PIER 400 PROJECT
NEW CONSTRUCTION OF A TANK FARM FACILITY

Facility Information	**PACIFIC LA MARINE TERMINAL, LLL** **ID# 164564** **TITLE V: YES** **RECLAIM: N/A** **CYCLE: N/A** **ZONE: COASTAL**
Mailing Address	**5900 CHERRY AVENUE** **LONG BEACH, CA 90805**
Equipment Address	**750 ELDRIDGE STREET** **TERMINAL ISLAND, CA 90731**
Contact Information	**THOMAS J. MCLANE** **DIRECTOR, ENVIRONMENTAL & REGULATORY COMPLIANCE** **(562) 728 – 2064**

EQUIPMENT DESCRIPTION

APPLICATION A/N 512793

STORAGE TANK T2000-1, CRUDE OIL, PARTIALLY REFINED PETROLEUM/INTERMEDIATE FEEDSTOCK, 265'-0" DIA. X 64'-0" H., 500,000 BBL. CAPACITY, INTERNAL FLOATING ROOF, WELDED SHELL, WITH METALLIC SHOE PRIMARY SEAL AND RIM-MOUNTED MULTIPLE WIPER TYPE SECONDARY SEAL, CONNECTED TO A VAPOR CONTROL UNIT

APPLICATION A/N 512794

STORAGE TANK T2000-2, CRUDE OIL, PARTIALLY REFINED PETROLEUM/INTERMEDIATE FEEDSTOCK, 265'-0" DIA. X 64'-0" H., 500,000 BBL. CAPACITY, INTERNAL FLOATING ROOF, WELDED SHELL, WITH METALLIC SHOE PRIMARY SEAL AND RIM-MOUNTED MULTIPLE WIPER TYPE SECONDARY SEAL, CONNECTED TO A VAPOR CONTROL UNIT

APPLICATION A/N 512795

STORAGE TANK T2000-3, CRUDE OIL, PARTIALLY REFINED PETROLEUM/INTERMEDIATE FEEDSTOCK, 265'-0" DIA. X 64'-0" H., 500,000 BBL. CAPACITY, INTERNAL FLOATING ROOF, WELDED SHELL, WITH METALLIC SHOE PRIMARY SEAL AND RIM-MOUNTED MULTIPLE WIPER TYPE SECONDARY SEAL, CONNECTED TO A VAPOR CONTROL UNIT

APPLICATION A/N 512796

STORAGE TANK T2000-4, CRUDE OIL, PARTIALLY REFINED PETROLEUM/INTERMEDIATE FEEDSTOCK, 265'-0" DIA. X 64'-0" H., 500,000 BBL. CAPACITY, INTERNAL FLOATING ROOF, WELDED SHELL, WITH METALLIC SHOE PRIMARY SEAL AND RIM-MOUNTED MULTIPLE WIPER TYPE SECONDARY SEAL, CONNECTED TO A VAPOR CONTROL UNIT

APPLICATION A/N 450095

STORAGE TANK T2000-5, CRUDE OIL, PARTIALLY REFINED PETROLEUM/INTERMEDIATE FEEDSTOCK, 185'-0" DIA. X 64'-0" H., 250,000 BBL. CAPACITY, INTERNAL FLOATING ROOF, WELDED SHELL, WITH METALLIC SHOE PRIMARY SEAL AND RIM-MOUNTED MULTIPLE WIPER TYPE SECONDARY SEAL, CONNECTED TO A VAPOR CONTROL UNIT

APPLICATION A/N 450097

STORAGE TANK T2000-6, CRUDE OIL, PARTIALLY REFINED PETROLEUM/INTERMEDIATE FEEDSTOCK, 185'-0" DIA. X 64'-0" H., 250,000 BBL. CAPACITY, INTERNAL FLOATING ROOF, WELDED SHELL, WITH METALLIC SHOE PRIMARY SEAL AND RIM-MOUNTED MULTIPLE WIPER TYPE SECONDARY SEAL, CONNECTED TO A VAPOR CONTROL UNIT

APPLICATION A/N 450098

STORAGE TANK T2000-7, CRUDE OIL, PARTIALLY REFINED PETROLEUM/INTERMEDIATE FEEDSTOCK, 185'-0" DIA. X 64'-0" H., 250,000 BBL. CAPACITY, INTERNAL FLOATING ROOF, WELDED SHELL, WITH METALLIC SHOE PRIMARY SEAL AND RIM-MOUNTED MULTIPLE WIPER TYPE SECONDARY SEAL, CONNECTED TO A VAPOR CONTROL UNIT

APPLICATION A/N 450099

STORAGE TANK T2000-8, CRUDE OIL, PARTIALLY REFINED PETROLEUM/INTERMEDIATE FEEDSTOCK, 185'-0" DIA. X 64'-0" H., 250,000 BBL. CAPACITY, INTERNAL FLOATING ROOF, WELDED SHELL, WITH METALLIC SHOE PRIMARY SEAL AND RIM-MOUNTED MULTIPLE WIPER TYPE SECONDARY SEAL, CONNECTED TO A VAPOR CONTROL UNIT

APPLICATION A/N 512797

STORAGE TANK T2000-9, CRUDE OIL, PARTIALLY REFINED PETROLEUM/INTERMEDIATE FEEDSTOCK, 265'-0" DIA. X 64'-0" H., 500,000 BBL. CAPACITY, INTERNAL FLOATING ROOF, WELDED SHELL, WITH METALLIC SHOE PRIMARY SEAL AND RIM-MOUNTED MULTIPLE WIPER TYPE SECONDARY SEAL, CONNECTED TO A VAPOR CONTROL UNIT

APPLICATION A/N 512798

STORAGE TANK T2000-10, CRUDE OIL, PARTIALLY REFINED PETROLEUM/INTERMEDIATE FEEDSTOCK, 265'-0" DIA. X 64'-0" H., 500,000 BBL. CAPACITY, INTERNAL FLOATING ROOF, WELDED SHELL, WITH METALLIC SHOE PRIMARY SEAL AND RIM-MOUNTED MULTIPLE WIPER TYPE SECONDARY SEAL, CONNECTED TO A VAPOR CONTROL UNIT

APPLICATION A/N 450679

STORAGE TANK CLEANING/DEGASSING VAPOR CONTROL SYSTEM CONSISTING OF:

1. VAPOR COLLECTION UNIT WITH A LIQUID KNOCKOUT DRUM 3'-6" DIA. X 7'-3" H., 325 GAL CAPACITY, WITH AN INFLUENT DETONATION ARRESTOR, TWO 5-HP VARIABLE FREQUENCY DRIVE VAPOR SCAVENGING BLOWERS WITH ONE SERVED A BACKUP, 420 SCFM MAXIMUM TOTAL FLOW RATE, EQUIPPED WITH TANDEM MECHANICAL SEALS WITH AN EFFLUENT DETONATION ARRESTOR.
2. 30,000 CU. FT VAPOR HOLDER/EXPANDABLE BLADDER TANK, 20'-0" DIA. X 26'-0" H.
3. DIRECT GAS FIRED INCINERATOR, WITH TWO BURNERS, 125 MMBTU/HR TOTAL, JOHN ZINK OR COMPARABLE BURNERS, COMBUSTING VAPORS FROM TANK CLEANING/DEGASSING OPERATION AND NATURAL GAS AS SUPPLEMENTAL FUEL, WITH TWO 75-HP COMBUSTOR BOOSTER BLOWERS, 2600 SCFM MAXIMUM TOTAL FLOW RATE, EQUIPPED WITH DETONATION ARRESTORS.
4. VAPOR RECOVERY HEADER SERVING STORAGE TANKS T2000-1 THROUGH T2000-10.

APPLICATION A/N 512076

INTERNAL COMBUSTION ENGINE, CUMMINS, MODEL NO. 80DSFAE OR EQUIVALENT, DIESEL FUELED, FOUR CYCLES, TURBOCHARGED, AFTERCOOLED, RATED AT 145 BHP, DRIVING AN EMERGENCY ELECTRICAL GENERATOR

APPLICATION A/N 512077

INTERNAL COMBUSTION ENGINE, CLARKE, MODEL NO. JX6H-UFAD60 *OR EQUIVALENT*, DIESEL FUELED, FOUR CYCLES, TURBOCHARGED, AFTERCOOLED, RATED AT 510 BHP, DRIVING AN EMERGENCY FIRE PUMP

APPLICATION A/N 513776

STORAGE TANK, CONTACT/STORM WATER, DIAMETER: 12 FT, LENGTH: 47.5 FT, 35,000 GALLON CAPACITY, WITH TWO CARBON ADSORPTION CANISTERS IN SERIES, EACH 55 GALLON DRUM OF GRANULAR ACTIVATED CARBON

APPLICATION INFORMATION

TABLE 1 - Applications Submitted for Tank Farm Facility T2000

Appl. No.	Tank Name	Application for
512793	T2000-1	New construction of a 500,000-barrel internal floating roof tank.
512794	T2000-2	New construction of a 500,000-barrel internal floating roof tank.
512795	T2000-3	New construction of a 500,000-barrel internal floating roof tank.

Appl. No.	Tank Name	Application for
512796	T2000-4	New construction of a 500,000-barrel internal floating roof tank.
450095	T2000-5	New construction of a 250,000-barrel internal floating roof tank.
450097	T2000-6	New construction of a 250,000-barrel internal floating roof tank.
450098	T2000-7	New construction of a 250,000-barrel internal floating roof tank.
450099	T2000-8	New construction of a 250,000-barrel internal floating roof tank.
512797	T2000-9	New construction of a 500,000-barrel internal floating roof tank.
512798	T2000-10	New construction of a 500,000-barrel internal floating roof tank.
460679	Tank Vapor Controlling System	New construction of a direct-flame afterburner and vapor collection system to control vapor from tank degassing and refilling operations.
512076	Emergency Generator	New construction of an internal combustion engine (ICE) that will power an emergency electrical generator. (Engineering evaluation for this application is found in Attachment I)
512077	Emergency Fire Pump	New construction of an internal combustion engine (ICE) that will power an emergency fire fighting water pump. (Engineering evaluation for this application is found in Attachment I)
513776	Storage Tank	New construction of a 35,000-gallon fixed roof storage tank that will be used to collect and store contact storm water from various areas within the facility. (Engineering evaluation for this application is found in Attachment I)

TABLE 2 - Pre-screening Information

A/N	Appl. Status	Deem Compl. Date	Fee Paid	Fee Req'd	Fee Bal.
450095	10	11/17/05	$2,437.95	$3,656.93	$1,218.98
450097	10	11/17/05	$2,437.95	$1,828.47	($609.48)
450098	10	11/17/05	$2,437.95	$3,656.93	$1,218.98

A/N	Appl. Status	Deem Compl. Date	Fee Paid	Fee Req'd	Fee Bal.
450099	10	11/17/05	$2,437.95	$1,828.47	($609.48)
460679	10	11/28/06	$3,701.25	$2,775.94	($925.31)
512076	10	3/3/06	$2,051.52	$3,141.90	$1,090.38
512077	10	3/3/06	$2,051.52	$3,141.90	$1,090.38
512793	10	8/26/10	$4,969.58	$4,969.58	$0.00
512794	10	8/26/10	$2,484.79	$2,484.79	$0.00
512795	10	8/26/10	$2,484.79	$2,484.79	$0.00
512796	10	8/26/10	$2,484.79	$2,484.79	$0.00
512797	10	8/26/10	$2,484.79	$2,484.79	$0.00
512798	10	8/26/10	$2,484.79	$2,484.79	$0.00
513776	10	8/26/10	$2,484.79	$2,484.79	$0.00

PROJECT DESCRIPTION

Pacific LA Marine Terminal LLC (PLAMT), a wholly owned subsidiary of PLAINS All American Pipeline, L.P. (PLAINS), proposes to build a deep-water bulk crude oil/petroleum liquids offloading marine terminal at Berth 408 on Pier 400 in the Port of Los Angeles, and a storage tank farm on Terminal Island, California. This project is developed in anticipation of continued decreases in Alaska and California crude oil supplies and projected increases in foreign crude imports in the next several years. Imported crude supplies will increasingly be brought into California using very large marine tanker vessels. Currently, there is no berth in the state with sufficient water depth to accommodate large size marine vessels such as Very Large Crude Carrier (ULCC) and Ultra Large Crude Carrier (ULCC) class tankers that can transport millions of barrels at a time. The growing demand for foreign crude oils is also expected to put a strain on existing facilities in the Port of Los Angeles and Port of Long Beach. The proposed deep-water berth will serve the increased demand for imported crude oils in Southern California.

The new Berth 408 proposed by PLAMT is designed to receive, store and transfer an average of 250,000 barrels per day of crude oil and petroleum feedstock to local refineries and storage facilities. The proposed project includes new construction of a deep-water berth and a tank farm. The new berth is called Facility T1000, which will be located at 3000 Navy Way on San Pedro, California. The tank farm is called Facility T2000 and will be located at 750 Eldridge Street on Terminal Island, California. Figure 1 on the page 7 on shows the locations of the two new facilities to be constructed for this project.

The proposed marine terminal will only offload liquid cargo from ocean-going marine tanker vessels. The liquid cargo will be limited to crude oil and partially refined/intermediate petroleum feedstock (e.g. gas oil, black oil, bunker oil, residual oil and other petroleum middle distillates). The new terminal will not load petroleum liquids nor load or unload finished petroleum products. After completion, the new marine terminal would have the following capabilities:

- Average daily throughput of 250,000 barrels
- Offload 5-10 marine tanker vessels per month
- Complete offloading a vessel in 24-28 hours with expected offloading rate between 50,000 to 125,000 barrels per hour
- Capable to accommodate ships up to 325,000 deadweight tonnage (dwt) including Very Large Crude Carrier (VLCC) and smaller Ultra Large Crude Carrier (ULCC) class tanker ships.
- "Partial" cold ironing by using shore side electric pumps to assist on-board ship offloading pumps during offloading liquid cargo. The use of shore side electric pumps reduces the loads on the steam-turbine-driven ship offloading pumps, and thereby decreases the emissions from ship boilers. The use of shore side electric pumps will not be required by permit. However, the shore side electric pumps are expected to be utilized regularly in preventing exceedance of the proposed NRS emissions cap limits for the marine terminal facility.

For storage, PLAMT proposes to construct ten above ground storage tanks with a total capacity of approximately four million barrels. The tank locations within the facility are shown in Figure 3 on page 8. PLAMT has proposed to complete the tank farm in three phases with the first phase scheduled to start shortly after Permit to Construct issuance. Phase 2 and 3 is not anticipated to begin until 2012 but no later than 2015. PLAMT will connect the terminal and tank farm with a new 42-inch diameter underground pipeline. The existing pipelines will also be extended to allow transferring of crude oil and feedstock to ExxonMobil Southwest Terminal, Valero Refinery as well as to other existing pipelines.

Figure 1: Proposed New Facilities for This Project

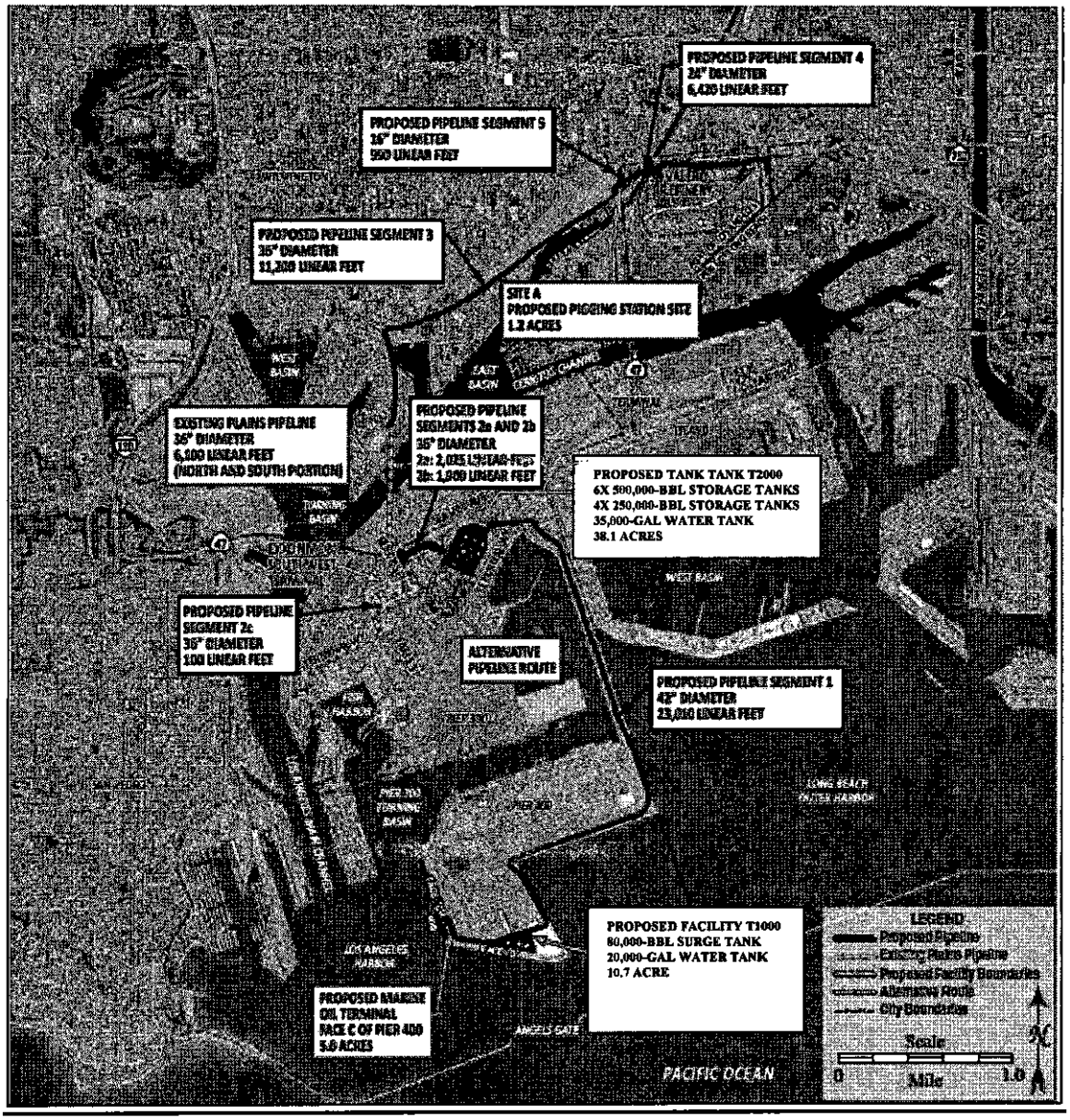


Figure 2: Proposed Marine Terminal T1000 Equipment Layout

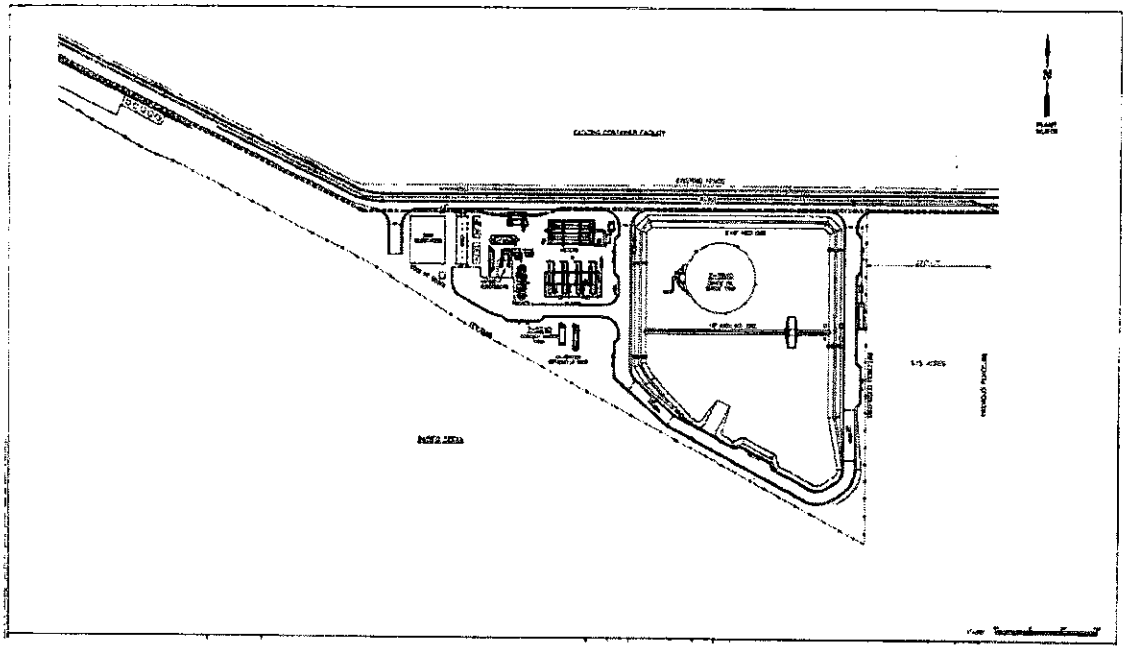
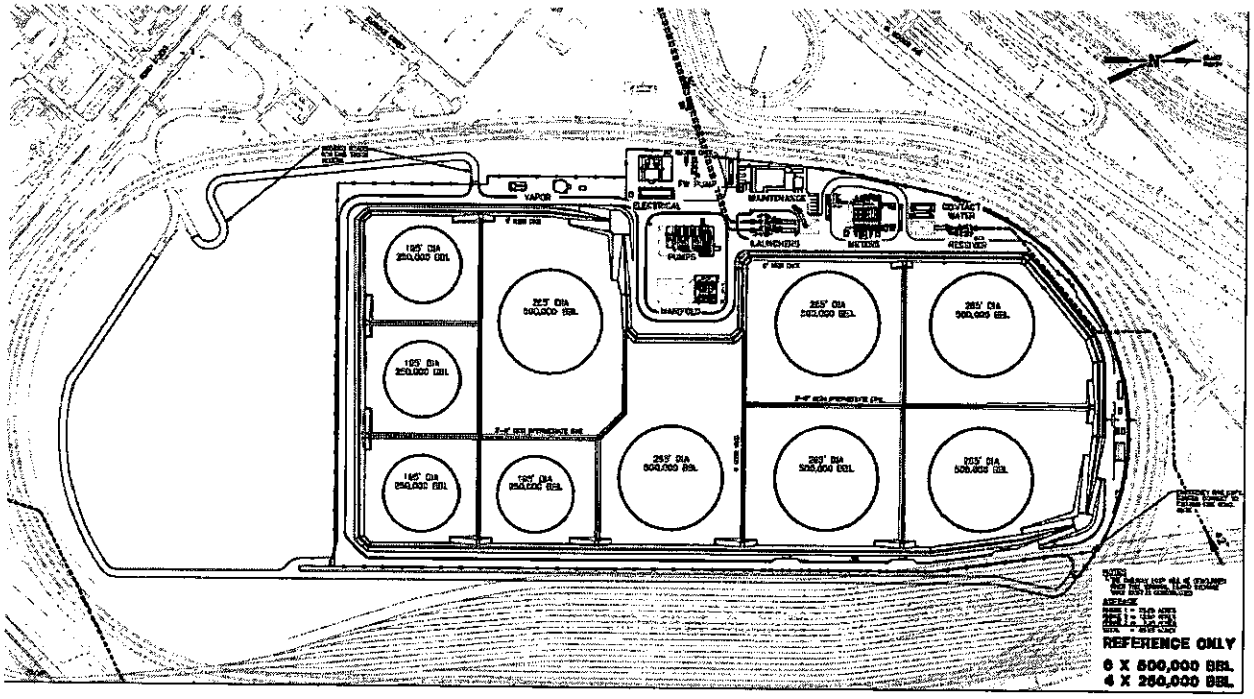


Figure 3: Proposed Tank Farm T2000 Layout



FACILITY/EQUIPMENT AND SCHOOL LOCATIONS

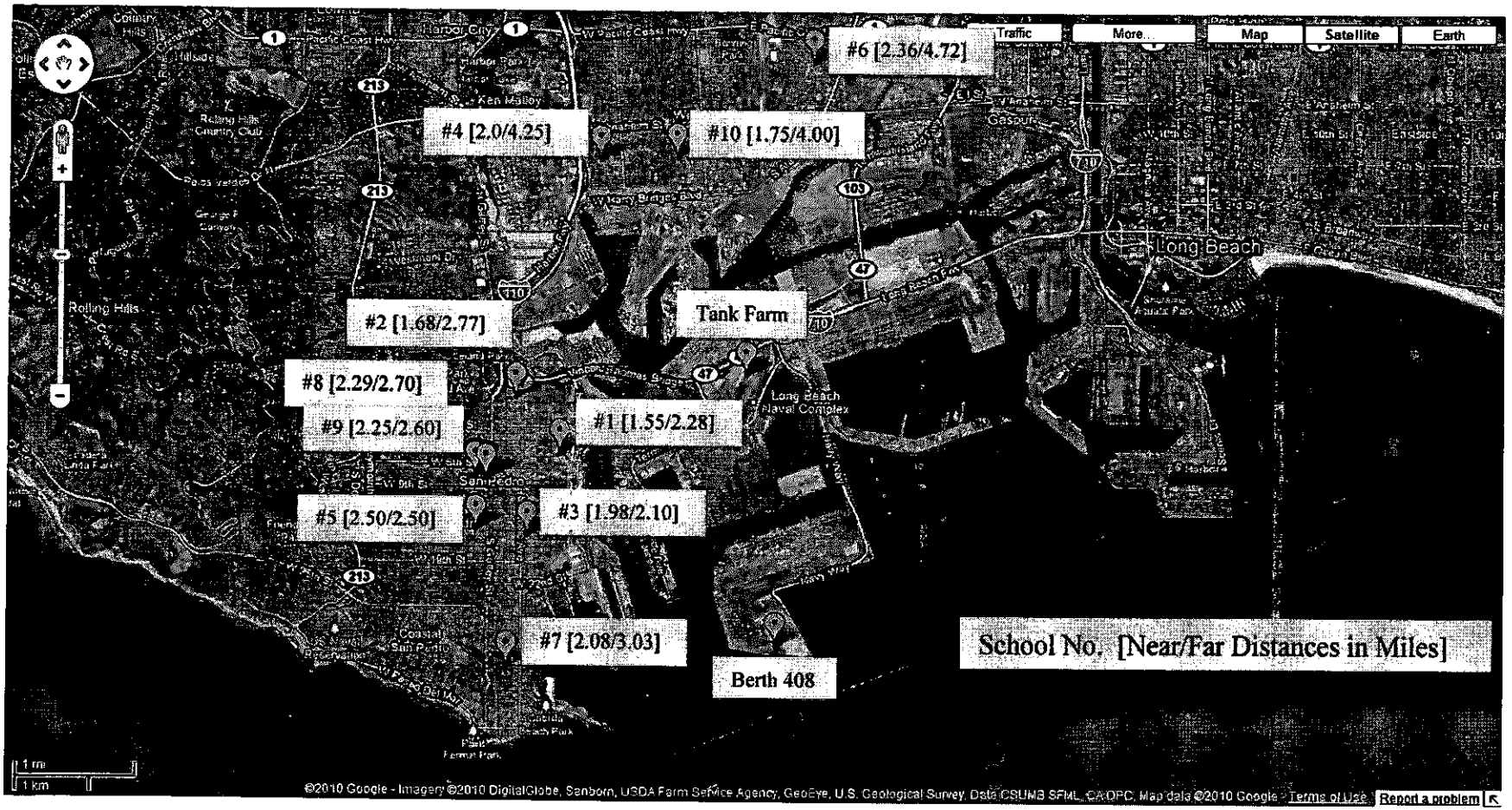
PLAMT's Facility T2000 is located at 750 Eldridge Street on Terminal Island, California. The location of the proposed tanks are shown in Figure 3. Facility T2000 is bounded by Navy Way on the north, Terminal Way on the east, Seaside Avenue on the west and Ferry Street on the south. The tank farm occupies an approximately 38.1 acres.

Land uses of the areas surrounding the project site include dry and liquid bulk, passenger, container, break bulk and automobile terminals, container transfer, warehousing and distribution, shipping services and a US naval station. As shown in Figure 4 on the next page, the proposed project is not located within 1000 feet from the outer boundary of a school. Schools located nearest to the facility include the Port of Los Angeles High School, Barton Hill Elementary School, 15th Street Elementary School and Hawaiian Elementary School. Additional schools located nearby the facility but further are listed in Table 3 below.

TABLE 3 -- Information of Schools Nearest to Project Sites

School No.	Name of School & Telephone No.	School Address
1.	Port of Los Angeles High School (310) 832 – 9201	250 W 5th Street San Pedro, CA 90731
2.	Barton Hill Elementary School (310) 547 – 2471	423 N. Pacific Avenue San Pedro, CA 90731
3.	15th Street Elementary School (310) 547 – 3323	1527 S. Mesa Street San Pedro, CA 90731
4.	Hawaiian Elementary School (310) 830 – 1151	540 Hawaiian Ave. Wilmington, CA 90744
5.	Dana Middle School (310) 833 – 5235	1501 S. Cabrillo Ave San Pedro, CA 90731
6.	Wilmington Park Elementary (310) 830 – 8404	1140 Mahar Ave. Wilmington, CA 90744
7.	Point Fermin Elementary School (310) 832- 2849	3333 South Kerckhoff Avenue San Pedro, CA 90731
8.	Mary Star of the Sea High School (310) 547 – 1138	810 8th Street San Pedro, CA 90731
9.	Cabrillo Avenue Elementary (310) 832-6446	732 S Cabrillo Ave San Pedro, CA 90731
10.	Banning Elementary School (310) 847-1400	500 Island Ave Wilmington, CA 90744

Figure 4 -- Distances to Nearest Schools



COMPLIANCE REVIEW

Facility T2000 is a new facility that has not begun operation. As a result, neither the facility nor the proposed permit units have any unresolved compliance issues or problems. Based on its estimated VOC emissions, Facility T2000 will be a major polluting facility as defined by Rule 1302(s). Consequently, PLAMT and its parent company PLAINS are required to demonstrate statewide compliance for all of its major stationary sources. In a letter dated September 13, 2010, Mr. Thomas McLane, PLAMT's Western Division Director E&RC, certified that PLAMT operates all of its major stationary sources in the State of California in compliance with all applicable emission limitations and standards under the Clean Air Act (see Attachment II).

PROCESS DESCRIPTION

INTERNAL FLOATING ROOF TANKS (A/Ns 450095, 450097-450099, 512793-512798)

PLAMT proposes to construct 10 crude oil/feedstock storage tanks at the new tank farm T2000. All of the tanks will be internal floating roof tanks with six tanks each having a capacity of 500,000 barrels and four tanks each having a capacity of 250,000 barrel. The proposed tanks will store crude oil and partially refined/intermediate petroleum feedstock (e.g. gas oil, black oil, bunker oil, residual oil and other petroleum middle distillates). The throughput of each tank is estimated to be no more than 4.5 turnovers per month. For crude oil, PLAMT agrees a vapor pressure limit of 10 psia. For petroleum liquids other than crude oil, PLAMT agrees to limit their vapor pressures to no more than five psia under actual storage condition. As shown in the Criteria Pollutant Emission section below, crude oil with a vapor pressure of 10 psia is the worst-case operating conditions for the tanks and will be used to determine their potential-to-emit (PTE) emissions. To increase flexibility for its operation, PLAMT requests that emission limits are imposed on three separate groups of tanks rather than individual storage tanks. Group one consists of four 500,000-barrel storage tanks, which will be in constructed in Phase 1 of the tank farm's construction schedule. Group two consists of four 250,000-barrel storage tanks, which make up of Phase 2. Group three includes the two remaining 500,000-barrel storage tanks, which will be built in Phase 3. According to PLAMT, Phase 1 construction will begin in July, 2011. Phase 2 and 3 is not anticipated to begin until 2012 but no later than 2015.

Internal floating roof tanks have both a permanent fixed roof and a floating deck underneath the fixed roof. The fixed roofs of the proposed tanks will be supported by multiple vertical columns. All of the proposed tanks will be equipped with mechanical shoes for primary seals and rim-mounted, multiple wiper secondary-seals for BACT compliance. The mechanical shoe tank seals will also be equipped with a coated fabric envelop to seal the liquid surface between the shoe and the deck rim to reduce deck seam loss emissions. Both the proposed primary and secondary seals will be selected from the current list of seals approved by the Executive Officer. The proposed tanks will be equipped fitting components that are typical to internal floating roof tanks. Some of the fittings typically found in internal floating roof tanks are not described in the applications and unknown to the applicant at this point. For the purpose of calculating emissions, default input values from US EPA TANKS 4.09d software will be used for these fittings. A permit condition will require PLAMT to submit as-built drawings that show the finalized configurations of the

tanks. Emissions from the tanks will be adjusted based on the finalized configurations prior the issuance of their Permits to Operate.

VAPOR COLLECTION AND DISPOSAL SYSTEM (A/N 460679)

PLAMT proposes to install a vapor controlling unit (VCU) that will be utilized to incinerate hydrocarbon vapors from tank degassing, cleaning and refilling operations at this facility. The proposed VCU will consist of an expandable bladder tank and a direct-flame thermal oxidizer. After a tank has been drained, vapor in the vapor space underneath the floating roof will be collected in a 30,000-cubic feet expandable bladder tank using a 5-hp scavenger blower with a maximum total flow rate of 420 standard cubic feet per minute (scfm). There will be also an identical blower serving as a backup to the primary scavenger blower. The vapor collection unit of the VCU will also be equipped with a 325-gallon liquid knockout drum and two detonation arrestors. The vapor controlling unit of the VCU will consist of a thermal oxidizer that will be equipped with two John Zink or comparable burners. The total heat rating capacity of the vapor controlling unit equals 125 MMBtu per hour. The vapor controlling unit will have two 75-hp combustor booster blowers and two detonation arrestors. The combustion chamber of the thermal oxidizer will be equipped with a thermocouple for temperature monitoring. The maximum gas flow rate of the thermal oxidizer will equal to 2600 standard cubic feet per minute.

The proposed VCU will operate in two distinct modes of operation—empty tank purging/degassing and tank refilling. During degassing of an empty tank, the scavenger blower will maintain a slight negative pressure in the vapor space of an empty tank when the floating roof land on the tank's legs and no product is being pumped into or out of the tank. Vapor will be pulled by the scavenger blower through a control valve maintaining a negative pressure of approximately 2 inches of water column in the header of the vapor collection unit. The scavenger blower will have variable speeds capability for maintaining a constant negative pressure. The blower discharges vapor from the collection header into an expandable bladder tank until pressure in the collection header equals to zero. The blower will maintain a flow rate range between 75 to 225 scfm (i.e. 75 scfm per emptied tank for a maximum of three tanks being degassed at the same time) in the collection header. The flow rate results in an air flow velocity through the gap areas of 0.1 to 0.3 feet per second.

PLAMT estimates that the heat content of the vapor pulled from an empty tank has a range as high as1000 Btu/scf at the beginning of the degassing period and gradually decreased to as low as 30 Btu/scf after the vapor space has been purged several times. Tank degassing is expected to last no more than 72 hours. Natural gas will be utilized to supplement tank vapor as its heat content decreased over the length of the degassing period. To maintaining a temperature of 1600°F in the combustion chamber, it is assumed that heat content for the fuel must be at least 800 Btu/scf. The proposed VCU will be equipped with a thermal couple in the combustion chamber and two non-resettable totalizing meters for recording natural gas usage and volume of vapors routed to the thermal oxidizer.

The VCU may be utilized to control tank vapor from up to a maximum of three tanks being degassed simultaneously. When the bladder tank reaches 80 percent of capacity, the thermal

oxidizer is automatically switched on. The thermal oxidizer requires a 5-minute startup period. Natural gas with a flow rate equals 100 cubic feet per minute is utilized to warm up the thermal oxidizer before it is ready to receive the vapor from the bladder tank. At the end of the startup period, the two 75-hp combustor booster blowers begin drawing vapor from the bladder tank and discharges into the reactor chamber of the thermal oxidizer at a maximum rate of 2600 scfm. The thermal oxidizer automatically switches off when the bladder tank reaches the low level at 10 percent of capacity of the bladder tank. It takes about 8 minutes to empty a bladder tank of vapor.

When a tank is being refilled with liquid after it has been emptied, a high volume of vapor is pushed out of the tank. As a result, the tank vapor collected during tank refilling mode is routed directly to thermal oxidizer bypassing the bladder tank. In the tank refilling mode, flow rate of vapor to the thermal oxidizer was estimated by PLAMT to be between 1755 to 1905 scfm. The flow rate was estimated by PLAMT using a low initial refilling rate of 15,000 barrels per hour multiplied by a vapor expansion factor of 1.25. The low initial refilling rate is a safety measure employed to prevent electrical static buildup during refilling of a tank. The low refilling rate will end when liquid level reaches the floating roof deck (i.e. the vapor space is eliminated). After that, refilling rate will increase to maximum pumping capacity. After the completion of tank refilling, the combustor booster blowers will empty the bladder tank before the thermal oxidizer is switched off. PLAMT anticipates that the vapor venting to the thermal oxidizer during tank refilling mode will have a sufficient heat content (approximately 1000 Btu/scf) such that only minimal or no natural gas will be needed to supplement the vapor.

PLAMT proposes that four of the six 500,000-barrel storage tanks (Phase I tanks) will have four roof landing events per month per tank, and the remaining two 500,000-barrel tanks will land their roofs three times per month per tank. The 250,000-barrel tanks will be restricted to two roof landing operations per month per tank. As a result, the facility total for roof landing operations per month will be limited to no more than 30 per month. Similar to the group emission limits for normal operation, PLAMT requests that the roof landing limits are imposed on three separate groups of tanks rather than individual storage tanks to allow operational flexibility at the storage facility.

ELECTRICAL GENERATOR EMERGENCY IC ENGINE (A/N 512076)

PLAMT proposes install a 145 bhp diesel fueled Cummins engine at this facility. The engine will drive an emergency electrical generator. The evaluation report for the engine is included in Attachment I.

FIRE FIGHTING PUMP EMERGENCY IC ENGINE (A/N 512077)

PLAMT proposes install a 510 bhp diesel fueled Clarke engine at this facility. The engine will drive an emergency fire fighting pump. The evaluation report for the engine is included in Attachment I.

FIXED ROOF CONTACT STORM WATER STORAGE TANK (A/N 513776)

PLAMT proposes to construct a 35,000-gallon fixed roof storage tank. The tank is proposed to received storm water and surface runoff water collected by drains throughout the facility that may be in contact with some slop oil. The evaluation report for the tank is included in Attachment I.

CRITERIA POLLUTANT EMISSIONS

INTERNAL FLOATING ROOF TANKS (A/Ns 450095, 450097-450099, 512793-512798)

Using US EPA TANKS4.09d software, the emissions from the proposed tanks for this facility were determined as shown in Table 4. For the purpose of determining emissions, the tanks are assumed to store only crude oil with a maximum true vapor pressure of 10 psia under actual storage conditions. Since PLAMT agrees to accept a vapor pressure limit of 5.0 psia for the partially refined/intermediate petroleum feedstock, the assumption of storing only crude oil results in the greatest emissions for the tanks. A throughput of 4.5 turnovers per month is used in the emission calculations. Appendix A shows the TANKS4.09d Emission Report for the proposed storage tanks.

