

SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT ENGINEERING AND COMPLIANCE DIVISION PERMIT APPLICATION EVALUATION AND CALCULATIONS	PAGES 5	PAGE 1
	APPL NO 496876	DATE 07-19-13
	PROCESSED BY LLD	CHECKED BY COT

OWNER/OPERATOR:

COID: 800079

PETRO DIAMOND TERMINAL COMPANY
18401 VON KARMAN AVENUE, SUITE 300
IRVINE, CA 92612

CONTACT PERSON: ERIC CONARD
MANAGER, ENV AND BUS. DEVELOPMENT
(949) 553-0112
econard@petrodiamond.com

EQUIPMENT LOCATION:

1920 LUGGER WAY, BERTH 83
LONG BEACH, CA 90813

CONTACT: PAT KENNEDY, TERMINAL MANAGER
(562) 435-8364
PatK@petrodiamond.com

EQUIPMENT DESCRIPTION

BULK LOADING/UNLOADING RACK NO. 1

SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT ENGINEERING AND COMPLIANCE DIVISION PERMIT APPLICATION EVALUATION AND CALCULATIONS	PAGES 5	PAGE 2
	APPL NO 496876	DATE 07-19-13
	PROCESSED BY LLD	CHECKED BY

INTRODUCTION:

Petro Diamond stores and distributed petroleum distillates, oxygenates and related products. Products are received via pipeline, ship/barge, and tanker trucks.

This application was submitted to add diesel/biodiesel arms and associated equipment. Permit to Construct was issued September 29, 2009. Construction was completed early 2010. This is ready for final P/O.

Permit to Construct issued 9/29/09 as follows:

496876	Rack No. 1	Add diesel/biodiesel and "loading arms/assoc. components" (Modification)
500379	TV Facility Permit	TV Revision (De Minimus Significant)

This application was submitted to modify an existing permit to allow **loading** of diesel and biodiesel (methyl ester) not to exceed 617,142 bbl/mo (25,919,964 gal/mo). The existing permit only allows **unloading** of naphtha and ethanol not to exceed a combined thruput of 100,000 bbl/mo. There was no vapor connection between Rack 1 and the VRS.

Thruput at the terminal/facility will not increase. However, diesel and biodiesel tanker trucks will be re-directed to this rack no. 1 from the other three existing racks. Additionally, thruput increase and commodity change does "occur" at this modified rack no. 1

As part of Permit to Construct, Petro Diamond added two loading arms, two vapor collection hoses to one vapor return line, and assorted support equipment.

Since diesel and biodiesel has a true vapor pressure of 0.01 psia (less than 1.5 psia), this rack is not subject to R462. However, a vapor return line was also added and the vapor recovery unit will be in operation whenever diesel or biodiesel is loaded.

CALCULATIONS:

(from P/C evaluation dated 8-6-09)

Bulk Loading Losses: VOC emissions from loading petroleum products into tank trucks can be calculated by using the equation in EPA AP-42, 5.2:

$$L = 12.46 \text{ SPM/T}$$

- Where:
- L = VOC emissions in lbs/1000 gal loaded
 - M = Molecular wt. of vapor, 130 lbs/ lb-mole (distillate no. 2 Table 7.1-2, AP-42)
 - P = True VP, 0.01 psia (diesel MSDS shows VP = 0.4 mmHg = 0.01 psia)
 - P = True VP, 0.02 psia (biodiesel/methyl ester MSDS shows VP < 1mmHG = < 0.02 psia)

SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT ENGINEERING AND COMPLIANCE DIVISION PERMIT APPLICATION EVALUATION AND CALCULATIONS	PAGES 5	PAGE 3
	APPL NO 496876	DATE 07-19-13
	PROCESSED BY LLD	CHECKED BY

T = 525 deg R (65 F + 460)(from SABs June 2009 VRS submittal pg 3)
S = Saturation factor, 1.0 (submerged fill, ded. vapor balance, Table 5.2-1, AP-42)
eff = control efficiency; 0% for uncontrolled and 99% or 98.5% for controlled

For uncontrolled,

$$L (VP = 0.02 \text{ psia}) = 0.062 \text{ lb/1000 gal}$$

$$\begin{aligned} \mathbf{R1(ROG)} &= 0.062 \text{ lb/1000 gal} * 25,919,964 \text{ gal/mo} * 1/30 \\ &= 53.6 \text{ lb/day} \\ &= 19284.5 \text{ lb/yr} \\ &= 9.6 \text{ tpy} \\ &= 2.23 \text{ lb/hr} \end{aligned}$$

For controlled

Assuming 98.5% control

$$\begin{aligned} L &= (0.062 \text{ lb/1000 gal})(1-0.985) \\ &= 0.00093 \text{ lb/1000 gal loaded} \end{aligned}$$

