PERMIT APPLICATION REVIEW
COVERED SOURCE PERMIT NO. 0080-01-C
Renewal Application No. 0080-07

Applicant: Chevron Products Company
Facility: Port Allen Marketing Terminal
Location: 260 Aka'ula Road (A & B Road), Eleele, Kauai

Mailing Address: 260 Aka'ula Road (A&B Road)
Eleele, Hawaii 96705

Coordinates: UTM: 436,100 meters East and 2,421,807 meters North (NAD 83)

Equipment:
a. 24,360 barrel internal floating roof storage tank with Allentech Flex-A-Span mechanical shoe primary seal, Tank No. 1;
b. 4,635 barrel internal floating roof storage tank with Allentech Flex-A-Span mechanical shoe primary seal, Tank No. 2;
c. 4,354 barrel internal floating roof storage tank with Allentech Flex-A-Span mechanical shoe primary seal, Tank No. 4;
d. 2,312 barrel internal floating roof storage tank with Allentech Flex-A-Span mechanical shoe primary seal, Tank No. 5;
e. 1,316 barrel internal floating roof storage tank with Allentech Flex-A-Span mechanical shoe primary seal, Tank No. 12;
f. Bottom loading load rack with one (1) loading lane and nine product load arms; and
g. 4,800 gallon/minute capacity John Zink vapor combustion system, model no. ZCT-2-8-35-X-2/8-X-X, serial no. VC-954547.

Responsible Official: Mr. James Dupree
Title: Terminal Manager
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1. Background.

1.1 Chevron Products Company has submitted a renewal application for its covered source permit to operate the Port Allen Marketing Terminal. The terminal uses a bottom loading load rack to distribute products that include motor gasoline, diesel fuel, ethanol, naphtha (straight run gasoline), and jet fuel. The load rack is equipped with a vapor combustion system to control volatile organic compounds (VOCs). The load rack's total combined throughput is limited to 5,631,429 barrels per year of aviation gasoline, denatured ethanol, motor gasoline, and naphtha (whole straight run gasoline). Product is received primarily from the Chevron Honolulu Marine Terminal on Oahu via barges and stored at the terminal in above ground tanks. The terminal occasionally obtains product from other sources. The standard industrial classification code for this facility is 5171 (Petroleum Bulk Stations and Terminals).

1.2 Changes were made to the permit after public comment and the 45-day EPA review period based on information provided in the Federal Register (Tuesday, December 15, 2009) that clarifies how to determine the gasoline throughput for applicability to Table 2 of 40 CFR Part 63, Subpart BBBBBB. The Department will initiate the public comment and EPA review period again for incorporating the permit revisions based on additional clarification of the regulations.

1.3 The applicant disclosed the following information:

a. Tank No. 16 that stores transmix is 30 feet high instead of 40 feet high and is, therefore, not subject to 40 Code of Federal Regulations (CFR) Part 63, Subpart BBBBBB, because the tank capacity is below 75 cubic meters (actual capacity based on 10.5 feet diameter and 30 feet height is 73.5 m^3).

b. Tank inspection and construction options from 40 CFR Part 60, Subpart Kb are planned for Tank Nos. 2 and 4 for complying with requirements specified in 40 CFR Part 63, Subpart BBBBBB, for gasoline storage tanks with internal floating roofs.

c. The average gasoline throughput for the terminal was 73,877 gallons per day in 2008 and 70,968 gallons per day in 2009.

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 CFR, Part 60 – NSPS, Subpart K, Standards of Performance for Storage Vessels for Petroleum Liquids for Which Construction, Reconstruction, or Modification Commenced After June 11, 1973 and Prior to May 19, 1978 is not applicable to Tank Nos. 2 and 4 based on information from the initial permit application review for this facility.

2.3 40 CFR, Part 60 – NSPS, Subpart Ka, Standards of Performance for Storage Vessels for Petroleum Liquids for Which Construction, Reconstruction, or Modification Commenced After May 18, 1978, and Prior to July 23, 1984, is not applicable to Tank Nos. 2 and 4 as determined in the initial permit application review for this facility.