TABLE 4 – Emissions from Proposed Storage Tanks
(Normal Operation + Roof Landing)

Appl No.	Tank Name	Emission Rates (lb/yr) **(lb/day, 30-d ave)** (lb/hr)
512793	T2000-1	13,569 **37.8** 11.5
512794	T2000-2	13,569 **37.8** 11.5
512795	T2000-3	13,569 **37.8** 11.5
512796	T2000-4	13,569 **37.8** 11.5
450095	T2000-5	7,849 **21.9** 9.1
450097	T2000-6	7,849 **21.9** 9.1

Appl No.	Tank Name	Emission Rates (lb/yr) **(lb/day, 30-d ave.)** (lb/hr)*
450098	T2000-7	7,849 **21.9** 9.1
450099	T2000-8	7,849 **21.9** 9.1
512797	T2000-9	12,734 **35.5** 11.5
512798	T2000-10	12,734 **35.5** 11.5

*Emissions from tank refilling after a roof landing

VAPOR COLLECTION AND DISPOSAL SYSTEM (A/N 460679)

As discussed above, the proposed VCU will operate in two distinct modes of operation—empty tank purging/degassing and tank refilling. Emissions from tank refilling after landing a tank roof include the combustions of natural gas during the VCU's startup and tank vapor pushed out by the incoming liquid. To simplify emission calculations for VOC emissions, the "arrival" loss during refilling is included in the degassing loss calculation. In calculating the "generated" loss component only, a saturation factor of the tank vapor of 0.15 per AP-42 is used to calculate VOC emissions. The "generated" loss emissions are reduced by 99 percent, the control efficiency for the VCU.

Emissions from tank purging/degassing include combustion of natural gas for thermal oxidizer's startup and combustion of tank vapor with and without the supplemental natural gas. The amount of vapor collected during degassing event is calculated using the flow rate in the vapor collection header of 75 scfm per tank and expected degassing period of no more than 72 hours. To maintain a temperature of 1600oF in the VCU combustion chamber, it is assumed that heat content of tank vapor must be at least 800 Btu/scf. To simplify emission calculations for VOC emissions, the degassing emissions are calculated assuming that the vapor space is completely purged at the ending the degassing period. The saturation factor of the vapor is calculated using the equation K_s in Chapter 7 of AP-42. A control efficiency of 99 percent is also applied to the degassing emissions.

PLAMT agrees to limit four of the 500,000-barrel storage tank (Phase I tanks) to no more than four roof landing operation per month per tank, and the remaining two 500,000-barrel tanks will land their roofs three times per month per tank. PLAMT agrees to restrict the 250,000-barrel tanks to no more than two roof landing operation per month per tank. Hourly emission rate is greater from tank refilling than empty tank purging because the tank refilling emissions will

occurs in a shorter length of time. Since the VCU is a control device for the proposed tanks, the VOC emissions from roof landing operations are added in with the tanks' emissions normal operations. As a result, the controlled VOC emissions (remaining 1%) will be charged to the tanks rather than the VCU. Appendix B shows the emission calculations for the VCU from tank roof landing operations. The emissions from the VCU system are as followed:

TABLE 5 -- Emissions from Proposed Vapor Collection and Disposal System

Emission Rate	VOC	NOx	SOx	CO	PM10
30-day ave., lb/day	5.2	77.5	5.9	6.5	19.8
Annually, lbs/yr	2,384	34,826	2,805	2,568	7,113
Hourly, lb/hr	1.09	15.91	1.29	1.14	3.28

Table 8 -- VOC Emissions from Tank Degassing and Refilling Operations

VOC Emissions	500k Tank w/ 4 landings	500k Tank w/ 3 landings	250k Tank w/ 2 landings
30-day ave., lb/day	9.1	6.8	2.3

ELECTRICAL GENERATOR EMERGENCY IC ENGINE (A/N 512076)

TABLE 6 -- Emissions from Proposed Emergency IC Engine Generator (lb/day—30-day ave.)

NOx	CO	VOC	PM	PM10	SOx
0.12	0.03	0.00	0.00	0.00	0.00

Note: See Attachment I for emission calculations of the engine

FIRE FIGHTING PUMP EMERGENCY IC ENGINE (A/N 512077)

TABLE 7 -- Emissions from Proposed Emergency IC Engine Generator (lb/day—30-day ave.)

NOx	CO	VOC	PM	PM10	SOx
0.62	0.06	0.02	0.01	0.01	0.00

Note: See Attachment I for emission calculations of the engine

FIXED ROOF CONTACT STORM WATER STORAGE TANK (A/N 513776)

See Attachment I for emission calculations of this tank.

VOC, lbs/day 30-day ave. = 0.1

TOXIC AIR CONTAMINANT EMISSIONS & RULE 1401 HEALTH RISK ASSESSMENT

INTERNAL FLOATING ROOF TANKS (A/Ns 450095, 450097-450099, 512793-512798)

PLAMT submitted analytical results performed on typical crude oils and partially refined/intermediate petroleum feedstock, which are expected to be unloaded by the proposed marine terminal Berth 408. The samples were analyzed using EPA Test Method 8260 -- Volatile Organic Compounds by Gas Chromatography/Mass Spectrometry (GC/MS) and EPA Test Method 8270 –Semi Volatile Organic Compounds by Gas Chromatography/Mass Spectrometry (GC/MS). Lab test results for concentrations of the toxic compounds that are listed in Table 1 of District Rule 1401 are included in Attachment III.

Toxic air contaminant (TAC) emissions from the proposed storage tanks will be emitted under two different and unrelated conditions: normal storage operation and roof landing event. For normal operation, the TAC emissions are calculated using US EPA TANKS4.09d software. Partial speciation option available with the program calculates emissions of individual components within a mixture liquid. The toxic speciation profiles for crude oil and partially refined petroleum/intermediate feedstock are assumed to have all of the toxic compounds that are present in the analytical results. Furthermore, each of the toxic compounds is assumed to have the greatest concentration among the test results. Appendix C shows the TAC emissions for the proposed storage tanks.

During a roof landing event, toxic air contaminants will be emitted as the byproducts from the combustions of natural gas and a mixture of natural gas and tank vapor, of which natural gas is used to increase the heat content of tank vapor. These TAC emissions are created by the vapor controlling system (VCU) and thus will be included with the control equipment, not the storage tanks. To ensure that the TAC emission estimate for tank degassing and refilling period is health protective, it is assumed that one percent of the uncontrolled toxic emissions from tank vapor will escape into the atmosphere. This amount is added to the toxic emissions from normal operation in determining the health risks from the storage tanks. TAC emissions from the roof landing operations of the storage tanks are calculated using 2, 3 and 4 events per month per tank as described above.

Toxic emissions during roof landing period are generated from two distinctly different activities: tank degassing/purging and tank refilling. For further details on how the toxic emissions for the proposed storage tanks are calculated, see Appendix C. Tables 8 through 10 show the worst-case toxic emissions for the proposed storage tanks. It should be noted that the shown emission rates are actually the total emissions for all of the tanks in the groups. Since PLAMT requests that the tank emission limits are imposed on three groups of tanks and not individual tanks, the potential-to-emit for each tank equals to the potential-to-emit for the group. For health risk assessment purpose, below emission rates are used to determine risk for individual tanks.

Table 8 -- Toxic Emissions from Storage Tanks T2000-1 through T2000-4

Toxic Air Contaminant	Crude Oil		Partially Refined Petro	
	lbs/yr	Max. lb/hr	lbs/yr	Max. lb/hr
Benzene	66.87	1.19E-02	0.09	1.53E-05
Ethylbenzene	22.13	2.46E-03	0.83	9.16E-05
Methylene chloride	33.17	9.66E-03	0.20	4.29E-05
Naphthalene	20.17	2.31E-03	0.24	2.75E-05
Toluene	66.46	7.08E-03	0.31	3.21E-05
Xylene (-m)	57.45	6.42E-03	0.25	2.75E-05
Xylene (-o)	29.22	3.28E-03	0.12	1.37E-05
Benzo[a] pyrene			0.16	1.83E-05
chrysene			0.56	6.41E-05

Table 9 -- Toxic Emissions from Storage Tanks T2000-5 through T2000-8

Toxic Air Contaminant	Crude Oil		Partially Refined Petro	
	lbs/yr	Max. lb/hr	lbs/yr	Max. lb/hr
Benzene	41.61	9.42E-03	0.04	1.21E-05
Ethylbenzene	15.31	1.88E-03	0.57	6.94E-05
Methylene chloride	18.84	7.63E-03	0.13	3.39E-05
Naphthalene	14.24	1.77E-03	0.16	1.98E-05
Toluene	44.43	5.37E-03	0.21	2.49E-05
Xylene (-m)	39.90	4.91E-03	0.16	1.98E-05
Xylene (-o)	20.38	2.51E-03	0.08	9.92E-06
Benzo[a] pyrene			0.12	1.49E-05
chrysene			0.40	4.96E-05

Table 10 -- Toxic Emissions from Storage Tanks T2000-9 through T2000-10

Toxic Air Contaminant	Crude Oil		Partially Refined Petro	
	lbs/yr	Max. lb/hr	lbs/yr	Max. lb/hr
Benzene	32.16	1.19E-02	0.04	1.53E-05
Ethylbenzene	10.99	1.23E-03	0.41	4.58E-05
Methylene chloride	15.55	9.66E-03	0.09	4.29E-05
Naphthalene	10.09	1.15E-03	0.12	1.37E-05
Toluene	32.66	5.36E-03	0.15	3.15E-05
Xylene (-m)	28.56	3.21E-03	0.12	1.37E-05
Xylene (-o)	14.54	1.64E-03	0.06	6.87E-06
Benzo[a] pyrene			0.08	9.16E-06
chrysene			0.28	3.21E-05

PLAMT performed Tier IV health risk assessments for the proposed storage tanks and facility risks from the new tank farm T2000. AERMOD modeling software together with ARB's Hot Spot Analysis and Report Program (HARP) software were used to determine the health risks from the proposed equipment. The maximum individual cancer risk (MICR) and chronic health index are determined from the sum of toxic emissions from normal operation and roof landing period. The acute hazard index is obtained using the highest hourly emission rate among normal operation, tank degassing/purging period and tank refilling. Even at facility-wide level, the maximum individual cancer risk (MICR) from the proposed equipment equals to 0.07 in one million, which is below the allowable threshold of one in one million. The maximum acute and chronic hazard indices equal to 8.62E-04 and 3.00E-5, respectively, both of which are also below the Rule 1401 limit of one at any receptor location. Therefore, the health risks increases from the individual storage tanks by themselves are also below the thresholds of Rule 1401. The risk assessment was submitted to AQMD modeling staff for review and approval. The risk results were deemed acceptable by AQMD modeling staff. Appendix E includes the Tier IV health risk assessment and the approval memorandum dated February 16, 2011.

VAPOR COLLECTION AND DISPOSAL SYSTEM (A/N 460679)

Toxic emissions from the proposed VCU will be created from the combustions of natural gas used for startups of the VCU. Toxic emissions from the VCU will also be created by the combustion of the tank vapor by itself and tank vapor supplemented with natural gas. Since no emission factors for the combustion of tank vapor are available, emission factors of AB2588 for natural gas adjusted by the heat content of the tank vapor will be used to calculate the toxic emissions for the VCU. Appendix D shows the TAC emission calculations for the proposed VCU.

Table 12 -- TAC Emissions from Proposed Vapor Collection and Disposal System

TAC Emissions	Hourly Rate (lb/hr)	Annual Rate (lb/yr)
Benzene	2.6605E-04	0.5153
Formaldehyde	5.6340E-04	1.0911
PAHs	6.2600E-05	0.1212
Naphthalene	4.6950E-05	0.0909
Acetaldehyde	1.4085E-04	0.2728
Acrolein	1.2520E-04	0.2425
Propylene	2.4304E-03	4.7070
Toluene	1.2207E-03	2.3641
Xylenes	9.0770E-04	1.7579
Ethyl benzene	3.1300E-04	0.6062
Hexane	2.0345E-04	0.3940

Similar to the storage tanks, PLAMT also performed Tier IV health risk assessment for the proposed VCU. Since the MICR and [illegible] for facility T2000 are below the allowable limits of Rule 1401 as discussed above, the health risks increases from the VCU by itself are also

below the thresholds of the rule. These risks were also deemed acceptable by AQMD modeling staff as shown in Appendix E.

ELECTRICAL GENERATOR EMERGENCY IC ENGINE (A/N 512076)

Emergency IC engine used exclusively as a standby electrical generator is exempt from Rule 1401. Toxic emissions from the proposed engine were determined for the purpose of calculating health risks. See Attachment I for the toxic emissions and health risks from the proposed IC engine.

FIRE FIGHTING PUMP EMERGENCY IC ENGINE (A/N 512077)

Emergency IC engine used exclusively for firefighting is exempt from Rule 1401. Toxic emissions from the proposed engine were determined for the purpose of calculating health risks. See Attachment I for the toxic emissions and health risks from the proposed IC engine.

FIXED ROOF OILY CONTACT WATER STORAGE TANK (A/N 513776)

(The proposed tank passes Tier I screening risk assessment. Therefore, the increases in health risks from the tank are below the thresholds of Rule 1401. See Attachment I for the toxic emissions and health risks from the proposed contact water storage tank.)

Table 13 -- TAC Emissions from Contact Water Storage Tank

TAC Emissions	Crude Oils lb/hr **(lb/yr)**
Benzene	2.96E-06 **2.58E-02**
Ethyl benzene	2.43E-07 **2.12E-03**
Methylene chloride	3.21E-06 **2.80E-02**
Toluene	1.84E-06 **1.61E-02**
Xylene, m-	5.35E-07 **4.67E-03**
Xylene, o-	2.19E-07 **1.91E-03**

RULE COMPLIANCE EVALUATION

DISTRICT RULES & REGULATIONS

Rule 212 STANDARDS FOR APPROVING PERMITS AND ISSUING
(Amended1/14/97) PUBLIC NOTICE

Facility T2000 is a new facility which will have on-site VOC emissions greater than 30 lbs/day, respectively. Therefore, the project is required public notification to all addresses within1/4 mile radius of its location, which is considered to be the outer property line of the facility according to District's policy. Pursuant to Rule 212(d), the District also requires PLAMT to distribute to an area beyond of the ¼ mile radius. The total area of public notification is bounded on the North by Opp Street continued on Avalon Street and Anaheim Street; on the West by Interstate 110 at the intersection of Anaheim Street extending southerly to Gaffey St until the intersection of South Gaffey St. and Shepard St; on the East by Terminal Island Fwy from the intersection of Opp Street and Henry Ford to the intersection of Terminal Island Fwy and West Ocean blvd; on the South by San Pedro Bay generally between Terminal Island Fwy and South Gaffey St (see Attachment IV for the map of this area). Since public notification is triggered as result of emissions increases exceeding the daily maximums specified by paragraph (g) of the rule, the public notification will be published in a newspaper in general circulation in the vicinity of Port of Los Angeles, Port of Long Beach and City of San Pedro. A copy of the notice will also be mailed to the Administrator of US EPA Region 9, the Air Resource Board, Southern California Association of Government, Los Angeles County, the chief executives of the city of San Pedro, Los Angeles and Long Beach, State and Federal Land Managers. Copies of the public notice along with the applications and this engineering evaluation report will also be made available to the public at Los Angeles Public Library, San Pedro Branch, located at 921 South Gaffey Street, San Pedro. Public comment period will be 30 days. Compliance with all applicable requirements of this rule is expected.

Rule 401 VISIBLE EMISSIONS
(Amended
11/09/01)

With proper operation and maintenance, visible emissions are not expected from the proposed equipment for this facility.

Rule 402 NUISANCE
(Adopted 5/07/76)

With proper operation and maintenance, the proposed equipment for this facility is not expected to cause nuisance under normal operating conditions.

Rule 404 PARTICULATE MATTER - CONCENTRATION
(Amended
2/07/86)

As shown in Appendix B, the particulate matter emission rate from the proposed vapor controlling system equals to 0.0169 grain/scf , which is below the rule limit of 0.0587 grain/dscf at the maximum firing rate of 125 MMBtu/hr. Additionally, compliance with the particulate emission limit specified by this rule will also be verified through a source test. Compliance with this rule is expected.

Rule 407 LIQUID AND GASEOUS AIR CONTAMINANTS
(Amended 4/02/82)

The proposed thermal oxidizer will be equipped with a new model burner that will be fired on natural gas and vapor from roof landing operation. The oxidizer is guaranteed by the vendor to emit CO of 100 ppmv or less. The thermal oxidizer is expected to comply with the CO limit of 2000 ppmv and SO2 limit of 500 ppmv. Additionally, compliance with the CO and SO2 limits will also be verified through a source test. Compliance with this rule is expected.

Rule 409 COMBUSTION CONTAMINANTS
(Amended 8/07/81)

Particulate matter emission rate from the proposed vapor controlling system is expected to be below the rule limit of 0.1 grain/dscf as shown in Appendix B. Additionally, compliance with the particulate emission limit will also be verified through a source test. Compliance with this rule is expected.

Rule 431.1 SULFUR CONTENT OF GASEOUS FUELS
(Amended 6/12/98)

Based on a H_2S limit of 70 ppm or less in the liquid phase which PLAMT will impose on its customers, facility T2000 is expected to emit less than 5 pounds per day total sulfur compounds, calculated as H_2S. Furthermore, analyses performed using District Method 307-91 show that there's no detectable level of carbonyl sulfide or mercaptans in the vapor of the typical crude oils to be stored at this facility. The H_2S calculation and lab analyses are included in Attachment V. Pursuant to paragraph (g)(8), this rule does not apply to combustion of gaseous fuels other than natural gas at this facility. Natural gas will be subject to a sulfur content of 16 ppmv. Compliance with this rule is expected.

Rule 463 ORGANIC LIQUID STORAGE
(Amended 5/06/05)

All storage tanks at this facility are subject to this rule. Therefore, the tanks are required to be

designed and equipped with vapor control devices specified by paragraph (c)(2) of the rule, which is properly installed and continuously maintained in good operating condition:

(c)(2) -- Internal Floating-Type Cover:

All of the tanks will be equipped with a primary seal and a secondary seal, both of which will be on the current list seals approved by the Executive. All openings and fittings will be gasketted and controlled in accordance to the requirements of Rule 1178. The gaps between the metallic shoe seals and the tank shells are expected to be within the distances specified by (c)(1)(A)(i). The gaps between the secondary seals and the tank shells are expected to be within the distances specified by (c)(1)(A)(ii). The metallic-shoe seals will be installed with one end submerged in the stored liquids and the other end extending at least 24 inches above the stored liquid surface. The geometry of the metallic-shoe seals will comply with the configuration specified by (c)(1)(A)(iv). The concentration of organic vapor in the vapor space above the internal floating-type cover will be required by permit condition not to exceed 30 percent of its lower explosive limit (LEL). The condition will also require the operator to verify compliance using an explosimeter.

The proposed storage tanks are also expected to comply with all other applicable requirements of this rule such as other performance requirements of paragraph (d), self-inspection, identification, maintenance, recordkeeping and reporting requirements. Finally, the proposed storage tanks will be conditioned by permit to comply with all applicable requirements of this rule. Compliance with this rule is expected.

Rule 1147 (Amended 12/5/2008) NOX REDUCTIONS FROM MISCELLANEOUS SOURCES

According PLAMT, the natural gas fuel for the proposed VCU will be mixed with waste gas prior to incineration. Therefore, the VCU is exempt from this rule pursuant to paragraph (g)(3)(E). A condition will require as-built drawings for the VCU is submitted to show that the VCU qualifies for the exemption.

Rule 1149 (Amended 5/2/2008) STORAGE TANK CLEANING AND DEGASSING

The proposed storage tanks are subject to the requirements of this rule whenever they are open to the atmosphere during cleaning and degassing after storing organic liquids with a Reid vapor pressure of 0.5 psia or greater. Emissions from tank cleaning and degassing activities will be controlled by the proposed vapor controlling system, which is expected to reduce VOC concentration within the tanks to less than 5,000 ppmv, measured as methane. The operator will also monitor the VOC concentration to ensure that it is below 5,000 ppmv for at least one hour after degassing operations have ceased. Finally, the proposed storage tanks will be conditioned by permit to comply with all applicable requirements of this rule. Compliance with this rule is expected.

Rule 1178 FURTHER REDUCTIONS OF VOC EMISSIONS FROM STORAGE

(Adopted 4/7/06) TANKS AT PETROLEUM FACILITIES

Facility T2000 is a petroleum facility as defined by paragraph (c)(22) that is expected to emit more than 20 tons of VOC per year when the tank farm facility is completely constructed and in full operational mode. However, PLAMT anticipates that the 20 ton threshold will not be reach in the first couple years of operation. The proposed storage tanks have capacities greater than 75,000 liters (or 472 barrels) and will store organic liquids having true vapor pressures as high as 10 psia under actual storage conditions. Therefore, the proposed internal floating roof tanks are subject to the requirements of paragraph (d)(3) once the facility emits more than 20 tons of VOC per year.

(d)(3) -- Internal Floating Roof Tanks

(A) -- Fixed roof support columns of the proposed tanks will be equipped with a gasketted sliding cover.

(B) -- According to the applicant, the proposed tanks will not be equipped with a ladder well. Roll-up ladders will be used to access the tanks.

(C) -- All other roof openings will comply with the specifications of paragraph (d)(1)(A) as shown below:

(d)(1)(A)

(i) -- Each access hatch and gauge float well will be equipped with a gasketted and bolted cover. The covers will be kept closed at all times except when personnel need to access the tanks.

(ii) -- Each gauge hatch/sample well will be equipped with a gasketted cover. The covers will be kept closed at all times with no visible gap except when personnel needs to access the hatches or wells.

(iii) -- Roof legs will be adjustable, gasketted and covered with VOC impervious socks at all times when the roof is floating.

(iv) -- Rim vents will be equipped with gasket and closed at all times except when the roof is being floated off the leg supports.

(v) -- Each vacuum breaker will be gasketted and maintained in a closed position at all times when the roof is floating. The vacuum breakers will be set to open only when the roof is being floated off or is being landed on the roof leg supports.

(vi) -- The proposed tanks will not be equipped with open floating roof drains according to the applicant.

(vii) -- Fixed-roof support columns function as unslotted guide poles for the proposed internal floating roof tanks. Each unslotted guidepole well will be equipped with a gasketted sliding cover and a wiper.

(viii) -- The ends of the fixed-roof support columns/guide poles are covered by the fixed roofs with no visible gaps.

(ix) thru (xi) -- The proposed tanks will not be equipped with slotted guide poles.

(xii) -- The guide poles of proposed tanks will not be equipped with pole floats.

(xiii) -- Except for vacuum breakers, each opening in the internal floating roofs of the proposed tanks will extend into the liquid surface.

(xiv) -- Except for vacuum breakers and leg sleeves, all other openings in the roofs will be equipped with a gasketted cover or seal which will be closed at all times, with no visible gaps, except when the cover or seal must be opened for access.

(D) -- The proposed internal floating roof tanks will be equipped with a metallic-shoe primary seal and a secondary seal that comply with the specifications of paragraph (d)(1)(B) as shown below:

(d)(1)(B)

(i) -- The proposed tanks will be equipped with a metallic-shoe type primary seals.

(ii) -- The secondary seals on the proposed tanks will be rim-mounted and will not be attached to the metallic shoe seals.

(iii) -- The gaps between the metallic shoe seals and the tank shells are expected to be within the distances specified by this paragraph.

(iv) -- The gaps between the secondary seals and the tank shells are expected to be within the distances specified by this paragraph.

(v) -- The metallic-shoe seals will be installed with one end extended at least 4 inches into the stored liquids and the other end extending at least 6 inches above the stored liquid surface.

(vi) -- The geometry of the metallic-shoe seals will comply with the configuration specified by this paragraph.

(vii) -- The primary seal envelope will be made accessible for unobstructed inspection by the Executive Officer along its circumference.

(viii) -- The secondary seal will be installed to allow access for probes up 1.5 inches in width to be inserted for gaps measurements in the primary seal.

(ix) -- The secondary seal and the primary seal envelope are not expected to have any holes, tears or openings.

(x) -- The seals of the proposed tanks will cover the annular space between the internal floating roof and the shell wall of the proposed tanks in a continuous fashion, with no visible gaps at all times except during preventive maintenance, repair, or inspection periods allowed by this paragraph.

(xi) -- PLAMT will install primary and secondary seals for the proposed surge tank that are identified in the current seal list approved by the Executive Officer for compliance with this rule. A condition will require as-built drawings for the tank is submitted to demonstrate compliance with this requirement.

(E) -- The concentration of organic vapor in the vapor space above the internal floating-type cover will be required by permit condition not to exceed 30 percent of its lower explosive limit (LEL).

The proposed storage tanks are also expected to comply with all other applicable requirements of this rule such as identification, monitoring, maintenance, recordkeeping and reporting requirements. Finally, the proposed storage tanks will be conditioned by permit to comply with all applicable requirements of this rule. Compliance with this rule is expected.

Rule 1303 (Amended 12/7/95) REQUIREMENTS

Best Available Control Technology (BACT)

Facility T-2000 is expected to be a major polluting facility as defined by Rule 1302(p)—VOC ≥10 tons/yr. Therefore, BACT determinations are based on Parts A & B of the BACT Guidelines.

For internal floating roof tanks, BACT is Category A tank seals and compliance with AQMD Rule 1178 except for the reporting and notification requirements. All of the proposed tanks will be equipped with liquid-mounted, metallic-shoe primary seals, which is a Category A seals. PLAMT also proposed to install multiple-wiper secondary seals on all of the tanks. Therefore, the secondary seals will also be Category A seals. As shown above, the proposed tanks are expected to comply with all applicable requirements of AQMD Rule 1178. Therefore, the proposed storage tanks will meet the BACT requirements for their source category.

BACT for the proposed vapor controlling system has been determined to be two NOx limits: 60 ppmv NOx when the equipment is fired on natural gas and 105 ppmv NOx for waste gas firing, both corrected to 3 percent oxygen. No BACT requirements for the other pollutants are required for this source category. The VCU will be conditioned by permit to demonstrate compliance the NOx BACT limits through a District approved test plan and validated test results.

Modeling

The proposed tanks will emit only VOCs. Modeling of VOC is not required. Therefore, modeling is not required for all of the proposed tanks.

The proposed vapor controlling system is subject to modeling requirement for NOx, CO and PM10. As shown in Table 9, PM10 and CO emissions from the system equal to 3.7 lb/hr and 35.4 lbs/hr, respective. Comparing to the maximum allowable emissions specified by Table A-1 of Rule 1303, the emissions are less than the allowable limits of 7.9 lbs/hr PM10 and 72.1 lbs/hr CO. Therefore, no further analysis is required for PM10 and CO. The NOx emissions of the VCU equals to 6.6 lbs/hr, which is greater than the screening allow limit of 1.31 lbs/hr. US EPA SCREEN3 modeling program is used to analyze the increase in NOx concentration at the nearest residential and commercial receptor to determine whether or not a significant change will occur (see Appendix E for SCREEN3 results). As shown in below table, the modeling results are less than the allowable changes in concentrations specified by Table A-2 of Rule 1303. Therefore, a significant change in air quality concentration is not expected to occur as a result of the NOx emissions from the proposed VCU.

Air Contaminant	Averaging Time	Significant Change in Air Quality Concentration	SCREEN 3 Results
Nitrogen Dioxide	1-hour Annual	20 ug/m^3 1 ug/m^3	0.64 ug/m^3 0.013 ug/m^3

Offset

The applicant has provided following regular ERCs to offset the increases in emissions from the proposed permit units. All of the ERCs were originated from Zone 1.

Pollutant	Amount lbs/day	ERC Certificate
ROG	372	AQ005458 AQ006555 AQ006006

PLAMT is not required to offset emissions from the proposed vapor controlling system (VCU). The VCU is exempt from offset requirement under regulatory compliance.

Facility Compliance
Facility T2000 is a new facility that has not begun operation. Therefore, it is not yet subject to any rules or regulation of the AQMD.

Major Polluting Facilities
Facility T2000 is expected to be a major polluting facility as defined by Rule 1302(p), and thus is subject to additional requirements specified by paragraph (b)(5) of this rule.

An analysis of alternative sites, sizes and control technologies was considered in the Final Supplemental Environmental Impact Statement (SEIS)/Supplemental Impact Report (SEIR), which was certified by the Los Angeles Board of Harbor Commissioner, the lead agency for this project, on November 20, 2008. As discussed in the Compliance Review section above, PLAMT operates all of its major stationary sources in the State of California in compliance with all applicable emission limitations and standards under the Clean Air Act. Finally, the proposed vapor controlling system will emit PM10 or NOx. However, the net increase of PM10 and NOx from the system will not exceed the threshold of 15 tons/yr and 40 tons/yr, respectively. Therefore, modeling for plume visibility is not required.

Compliance with this rule is expected.

Rule 1401 NEW SOURCE REVIEW OF AIR TOXIC CONTAMINANTS
(Amended 6/5/09)

The applications for four of the proposed storage tanks were deemed completed on November 17, 2005. The application for the vapor controlling system was deemed complete on March 3, 2006. Therefore, these permit units are subject to the version of this rule that was amended on March 4, 2005. The other storage tank applications were deemed complete in August 2010. As a result, six of the proposed storage tanks are subject the version of Rule 1401 amended on June 5, 2009.

MICR and Cancer Burden
As shown in TAC Emissions & Rule 1401Health Risk Assessment section, none of the proposed equipment is expected to result in an MICR one in a million at any receptor location. Cancer burden only needs to be calculated if the MICR is greater than one in a million.

Chronic/Acute Hazard Index

As shown in TAC Emissions & Rule 1401 Health Risk Assessment section, none of the proposed equipment is expected to result a cumulative increase in total chronic hazard index or acute hazard index for any target organ system greater than one at any receptor location.

Risk per Year

The maximum risk per year allowed for sources with T-BACT equal to 1/70 multiplied by 10×10^{-6} which is one-seventh (1/7) cancer case increase per year in a million people population. For the MICR of 7.0×10^{-8}, the risk per year equal to 0.007/7 cancer case increase per year in a million people population. Since the MICR of 7.0×10^{-8} is the greatest MICR increase for any receptor locations in residential areas from any permit units at this facility, it can be concluded that none of the risks per year exceeds the allowable limit specified by this paragraph.

Compliance with this rule is expected.

Regulation XVII – Prevention of Significant Deterioration (PSD)

Effective upon delegation by EPA, AQMD Regulation 17- Prevention of Significant Deterioration applies to preconstruction review of stationary sources that emit attainment air contaminants. Effective July 25, 2007, the District was granted a limited delegation authority from the EPA for reviewing compliance with Prevention of Significant Deterioration (PSD) Program. Since this facility is a new PSD source, the District is responsible for determining PSD compliance according the agreement between the District and EPA signed on July 25, 2007.

This facility is a new stationary source that will emit only VOC emissions under normal operation. The only equipment emits attainment air contaminants (NO2, SO2 and CO) is the proposed vapor controlling system and two emergency IC engines which are expected to comply with all applicable rules and regulation of the District as discussed above and in Attachments I. As shown in above BACT evaluation of Rule 1303, the VCU is expected to meet BACT for its source category. Since the potential to emit from the proposed T2000 facility is below the PSD threshold, no further PSD analysis is required. Therefore, the facility is in compliance with PSD.

PSD applicability for GHGs—According to Tailoring Rule Step 1, PSD analysis is not required if a new source does not trigger PSD through another regulated NSR pollutant. As indicated above, facility T2000 is not subject to PSD analysis based on NO2, SO2 and CO emissions. Therefore, PSD applicability for GHGs does not trigger even when GHGs emissions were not determined for facility T2000.

Rule 2001 (Amended 5/06/05)

APPLICABILITY

The only source of NOx and SOx emissions for this facility comes from the proposed VCU. As

shown in the Criteria Pollutant Emissions section, NOx emissions from the proposed VCU are expected to exceed 4 ton/yr. However, the criteria for inclusion in RECLAIM are determined using the fee data filed pursuant to Rule 301. Because facility T2000 is a new facility that has not begun, NOx emission inventory for the facility equal to nil at this time. Therefore, facility T2000 is not subject RECLAIM. Additionally, PLAMT has not elected to enter RECLAIM at this point.

Rule 3001 (Amended 11/14/97) APPLICABILITY

PLAMT Facility T2000 is a Phase II Title V facility. On September 16, 2010, PLAMT submitted an initial Title V application (A/N 514917) to the Executive Officer. The Title V permit for this facility is being proposed at the same time as the issuance for Permits to Construct for this project. The public review period is expected to start on February 15, 2011 and will end on April 1, 2011. The final Title V permit is expected to be issued by the District at end of the public comment period.

STATE REGULATIONS

CALIFORNIA ENVIRONMENTAL QUALITY ACT (CEQA)

Pier 400 Project could have significant impacts on the air quality and other environmental aspects. PLAMT was required to prepare a Supplemental Environmental Impact Statement (SEIS)/ Supplemental Environmental Impact Report (SEIR) to address and mitigate all environmental impacts. The Los Angeles Harbor Department and Army Corps of Engineers are the lead agencies for the project. A SEIS/SEIR was prepared for the project which includes the new marine terminal T1000 and tank farm facility T2000. On May 28, 2008, the lead agencies circulated the SEIS/EIR for public review. A public meeting for the proposed project was jointly conducted by the lead agencies on June 26, 2008 at the Board of Harbor Commissioner Hearing Room. The public review period closed on August 13, 2008. Public comments and responses were incorporated into the Final SEIS/SEIR which was certified on November 20, 2008.

FEDERAL REGULATIONS

STANDARDS OF PERFORMANCE FOR NEW STATIONARY SOURCES

Subpart Kb (Source: 52 FR 11429, April 8, 1987, unless otherwise noted) 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

The proposed internal floating roof storage tanks are subject to this subpart. Additionally, the tanks have a capacity greater than 151 m^3 (949.8 barrels), and will store volatile organic liquids with a true vapor pressure as high as 10 psia. Therefore, the permit units are subject to the requirements

specified by paragraph (a)(1) of section §60.112b.

(a)(1) -- A fixed roof in combination with an internal floating roof
(i) -- The internal floating roofs are expected to be floating on the liquid surface at all times except during filling, emptying and refilling. When the roof is resting on the leg supports, the process of filling, emptying, or refilling is expected to be continuous and be accomplished as rapidly as possible. In addition, emissions from tank emptying and refilling will be controlled by a vapor controlling system.
(ii) -- The proposed tanks will be equipped with a mechanical shoe seal, which is listed as one of the three closure devices specified by this paragraph.
(iii) -- Except for vacuum breakers, each opening in the internal floating roofs of the proposed tanks will extend into the liquid surface.
(iv) -- Except for leg sleeves, automatic bleeder vents, column wells, sample wells, and stub drains, all other openings in the roofs will be equipped with a gasketted cover or seal that will be closed at all times, with no visible gaps, except when the cover or seal must be opened for access.
(v) -- Each automatic bleeder vent will be gasketted and maintained in a closed position at all times when the roof is floating. The vacuum breakers will be set to open only when the roof is being floated off or is being landed on the roof leg supports.
(vi) -- Rim vents will be equipped with gasket and closed at all times except when the roof is being floated off the leg supports.
(vii) -- Each sample well will be equipped with a gasketted cover. The covers will be kept closed at all times with no visible gap except when personnel needs to access the hatches or wells. Gasketted cover is equivalent or better than slit fabric cover that covers at least 90 percent of the opening. Therefore, the tanks are expected to be in compliance with this paragraph.
(viii) -- Fixed-roof support columns will penetrate the internal floating roofs of the proposed tanks. Each fixed-roof column will be equipped with a gasketted sliding cover and a wiper.
(ix) -- The proposed tanks will not have a penetration for passage of a ladder according to the applicant. Instead, roll-up ladders will be used to access the tanks. Therefore, this paragraph does not apply to the proposed tanks.

Since the proposed storage tanks will also be subject to District Rule 1178, they are also expected to comply with all other applicable requirements of this subpart such as inspecting, monitoring, maintenance, recordkeeping and reporting requirements.

Compliance with this subpart is expected.

COMPLIANCE ASSURANCE MONITORING (CAM)

40 CFR64
(Source: 62 FR 54940, October 22, 1997)

Pursuant to District Rule 1149, the proposed storage tank will be required to vent to vapor control device when the roof rests upon its support legs after the tank has been emptied. The tank will also be subject to a VOC concentration limit of less than 5,000 ppmv prior to being open to the atmosphere. Furthermore, facility T2000 is a Title V facility which initial Title V

application was received after April 20, 1998. However, the potential post-control VOC emissions of the surge tank will not be equal or greater than the major source definition of 10 tons per year. The potential post-control VOC emissions equals to only 710 lbs per year. Therefore, CAM evaluation is not required. (Under normal operation, the proposed storage tanks will not vent to a vapor destruction unit. For the purpose of determining applicability, the storage tanks' potential post-control VOC emissions do not include VOC emissions from normal operation).

RECOMMENDATION

The proposed new construction of storage tanks T-20001 through T2000-10, tank vapor controlling system, two emergency IC engines and a contact water tank are expected to comply with all applicable rules or regulations of the District. Furthermore, facility T2000 is a new facility and thus does not have any violations. Therefore, issuance of fourteen Permits to Construct for the proposed tank farm T-2000 is recommended with the following conditions:

CONDITIONS

FACILITY WIDE CONDITION(S)

1. CONSTRUCTION AND OPERATION OF THE PERMITTED EQUIPMENT AT THIS FACILITY SHALL BE CONDUCTED IN ACCORDANCE WITH ALL DATA AND SPECIFICATIONS SUBMITTED WITH THE APPLICATIONS UNDER WHICH THE FACILITY PERMIT IS ISSUED EXCEPT WHEN OTHERWISE SPECIFIED IN THIS PERMIT.

   [RULE 204]

2. ALL EQUIPMENT UNDER THIS FACILITY PERMIT SHALL BE PROPERLY MAINTAINED AND KEPT IN GOOD OPERATING CONDITION AT ALL TIMES.

   [RULE 204]

3. THE OPERATOR OF THIS FACILITY SHALL COMPLY WITH AIR-QUALITY-RELATED MITIGATION MEASURES STIPULATED IN THE "FINDINGS OF FACTS, STATEMENT OF OVERRIDING CONSIDERATIONS" AND "MITIGATION MONITORING AND REPORT PROGRAM (MMRP)" DOCUMENTS WHICH ARE PARTS OF FINAL SUPPLEMENTAL IMPACT STATEMENT/FINAL SUBSEQUENT ENVIRONMENTAL IMPACT REPORT (FINAL SEIS/SEIR) CERTIFIED BY THE BOARD OF HARBOR COMMISSIONER ON NOVEMBER 18, 2008.