Note: A 98.5% destruction is conservatively assumed for the VRS based on gasoline loading as follows:

$$\begin{aligned} \text{Uncontrolled } L (VP \text{ gasoline} = 6.2 \text{ psia}) &= 12.46 \text{ SPM/T, where } M = 66 \text{ lb/lbm} \\ &= 9.7 \text{ lb/1000 gallons gasoline} \end{aligned}$$

$$\begin{aligned} \text{Controlled (VRU permit condition) } L &= 0.065 \text{ lb/1000 gal} \\ \% \text{ eff} &= 99.3\% \end{aligned}$$

$$\begin{aligned} \mathbf{R2(ROG)}@98.5\% &= 0.00093 \text{ lb/1000 gal} * 25,919,964 \text{ gal/mo} * 1/30 \\ &= 0.80 \text{ lb/day} \\ &*1/24 = 0.033 \text{ lb/hr} \end{aligned}$$

In order to demonstrate compliance with the 98.5% destruction efficiency (which is equivalent to 0.00047 lb/1000 gal), a source test done with diesel loading only is not required. Instead, the R462 CARB certification testing will be used as a "surrogate" with the assumption that if the CARB testing demonstrates at least 98.5% during gasoline loading, then it should also demonstrate 98.5% during diesel loading.

The most recent CARB testing was Jan 2009. Most recent source test was May 7, 2010. Results from the 2010 source test are:

SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT ENGINEERING AND COMPLIANCE DIVISION PERMIT APPLICATION EVALUATION AND CALCULATIONS	PAGES 5	PAGE 4
	APPL NO 496876	DATE 07-19-13
	PROCESSED BY LLD	CHECKED BY

Pollutant	Results	Allowable/Permit Limit
Destruction efficiency	99.9%	98.5% (on VRU)
Total non-methane HC	0.001 lb/1000 gal	0.065 lb/1000 gal (on VRU)
Benzene	0.000019 lb/hr	MICR <1 in a million
Toluene	0.000028	
Ethylbenzene	0.000012	
Xylene	0.000015	

MICR based in Tier 2 is 5.38E-9 (residential) and 1.18E-9 (commercial). HIA and HIC are less than one (see Excel Spreadsheet attached)

Fugitives:

Permit to Construct limits fugitives from new components to 250 ppm (less than one pound per day). After construction was completed, the fugitive count was revised and a recalculated. In order to keep fugitive emissions below one pound per day, the fugitive limit is lowered to 100 ppm (see attached fugitive spreadsheet and email dated 5-12-10 from B. Onufer). A permit condition will be amended to limit the new components to 100 ppm instead of 250 ppm.

Emissions Summary:

PreMod (see A/N 392873)	0.25 lb/hr	6.11 lb/day
Change with this mod (fug+load)	+0.071	+1.7 lb/day
Post Mod (total)	0.32 lb/hr	7.81 lb/day
		*30 = 234 lb/month

EVALUATION:

Rules:

- 401: No visible emissions are expected.
- 402: No nuisance is expected with proper operational procedures and mitigation measures.
- 462: This rule is not applicable for this rack since diesel and biodiesel have true vapor pressure less than 1.5 psia. However, the VRS equipment is currently subject to R462 since it also controls displaced vapors from the loading of products at other racks with vapor pressure at 1.5 or greater psia.
- 1173: This facility is expected to comply with the requirements of this rule. New fugitive components will be limited to 100 ppm, which is less than the allowable 500 ppm for heavy liquid service.

SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT ENGINEERING AND COMPLIANCE DIVISION PERMIT APPLICATION EVALUATION AND CALCULATIONS	PAGES	PAGE
	5	5
	APPL NO 496876	DATE 07-19-13
	PROCESSED BY LLD	CHECKED BY

Reg 13: There is an emission increase of 53.6 lb/day of ROG before control during loading operations. BACT/LAER for loading operations is vapor return to a VRS. Controlled emissions are 0.80 lbs/day ROG.

There is 0.9 lb/day (less than 1 lb/day) ROG of fugitives due to the additional components associated with this modification. Thus, BACT for fugitives is not required.

OFFSETS: Total emission increases of 1.7 lb of ROG required 2 lbs of ERCs and was offset during P/C stage. There are no increases from P/C to P/O.

MODELING: Not required for ROG.

MAJOR POLLUTING FACILITY: Statewide Compliance: PetroDiamond operates no other facility in California.

1401: Total risk from this rack/VRS modification is less than one in a million. HIC and HIA are less than one. Compliance

40CFR60 XX: The VRU is currently subject to XX due to gasoline loading at the facility. This modification by the addition of diesel/biodiesel loading vapor return lines is not subject to XX.

Title V: This permit will be issued as a minor revision since this is a P/C to final P/O with an emission change from 250 ppm to 100 ppm.

This project will meet all District Rules and Regulations. It is recommended that a Permit to Operate be granted subject to the attached conditions.