2.4 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 1, 5, and 12. Subpart Kb is applicable because these tanks were modified after 1984 for storing a volatile organic liquid (e.g., gasoline, ethanol, and naphtha) with a true vapor pressure greater than 0.507 psi and each tank is greater than 151 m^3 (greater than 40,000 gallons) in capacity.

2.5 40 CFR, Part 60 – NSPS, Subpart XX, Standards of Performance for Bulk Gasoline Terminals is applicable to the bottom loading load rack because the load rack was constructed after December 17, 1980.

2.6 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 emits hazardous air pollutants (HAPs) from an area source bulk gasoline terminal. The facility is designated a bulk gasoline terminal because the gasoline throughput is greater than 20,000 gallons per day based on the permit limit on gasoline throughput. Option 2 from Table 2 of 40 CFR Part 63, Subpart BBBB, applies to the load rack because the actual gasoline throughput has been less than 250,000 gallons per day. Tank Nos. 1, 2, 4, 5, and 12 are subject to 40 CFR Part 60 Subpart BBBBBB, because the tanks are located at a bulk gasoline terminal, store gasoline as worst-case scenario, and are greater than 75 cubic meters in capacity. Pursuant to 40 CFR §63.11087(f), gasoline storage Tank Nos. 1, 2, and 5 are in compliance with 40 CFR Part 60, Subpart BBBBBB, because the tanks are subject to 40 CFR Part 60, Subpart Kb.

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

2.8 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.

2.9 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 combustion system 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 because the terminal is not a major source.

2.10 Prevention of significant deterioration (PSD) does not apply because emissions from the terminal are less than major source thresholds.

2.11 The facility is not a major source for hazardous air pollutants (HAPs), however, the facility is subject 40 CFR Part 63, because the facility emits HAPs from an area source gasoline bulk terminal.

2.12 The facility is a synthetic minor source because the throughput limitation of 5,631,429 barrels per year limits emissions to levels that are below the major source thresholds. Maximum capacity of the terminal is 4,800 gallons per minute based on the capacity of the vapor combustion system (2,522,880,000 gallons/year).

3. Insignificant Activities

3.1 The following is a list of insignificant activities at the marketing terminal. Tanks listed in (a) through (c) and (e) are exempt pursuant to HAR §11-60.1-82(f)(7). Tanks listed in (d) and (f) through (i) are exempt in accordance with HAR §11-60.1-82(f)(1). The oil water separator and concrete sump listed in (j) and (k), respectively, are exempt pursuant to HAR §11-60.1-82(f)(7).

a. 5,683 barrel vertical fixed cone roof Tank No. 3 currently storing ultra-low sulfur diesel;
b. 10,641 barrel vertical fixed cone roof Tank No. 14 currently storing ultra-low sulfur diesel;
c. 2,000 barrel vertical fixed roof Tank No. 13 currently out of service;
d. 418 barrel vertical fixed cone roof Tank No. 16 currently storing transmix;
e. 33,090 barrel vertical fixed cone roof Tank No. 21 currently storing low sulfur diesel;
f. 168 barrel horizontal fixed roof additive Tank No. 22 currently storing fuel additives;
g. 500 gallon transmix tank ;
h. 499 gallon propane tank;
i. Two 400 gallon portable tote tanks;
j. 7,000 gallon concrete sump; and
k. AFL oil water separator.

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 5,631,429 barrels/year (236,520,018 gallons/year);
b. Maximum 4,800 gallon/minute gasoline throughput and manufacturer's data to determine short-term NO_X, and CO emissions;
c. Loading of gasoline into tank trucks as worst-case scenario;
d. Maximum VOC emission of 35 mg per liter of gasoline loaded based on federal standard for total organic compounds (TOCs) for the vapor combustion unit;
e. 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;
f. An emission factor for NO_X of 4 mg/liter of gasoline loaded based on manufacturer's information for the vapor combustion system;
g. An emission factor for CO of 10 mg/liter of gasoline loaded based on manufacturer's information for the vapor combustion system;

h. Use of a mass balance calculation to determine SO_2 emissions (It was assumed that 0.1% sulfur was present in VOCs from tank truck loading losses). Available literature indicates that gasoline contains as much as 1,000 ppm sulfur (0.1% sulfur). The AP-42 emission factor (12.46 SPM/T) was used to determine loading losses. A saturation factor (S) of 0.6 for bottom loading tank truck – normal dedicated service was used. The true vapor pressure (P) was assumed to be 11 psia. The molecular weight (M) of gasoline was assumed to be 66. A temperature (T) of 536 ^{O}R (76 ^{O}F + 460) was used for the equation);

i. Vapor mass fractions of pollutants for naphtha multiplied by the total VOC emissions to determine HAP emissions as worst-case scenario; and

j. Potential emissions are summarized as follows:

Bottom Loading Load Rack (Gasoline)				
Pollutant	Vapor Mass Fraction	Emission (lb/hr)	Emission (g/s)	Emission (TPY)
VOC (see Notes a &b)	----------	----------	----------	42.5
NO_X (see Notes c, d ,& e)	----------	9.620	1.215	4.0
CO (See Notes f, g, & h)	----------	24.050	3.037	9.9
SO_2 (See Notes i, j, k, & 1)	----------	5.813	0.734	2.4
Benzene	0.0050	----------	----------	0.213
Hexane (n)	0.0181	----------	----------	0.769
Toluene	0.0027			0.115
Xylene (-m)	0.0002	----------	----------	0.009
Xylene (-o)	0.0001	----------	----------	0.004
Xylene (-p)	0.0001			0.004
			Total HAPs------->	1.114

a: (35 mg VOC/liter)(236,520,018 gal/yr)(liter/0.264 gal)(10^{-3} g/mg)(kg/1,000 g)(2.2046 lb/kg)(ton/2,000 lb) = 34.565 TPY VOC from vapor combustion system

b: (8 mg VOC/liter)(236,520,018 gal/yr)(liter/0.264 gal)(10^{-3} g/mg)(kg/1,000 g)(2.2046 lb/kg)(ton/2,000 lb) = 7.900 TPY VOC from tank truck cargo tank leaks

c: (4,800 gal/min)(4 mg NO_X/liter)(liter/0.264 gal)(10^{-3} g/mg)(kg/1,000 g)(2.2046 lb/kg)(60 min/hr) = 9.620 lb/hr NO_X

d: (9.620 lb NO_X/hr)(hr/3,600 sec)(kg/2.2 lb)(1,000 g/kg) = 1.215 g/sec NO_X

e: (4 mg NO_X/liter)(236,520,018 gal/yr)(liter/0.264 gal)(10^{-3} g/mg)(kg/1,000 g)(2.2046 lb/kg)(ton/2,000 lb) = 3.950 TPY NO_X

f: (4,800 gal/min)(10 mg CO/liter)(liter/0.264 gal)(10^{-3} g/mg)(kg/1,000 g)(2.2046 lb/kg)(60 min/hr) = 24.050 lb/hr CO

g: (24.050 lb CO/hr)(hr/3,600 sec)(kg/2.2 lb)(1,000 g/kg) = 3.037 g/sec CO

h: (10 mg CO/liter)(236,520,018 gal/yr)(liter/0.264 gal)(10^{-3} g/mg)(kg/1,000 g)(2.2046 lb/kg)(ton/2,000 lb) = 9.876 TPY CO

i: 12.46(0.6)(11)(66)/536 (0.1/100) = 0.0101 lb sulfur/1,000 gal = 0.0101(64.06/32.06 S) = 0.0202 lb/1,000 gal SO_2

j: (0.0202 lb/1,000 gal)(4,800 gal/min)(min/60 sec)(1,000 g/kg)(kg/2.2lb) = 0.734 g/sec SO_2

k: (0.734 g/sec)(3,600 sec/hr)(kg/1,000 g)(2.2 lb/kg) = 5.813 lb/hr SO_2

l: (0.0202 lb/1,000 gal)(236,520,000 gal/yr)(ton/2,000 lb) = 2.389 TPY SO_2

5.2 Potential emissions from the tank farm were based on a 236,520,018 gallon per year throughput based on the throughput limit specified in the permit for the facility's bottom loading load rack. Because Hawaii requires motor gasoline to be blended with 10% ethanol (E10 fuel), it was assumed that 10% of the total gasoline throughput is ethanol handled by Tank Nos. 5 and 12. The ethanol throughput was divided equally among the two storage tanks. The remaining throughput (236,520,018 gallons – 23,652,002 gallons or 212,868,016 gallons) was divided equally among the remaining internal floating roof