   [CA PRC CEQA, 11-23-1970]

4. EXCEPT FOR OPEN ABRASIVE BLASTING OPERATIONS, THE OPERATOR SHALL NOT DISCHARGE INTO THE ATMOSPHERE FROM ANY SINGLE SOURCE OF EMISSIONS WHATSOEVER ANY AIR CONTAMINANT FOR A PERIOD OR PERIODS AGGREGATING MORE THAN THREE MINUTES IN ANY ONE HOUR WHICH IS:

   A. AS DARK OR DARKER IN SHADE AS THAT DESIGNATED NO. 1 ON THE RINGLEMANN CHART, AS PUBLISHED BY THE UNITED STATES BUREAU OF MINES; OR

B. OF SUCH OPACITY AS TO OBSCURE AN OBSERVER'S VIEW TO A DEGREE EQUAL TO OR GREATER THAN DOES SMOKE DESCRIBED IN SUBPARAGRAPH (A) OF THIS CONDITION.

[RULE 401]

5. THE OPERATOR SHALL NOT BURN OR PURCHASE ANY LIQUID FUEL FOR ANY STATIONARY SOURCE CONTAINING SULFUR COMPOUNDS IN EXCESS OF 0.05 PERCENT BY WEIGHT. ON OR AFTER JUNE 1, 2004, THE OPERATOR SHALL NOT PURCHASE ANY DIESEL FUEL FOR STATIONARY SOURCE CONTAINING SULFUR COMPOUNDS IN EXCESS 15 PPM BY WEIGHT AS SUPPLIED BY THE SUPPLIER.

[RULE 431.2]

6. THE OPERATOR SHALL NOT USE ANY FUEL IN STATIONARY COMPRESSION IGNITION ENGINE UNLESS THE FUEL IS CARB DIESEL FUEL OR AN ALTERNATIVE DIESEL FUEL SPECIFIED BY AQMD RULE 1470.

[RULE 1470]

FOR STORAGE TANKS T2000-1 THROUGH T2000-4 (500,000-BBL TANKS)

1. The operator shall limit total emissions excluding roof landing emissions from storage tanks T2000-1, T2000-2, T2000-3 and T2000-4 (PC A/Ns 512793, 512794, 512795 and 512796, respectively) as follows:

Contaminant	Emission Limit, lbs per calendar month
VOC	3,444

The operator shall use US EPA's TANKS4.0 software (latest version) and the method described below for calculating emissions from each storage tank subject to this condition.

The operator shall multiply monthly throughput determined as shown below by 12 for the turnovers per year input into TANKS 4.0 program.

The operator shall calculate the throughput, in barrels, by the following equation: V x L/h, where V is the volume of the tank in barrels, L is the total vertical one-way liquid surface level travel in feet per month and h is the height of the tank in feet. V and h shall be based the most recent strapping chart measurements, and L shall be actual measurement taken by an automatic tank level gauge (ATLG) meeting below requirements.

The operator shall install and maintain an automatic tank level gauge (ATLG) and recorder to record continuously the vertical movement of the tank level. For the purpose of this condition, continuous recording is defined as once every 15 minutes.

The operator shall calculate the total one-way liquid surface level movement, in feet, on a daily and monthly basis.

The ATLG installed shall be verified once per quarter by comparing against a manual tank level measurement. If the ATLG differs from the manual measurement by more than 1.0 inch or 0.8%, whichever is greater, the ATLG shall be repaired and put back into service within 10 days. While the ATLG is being repaired, throughput shall be determined by hourly tank level data averaged for the previous 30 days, prior to the discovery of the discrepancy.

In the event of a failure or routine maintenance of the ATLG, the ATLG shall be repaired (if necessary) and put back into service within 10 days of the time that the ATLG failed or was removed from service for maintenance. While the ATLG is being repaired or maintained, the throughput shall be determined by the hourly tank level data averaged from the previous 30 days prior to time that the ATLG went out of service.

The operator shall use actual physical characteristics of the tank, best available meteorological data and vapor pressures under actual storage conditions of liquids stored in the tank to input into TANKS 4.0 program.

[RULE 1303(B)(2)-OFFSET, 5-10-1996]

2. The operator shall limit the total number of roof landings for drain-dry, degassing and cleaning of storage tanks T2000-1, T2000-2, T2000-3 and T2000-4 (PC A/Ns 512793, 512794, 512795 and 51796, respectively) to no more than 16 times in any one calendar month.

[RULE 1303(B)(2)-OFFSET, 5-10-1996]

FOR STORAGE TANKS T2000-5 THROUGH T2000-8 (250,000-BBL TANKS)

1. The operator shall limit total emissions excluding roof landing emissions from storage tanks T2000-5, T2000-6, T2000-7 and T2000-8 (PC A/Ns 450095, 450097, 450098 and 450099, respectively) as follows:

Contaminant	Emission Limit, lbs per calendar month
VOC	2,352

The operator shall use US EPA's TANKS4.0 software (latest version) and the method described below for calculating emissions from each storage tank subject to this condition.

The operator shall multiply monthly throughput determined as shown below by 12 for the turnovers per year input into TANKS 4.0 program.

The operator shall calculate the throughput, in barrels, by the following equation: V x L/h, where V is the volume of the tank in barrels, L is the total vertical one-way liquid surface level travel in feet per month and h is the height of the tank in feet. V and h shall be based the most recent strapping chart measurements, and L shall be actual measurement taken by an automatic tank level gauge (ATLG) meeting below requirements.

The operator shall install and maintain an automatic tank level gauge (ATLG) and recorder to record continuously the vertical movement of the tank level. For the purpose of this condition, continuous recording is defined as once every 15 minutes.

The operator shall calculate the total one-way liquid surface level movement, in feet, on a daily and monthly basis.

The ATLG installed shall be verified once per quarter by comparing against a manual tank level measurement. If the ATLG differs from the manual measurement by more than 1.0 inch or 0.8%, whichever is greater, the ATLG shall be repaired and put back into service within 10 days. While the ATLG is being repaired, throughput shall be determined by hourly tank level data averaged for the previous 30 days, prior to the discovery of the discrepancy.

In the event of a failure or routine maintenance of the ATLG, the ATLG shall be repaired (if necessary) and put back into service within 10 days of the time that the ATLG failed or was removed from service for maintenance. While the ATLG is being repaired or maintained, the throughput shall be determined

by the hourly tank level data averaged from the previous 30 days prior to time that the ATLG went out of service.

The operator shall use actual physical characteristics of the tank, best available meteorological data and vapor pressures under actual storage conditions of liquids stored in the tank to input into TANKS 4.0 program.

[RULE 1303(B)(2)-OFFSET, 5-10-1996]

2. The operator shall limit the total number of roof landings for drain-dry, degassing and cleaning of storage tanks T2000-5, T2000-6, T2000-7 and T2000-8 (PC A/Ns 450095, 450097, 450098 and 450099, respectively) to no more than 8 times in any one calendar month.

[RULE 1303(B)(2)-OFFSET, 5-10-1996]

FOR STORAGE TANKS T2000-9 THROUGH T2000-10 (500,000-BBL TANKS)

1. The operator shall limit total emissions excluding roof landing emissions from storage tanks T2000-9 and T2000-10 (PC A/Ns 512797 and 512798, respectively) as follows:

Contaminant	Emission Limit, lbs per calendar month
VOC	1,722

The operator shall use US EPA's TANKS4.0 software (latest version) and the method described below for calculating emissions from each storage tank subject to this condition.

The operator shall multiply monthly throughput determined as shown below by 12 for the turnovers per year input into TANKS 4.0 program.

The operator shall calculate the throughput, in barrels, by the following equation: V x L/h, where V is the volume of the tank in barrels, L is the total vertical one-way liquid surface level travel in feet per month and h is the height of the tank in feet. V and h shall be based the most recent strapping chart measurements, and L shall be actual measurement taken by an automatic tank level gauge (ATLG) meeting below requirements.

The operator shall install and maintain an automatic tank level gauge (ATLG) and recorder to record continuously the vertical movement of the tank level. For the purpose of this condition, continuous recording is defined as once every 15 minutes.

The operator shall calculate the total one-way liquid surface level movement, in feet, on a daily and monthly basis.

The ATLG installed shall be verified once per quarter by comparing against a manual tank level measurement. If the ATLG differs from the manual measurement by more than 1.0 inch or 0.8%, whichever is greater, the ATLG shall be repaired and put back into service within 10 days. While the ATLG is being repaired, throughput shall be determined by hourly tank level data averaged for the previous 30 days, prior to the discovery of the discrepancy.

In the event of a failure or routine maintenance of the ATLG, the ATLG shall be repaired (if necessary) and put back into service within 10 days of the time that the ATLG failed or was removed from service for maintenance. While the ATLG is being repaired or maintained, the throughput shall be determined by the hourly tank level data averaged from the previous 30 days prior to time that the ATLG went out of service.

The operator shall use actual physical characteristics of the tank, best available meteorological data and vapor pressures under actual storage conditions of liquids stored in the tank to input into TANKS 4.0 program.

[RULE 1303(B)(2)-OFFSET, 5-10-1996]

2. The operator shall limit the total number of roof landings for drain-dry, degassing and cleaning of storage tanks T2000-9 and T2000-10 (PC A/Ns 512797 and 512798, respectively) to no more than 6 times in any one calendar month.

[RULE 1303(B)(2)-OFFSET, 5-10-1996]

FOR ALL STORAGE TANKS T2000-1 THROUGH T2000-10

3. The operator shall not store in this tank crude oils having a true vapor pressure (TVP) of greater than 10 psia or partially refined petroleum/intermediate feedstock having a TVP of greater than 5 psia under actual storing conditions. To demonstrate compliance with this condition, the operator shall determine vapor pressures of the materials stored in the storage tank using one of the following methods:

   a. Sample and test the material stored
   b. Use engineering method to calculate the vapor pressure of material stored
   c. Provide material safety data sheet (MSDS) that show vapor pressure of material stored

[RULE 1303(b)(2)-Offset, 5-10-1996; Rule 1401, 3-5-2005]

4. This tank shall not store finished petroleum products or carbon black oil (CBO).

[RULE 1401, 6-5-2009]

5. The operator shall construct, operate, and maintain this tank as follows:

   (a) All roof openings and fittings for the internal floating-type cover shall meet the requirements of Rule 1178 (d)(1)(A)(i) through (d)(1)(A)(xiv), as applicable.
   (b) The rim seals for the internal floating-type cover shall meet the requirements of Rule 1178 (d)(1)(B)(i) through (d)(1)(B)(xi), as applicable.
   (c) Complete gap measurements of the rim seal system shall be performed by District certified personnel each time the tank is emptied and degassed for a continuous period of 10 days or more. Measurements shall be conducted by District certified personnel in accordance with Rule 1178 Attachment A – Inspection Procedures and Compliance Report Forms. However, such complete gap measurements, once completed, may not be required for five years; but it shall be conducted at least once every 10 years
   (d) The concentration of organic vapor in the vapor space above the internal floating-type cover shall not exceed 30% of its lower explosive limit (LEL). The LEL levels in the vapor space above the internal floating-type cover shall be measured by District certified personnel on a semiannual basis. Measurements shall be conducted by District certified personnel in accordance with Rule 463 Attachment B – Inspection Procedures and Compliance Report Form, Part E.

[RULE 1303(a)(1)-BACT, 5-10-1996; Rule 3004 (a)(4) – Periodic Monitoring, 12-12-1997]

6. This storage tank is subject to the applicable requirements of the following rules or regulations:

Contaminant	[illegible]	Rule/Subpart

VOC	District Rule	1178
VOC	District Rule	463
VOC	District Rule	1149
VOC	40 CFR60	Kb

For the purpose of this condition, District Rule 1178 is not applicable to the tank until the VOC emissions for this facility exceeds 20 tons per year as reported under Rule 301.

[RULE 1149, 7-14-1995; RULE 1178, 4-7-2006; RULE 463, 5-6-2005; 40CFR 60 SUBPART Kb, 10-15-2003]

7. The operator shall operate and maintain this equipment according to the following requirements:

Whenever this tank is being degassed or filled prior to the roof being refloated, it shall be connected to the tank cleaning /degassing vapor control unit (A/N 460679) which is in full use and has been issued a valid permit to operate by the District.

This tank shall vent to the vapor control unit while its floating roof is resting on leg support until the VOC concentration within the tank is reduced to less than 5,000 ppmv, measured as methane, for at least one hour after the shutdown of the air pollution control system.

The operator may elect not venting this tank to the vapor control unit if the tank contained or last contained organic liquid with a Reid vapor pressure (RVP) of 0.5 psia or less under actual storage condition before being drained dry. The operator shall maintain and make available to the Executive Officer upon request RVP data of the liquid stored in the tank before it is emptied.

[RULE 1149, 5-2-2008]

8. The operator shall keep records, in a manner approved by the District, for the following parameter(s) or item(s):

Throughput, vapor pressure of stored liquid, and other records required to demonstrate compliance with permit conditions.

The start and end dates and times when this tank has a roof-landing event including the numbers of degassing hours.

[RULE 1303(b)(2)-Offset, 5-10-1996; RULE 3004(a)(4)-Periodic Monitoring, 12-12-1997]

9. The operator shall provide to the District the following items:

Final drawings and/or specifications of tank rim seals, deck fittings, floating roof and all other roof openings for this tank. All items shall be submitted to the District within 60 days after installation.

[RULE 1303(b)(2)-Offset, 5-10-1996]

CONDITIONS FOR TANK CLEANING/DEGASSING VAPOR CONTROL SYSTEM (A/N 460679)

1. The operator shall operate and maintain this equipment to achieve a VOC destruction efficiency of 99 percent or greater.

[RULE 1303(b)(2)-Offset, 5-10-1996]

2. The operator shall limit emissions from this equipment as follows:

Contaminant	Emission Limit	Fuel to Burner
NOx	60 ppmv	Natural gas only
NOx	105 ppmv	Waste gas with or without NG added

For the purpose of this condition, the NOx concentrations shall be corrected to 3 percent stack-gas oxygen at standard conditions, measured on a dry basis and averaged over a period of 15 minutes

[RULE 1303(a)(1)-BACT, 5-10-1996]

3. The operator shall use this equipment in such a manner that the temperature being monitored, as indicated below, is not less than 1600 Deg F.

To comply with this condition, the operator shall install and maintain a temperature gauge to indicate accurately the temperature in the combustion chamber of the incinerator.

The operator shall also install and maintain a device to record continuously the temperature of the combustion chamber.

The operator shall calibrate the thermocouple/temperature recorder once a year, in accordance with manufacturer's specification, such that the overall accuracy is within + /- 1% or + /- 2 degrees Celsius, whichever is greater.

The operator shall keep the temperature record on site to show compliance with above conditions. Such records shall be kept for at least five years and made available to District personnel upon request.

[RULE 1303(a)(1)-BACT, 5-10-1996; RULE 1149, 5-2-2008]

4. The operator shall operate and maintain this equipment according to the following requirements:

The height of bladder tank shall not exceed a height of 24 ft or a maximum height specified by the Executive Officer in writing. The height of bladder shall be monitored and recorded as approved by the Executive Officer.

The operator shall install and maintain a device to indicate continuously the integrity of the bladder tank. No gases shall be received by the bladder tank unless the tank integrity is verified to be leak free.

[RULE 1303(a)(1)-BACT, 5-10-1996, RULE 1149, 5-2-2008]

5. The operator shall operate and maintain this equipment according to the following requirements:

This incinerator shall receive vent gas from: (a) no more than three tanks in the degassing/purging operation at any time, and (b) no more than one tank in refilling operation with a maximum of two tanks in degassing operation at any time.

The operator shall install and maintain a non-resettable totalizing meter for recording natural gas usage by this incinerator.

The operator shall install and maintain a non-resettable totalizing meter for recording tank waste gas routed to this incinerator.

[RULE 1303(a)(1)-BACT, 5-10-1996, RULE 1149, 5-2-2008]

6. The operator shall conduct source test(s) in accordance with the following specifications:

The test shall be conducted to determine :

1. the VOC destruction efficiency of the unit;
2. the NOx concentrations at the outlet;
3. the NOX, SOX, VOC, PM10, CO mass emissions at the outlet; and
4. the high heating value (HHV) and total sulfur compounds of the inlet vent gas

The NOx, VOC, SOx, PM10 and CO test shall be conducted when this thermal oxidizer receives tank vapors during the tank refilling period. In addition, the HHV and H2S test shall also be conducted during this period.

The NOx, VOC, SOx and CO test shall be conducted when this thermal oxidizer receives tank vapors during the tank degassing period. In addition, the HHV and H2S test shall also be conducted during this period.

The test shall be conducted in accordance to a District approved source test protocol. The protocol shall be submitted to the District no later than 45 days before the proposed test date and shall be approved by the District before the test commences. The test protocol shall include the proposed operational conditions for the incinerator, the identity of the testing lab, a statement from the testing lab certifying that it meets the criteria of Rule 304, and a description of all sampling and analytical test methods.

The test shall be conducted after District approval of the source test protocol but no later than 180 days after initial start-up. The District shall be notified of the date and time of the test at least 10 days prior to the test date.

[RULE 1303(a)(1)-BACT, 5-10-1996, RULE 1303(b)(2)-Offset, 5-10-1996, RULE 1149, 5-2-2008, RULE 431.1, 6-12-1998]

7. The operator shall provide to the District a source test report in accordance with the following specifications:

Source test results shall be submitted to the District no later than 60 days after the source test was conducted.

All exhaust flow rate shall be expressed in terms of dry standard cubic feet per minute (DSCFM) and dry actual cubic feet per minute (DACFM).

Emission data shall be expressed in terms of mass rate (lbs/hr). In addition, solid PM emissions, if required to be tested, shall also be reported in terms of grains per DSCF.

Emission data shall be expressed in terms of concentration (ppmv), corrected to 3 percent stack-gas oxygen at standard conditions, measured on a dry basis and averaged over a period of 15 minutes

Source test results shall also include the oxygen and carbon dioxide levels in the exhaust gas, natural gas startup flow rate (scfm), supplemental natural gas flow rate (scfm), high heating value (Btu/scf), total sulfur content of the tank vapors during tank refilling and tank degassing/purging operations, the flue gas temperature and percent excess air under which the test was conducted.

[RULE 1303(a)(1)-BACT, 5-10-1996, RULE 1303(b)(2)-Offset, 5-10-1996, RULE 1149, 5-2-2008]

8. The operator shall provide to the District the following items:

   Final drawings and/or specifications of the equipment installed including but not limited to make and model of the burners, performance guarantee, fuel and vapor line configurations, process flow diagrams (PFD), process and instrumentation diagrams (P&ID). All items shall be submitted to the District within 60 days after installation.

   [RULE 1303(b)(2)-Offset, 5-10-1996]

EMERGENCY GENERATOR IC ENGINE (A/N 512076)

1. For the purpose of this permit, an equivalent engine is an internal combustion engine that meets the same or lower emissions limits as Cummins engine, model 80DSFAE and meets the emission limits specified in Title 13 California Code of Regulations Section 2423.

2. The engine is subject to all applicable requirements of SCAQMD Rules 431.2, 1470 and 40CFR 60 Subpart IIII and 40CFR 63 Subpart ZZZZ.

3. This engine shall not operate more than 200 hours in any one year, which includes no more than (a) 50 hours in any one year for maintenance and testing purpose; and (b) No more than 4.2 hours in any one calendar month for maintenance and testing.

4. An operational non-resettable totalizing time meter shall be installed and maintained to indicate the engine elapsed operating time.

5. The operator shall restrict the operation of this equipment as follows:

   In addition to maintenance and testing of this engine, this engine shall only be used to provide electrical power to either portable operations or emergency power to stationary sources.

   Portable operations are those where it can be demonstrated that because of the nature of the operation, it is necessary to periodically move the equipment from one location to another.

   Emergencies at stationary sources are those that result in an interruption of services of the primary power supply or during stage II or III electrical emergencies declared by the California Independent System Operator.

6. The operator shall keep a log of engine operations documenting the total time the engine is operated each month and the specific reason for operation as:

   a. Emergency Use
   b. Maintenance and testing
   c. Other operating hours (describe the reason for the operation)

   In addition, for each time the engine is manually started, the log shall include the date of engine operation, the specific reason for operation, and the totalizing hour meter readings (in hours and tenths of hours) at the beginning and the end of the operation.

   On or before January 15th of each year, the operator shall record in the engine operating log:

   a. The total hours of engine operation for the previous calendar year, and

b. The total hours of engine operation for maintenance and testing for the previous calendar year.

7. Engine operation log(s) shall be retained on site for a minimum of five calendar years and shall be made available to the Executive Officer or his representative upon request.

EMERGENCY FIREFIGHTING IC ENGINE (A/N 512077)

1. For the purpose of this permit, an equivalent engine is an internal combustion engine that meets the same or lower emissions limits as Clarke engine, model JX6H-UFAD60 and meet the emission limits specified in Title 13 California Code of Regulations Section 2423.

2. The engine is subject to all applicable requirements of SCAQMD Rules 431.2, 1470 and 40CFR 60 Subpart IIII and 40CFR 63 Subpart ZZZZ.

3. This engine shall not operate more than 200 hours in any one year, which includes no more than (a) 50 hours in any one year for maintenance and testing purpose; and (b) No more than 4.2 hours in any one calendar month for maintenance and testing.

4. An operational non-resettable totalizing time meter shall be installed and maintained to indicate the engine elapsed operating time.

5. The operator shall restrict the operation of this equipment as follows:

   In addition to maintenance and testing of this engine, this engine shall only be used to provide electrical power to either portable operations or emergency power to stationary sources.

   Portable operations are those where it can be demonstrated that because of the nature of the operation, it is necessary to periodically move the equipment from one location to another.

   Emergencies at stationary sources are those that result in an interruption of services of the primary power supply or during stage II or III electrical emergencies declared by the California Independent System Operator.

6. The operator shall keep a log of engine operations documenting the total time the engine is operated each month and the specific reason for operation as:

   a. Emergency Use
   b. Maintenance and testing
   c. Other operating hours (describe the reason for the operation)

   In addition, for each time the engine is manually started, the log shall include the date of engine operation, the specific reason for operation, and the totalizing hour meter readings (in hours and tenths of hours) at the beginning and the end of the operation.

   On or before January 15th of each year, the operator shall record in the engine operating log:

   a. The total hours of engine operation for the previous calendar year, and
   b. The total hours of engine operation for maintenance and testing for the previous calendar year.

7. Engine operation log(s) shall be retained on site for a minimum of five calendar years and shall be made available to the Executive Officer or his representative upon request.

removed from service

CONTACT/STORM WATER TANK (A/N 513776)

1. The storage tank shall be vented to the carbon adsorption canisters at all times.

2. The operator shall limit the throughput to no more than 35,000 barrel(s) in any one calendar month.

   To comply with this condition, the operator shall keep records, in a manner approved by the District, for the following parameter(s) or item(s):

   Tank throughput in barrels per month.
   Vacuum truck records

3. The operator shall monitor the concentration of volatile organic compounds (VOCs) at the outlet of the primary carbon adsorber whenever the tank is being filled. The operator shall monitor using EPA Reference Method 21 with a District approved hydrocarbon detection instrument calibrated in ppmv methane.

4. In the event the OVA analyzer reaches 500 ppmv, the carbon in the primary carbon canister shall be replaced with fresh activated carbon or, the secondary canister becomes the primary canister and the replenished canister becomes the secondary canister. The primary canister shall be replaced within 72 hours after the initial discovery of 500ppmv. A log shall be maintained to record the sequential position of each fresh carbon canister and the date each carbon canister is replenished and/or re-sequenced.

5. This equipment shall only be used to store storm water and the liquid stored in this equipment shall not exceed VOC content of 10 percent by weight pursuant to Rule 1173(l)(1)(D)—amended February 6, 2009. Annual records shall be retained to show compliance with this condition and shall be made available to the Executive Officer.

6. The activated carbon used in the primary and secondary carbon canisters shall have a carbon tetrachloride activity number not less than 60% as measure by ASTM Method D3467-99 or a butane activity number of not less than 23.5% as measured by ASTM Method 5288-92.

7. Spent carbon removed from the carbon adsorption system shall be maintained or stored in closed containers prior to removal from this site.

8. This tank is subject to all applicable requirements of SCAQMD Rules 463.

9. The storage tank shall not be used to receive petroleum liquids as defined in 40 CFR60 Subpart Kb.

Appendix A

TANK EMISSIONS FROM NORMAL AND ROOF LANDING OPERATIONS

As shown in Table 1 below, processing crude oil only for the entire month will result in the highest VOC emissions for the proposed storage tanks. Consequently, the potential to emit (PTE) emissions for the proposed storage tanks are determined on the basis of processing crude oil for an entire month.

Table 1 – Emissions from Proposed Storage Tanks (Normal Operation)

	500,000-bbl Tanks		250,000-bbl Tanks	
VOC Emission Rate	Crude Oil	Intermediate Feedstock	Crude Oil	Intermediate Feedstock
30-day ave, lb/day	**28.7**	**23.4**	**19.6**	**15.7**
Annual, lb/yr	10,300	8,409	7,029	5,624
Hourly, lb/hr	1.18	0.96	0.80	0.64

Table 2 -- Roof Landing Emissions from Proposed Storage Tanks

VOC Emissions	500k Tank w/ 4 landings	500k Tank w/ 3 landings	250k Tank w/ 2 landings
30-day ave., lb/day	9.1	6.8	2.3
Annual, lb/yr	13,569	7,849	12,734
Hourly, lb/hr	11.5	11.5	9.1

TANKS 4.0.9d
Emissions Report - Detail Format
Tank Indentification and Physical Characteristics

Identification	
User Identification:	Tank T2001-1 thru T2000-4, T2000-9 & T2000-10 (Normal Operation)
City:	Long Beach
State:	California
Company:	Pacific LA Marine Terminal LLC
Type of Tank:	Internal Floating Roof Tank
Description:	Crude oil; Vp limit of 10.0 psia or less; throughput limit of 4.5 turnovers/ month
Tank Dimensions	
Diameter (ft):	265.00
Volume (gallons):	21,000,000.00
Turnovers:	54.00
Self Supp. Roof? (y/n):	N
No. of Columns:	31.00
Eff. Col. Diam. (ft):	1.00
Paint Characteristics	
Internal Shell Condition:	Light Rust
Shell Color/Shade:	White/White
Shell Condition	Good
Roof Color/Shade:	White/White
Roof Condition:	Good
Rim-Seal System	
Primary Seal:	Mechanical Shoe
Secondary Seal	Rim-mounted
Deck Characteristics	
Deck Fitting Category:	Detail
Deck Type:	Welded

Deck Fitting/Status	Quantity
Access Hatch (24-in. Diam.)/Bolted Cover, Gasketed	1
Automatic Gauge Float Well/Bolted Cover, Gasketed	1
Column Well (24-in. Diam.)/Pipe Col.-Sliding Cover, Gask.	31
Roof Leg (3-in. Diameter)/Fixed	120
Gauge-Hatch/Sample Well (8-in. Diam.)/Weighted Mech. Actuation, Gask.	1
Vacuum Breaker (10-in. Diam.)/Weighted Mech. Actuation, Gask.	4
Rim Vent (6-in. Diameter)/Weighted Mech. Actuation, Gask.	2
Slotted Guide-Pole/Sample Well/Gask. Sliding Cover, w. Pole Sleeve	1
Ladder Well (36-in. Diam.)/Sliding Cover, Gasketed	1

Meterological Data used in Emissions Calculations: Long Beach, California (Avg Atmospheric Pressure = 14.7 psia)

TANKS 4.0.9d
Emissions Report - Detail Format
Liquid Contents of Storage Tank

Tank T2001-1 thru T2000-4, T2000-9 & T2000-10 - Internal Floating Roof Tank
Long Beach, California

Mixture/Component	Month	Daily Liquid Surf. Temperature (deg F) Avg.	Min.	Max.	Liquid Bulk Temp (deg F)	Vapor Pressure (psia) Avg.	Min.	Max.	Vapor Mol. Weight.	Liquid Mass Fract.	Vapor Mass Fract.	Mol. Weight	Basis for Vapor Pressure Calculations
Crude Oil (TVP 10.0)	All	66.43	60.99	71.87	64.33	10.0000	N/A	N/A	50.0000			207.00	

TANKS 4.0.9d
Emissions Report - Detail Format
Detail Calculations (AP-42)

Tank T2001-1 thru T2000-4, T2000-9 & T2000-10 - Internal Floating Roof Tank
Long Beach, California

Annual Emission Calcaulations	
Rim Seal Losses (lb):	882.4244
Seal Factor A (lb-mole/ft-yr):	0.6000
Seal Factor B (lb-mole/ft-yr (mph)^n):	0.4000
Value of Vapor Pressure Function:	0.2775
Vapor Pressure at Daily Average Liquid Surface Temperature (psia):	10.0000
Tank Diameter (ft):	265.0000
Vapor Molecular Weight (lb/lb-mole):	50.0000
Product Factor:	0.4000
Withdrawal Losses (lb):	4,571.7768
Number of Columns:	31.0000
Effective Column Diameter (ft):	1.0000
Annual Net Throughput (gal/yr.):	1,134,000,000.0000
Shell Clingage Factor (bbl/1000 sqft):	0.0060
Average Organic Liquid Density (lb/gal):	7.1000
Tank Diameter (ft):	265.0000
Deck Fitting Losses (lb):	4,845.5091
Value of Vapor Pressure Function:	0.2775

Vapor Molecular Weight (lb/lb-mole):	50.0000
Product Factor:	0.4000
Tot. Roof Fitting Loss Fact.(lb-mole/yr):	873.0900
Deck Seam Losses (lb):	0.0000
Deck Seam Length (ft):	0.0000
Deck Seam Loss per Unit Length Factor (lb-mole/ft-yr):	0.0000
Deck Seam Length Factor(ft/sqft):	0.0000
Tank Diameter (ft):	265.0000
Vapor Molecular Weight (lb/lb-mole):	50.0000
Product Factor:	0.4000
Total Losses (lb):	10,299.7103

Roof Fitting/Status	Quantity	Roof Fitting Loss Factors KFa(lb-mole/yr)	KFb(lb-mole/(yr mph^n))	m	Losses(lb)
Access Hatch (24-in. Diam.)/Bolted Cover, Gasketed	1	1.60	0.00	0.00	8.8797
Automatic Gauge Float Well/Bolted Cover, Gasketed	1	2.80	0.00	0.00	15.5395
Column Well (24-in. Diam.)/Pipe Col.-Sliding Cover, Gask.	31	25.00	0.00	0.00	4,301.1253
Roof Leg (3-in. Diameter)/Fixed	120	0.00	0.00	0.00	0.0000
Gauge-Hatch/Sample Well (8-in. Diam.)/Weighted Mech. Actuation, Gask.	1	0.47	0.02	0.97	2.6084
Vacuum Breaker (10-in. Diam.)/Weighted Mech. Actuation, Gask.	4	6.20	1.20	0.94	137.6360
Rim Vent (6-in. Diameter)/Weighted Mech. Actuation, Gask.	2	0.71	0.10	1.00	7.8808
Slotted Guide-Pole/Sample Well/Gask. Sliding Cover, w. Pole Sleeve	1	11.00	46.00	1.40	61.0482
Ladder Well (36-in. Diam.)/Sliding Cover, Gasketed	1	56.00	0.00	0.00	310.7910

TANKS 4.0.9d
Emissions Report - Detail Format
Individual Tank Emission Totals

Emissions Report for: Annual

Tank T2001-1 thru T2000-4, T2000-9 & T2000-10 - Internal Floating Roof Tank
Long Beach, California

	Losses(lbs)				
Components	Rim Seal Loss	Withdrawl Loss	Deck Fitting Loss	Deck Seam Loss	Total Emissions
Crude Oil (TVP 10.0)	882.42	4,571.78	4,845.51	0.00	**10,299.71**

TANKS 4.0.9d
Emissions Report - Detail Format
Tank Indentification and Physical Characteristics

Identification

User Identification:	Tank T2001-1 thru T2000-4, T2000-9 & T2000-10 (Normal Operation)
City:	Long Beach
State:	California
Company:	Pacific LA Marine Terminal LLC
Type of Tank:	Internal Floating Roof Tank
Description:	Partially refined petro; Vp limit of 5.0 psia or less; throughput limit of 4.5 turnovers/ month

Tank Dimensions

Diameter (ft):	265.00
Volume (gallons):	21,000,000.00
Turnovers:	54.00
Self Supp. Roof? (y/n):	N
No. of Columns:	31.00
Eff. Col. Diam. (ft):	1.00

Paint Characteristics

Internal Shell Condition:	Light Rust
Shell Color/Shade:	White/White
Shell Condition	Good
Roof Color/Shade:	White/White
Roof Condition:	Good

Rim-Seal System

Primary Seal:	Mechanical Shoe
Secondary Seal	Rim-mounted

Deck Characteristics

Deck Fitting Category:	Detail
Deck Type:	Welded

Deck Fitting/Status	Quantity
Access Hatch (24-in. Diam.)/Bolted Cover, Gasketed	1
Automatic Gauge Float Well/Bolted Cover, Gasketed	1
Column Well (24-in. Diam.)/Pipe Col.-Sliding Cover, Gask.	31
Roof Leg (3-in. Diameter)/Fixed	120
Gauge-Hatch/Sample Well (8-in. Diam.)/Weighted Mech. Actuation, Gask.	1
Vacuum Breaker (10-in. Diam.)/Weighted Mech. Actuation, Gask.	4
Rim Vent (6-in. Diameter)/Weighted Mech. Actuation, Gask.	2
Slotted Guide-Pole/Sample Well/Gask. Sliding Cover, w. Pole Sleeve	1
Ladder Well (36-in. Diam.)/Sliding Cover, Gasketed	1

Meterological Data used in Emissions Calculations: Long Beach, California (Avg Atmospheric Pressure = 14.7 psia)

TANKS 4.0.9d
Emissions Report - Detail Format
Liquid Contents of Storage Tank

Tank T2001-1 thru T2000-4, T2000-9 & T2000-10 - Internal Floating Roof Tank
Long Beach, California

Mixture/Component	Month	Daily Liquid Surf. Temperature (deg F) Avg.	Min.	Max.	Liquid Bulk Temp (deg F)	Vapor Pressure (psia) Avg.	Min.	Max.	Vapor Mol. Weight.	Liquid Mass Fract.	Vapor Mass Fract.	Mol. Weight	Basis for Vapor Pressure Calculations
Partially Refined Petro (TVP 5.0)	All	66.43	60.99	71.87	64.33	5.0000	N/A	N/A	68.0000			92.00	

TANKS 4.0.9d
Emissions Report - Detail Format
Detail Calculations (AP-42)

Tank T2001-1 thru T2000-4, T2000-9 & T2000-10 - Internal Floating Roof Tank
Long Beach, California

Annual Emission Calcaulations	
Rim Seal Losses (lb):	1,119.3858
Seal Factor A (lb-mole/ft-yr):	0.6000
Seal Factor B (lb-mole/ft-yr (mph)^n):	0.4000
Value of Vapor Pressure Function:	0.1035
Vapor Pressure at Daily Average Liquid Surface Temperature (psia):	5.0000
Tank Diameter (ft):	265.0000
Vapor Molecular Weight (lb/lb-mole):	68.0000
Product Factor:	1.0000
Withdrawal Losses (lb):	1,142.9442
Number of Columns:	31.0000
Effective Column Diameter (ft):	1.0000
Annual Net Throughput (gal/yr.):	1,134,000,000.0000
Shell Clingage Factor (bbl/1000 sqft):	0.0015
Average Organic Liquid Density (lb/gal):	7.1000
Tank Diameter (ft):	265.0000
Deck Fitting Losses (lb):	6,146.6953
Value of Vapor Pressure Function:	0.1035

Vapor Molecular Weight (lb/lb-mole):	68.0000
Product Factor:	1.0000
Tot. Roof Fitting Loss Fact.(lb-mole/yr):	873.0900
Deck Seam Losses (lb):	0.0000
Deck Seam Length (ft):	0.0000
Deck Seam Loss per Unit Length Factor (lb-mole/ft-yr):	0.0000
Deck Seam Length Factor(ft/sqft):	0.0000
Tank Diameter (ft):	265.0000
Vapor Molecular Weight (lb/lb-mole):	68.0000
Product Factor:	1.0000
Total Losses (lb):	8,409.0253

Roof Fitting/Status	Quantity	Roof Fitting Loss Factors KFa(lb-mole/yr)	KFb(lb-mole/(yr mph^n))	m	Losses(lb)
Access Hatch (24-in. Diam.)/Bolted Cover, Gasketed	1	1.60	0.00	0.00	11.2643
Automatic Gauge Float Well/Bolted Cover, Gasketed	1	2.80	0.00	0.00	19.7125
Column Well (24-in. Diam.)/Pipe Col.-Sliding Cover, Gask.	31	25.00	0.00	0.00	5,456.1258
Roof Leg (3-in. Diameter)/Fixed	120	0.00	0.00	0.00	0.0000
Gauge-Hatch/Sample Well (8-in. Diam.)/Weighted Mech. Actuation, Gask.	1	0.47	0.02	0.97	3.3089
Vacuum Breaker (10-in. Diam.)/Weighted Mech. Actuation, Gask.	4	6.20	1.20	0.94	174.5960
Rim Vent (6-in. Diameter)/Weighted Mech. Actuation, Gask.	2	0.71	0.10	1.00	9.9970
Slotted Guide-Pole/Sample Well/Gask. Sliding Cover, w. Pole Sleeve	1	11.00	46.00	1.40	77.4418
Ladder Well (36-in. Diam.)/Sliding Cover, Gasketed	1	56.00	0.00	0.00	394.2491

TANKS 4.0.9d

Emissions Report - Detail Format

Individual Tank Emission Totals

Emissions Report for: Annual

Tank T2001-1 thru T2000-4, T2000-9 & T2000-10 - Internal Floating Roof Tank
Long Beach, California

	Losses(lbs)				
Components	Rim Seal Loss	Withdrawl Loss	Deck Fitting Loss	Deck Seam Loss	Total Emissions
Partially Refined Petro (TVP 5.0)	1,119.39	1,142.94	6,146.70	0.00	8,409.03

TANKS 4.0.9d
Emissions Report - Summary Format
Tank Indentification and Physical Characteristics

Identification

User Identification:	Tank T2000-5 thru T2000-8 (Normal Operation)
City:	Long Beach
State:	California
Company:	Pacific LA Marine Terminal LLC
Type of Tank:	Internal Floating Roof Tank
Description:	Crude Oil; Vp limit of 10 psia or less; Throughput limit of 4.5 turnovers/ month

Tank Dimensions

Diameter (ft):	185.00
Volume (gallons):	10,500,000.00
Turnovers:	54.00
Self Supp. Roof? (y/n):	N
No. of Columns:	19.00
Eff. Col. Diam. (ft):	1.00

Paint Characteristics

Internal Shell Condition:	Light Rust
Shell Color/Shade:	White/White
Shell Condition	Good
Roof Color/Shade:	White/White
Roof Condition:	Good

