

**PERMIT APPLICATION REVIEW  
COVERED SOURCE PERMIT NO. 0066-03-C  
Application for Permit Modification No. 0066-07**

**Applicant:** Tesoro Hawaii Corporation  
**Facility:** Hilo Terminal No. 3  
**Located At:** 607 Kalaniana'ole Avenue Hilo, Hawaii

**\*Mailing**

**Address:** 431 Kuwili Street, 2<sup>nd</sup> Floor  
Honolulu, Hawaii 96817

**Coordinates:** UTM: 284239 meters East and 2182881 meters North (load rack)

- Equipment:**
- a) 10,000 barrel internal floating roof storage tank number 4279, with primary and secondary wiper seals.
  - b) 40,000 barrel internal floating roof storage tank number 4298, with mechanical shoe primary seal and secondary wiper seal.
  - c) Bottom loading load rack with two (2) loading stations sharing one load arm.
  - d) John Zink vapor collection system with 3,600 gallon per minute vapor recovery unit, model no. MR-2x184DT, job no. 99145.

**Responsible**

**Official:** Mr. Wade K. Nakashima  
**Title:** Manager, Supply and Distribution Hawaii  
**Phone:** (808) 547-3830  
**Address:** \*See Above

<b>Contact:</b> Mr. Jack Clayton	<b>Contact:</b> Ms. Rose Chu
<b>Title:</b> Hilo Terminal Supervisor	<b>Title:</b> Environmental Compliance Administrator
<b>Phone:</b> (808) 961-3177	<b>Phone:</b> (808) 547-3817
<b>Address:</b> 607 Kalaniana'ole Avenue Hilo, Hawaii 96720	<b>Address:</b> *See Above

**1. Background.**

1.1 Tesoro Hawaii Corporation has submitted a permit application to modify its covered source permit for Hilo Terminal No. 3. The permit modification is to incorporate control requirements from Option 2 of Table 2 in 40 Code of Federal Regulations (CFR) Part 63, Subpart BBBBBB. Currently, only naphtha (straight run gasoline) is distributed at the loading rack. The loading rack is equipped with a vapor recovery system to control volatile organic compounds (VOCs). The loading rack has two loading stations and one load arm that swivels from one lane to the other. Also, an old fuel oil loading rack at this site has been dismantled. Hilo Terminal No. 3 supplies naphtha to Hamakua Energy Partners, L.P. to power its combustion turbine generators. The existing permit limits product throughput at the loading rack to 210,240,000 gallons per year. The standard industrial classification code for this facility is 5171 (Petroleum Bulk Stations and Terminals).

1.2 Tesoro requested that this terminal be designated Hilo Terminal No. 3 instead of Hilo Terminal No. 2. Tesoro owns three distribution facilities in the same vicinity that are described as follows:

- a) Hilo Terminal No. 3 at 607 Kalaniana'ole Avenue is currently in operation under CSP No. 0066-03-C. Tesoro bought an old Tosco terminal at this site and renovated the terminal to distribute naphtha in 1998. The Tosco terminal was permitted under NSP No. 0075-01-N which has been closed.
- b) Hilo Terminal No. 2 at 595 Kalaniana'ole Avenue is not in operation. Tesoro was going to modify this terminal to build the terminal in 1.2-a above, but decided to renovate the old Tosco terminal instead. Hilo Petroleum Terminal No. 2 is currently not in operation. The terminal was permitted under NSP No. 0066-01-N which has been closed.
- c) Hilo Terminal No. 1 at 701 Kalaniana'ole Avenue handles jet and diesel fuel. This terminal is exempt from permit requirements because the fuels that are distributed by the facility are low vapor pressure fuels. The exemption for this terminal was granted by the Clean Air Branch (CAB) in 1997.

1.3 The applicant indicated that two 400 gallon per minute (gpm) pumps servicing the one load arm for the bottom loading load rack will be replaced with two 750 gpm pumps. One of the load arm pumps has already been replaced.

