL EMISSIONS SUMMARY:

Pollutant	Loading Racks & VRU		Storage Tanks	Fugitive Emissions	Total
	lbs/hr	tons/yr	tons/yr	tons/yr	tons/yr
VOCs	66.1	83.7	14.3	0.716	98.7
Benzene	0.0216	0.027	0.195	0.0098	0.23
Cumene	0.013	0.017	0.003	0.0002	0.02
MTBE	0.3313	0.42	1.52	0.0761	2.02
Toluene	0.3092	0.392	0.297	0.0149	0.70
Xylenes	1.6567	2.098	0.119	0.0060	2.22
Ethylbenzene	0.2503	0.317	0.02	0.0010	0.34
Isooctane	0.3357	0.425	0.194	0.0097	0.63
N-Hexane	0.0883	0.112	0.282	0.0360	0.43
Total HAPs	3.01	3.81	2.63	0.1536	6.59

A year is defined as any consecutive twelve month period

OPERATING PERMIT APPLICATION COMPONENTS:

1. Updated Operating Permit Renewal Application No. 0007, dated May 7, 2007
2. Installation Permit No.0007-I001, issued June 15, 1998.
3. Initial notification of 40 CFR part 63 subpart BBBBBB, dated May 6, 2008
4. CAM plan submitted September 14, 2010

TESTING REQUIREMENTS:

The permittee shall test the loading process and VRU 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 VRU. 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.

Article XXI, §2105.13 "Gasoline Loading Facilities":

This section is applicable to the facility. See the Operating Permit No. 0007 for specific regulatory provisions.

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 subject to emission limitations and standards proposed by the EPA after November 15, 1990. The facility is subject to the monitoring requirements of 40 CFR part 63 subpart BBBBBB.

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":

AST, T002 is subject to this standard due to the construction date of 1977. See the Operating Permit No. 0007 for specific regulatory provisions.

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 ASTs at this facility are subject to this standard due to the age of the tanks, age 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":

ASTs T003, T004 and T321 are subject to this standard due to construction or modification after July 23, 1984. They are each greater than 151m^3 incapacity and store volatile organic liquids with a vapor pressures between 5.2 and 76.6 kPa. See the Operating Permit No. 0007 for specific regulatory provisions.

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

The total of all gasoline loading racks at the facility are affected units under Subpart XX due to the replacement of the VRU in 1983. See the Operating Permit No. 0007 for specific regulatory provisions.

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

Installation permit 0007-I001 limited the hazardous air pollutants from the source to less than major source limits.

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 terminal must be in compliance with the regulatory requirements delineated in 40 CFR Part 63, Subpart BBBBBB no later than January 10, 2011. See Operating Permit No. 0007 for specific regulatory provisions.

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 VRU every five years, monitoring of the carbon bed temperatures, regeneration vacuum range and absorber tower pressure drop on a weekly basis, and activated carbon testing every two years along with record keeping and reporting requirements.

See the Operating Permit No. 0007 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. 0007 be issued.