Rim-Seal System

Primary Seal:	Mechanical Shoe
Secondary Seal	Rim-mounted

Deck Characteristics

Deck Fitting Category:	Detail
Deck Type:	Welded

Deck Fitting/Status	Quantity
Access Hatch (24-in. Diam.)/Bolted Cover, Gasketed	1
Automatic Gauge Float Well/Bolted Cover, Gasketed	1
Column Well (24-in. Diam.)/Pipe Col.-Sliding Cover, Gask.	19
Roof Leg (3-in. Diameter)/Fixed	87
Gauge-Hatch/Sample Well (8-in. Diam.)/Weighted Mech. Actuation, Gask.	1
Vacuum Breaker (10-in. Diam.)/Weighted Mech. Actuation, Gask.	4
Rim Vent (6-in. Diameter)/Weighted Mech. Actuation, Gask.	2
Slotted Guide-Pole/Sample Well/Gask. Sliding Cover, w. Pole Sleeve	1
Ladder Well (36-in. Diam.)/Sliding Cover, Gasketed	1

Meterological Data used in Emissions Calculations: Long Beach, California (Avg Atmospheric Pressure = 14.7 psia)

TANKS 4.0.9d
Emissions Report - Summary Format
Liquid Contents of Storage Tank

Tank T2000-5 thru T2000-8 - Internal Floating Roof Tank
Long Beach, California

Mixture/Component	Month	Daily Liquid Surf. Temperature (deg F) Avg.	Min.	Max.	Liquid Bulk Temp (deg F)	Vapor Pressure (psia) Avg.	Min.	Max.	Vapor Mol. Weight	Liquid Mass Fract.	Vapor Mass Fract.	Mol. Weight	Basis for Vapor Pressure Calculations
Crude Oil (TVP 10.0)	All	66.43	60.99	71.87	64.33	10.0000	N/A	N/A	50.0000			207.00	

TANKS 4.0.9d
Emissions Report - Summary Format
Individual Tank Emission Totals

Emissions Report for: Annual

Tank T2000-5 thru T2000-8 - Internal Floating Roof Tank
Long Beach, California

	Losses(lbs)				
Components	Rim Seal Loss	Withdrawl Loss	Deck Fitting Loss	Deck Seam Loss	Total Emissions
Crude Oil (TVP 10.0)	616.03	3,232.52	3,180.56	0.00	**7,029.11**

TANKS 4.0.9d
Emissions Report - Summary Format
Tank Indentification and Physical Characteristics

Identification	
User Identification:	Tank T2000-5 thru T2000-8
City:	Long Beach
State:	California
Company:	Pacific LA Marine Terminal LLC
Type of Tank:	Internal Floating Roof Tank
Description:	Partially Refined Petro; Vp limit of 5.0 psia or less; Throughput limit of 4.5 turnovers/ month
Tank Dimensions	
Diameter (ft):	185.00
Volume (gallons):	10,500,000.00
Turnovers:	54.00
Self Supp. Roof? (y/n):	N
No. of Columns:	19.00
Eff. Col. Diam. (ft):	1.00
Paint Characteristics	
Internal Shell Condition:	Light Rust
Shell Color/Shade:	White/White
Shell Condition	Good
Roof Color/Shade:	White/White
Roof Condition:	Good
Rim-Seal System	
Primary Seal:	Mechanical Shoe
Secondary Seal	Rim-mounted
Deck Characteristics	
Deck Fitting Category:	Detail
Deck Type:	Welded

Deck Fitting/Status	Quantity
Access Hatch (24-in. Diam.)/Bolted Cover, Gasketed	1
Automatic Gauge Float Well/Bolted Cover, Gasketed	1
Column Well (24-in. Diam.)/Pipe Col.-Sliding Cover, Gask.	19
Roof Leg (3-in. Diameter)/Fixed	87
Gauge-Hatch/Sample Well (8-in. Diam.)/Weighted Mech. Actuation, Gask.	1
Vacuum Breaker (10-in. Diam.)/Weighted Mech. Actuation, Gask.	4
Rim Vent (6-in. Diameter)/Weighted Mech. Actuation, Gask.	2
Slotted Guide-Pole/Sample Well/Gask. Sliding Cover, w. Pole Sleeve	1
Ladder Well (36-in. Diam.)/Sliding Cover, Gasketed	1

Meterological Data used in Emissions Calculations: Long Beach, California (Avg Atmospheric Pressure = 14.7 psia)

TANKS 4.0.9d
Emissions Report - Summary Format
Liquid Contents of Storage Tank

Tank T2000-5 thru T2000-8 - Internal Floating Roof Tank
Long Beach, California

Mixture/Component	Month	Daily Liquid Surf. Temperature (deg F) Avg.	Min.	Max.	Liquid Bulk Temp (deg F)	Vapor Pressure (psia) Avg.	Min.	Max.	Vapor Mol. Weight.	Liquid Mass Fract.	Vapor Mass Fract.	Mol. Weight	Basis for Vapor Pressure Calculations
Partially Refined Petro (TVP 5.0)	All	66.43	60.99	71.87	64.33	5.0000	N/A	N/A	68.0000			92.00	

TANKS 4.0.9d
Emissions Report - Summary Format
Individual Tank Emission Totals

Emissions Report for: Annual

Tank T2000-5 thru T2000-8 - Internal Floating Roof Tank
Long Beach, California

	Losses(lbs)				
Components	Rim Seal Loss	Withdrawl Loss	Deck Fitting Loss	Deck Seam Loss	Total Emissions
Partially Refined Petro (TVP 5.0)	781.46	808.13	4,034.65	0.00	5,624.24

Total Roof Landing Emissions From All Six 500k Tanks at T2000

Volume of the vapor space, ft^3	129865
Tank diameter, ft	265
Crude oil TVP, psia	10
Partially Refined Petro, psia	5
Ideal Gas Constant, psia-ft^3/(lb-mol-$^\circ R$)	10.731
Crude Oil Vapor Mol. Wt, lb/lb-mol	50
Petro Vapor Mol. Wt, lb/lb-mol	68
Vapor space outage h_v, ft	2.36
Standing Idle Saturation Factor, K_s	0.44
Filling Saturation Factor, S	0.15
Ave. liquid/vapor temp, $^\circ R$	526.1
Number of tanks in the group	6

Uncontr'l VOC Degassing Loss per Landing,lbs		Landings per Mon	Contr'l Eff.	**Contr'l VOC Loss (30-ave), lbs/day**
Crude Oil	5115.1	22	99.0	**37.51**
Partially Refined Petro	3478.2	22	99.0	25.51

Uncontr'l VOC Filling Loss per Landing,lbs		Landings per Mon	Contr'l Eff.	**Contr'l VOC Loss (30-ave), lbs/day**
Crude Oil	1725.2	22	99.0	**12.65**
Partially Refined Petro	1173.2	22	99.0	8.60

Uncontr'l VOC Loss per hour per tank,lbs				
Filling time, hr	1.50		Total Loss, lbs	**50.16**
Crude Oil	1150.1			
Partially Refined Petro	782.1			

Total Roof Landing Emissions From All Four 250k Tanks at T2000

Volume of the vapor space, ft^3	68338
Tank diameter, ft	185
Crude oil TVP, psia	10
Partially refined oil, psia	5
Ideal Gas Constant, psia-ft^3/(lb-mol-°R)	10.731
Crude Oil Vapor Mol. Wt, lb/lb-mol	50
Petro Vapor Mol. Wt, lb/lb-mol	68
Vapor space outage h_v, ft	2.54
Standing Idle Saturation Factor, K_s	0.43
Filling Saturation Factor, S	0.15
Ave. liquid/vapor temp, °R	526.1
Number of tanks in the group	4

Uncontr'l VOC Degassing Loss per Landing,lbs		Landings per Mon	Contr'l Eff.	**Contr'l VOC Loss (30-ave), lbs/day**
Crude Oil	2577.5	8	99.0	**6.87**
Partially Refined Petro	1752.7	8	99.0	4.67

Uncontr'l VOC Filling Loss per Landing,lbs		Landings per Mon	Contr'l Eff.	**Contr'l VOC Loss (30-ave), lbs/day**
Crude Oil	907.9	8	99.0	**2.42**
Partially Refined Petro	617.3	8	99.0	1.65

Uncontr'l VOC Loss per hour per tank,lbs			
Filling time, hr (less than 1 hr)	0.81	Total Loss,lbs	**9.29**
Crude Oil	907.9		
Partially Refined Petro	617.3		

Appendix B

TANK REFILLING EMISSIONS

EMISSIONS FROM NATURAL GAS COMBUSTION

			Vol. Gas	Event/month	Startup/event		Vol per yr, MMscf
			0.0005	30	1		0.18
	EF		Per Startup	Monthly per tank	Monthly Total	30-ave, lbs/day	
VOC	7		**0.004**	0.11	0.11	0.004	
NOx	130		**0.065**	1.95	1.95	0.065	
SOx	0.83		**0.000**	0.01	0.01	0.000	
CO	35		**0.018**	0.53	0.53	0.018	
PM10	7.5		**0.004**	0.11	0.11	0.004	

EMISSIONS FROM TANK VAPOR COMBUSTION (500,000-bbl tank with 4 roof landings per month)

time per TO, hr	Prod, gal	Load rate, bbl/hr	Vent Flow, scfm	Event/month	No. of Tanks	Space Vol,gal	
1.54	971458	15000	2600.000	4	4	971458	24.934
	EF	Hourly, lb/hr	Per Refill	Monthly per tank	Monthly Total	30-ave, lbs/day	
VOC	7	1.09	**1.68**	6.74	26.94	0.90	
NOx	102	15.91	**24.54**	98.15	392.58	13.09	
SOx	8.3	1.29	**2.00**	7.99	31.95	1.06	
CO	7.3	1.14	**1.76**	7.02	28.10	0.94	
PM10	21	3.28	**5.05**	20.21	80.83	2.69	
431.1 H2S	4.4	0.69	**1.06**	N/A	N/A	N/A	

EMISSIONS FROM TANK VAPOR COMBUSTION (500,000-bbl tank with 3 roof landings per month)

time per TO, hr	Prod, gal	Load rate, bbl/hr	Vent Flow, scfm	Event/month	No. of Tanks	Space Vol,gal	
1.54	971458	15000	2600.000	3	2	971458	9.350
	EF	Hourly, lb/hr	Per Refill	Monthly per tank	Monthly Total	30-ave, lbs/day	
VOC	7	1.09	**1.68**	5.05	10.10	0.34	
NOx	102	15.91	**24.54**	73.61	147.22	4.91	
SOx	8.3	1.29	**2.00**	5.99	11.98	0.40	
CO	7.3	1.14	**1.76**	5.27	10.54	0.35	
PM10	21	3.28	**5.05**	15.15	30.31	1.01	

EMISSIONS FROM TANK VAPOR COMBUSTION (250,000-bbl tank with 2 roof landings)

time per TO, hr	Prod, gal	Load rate, bbl/hr	Vent Flow, scfm	Event/month	No. of Tanks	Space Vol,gal	
0.81	511204	15000	2600.000	2	4	511204	6.560

	EF	Hourly, lb/hr	Per Refill	Monthly per tank	Monthly Total	30-ave, lbs/day	
VOC	7	0.89	**0.72**	1.44	5.75	0.19	
NOx	102	12.91	**10.48**	20.95	83.82	2.79	
SOx	8.3	1.05	**0.85**	1.71	6.82	0.23	
CO	7.3	0.92	**0.75**	1.50	6.00	0.20	
PM10	21	2.66	**2.16**	4.31	17.26	0.58	40.845

Total-Degassing Emissions	30-day Ave lbs/day
VOC	3.82
NOx	56.63
SOx	4.25
CO	4.99
PM10	15.48

Total-Refiling Emissions	30-day Ave lbs/day	Total-VDU lbs/day
VOC	1.43	**5.2**
NOx	20.85	**77.5**
SOx	1.69	**5.9**
CO	1.51	**6.5**
PM10	4.28	**19.8**

TANK REFILLING EMISSIONS

EMISSIONS FROM NATURAL GAS COMBUSTION

			Vol. Gas	Event/yr	Startup/event
			0.0005	360	1
	EF		Per Startup	Monthly per tank	Yearly Total
VOC	7		**0.004**	1.26	1.26
NOx	130		**0.065**	23.40	23.40
SOx	0.83		**0.000**	0.15	0.15
CO	35		**0.018**	6.30	6.30
PM10	7.5		**0.004**	1.35	1.35

EMISSIONS FROM TANK VAPOR COMBUSTION (500,000-bbl tank with 4 roof landings per month)

time per TO, hr	Prod, gal	Load rate, bbl/hr	Vent Flow, scfm	Event/yr	No. of Tanks	Space Vol,gal
1.54	971458	15000	2600.000	48	4	971458

	EF	Hourly, lb/hr	Per Refill	Monthly per tank	Yearly Total
VOC	7	1.09	**1.68**	80.83	323.30
NOx	102	15.91	**24.54**	1177.74	4710.96
SOx	8.3	1.29	**2.00**	95.84	383.34
CO	7.3	1.14	**1.76**	84.29	337.16
PM10	21	3.28	**5.05**	242.48	969.90
431.1 H2S	4.4	0.69	**1.06**	N/A	N/A

EMISSIONS FROM TANK VAPOR COMBUSTION (500,000-bbl tank with 3 roof landings per month)

time per TO, hr	Prod, gal	Load rate, bbl/hr	Vent Flow, scfm	Event/yr	No. of Tanks	Space Vol,gal
1.54	971458	15000	2600.000	36	2	971458

	EF	Hourly, lb/hr	Per Refill	Monthly per tank	Yearly Total
VOC	7	1.09	**1.68**	60.62	121.24
NOx	102	15.91	**24.54**	883.31	1766.61
SOx	8.3	1.29	**2.00**	71.88	143.75
CO	7.3	1.14	**1.76**	63.22	126.43
PM10	21	3.28	**5.05**	181.86	363.71

EMISSIONS FROM TANK VAPOR COMBUSTION (250,000-bbl tank with 2 roof landings per month)

time per TO, hr	Prod, gal	Load rate, bbl/hr	Vent Flow, scfm	Event/yr	No. of Tanks	Space Vol,gal
0.81	511204	15000	2600.000	24	4	511204

	EF	Hourly, lb/hr	Per Refill	Monthly per tank	Yearly Total
VOC	7	0.89	**0.72**	17.26	69.02
NOx	102	12.91	**10.48**	251.45	1005.78
SOx	8.3	1.05	**0.85**	20.46	81.84
CO	7.3	0.92	**0.75**	18.00	71.98
PM10	21	2.66	**2.16**	51.77	207.07

Total-Degassing Emissions	Annual Rate lbs/yr
VOC	1869.52
NOx	27319.33
SOx	2195.97
CO	2026.57
PM10	5571.07

Total-Refiling Emissions	Annual Rate lbs/yr	Total-VDU lbs/yr
VOC	514.82	**2384.34**
NOx	7506.75	**34826.09**
SOx	609.09	**2805.06**
CO	541.87	**2568.44**
PM10	1542.04	**7113.11**

Total-VDU Emissions	Annual Rate ton/yr
VOC	**1.2**
NOx	**17.4**
SOx	**1.4**
CO	**1.3**
PM10	**3.6**

EMPTY TANK PURGING EMISSIONS FOR 500,000-BBL TANKS--Assume 72 hours duration

Vol_{empty}, ft^3	129865
No of tanks	4
Q,ft^3/hr	18000
HHV_I	1000
HHV_{target}	800
HHV_{NG}	1050

	VOC	NOx	SOx	CO	PM10
N.G EF	7	130	0.83	35	7.5
Vapor EF	7	102	8.3	7.3	21

Time, hr	HHV_{end}	VOC EF	NOx EF	SOx EF	CO EF	PM10 EF	Vol_{suppl} cu.ft	VOC	NOx	SOx	CO	PM10	431.1 H2S
0	1000.0	6.67	97.14	7.90	6.95	20.00	0.00	0.120	1.749	0.142	0.125	0.360	0.076
1	965.9	6.44	93.83	7.64	6.72	19.32	0.00	0.116	1.689	0.137	0.121	0.348	0.073
2	933.0	6.22	90.64	7.38	6.49	18.66	0.00	0.112	1.631	0.133	0.117	0.336	0.071
3	901.3	6.01	87.55	7.12	6.27	18.03	0.00	0.108	1.576	0.128	0.113	0.324	0.068
4	870.6	5.80	84.57	6.88	6.05	17.41	0.00	0.104	1.522	0.124	0.109	0.313	0.066
5	840.9	5.61	81.69	6.65	5.85	16.82	0.00	0.101	1.470	0.120	0.105	0.303	0.064
6	812.3	5.42	78.91	6.42	5.65	16.25	0.00	0.097	1.420	0.116	0.102	0.292	0.061
7	784.6	5.33	77.71	6.32	5.56	16.00	1107.58	0.102	1.485	0.121	0.106	0.306	0.060
8	757.9	5.33	77.71	6.32	5.56	16.00	3031.59	0.112	1.634	0.133	0.117	0.337	0.060
9	732.1	5.33	77.71	6.32	5.56	16.00	4890.07	0.122	1.779	0.145	0.127	0.366	0.060
10	707.1	5.33	77.71	6.32	5.56	16.00	6685.26	0.132	1.918	0.156	0.137	0.395	0.060
11	683.1	5.33	77.71	6.32	5.56	16.00	8419.31	0.141	2.053	0.167	0.147	0.423	0.060
12	659.8	5.33	77.71	6.32	5.56	16.00	10094.30	0.150	2.183	0.178	0.156	0.450	0.060
13	637.3	5.33	77.71	6.32	5.56	16.00	11712.24	0.158	2.309	0.188	0.165	0.475	0.060
14	615.6	5.33	77.71	6.32	5.56	16.00	13275.08	0.167	2.431	0.198	0.174	0.500	0.060
15	594.7	5.33	77.71	6.32	5.56	16.00	14784.70	0.175	2.548	0.207	0.182	0.525	0.060
16	574.4	5.33	77.71	6.32	5.56	16.00	16242.90	0.183	2.661	0.217	0.190	0.548	0.060
17	554.8	5.33	77.71	6.32	5.56	16.00	17651.43	0.190	2.771	0.225	0.198	0.570	0.060
18	535.9	5.33	77.71	6.32	5.56	16.00	19011.99	0.197	2.876	0.234	0.206	0.592	0.060
19	517.7	5.33	77.71	6.32	5.56	16.00	20326.22	0.204	2.978	0.242	0.213	0.613	0.060
20	500.1	5.33	77.71	6.32	5.56	16.00	21595.69	0.211	3.077	0.250	0.220	0.634	0.060
21	483.0	5.33	77.71	6.32	5.56	16.00	22821.92	0.218	3.172	0.258	0.227	0.653	0.060
22	466.6	5.33	77.71	6.32	5.56	16.00	24006.39	0.224	3.264	0.266	0.234	0.672	0.060
23	450.7	5.33	77.71	6.32	5.56	16.00	25150.51	0.230	3.353	0.273	0.240	0.690	0.060
24	435.3	5.33	77.71	6.32	5.56	16.00	26255.67	0.236	3.439	0.280	0.246	0.708	
25	420.5	5.33	77.71	6.32	5.56	16.00	27323.20	0.242	3.522	0.287	0.252	0.725	
26	406.2	5.33	77.71	6.32	5.56	16.00	28354.36	0.247	3.602	0.293	0.258	0.742	
27	392.4	5.33	77.71	6.32	5.56	16.00	29350.40	0.253	3.680	0.299	0.263	0.758	
28	379.0	5.33	77.71	6.32	5.56	16.00	30312.53	0.258	3.755	0.306	0.269	0.773	

29	366.1	5.33	77.71	6.32	5.56	16.00	31241.88	0.263	3.827	0.311	0.274	0.788
30	353.6	5.33	77.71	6.32	5.56	16.00	32139.58	0.267	3.897	0.317	0.279	0.802
31	341.6	5.33	77.71	6.32	5.56	16.00	33006.71	0.272	3.964	0.323	0.284	0.816
32	329.9	5.33	77.71	6.32	5.56	16.00	33844.30	0.277	4.029	0.328	0.288	0.830
33	318.7	5.33	77.71	6.32	5.56	16.00	34653.37	0.281	4.092	0.333	0.293	0.842
34	307.8	5.33	77.71	6.32	5.56	16.00	35434.89	0.285	4.153	0.338	0.297	0.855
35	297.4	5.33	77.71	6.32	5.56	16.00	36189.78	0.289	4.211	0.343	0.301	0.867
36	287.2	5.33	77.71	6.32	5.56	16.00	36918.97	0.293	4.268	0.347	0.305	0.879
37	277.5	5.33	77.71	6.32	5.56	16.00	37623.32	0.297	4.323	0.352	0.309	0.890
38	268.0	5.33	77.71	6.32	5.56	16.00	38303.69	0.300	4.376	0.356	0.313	0.901
39	258.9	5.33	77.71	6.32	5.56	16.00	38960.88	0.304	4.427	0.360	0.317	0.911
40	250.1	5.33	77.71	6.32	5.56	16.00	39595.69	0.307	4.476	0.364	0.320	0.922
41	241.5	5.33	77.71	6.32	5.56	16.00	40208.88	0.310	4.524	0.368	0.324	0.931
42	233.3	5.33	77.71	6.32	5.56	16.00	40801.18	0.314	4.570	0.372	0.327	0.941
43	225.4	5.33	77.71	6.32	5.56	16.00	41373.31	0.317	4.614	0.375	0.330	0.950
44	217.7	5.33	77.71	6.32	5.56	16.00	41925.96	0.320	4.657	0.379	0.333	0.959
45	210.3	5.33	77.71	6.32	5.56	16.00	42459.78	0.322	4.699	0.382	0.336	0.967
46	203.1	5.33	77.71	6.32	5.56	16.00	42975.43	0.325	4.739	0.386	0.339	0.976
47	196.2	5.33	77.71	6.32	5.56	16.00	43473.51	0.328	4.777	0.389	0.342	0.984
48	189.5	5.33	77.71	6.32	5.56	16.00	43954.63	0.330	4.815	0.392	0.345	0.991
49	183.1	5.33	77.71	6.32	5.56	16.00	44419.36	0.333	4.851	0.395	0.347	0.999
50	176.8	5.33	77.71	6.32	5.56	16.00	44868.27	0.335	4.886	0.398	0.350	1.006
51	170.8	5.33	77.71	6.32	5.56	16.00	45301.88	0.338	4.919	0.400	0.352	1.013
52	165.0	5.33	77.71	6.32	5.56	16.00	45720.73	0.340	4.952	0.403	0.354	1.020
53	159.4	5.33	77.71	6.32	5.56	16.00	46125.31	0.342	4.983	0.406	0.357	1.026
54	153.9	5.33	77.71	6.32	5.56	16.00	46516.12	0.344	5.014	0.408	0.359	1.032
55	148.7	5.33	77.71	6.32	5.56	16.00	46893.61	0.346	5.043	0.410	0.361	1.038
56	143.6	5.33	77.71	6.32	5.56	16.00	47258.25	0.348	5.071	0.413	0.363	1.044
57	138.7	5.33	77.71	6.32	5.56	16.00	47610.46	0.350	5.099	0.415	0.365	1.050
58	134.0	5.33	77.71	6.32	5.56	16.00	47950.69	0.352	5.125	0.417	0.367	1.055
59	129.5	5.33	77.71	6.32	5.56	16.00	48279.32	0.353	5.151	0.419	0.369	1.060
60	125.0	5.33	77.71	6.32	5.56	16.00	48596.76	0.355	5.176	0.421	0.370	1.066
61	120.8	5.33	77.71	6.32	5.56	16.00	48903.40	0.357	5.199	0.423	0.372	1.070
62	116.7	5.33	77.71	6.32	5.56	16.00	49199.58	0.358	5.222	0.425	0.374	1.075
63	112.7	5.33	77.71	6.32	5.56	16.00	49485.68	0.360	5.245	0.427	0.375	1.080
64	108.9	5.33	77.71	6.32	5.56	16.00	49762.04	0.361	5.266	0.429	0.377	1.084
65	105.2	5.33	77.71	6.32	5.56	16.00	50028.98	0.363	5.287	0.430	0.378	1.088
66	101.6	5.33	77.71	6.32	5.56	16.00	50286.84	0.364	5.307	0.432	0.380	1.093
67	98.1	5.33	77.71	6.32	5.56	16.00	50535.91	0.366	5.326	0.433	0.381	1.097
68	94.8	5.33	77.71	6.32	5.56	16.00	50776.50	0.367	5.345	0.435	0.383	1.100
69	91.5	5.33	77.71	6.32	5.56	16.00	51008.89	0.368	5.363	0.436	0.384	1.104

70	88.4	5.33	77.71	6.32	5.56	16.00	51233.37	0.369	5.380	0.438	0.385	1.108	
71	85.4	5.33	77.71	6.32	5.56	16.00	51450.20	0.370	5.397	0.439	0.386	1.111	
72	82.5	5.33	77.71	6.32	5.56	16.00	51659.65	0.372	5.414	0.441	0.387	1.115	
					Per Event w/		4 Tanks	19.422	283.008	23.029	20.255	58.266	**1.287**
					Monthly		4 events/month	77.69	1132.03	92.12	81.02	233.07	↑
					30-d Ave		30 days/month	2.59	37.73	3.07	2.70	7.77	**per 24 hr**
					30-d Ave Startup		61.7 @500 cu.ft	0.03	0.53	0.00	0.14	0.03	**+3 tanks**
							246.9	0.22	4.01	0.03	1.08	0.23	←
					Total #Startup per event		**lbs/day**	**2.62**	**38.27**	**3.07**	**2.84**	**7.80**	
					Total #startup per month		lbs/yr	942.6	13776.9	1106.6	1024.1	2807.9	
					Total gas vol combu		3.607	173.2					

EMPTY TANK PURGING EMISSIONS FOR 500,000-BBL TANKS--Assume 72 hours duration

Vol_{empty}, ft^3	129865
No of tanks	2
Q,ft^3/hr	9000
HHV_I	1000
HHV_{target}	800
HHV_{NG}	1050

	VOC	NOx	SOx	CO	PM10
N.G EF	7	130	0.83	35	7.5
Vapor EF	7	102	8.3	7.3	21

Time, hr	HHV_{end}	VOC EF	NOx EF	SOx EF	CO EF	PM10 EF	Vol_{suppl} cu.ft	VOC	NOx	SOx	CO	PM10	431.1 H2S
0	1000.0	6.67	97.14	7.90	6.95	20.00	0.00	0.060	0.874	0.071	0.063	0.180	0.038
1	965.9	6.44	93.83	7.64	6.72	19.32	0.00	0.058	0.845	0.069	0.060	0.174	0.037
2	933.0	6.22	90.64	7.38	6.49	18.66	0.00	0.056	0.816	0.066	0.058	0.168	0.035
3	901.3	6.01	87.55	7.12	6.27	18.03	0.00	0.054	0.788	0.064	0.056	0.162	0.034
4	870.6	5.80	84.57	6.88	6.05	17.41	0.00	0.052	0.761	0.062	0.054	0.157	0.033
5	840.9	5.61	81.69	6.65	5.85	16.82	0.00	0.050	0.735	0.060	0.053	0.151	0.032
6	812.3	5.42	78.91	6.42	5.65	16.25	0.00	0.049	0.710	0.058	0.051	0.146	0.031
7	784.6	5.33	77.71	6.32	5.56	16.00	553.79	0.051	0.742	0.060	0.053	0.153	0.030
8	757.9	5.33	77.71	6.32	5.56	16.00	1515.79	0.056	0.817	0.066	0.058	0.168	0.030
9	732.1	5.33	77.71	6.32	5.56	16.00	2445.04	0.061	0.889	0.072	0.064	0.183	0.030
10	707.1	5.33	77.71	6.32	5.56	16.00	3342.63	0.066	0.959	0.078	0.069	0.197	0.030
11	683.1	5.33	77.71	6.32	5.56	16.00	4209.66	0.070	1.027	0.084	0.073	0.211	0.030
12	659.8	5.33	77.71	6.32	5.56	16.00	5047.15	0.075	1.092	0.089	0.078	0.225	0.030
13	637.3	5.33	77.71	6.32	5.56	16.00	5856.12	0.079	1.155	0.094	0.083	0.238	0.030
14	615.6	5.33	77.71	6.32	5.56	16.00	6637.54	0.083	1.215	0.099	0.087	0.250	0.030
15	594.7	5.33	77.71	6.32	5.56	16.00	7392.35	0.087	1.274	0.104	0.091	0.262	0.030
16	574.4	5.33	77.71	6.32	5.56	16.00	8121.45	0.091	1.331	0.108	0.095	0.274	0.030
17	554.8	5.33	77.71	6.32	5.56	16.00	8825.72	0.095	1.385	0.113	0.099	0.285	0.030
18	535.9	5.33	77.71	6.32	5.56	16.00	9506.00	0.099	1.438	0.117	0.103	0.296	0.030
19	517.7	5.33	77.71	6.32	5.56	16.00	10163.11	0.102	1.489	0.121	0.107	0.307	0.030
20	500.1	5.33	77.71	6.32	5.56	16.00	10797.84	0.106	1.539	0.125	0.110	0.317	0.030
21	483.0	5.33	77.71	6.32	5.56	16.00	11410.96	0.109	1.586	0.129	0.114	0.327	0.030
22	466.6	5.33	77.71	6.32	5.56	16.00	12003.19	0.112	1.632	0.133	0.117	0.336	0.030
23	450.7	5.33	77.71	6.32	5.56	16.00	12575.26	0.115	1.677	0.136	0.120	0.345	0.030
24	435.3	5.33	77.71	6.32	5.56	16.00	13127.84	0.118	1.720	0.140	0.123	0.354	
25	420.5	5.33	77.71	6.32	5.56	16.00	13661.60	0.121	1.761	0.143	0.126	0.363	
26	406.2	5.33	77.71	6.32	5.56	16.00	14177.18	0.124	1.801	0.147	0.129	0.371	

27	392.4	5.33	77.71	6.32	5.56	16.00	14675.20	0.126	1.840	0.150	0.132	0.379
28	379.0	5.33	77.71	6.32	5.56	16.00	15156.26	0.129	1.877	0.153	0.134	0.387
29	366.1	5.33	77.71	6.32	5.56	16.00	15620.94	0.131	1.913	0.156	0.137	0.394
30	353.6	5.33	77.71	6.32	5.56	16.00	16069.79	0.134	1.948	0.159	0.139	0.401
31	341.6	5.33	77.71	6.32	5.56	16.00	16503.35	0.136	1.982	0.161	0.142	0.408
32	329.9	5.33	77.71	6.32	5.56	16.00	16922.15	0.138	2.015	0.164	0.144	0.415
33	318.7	5.33	77.71	6.32	5.56	16.00	17326.69	0.140	2.046	0.166	0.146	0.421
34	307.8	5.33	77.71	6.32	5.56	16.00	17717.44	0.142	2.076	0.169	0.149	0.427
35	297.4	5.33	77.71	6.32	5.56	16.00	18094.89	0.145	2.106	0.171	0.151	0.434
36	287.2	5.33	77.71	6.32	5.56	16.00	18459.49	0.146	2.134	0.174	0.153	0.439
37	277.5	5.33	77.71	6.32	5.56	16.00	18811.66	0.148	2.161	0.176	0.155	0.445
38	268.0	5.33	77.71	6.32	5.56	16.00	19151.84	0.150	2.188	0.178	0.157	0.450
39	258.9	5.33	77.71	6.32	5.56	16.00	19480.44	0.152	2.213	0.180	0.158	0.456
40	250.1	5.33	77.71	6.32	5.56	16.00	19797.84	0.154	2.238	0.182	0.160	0.461
41	241.5	5.33	77.71	6.32	5.56	16.00	20104.44	0.155	2.262	0.184	0.162	0.466
42	233.3	5.33	77.71	6.32	5.56	16.00	20400.59	0.157	2.285	0.186	0.164	0.470
43	225.4	5.33	77.71	6.32	5.56	16.00	20686.66	0.158	2.307	0.188	0.165	0.475
44	217.7	5.33	77.71	6.32	5.56	16.00	20962.98	0.160	2.329	0.189	0.167	0.479
45	210.3	5.33	77.71	6.32	5.56	16.00	21229.89	0.161	2.349	0.191	0.168	0.484
46	203.1	5.33	77.71	6.32	5.56	16.00	21487.71	0.163	2.369	0.193	0.170	0.488
47	196.2	5.33	77.71	6.32	5.56	16.00	21736.75	0.164	2.389	0.194	0.171	0.492
48	189.5	5.33	77.71	6.32	5.56	16.00	21977.31	0.165	2.407	0.196	0.172	0.496
49	183.1	5.33	77.71	6.32	5.56	16.00	22209.68	0.166	2.425	0.197	0.174	0.499
50	176.8	5.33	77.71	6.32	5.56	16.00	22434.13	0.168	2.443	0.199	0.175	0.503
51	170.8	5.33	77.71	6.32	5.56	16.00	22650.94	0.169	2.460	0.200	0.176	0.506
52	165.0	5.33	77.71	6.32	5.56	16.00	22860.36	0.170	2.476	0.201	0.177	0.510
53	159.4	5.33	77.71	6.32	5.56	16.00	23062.66	0.171	2.492	0.203	0.178	0.513
54	153.9	5.33	77.71	6.32	5.56	16.00	23258.06	0.172	2.507	0.204	0.179	0.516
55	148.7	5.33	77.71	6.32	5.56	16.00	23446.80	0.173	2.522	0.205	0.180	0.519
56	143.6	5.33	77.71	6.32	5.56	16.00	23629.12	0.174	2.536	0.206	0.181	0.522
57	138.7	5.33	77.71	6.32	5.56	16.00	23805.23	0.175	2.549	0.207	0.182	0.525
58	134.0	5.33	77.71	6.32	5.56	16.00	23975.34	0.176	2.563	0.209	0.183	0.528
59	129.5	5.33	77.71	6.32	5.56	16.00	24139.66	0.177	2.575	0.210	0.184	0.530
60	125.0	5.33	77.71	6.32	5.56	16.00	24298.38	0.178	2.588	0.211	0.185	0.533
61	120.8	5.33	77.71	6.32	5.56	16.00	24451.70	0.178	2.600	0.212	0.186	0.535
62	116.7	5.33	77.71	6.32	5.56	16.00	24599.79	0.179	2.611	0.212	0.187	0.538
63	112.7	5.33	77.71	6.32	5.56	16.00	24742.84	0.180	2.622	0.213	0.188	0.540
64	108.9	5.33	77.71	6.32	5.56	16.00	24881.02	0.181	2.633	0.214	0.188	0.542
65	105.2	5.33	77.71	6.32	5.56	16.00	25014.49	0.181	2.643	0.215	0.189	0.544

66	101.6	5.33	77.71	6.32	5.56	16.00	25143.42	0.182	2.653	0.216	0.190	0.546	
67	98.1	5.33	77.71	6.32	5.56	16.00	25267.95	0.183	2.663	0.217	0.191	0.548	
68	94.8	5.33	77.71	6.32	5.56	16.00	25388.25	0.183	2.672	0.217	0.191	0.550	
69	91.5	5.33	77.71	6.32	5.56	16.00	25504.45	0.184	2.681	0.218	0.192	0.552	
70	88.4	5.33	77.71	6.32	5.56	16.00	25616.68	0.185	2.690	0.219	0.193	0.554	
71	85.4	5.33	77.71	6.32	5.56	16.00	25725.10	0.185	2.699	0.220	0.193	0.556	
72	82.5	5.33	77.71	6.32	5.56	16.00	25829.83	0.186	2.707	0.220	0.194	0.557	
					Per Event w/	2	Tanks	9.711	141.504	11.515	10.127	29.133	**0.643**
					Monthly	3	events/month	29.13	424.51	34.54	30.38	87.40	↑
					30-d Ave	30	days/month	0.97	14.15	1.15	1.01	2.91	**per 24 hr**
					30-d Ave Startup	30.9	@500 cu.ft	0.01	0.20	0.00	0.05	0.01	**+3 tanks**
						92.6		0.11	2.01	0.01	0.54	0.12	
							lbs/day	**0.98**	**14.35**	**1.15**	**1.07**	**2.92**	
							lbs/yr	353.5	5166.4	415.0	384.0	1053.0	
					Total gas vol combu		1.804	64.9					

EMPTY TANK PURGING EMISSIONS FOR 250,000-BBL TANKS--Assume 72 hours duration

Vol_{empty}, ft^3	68338
No of tanks	4
Q,ft^3/hr	18000
HHV_i	1000
HHV_{target}	800
HHV_{NG}	1050

		VOC	NOx	SOx	CO	PM10							
	N.G EF	7	130	0.83	35	7.5							
	Vapor EF	7	102	8.3	7.3	21	Vol_{suppl}						
Time, hr	HHV_{end}	VOC EF	NOx EF	SOx EF	CO EF	PM10 EF	cu.ft	VOC	NOx	SOx	CO	PM10	431.1 H2S
0	1000.0	6.67	97.14	7.90	6.95	20.00	0.00	0.120	1.749	0.142	0.125	0.360	0.076
1	936.3	6.24	90.95	7.40	6.51	18.73	0.00	0.112	1.637	0.133	0.117	0.337	0.071
2	876.6	5.84	85.16	6.93	6.09	17.53	0.00	0.105	1.533	0.125	0.110	0.316	0.066
3	820.7	5.47	79.73	6.49	5.71	16.41	0.00	0.098	1.435	0.117	0.103	0.295	0.062
4	768.4	5.33	77.71	6.32	5.56	16.00	2272.53	0.108	1.575	0.128	0.113	0.324	0.060
5	719.5	5.33	77.71	6.32	5.56	16.00	5798.44	0.127	1.849	0.150	0.132	0.381	0.060
6	673.6	5.33	77.71	6.32	5.56	16.00	9099.64	0.145	2.106	0.171	0.151	0.434	0.060
7	630.7	5.33	77.71	6.32	5.56	16.00	12190.47	0.161	2.346	0.191	0.168	0.483	0.060
8	590.5	5.33	77.71	6.32	5.56	16.00	15084.33	0.176	2.571	0.209	0.184	0.529	0.060
9	552.9	5.33	77.71	6.32	5.56	16.00	17793.76	0.191	2.782	0.226	0.199	0.573	0.060
10	517.6	5.33	77.71	6.32	5.56	16.00	20330.53	0.204	2.979	0.242	0.213	0.613	0.060
11	484.6	5.33	77.71	6.32	5.56	16.00	22705.64	0.217	3.163	0.257	0.226	0.651	0.060
12	453.8	5.33	77.71	6.32	5.56	16.00	24929.38	0.229	3.336	0.271	0.239	0.687	0.060
13	424.8	5.33	77.71	6.32	5.56	16.00	27011.41	0.240	3.498	0.285	0.250	0.720	0.060
14	397.8	5.33	77.71	6.32	5.56	16.00	28960.76	0.250	3.650	0.297	0.261	0.751	0.060
15	372.4	5.33	77.71	6.32	5.56	16.00	30785.88	0.260	3.791	0.309	0.271	0.781	0.060
16	348.7	5.33	77.71	6.32	5.56	16.00	32494.69	0.269	3.924	0.319	0.281	0.808	0.060
17	326.5	5.33	77.71	6.32	5.56	16.00	34094.60	0.278	4.048	0.329	0.290	0.834	0.060
18	305.7	5.33	77.71	6.32	5.56	16.00	35592.55	0.286	4.165	0.339	0.298	0.857	0.060
19	286.2	5.33	77.71	6.32	5.56	16.00	36995.04	0.293	4.274	0.348	0.306	0.880	0.060
20	267.9	5.33	77.71	6.32	5.56	16.00	38308.15	0.300	4.376	0.356	0.313	0.901	0.060
21	250.9	5.33	77.71	6.32	5.56	16.00	39537.58	0.307	4.471	0.364	0.320	0.921	0.060
22	234.9	5.33	77.71	6.32	5.56	16.00	40688.66	0.313	4.561	0.371	0.326	0.939	0.060
23	219.9	5.33	77.71	6.32	5.56	16.00	41766.38	0.319	4.645	0.378	0.332	0.956	0.060
24	205.9	5.33	77.71	6.32	5.56	16.00	42775.43	0.324	4.723	0.384	0.338	0.972	
25	192.8	5.33	77.71	6.32	5.56	16.00	43720.16	0.329	4.797	0.390	0.343	0.988	
26	180.5	5.33	77.71	6.32	5.56	16.00	44604.70	0.334	4.865	0.396	0.348	1.002	