gasoline storage tanks (Tank Nos. 1, 2, and 4). Vapor mass fractions of components for naphtha were multiplied by the total VOC emissions to determine HAP emissions as worst-case. Emissions for the review were only included from permitted tanks. The applicant used a Tanks 4.09d program to determine the VOC emissions. Potential emissions from permitted tanks are shown in Enclosure (1) and summarized below.

Tank Farm Emissions						
Pollutant	**TPY Emissions**					
	Tank 1	Tank 2	Tank 4	Tank 5	Tank 12	Total
VOC	9.9	4.7	3.9	0.5	0.3	19.3
HAPs	0.259	0.123	0.102	0.013	0.008	0.505

5.3 Equipment leaks emissions were determined based on New Equipment Leak Emission Factors for Petroleum Refineries, Gasoline Marketing, and Oil & Gas Production, February1995 [EPA-453/R-95-017], Table 2.3. Emission factors were selected from the light liquid and gas groups for pumps, seals, valves, connectors, and other components. The number of pumps, valves, connectors, and other components were update since the previous permit application. Vapor weight fractions of pollutants from data for naphtha as worst-case scenario were multiplied by the total VOC emissions to determine HAP emissions. Emission estimates are shown in Enclosure (2) and summarized below as follows:

Equipment Leak Emissions						
Pollutant	**Vapor Mass Fraction**	**Emission (TPY)**				**Total Emissions**
		Fittings	**Other**	**Pumps**	**Valves**	
VOC	------	0.222	0.112	0.088	0.265	0.688
Benzene	0.0050					0.003
Hexane (n)	0.0181					0.012
Toluene	0.0027					0.002
Xylene (-m)	0.0002					0.0001
Xylene (-o)	0.0001					0.0001
Xylene (-p)	0.0001					0.0001
					Total HAPs---------→	0.018

5.4 Worst-case yearly emissions of VOCs and HAPs from Port Allen Marketing Terminal are as follows:

Facility Emissions				
Pollutant	**Emissions (TPY)**			**Total Emissions (TPY)**
	Bottom Loading Load Rack	**Internal Floating Roof Tanks**	**Equipment Leaks**	
VOCs	42.5	19.3	0.688	62.5
NO_X	4.0	-------	-------	4.0
CO	9.9	-------	-------	9.9
SO_2	2.4	-------	-------	2.4
HAPS	1.114	0.505	0.018	1.637

6. Air Pollution Controls

6.1 The loading rack is equipped with a model no. ZCT-2-8-35-X2/8-X-X John Zink vapor combustion system to control VOC and HAP emissions. Maximum specified loading capacity for operating the vapor combustion system is 4,800 gallons per minute. Minimum specified loading rate for operating the vapor combustion system is 15 gallons per minute.

6.2 Tank Nos. 1, 2, 4, 5 and 12 are equipped with internal floating roofs and tank seal systems to control VOC and HAP emissions.

7. Air Quality Assessment

7.1 No changes to the permit are proposed that increase emissions from the vapor combustion system. Therefore, an air modeling assessment for the vapor combustion system is not required.

8. Significant Permit Conditions

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

Reason for 8.1: 40 CFR Part 63, Subpart BBBBBB was promulgated on January 10, 2008. Chevron Products Company must comply with the federal standard no later than January 10, 2011.

9. Conclusions and Recommendation

9.1 Actual emissions be less than those estimated because the terminal does not operate on a continuous basis. The terminal is equipped with a vapor combustion system to control VOC and HAP emissions from tank truck loading operations. The internal floating roofs and tank seals systems for Tank Nos. 1, 2, 4, 5, and 12 provide additional control of VOC and HAP emissions. Recommend issuance of the permit subject to incorporation of the significant permit conditions. The 30-day public comment period and 45-day EPA review period will be initiated simultaneously.

Mike Madsen 3-10-2010