

**PERMIT APPLICATION REVIEW
COVERED SOURCE PERMIT (CSP) NO. 0078-01-C
Modification Application No. 0078-04**

Applicant: Chevron Products Company
Facility: Honolulu Terminal Marine
***Location:** 777 North Nimitz Highway, Honolulu, Oahu

****Mailing
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Kapolei, Hawaii 96707

Responsible

Official: Mr. Gary Cushnie
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Contact: Mr. Brian Siperly
Title: Terminal Manager
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Contact: Mr. Richard Rosen
Title: Terminal Environment Safety Specialist
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1. Background

1.1 Chevron Products Company has submitted an application to modify their covered source permit for Honolulu Terminal Marine (HTM) located at 777 North Nimitz Highway for storing and distributing denatured ethanol. The modification is requested pursuant to a state requirement to blend 10% ethanol with gasoline by April 2006. The 10% ethanol and 90% gasoline blend is designated E10. Literature indicates that the E10 blend reduces carbon monoxide emissions from combustion in motor vehicles better than any other reformulated gasoline. The terminal consists of storage tanks and a marine vessel loading facility. Product is supplied to HTM through a single pipeline from the Chevron refinery located in Campbell Industrial Park. Product received by HTM is either piped to Chevron's Honolulu Transportation Terminal (HTT) at 933 North Nimitz Highway for tank truck distribution or loaded onto vessels at HTM Pier 30 for marine distribution. The standard industrial classification code for HTM is 5171 (Petroleum Bulk Stations and Terminals). The following is information on the permit modification for distributing ethanol at the marine terminal:

- a. Tank Nos. 5 and 10 will be upgraded to store denatured ethanol with approximately 5% gasoline.
- b. Tank No. 5 has a working capacity of 52,442 barrels.

- c. Tank No. 10 has a working capacity of 43,600 barrels.
 - d. Emissions for the modification of Tank Nos. 5 and 10 will be based on the storage of gasoline as worst-case scenario.
 - e. Tank Nos. 5 and 10 will each be equipped with an Allentech Flex-a-span primary mechanical shoe seal and a secondary seal.
 - f. It was requested that the terminal be allowed to load 35,000,000 gallons (833,333 barrels) per year of ethanol into marine barges for distribution to other islands.
 - g. The amount of gasoline for denaturing the ethanol will be included in the current gasoline throughput limit for the facility.
 - h. Ethanol will be supplied to the terminal by barge. This product cannot be transported through the pipeline due to ethanol's high affinity for water.
 - i. Ethanol will be mixed with 5% gasoline inside the storage tanks.
 - m. Ethanol is not a hazardous air pollutant (HAP).
- 1.2 Mr. Siperly from Chevron Products company indicated that Tank No. 5 is out of service and Tank No. 10 currently stores high sulfur diesel. Mr. Siperly also provided pictures of the tanks that are shown in Enclosure (1).

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

§11-60.1-39 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

Subchapter 9, Hazardous Air Pollutants

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- 2.2 Tank Nos. 5 and 10 that are being upgraded will be subject to 40 Code of Federal Regulations (CFR), Part 60-New Source Performance Standards, 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 because the tanks are greater than 151 m³ (greater than about 40,000 gallons) and will be storing gasoline worst-case with a true vapor pressure greater than 0.507 psi. AP-42 indicates a true vapor pressure for gasoline with Reid vapor pressure of 10 of 9.9 psi at 80 °F. AP-42 indicates the true vapor pressure of ethanol at 80 °F is 1.2 psi. The working volumes of Tank Nos. 5 and 10 are 52,442 and 43,600 barrels, respectively. As indicated by Mr. Richard Rosen from Chevron Products Company, alterations to Tank Nos. 5 and 10 will trigger a reconstruction because the costs for the new construction/components will be greater than 50 percent of the costs of a comparable tank that is entirely new. Tank No. 30 is already subject to Subpart Kb.
- 2.3 The facility will be placed into the Compliance Data System (CDS) because HTM is a covered source.
- 2.4 The Consolidated Emissions Reporting Rule (CERR) is applicable because emissions from the facility exceed reporting levels pursuant to 40 CFR 51, Subpart A for a Type A source (see table below).

CERR APPLICABILITY			
Pollutant	Potential Emissions (TPY)	CERR Triggering Levels (TPY)	
		1 year cycle (Type A sources)	3 year cycle (Type B sources)
VOC	367.1	≥ 250	100

- 2.5 A Best Available Control Technology (BACT) analysis is required for new sources or modifications to existing sources that would result in a net emission increase above significant levels as defined in HAR, Section 11-60.1-1. The changes to Tank Nos. 5 and 10 to store gasoline worst-case and loading 35,000,000 gallons per year of ethanol will not increase emissions above the significant level as shown in the table below. As such, a BACT review is not applicable to this facility.