27	169.0	5.33	77.71	6.32	5.56	16.00	45432.86	0.338	4.930	0.401	0.353	1.015
28	158.2	5.33	77.71	6.32	5.56	16.00	46208.25	0.342	4.990	0.406	0.357	1.027
29	148.1	5.33	77.71	6.32	5.56	16.00	46934.22	0.346	5.046	0.411	0.361	1.039
30	138.7	5.33	77.71	6.32	5.56	16.00	47613.93	0.350	5.099	0.415	0.365	1.050
31	129.9	5.33	77.71	6.32	5.56	16.00	48250.32	0.353	5.149	0.419	0.368	1.060
32	121.6	5.33	77.71	6.32	5.56	16.00	48846.16	0.357	5.195	0.423	0.372	1.070
33	113.8	5.33	77.71	6.32	5.56	16.00	49404.02	0.359	5.238	0.426	0.375	1.078
34	106.6	5.33	77.71	6.32	5.56	16.00	49926.33	0.362	5.279	0.430	0.378	1.087
35	99.8	5.33	77.71	6.32	5.56	16.00	50415.36	0.365	5.317	0.433	0.381	1.095
36	93.4	5.33	77.71	6.32	5.56	16.00	50873.22	0.367	5.352	0.436	0.383	1.102
37	87.5	5.33	77.71	6.32	5.56	16.00	51301.91	0.370	5.386	0.438	0.385	1.109
38	81.9	5.33	77.71	6.32	5.56	16.00	51703.27	0.372	5.417	0.441	0.388	1.115
39	76.7	5.33	77.71	6.32	5.56	16.00	52079.06	0.374	5.446	0.443	0.390	1.121
40	71.8	5.33	77.71	6.32	5.56	16.00	52430.89	0.376	5.473	0.445	0.392	1.127
41	67.2	5.33	77.71	6.32	5.56	16.00	52760.31	0.377	5.499	0.447	0.394	1.132
42	62.9	5.33	77.71	6.32	5.56	16.00	53068.73	0.379	5.523	0.449	0.395	1.137
43	58.9	5.33	77.71	6.32	5.56	16.00	53357.50	0.381	5.545	0.451	0.397	1.142
44	55.2	5.33	77.71	6.32	5.56	16.00	53627.87	0.382	5.567	0.453	0.398	1.146
45	51.7	5.33	77.71	6.32	5.56	16.00	53881.00	0.383	5.586	0.455	0.400	1.150
46	48.4	5.33	77.71	6.32	5.56	16.00	54118.01	0.385	5.605	0.456	0.401	1.154
47	45.3	5.33	77.71	6.32	5.56	16.00	54339.91	0.386	5.622	0.457	0.402	1.157
48	42.4	5.33	77.71	6.32	5.56	16.00	54547.67	0.387	5.638	0.459	0.404	1.161
49	39.7	5.33	77.71	6.32	5.56	16.00	54742.19	0.388	5.653	0.460	0.405	1.164
50	37.2	5.33	77.71	6.32	5.56	16.00	54924.31	0.389	5.667	0.461	0.406	1.167
51	34.8	5.33	77.71	6.32	5.56	16.00	55094.82	0.390	5.681	0.462	0.407	1.170
52	32.6	5.33	77.71	6.32	5.56	16.00	55254.47	0.391	5.693	0.463	0.407	1.172
53	30.5	5.33	77.71	6.32	5.56	16.00	55403.95	0.391	5.705	0.464	0.408	1.174
54	28.6	5.33	77.71	6.32	5.56	16.00	55543.90	0.392	5.715	0.465	0.409	1.177
55	26.7	5.33	77.71	6.32	5.56	16.00	55674.93	0.393	5.726	0.466	0.410	1.179
56	25.0	5.33	77.71	6.32	5.56	16.00	55797.61	0.394	5.735	0.467	0.410	1.181
57	23.4	5.33	77.71	6.32	5.56	16.00	55912.47	0.394	5.744	0.467	0.411	1.183
58	21.9	5.33	77.71	6.32	5.56	16.00	56020.02	0.395	5.752	0.468	0.412	1.184
59	20.5	5.33	77.71	6.32	5.56	16.00	56120.71	0.395	5.760	0.469	0.412	1.186
60	19.2	5.33	77.71	6.32	5.56	16.00	56214.98	0.396	5.768	0.469	0.413	1.187
61	18.0	5.33	77.71	6.32	5.56	16.00	56303.24	0.396	5.774	0.470	0.413	1.189
62	16.9	5.33	77.71	6.32	5.56	16.00	56385.88	0.397	5.781	0.470	0.414	1.190
63	15.8	5.33	77.71	6.32	5.56	16.00	56463.25	0.397	5.787	0.471	0.414	1.191
64	14.8	5.33	77.71	6.32	5.56	16.00	56535.70	0.398	5.792	0.471	0.415	1.193
65	13.8	5.33	77.71	6.32	5.56	16.00	56603.52	0.398	5.798	0.472	0.415	1.194

66	13.0	5.33	77.71	6.32	5.56	16.00	56667.03	0.398	5.803	0.472	0.415	1.195	
67	12.1	5.33	77.71	6.32	5.56	16.00	56726.48	0.399	5.807	0.473	0.416	1.196	
68	11.4	5.33	77.71	6.32	5.56	16.00	56782.15	0.399	5.812	0.473	0.416	1.197	
69	10.6	5.33	77.71	6.32	5.56	16.00	56834.27	0.399	5.816	0.473	0.416	1.197	
70	10.0	5.33	77.71	6.32	5.56	16.00	56883.07	0.399	5.819	0.474	0.416	1.198	
71	9.3	5.33	77.71	6.32	5.56	16.00	56928.76	0.400	5.823	0.474	0.417	1.199	
72	8.7	5.33	77.71	6.32	5.56	16.00	56971.53	0.400	5.826	0.474	0.417	1.200	
					Total for	4	Tanks	23.676	344.990	28.073	24.690	71.027	**1.271**
					Monthly	2	events/month	47.35	689.98	56.15	49.38	142.05	⇕
					30-d Ave	30	days/month	1.58	23.00	1.87	1.65	4.74	**per 24 hr**
					30-d Ave Startup	61.7	@500 cu.ft	0.01	0.27	0.00	0.07	0.02	**+3 tanks**
						123.4286		0.22	4.01	0.03	1.08	0.23	
							lbs/day	**1.59**	**23.27**	**1.87**	**1.72**	**4.75**	
							lbs/yr	573.4	8376.0	674.4	618.5	1710.2	
					Total gas vol combu		4.411	105.9					

Particulate Matter Emission Rates (grain/scf)

The vapor controlling unit (VCU) is subject to District Rules 404 and 409. Since PM emissions of the system are calculated using the emission factors of 7.5 lb/MMscf for natural gas and 21 lbs/MMscf for tank waste gas, PM emission rates are converted into grain/scf as followed:

$$\text{PM (grain/scf)} = \text{E.F}\ {}^{\text{lb}}/_{\text{MMscf}}\ \text{x}\ 7000\ {}^{\text{grains}}/_{\text{lb}}\ \text{x}\ \frac{scf}{\text{HHV, Btu}} \times \frac{MMBtu}{8710\ \text{dscf}}$$

Consequently,

PM_{NG} = (7.5 x 7000) / (1050 x 8710)
= 0.0057 grain/scf

$PM_{waste\ gas}$ = (21 x 7000) / (1000 x 8710)
= 0.0169 grain/scf

The VCU has a maximum firing capacity of 125 MMBtu/hr. At the maximum firing rate, the exhaust flow equals to:

$$\text{Flow}_{max} = 125\frac{\text{MMBtu}}{\text{hr}}\ \text{x}\ 8710\frac{\text{dscf}}{\text{MMBtu}}\ \text{x}\ \frac{(460^{\circ}+60^{\circ})\text{R}}{(460^{\circ}+68^{\circ})\text{R}}\ \text{x}\ \frac{\text{hr}}{60\ \text{min}}$$

$$= 17{,}871\ {}^{\text{scf}}/_{\text{min}}$$

From Table 404(a) of Rule 404, the maximum allowable PM emission rate at the maximum firing rate of the vapor controlling unit equals to 0.0587 grain/scf. As shown above, the PM emission rates for all of the gases to be combusted by the VCU are expected to be lower than the allowable limit of Rule 404. The PM emission rates are also below the allowable limit of 0.1 grain/scf specified by Rule 409.

Appendix C

Toxic Emissions From All Four 500,000-bbl Tanks with 16 Roof Landing Per Month

Volume of the vapor space, ft^3	129865
Tank diameter, ft	265
Crude oil TVP, psia	10
Partially Refined Petro, psia	5
Ideal Gas Constant, psia-ft^3/(lb-mol-°R)	10.731
Crude Oil Vapor Mol. Wt, lb/lb-mol	50
Petro Vapor Mol. Wt, lb/lb-mol	68
Vapor space outage h_v, ft	2.36
Standing Idle Saturation Factor, K_s	0.44
Filling Saturation Factor, S	0.15
Ave. liquid/vapor temp, °R	526.1
Number of tanks in the group	4

Uncontr'l VOC Degassing Loss per Landing,lbs		Landings per Mon	Contr'l Eff.
Crude Oil	5115.1	16	99.0
Partially Refined Petro	3478.2	16	99.0

Uncontr'l VOC Filling Loss per Landing,lbs		Landings per Mon	Contr'l Eff.
Crude Oil	1725.2	16	99.0
Partially Refined Petro	1173.2	16	99.0

Uncontr'l VOC Loss per hour per tank,lbs	
Filling time, hr	1.50
Crude Oil	1150.1
Partially Refined Petro	782.1

Max. Crude Oil	Vapor Mass Fract
Benzene	1.0374E-03
Ethylbenzene	6.1614E-05
Methylene chloride	8.3991E-04
Naphthalene	1.4967E-06
Toluene	4.6614E-04
Xylene (-m)	1.3556E-04
Xylene (-o)	5.5390E-05

Landing Uncontr'l Emissions		Landing Contr'l Emissions		Normal Emissions		Total	Max
lbs/yr	lb/hr	lbs/yr	lb/hr	lbs/yr	lb/hr	lbs/yr	lb/hr
1018.9	1.1932E+00	10.19	1.19E-02	56.68	6.49E-03	66.87	1.19E-02
60.5	7.0865E-02	0.61	7.09E-04	21.52	2.46E-03	22.13	2.46E-03
824.9	9.6602E-01	8.25	9.66E-03	24.92	2.85E-03	33.17	9.66E-03
1.5	1.7215E-03	0.01	1.72E-05	20.16	2.31E-03	20.17	2.31E-03
457.8	5.3613E-01	4.58	5.36E-03	61.88	7.08E-03	66.46	7.08E-03
133.1	1.5591E-01	1.33	1.56E-03	56.12	6.42E-03	57.45	6.42E-03
54.4	6.3707E-02	0.54	6.37E-04	28.68	3.28E-03	29.22	3.28E-03

Max. Partially Refined Petro

Benzene	1.9588E-06
Ethylbenzene	5.1253E-06
Methylene chloride	5.4896E-06
Naphthalene	4.4466E-08
Toluene	4.0260E-06
Xylene (-m)	1.4054E-06
Xylene (-o)	5.7924E-07
Benzo[a] pyrene	5.3364E-11
chrysene	1.4390E-16

Landing Uncontr'l Emissions		Landing Contr'l Emissions		Normal Emissions		Total	Max
lbs/yr	lb/hr	lbs/yr	lb/hr	lbs/yr	lb/hr	lbs/yr	lb/hr
1.3	1.5320E-03	0.01	1.53E-05	0.08	9.16E-06	0.09	1.53E-05
3.4	4.0085E-03	0.03	4.01E-05	0.8	9.16E-05	0.83	9.16E-05
3.7	4.2934E-03	0.04	4.29E-05	0.16	1.83E-05	0.20	4.29E-05
0.0	3.4777E-05	0.00	3.48E-07	0.24	2.75E-05	0.24	2.75E-05
2.7	3.1487E-03	0.03	3.15E-05	0.28	3.21E-05	0.31	3.21E-05
0.9	1.0992E-03	0.01	1.10E-05	0.24	2.75E-05	0.25	2.75E-05
0.4	4.5303E-04	0.00	4.53E-06	0.12	1.37E-05	0.12	1.37E-05
0.0	4.1736E-08	0.00	4.17E-10	0.16	1.83E-05	0.16	1.83E-05
0.0	1.1254E-13	0.00	1.13E-15	0.56	6.41E-05	0.56	6.41E-05

Total Toxic Emissions From Two 500,000-bbl Tanks with 6 Roof Landing Per Month

Volume of the vapor space, ft^3	129865
Tank diameter, ft	265
Crude oil TVP, psia	10
Partially Refined Petro, psia	5
Ideal Gas Constant, psia-ft^3/(lb-mol-°R)	10.731
Crude Oil Vapor Mol. Wt, lb/lb-mol	50
Petro Vapor Mol. Wt, lb/lb-mol	68
Vapor space outage h_v, ft	2.36
Standing Idle Saturation Factor, K_s	0.44
Filling Saturation Factor, S	0.15
Ave. liquid/vapor temp, °R	526.1
Number of tanks in the group	2

Uncontr'l VOC Degassing Loss per Landing,lbs		Landings per Mon	Contr'l Eff.
Crude Oil	5115.1	6	99.0
Partially Refined Petro	3478.2	6	99.0

Uncontr'l VOC Filling Loss per Landing,lbs		Landings per Mon	Contr'l Eff.
Crude Oil	1725.2	6	99.0
Partially Refined Petro	1173.2	6	99.0
Uncontr'l VOC Loss per hour per tank,lbs			
Filling time, hr	1.50		
Crude Oil	1150.1		
Partially Refined Petro	782.1		

Max. Crude Oil	Vapor Mass Fract
Benzene	1.0374E-03
Ethylbenzene	6.1614E-05
Methylene chloride	8.3991E-04
Naphthalene	1.4967E-06
Toluene	4.6614E-04
Xylene (-m)	1.3556E-04
Xylene (-o)	5.5390E-05

Max. Partially Refined Petro	
Benzene	1.9588E-06
Ethylbenzene	5.1253E-06
Methylene chloride	5.4896E-06
Naphthalene	4.4466E-08
Toluene	4.0260E-06
Xylene (-m)	1.4054E-06
Xylene (-o)	5.7924E-07
Benzo[a] pyrene	5.3364E-11
chrysene	1.4390E-16

Landing Uncontr'l Emissions		Landing Contr'l Emissions		Normal Emissions		Total	Max
lbs/yr	lb/hr	lbs/yr	lb/hr	lbs/yr	lb/hr	lbs/yr	lb/hr
382.1	1.1932E+00	3.82	1.19E-02	28.34	3.24E-03	32.16	1.19E-02
22.7	7.0865E-02	0.23	7.09E-04	10.76	1.23E-03	10.99	1.23E-03
309.3	9.6602E-01	3.09	9.66E-03	12.46	1.43E-03	15.55	9.66E-03
0.6	1.7215E-03	0.01	1.72E-05	10.08	1.15E-03	10.09	1.15E-03
171.7	5.3613E-01	1.72	5.36E-03	30.94	3.54E-03	32.66	5.36E-03
49.9	1.5591E-01	0.50	1.56E-03	28.06	3.21E-03	28.56	3.21E-03
20.4	6.3707E-02	0.20	6.37E-04	14.34	1.64E-03	14.54	1.64E-03

Landing Uncontr'l Emissions		Landing Contr'l Emissions		Normal Emissions		Total	Max
lbs/yr	lb/hr	lbs/yr	lb/hr	lbs/yr	lb/hr	lbs/yr	lb/hr
0.5	1.5320E-03	0.00	1.53E-05	0.04	4.58E-06	0.04	1.53E-05
1.3	4.0085E-03	0.01	4.01E-05	0.4	4.58E-05	0.41	4.58E-05
1.4	4.2934E-03	0.01	4.29E-05	0.08	9.16E-06	0.09	4.29E-05
0.0	3.4777E-05	0.00	3.48E-07	0.12	1.37E-05	0.12	1.37E-05
1.0	3.1487E-03	0.01	3.15E-05	0.14	1.60E-05	0.15	3.15E-05
0.4	1.0992E-03	0.00	1.10E-05	0.12	1.37E-05	0.12	1.37E-05
0.1	4.5303E-04	0.00	4.53E-06	0.06	6.87E-06	0.06	6.87E-06
0.0	4.1736E-08	0.00	4.17E-10	0.08	9.16E-06	0.08	9.16E-06
0.0	1.1254E-13	0.00	1.13E-15	0.28	3.21E-05	0.28	3.21E-05

Total Toxic Emissions From Four 250k Tanks with 8 Roof Landing per Month

Volume of the vapor space, ft^3	68338
Tank diameter, ft	185
Crude oil TVP, psia	10
Partially refined oil, psia	5
Ideal Gas Constant, psia-ft^3/(lb-mol-^oR)	10.731
Crude Oil Vapor Mol. Wt, lb/lb-mol	50
Petro Vapor Mol. Wt, lb/lb-mol	68
Vapor space outage h_v, ft	2.54
Standing Idle Saturation Factor, K_s	0.43
Filling Saturation Factor, S	0.15
Ave. liquid/vapor temp, ^oR	526.1
Number of tanks in the group	4

Uncontr'l VOC Degassing Loss per Landing,lbs		Landings per Mon	Contr'l Eff.	**Contr'l VOC Loss (30-ave), lbs/day**
Crude Oil	2577.5	8	99.0	**6.87**
Partially Refined Petro	1752.7	8	99.0	4.67

Uncontr'l VOC Filling Loss per Landing,lbs		Landings per Mon	Contr'l Eff.	**Contr'l VOC Loss (30-ave), lbs/day**
Crude Oil	907.9	8	99.0	**2.42**
Partially Refined Petro	617.3	8	99.0	1.65

Uncontr'l VOC Loss per hour per tank,lbs			
Filling time, hr (less than 1 hr)	0.81	Total Loss,lbs	**9.29**
Crude Oil	907.9		
Partially Refined Petro	617.3		

Max. Crude Oil	Vapor Mass Fract
Benzene	1.0374E-03
Ethylbenzene	6.1614E-05
Methylene chloride	8.3991E-04
Naphthalene	1.4967E-06
Toluene	4.6614E-04
Xylene (-m)	1.3556E-04
Xylene (-o)	5.5390E-05

Landing Uncontr'l Emissions		Landing Contr'l Emissions		Normal Emissions		Total	Max
lbs/yr	lb/hr	lbs/yr	lb/hr	lbs/yr	lb/hr	lbs/yr	lb/hr
256.7	9.4184E-01	2.57	9.42E-03	39.04	4.84E-03	41.61	9.42E-03
15.2	5.5936E-02	0.15	5.59E-04	15.16	1.88E-03	15.31	1.88E-03
207.8	7.6252E-01	2.08	7.63E-03	16.76	2.08E-03	18.84	7.63E-03
0.4	1.3588E-03	0.00	1.36E-05	14.24	1.77E-03	14.24	1.77E-03
115.3	4.2319E-01	1.15	4.23E-03	43.28	5.37E-03	44.43	5.37E-03
33.5	1.2307E-01	0.34	1.23E-03	39.56	4.91E-03	39.90	4.91E-03
13.7	5.0286E-02	0.14	5.03E-04	20.24	2.51E-03	20.38	2.51E-03

Max. Partially Refined Petro

Benzene	1.9588E-06
Ethylbenzene	5.1253E-06
Methylene chloride	5.4896E-06
Naphthalene	4.4466E-08
Toluene	4.0260E-06
Xylene (-m)	1.4054E-06
Xylene (-o)	5.7924E-07
Benzo[a] pyrene	5.3364E-11
chrysene	1.4390E-16

Landing Uncontr'l Emissions		Landing Contr'l Emissions		Normal Emissions		Total	Max
lbs/yr	lb/hr	lbs/yr	lb/hr	lbs/yr	lb/hr	lbs/yr	lb/hr
0.3	1.2093E-03	0.00	1.21E-05	0.04	4.96E-06	0.04	1.21E-05
0.9	3.1641E-03	0.01	3.16E-05	0.56	6.94E-05	0.57	6.94E-05
0.9	3.3890E-03	0.01	3.39E-05	0.12	1.49E-05	0.13	3.39E-05
0.0	2.7451E-05	0.00	2.75E-07	0.16	1.98E-05	0.16	1.98E-05
0.7	2.4854E-03	0.01	2.49E-05	0.2	2.48E-05	0.21	2.49E-05
0.2	8.6761E-04	0.00	8.68E-06	0.16	1.98E-05	0.16	1.98E-05
0.1	3.5759E-04	0.00	3.58E-06	0.08	9.92E-06	0.08	9.92E-06
0.0	3.2944E-08	0.00	3.29E-10	0.12	1.49E-05	0.12	1.49E-05
0.0	8.8833E-14	0.00	8.88E-16	0.4	4.96E-05	0.40	4.96E-05

Appendix D

Toxic Emissions from VDU

Hourly flow	2600 scfm
Yearly refilling flow	40.845 MMscf/yr
Yearly purging flow	343.961 MMscf/yr
Yearly NG startup flow	0.180 MMscf/yr

TAC Emissions	AB 2588 E.F. (lb/MMscf)	Hourly Rate lbs/hr	Yearly Rate lbs/yr
Benzene	0.0017	2.6605E-04	0.5153
Formaldehyde	0.0036	5.6340E-04	1.0911
PAHs	0.0004	6.2600E-05	0.1212
Naphthalene	0.0003	4.6950E-05	0.0909
Acetaldehyde	0.0009	1.4085E-04	0.2728
Acrolein	0.0008	1.2520E-04	0.2425
Propylene	0.01553	2.4304E-03	4.7070
Toluene	0.0078	1.2207E-03	2.3641
Xylenes	0.0058	9.0770E-04	1.7579
Ethyl benzene	0.002	3.1300E-04	0.6062
Hexane	0.0013	2.0345E-04	0.3940

Appendix E

SOUTH COAST AIR QUALITY M ANAGEMENT DISTRICT

M E M O R A N D U M

DATE: February 16, 2011

TO: Jay Chen

FROM: Naveen Berry

SUBJECT: Modeling Review of Pier 400 Project (Facilities T1000 & T2000)

As you requested, Planning, Rule Development & Area Sources (PRA) staff reviewed the cancer risk analysis for the proposed project. Facility T1000 is located at 3000 Navy Way, on Terminal Island, California and Facility T2000 is located at 750 Eldrige Street, on Terminal Island, California. PRA staff had previously reviewed the modeling performed for the project and provided a memo dated February 11, 2009. Since then, the applicant has revised the emissions from the project and a subsequent review of the health risks was requested. On November 23, 2010, the applicant provided a memo and modeling files for our review. Our comments on the health risks from the project are as follows:

- **Rule 1401 - Application of HARP for the Health Risk Impacts**
  - ✓ The applicant utilized AERMOD (version 09292) for the air dispersion modeling and the HARP On-Ramp model to convert the AERMOD output files. The applicant utilized two sets of meteorological data in the AERMOD analysis. This is appropriate based on the location of the two facilities within the Port of Los Angeles. One complete year of meteorological data was used, which is acceptable as the data used is considered site-specific to the Project.
  - ✓ The AERMOD modeling generally conforms to the District's dispersion modeling procedures.
  - ✓ The applicant performed the risk assessment with the Hot Spots Analysis and Reporting Program (HARP, version 1.4c).
  - ✓ Although crude oil will be stored in the tanks nearly all of the time, a partially refined crude oil might occasionally be handled by the Project. Therefore, two scenarios (referred to as Partially Refined and Crude) were modeled for each facility in order to analyze the worst-case health risks.
  - ✓ PRA staff re-ran the AERMOD and HARP model analysis using the emission factors provided by E&C staff (email from Khang Nguyen on February 9, 2011). For both the facilities, PRA staff estimated the health impacts from the entire facility. This is a worse-case analysis as the health impacts from each individual permit unit will be less than that of the entire facility. The results are summarized below.
  - ✓ For Facility T1000, the peak cancer risk for the proposed project is 0.22 in one million from the Partially Refined scenario, and 0.06 in one million from the Maximum Crude scenario. The peak acute and chronic hazard indices for the proposed project are 7.65E-07 and 5.36E-06, respectively, from the Partially Refined scenario; and 5.17E-04 and 3.46E-04, respectively, from the Maximum Crude scenario. These total facility risks are less than the Rule 1401 cancer and non-cancer permit limits of 1 in one million (for permit units without T-BACT) and hazard index of 1, respectively. Therefore, the cancer

and non-cancer risks from the T1000 facility for both scenarios are less than the Rule 1401 permit limits.

- ✓ For Facility T2000, the ten tanks are grouped into three separate groups with emission limits for each group of tanks. Therefore, in order to estimate the health impacts, PRA staff assigned the emission limit amount to each of the tanks of the same group and found the one tank which would yield the greatest health impact. This was repeated for each group of tanks in order to determine the maximum health impacts from the entire facility. The peak cancer risk for the proposed project is 0.07 in one million from the Partially Refined scenario, and 0.03 in one million from the Maximum Crude scenario. The peak acute and chronic hazard indices for the proposed project are 1.74E-04 and 1.18E-06, respectively, from the Partially Refined scenario; and 8.62E-04 and 3.00E-05, respectively, from the Maximum Crude scenario. These total facility risks are less than the Rule 1401 cancer and non-cancer permit limits of 1 in one million (for permit units without T-BACT) and hazard index of 1, respectively. Therefore, the cancer and non-cancer risks from the T2000 facility for both scenarios are less than the Rule 1401 permit limits.

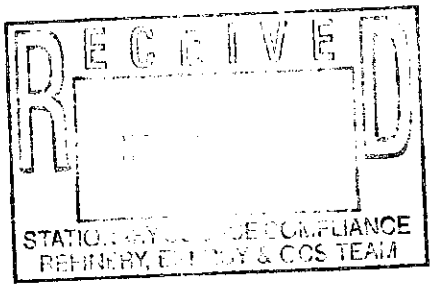
Modeling staff spent a total of 50 hours on this review. Please direct any questions to Thomas Chico at ext. 3149.

TC:JB

cc: Khang Nguyen

ManageTech

Transmittal



To: Khang Nguyen; Jillian Baker

From: Connie Cunningham

Date: November 23, 2010

Re: Pier 400 Modeling Files

Enclosed is the modeling report and CD with the modeling files divided by facility (T1000 and T2000) and further by permit units and the emission profiles (crude oil and partially refined) for your review and approval.

Khang Nguyen

From: Connie Cunningham [ccunningham@e2managetech.com]
Sent: Tuesday, November 23, 2010 9:44 AM
To: Jillian Baker; Khang Nguyen
Cc: Glenn Mayer
Subject: Pier 400 Modeling File
Attachments: Pier 400 Modeling DRAFT Report.docx

Khang/Jillian—

Attached is the Pier 400 modeling report. I will send a CD with all the HARP files in today's mail.

Happy Thanksgiving!
--Connie

Constance M. Cunningham, P.E.

E2 ManageTech
5000 East Spring Street, Suite 720
Long Beach, California 90815
Phone: 866-609-3374 ext. 909
Fax: 419-715-1762
mailto:ccunningham@e2managetech.com

Technology. Management. Solutions. It's all in the people and the process...

Khang Nguyen

From: Connie Cunningham [ccunningham@edsg.com]
Sent: Wednesday, November 19, 2008 3:24 PM
To: Khang Nguyen
Cc: Glenn Mayer
Subject: Pier 400 Modeling
Attachments: emissions.xls; VDU calc 1008.xls; T2000 tank 8x lab crude.pdf; Surge tank CBO.pdf; Surge tank default crude.pdf; Surge tank default gasoline.pdf; Surge tank lab crude.pdf; T1000 tank CBO.pdf; T1000 tank default crude.pdf; T1000 tank default gasoline.pdf; T1000 tank lab crude.pdf; T2000 tank 8x CBO.pdf; T2000 tank 8x default crude.pdf; T2000 tank 8x default gasoline.pdf

Khang,

Attached is the Pier 400 risk modeling. I will also send a CD with the files as a few of the files are too large to email.

This email has the emission files only.

Per your request, the risk is based on two separate risk scenarios - (1) highest tank emissions from crude oil either from submitted lab data or crude default in TANKS and (2) highest tank emissions from partially refined petroleum materials either from submitted lab data for CBO or default gasoline at 1 psia in TANKS. The VDU VOC emissions were calculated and then the toxic components were prorated based on the chemical composition output from TANKS.

Below is a description of the emission files:
emissions.xls - summary of the TANKS outputs with the VDU proration. The summary sheet takes the maximum value for the lab data vs TANKS default.
VDUcalc1008.xls - has the VDU calculation for T1000, T2000, and surge tank.
TANKS outputs in pdf:
surge tank CBO
surge tank default crude
surge tank default gasoline
surge tank lab crude
T1000 tank CBO
T1000 tank default crude
T1000 tank default gasoline
T1000 tank lab crude
T2000 tank 8x CBO
T2000 tank 8x default crude
T2000 tank 8x default gasoline
T2000 tank 8x lab crude

AERMOD was used as the air emissions model and the on-ramp HARP risk model using 80% inhalation method. The EIR used 2 sets of met data for this project. Berth47 met data was used for the outer harbor area which includes T1000. TITP met data was used for the Terminal Island area which includes T2000. T1000 includes 2 identical storage tanks with a height of 51.5 ft and a diameter of 209 ft and a surge tank with a height of 51.5 ft and a diameter of 90 ft which were modeled as volume sources. T2000 includes 14 identical storage tanks with a height of 65.5 ft and a diameter of 185 ft which were modeled as volume sources. Boundary and sensitive receptors were modeled and the receptor grid spacing of 250 meters was used.

Below is a description of the T1000 modeling and risk files:
Berth47_9-06_8-07.sfc - met data
Berth47_9-06_8-07.pfl - met data
aermodT1000.inp - input file
aermodT1000.out - output file (too large to email)
BothT1000.plt - plot file (too large to email)
T1000.rsk - risk file
T1000.src - source file

T1000.xoq - XOQ file (too large to email)
T1000crude.ems - emission file for crude scenario
RiskT1000crude - resulting risk file for the crude scenario
T1000partial.ems - emission file for partially refined scenario
RiskT1000partial - resulting risk file for the partially refined scenario

Below is a description of the T2000 modeling and risk files:
TITP_Sep06_Aug07.sfc - met data
TITP_Sep06_Aug07.pfl - met data
aermodT2000.inp - input file
aermodT2000.out - output file (too large to email)
BothT2000.plt - plot file (too large to email)
T2000.rsk - risk file
T2000.src - source file
T2000.xoq - XOQ file (too large to email)
T2000crude.ems - emission file for crude scenario
RiskT2000crude - resulting risk file for the crude scenario
T2000partial.ems - emission file for partially refined scenario
RiskT2000partial - resulting risk file for the partially refined scenario

Please contact me with any questions.
Thank you,

Connie Cunningham

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ccunningham@edsgrp.com
www.edsgrp.com

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SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT

MEMORANDUM

DATE: October 1, 2010

TO: Naveen Berry

FROM: Jay Chen

Naveen/Tom - Anything you can do to help expedite this review would be greatly appreciated. Thanks

SUBJECT: Revised Rule 1401 Health Risk Assessment for Pier 400 Project

PLAINS All American Pipeline, L.P. (PLAINS) previously submitted a cancer risk analysis for the proposed project that was reviewed by Planning, Rule Development& Area Source (PRA) staff. Comments on the health risk assessment (HRA) were included in a memo dated February 11, 2009. The project was subsequently put on hold at the request of the applicant for various reasons including the permit moratorium and business agreement delays between PLAINS and its customers. In June of this year, PLAINS submitted a new proposal to the District that included several modifications to the originally proposed project. As a result, we requested that PLAINS resubmit a new HRA for the project. Attached for your review are electronic modeling files of the revised HRA. It should be noted that the attached AERMOD and HARP model analysis utilizes input data files provided by PRA staff to the applicant.

Please call or e-mail Khang Nguyen (x3210) or Paul Park (x2568) for any questions you may have on the project. In addition, please contact Ms. Connie Cunningham of EDSG at (866) 609-EDSG ext. 09 for any questions on the documents attached.

REQUESTED RESPONSE DATE: October 15, 2010

COMPANY NAME Pacific LA Marine Terminal LLC
FACILITY ID T1000—146546 & T2000—164567
FACILITY LOCATION T1000—3000 Navy Way, Terminal Island, CA 90731
T2000—750 Eldridge Street, Terminal Island, CA 90731

PROJECT DESCRIPTION: New constructions of a marine offloading terminal (T1000) and a tank farm (T2000)

Applications Submitted For Facility T1000

Appl No.	Equipment Tag Name	Application for
451893	Bulk Unloading Berth 408	(1) New construction of a marine bulk unloading facility at Berth 408 on Pier 400 in the Port of Los Angeles. (2) New construction of a 80,000-barrel internal floating roof tank. This tank will function as a surge tank to stabilize the different flow rates between the ship offload pumps and shore side assisted pumps.
512041	Emergency ICE	New construction of a 2922 bhp IC engine that will power an emergency generator.
512791	In-line Air Eliminator System	New construction of an air eliminator drum located upstream of the shore side offloading pumps. The drum will vent two activated carbon adsorbers connected in series

Appl No.	Equipment Tag Name	Application for
513781	Storage Tank CW1	New construction of a fixed roof storage tank that will be used to collect and store slop oil and contact oily water from various areas within the facility.

Applications Submitted For Facility T2000

Appl. No.	Tank Name	Application for
512793	T2000-1	New construction of a 500,000-barrel internal floating roof tank.
512794	T2000-2	New construction of a 500,000-barrel internal floating roof tank.
512795	T2000-3	New construction of a 500,000-barrel internal floating roof tank.
512796	T2000-4	New construction of a 500,000-barrel internal floating roof tank.
450095	T2000-5	New construction of a 250,000-barrel internal floating roof tank.
450097	T2000-6	New construction of a 250,000-barrel internal floating roof tank.
450098	T2000-7	New construction of a 250,000-barrel internal floating roof tank.
450099	T2000-8	New construction of a 250,000-barrel internal floating roof tank.
512797	T2000-9	New construction of a 500,000-barrel internal floating roof tank.
512798	T2000-10	New construction of a 500,000-barrel internal floating roof tank.
460679	Vapor Collection & Disposal System	New construction of a direct-flame afterburner and vapor collection system to control vapor from tank degassing and refilling operations.
512076	Emergency Generator	New construction of an internal combustion engine (ICE) that will power an emergency generator.
512077	Emergency Fire Pump	New construction of an internal combustion engine (ICE) that will power an emergency fire pump.
513776	Storage Tank CW1	New construction of a 35,000-gallon fixed roof storage tank that will be used to collect and store slop oil and contact water from various areas within the facility. (Engineering evaluation for this application is found in Attachment III)

FACILITY TYPE: Title V facilities; non-RECLAIM

PROCESSING ENGINEER: Khang Nguyen (x3210)

DOCUMENTS ATTACHED FOR REVIEW:

- A compact disk labeled Pier 400 Toxic Modeling, October 1, 2010

Attachments
cc (without attachment): Khang Nguyen

Appendix F

09/18/08
09:39:05

*** SCREEN3 MODEL RUN ***
*** VERSION DATED 96043 ***

T1000 VDU NOx

SIMPLE TERRAIN INPUTS:

SOURCE TYPE	=	POINT
EMISSION RATE (G/S)	=	1.00000
STACK HEIGHT (M)	=	18.3000
STK INSIDE DIAM (M)	=	3.0000
STK EXIT VELOCITY (M/S)	=	582.0000
STK GAS EXIT TEMP (K)	=	1033.0000
AMBIENT AIR TEMP (K)	=	293.0000
RECEPTOR HEIGHT (M)	=	.0000
URBAN/RURAL OPTION	=	URBAN
BUILDING HEIGHT (M)	=	.0000
MIN HORIZ BLDG DIM (M)	=	.0000
MAX HORIZ BLDG DIM (M)	=	.0000

THE REGULATORY (DEFAULT) MIXING HEIGHT OPTION WAS SELECTED.
THE REGULATORY (DEFAULT) ANEMOMETER HEIGHT OF 10.0 METERS WAS ENTERED.

BUOY. FLUX = 9198.899 M**4/S**3; MOM. FLUX =********* M**4/S**2.