1.4 Permitted Tanks at the facility are listed as follows:

<b>Tank No.</b>	<b>Capacity (gallons)</b>	<b>Capacity (barrels)</b>	<b>Type</b>
4279	420,000	10,000	internal floating roof
4298	1,680,000	40,000	internal floating roof

1.5 There are five tanks that are out of service that are listed as follows:

<b>Tank No.</b>	<b>Capacity (gallons)</b>	<b>Capacity (barrels)</b>	<b>Type</b>
2727	390,600	9,300	vertical fixed roof
3119	42,000	1,000	vertical fixed roof
3708	420,000	10,000	vertical fixed roof
3738	1,050,000	25,000	vertical fixed roof
4299	159,600	3,800	vertical fixed roof

**2. Applicable Requirements**

2.1 Hawaii Administrative Rules (HAR)

Chapter 11-59, Ambient Air Quality Standards

Chapter 11-60.1, Air Pollution Control

Subchapter 1, General Requirements

Subchapter 2, General Prohibitions

§11-60.1-31 Applicability

§11-60.1-31 Storage of Volatile Organic Compounds

- §11-60.1-41 Pump and Compressor Requirements
- Subchapter 5, Covered Sources
- Subchapter 6, Fees for Covered Sources, Noncovered Sources, and Agricultural Burning
  - §11-60.1-111 Definitions
  - §11-60.1-112 General Fee Provisions for Covered Sources
  - §11-60.1-113 Application Fees for Covered Sources
  - §11-60.1-114 Annual Fees for Covered Sources
  - §11-60.1-115 Basis of Annual Fees for Covered Sources
- Subchapter 8, New Source Performance Standards
  - §11-60.1-161 New Source Performance Standards

2.2 40 Code of Federal Regulations (CFR), Part 60 – New Source Performance Standards (NSPS), Subpart Kb, Standards of Performance for Volatile Organic Liquid Storage Vessels (Including Petroleum Liquid Storage Vessels) for which Construction, Reconstruction, or Modification Commenced after July 23, 1984 is applicable to storage tank numbers 4279 and 4298. Subpart Kb is applicable because these tanks were reconstructed after 1984, are greater than 151 m<sup>3</sup> (greater than 40,000 gallons), and will be storing naphtha (whole straight run gasoline) with a true vapor pressure greater than 0.507 psi. Per AP-42, Section 7.1 (9/97), the true vapor pressure of gasoline with Reid vapor pressure of 10, that may be representative of naphtha, is 7.4 psi at 80 °F. Tank numbers 4279 and 4298 were reconstructed from existing tanks from the Tosco terminal that was obtained by Tesoro to construct Hilo Terminal No. 3.

2.3 40 CFR, Part 60 – NSPS, Subpart XX, Standards of Performance for Bulk Gasoline Terminals is applicable to Hilo Terminal 3 because the bottom loading load rack was constructed after December 17, 1980.

2.4 40 CFR Part 63, Subpart BBBBBB – National Emission Standards for Hazardous Air Pollutants for Source Category: Gasoline Distribution Bulk Terminals, Bulk Plants, and Pipeline Facilities is applicable because the facility’s gasoline throughput is greater than 20,000 gallons per day. The average daily product throughput at the facility for 2008 and 2009 was 73,066 gallons and 64,957 gallons for 2008 and 2009, respectively. Pursuant to 40 CFR §63.11087(f) gasoline storage tanks are in compliance with Subpart BBBBBB because the tanks are subject to 40 CFR Part 60, Subpart Kb. Also, the facility is designated a bulk gasoline terminal because the gasoline throughput is greater than 20,000 gallons per day.

2.5 The Consolidated Emissions Reporting Rule (CERR) is not applicable because emissions from the facility do not exceed reporting levels pursuant to 40 CFR 51 (see table below).

<b>CERR APPLICABILITY</b>			
<b>Pollutant</b>	<b>Emissions (TPY)</b>	<b>CERR Triggering Levels (TPY)</b>	
		<b>1 year cycle (Type A sources)</b>	<b>3 year cycle (Type B sources)</b>
VOC	44.6	≥ 250	≥ 100