BACT APPLICABILITY		
Pollutant	Emissions (TPY) ^a	Significant Level (TPY)
VOC	21.7	40

a: Based on emissions from the following:

- i. Tank No.5 storing gasoline worst-case;
- ii. Tank No. 10 storing gasoline worst-case;
- iii. Marine vessel loading 35,000,000 gallons per year ethanol.

- 2.6 Although Chevron HTM is a major stationary source for VOCs (the terminal emits more than 100 TPY VOCs and is one of 28 source categories pursuant to HAR §11-60.1-131 listed as petroleum storage and transfer units with a total storage capacity exceeding three hundred thousand barrels), prevention of significant deterioration (PSD) does not apply because emissions from the modifications to distribute denatured ethanol at the terminal do not exceed the significant level specified in Paragraph 2.5.
- 2.7 The facility is not a major source for hazardous air pollutants (HAPs) and is not subject to any National Emissions Standards for HAPs or Maximum Achievable Control Technology standards under 40 CFR Parts 61 or 63.
- 2.8 The purpose of Compliance Assurance Monitoring (CAM) is to provide reasonable assurance that compliance is being achieved with large emission 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 precontrol emissions that are greater than the major source level; and (5) not otherwise be exempt from CAM. Although the terminal is a major source for VOCs, CAM is not applicable because this terminal does not use a control device as defined in 40 CFR, Part 64, to achieve compliance with an applicable limit or standard.

3. Insignificant Activities

- 3.1 The following is a list of insignificant activities at the terminal. Tanks listed in (a)-(i) are exempt per HAR §11-60.1-82(f)(7). Tanks listed at (j)- (l) are exempt per HAR §11-60.1-82(f)(1). The oil water separators and sumps listed at (m)-(q) are exempt per HAR §11-60.1-82(f)(7). Emergency diesel engine generator listed at (r) is exempt per HAR §11-60.1-82(f)(5). Marine vessel loading operations for diesel and fuel oil listed at (s) are exempt per HAR §11-60.1-82(f)(7).
- a. 16,404 barrel fixed cone roof Tank No. 1;
 - b. 9,288 barrel fixed roof Tank No. 2;
 - c. 1,454 barrel fixed cone roof Tank No. 7;
 - d. 13,283 barrel fixed cone roof Tank No. 14;
 - e. 11,521 barrel fixed cone roof Tank No. 26;
 - f. 5,849 barrel fixed cone roof Tank No. 32;
 - g. 11,205 barrel fixed cone roof Tank No. 48;
 - h. 23,502 barrel fixed cone roof Tank No. 50;
 - i. 25,855 barrel fixed cone roof Tank No. 51;
 - j. 1,000 gallon horizontal fixed roof Tank No. 52;
 - k. 400 gallon portable tote tank;
 - l. 760 gallon recovered oil tank;
 - m. Oil water separator inside open concrete pit;

- n. Three (3) oil water separators inside closed concrete pits;
- o. Monarch System oil water separator, job no. 890, serial no. MSECS 28/75 8901;
- p. Sump (one compartment concrete pit);
- q. Sump (two compartment concrete pit);
- r. 256 kW emergency Caterpillar diesel engine generator, model no. 3406B, serial no. 4RC00344PP04841; and
- s. Marine vessel loading operations for diesel and fuel oil.

4. Alternative Operating Scenarios

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

5. Air Pollution Controls

- 5.1 Fourteen (14) tanks at the facility require internal floating roofs to control VOC/HAP emissions for storing motor gasoline, aviation gasoline, naphtha, or denatured ethanol. Tank Nos. 5 and 10 that are being upgraded to store gasoline worst-case are among the tanks with internal floating roofs.

6. Project Emissions

- 6.1 Potential emissions from marine vessel loading operations were based on emission factors from AP-42, Section 5.2 (1/95) "Transportation And Marketing Of Petroleum Liquids" with the following assumptions [see Enclosure (2)]:
 - a. Maximum permitted loading throughput of 4,137,881 barrels per year (173,791,002 gal/yr) to determine VOC emissions from total combined loading of aviation gasoline, Dimate, motor gasoline, and naphtha;
 - b. Maximum throughput of 833,333 barrels per year (35,000,000 gal/yr) to determine VOC emissions from loading ethanol;
 - c. Maximum permitted loading throughput of 6,271,619 barrels per year (263,407,998 gal/yr) to determine VOC emissions from loading Jet A;
 - d. VOC emission factor for gasoline loading for typical overall situation of 3.4 lb/1000 gal based on Section 5.2, Table 5.2-2;
 - e. A VOC emission factor for ethanol loading of 0.8539 lbs/1,000 gallons based on Section 5.2 emissions factor Equation (1) and assuming a saturation factor (S) for submerged barge loading of 0.5, a true vapor pressure of 1.6 psi, a molecular weight of 46 lb/lb-mole, and a temperature of 537 °K;
 - f. A VOC emission factor for Jet A loading of 0.172 lbs/1,000 gallons based on Section 5.2 emission factor Equation (1) and assuming a saturation factor (S) for submerged barge loading of 0.5, a true vapor pressure of 0.1139 psia, a molecular weight of 130 lb/lb-mole, and a temperature of 537 °K;