*** FULL METEOROLOGY ***

****
*** SCREEN AUTOMATED DISTANCES ***
****

*** TERRAIN HEIGHT OF 0. M ABOVE STACK BASE USED FOR FOLLOWING DISTANCES ***

DIST (M)	CONC (UG/M**3)	STAB	U10M (M/S)	USTK (M/S)	MIX HT (M)	PLUME HT (M)	SIGMA Y (M)	SIGMA Z (M)	DWASH
1.	.0000	1	1.0	1.1	8466.2	8465.20	48.24	48.24	NO
100.	.1907E-01	6	1.0	1.2	10000.0	504.79	139.41	139.20	NO
200.	.1976E-01	6	1.0	1.2	10000.0	504.79	140.60	139.70	NO
300.	.2074E-01	6	1.0	1.2	10000.0	504.79	142.45	140.42	NO
400.	.2192E-01	6	1.0	1.2	10000.0	504.79	144.88	141.28	NO
500.	.2328E-01	6	1.0	1.2	10000.0	504.79	147.79	142.25	NO
600.	.2476E-01	6	1.0	1.2	10000.0	504.79	151.11	143.29	NO
700.	.2637E-01	6	1.0	1.2	10000.0	504.79	154.76	144.39	NO
800.	.2808E-01	6	1.0	1.2	10000.0	504.79	158.70	145.54	NO
900.	.2988E-01	6	1.0	1.2	10000.0	504.79	162.87	146.72	NO
1000.	.3176E-01	6	1.0	1.2	10000.0	504.79	167.22	147.92	NO
1100.	.3373E-01	6	1.0	1.2	10000.0	504.79	171.72	149.14	NO
1200.	.3697E-01	6	4.0	4.8	10000.0	324.77	139.43	104.68	NO
1300.	.4090E-01	6	4.0	4.8	10000.0	324.77	145.33	106.46	NO
1400.	.4496E-01	6	4.0	4.8	10000.0	324.77	151.23	108.23	NO
1500.	.4913E-01	6	4.0	4.8	10000.0	324.77	157.11	109.99	NO
1600.	.5339E-01	6	4.0	4.8	10000.0	324.77	162.96	111.74	NO
1700.	.5771E-01	6	4.0	4.8	10000.0	324.77	168.77	113.48	NO
1800.	.6208E-01	6	4.0	4.8	10000.0	324.77	174.53	115.20	NO
1900.	.6648E-01	6	4.0	4.8	10000.0	324.77	180.24	116.91	NO
2000.	.7088E-01	6	4.0	4.8	10000.0	324.77	185.89	118.61	NO
2100.	.7528E-01	6	4.0	4.8	10000.0	324.77	191.49	120.28	NO
2200.	.7966E-01	6	4.0	4.8	10000.0	324.77	197.02	121.95	NO
2300.	.8400E-01	6	4.0	4.8	10000.0	324.77	202.50	123.59	NO
2400.	.8829E-01	6	4.0	4.8	10000.0	324.77	207.91	125.22	NO
2500.	.9253E-01	6	4.0	4.8	10000.0	324.77	213.26	126.84	NO
2600.	.9670E-01	6	4.0	4.8	10000.0	324.77	218.55	128.44	NO

2700.	.1008	6	4.0	4.8	10000.0	324.77	223.78	130.02	NO
2800.	.1048	6	4.0	4.8	10000.0	324.77	228.94	131.59	NO
2900.	.1088	6	4.0	4.8	10000.0	324.77	234.05	133.15	NO
3000.	.1126	6	4.0	4.8	10000.0	324.77	239.10	134.68	NO
3500.	.1304	6	4.0	4.8	10000.0	324.77	263.49	142.17	NO
4000.	.1457	6	4.0	4.8	10000.0	324.77	286.58	149.32	NO
4500.	.1585	6	4.0	4.8	10000.0	324.77	308.51	156.17	NO
5000.	.1691	6	4.0	4.8	10000.0	324.77	329.39	162.76	NO
5500.	.1787	6	3.5	4.2	10000.0	338.72	350.38	171.20	NO
6000.	.1878	6	3.0	3.6	10000.0	355.61	370.68	179.80	NO
6500.	.1967	6	2.5	3.0	10000.0	376.75	390.51	188.79	NO
7000.	.2050	6	2.0	2.4	10000.0	404.43	410.12	198.60	NO
7500.	.2132	6	2.0	2.4	10000.0	404.43	427.00	203.86	NO
8000.	.2205	6	1.5	1.8	10000.0	443.29	446.23	215.06	NO
8500.	.2286	6	1.5	1.8	10000.0	443.29	461.99	219.94	NO
9000.	.2358	6	1.5	1.8	10000.0	443.29	477.29	224.71	NO
9500.	.2423	6	1.5	1.8	10000.0	443.29	492.19	229.39	NO
10000.	.2490	6	1.0	1.2	10000.0	504.79	511.19	243.56	NO
15000.	.3013	6	1.0	1.2	10000.0	504.79	638.94	283.90	NO
20000.	.3192	6	1.0	1.2	10000.0	504.79	746.39	319.22	NO
25000.	.3199	6	1.0	1.2	10000.0	504.79	840.73	351.02	NO
30000.	.3125	6	1.0	1.2	10000.0	504.79	925.75	380.18	NO
40000.	.2887	6	1.0	1.2	10000.0	504.79	1076.17	432.65	NO
50000.	.2633	6	1.0	1.2	10000.0	504.79	1208.22	479.42	NO

MAXIMUM 1-HR CONCENTRATION AT OR BEYOND 1. M:

22672.	.3210	6	1.0	1.2	10000.0	504.79	798.16	336.59	NO

DWASH= MEANS NO CALC MADE (CONC = 0.0)
DWASH=NO MEANS NO BUILDING DOWNWASH USED
DWASH=HS MEANS HUBER-SNYDER DOWNWASH USED
DWASH=SS MEANS SCHULMAN-SCIRE DOWNWASH USED
DWASH=NA MEANS DOWNWASH NOT APPLICABLE, X<3*LB

****
*** SUMMARY OF SCREEN MODEL RESULTS ***
****

CALCULATION PROCEDURE	MAX CONC (UG/M**3)	DIST TO MAX (M)	TERRAIN HT (M)
SIMPLE TERRAIN	.3210	22672.	0.

****
** REMEMBER TO INCLUDE BACKGROUND CONCENTRATIONS **
****

Attachment I

SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT	PAGES 57	PAGE 1
ENGINEERING & COMPLIANCE	APPL. NO. 512076,512077, 513776	DATE 2/15/2011
APPLICATION PROCESSING AND CALCULATIONS	PROCESSED BY: Cynthia Carter	CHECKED BY

PERMIT TO CONSTRUCT

APPLICANT'S NAME: PACIFIC LA MARINE TERMINAL
(FACILITY ID: 164564)

MAILING ADDRESS: 5900 CHERRY AVE
LONG BEACH, CA 90805

EQUIPMENT ADDRESS: 750 ELDRIDGE STREET (T2000)
TERMINAL ISLAND, CA 90731

Equipment Description:
A/N 512076
INTERNAL COMBUSTION ENGINE, CUMMINS, MODEL NO. 80DSFAE *OR EQUIVALENT*, DIESEL FUELED, FOUR CYCLES, TURBOCHARGED, AFTERCOOLED, RATED AT 145 BHP, DRIVING AN EMERGENCY ELECTRICAL GENERATOR

Conditions:

1. OPERATION OF THIS EQUIPMENT SHALL BE CONDUCTED IN COMPLIANCE WITH ALL DATA AND SPECIFICATIONS SUBMITTED WITH THE APPLICATION UNDER WHICH THIS PERMIT IS ISSUED.
2. FOR THE PURPOSES OF THIS PERMIT, AN EQUIVALENT ENGINE IS AN INTERNAL COMBUSTION ENGINE THAT MEETS THE SAME OR LOWER EMISSIONS LIMITS AS CUMMINS ENGINE, MODEL NO. 80DSFAE AND MEETS THE EMISSION LIMITS SPECIFIED IN TITLE 13 CALIFORNIA CODE OF REGULATIONS SECTION 2423.
3. THIS EQUIPMENT SHALL BE PROPERLY MAINTAINED AND KEPT IN GOOD OPERATING CONDITIONS AT ALL TIMES.
4. THE ENGINE IS SUBJECT TO ALL APPLICABLE REQUIREMENTS OF SCAQMD RULES 431.2, 1470 AND 40 CFR60 SUBPART IIII AND 40 CFR60 SUBPART ZZZZ.
5. THIS ENGINE SHALL NOT OPERATE MORE THAN 200 HOURS IN ANY ONE YEAR, WHICH INCLUDES NO MORE THAN A) 50 HOURS IN ANY ONE YEAR FOR MAINTENANCE AND TESTING PURPOSED; AND B) NO MORE THAN 4.2 HOURS IN ANY ONE CALENDAR MONTH FOR MAINTENANCE AND TESTING.
6. AN OPEARTIONAL NON-RESETTABLE TOTALIZING TIME METER SHALL BE INSTALLED AND MAINTAINED TO INDICATE THE ENGINE ELAPSED OPERATING TIME.
7. THE OPERATAOR SHALL RESTRICT THE OPERATION OF THIS EQUIPEMENT AS FOLLOWS:

   IN ADDITION TO MAINTENANCE AND TESTING OF THIS ENGINE, THIS ENGINE SHALL ONLY BE USED TO PROVIDE ELECTRICAL POWER TO EITHER PORTABLE OPERATIONS OR EMERGENCY POWER TO STATIONARY SOURCES.

   PORTABLE OPERATIONS ARE THOSE WHERE IT CAN BE DEMONSTRATED THAT BECAUSE OF THE NATURE OF THE OPERATION, IT IS NECESSARY TO PERIODICALLY MOVE THE EQUIPMENT FROM ONE LOCATION TO ANOTHER.

   EMERGENCIES AT STATIONARY SOURCES ARE THOSE THAT RESULT IN AN INTERRUPTION OF SERVICES OF THE PRIMARY POWER SUPPLY OR DURING STAGE II

OR III ELECTRICAL EMERGENCIES DECLARED BY THE CALIFORNIA INDEPENDENT SYSTEM OPERATIOR.

8. THE OPERATOR SHALL KEEP A LOG OF ENGINE OPERATIONS DOCUMENTING THE TOTAL TIME THE ENGINE IS OPERATED EACH MONTH AND THE SPECIFIC REASON FOR OPERATION AS:
   A. EMERGENCY USE
   B. MAINTENANCE AND TESTING
   C. OTHER OPERATING HOURS (DESCRIBE THE REASON FOR THE OPERATION)

   IN ADDITION, FOR EACH TIME THE ENGINE IS MANUALLY STARTED, THE LOG SHALL INCLUDE THE DATE OF ENGINE OPERATION, THE SPECIFIC REASON FOR OPERATION, AND THE TOTALIZING HOUR METER READINGS (IN HOURS AND TENTHS OF HOURS) AT THE BEGINNING AND THE END OF THE OPERATION.

   ON OR BEFORE JANUARY 15TH OF EACH YEAR, THE OPERATOR SHALL RECORD IN THE ENGINE OPERATING LOG:
   A. THE TOTAL HOURS OF ENGINE OPERATION FOR THE PREVIOUS CALENDAR YEAR, AND
   B. THE TOTAL HOURS OF ENGINE OPERATION FOR MAINTENTANCE AND TESTING FOR THE PREVIOUS CALENDAR YEAR.

9. ENGINE OPERATION LOG(S) SHALL BE RETAINED ON SITE FOR A MINIMUM OF FIVE CALENDAR YEARS AND SHALL BE MADE AVAILABLE TO THE EXECUTIVE OFFICER OR REPRESENTATIVE UPON REQUEST.

Equipment Description:
A/N 512077
INTERNAL COMBUSTION ENGINE, CLARKE, MODEL NO. JX6H-UFAD60 *OR EQUIVALENT*, DIESEL FUELED, FOUR CYCLES, TURBOCHARGED, AFTERCOOLED, RATED AT 510 BHP, DRIVING AN EMERGENCY FIRE PUMP

Conditions:

1. OPERATION OF THIS EQUIPMENT SHALL BE CONDUCTED IN COMPLIANCE WITH ALL DATA AND SPECIFICATIONS SUBMITTED WITH THE APPLICATION UNDER WHICH THIS PERMIT IS ISSUED.
2. FOR THE PURPOSES OF THIS PERMIT, AN EQUIVALENT ENGINE IS AN INTERNAL COMBUSTION ENGINE THAT MEETS THE SAME OR LOWER EMISSIONS LIMITS AS CLARKE ENGINE, MODEL NO. JX6H-UFAD60 AND MEETS THE EMISSION LIMITS SPECIFIED IN TITLE 13 CALIFORNIA CODE OF REGULATIONS SECTION 2423.
3. THIS EQUIPMENT SHALL BE PROPERLY MAINTAINED AND KEPT IN GOOD OPERATING CONDITIONS AT ALL TIMES.
4. THE ENGINE IS SUBJECT TO ALL APPLICABLE REQUIREMENTS OF SCAQMD RULES 431.2, 1470 AND 40 CFR60 SUBPART IIII AND 40 CFR60 SUBPART ZZZZ.
5. THIS ENGINE SHALL NOT OPERATE MORE THAN 200 HOURS IN ANY ONE YEAR, WHICH INCLUDES NO MORE THAN A) 50 HOURS IN ANY ONE YEAR FOR MAINTENANCE AND TESTING PURPOSED; AND B) NO MORE THAN 4.2 HOURS IN ANY ONE CALENDAR MONTH FOR MAINTENANCE AND TESTING.
6. AN OPEARTIONAL NON-RESETTABLE TOTALIZING TIME METER SHALL BE INSTALLED AND MAINTAINED TO INDICATE THE ENGINE ELAPSED OPERATING TIME.

7. THE OPERATAOR SHALL RESTRICT THE OPERATION OF THIS EQUIPEMENT AS FOLLOWS:

   IN ADDITION TO MAINTENANCE AND TESTING OF THIS ENGINE, THIS ENGINE SHALL ONLY BE USED TO PROVIDE ELECTRICAL POWER TO EITHER PORTABLE OPERATIONS OR EMERGENCY POWER TO STATIONARY SOURCES.

   PORTABLE OPERATIONS ARE THOSE WHERE IT CAN BE DEMONSTRATED THAT BECAUSE OF THE NATURE OF THE OPERATION, IT IS NECESSARY TO PERIODICALLY MOVE THE EQUIPMENT FROM ONE LOCATION TO ANOTHER.

   EMERGENCIES AT STATIONARY SOURCES ARE THOSE THAT RESULT IN AN INTERRUPTION OF SERVICES OF THE PRIMARY POWER SUPPLY OR DURING STAGE II OR III ELECTRICAL EMERGENCIES DECLARED BY THE CALIFORNIA INDEPENDENT SYSTEM OPERATIOR.

8. THE OPERATOR SHALL KEEP A LOG OF ENGINE OPERATIONS DOCUMENTING THE TOTAL TIME THE ENGINE IS OPERATED EACH MONTH AND THE SPECIFIC REASON FOR OPERATION AS:
   A. EMERGENCY USE
   B. MAINTENANCE AND TESTING
   C. OTHER OPERATING HOURS (DESCRIBE THE REASON FOR THE OPERATION)

   IN ADDITION, FOR EACH TIME THE ENGINE IS MANUALLY STARTED, THE LOG SHALL INCLUDE THE DATE OF ENGINE OPERATION, THE SPECIFIC REASON FOR OPERATION, AND THE TOTALIZING HOUR METER READINGS (IN HOURS AND TENTHS OF HOURS) AT THE BEGINNING AND THE END OF THE OPERATION.

   ON OR BEFORE JANUARY 15TH OF EACH YEAR, THE OPERATOR SHALL RECORD IN THE ENGINE OPERATING LOG:
   A. THE TOTAL HOURS OF ENGINE OPERATION FOR THE PREVIOUS CALENDAR YEAR, AND
   B. THE TOTAL HOURS OF ENGINE OPERATION FOR MAINTENTANCE AND TESTING FOR THE PREVIOUS CALENDAR YEAR. ENGINE OPERATION LOG(S) SHALL BE RETAINED ON SITE FOR A MINIMUM OF FIVE CALENDAR YEARS AND SHALL BE MADE AVAILABLE TO THE EXECUTIVE OFFICER OR REPRESENTATIVE UPON REQUEST.

Equipment Description:
A/N 513776
STORAGE TANK, CONTACT STORM WATER, DIAMETER: 12 FT, LENGTH: 47.5 FT, 35,000 GALLON CAPACITY, WITH TWO CARBON ADSORPTION CANISTERS IN SERIES, EACH 55 GALLON DRUM OF GRANULAR ACTIVATED CARBON

Conditions:
1. OPERATION OF THIS EQUIPMENT SHALL BE CONDUCTED IN COMPLIANCE WITH ALL DATA AND SPECIFICATIONS SUBMITTED WITH THE APPLICATION UNDER WHICH THIS PERMIT IS ISSUED.
2. THIS EQUIPMENT SHALL BE PROPERLY MAINTAINED AND KEPT IN GOOD OPERATING CONDITIONS AT ALL TIMES.
3. THE STORAGE TANK SHALL BE VENTED TO THE CARBON ADSORPTION CANISTERS AT ALL TIMES.

4. THE OPERATOR SHALL LIMIT THE THROUGHPUT TO NO MORE THAN 35,000 BARREL(S) IN ANY ONE CALENDAR MONTH
   TO COMPLY WITH THIS CONDITION, THE OPERATOR SHALL KEEP RECORDS, IN A MANNER APPROVED BY THE DISTRICT, FOR THE FOLLOWING PARAMETER(S) OR ITEM(S):

   TANK THROUGHPUT IN BARRELS PER MONTH.
   VACUUM TRUCK RECORDS

5. THE OPERATOR SHALL MONITOR THE CONCENTRATION OF VOLATILE ORGANIC COMPOUNDS (VOCS) AT THE OUTLET OF THE PRIMARY CARBON ADSORBER WHENEVER THE TANK IS BEING FILLED. THE OPERATOR SHALL MONITOR USING EPA REFERENCE METHOD 21 WITH A DISTRICT APPROVED HYDROCARBON DETECTION INSTRUMENT CALIBRATED IN PPMV METHANE.

6. IN THE EVENT THE OVA ANAYLZER REACHES 500 PPMV, THE CARBON IN THE PRIMARY CARBON CANISTER SHALL BE REPLACED WITH FRESH ACTIVATED CARBON OR, THE SECONDARY CANISTER BECOMES THE PRIMARY CANISTER AND THE REPLENISHED CANISTER BECOMES THE SECONDARY CANISTER. THE PRIMARY CANISTER SHALL BE REPLACED WITHIN 72 HOURS AFTER THE INITIAL DISCOVERY OF 500PPMV. A LOG SHALL BE MAINTAINED TO RECORD THE SEQUENTIAL POSITION OF EACH FRESH CARBON CANISTER AND THE DATE EACH CARBON CANISTER IS REPLENISHED AND/OR RE-SEQUENCED.

7. THIS EQUIPMENT SHALL ONLY BE USED TO STORE STORMWATER AND THE LIQUID STORED IN THIS EQUIPMENT SHALL NOT EXCEED VOC CONTENT OF 10% BY WEIGHT PURSUANT TO RULE 1173 (I)(1)(D) –AMENDED FEBRUARY 6, 2009. ANNUAL RECORDS SHALL BE RETAINED TO SHOW COMPLIANCE WITH THIS CONDITION AND SHALL BE MADE AVAILABLE TO THE EXECUTIVE OFFICER.

8. THE ACTIVATED CARBON USED IN THE PRIMARY AND SECONDARY CARBON CANISTERS SHALL HAVE A CARBON TETRACHLORIDE ACTIVITY NUMBER NOT LESS THAN 60% AS MESURED BY ASTM METHOD D3467-99 OR A BUTANE ACTIVITY NUMBER OF NOT LESS THAN 23.5% AS MEASURED BY ASTM METHOD 5288-92.

9. SPENT CARBON REMOVED FROM THE CARBON ADSORPTION SYSTEM SHALL BE MAINTAINED OR STORED IN CLOSED CONTAINERS PRIOR TO REMOVAL FROM THIS SITE.

10. THE TANK IS SUBJECT TO ALL APPLICABLE REQUIREMENTS OF SCAQMD RULES 463.

11. THE STORAGE TANK SHALL NOT BE USED TO RECEIVE PETROLUEM LIQUIDS AS DEFINED IN 40 CFR 60 SUBPART KB.

BACKGROUND:

Pacific LA Marine Terminal submitted applications for auxiliary equipment at T2000. For more background information, please see the Master Evaluation for their entire project under AN 451893. Table 1 shows the submitted applications.

Table 1- Submitted Application(s)

	A/N	Received Date	Equipment	Requested Action	Previous A/N
Terminal Island (T2000)	512076	06/23/2010	IC Engine, Emergency Generator	• Install new emergency IC Engine	N/A
	512077	06/23/2010	Emergency Fire Pump	• Install new emergency IC Engine	N/A
	513776	08/19/2010	Contact Water Tank	• Construct tank	N/A

Since construction is expected to begin 1-2 years from the issuance of the permit, the engines have not been purchased. In a meeting between AQMD and PLAMT on August 12, 2010, it was agreed that PLAMT may purchase equivalent engines as long as the emissions are the same or less than the proposed engines. A permit condition will be added to reflect this. Once the PC to PO conversion is done, the equipment description (serial number, model number, etc) will be updated.

FEE EVALUATION:

The fees paid for the applications submitted are as follows:

Table 2-Application Fees Submitted

A/N	Equipment	BCAT/ CCAT	Type	Status	Fee Schedule, FY 09-10 & 10-11	Fee Required, $	Fees Paid, $
512076	IC Engine, Emergency Generator	043902	10	20	B	$2,051.52	$2,051.52
512077	Emergency Fire Pump	044902	10	20	B	$2,051.52	$2,051.52
513776	Contact Water Tank	294901	10	20	B	$2,051.52	$3,141.90*
				*Expedited fees were not accepted	Total:	$6,154.56	$7,244.94
						Net Fee Due:	***($1,090.38)***

PROCESS DESCRIPTION:

A/N 512076

The proposed diesel-fired engine is a Cummins rated at 145 bhp. This engine is Tier 3 compliant and will be used to drive an emergency electrical generator to provide emergency power. The emission factors provided by the engine manufacturer will be used.

A/N 512077

The proposed diesel-fired engine is a Clarke rated at 510 bhp. This engine is Tier 3 compliant and will be used to drive an emergency fire pump. The emission factors provided by the engine manufacturer will be used.

A/N 513776

PLAMT proposed to install a 35,000 gallon contact water horizontal tank to collect stormwater with an oily sheen. When it rains, the containment pads (sizes vary per operation) may fill with stormwater. The operator will then manually open the valves in order for the stormwater to drain out of the containment pads. In the event of a spill, the operators have a different procedure on handling the spill. The water will be held in the tank until filled and then pumped out by a contractor for appropriate off-site disposal. The tank will be vented through two carbon adsorbers (55-gallons each). The facility requested the maximum throughput to be 35,000 barrels per month which amounts to 16.44MM gal/yr.

EMISSIONS:

Emergency Engine

The emissions with calculations can be found below. The overall mass emissions are summarized in Table 3.

A/N 512076

Engine data

Engine hp	145	hp
Engine manufacturer	Cummins	
Fuel type	Diesel	
Fuel rate	7	gal/hour
EPA non-road engine		
Date manufactured	2010	

Engine operating limits

max hr/day	4.2	hour
max hr/month	4.2	hour
max hr/year	50	hour

PM10/PM	0.96

Emission factors	R1	units	R2	units
NOx (Manufacturer)	2.760	g/bhp-hr	2.760	g/bhp-hr
ROG (Manufacturer)	0.067	g/bhp-hr	0.067	g/bhp-hr
CO (Manufacturer)	0.67	g/bhp-hr	0.67	g/bhp-hr
SOx (AQMD Rule)	0.0049	g/bhp-hr	0.005	g/bhp-hr
PM (Manufacturer)	0.097	g/bhp-hr	0.097	g/bhp-hr
PM10 (Calc.)	0.093	g/bhp-hr	0.093	g/bhp-hr

Emission calculations	lb/hour		lb/day max		30-day avg lb/day		lb/year	
	R1	R2	R1	R2	R1	R2	R1	R2
NOx	0.88	0.88	3.70	3.70	0.12	0.12	44.07	44.07
ROG	0.02	0.02	0.09	0.09	0.00	0.00	1.07	1.07
CO	0.21	0.21	0.90	0.90	0.03	0.03	10.70	10.70
SOx	0.00	0.00	0.01	0.01	0.00	0.00	0.08	0.08
PM	0.03	0.03	0.13	0.13	0.00	0.00	1.55	1.55
PM10	0.03	0.03	0.12	0.12	0.00	0.00	1.49	1.49

SOx emission factor = based on AQMD Rule

SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT	PAGES 57	PAGE 8
ENGINEERING & COMPLIANCE	APPL. NO. 512076,512077, 513776	DATE 2/15/2011
APPLICATION PROCESSING AND CALCULATIONS	PROCESSED BY: Cynthia Carter	CHECKED BY

Nox, ROG, CO, PM emission factors from engine manufacturer data; PM10 = 0.96 * PM
A. Emissions as a function of gr/bhp-hr
Emissions (lb/hr) = gr/bhp-hr * hp rating * 1 lb/454 grams
Emissions (lb/day max) = lb/hr * max hr/day

B. NSR 30-day and lb/year values
30-day avg (lb/day) = lb/hr * max hr/month / 30 day
lb/year = lb/day * max lb/year

A/N 512077

Engine data

Engine hp	510	hp
Engine manufacturer	Clarke	
Fuel type	Diesel	
Fuel rate	138	gal/hour
EPA non-road engine		
Date manufactured	2010	

Engine operating limits

max hr/day	4.2	hour
max hr/month	4.2	hour
max hr/year	50	hour

PM10/PM	0.96

Emission factors	R1	units	R2	units
NOx (Manufacturer)	3.930	g/bhp-hr	3.930	g/bhp-hr
ROG (Manufacturer)	0.1	g/bhp-hr	0.1	g/bhp-hr
CO (Manufacturer)	0.37	g/bhp-hr	0.37	g/bhp-hr
SOx (AQMD Rule)	0.0049	g/bhp-hr	0.005	g/bhp-hr
PM (Manufacturer)	0.07	g/bhp-hr	0.07	g/bhp-hr
PM10 (Calc.)	0.067	g/bhp-hr	0.067	g/bhp-hr

Emission calculations	lb/hour		lb/day max		30-day avg lb/day		lb/year	
	R1	R2	R1	R2	R1	R2	R1	R2
NOx	4.41	4.41	18.54	18.54	0.62	0.62	220.74	220.74

ROG	0.11	0.11	0.47	0.47	0.02	0.02	5.62	5.62
CO	0.42	0.42	1.75	1.75	0.06	0.06	20.78	20.78
SOx	0.01	0.01	0.02	0.02	0.00	0.00	0.28	0.28
PM	0.08	0.08	0.33	0.33	0.01	0.01	3.93	3.93
PM10	0.08	0.08	0.32	0.32	0.01	0.01	3.77	3.77

SOx emission factor = based on AQMD Rule

Nox, ROG, CO, PM emission factors from engine manufacturer data; PM10 = 0.96 * PM

A. Emissions as a function of gr/bhp-hr

Emissions (lb/hr) = gr/bhp-hr * hp rating * 1 lb/454 grams

Emissions (lb/day max) = lb/hr * max hr/day

B. NSR 30-day and lb/year values

30-day avg (lb/day) = lb/hr * max hr/month / 30 day

lb/year = lb/day * max lb/year

Table 4 – Clarke Emergency Fire Pump Estimated Emissions[a,b]

	lb/hour	lb/day max	30-day avg lb/day	lb/year
	R1=R2	R1=R2	R1=R2	R1=R2
NOx	4.41	18.54	0.62	220.74
ROG	0.11	0.47	0.02	5.62
CO	0.42	1.75	0.06	20.78
SOx	0.01	0.02	0.00	0.28
PM	0.08	0.33	0.01	3.93
PM10	0.08	0.32	0.01	3.77

[a] Assumes each engine will operate 1 hr/day, 1 day/week in a 30-day month for testing

[b] Engine is limited to operate 50 hours/year for maintenance and testing.

Table 5 – Cummins Emergency Generator (145 bhp) Estimated Emissions[c,d]

	lb/hour	lb/day max	30-day avg lb/day	lb/year
	R1: R2	R1=R2	R1=R2	R1=R2
NOx	0.18	3.70	0.12	44.07
ROG	0.02	0.09	0.00	1.07
CO	0.21	0.90	0.03	10.70
SOx	0.00	0.01	0.00	0.08
PM	0.03	0.13	0.00	1.55
PM10	0.03	0.12	0.00	1.49

For major polluting facilities, Lowest Achievable Emission Rate (LAER) is determined by the most stringent emission or control technology which are: found in a state implementation plan (SIP), or SCAQMD's Best Available Control Technology (BACT) guidelines for Non-Major Polluting Facilities (October 3, 2008) are "achieved in practice". Therefore, the following table shows the BACT guidelines for an emergency engine > 750 bhp and the facility's proposed emergency engine emission rates.

Table 7 – BACT Compliance Emergency Fire Pump 510bhp

	NOx + NMHC	SOx	CO	PM
U.S. EPA Tier 3 Certification Levels Required for Emergency Compression-Ignition Engines, Fire Pump 175 ≤ HP < 750 bhp (10-3-2008 Revision)	3.0 gr/bhp-hr	Diesel Fuel Sulfur Content ≤ 0.05% by Weight; User only purchase diesel < 0.0015 % by weight (Rule 431.2)	2.6 gr/bhp-hr	0.15 gr/bhp-hr
Clarke, 510 BHP	2.54 gr/bhp-hr	Rule 431.2: Diesel Fuel Sulfur ≤	0.45 gr/bhp-hr	0.075 gr/bhp-hr

[c] Assumes each engine will operate 1 hr/day, 1 day/week in a 30-day month for testing
[d] Engine is limited to operate 50 hours/year for maintenance and testing.

	NOx + NMHC	SOx	CO	PM
		0.0015% by Weight		
Comply with BACT?	Yes	Yes	Yes	Yes

Table 8 – BACT Compliance Emergency Generator 145bhp

	NOx + NMHC	SOx	CO	PM
U.S. EPA Tier 3 Certification Levels Required for Emergency Compression-Ignition Engines, 100 ≤ HP < 175 bhp (10-3-2008 Revision)	3.0 gr/bhp-hr	Diesel Fuel Sulfur Content ≤ 0.05% by Weight; User only purchase diesel < 0.0015 % by weight (Rule 431.2)	3.7 gr/bhp-hr	0.22 gr/bhp-hr
Cummins, 145 BHP AQMD Certified ICE AN 465328	2.83 gr/bhp-hr	Rule 431.2: Diesel Fuel Sulfur ≤ 0.0015% by Weight	0.67 gr/bhp-hr	0.097 gr/bhp-hr
Comply with BACT?	Yes	Yes	Yes	Yes

Tank

The emissions for the contact water tank were calculated using EPA Tanks 4.0 Program. To be conservative, crude oil was used as its commodity with a vapor pressure <10psia with ~47 turnovers per year for the 35,000 gallon tank. For controlled emissions calculations, the emissions were based off 500 ppmv. Based on the ratio of atmospheric pressure equaling to 1 x10^6ppm, the equivalent vapor pressure at 500 ppmv equals 0.00735 psia. Thus, the calculated vapor pressure was inputted in the tanks' program and the resulting emissions were 99.9% less than the uncontrolled emissions. For carbon breakthrough, the rule of thumb is 20% adsorption. To be conservative, calculating the weight of the carbon divided by total VOC emissions:

$$Min\ Days\ till\ breakthrough = \frac{180\ lb * 20\%}{96.1\ {}^{lb}/_{day}} = 0.37\ days$$

See below for the summary and detailed results.

Table 5: Tank Summary ROG Emissions

		ROG Emissions			
		Uncontrolled		500 ppmv Controlled	
A/N	Tank No.	lb/yr	30day average (lb/day)	lb/yr	30day average (lb/day)
513776	T2000	34,596.35	96.10	28.08	0.08

See the next few pages for EPA Tanks Program emissions report.

Uncontrolled Emissions

TANKS 4.0.9d
Emissions Report - Detail Format
Tank Identification and Physical Characteristics

Identification

User Identification:	T2000-Contact Water Tank
City:	Long Beach
State:	California
Company:	Pacific LA Marine Terminal LLC
Type of Tank:	Horizontal Tank
Description:	Assume crude oil properties with Vp <1 psia

Tank Dimensions

Shell Length (ft):	47.50
Diameter (ft):	12.00
Volume (gallons):	35,000.00
Turnovers:	469.73
Net Throughput(gal/yr):	16,440,480.00
Is Tank Heated (y/n):	N
Is Tank Underground (y/n):	N

Paint Characteristics

Shell Color/Shade:	White/White
Shell Condition	Good

Breather Vent Settings

Vacuum Settings (psig):	-0.03
Pressure Settings (psig)	0.03

Meterological Data used in Emissions Calculations: Long Beach, California (Avg Atmospheric Pressure = 14.7 psia)

TANKS 4.0.9d
Emissions Report - Detail Format
Liquid Contents of Storage Tank

T2000-Contact Water Tank - Horizontal Tank
Long Beach, California

Mixture/Component	Month	Daily Liquid Surf. Temperature (deg F) Avg.	Min.	Max.	Liquid Bulk Temp (deg F)	Vapor Pressure (psia) Avg.	Min.	Max.	Vapor Mol. Weight.	Liquid Mass Fract.	Vapor Mass Fract.	Mol. Weight	Basis for Vapor Pressure Calculations
Crude Oil (TVP <10 psia)	All	66.43	60.99	71.87	64.33	10.0000	10.0000	10.0000	50.0000			207.00	
Benzene						1.3922	1.2004	1.6086	78.1100	0.0018	0.0010	78.11	Option 2: A=6.905, B=1211.033, C=220.79
Ethylbenzene						0.1353	0.1123	0.1622	106.1700	0.0011	0.0001	106.17	Option 2: A=6.975, B=1424.255, C=213.21
Methylene chloride						6.5444	5.7679	7.4049	84.9400	0.0003	0.0008	84.94	Option 2: A=7.409, B=1325.9, C=252.6
Naphthalene						0.0033	0.0026	0.0041	128.2000	0.0011	0.0000	128.20	Option 2: A=7.3729, B=1968.36, C=222.61
Toluene						0.4021	0.3405	0.4730	92.1300	0.0028	0.0005	92.13	Option 2: A=6.954, B=1344.8, C=219.48
Unidentified Components						10.2335	10.2309	10.2311	49.9466	0.9885	0.9974	209.72	
Xylene (-m)						0.1129	0.0936	0.1356	106.1700	0.0029	0.0001	106.17	Option 2: A=7.009, B=1462.266, C=215.11
Xylene (-o)						0.0892	0.0736	0.1075	106.1700	0.0015	0.0001	106.17	Option 2: A=6.998, B=1474.679, C=213.69

TANKS 4.0.9d
Emissions Report - Detail Format
Detail Calculations (AP-42)

T2000-Contact Water Tank - Horizontal Tank
Long Beach, California

Annual Emission Calcaulations	
Standing Losses (lb):	756.3479
Vapor Space Volume (cu ft):	3,421.7347
Vapor Density (lb/cu ft):	0.0886
Vapor Space Expansion Factor:	0.0286
Vented Vapor Saturation Factor:	0.2392

Tank Vapor Space Volume:	
Vapor Space Volume (cu ft):	3,421.7347
Tank Diameter (ft):	12.0000
Effective Diameter (ft):	26.9465
Vapor Space Outage (ft):	3.0000
Tank Shell Length (ft):	47.5000
Vapor Density	
Vapor Density (lb/cu ft):	0.0886
Vapor Molecular Weight (lb/lb-mole):	50.0000
Vapor Pressure at Daily Average Liquid Surface Temperature (psia):	10.0000
Daily Avg. Liquid Surface Temp. (deg. R):	526.1003
Daily Average Ambient Temp. (deg. F):	64.3083
Ideal Gas Constant R (psia cuft / (lb-mol-deg R)):	10.731
Liquid Bulk Temperature (deg. R):	523.9983
Tank Paint Solar Absorptance (Shell):	0.1700
Daily Total Solar Insulation Factor (Btu/sqft day):	1,571.6498
Vapor Space Expansion Factor	
Vapor Space Expansion Factor:	0.0286
Daily Vapor Temperature Range (deg. R):	21.7491
Daily Vapor Pressure Range (psia):	0.0000
Breather Vent Press. Setting Range(psia):	0.0600
Vapor Pressure at Daily Average Liquid Surface Temperature (psia):	10.0000
Vapor Pressure at Daily Minimum Liquid Surface Temperature (psia):	10.0000
Vapor Pressure at Daily Maximum Liquid Surface Temperature (psia):	10.0000
Daily Avg. Liquid Surface Temp. (deg R):	526.1003
Daily Min. Liquid Surface Temp. (deg R):	520.6630
Daily Max. Liquid Surface Temp. (deg R):	531.5375
Daily Ambient Temp. Range (deg. R):	19.8167
Vented Vapor Saturation Factor	
Vented Vapor Saturation Factor:	0.2644
Vapor Pressure at Daily Average Liquid: Surface Temperature (psia):	10.0000
Vapor Space Outage (ft):	6.0000
Working Losses (lb):	33,840.0000
Vapor Molecular Weight (lb/lb-mole):	50.0000
Vapor Pressure at Daily Average Liquid Surface Temperature (psia):	10.0000
Annual Net Throughput (gal/yr.):	16,440,480.0000
Annual Turnovers:	469.7280
Turnover Factor:	0.2305
Tank Diameter (ft):	12.0000
Working Loss Product Factor:	0.7500
Total Losses (lb):	34,596.3479

TANKS 4.0.0d

Emissions Report - Detail Format

Individual Tank Emission Totals

Emissions Report for: Annual

T2000-Contact Water Tank - Horizontal Tank
Long Beach, California

	Losses(lbs)		
Components	Working Loss	Breathing Loss	Total Emissions
Crude Oil (TVP <10 psia)	33,840.00	756.35	34,596.35
Benzene	35.11	0.78	35.89
Ethylbenzene	2.09	0.05	2.13
Methylene chloride	27.51	0.61	28.12
Naphthalene	0.05	0.00	0.05
Toluene	15.77	0.35	16.13
Xylene (-m)	4.59	0.10	4.69
Xylene (-o)	1.87	0.04	1.92
Unidentified Components	33,753.02	754.40	34,507.42

Controlled Emissions:

TANKS 4.0.9d

Emissions Report - Detail Format

Tank Identification and Physical Characteristics

Identification

User Identification:	T2000-Contact Water Tank
City:	Long Beach
State:	California
Company:	Pacific LA Marine Terminal LLC
Type of Tank:	Horizontal Tank
Description:	Controlled VOC

Tank Dimensions

Shell Length (ft):	47.50
Diameter (ft):	12.00
Volume (gallons):	35,000.00
Turnovers:	469.73
Net Throughput(gal/yr):	16,440,480.00
Is Tank Heated (y/n):	N
Is Tank Underground (y/n):	N

Paint Characteristics

Shell Color/Shade:	White/White
Shell Condition	Good

Breather Vent Settings

Vacuum Settings (psig):	-0.03
Pressure Settings (psig)	0.03

Meterological Data used in Emissions Calculations: Long Beach, California (Avg Atmospheric Pressure = 14.7 psia)

TANKS 4.0.9d
Emissions Report - Detail Format
Liquid Contents of Storage Tank

T2000-Contact Water Tank - Horizontal Tank
Long Beach, California

Mixture/Component	Month	Daily Liquid Surf. Temperature (deg F) Avg.	Min.	Max.	Liquid Bulk Temp (deg F)	Vapor Pressure (psia) Avg.	Min.	Max.	Vapor Mol. Weight.	Liquid Mass Fract.	Vapor Mass Fract.	Mol. Weight	Basis for Vapor Pressure Calculations
Controlled VOC (500 ppmv at outlet)	All	66.43	60.99	71.87	64.33	0.0074	0.0074	0.0074	50.0000			207.00	

TANKS 4.0.9d
Emissions Report - Detail Format
Detail Calculations (AP-42)

T2000-Contact Water Tank - Horizontal Tank
Long Beach, California

Annual Emission Calcaulations	
Standing Losses (lb):	3.0219
Vapor Space Volume (cu ft):	3,421.7347
Vapor Density (lb/cu ft):	0.0001
Vapor Space Expansion Factor:	0.0373
Vented Vapor Saturation Factor:	0.9977
Tank Vapor Space Volume:	
Vapor Space Volume (cu ft):	3,421.7347
Tank Diameter (ft):	12.0000
Effective Diameter (ft):	26.9465
Vapor Space Outage (ft):	6.0000
Tank Shell Length (ft):	47.5000
Vapor Density	
Vapor Density (lb/cu ft):	0.0001
Vapor Molecular Weight (lb/lb-mole):	50.0000

Vapor Pressure at Daily Average Liquid Surface Temperature (psia):	0.0074
Daily Avg. Liquid Surface Temp. (deg. R):	526.1003
Daily Average Ambient Temp. (deg. F):	64.3083
Ideal Gas Constant R (psia cuft / (lb-mol-deg R)):	10.731
Liquid Bulk Temperature (deg. R):	523.9983
Tank Paint Solar Absorptance (Shell):	0.1700
Daily Total Solar Insulation Factor (Btu/sqft day):	1,571.6498
Vapor Space Expansion Factor	
Vapor Space Expansion Factor:	0.0373
Daily Vapor Temperature Range (deg. R):	21.7491
Daily Vapor Pressure Range (psia):	0.0000
Breather Vent Press. Setting Range(psia):	0.0600
Vapor Pressure at Daily Average Liquid Surface Temperature (psia):	0.0074
Vapor Pressure at Daily Minimum Liquid Surface Temperature (psia):	0.0074
Vapor Pressure at Daily Maximum Liquid Surface Temperature (psia):	0.0074
Daily Avg. Liquid Surface Temp. (deg R):	526.1003
Daily Min. Liquid Surface Temp. (deg R):	520.6630
Daily Max. Liquid Surface Temp. (deg R):	531.5375
Daily Ambient Temp. Range (deg. R):	19.8167
Vented Vapor Saturation Factor	
Vented Vapor Saturation Factor:	0.9980
Vapor Pressure at Daily Average Liquid: Surface Temperature (psia):	0.0074
Vapor Space Outage (ft):	6.0000
Working Losses (lb):	25.0416
Vapor Molecular Weight (lb/lb-mole):	50.0000
Vapor Pressure at Daily Average Liquid Surface Temperature (psia):	0.0074
Annual Net Throughput (gal/yr.):	16,440,480.0000
Annual Turnovers:	469.7280
Turnover Factor:	0.2305
Tank Diameter (ft):	12.0000
Working Loss Product Factor:	0.7500
Total Losses (lb):	28.0840

TANKS 4.0.9d
Emissions Report - Detail Format
Individual Tank Emission Totals

Emissions Report for: Annual

T2000-Contact Water Tank - Horizontal Tank
Long Beach, California

	Losses(lbs)		
Components	Working Loss	Breathing Loss	Total Emissions
Controlled VOC (500 ppmv at outlet)	25.04	3.04	28.08

RULES EVALUATION:

PART 1 SCAQMD REGULATIONS

Rule 212	**Standards for Approving Permits**	**November 14, 1997**
	This modification meets all criteria in Rule 212 for permit approval. The installation of the IC Engine does not violate Division 26 of the State Health and Safety Code or in violation of AQMD's rules and regulations. Prior to granting a Permit to Construct for a project requiring notification is as follows: (1) the modified permit unit are, located within 1000 feet of a school. This subdivision shall *not* apply to a modification of an existing facility if the Executive Officer determines that the modification will *result in a reduction of emissions of air contaminants* from the facility and no increase in health risk at any receptor location. (2) the emissions increase does not exceed the daily maximum specified in subdivision (g) of this rule (30 lbs/day); and (3) the modified permit units do not have an increased cancer risk greater than, or equal to, one in a million (1x 10^{-6}) during a lifetime of 70 years or pose a risk of nuisance. The IC Engines and contact water tank are not within 1,000 feet of a school, the emission increase does not exceed the daily maximum specified in Rule 212(g). Even though the IC Engine is exempt from Rule 1401 per Rule 1401(g)(1)(F), a public notice is being published since it is part of a major project. A risk assessment was calculated for this rule. All the subject equipment pass the health risk assessment. The MICR for each are less than the threshold of one in a million. See Rule 1401 for detailed results.	