- 2.6 A best available control technology analysis (BACT) analysis is required for new sources or modifications to existing sources that would result in a significant emissions increase as defined in HAR, Section 11-60.1. Because there are no modifications to the terminal that increase emissions, BACT is not applicable.
- 2.7 The purpose of Compliance Assurance Monitoring (CAM) is to provide reasonable assurance that compliance is being achieved with large emissions units that rely on air pollution control device equipment to meet an emissions limit or standard. Pursuant to 40 CFR, Part 64, for CAM to be applicable, the emissions unit must: (1) be located at a major source; (2) be subject to an emissions limit or standard; (3) use a control device to achieve compliance; (4) have potential pre-control emissions that are greater than the major source level; and (5) not otherwise be exempt from CAM. Although the load rack relies on a vapor recovery unit to achieve compliance with the federal VOC standard required by 40 CFR, Subpart XX and has potential pre-control emissions greater than the major source level for VOCs, CAM is not applicable to the load rack because the terminal is not a major source.
- 2.8 Prevention of significant deterioration (PSD) does not apply because emissions from the terminal are less than major source thresholds as defined in HAR Subchapter 7, Prevention of Significant Deterioration Review.
- 2.9 The facility is a synthetic minor source because the throughput limitation of 210,240,000 gallons per year based on loading an 8,000 gallon tank truck every 20 minutes restricts emissions below major source thresholds. Maximum capacity of the terminal is 3,600 gallons per minute based on the capacity of the vapor system (1,892,160,000 gallons/year).

### **3. Insignificant Activities**

- 3.1 The terminal has the following insignificant activities:
- a. Oil water separator with 300 gallon skimmed oil tank and 300 gallon skimmed water tank qualifies for an insignificant activity pursuant to HAR §11-60.1-82(f)(7).
  - b. A 1,000 gallon waste-water storage tank is exempt pursuant to HAR §11-60.1-82(f)(7).

### **4. Alternate Operating Scenarios**

- 4.1 No alternate operating scenarios were proposed for the permit renewal.

### **5. Project Emissions**

- 5.1 Potential emissions from the bottom loading load rack with vapor recovery were based on the following:
- a) Maximum permitted throughput of 5,005,714 bbls/yr (210,240,000 gal/yr) based on loading an 8,000 gallon tank truck every 20 minutes;
  - b) Loading of naphtha into tank trucks as worst-case scenario;

- c) Maximum VOC emission of 35 mg per liter of product loaded based on federal standard for total organic compounds (TOCs);
- d) A VOC emission factor of 8 mg/liter for leakage from tank truck when loading tank trucks based on a November 7, 2001 memo regarding EPA Emission Factors for Tank Truck Loading;
- e) Vapor mass fractions of pollutants for naphtha were multiplied by the total VOC emissions to determine HAP emissions; and
- f) Potential VOC/HAP emissions are summarized as follows:

Bottom Loading Load Rack Emissions		
Pollutant	Vapor Mass Fraction	Emission (TPY)
VOC	-----	37.7 <sup>a</sup>
Benzene	0.0124	0.467
Ethyl benzene	0.0001	0.004
Hexane	0.1184	4.464
Toluene	0.0022	0.083
Xylene (-m)	0.0003	0.011
Xylene (-p,-o)	0.0003	0.011
Total HAPs----->		5.040

a: VOC emission from VRU:

$$(35 \text{ mg/liter})(210,240,000 \text{ gal/yr})(\text{liter}/0.264 \text{ gal})(10^{-3} \text{ g/mg})(\text{kg}/1,000 \text{ g})(2.2046 \text{ lb/kg})(\text{ton}/2,000 \text{ lb}) = 30.724 \text{ TPY}$$

b: VOC emission from VRU:

$$(8 \text{ mg/liter})(210,240,000 \text{ gal/yr})(\text{liter}/0.264 \text{ gal})(10^{-3} \text{ g/mg})(\text{kg}/1,000 \text{ g})(2.2046 \text{ lb/kg})(\text{ton}/2,000 \text{ lb}) = 7.023 \text{ TPY}$$

5.2 Internal floating roof tank emissions were determined with EPA's Tanks program. Emissions were based on a throughput of 5,005,714 bbls/yr (210,240,000 gal/yr) for each storage tank. It was assumed that the tank throughput for the 420,000 gallon tank (Tank No. 4279) at 500.57 turnovers per year was 210,239,400 gallons per year. Throughput for the 1,680,000 gallon tank (Tank No. 4298) at 125 turnovers per year was 210,235,200 gallons per year. It was assumed that each tank stored naphtha with a Reid vapor pressure of 11 psi worst-case. Vapor mass fractions of pollutants from data for naphtha were multiplied by the total VOC emission to determine HAP emissions. Potential VOC/HAP emissions are summarized as follows:

Internal Floating Roof Tank Emissions				
Pollutant	Vapor Mass Fraction	Emission (TPY)		Total Average Emissions (TPY)
		Tank 4279	Tank 4298	
VOC	-----	7.749	6.106	6.928
Benzene	0.0124			0.086
Ethyl benzene	0.0001			0.001
Hexane	0.1184			0.820
Toluene	0.0022			0.015
Xylene (-m)	0.0003			0.002
Xylene (-o)	0.0003			0.002
Total HAPs----->				0.926

5.3 Equipment leaks emissions were determined based on New Equipment Leak Emission Factors for Petroleum Refineries, Gasoline Marketing, and Oil & Gas Production, February 1995 [EPA-453/R-95-017], Table 2.3. Emission factors were selected from the light liquid group for pump seals, valves, and connectors. The number of pumps, valves, and connectors were based on information from a previous permit application review. Vapor weight fractions of pollutants from data for naphtha were multiplied by the total VOC emissions to determine HAP emissions. Emission estimates are summarized below as follows:

Equipment Leak Emissions					
Pollutant	Vapor Mass Fraction	Emission (TPY)			Total Emissions
		<sup>a</sup> Pump Seals	<sup>b</sup> Valves	<sup>c</sup> Connectors	
VOC	-----	0.021	0.015	0.006	0.042
Benzene	0.0124				0.0005
Ethyl benzene	0.0001				0.0000042
Hexane	0.1184				0.0049
Toluene	0.0022				0.00009
Xylene (-m)	0.0003				0.000013
Xylene (-o)	0.0003				0.000013
Total HAPs----->					0.006

- a: (4 pump seals)(5.4E-04 kg/hr – seal)(2.2 lb/kg)(8,760 hr/yr)(ton/2,000 lb) = 0.021 TPY VOC
- b: (37 valves)(4.3E-05 kg/hr – valve)(2.2 lb/kg)(8,760 hr/yr)(ton/2,000 lb) = 0.015 TPY VOC
- c: (88 connectors)(8.0E-06 kg/hr – connector)(2.2 lb/kg)(8,760 hr/yr)(ton/2,000 lb) = 0.006 TPY VOC

5.4 Worst-case yearly emissions of VOCs and HAPs from Hilo Petroleum Terminal No. 3 are as follows:

Facility Emissions				
Pollutant	Emissions (TPY)			Total Emissions (TPY)
	Bottom Loading Load Rack	Internal Floating Roof Tanks	Equipment Leaks	
VOCs	37.7	6.9	0.04	44.6
HAPS	5.040	0.926	0.006	6.0

**6. Air Pollution Controls**

6.1 Emissions from the loading rack are controlled by a model no. MR-2x184DT John Zink vapor recovery unit. The system has two activated carbon vessels that recover hydrocarbon vapors from tank truck loading operations. The carbon adsorption vessels alternate in operation every 15 minutes. Vapors from loading tank trucks are recovered, condensed, and pumped back to the product supply tank.

6.2 Tank Nos. 4279 and 4298 are equipped with internal floating roofs and tank seal systems\ for the control of VOC and HAP emissions.

**7. Air Quality Assessment**

- 7.1 An ambient air quality impact assessment is not required for the terminal because air modeling is not required for VOCs.

**8. Significant Permit Conditions**

- 8.1 Add and update conditions that incorporate control measures for equipment leaks, tanks, and the loading rack as required by 40 CFR Part 63, Subpart BBBB.

Reason for 8.1: Incorporate pursuant to Paragraph 2.4 of this permit application review and most current revision of 40 CFR Part 63, Subpart BBBB .

**9. Conclusions and Recommendation**

- 9.1 Actual emissions from the facility should be less than those estimated because the terminal does not operate on a continuous basis. The terminal is equipped with a vapor recovery unit to control VOC emissions from tank truck loading operations. The internal floating roofs and tank seals systems for Tank Nos. 4279 and 4298 provide additional control of VOC emissions. Recommend issuance of the permit subject to incorporation of the significant permit conditions. The 30-day public comment period and 45-day review by the Environmental Protection Agency will be initiated simultaneously.

Mike Madsen 6-27-2011