- g. Vapor mass fractions for pollutants from light liquids and jet A were multiplied by the total VOC emissions to determine HAP emissions;
- h. Potential VOC/HAP emissions, shown in Enclosure (2), are summarized as follows:

Marine Vessel Loading Emissions				
Pollutant	Emission (TPY)			
	Aviation Gasoline, Dimate Motor Gasoline (total combined)	Ethanol	Jet A	Total
VOC	295.4	14.9	22.6	332.9
Hexane (n) [max. single HAP]	4.815	not listed as HAP	0.226	5.041
HAPs	^a 9.068	not listed as HAP	4.354	13.422

a: Based on loading naphtha worst-case.

- 6.2 Potential emissions from the tank farm were based on storing motor gasoline worst-case with Reid vapor pressure of 11.5 and a 648,291,002 gallon per year (15,435,500 barrel/yr) throughput based on permit limitations on product throughput from air permits for HTM and HTT. Vapor mass fractions of components for naphtha were multiplied by the total VOC emissions to determine HAP emissions worst case. Emissions were not estimated from tanks storing Jet A, diesel, and fuel oil because these tanks are insignificant activities. Potential emissions from the tank farm are shown in Enclosure (3) and summarized below:

Tank Farm Emissions				
Pollutant	Emissions (TPY)			
	Tank 5	Tank 10	Existing Tanks	Total
VOC	3.9	2.9	26.9	33.7
Hexane (n)[max. single HAP] ^a	0.064	0.047	0.439	0.550
HAPs ^a	0.120	0.109	0.805	1.034

a: Based on loading naphtha worst-case.

- 6.3 Emissions from equipment leaks 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 fittings. Information from the application on the number of pump seals, valves, and connectors was used to determine emissions. Vapor weight fractions of pollutants from data for naphtha were multiplied by the total VOC emissions to determine HAP emissions. Emission estimates are shown in Enclosure (4) and summarized below as follows:

Equipment Leak Emissions				
Pollutant	Emissions (TPY)			Emissions (TPY)
	Valves	Fittings	Pump Seals	
VOC	0.211	0.190	0.135	0.536
Hexane (n) <small>[max. single HAP]</small>	0.003	0.003	0.002	0.008
HAPs	0.0058	0.0057	0.0045	0.017

6.4 Emissions of VOCs and HAPs from the modification to the terminal are shown below.

Modification Emissions				
Pollutant	Emissions (TPY)			Total Emissions (TPY)
	Marine Vessel Loading	Tank No. 5	Tank No. 10	
VOC	14.9	3.9	2.9	21.7
Hexane (n) <small>[max. single HAP]</small>	Ethanol is not a HAP	0.064	0.047	0.111
HAPs	Ethanol is not a HAP	0.120	0.109	0.229

6.5 Worst-case yearly emissions of VOCs and HAPs from operating HTM are shown below.

Facility Emissions				
Pollutant	Emissions (TPY)			Total Emissions (TPY)
	Marine Vessel Loading	Tank Farm	Equipment Leaks	
VOC	332.9	33.7	0.5	367.1
Hexane (n) <small>[max. single HAP]</small>	5.041	0.550	0.008	5.6
HAPs	13.422	1.034	0.017	14.5

7. Air Quality Assessment

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

8. Significant Permit Conditions

- 8.1 Add condition that incorporates an 833,333 barrel per year ethanol marine vessel loading limit.
- 8.2 Incorporate NSPS, Subpart Kb regulations for Tank Nos. 5 and 10 based on tank modifications to the tanks that trigger a reconstruction.

9. Conclusion and Recommendation

- 9.1 Actual emissions from the distribution terminal should be less than those estimated. Actual throughput for calendar year 2004 was 82,842,354 gallons total combined naphtha and motor gasoline. No Dimate or aviation gasoline were loaded into marine vessels in calendar year 2004. The actual calendar year 2004 product throughput is below the 4,137,881 barrel/yr (173,791,002 gallon/yr) total combined product throughput limit for aviation gasoline, Dimate, motor gasoline, and naphtha. Also, the calendar year 2004 loading of 27,244,350 gallons of Jet A into marine vessels is far below the 6,271,619 barrel/yr (263,407,998 gallon/yr) Jet A throughput limit. Recommend issuance of the permit with changes pending 30-day public comment period and 45-day review by EPA.

Mike Madsen 7-5-2005