Rule 401	**Visible Emissions**	**November 9, 2001**
(b)(1)	Visible emissions are not expected from the IC Engine and contact water tank. Compliance is expected with proper operation and maintenance.	

Rule 402	**Nuisance**	**May 7, 1976**
	All of the subject equipment is not expected to emit odorous emissions. Compliance with this rule is expected.	

Rule 404	**Particulate Matter – Concentration**	**February 7, 1986**
	Based on the manufacturer's data, the exhaust flow rates for the engine as follows:	

	Cummins Emergency Generator (145 bhp)	Clarke Emergency Fire Pump

Rule 404	**Particulate Matter – Concentration**	**February 7, 1986**

PM Emission Factor (g/bhp-hr)	0.097	0.07
Exhaust Flow Rate (cfm)	736	2643
PM Emission Rate (gr/cf)	0.0049	.0035
R404 Max PM Emission Rate (gr/cf)	0.196	0.131
RESULT:	**PASS**	**PASS**

By interpolation at the engines' flow rate, the PM emission rate is below the maximum concentration of particulate matter allowed according to Table 404(a)

Therefore, the engine is expected to comply with Rule 404.

Rule 407	**Liquid and Gaseous Air Contaminants**	**April 2, 1982**
	In accordance with Rule 407(b)(1), the provisions of this rule shall not apply to emissions from stationary internal combustion engines.	

Rule 409	**Combustion Contaminants**	**August 7, 1981**
	The provisions of this rule shall not apply to emissions from stationary internal combustion engines.	

Rule 431.2	**Sulfur Content of Liquid Fuels**	**September 15, 2000**
	The operator is required by this rule to purchase only diesel fuel that contains 0.0015% or less sulfur by weight. A condition will be added to this effect. Compliance is expected.	

Rule 463	**Organic Liquid Storage**	**May 6, 2005**
	This rule applies to any above-ground tank with capacity 19,815 gallons or greater for storing organic liquids. The fixed roof tank is subject to Rule 463(c)(3). The tank will be vented to a carbon adsorption system, which meets 463 (c)(3)(C) 95% efficiency requirement. The tank is expected to comply with proper recordkeeping and inspections.	

Rule 1110.2	**Emissions from Gaseous and Liquid Fueled Engines**	**February 1, 2008**
(b)	This rule applies to all stationary and portable engines over 50 rated brake horsepower. The subject engines are stationary and are rated at 145 HP and 510 HP, therefore this rule applies.	
(h)	The rule exempts emergency standby engines of subdivision (d) that have permit conditions that limit operation to 200 hours or less per year. The engines will have a permit condition to limit its operation to comply with this rule.	
	Based on the above analysis, the facility is expected to comply with the rule.	

Rule 1149	**Storage Tank Cleaning and Degassing**	**May 2, 2008**
	The purpose of this rule is to reduce Volatile Organic Compounds (VOCs) and toxics emissions from roof landings, cleaning, maintenance, testing, repair and removal of storage tanks and pipelines. This rule applies to the cleaning and degassing of a pipeline opened to atmosphere outside the boundaries of a facility, stationary tank, reservoir, or other container, storing or last used to store VOCs. The purpose of the tank is to store stormwater with an oily sheen, not store VOCS. Therefore, the requirements of this rule do not apply.	

Rule 1173:	**Fugitive Emissions of Volatile Organic Compounds**	**Amended February 6, 2009**
	This rule applies to fugitive VOC components at refineries, chemical plants, oil, and gas production fields, natural gas process plants and pipeline transfer stations. This rule specifies leak control, identification, operator inspection, maintenance, and recordkeeping requirements for valves pumps, compressors, pressure relief valves, and other components from which fugitive VOC emissions may emanate. The liquid is expected to be exempt from the requirements of this rule per 1173(l)(1)(D). A permit condition will be added to show its exemption. Compliance is expected.	

Rule 1178	**Further Reductions of VOC Emissions from Storage Tanks at Petroleum Facilities** **April 7, 2006**
	This rule applies to aboveground storage tanks that have a capacity of 19,815 gallons that store organic liquids with a true vapor pressure greater than 0.1psi and the petroleum facility emits more than 20 tons per year of VOC in any emission inventory. Facility T2000 is a petroleum facility as defined by paragraph (c)(22). However, facility T2000 is not expected to emit more than 20 tons of VOC per year. The proposed facility's total VOC emissions are estimated to be less than 10 tons per year. Therefore, the proposed contact waste tank is not subject to this rule.

REG XIII	**New Source Review** **December 6, 2002** **Application Deem Complete Date: October 20, 2008**
	The proposed new construction in this project will cause an emission increase of non attainment pollutants (ROG, PM, NOx, and SOx). Even though the District is in attainment for CO, BACT applies when there is an increase of CO per DEO Mohsen Nazmi's email 8-9-2007. The daily emissions are as follows:

Application #	Equipment	NSR Emissions, lbs/day				
		VOC	PM	NOx	SOx	CO
512077	Clarke Emergency IC Engine	0.02	0.01	0.64	0.00	0.06
512076	Cummins	0	0	0.12	0	0.03
513776	Storage Tank	0.08	--	--	--	--

The following is a discussion of each requirement in NSR.

BACT: 1303(a)	**Emergency IC Engines** Pacific Terminal is proposing the emission levels specified in emissions calculations section. The engines will meet the BACT requirements for ROG, CO, NOx, SOx, and PM_{10} as shown in the BACT Compliance Tables 7 and 8. **Tank** According to BACT guidelines, for fixed roof storage tanks, the Vapor Recovery System must have an overall system efficiency of ≥ 95% for VOCs. Carbon adsorption has an efficiency greater than 95%.

REG XIII	**New Source Review** **December 6, 2002** **Application Deem Complete Date: October 20, 2008**
Modeling **1303(b)(1)**	**Emergency IC Engines** In accordance with Rule 1304(a)(4) – Exemptions (Emergency Equipment), the engines are exempt from the modeling requirements specified in 1303(b)(1) if the source is exclusively used as emergency standby equipment, provided the source does not operate more than 200 hours per year as evidenced by an engine-hour meter (see permit condition) **Tank** Although there is an increase in VOC from the tank, modeling for VOC, is not required.
Offsets. **1303(b)(2)**	The emissions from the subject equipment will be accumulated with the other project's equipment. Please refer to the MASTER evaluation under AN 451893
1303(b)(3)	Sensitive Zone Requirements. ERC's are not required.
1303(b)(4)	Facility Compliance. This facility complies with all applicable District rules and regulations.
Major Polluting Facilities 1303(b)(5)	Please refer to the MASTER evaluation under AN 451893 for rule analysis.
	Compliance with this rule is expected.

Regulation XIV	**New Source Review of Toxic Air Contaminants** **June 5, 2009**
	This rule requires permit applicants to assess the cancer risks due to the cumulative emission impacts of new/modified sources in their facility. Requirements- Rule 1401 contains the following requirements: MICR, without T-BACT: ≤ 1 in 1 million (1.0×10^{-6}) MICR, with T-BACT: ≤ 10 in 1 million (1.0×10^{-5}) Cancer Burden: ≤ 0.5 Maximum Chronic Hazard Index: ≤ 1.0 Maximum Acute Hazard Index: ≤ 1.0 **Emergency Engines** Rule 1401(g)(1)(F) – Emergency Internal Combustion Engines provides an exemption from the requirements of Rule 1401(d) – Requirements, if the engine is exempt under Rule 1304. This engine is exempt from modeling under Rule 1304 (and offsets are not

required) since they will exclusively be used as emergency generation and will not operate more than 200 hours per year. Even though, these engines are exempt from the requirements of Rule 1401(d), a risk assessment was calculated for Rule 212 (Public Notice) purposes. All the engines pass the health risk assessment. See the next page for Contact Water Tank detailed results.

Emergency IC Engines Health Risk Assessment Results

		MICR	∑HIC	∑HIA
IC Emergency Engine (Clarke)	Residential	1.69E-10	<1	<1
	Commercial	1.42E-7	<1	<1
IC Emergency Engine (Cummins)	Residential	6.35E-11	<1	<1
	Commercial	5.33E-08	<1	<1
	RESULT	PASS	PASS	PASS

Tank

Since the tank is a new source, a health risk assessment was calculated. The tank passed Tier 1, but since AQMD's R1401 spreadsheet calculates MICR, HIC, and HIA in Tier 2, the table below shows the results. To be conservative the nearest residential (2000 m) and commercial distances (25 m) were taken from the boundary of the facility near residential and commercial receptors. The results of the health risk assessment are summarized below:

Tank Health Risk Assessment Results

		MICR	∑HIC	∑HIA
T2000 tank	Residential	4.65E-11	<1	<1
	Commercial	4.57E-09	<1	<1
	RESULT	PASS	PASS	PASS

1401(d)(1)(A):Based on Tier 2 results, the MICR values are less than one in a million.
1401(d)(1)(B):Not applicable.
1401(d)(1)(C):Since the MICR is not greater than one in a million, the cancer burden is not greater than 0.5.
1401(d)(2): Based on Tier 2 results, the Chronic Hazard Index is less than 1.0.
1401(d)(3): Based on Tier 2 results, the Acute Hazard Index is less than 1.0.
1401(d)(4): Since the residential MICR value is below than one in a million, the risk per year is less than $1/70^{th}$ of this value.
1401(d)(5): Not applicable since the permit conditions are not pursuant to Rule 1401.

	1401(d)(6): Pursuant to Section 112(g) of the federal Clean Air Act (CAA), no person shall begin construction or reconstruction of a major stationary source emitting hazardous air pollutants listed in Section 112 (b) of the CAA, unless the source is constructed with Best Available Control Technology for Toxics (T-BACT) and complies with all other applicable requirements, including definitions and public noticing, referenced in 40 CFR 63.40 through 63.44. Since this is not a major HAP source, this does not apply.
	Compliance with this rule is expected. See the next few pages for detailed risk assessment report.

SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT	PAGES 57	PAGE 27
ENGINEERING & COMPLIANCE	APPL. NO. 512076,512077, 513776	DATE 2/15/2011
APPLICATION PROCESSING AND CALCULATIONS	PROCESSED BY: Cynthia Carter	CHECKED BY

Clarke IC Emergency Engine Risk Assessment

TIER 1 / TIER 2 SCREENING RISK ASSESSMENT DATA INPUT

Application deemed complete date:	08/12/10
A/N:	512077 (510 bhp)
Fac:	Pacific LA Marine Terminal (T2000)

Stack Data		Units
Hour/Day	1	hr/day
Day/Week	1	day/wk
Week/Year	50	wk/yr
Emission Units	lb/hr	
		0
Control Efficiency	0.00	fraction range 0-1
Does source have TBACT?	NO	
Point or Volume Source ?	P	P or V
Stack Height or Building Height	10	feet
Area (For Volume Source Only)		ft^2
Distance-Residential	2000	meters
Distance-Commercial	25	meters
Meteorological Station	Long Beach	

SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT	PAGES 57	PAGE 28
ENGINEERING & COMPLIANCE	APPL. NO. 512076,512077, 513776	DATE 2/15/2011
APPLICATION PROCESSING AND CALCULATIONS	PROCESSED BY: Cynthia Carter	CHECKED BY

Source Type:	O - Other
Screening Mode (**NO** = Tier 1 or Tier 2; **YES** = Tier 3)	NO

Emission Units	lb/hr	
Source output capacity	n/a	n/a

FOR USER-DEFINED CHEMICALS AND EMISSIONS, FILL IN THE TABLE BELOW

USER DEFINED CHEMICALS AND EMISSIONS				R1 - Uncontrolled	Efficiency Factor	R2 - Controlled
Compound Code	Compound	lb/hr	Molecular Weight	lbs/hr	Fraction range 0-1	lbs/hr
D14	Diesel PM from diesel-fueled internal combustion engine	8.00E-02	no data	0.08	0.99100	0.00072

TIER 1 SCREENING RISK ASSESSMENT REPORT

Receptor Distance (actual)	25
Receptor Distance (for X/Q LOOKUP)	25

Tier 1 Results	
Cancer/Chronic ASI	**Acute ASI**
3.00E-01	
PASSED	PASSED

APPLICATION SCREENING INDEX CALCULATION

Code	Compound	Average Annual Emission Rate (lbs/yr)	Max Hourly Emission Rate (lbs/hr)	Cancer / Chronic Pollutant Screening Level (lbs/yr)	Acute Pollutant Screening Level (lbs/hr)	Cancer / Chronic Pollutant Screening Index (PSI)	Acute Pollutant Screening Index (PSI)
D14	Diesel PM from diesel-fueled internal combustion engine	3.60E-02	7.20-04	1.20E-01		3.00E-01	
	TOTAL (APPLICATION SCREENING INDEX)					**3.00E-01**	

TIER 2 SCREENING RISK ASSESSMENT REPORT

A/N:	512077
Fac:	Pacific LA Marine Terminal (T2000)

Application deemed complete date: 08/12/10

2. Tier 2 Data

MET Factor	0.59
4 hr	0.89
6 or 7 hrs	0.73

Dispersion Factors tables

2	For Chronic X/Q
6	For Acute X/Q

Dilution Factors (ug/m3)/(tons/yr)

Receptor	X/Q	X/Qmax
Residential	0.05	8.4
Commercial	51.18	2000

Adjustment and Intake Factors

	AFann	DBR	EVF
Residential	1	302	0.96
Worker	4.2	149	0.38

3. Rule 1401 Compound Data

Compound	R1 - uncontrolled (lbs/hr)	R2 - controlled (lbs/hr)	CP	MP MICR Resident	MP MICR Worker	MP Chronic Resident	MP Chronic Worker	REL Chronic	REL Acute
Diesel PM from diesel-fueled internal combustion engine	8.00E-02	7.20E-04	1.10E+00	1.0000	1.0000	1.0000	1.0000	5	

SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT	PAGES 57	PAGE 31
ENGINEERING & COMPLIANCE	APPL. NO. 512076,512077, 513776	DATE 2/15/2011
APPLICATION PROCESSING AND CALCULATIONS	PROCESSED BY: Cynthia Carter	CHECKED BY

4. Emission Calculations

Compound	uncontrolled R1 (lb/hr)	controlled R2 (lb/hr)	R2 (lb/yr)	R2 (ton/yr)
Diesel PM from diesel-fueled internal combustion engine	8.00E-02	7.20E-04	0.036	0.00000675
Total	8.00E-02	7.20E-03	1.35E-02	6.75E-06

A/N: 512077

Application deemed complete date: 08/12/10

TIER 2 RESULTS

5a. MICR

MICR = CP (mg/(kg-day))^-1 * Q (ton/yr) * (X/Q) * AFann * MET * DBR * EVF * 1E-6* MP

Compound	Residential	Commercial
Diesel PM from diesel-fueled internal combustion engine	1.69E-10	1.42E-07

No Cancer Burden, MICR<1.0E-6

5b. Cancer Burden	**NO**
X/Q for one-in-a-million:	
Distance (meter)	

Total	**1.69E-10**	**1.42E-07**
	PASS	**PASS**

Area (km2):	
Population:	-
Cancer Burden:	

6. Hazard Index
HIA = [Q(lb/hr) * (X/Q)max] * AF / Acute REL
HIC = [Q(ton/yr) * (X/Q) * MET * MP] / Chronic REL

Target Organs	Acute	Chronic	Acute Pass/Fail	Chronic Pass/Fail
Alimentary system (liver) - AL			Pass	Pass
Bones and teeth - BN			Pass	Pass
Cardiovascular system - CV			Pass	Pass
Developmental - DEV			Pass	Pass
Endocrine system - END			Pass	Pass
Eye			Pass	Pass
Hematopoietic system - HEM			Pass	Pass
Immune system - IMM			Pass	Pass
Kidney - KID			Pass	Pass
Nervous system - NS			Pass	Pass
Reproductive system - REP			Pass	Pass
Respiratory system - RES		1.09E-04	Pass	Pass
Skin			Pass	Pass

A/N: 512077 (510 bhp) **Application deemed complete date:** 08/12/10

6a. Hazard Index Acute

HIA = [Q(lb/hr) * (X/Q)max] *AF/ Acute REL

	HIA - Residential									
Compound	AL	CV	DEV	EYE	HEM	IMM	NS	REP	RESP	SKIN
Diesel PM from diesel-fueled internal combustion engine										
Total										

	HIA - Commercial									
Compound	AL	CV	DEV	EYE	HEM	IMM	NS	REP	RESP	SKIN
Diesel PM from diesel-fueled internal combustion engine										
Total										

6b. Hazard Index Chronic

HIC = [Q(ton/yr) * (X/Q) * MET * MP] / Chronic REL

	HIC - Residential												
Compound	AL	BN	CV	DEV	END	EYE	HEM	IMM	KID	NS	REP	RESP	SKIN
Diesel PM from diesel-fueled internal combustion engine												1.06E-07	
Total												1.06E-07	

A/N: 512076 (510 bhp)

Application deemed complete date: 08/12/10

6b. Hazard Index Chronic (cont.)

	HIC - Commercial												
Compound	AL	BN	CV	DEV	END	EYE	HEM	IMM	KID	NS	REP	RESP	SKIN
Diesel PM from diesel-fueled internal combustion engine												1.09E-04	
Total												1.09E-04	

SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT	PAGES 57	PAGE 35
ENGINEERING & COMPLIANCE	APPL. NO. 512076,512077, 513776	DATE 2/15/2011
APPLICATION PROCESSING AND CALCULATIONS	PROCESSED BY: Cynthia Carter	CHECKED BY

Cummins IC Emergency Engine Risk Assessment

TIER 1 / TIER 2 SCREENING RISK ASSESSMENT DATA INPUT

Application deemed complete date:	08/12/10
A/N:	512076 (145 bhp)
Fac:	Pacific LA Marine Terminal (T2000)

Stack Data		Units
Hour/Day	1	hr/day
Day/Week	1	day/wk
Week/Year	50	wk/yr
Emission Units	lb/hr	
		0
Control Efficiency	0.00	fraction range 0-1
Does source have TBACT?	NO	
Point or Volume Source ?	P	P or V
Stack Height or Building Height	10	feet
Area (For Volume Source Only)		ft^2
Distance-Residential	2000	meters
Distance-Commercial	25	meters
Meteorological Station	Long Beach	

SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT	PAGES 57	PAGE 36
ENGINEERING & COMPLIANCE	APPL. NO. 512076,512077, 513776	DATE 2/15/2011
APPLICATION PROCESSING AND CALCULATIONS	PROCESSED BY: Cynthia Carter	CHECKED BY

Source Type:	O - Other
Screening Mode (**NO** = Tier 1 or Tier 2; **YES** = Tier 3)	NO

Emission Units	lb/hr	
Source output capacity	n/a	n/a

FOR USER-DEFINED CHEMICALS AND EMISSIONS, FILL IN THE TABLE BELOW

USER DEFINED CHEMICALS AND EMISSIONS				R1 - Uncontrolled	Efficiency Factor	R2 - Controlled
Compound Code	Compound	lb/hr	Molecular Weight	lbs/hr	Fraction range 0-1	lbs/hr
D14	Diesel PM from diesel-fueled internal combustion engine	3.00E-02	no data	0.03	0.99100	0.00027

TIER 1 SCREENING RISK ASSESSMENT REPORT

Receptor Distance (actual)	25
Receptor Distance (for X/Q LOOKUP)	25

Tier 1 Results	
Cancer/Caronic ASI	**Acute ASI**
1.13E-01	
PASSED	PASSED

APPLICATION SCREENING INDEX CALCULATION

Code	Compound	Average Annual Emission Rate (lbs/yr)	Max Hourly Emission Rate (lbs/hr)	Cancer / Chronic Pollutant Screening Level (lbs/yr)	Acute Pollutant Screening Level (lbs/hr)	Cancer / Chronic Pollutant Screening Index (PSI)	Acute Pollutant Screening Index (PSI)
D14	Diesel PM from diesel-fueled internal combustion engine	1.35E-02	2.70E-04	1.13E-01		1.13E-01	
	TOTAL (APPLICATION SCREENING INDEX)					**1.13E-01**	

TIER 2 SCREENING RISK ASSESSMENT REPORT

A/N:	512076 (145 bhp)	**Application deemed complete date:**	08/12/10
Fac:	Pacific LA Marine Terminal (T2000)		

2. Tier 2 Data

MET Factor	0.59
4 hr	0.89
6 or 7 hrs	0.73

Dispersion Factors tables

2	For Chronic X/Q
6	For Acute X/Q

Dilution Factors (ug/m3)/(tons/yr)

Receptor	X/Q	X/Qmax
Residential	0.05	8.4
Commercial	51.18	2000

Adjustment and Intake Factors

	AFann	DBR	EVF
Residential	1	302	0.96
Worker	4.2	149	0.38

3. Rule 1401 Compound Data

Compound	R1 - uncontrolled (lbs/hr)	R2 - controlled (lbs/hr)	CP	MP MICR Resident	MP MICR Worker	MP Chronic Resident	MP Chronic Worker	REL Chronic	REL Acute
Diesel PM from diesel-fueled internal combustion engine	3.00E-02	2.70E-04	1.10E+00	1.0000	1.0000	1.0000	1.0000	5	

4. Emission Calculations

Compound	uncontrolled R1 (lb/hr)	controlled R2 (lb/hr)	R2 (lb/yr)	R2 (ton/yr)
Diesel PM from diesel-fueled internal combustion engine	3.00E-02	2.70E-04	0.0135	0.00000675
Total	3.00E-02	2.70E-04	1.35E-02	6.75E-06

A/N:	512076 (145 bhp)	**Application deemed complete date:**	08/12/10

TIER 2 RESULTS

5a. MICR

MICR = CP (mg/(kg-day))^-1 * Q (ton/yr) * (X/Q) * AFann * MET * DBR * EVF * 1E-6* MP

Compound	Residential	Commercial
Diesel PM from diesel-fueled internal combustion engine	6.35E-11	5.33E-08

No Cancer Burden, MICR<1.0E-6

5b. Cancer Burden	**NO**
X/Q for one-in-a-million:	
Distance (meter)	

Total	**6.35E-11**	**5.33E-08**
	PASS	**PASS**

Area (km2):	
Population:	-
Cancer Burden:	

6. Hazard Index
HIA = [Q(lb/hr) * (X/Q)max] * AF / Acute REL
HIC = [Q(ton/yr) * (X/Q) * MET * MP] / Chronic REL

Target Organs	Acute	Chronic	Acute Pass/Fail	Chronic Pass/Fail
Alimentary system (liver) - AL			Pass	Pass
Bones and teeth - BN			Pass	Pass
Cardiovascular system - CV			Pass	Pass
Developmental - DEV			Pass	Pass
Endocrine system - END			Pass	Pass
Eye			Pass	Pass
Hematopoietic system - HEM			Pass	Pass
Immune system - IMM			Pass	Pass
Kidney - KID			Pass	Pass
Nervous system - NS			Pass	Pass
Reproductive system - REP			Pass	Pass
Respiratory system - RES		4.08E-05	Pass	Pass
Skin			Pass	Pass

A/N: 512076 (145 bhp) **Application deemed complete date:** 08/12/10

6a. Hazard Index Acute

HIA = [Q(lb/hr) * (X/Q)max] *AF/ Acute REL

	HIA - Residential									
Compound	AL	CV	DEV	EYE	HEM	IMM	NS	REP	RESP	SKIN
Diesel PM from diesel-fueled internal combustion engine										
Total										

	HIA - Commercial									
Compound	AL	CV	DEV	EYE	HEM	IMM	NS	REP	RESP	SKIN
Diesel PM from diesel-fueled internal combustion engine										
Total										

6b. Hazard Index Chronic

HIC = [Q(ton/yr) * (X/Q) * MET * MP] / Chronic REL

	HIC - Residential												
Compound	AL	BN	CV	DEV	END	EYE	HEM	IMM	KID	NS	REP	RESP	SKIN
Diesel PM from diesel-fueled internal combustion engine												3.98E-08	
Total												3.98E-08	

A/N: 512076 (145 bhp)

Application deemed complete date: 08/12/10

6b. Hazard Index Chronic (cont.)

	HIC - Commercial												
Compound	AL	BN	CV	DEV	END	EYE	HEM	IMM	KID	NS	REP	RESP	SKIN
Diesel PM from diesel-fueled internal combustion engine												4.08E-05	
Total												4.08E-05	

SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT	PAGES 57	PAGE 43
ENGINEERING & COMPLIANCE	APPL. NO. 512076,512077, 513776	DATE 2/15/2011
APPLICATION PROCESSING AND CALCULATIONS	PROCESSED BY: Cynthia Carter	CHECKED BY

Contact Water Tank Risk Assessment

TIER 1 / TIER 2 SCREENING RISK ASSESSMENT
DATA INPUT

Application deemed complete date:	08/20/10
A/N:	513776
Fac:	Pacific LA Marine Terminal (T1000)

Stack Data		Units
Hour/Day	24	hr/day
Day/Week	7	day/wk
Week/Year	52	wk/yr
Emission Units	lb/hr	
		0
Control Efficiency	0.00	fraction range 0-1
Does source have TBACT?	NO	
Point or Volume Source ?	V	P or V
Stack Height or Building Height	15	feet
Area (For Volume Source Only)	570	ft^2
Distance-Residential	2000	meters
Distance-Commercial	25	meters
Meteorological Station	Long Beach	

SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT	PAGES 57	PAGE 44
ENGINEERING & COMPLIANCE	APPL. NO. 512076,512077, 513776	DATE 2/15/2011
APPLICATION PROCESSING AND CALCULATIONS	PROCESSED BY: Cynthia Carter	CHECKED BY

Source Type:	O - Other
Screening Mode (**NO** = Tier 1 or Tier 2; **YES** = Tier 3)	NO

Emission Units	lb/hr	
Source output capacity	n/a	n/a

FOR USER-DEFINED CHEMICALS AND EMISSIONS, FILL IN THE TABLE BELOW

USER DEFINED CHEMICALS AND EMISSIONS				R1 - Uncontrolled	Efficiency Factor	R2 - Controlled
Compound Code	Compound	lb/hr	Molecular Weight	lbs/hr	Fraction range 0-1	lbs/hr
B1	Benzene (including benzene from gasoline)	2.96E-06	78.11	2.9554E-06	0.99100	2.9554E-06
E4	Ethyl benzene	2.43E-07	106.16	2.4315E-07	0.97140	2.4315E-07
M13	Methylene chloride(Dichloromethane)	3.21E-06	84.94	0.00000321	0.99100	0.00000321
T3	Toluene (methyl benzene)	1.84E-06	92.13	0.00000184	0.99100	0.00000184
X2	Xylene, m-	5.35E-07	106.17	0.000000535		0.000000535
X3	Xylene, o-	2.19E-07	106.18	0.000000219		0.000000219

TIER 1 SCREENING RISK ASSESSMENT REPORT

Receptor Distance (actual)	25
Receptor Distance (for X/Q LOOKUP)	25

Tier 1 Results	
Cancer/Chronic ASI	**Acute ASI**
2.36E-02	4.63E-06
PASSED	PASSED

APPLICATION SCREENING INDEX CALCULATION

Code	Compound	Average Annual Emission Rate (lbs/yr)	Max Hourly Emission Rate (lbs/hr)	Cancer / Chronic Pollutant Screening Level (lbs/yr)	Acute Pollutant Screening Level (lbs/hr)	Cancer / Chronic Pollutant Screening Index (PSI)	Acute Pollutant Screening Index (PSI)
B1	Benzene (including benzene from gasoline)	2.58E-02	2.96E-06	1.14E+00	7.39E-01	2.26E-02	4.00E-06
E4	Ethyl benzene	2.12E-03	2.43E-07	1.31E+01		1.62E-04	
M13	Methylene chloride(Dichloromethane)	2.80E-02	3.21E-06	3.26E+01	7.00E+00	8.60E-04	4.59E-07
T3	Toluene (methyl benzene)	1.61E-02	1.84E-06	9.92E+03	1.85E+01	1.62E-06	9.95E-08
X2	Xylene, m-	4.67E-03	5.35E-07	2.31E+04	1.10E+01	2.02E-07	4.86E-08
X3	Xylene, o-	1.91E-03	2.19E-07	2.31E+04	1.10E+01	8.27E-08	1.99E-08
	TOTAL (APPLICATION SCREENING INDEX)					**2.36E-02**	**4.63E-06**

SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT	PAGES 57	PAGE 46
ENGINEERING & COMPLIANCE	APPL. NO. 512076,512077, 513776	DATE 2/15/2011
APPLICATION PROCESSING AND CALCULATIONS	PROCESSED BY: Cynthia Carter	CHECKED BY

A/N:	513776
Fac:	Pacific LA Marine Terminal (T2000)

Application deemed complete date: 08/20/10

2. Tier 2 Data

MET Factor	0.99
4 hr	0.92
6 or 7 hrs	0.87

Dispersion Factors tables

5	For Chronic X/Q
7	For Acute X/Q

Dilution Factors (ug/m3)/(tons/yr)

Receptor	X/Q	X/Qmax
Residential	0.12	8.2
Commercial	60.49	1532.1

Adjustment and Intake Factors

	AFann	DBR	EVF
Residential	1	302	0.96

Worker	1	149	0.38

3. Rule 1401 Compound Data

Compound	R1 - uncontrolled (lbs/hr)	R2 - controlled (lbs/hr)	CP	MP MICR Resident	MP MICR Worker	MP Chronic Resident	MP Chronic Worker	REL Chronic	REL Acute
Benzene (including benzene from gasoline)	2.96E-06	2.96E-06	1.00E-01	1.0000	1.0000	1.0000	1.0000	60	1300
Ethyl benzene	2.43E-07	2.43E-07	8.70E-03	1	1	1	1	2000	
Methylene chloride(Dichloromethane)	3.21E-06	3.21E-06	3.50E-03	1	1	1	1.0000	400	14000
Toluene (methyl benzene)	1.84E-06	1.84E-06		1	1	1	1	300	37000
Xylene, m-	5.35E-07	5.35E-07		1.0000	1.0000	1	1	700	22000
Xylene, o-	2.19E-07	2.19E-07		1.0000	1.0000	1	1	700	22000

4. Emission Calculations

Compound	uncontrolled R1 (lb/hr)	controlled R2 (lb/hr)	R2 (lb/yr)	R2 (ton/yr)
Benzene (including benzene from gasoline)	2.96E-06	2.96E-06	0.025818374	1.29092E-05
Ethyl benzene	2.43E-07	2.43E-07	0.002124158	1.06208E-06
Methylene chloride(Dichloromethane)	3.21E-06	3.21E-06	0.02804256	1.40213E-05

Toluene (methyl benzene)	1.84E-06	1.84E-06	0.01607424	8.03712E-06
Xylene, m-	5.35E-07	5.35E-07	0.00467376	2.33688E-06
Xylene, o-	2.19E-07	2.19E-07	0.001913184	9.56592E-07
Total	9.00E-06	9.00E-06	7.86E-02	3.93E-05

A/N: 513776 **Application deemed complete date:** 08/20/10

TIER 2 RESULTS

5a. MICR

MICR = CP (mg/(kg-day))^-1 * Q (ton/yr) * (X/Q) * AFann * MET * DBR * EVF * 1E-6* MP

Compound	Residential	Commercial
Benzene (including benzene from gasoline)	4.45E-11	4.38E-09
Ethyl benzene	3.18E-13	3.13E-11
Methylene chloride(Dichloromethane)	1.69E-12	1.66E-10
Toluene (methyl benzene)		
Xylene, m-		
Xylene, o-		

No Cancer Burden, MICR<1.0E-6

5b. Cancer Burden	**NO**

Total	**4.65E-11**	**4.57E-09**
	PASS	**PASS**

X/Q for one-in-a-million:	
Distance (meter)	
Area (km2):	
Population:	
Cancer Burden:	

6. Hazard Index

HIA = [Q(lb/hr) * (X/Q)max] * AF / Acute REL

HIC = [Q(ton/yr) * (X/Q) * MET * MP] / Chronic REL

Target Organs	Acute	Chronic	Acute Pass/Fail	Chronic Pass/Fail
Alimentary system (liver) - AL		3.18E-08	Pass	Pass
Bones and teeth - BN			Pass	Pass
Cardiovascular system - CV		2.10E-06	Pass	Pass
Developmental - DEV	3.56E-06	1.45E-05	Pass	Pass
Endocrine system - END		3.18E-08	Pass	Pass
Eye	1.29E-07		Pass	Pass
Hematopoietic system - HEM	3.48E-06	1.29E-05	Pass	Pass
Immune system - IMM	3.48E-06		Pass	Pass
Kidney - KID		3.18E-08	Pass	Pass
Nervous system - NS	4.27E-07	1.69E-05	Pass	Pass
Reproductive system -	1.29E-07		Pass	Pass

REP				
Respiratory system - RES	1.29E-07	1.89E-06	Pass	Pass
Skin			Pass	Pass

A/N: 513776 **Application deemed complete date:** 08/20/10

6a. Hazard Index
Acute

HIA = [Q(lb/hr) * (X/Q)max] *AF/ Acute REL

	HIA - Residential									
Compound	AL	CV	DEV	EYE	HEM	IMM	NS	REP	RESP	SKIN
Benzene (including benzene from gasoline)			1.86E-08		1.86E-08	1.86E-08		1.86E-08		
Ethyl benzene										
Methylene chloride(Dichloromethane)							1.88E-09			
Toluene (methyl benzene)			4.08E-10	4.08E-10			4.08E-10	4.08E-10	4.08E-10	
Xylene, m-				1.99E-10					1.99E-10	
Xylene, o-				8.16E-11					8.16E-11	
Total			1.90E-08	6.89E-10	1.86E-08	1.86E-08	2.29E-09	1.90E-08	6.89E-10	

	HIA - Commercial									
Compound	AL	CV	DEV	EYE	HEM	IMM	NS	REP	RESP	SKIN
Benzene (including benzene from gasoline)			3.48E-06		3.48E-06	3.48E-06		3.48E-06		

Ethyl benzene											
Methylene chloride(Dichloromethane)							3.51E-07				
Toluene (methyl benzene)			7.62E-08	7.62E-08			7.62E-08	7.62E-08	7.62E-08		
Xylene, m-				3.73E-08					3.73E-08		
Xylene, o-				1.53E-08					1.53E-08		
Total			3.56E-06	1.29E-07	3.48E-06	3.48E-06	4.27E-07	3.56E-06	1.29E-07		

6b. Hazard Index
Chronic

HIC = [Q(ton/yr) * (X/Q) * MET * MP] / Chronic REL

HIC - Residential

Compound	AL	BN	CV	DEV	END	EYE	HEM	IMM	KID	NS	REP	RESP	SKIN
Benzene (including benzene from gasoline)				2.56E-08			2.56E-08			2.56E-08			
Ethyl benzene	6.31E-11			6.31E-11	6.31E-11				6.31E-11				
Methylene chloride(Dichloromethane)			4.16E-09							4.16E-09			
Toluene (methyl benzene)				3.18E-09						3.18E-09		3.18E-09	
Xylene, m-										3.97E-10		3.97E-10	
Xylene, o-										1.62E-10		1.62E-10	
Total	6.31E-11		4.16E-09	2.88E-08	6.31E-11		2.56E-08		6.31E-11	3.35E-08		3.74E-09	

A/N: 513776 **Application deemed complete date:** 08/20/10

6b. Hazard Index Chronic (cont.)

	HIC - Commercial												
Compound	AL	BN	CV	DEV	END	EYE	HEM	IMM	KID	NS	REP	RESP	SKIN
Benzene (including benzene from gasoline)				1.29E-05			1.29E-05			1.29E-05			
Ethyl benzene	3.18E-08			3.18E-08	3.18E-08				3.18E-08				
Methylene chloride(Dichloromethane)			2.10E-06							2.10E-09			
Toluene (methyl benzene)				1.60E-06						1.60E-06		5.32E-09	
Xylene, m-										2.00E-07		7.40E-08	
Xylene, o-										8.18E-08		3.03E-08	
Total	3.18E-08		2.10E-06	1.45E-05	3.18E-08		1.29E-05		3.18E-08	1.69E-05		1.89E-06	

Rule 1470	**Requirements For Stationary Diesel-Fueled Internal Combustion And Other Compression Ignition Engines** **June 1, 2007**
	This rule applies to any person who owns or operates a stationary CI engine in AQMD with a rated brake horsepower greater than 50(50bhp), except as provided in subdivision (h).
1470(c)(2)(A)	Does not apply, engines will not be located 500 feet or less from a school.
1470(c)(2)(B)	Does not apply; engines will not operate in response to the notification of an impending rotating outage.
1470(c)(2)(C)	(i) New stationary emergency standby diesel-fueled engines (>50 bhp), shall: (I) emit diesel PM at a rate less than or equal to 0.15 g/bhp-hr; or (II) meet the diesel PM standard specified in the Off-Road Compression Ignition Engine Standards for off-road engines with the same maximum rated power (Title 13 CCR Section 2423), whichever is more stringent; and (III) not operate more than 50 hours per year for maintenance and testing. The engines are EPA Tier 3 certified with a PM emission factors less than the requirement of the rule of 0.15 g/bhp-hr and the engines will be limited to 50 hours per year for maintenance and testing. Therefore, compliance is expected.
	(ii) Alternative standard was not requested.
	(iii) Does not apply; engine will not be located 100 meters or less from a school.

Rule 1470	**Requirements For Stationary Diesel-Fueled Internal Combustion And Other Compression Ignition Engines** **June 1, 2007**

(iv) New stationary emergency standby diesel-fueled CI engines (> 50 bhp) must meet the HC, NOx, NMHC + NOx, and CO Standards as specified in the Off-Road Compression-Ignition Engine Standards (Title 13, CCR, Section 2423). In accordance to Title 13, CCR, Section 2423, Table 1a, the applicable exhaust emission standards for the proposed IC engine are:

Maximum Rated Power, kW	Tier	Model Year	NMHC+NOx	CO	PM
			gram/kW-hr		
75≤kw<130	3	2007-2011	4.0	5.0	.3
Cummins 80 kw	3	2010	2.827	0.67	.097
225≤kw<450	3	2006-2010	4.0	3.5	.20
Clarke 380 kw	3	2010	3.4	0.6	0.1

The exhaust emissions from the engines are below the tier limits of Title 13, CCR, Section 2423, Table 1a. Compliance is expected.

Since the project will commence in the future, the operator may select a newer model. If they do select a newer model they would need to comply with Title 13, CCR, Section 2423's newer standards. This requirement will be added to the permit conditions to ensure compliance.

1470(d)	The operator is subject to the recordkeeping, reporting, and monitoring requirements of this subdivision. The operator has provided the information required in subparagraph (d)(1)(C) with the permit application. Subparagraph (d)(7)(A) requires installation of a non-resettable hour meter . Subparagraph (d)(9)(A) requires a monthly operating log. Permit conditions will be added to enforce the requirements of this rule. Compliance is expected.

Regulation XVII	**PREVENTION OF SIGNIFICANT DETERIORATION (PSD)**
	Please refer to the MASTER evaluation under AN 451893 for rule analysis.

Rule 2005	**New Source Review for RECLAIM** **May 6, 2005** **Application Deem Complete Date: October 20, 2008**
	Pacific LA Terminal is ***not*** part of the NOx and SOx RECLAIM program. Therefore, the requirements of this regulation do not apply.

Regulation XXX	**Title V** **March 16, 2001**
	Please refer to the MASTER evaluation under AN 451893 for rule analysis.

PART 3 FEDERAL REGULATIONS

Subpart Kb	***Standards of Performance for Liquids Storage Vessels for Petroleum***
	For which construction, Reconstruction or Modification commenced after July 23, 1984. The subject of this application is to construct a horizontal tank. Construction is defined in 40 CFR 60 Subpart A §60.2 as "*Construction* means fabrication, erection, or installation of an affected facility". § 60.110b Applicability and designation of affected facility. (a) the affected facility to which this subpart applies is each storage vessel with a capacity greater than or equal to 75 cubic meters (m^3) that is used to store volatile organic liquids (VOL) for which construction, reconstruction, or modification is commenced after July 23, 1984. The purpose of the tank is to store stormwater with an oily sheen, not store VOCS. Therefore, the requirements of this regulation do not apply.

Part 60, NSPS	**Subpart IIII - Standards of Performance for Stationary Compression Ignition Internal Combustion Engines** **July 11, 2006**
§60.4200 - §60.4219	Subpart IIII regulates stationary compression ignition (CI) IC engines such as the one proposed at Pacific LA Terminal. a) The provisions of this subpart are applicable to manufacturers, owners, and operators of stationary compression ignition (CI) internal combustion engines (ICE) as specified in paragraphs (a)(1) through (3) of this section. For the purposes of this subpart, the date that construction commences is the date the engine is ordered by the owner or operator. (1) Manufacturers of stationary CI ICE with a displacement of less than 30 liters per cylinder where the model year is: (i) 2007 or later, for engines that are not fire pump engines, For engines with a maximum engine power greater than or equal to 50 HP, §60.4202(a)(2) of this subpart states the engine shall not exceed the certification emission standards for new nonroad CI engines for the same model year and maximum engine power in 40 CFR 89.112* and 40 CFR 89.113* for all pollutants beginning in model year 2007. 40 CFR 89.112 (Oxides of nitrogen, carbon monoxide, hydrocarbon, and particulate matter exhaust emission standards) contains the exhaust emission standards from nonroad engines for nitrogen, carbon monoxide, hydrocarbon, and particulate matter. These emission standards are the same for CCR (see R1470 evaluation) 40 CFR 89.113 (Smoke emission standard) specifies that the exhaust opacity from compression-ignition nonroad engines must not exceed:

Part 60, NSPS	**Subpart IIII - Standards of Performance for Stationary Compression Ignition Internal Combustion Engines** **July 11, 2006**
	(1) 20 percent during the acceleration mode; (2) 15 percent during the lugging mode; and (3) 50 percent during the peaks in either the acceleration or lugging modes. For the life of the engine, §60.4206 requires the operator to operate and maintain the engine according to the manufacturer's written instructions or procedures. §60.4207(a) and (b) requires the engine to only be fueled with diesel that meets minimum federal requirements. §60.4209(a) requires the installation of a non-resettable hour meter. Maintenance checks and testing is limited to 100 hour per year in accordance with §60.4211(e). NSPS initial notification under Subpart A and Subpart IIII is waived for emergency stationary engines (§60.4214(b)). *A permit condition ensures compliance with these requirements.* Compliance is expected since the Subpart IIII requirements are equivalent or superseded by more stringent District rules.

Part 63, NESHAP	**Subpart ZZZZ - National Emissions Standards for Hazardous Air Pollutants for Stationary Reciprocating Internal Combustion Engines** **January 18, 2008**
§63.6580 - §63.6675	Subpart ZZZZ, otherwise known as RICE MACT, regulates stationary reciprocating internal combustion engines (RICE) if the facility owns or operates a stationary RICE at a major or area source of HAP emissions, except if the stationary RICE is being tested at a stationary RICE test cell/stand. The facility is considered an area source of HAP emissions; therefore, the requirements of this regulation do apply. §63.6590(c)(1)-The engine meets the following criteria *Stationary RICE subject to Regulations under 40 CFR Part 60.* An affected source that meets any of the criteria in paragraphs (c)(1) through (7) of this section must meet the requirements of this part by meeting the requirements of 40 CFR part 60 subpart IIII, for compression ignition engines or 40 CFR part 60 subpart JJJJ, for spark ignition engines. No further requirements apply for such engines under this part. (1) A new or reconstructed stationary RICE located at an area source Since the engines will be subject to 40 CFR part 60 Subpart IIII, the requirements of this

Part 63, NESHAP	**Subpart ZZZZ - National Emissions Standards for Hazardous Air Pollutants for Stationary Reciprocating Internal Combustion Engines**	**January 18, 2008**
	regulation will be met. The engines will be tagged with a *permit condition to ensure compliance with these requirements*	

CONCLUSION:

Based on the above evaluation PLAMT is expected to continue to comply. Therefore, it is recommended that a Permit to Construct be issued for the following applications:

A/N	Recommendation
512076	Issue Permit to Construct with conditions listed in the Conditions Section
512077	Issue Permit to Construct with conditions listed in the Conditions Section
513776	Issue Permit to Construct with conditions listed in the Conditions Section

Kien Huynh

From: Jeff Dambrun [DambrunJ@TAMCOSTEEL.COM]
Sent: Thursday, February 03, 2011 12:15 PM
To: Kien Huynh
Subject: Tamco Permit Section A: Facility Information

Hi Kien,

Below is our updated contact information:

RESPONSIBLE OFFICIAL: James Crompton
TITLE: Vice President and General Manager

CONTACT PERSON: Jeff Dambrun

Everything else should stay the same. I will be in touch about the meeting agenda, need to speak with our engineering dept to see what they have from the technical side of things. Thank you.

Jeff Dambrun
Environmental Manager
Gerdau Ameristeel-Tamco
Phone: 909-899-0660 ext. 5291
Cell: 909-732-6919
Fax: 909-899-8375

Attachment II

PACIFIC L.A. MARINE TERMINAL LLC

September 13, 2010

Mr. Khang Nguyen
Senior Air Quality Engineer
SCAQMD
21865 E. Copley Drive
Diamond Bar, CA 91765-4182

SUBJECT: STATEWIDE COMPLIANCE
PACIFIC L.A. MARINE TERMINAL LLC AND AFFILIATES
FACILITY IDS 146810 AND 164564

Dear Mr. Nguyen:

Pacific L.A. Marine Terminal LLC (PLAMT) is a wholly owned and California operated subsidiary of Plains All American Pipeline, L.P.

To the best of my knowledge and public record, PLAMT and its affiliated companies operating in California are in compliance with all applicable emissions limits and standards under the Clean Air Act.

Should you have any questions or require additional information, please contact Mr. Ngiabi Gicuhi at 562-728-2024.

Respectfully,

Thomas J. McLane
Director, Environmental & Regulatory Compliance

cc: Jay Chen, SCAQMD
Tran Vo, SCAQMD
Paul Park, SCAQMD
Jordan R. Janak, Plains All American Pipeline/PLAMT
Nestor A. Taura, Plains All American Pipeline/PLAMT
John F. Russell, Plains All American Pipeline/PLAMT
David E. Wright, Plains All American Pipeline/PLAMT

5900 Cherry Avenue ■ Long Beach, California 90805-4408 ■ 562-728-2816 ■ Fax 562-728-2823

Khang Nguyen

From: Connie Cunningham [ccunningham@e2managetech.com]
Sent: Wednesday, February 02, 2011 10:02 AM
To: Khang Nguyen
Cc: Glenn Mayer; Nestor A Taura; Gicuhi, Ngiabi; Thomas J McLane
Subject: Plains Title V Facilities

Khang—

Below is a list of Title V facilities under the Plains ownership. Note each entities name.

Plains Marketing
Pentland
3600 Bowman Court
Bakersfield CA 93308
Facility S-1199/S-254

Plains Atlantic Terminals
Martinez
2801 Waterfront Road
Martinez CA 94533
Plant # 17559

Plains West Coast Terminals
Dominguez Hills
2500 E Victoria Street
Compton CA 90220
Facility ID 800417

Plains West Coast Terminals
Long Beach
2685 Seaside Blvd
Long Beach CA 90802
Facility ID 800420

Plains West Coast Terminals
West Hynes
5900 Cherry Ave
Long Beach CA 90805
Facility IDs 121727&148086

Constance M. Cunningham, P.E.

E2 ManageTech
5000 East Spring Street, Suite 720
Long Beach, California 90815
Phone: 866-609-3374 ext. 909

Fax: 419-715-1762
mailto:ccunningham@e2managetech.com

Technology. Management. Solutions. It's all in the people and the process...

Attachment III

Khang Nguyen

From: Connie Cunningham [ccunningham@edsgrp.com]
Sent: Tuesday, July 18, 2006 11:01 AM
To: Khang Nguyen
Cc: Reese, Mark; Glenn Mayer; Taura, Nestor
Subject: Crude H2S specs and generic description

Khang,

Attached is the summarized lab results of various crude H2S content in both the liquid and vapor phase for your review per the June 21 meeting notes.

The following is our proposed generic description of partially refined petroleum/intermediate feed stock:
Various petroleum products (gas oil, black oil, bunker oil, residual oil) and other petroleum middle distillates with a TVP at actual storage temperature not to exceed 10 psia.

Let me know if you have any questions.

Connie Cunningham

EDSG - Environmental Data Solutions Group, LLC
26741 Portola Parkway, Suite 1E-245
Foothill Ranch, CA 92610
tel/fax 949-457-3485
ccunningham@edsgrp.com
www.edsgrp.com

The Leader in Integrating IT Innovations to Optimize EHS performance!

Date		7/1/2004	3/21/2005	6/27/2005	8/23/2005	9/2/2005
ASTM Test	**TYPE**	ORIENTE	Basrah Light	Hungo	Ceiba	NAPO
D-5191	**RVP**	1.82	7.70	6.8	2.71	0.74
	PSI					
D-287	**Gravity**	23.60	30.80	29.20	30.30	19.40
	API @ 60 F					
D-445	**VIS.**					
	122F cSt	31.50	6.37	9.041	8.87	145.90
	100F cSt	51.90	9.05	12.12	12.6	225.60
	60F cSt		20.21			
D-97	**POUR**	10.00	<-5.8	<-5.8	<0	10.00
	F					
D-93	**FLASH**	Ambient	<-5.8	<50	Ambient	Ambient
	F					
D-4294	**SULFUR**	1.63	2.59	0.691	0.650	2.12
	wt. %					
D-4007	**W&S**	0.02	0.05	0.050	0.050	0.30
	%					
SCAQMD 315-96	**H2S**	7.00	23.00	19.00		30.00
	Liquid, ppm					

Pacific Energy
Pier 400
Crude Sampling Results
EPA Test Method 8270

Component	Results (mg/kg)								
	Crude Oil				Intermediate Petroleum Products				
	Oriente	Basrah Lt	Napo	Cold Lake	LSVGO	RGO	CBO	FRGO	Permitted
Naphthalene	1,100	670	740	110	50		1,100		
2-Methylnaphthalene	2,100	1,500	1,200	250	230	77	3,500	110	
1-Methylnaphthalene	1,600	1,400	930	170	130		1,900	100	
Phenanthrene				110	56	85	5,500	440	
Chrysene					14	77	8,900	120	
Pyrene					170		9,200	78	
Benzo (a) Pyrene					32		3,500		
Benzo (g,h,i) Perylene					59		1,000		
Benzoic Acid				58					
Fluorene							590		
Anthracene							640		
Fluoranthene							1,200		
Benzo (a) Anthracene							3,700		
Benzo (k) Fluoranthene							780		
Benzo (b) Fluoranthene							1,600		
Benzene									0.38%
Hexane									9.90%

Bold indicates Rule 1401 compounds

Will Not Volatilize

RGO = Raw Gas Oil
LSVGO = Low Sulfur Vacuum Gas Oil
CBO = Carbon Black Oil
FRGO = Raw Gas Oil

Oriente is from Ecuador
Basrah Lt is from Iraq
Napo is from Ecuador
Cold Lake is from British Columbia

Basis: 100 lb of Int. Pet. Prod. **basis: 1 mol**

Component	True Vapor Pressure (mmHg@20C)	molecular weight	moles	liquid mole fraction	Partial Pressure (mmHg)	vapor mole fraction	vapor mass fraction
Naphthalene	7.80E-02	129	8.53E-04	1.77E-03	1.38E-04	2.66E-07	6.87E-07
2-Methylnaphthalene							
1-Methylnaphthalene							
Phenanthrene	6.80E-04	178	3.09E-03	5.81E-03	3.95E-06	3.82E-06	5.23E-06
Chrysene	6.30E-07	228	3.90E-03	7.34E-03	4.62E-09	4.47E-09	7.84E-09
Pyrene	2.50E-06	202	4.55E-03	8.56E-03	2.14E-08	2.07E-08	3.22E-08
Benzo (a) Pyrene	5.60E-09	252	1.39E-03	2.61E-03	1.46E-11	1.41E-11	2.74E-11
Benzo (g,h,i) Perylene	1.03E-10	276	3.62E-04	6.81E-04	7.02E-14	6.79E-14	1.44E-13
Benzoic Acid	1.0 [@96C]	122	4.75E-05	8.94E-05	8.94E-08	8.64E-08	8.11E-08
Fluorene	3.20E-04	166	3.55E-04	6.68E-04	2.14E-07	2.07E-07	2.64E-07
Anthracene	1.70E-05	178	3.60E-04	6.76E-04	1.15E-08	1.11E-08	1.52E-08
Fluoranthene	5.00E-06	202	5.94E-04	1.12E-03	5.58E-09	5.40E-09	8.39E-09
Benzo (a) Anthracene	2.20E-08	228	1.62E-03	3.05E-03	6.71E-11	6.49E-11	1.14E-10
Benzo (k) Fluoranthene	9.59E-11	252	3.10E-04	5.82E-04	5.58E-14	5.40E-14	1.05E-13
Benzo (b) Fluoranthene	5.00E-07	252	6.35E-04	1.19E-03	5.97E-10	5.77E-10	1.12E-09
Benzene							
Hexane							

Intermediate Petroleum Products	mw mixture liquid	188	lb/lbmol	$P_a=P^o x_a$	$y_a=P_a/P$
	total pressure	1.03401	mmHg	Raoult's Law	Dalton's Law
	mw mixture vapor	130	lb/lbmol		
Crude	mw mixture liquid	207	lb/lbmol		
	total pressure	517.0	mmHg		
	mw mixture vapor	50	lb/lbmol		

Pacific Energy
Pier 400
Crude Sampling Results
EPA Test Method 8260

	Results (ug/kg)									
	Crude Oil				Intermediate Petroleum Products					
Component	Oriente	Basrah Lt	Napo	Cold Lake	RGO	LSVGO	CBO	FRGO	Method Blank	Permitted
Benzene	320,000	610,000	240,000	1,800,000	5,200	1,600	33,000	91		0.38%
n-Butylbenzene	140,000	230,000	94,000	66,000	3,200	8,200	30,000	1,200		
sec-Butylbenzene	69,000	100,000	50,000	38,000	1,900	3,400	2,000	500		
Ethylbenzene	430,000	1,100,000	290,000	380,000	9,700	140,000	70,000	610		
Isopropylbenzene	150,000	180,000	110,000	68,000	3,000	2,900	2,800	440		
p-Isopropyltoluene	130,000	120,000	92,000	38,000	2,300	3,200	1,500	1,000		
Naphthalene	330,000	190,000	230,000	83,000	14,000	37,000	180,000	13,000	73	
n-Propylbenzene	200,000	320,000	130,000	1,100,000	4,600	9,000	30,000	1,500		
Toluene	1,000,000	2,600,000	620,000	2,800,000	37,000	18,000	180,000	840	23	
1,2,4-Trimethylbenzene	760,000	1,800,000	460,000	580,000	23,000	40,000	190,000	12,000		
1,3,5-Trimethylbenzene	200,000	530,000	120,000	260,000	6,900	13,000	55,000	2,700		
p/m Xylene	1,100,000	2,900,000	660,000	1,900,000	36,000	46,000	260,000	2,300	22	
o-Xylene	520,000	1,500,000	330,000	620,000	14,000	24,000	110,000	1,500		
Methylene Chloride		310,000	34,000	160,000	2,900	2,800	11,000	3,100	600	
tert-Butylbenzene					130					
Acetone								1,500		
1,2,3-Trichlorobenzene									43	
1,2,4-Trichlorobenzene									39	
Hexane										9.90%

Bold indicates Rule 1401 compounds

RGO = Raw Gas Oil
LSVGO = Low Sulfur Vacuum Gas Oil
CBO = Carbon Black Oil
FRGO = Raw Gas Oil

Oriente is from Ecuador
Basrah Lt is from Iraq
Napo is from Ecuador
Cold Lake is from British Columbia

Max Value
1,800,000
230,000
100,000
1,100,000
180,000
120,000
330,000
1,100,000
2,800,000
1,800,000
530,000
2,900,000
1,500,000
310,000
130
1,500

Basis: 100 lb of Int. Pet. Prod. **basis: 1 mol**

Component	True Vapor Pressure (mmHg@20C)	molecular weight	moles	liquid mole fraction	Partial Pressure (mmHg)	vapor mole fraction	vapor mass fraction
Benzene	7.50E+01	78	2.31E-03	1.19E-02	8.95E-01	1.73E-03	2.70E-03
Naphthalene	7.80E-02	129	2.56E-04	1.32E-03	1.03E-04	2.00E-07	5.15E-07
Methylene Chloride	3.50E+02	85	3.65E-04	1.89E-03	6.60E-01	1.28E-03	2.17E-03

mw mixture liquid	207 lb/lbmol	$P_a=P^{\circ}x_a$	$y_a=P_a/P$
total pressure	517.0 mmHg	Raoult's Law	Dalton's Law
mw mixture vapor	50 lb/lbmol		

MICR CALCULATION

Pacific Energy
Pier 400

VOC Emissions from the tanks 102,123 lb/yr

Toxic Air Contaminant	mass fraction	Emissions (lb/yr)	Q (tpy)	Cancer Potency (CP)	Multipath res (MP)	Multipath worker (MP)	MICR (RES)	MICR (Worker)
Benzene (including benzene from gasoline)	2.70E-03	2.76E+02	1.38E-01	1.00E-01	1	1	4.75E-07	1.30E-07
Ethyl benzene		0.00E+00	0.00E+00	0.00E+00	0	0	0.00E+00	0.00E+00
Polycyclic Aromatic Hydrocarbon (PAHs)								
Benz[a]anthracene	1.14E-10	1.16E-05	5.81E-09	3.90E-01	29.76	14.62	2.32E-12	3.12E-13
Benzo[b]fluoranthene	1.12E-09	1.14E-04	5.71E-08	3.90E-01	29.76	14.62	2.28E-11	3.07E-12
Benzo[k]fluoranthene	1.05E-13	1.07E-08	5.34E-12	3.90E-01	29.76	14.62	2.14E-15	2.87E-16
Chrysene	7.84E-09	8.01E-04	4.00E-07	3.90E-02	29.76	14.62	1.60E-11	2.15E-12
Benzo[a]pyrene	2.74E-11	2.80E-06	1.40E-09	3.90E+00	29.76	14.62	5.60E-12	7.52E-13
Napthalene	6.87E-07	7.02E-02	3.51E-05	1.20E-01	1	1	1.45E-10	3.96E-11
Toluene (methyl benzene)		0.00E+00	0.00E+00	0.00E+00	0	0	0.00E+00	0.00E+00
Xylenes (isomers and mixtures)		0.00E+00	0.00E+00	0.00E+00	0	0	0.00E+00	0.00E+00
Methylene chloride (Dichloromethane)	2.17E-03	2.22E+02	1.11E-01	3.50E-03	1	1	1.34E-08	3.65E-09
Hexane (n-)		0.00E+00	0.00E+00	0.00E+00	0	0	0.00E+00	0.00E+00
						TOTAL	**4.88E-07**	**1.34E-07**

$MICR = CP \times Qtons \times X/Q \times AFann \times MET \times DBR \times EVF \times 10^{-6} \times MP$

X/Q res:	0.12	> 20 ft stack height at 1000 m distance (Table 5A)
X/Q worker:	0.12	> 20 ft stack height at 1000 m distance (Table 5A)
MET:	0.99	at Long Beach (Table 5B)
AF ann res:	1.0	Table 3C
AF ann worker:	1.4	Table 3C
CP:	*above*	*Table 8A*
MP:	*above*	*Table 8A*
DBR res:	302	Table 9A
DBR worker:	149	Table 9A
EVF res:	0.96	Table 9B
EVF worker:	0.38	Table 9B

Pacific Energy
Pier 400
SCAQMD RELs

Toxic Air Contaminant	CAS NO	cancer			chronic			acute	
		CP $(mg/kg\text{-}dy)^{-1}$	MP_R	MP_W	REL (ug/m^3)	MP_R	MP_W	REL (ug/m^3)	Avg Hrs
Benzene (including benzene from gasoline)	71-43-2	1.00E-01	1	1	6.00E+01	1	1	1.30E+03	6
Ethyl benzene	100-41-4				2.00E+03	1	1		
Polycyclic Aromatic Hydrocarbon (PAHs)	1150&1151	3.90E+00	29.76	14.62					
Benz[a]anthracene	56-55-3	3.90E-01	29.76	14.62					
Benzo[b]fluoranthene	205-99-2	3.90E-01	29.76	14.62					
Benzo[k]fluoranthene	207-08-9	3.90E-01	29.76	14.62					
Chrysene	218-01-9	3.90E-02	29.76	14.62					
Benzo[a]pyrene	50-32-8	3.90E+00	29.76	14.62					
Napthalene	91-20-3	1.20E-01	1	1	9.00E+00	1	1		
Toluene (methyl benzene)	108-88-3				3.00E+02	1	1	3.70E+04	1
Xylenes (isomers and mixtures)	1330-20-7				7.00E+02	1	1	2.20E+04	1
Methylene chloride (Dichloromethane)	75-09-2	3.50E-03	1	1	4.00E+02	1	1	1.40E+04	1
Hexane (n-)	110-54-3				7.00E+03	1	1		

Attachment IV

EXPLANATION

SCAQMD PROPOSED PUBLIC NOTICE AREA

NORTH

0 1.5 3

APPROXIMATE SCALE IN MILES

ManageTech SOLUTIONS

PIER 400 PERMITTING
SAN PEDRO, CALIFORNIA

PIER 400
RISK ISOPLETHS AND
PUBLIC NOTICE
AREAS

Project No: 09-104-002 | Date: AUGUST 2010 | Figure --

FILE NAME: 09-104-002-ISOPLETH4-NMM-E2.DWG

Attachment V

431.1 – Sulfur Content of Gaseous Fuels

Rule 431.1 addresses the sulfur content of gaseous fuels. This source will burn crude vapors with a sulfur content of less than 40 ppmv and also supplemental natural gas. This source is exempt from this rule per Rule 431.1(g)(8) – less than 5 lb/day of total sulfur will be emitted, calculated as H_2S.

PLAMT will limit crude oil to 70 ppm H_2S or less in the liquid phase. For this case:

70 ppm / 379 ft^3/lbmol * 34 lbH_2S/lbmol * ~~2~~ 3 tanks/day * 479,431 gal/tank headspace / 7.48 gal/ft^3 = ~~0.8~~ 1.2 lbH_2S/day

Therefore, the source is exempt from Rule 431.1

463 – Storage of Organic Liquids

This source is being permitted to comply with Rule 463 for the tanks it is connected to. Specific permit conditions are requested in this application to allow the source to comply with 463(d)(2) requirements. These permit conditions have been determined by District staff to meet the intent of the language in this portion of the rule.

Regulation IX – Standards of Performance for New Stationary Sources (NSPS)

No applicable NSPS applies.

Regulation XI - Source Specific Rules

Rule 1149 – Storage Tank Cleaning and Degassing

PLAMT will use this source to control ROG emissions during degassing of the facility's storage tanks. This thermal oxidizer is more than 90% efficient to combust petroleum vapors and thus, complies with the rule requirements.

Rule 1173 – Control of Volatile Organic Compound Leaks and Releases from Components at Petroleum Facilities and Chemical Plants

PLAMT will comply with Rule 1173 inspections, maintenance, recordkeeping, and reporting.

Client: Pacific Pipeline
Attn: Eli Rodriguez

Client's Project: Tank 3 DHPS (SEALHYY Crude), Tracking #5967
Date Received: 06/04/08
Matrix: Air
Units: ppmv

Method 307-91 (Sulfur Compounds in Air)

Lab Number:	A8060404-01
Client Sample I.D.:	Canister 5967
Date Sampled:	06/03/08
Date Analyzed:	06/04/08
Analyst Initials:	VM
QC Batch:	080604GC3A1
Dilution Factor:	1.7

ANALYTE	PQL	RL	Results
Hydrogen Sulfide	0.20	0.35	ND
Carbonyl Sulfide	0.20	0.35	ND
[redacted]thyl Mercaptan	0.20	0.35	ND
[redacted]yl Mercaptan	0.20	0.35	ND
Dimethyl Sulfide	0.20	0.35	ND
Carbon Disulfide	0.20	0.35	ND
Dimethyl Disulfide	0.20	0.35	ND

PQL = Practical Quantitation Limit
ND = Not Detected (Below RL)
RL = Reporting Limit = PQL X Dilution Factor

Reviewed/Approved By: _____ Date: 7/3/08
Mark J. Johnson
Operations Manager

The cover letter is an integral part of this analytical report

Client: Pacific Pipeline
Attn: Eli Rodriguez

Client's Project: Tank 7 DHPS (NAPO Crude), Tracking #6064
Date Received: 06/04/08
Matrix: Air
Units: ppmv

Method 307-91 (Sulfur Compounds in Air)

Lab Number:	A8060403-01
Client Sample I.D.:	Canister 6064
Date Sampled:	06/03/08
Date Analyzed:	06/04/08
Analyst Initials:	VM
QC Batch:	080604GC3A1
Dilution Factor:	1.7

ANALYTE	PQL	RL	Results
Hydrogen Sulfide	0.20	0.35	ND
Carbonyl Sulfide	0.20	0.35	ND
[redacted]thyl Mercaptan	0.20	0.35	ND
[redacted]yl Mercaptan	0.20	0.35	ND
Dimethyl Sulfide	0.20	0.35	ND
Carbon Disulfide	0.20	0.35	ND
Dimethyl Disulfide	0.20	0.35	ND

PQL = Practical Quantitation Limit
ND = Not Detected (Below RL)
RL = Reporting Limit = PQL X Dilution Factor

Reviewed/Approved By: _____ Date: 7/3/08
Mark J. Johnson
Operations Manager

The cover letter is an integral part of this analytical report.

Client: Pacific Pipeline
Attn: Eli Rodriguez

Client's Project: Tank 6 DHPS (Vasconia), Tracking #3237
Date Received: 06/05/08
Matrix: Air
Units: ppmv

Method 307-91 (Sulfur Compounds in Air)

Lab Number:	A8060504-01
Client Sample I.D.:	Canister 5217
Date Sampled:	06/04/08
Date Analyzed:	06/07/08
Analyst Initials:	VM
QC Batch:	080607GC3A1
Dilution Factor:	1.7

ANALYTE	PQL	RL	Results
Hydrogen Sulfide	0.20	0.35	ND
Carbonyl Sulfide	0.20	0.35	ND
[redacted]thyl Mercaptan	0.20	0.35	ND
[redacted]yl Mercaptan	0.20	0.35	ND
Dimethyl Sulfide	0.20	0.35	ND
Carbon Disulfide	0.20	0.35	ND
Dimethyl Disulfide	0.20	0.35	ND

PQL = Practical Quantitation Limit
ND = Not Detected (Below RL)
RL = Reporting Limit = PQL X Dilution Factor

Reviewed/Approved By: _____ Date: 1/3/08
Mark J. Johnson
Operations Manager

The cover letter is an integral part of this analytical report.

Client: Pacific Pipeline
Attn: Eli Rodriguez

Client's Project: Tank 10 DHPS (Oriente), Tracking #3237
Date Received: 06/05/08
Matrix: Air
Units: ppmv

Method 307-91 (Sulfur Compounds in Air)

Lab Number:	A8060505-01
Client Sample I.D.:	Canister 6059
Date Sampled:	06/04/08
Date Analyzed:	06/07/08
Analyst Initials:	VM
QC Batch:	080607GC3A1
Dilution Factor:	1.7

ANALYTE	PQL	RL	Results
Hydrogen Sulfide	0.20	0.35	ND
Carbonyl Sulfide	0.20	0.35	ND
Methyl Mercaptan	0.20	0.35	ND
Ethyl Mercaptan	0.20	0.35	ND
Dimethyl Sulfide	0.20	0.35	ND
Carbon Disulfide	0.20	0.35	ND
Dimethyl Disulfide	0.20	0.35	ND

PQL = Practical Quantitation Limit
ND = Not Detected (Below RL)
RL = Reporting Limit = PQL X Dilution Factor

Reviewed/Approved By: _____ **Date:** 7/3/08
Mark J. Johnson
Operations Manager

The cover letter is an integral part of this analytical report

Client: Pacific Pipeline
Attn: Eli Rodriguez

Client's Project: Tank 12 DHPS (LSVGO), Tracking #3237
Date Received: 06/06/08
Matrix: Air
Units: ppmv

Method 307-91 (Sulfur Compounds in Air)

Lab Number:	A8060602-01
Client Sample I.D.:	Bag 1000
Date Sampled:	06/05/08
Date Analyzed:	06/07/08
Analyst Initials:	VM
QC Batch:	080607GC3A1
Dilution Factor:	1.0

ANALYTE	PQL	RL	Results
Hydrogen Sulfide	0.20	0.20	ND
Carbonyl Sulfide	0.20	0.20	ND
[redacted]thyl Mercaptan	0.20	0.20	ND
[redacted]yl Mercaptan	0.20	0.20	ND
Dimethyl Sulfide	0.20	0.20	ND
Carbon Disulfide	0.20	0.20	ND
Dimethyl Disulfide	0.20	0.20	ND

PQL = Practical Quantitation Limit
ND = Not Detected (Below RL)
RL = Reporting Limit = PQL X Dilution Factor

Reviewed/Approved By: MJJ for
Mark J. Johnson
Operations Manager

Date: 7/3/08

The cover letter is an integral part of this analytical report.

Client: Pacific Pipeline
Attn: Eli Rodriguez

Client's Project: Tank 4 DHPS (Caof), Tracking #3237
Date Received: 06/06/08
Matrix: Air
Units: ug/L

Method 307-91 (Sulfur Compounds in Air)

Lab Number:	A8060603-01
Client Sample I.D.:	Bag 1001
Date Sampled:	06/05/08
Date Analyzed:	06/07/08
Analyst Initials:	VM
QC Batch:	080607GC3A1
Dilution Factor:	1.0

ANALYTE	PQL	RL	Results
Hydrogen Sulfide	6.8	6.8	ND
Carbonyl Sulfide	12	12	ND
[redacted]thyl Mercaptan	9.6	9.6	ND
[redacted]yl Mercaptan	12	12	ND
Dimethyl Sulfide	12	12	ND
Carbon Disulfide	15	15	ND
Dimethyl Disulfide	19	19	ND

PQL = Practical Quantitation Limit
ND = Not Detected (Below RL)
RL = Reporting Limit = PQL X Dilution Factor

Reviewed/Approved By: [redacted] Date: 6/24/08
Mark J. Johnson
Operations Manager

The cover letter is an integral part of this analytical report

Client: Pacific Pipeline
Attn: Eli Rodriguez

Client's Project: Tank 1 LBPS (Basrah Light), Tracking #3237
Date Received: 06/06/08
Matrix: Air
Units: ppmv

Method 307-91 (Sulfur Compounds in Air)

Lab Number:	A8060604-01
Client Sample I.D.:	Bag 1002
Date Sampled:	06/05/08
Date Analyzed:	06/07/08
Analyst Initials:	VM
QC Batch:	080607GC3A1
Dilution Factor:	1.0

ANALYTE	PQL	RL	Results
Hydrogen Sulfide	0.20	0.20	ND
Carbonyl Sulfide	0.20	0.20	ND
[redacted]thyl Mercaptan	0.20	0.20	ND
[redacted]yl Mercaptan	0.20	0.20	ND
Dimethyl Sulfide	0.20	0.20	ND
Carbon Disulfide	0.20	0.20	ND
Dimethyl Disulfide	0.20	0.20	ND

PQL = Practical Quantitation Limit
ND = Not Detected (Below RL)
RL = Reporting Limit = PQL X Dilution Factor

Reviewed/Approved By: _____ Date: 7/3/08
Mark J. Johnson
Operations Manager

The cover letter is an integral part of this analytical report

Client: Pacific Pipeline
Attn: Eli Rodriguez

Client's Project: Tank 8 DHPS (RGO), Tracking #3237
Date Received: 06/06/08
Matrix: Air
Units: ppmv

Method 307-91 (Sulfur Compounds in Air)

Lab Number:	A8060605-01
Client Sample I.D.:	Bag 1003
Date Sampled:	06/06/08
Date Analyzed:	06/07/08
Analyst Initials:	VM
QC Batch:	080607GC3A1
Dilution Factor:	1.0

ANALYTE	PQL	RL	Results
Hydrogen Sulfide	0.20	0.20	4.5
Carbonyl Sulfide	0.20	0.20	ND
[illegible]thyl Mercaptan	0.20	0.20	ND
[illegible]yl Mercaptan	0.20	0.20	ND
Dimethyl Sulfide	0.20	0.20	ND
Carbon Disulfide	0.20	0.20	ND
Dimethyl Disulfide	0.20	0.20	ND

PQL = Practical Quantitation Limit
ND = Not Detected (Below RL)
RL = Reporting Limit = PQL X Dilution Factor

Reviewed/Approved By: MJ for Date: 7/3/08
Mark J. Johnson
Operations Manager

The cover letter is an integral part of this analytical report

Client: Pacific Pipeline
Attn: Eli Rodriguez

Client's Project: Tank 5 DHPS (M100), Tracking #3237
Date Received: 06/06/08
Matrix: Air
Units: ppmv

Method 307-91 (Sulfur Compounds in Air)

Lab Number:	A8060606-01		
Client Sample I.D.:	Bag 1004		
Date Sampled:	06/06/08		
Date Analyzed:	06/07/08		
Analyst Initials:	VM		
QC Batch:	080607GC3A1		
Dilution Factor:	1.0		

ANALYTE	PQL	RL	Results
Hydrogen Sulfide	0.20	0.20	ND
Carbonyl Sulfide	0.20	0.20	ND
[redacted]thyl Mercaptan	0.20	0.20	ND
[redacted]yl Mercaptan	0.20	0.20	ND
Dimethyl Sulfide	0.20	0.20	ND
Carbon Disulfide	0.20	0.20	ND
Dimethyl Disulfide	0.20	0.20	ND

PQL = Practical Quantitation Limit
ND = Not Detected (Below RL)
RL = Reporting Limit = PQL X Dilution Factor

Reviewed/Approved By: [redacted] Date: 7/3/08
Mark J. Johnson
Operations Manager

The cover letter is an integral part of this analytical report