

**Significant Modification to a Covered Source**  
**Review Summary**

**Application File Nos.:** 0212-23

**Permit No.:** 0212-01-C

**Applicant:** Tesoro Hawaii Corporation

**Facility Title:** Petroleum Refinery  
Tesoro Hawaii Corporation  
91-325 Komohana Street  
Kapolei, Hawaii 96707

**Mailing Address:** Tesoro Hawaii Corporation  
91-325 Komohana Street  
Kapolei, Hawaii 96707

**Responsible Official:** Mr. Frank D. Clouse  
Vice President, Refinery Operations  
(808) 479-0508

**Point of Contact:** Mr. Theodore K. Metrose  
Manager, Refinery Environmental Affairs  
(808) 479-9886

**Application Dates:** Significant Modification Application No. 0212-23 dated  
October 25, 2007

**Proposed Project:**

SICC 2911 (Petroleum Refining)

Tesoro currently has seven crude tanks. Tesoro would like to build and operate a new crude oil storage tank no.108 with a nominal size of 18,298,590 gallons. The extra capacity is needed to accommodate deliveries of some new supertankers and those which are coming from increasingly distant ports, making them subject to schedule changes. Extra tank capacity helps ensure that the refinery will not run out of select grades of crude, reduces the need to mix various crude types (in one tank) which improves block run operation and generally enhances refinery/tanker logistics.

There will be two new pumps installed as a result of the installation of the new crude tank and four valves and associated fittings.

A permit modification application fee of \$1000.00 for a significant modification was submitted by the applicant and processed.

**Equipment:**

1. One (1) crude oil storage tank no. 108 consisting of a 18,298,590 gallon external floating roof petroleum storage tank with mechanical shoe primary seal and rim mounted secondary seal;
2. Two (2) pumps; and
3. Four (4) valves and associated fittings

**Applicable Requirements:**

Hawaii Administrative Rules (HAR)

Title 11, Chapter 59	Ambient Air Quality Standards
Title 11, Chapter 60.1	Air Pollution Control
Subchapter 1	General Requirements
Subchapter 2	General Prohibition
HAR 11-60.1-31	Applicability
HAR 11-60.1-39	Storage of Volatile Organic Compounds
Subchapter 5	Covered Sources
Subchapter 6	Fees for Covered Sources, Noncovered Sources, and Agricultural Burning
HAR 11-60.1-111	Definitions
HAR 11-60.1-112	General Fee Provisions for Covered Sources
HAR 11-60.1-113	Application Fees for Covered Sources
HAR 11-60.1-114	Annual Fees for Covered Sources
HAR 11-60.1-115	Basis of Annual Fees for Covered Sources
Subchapter 8	Standards of Performance for Stationary Sources
Subchapter 9	Hazardous Air Pollutant Sources

Federal Requirements

- 40 CFR Part 60 - Standards of Performance for New Stationary Sources (NSPS)
  - Subpart Kb - Standards of Performance for Volatile Organic Liquid Storage Vessels (including Petroleum Liquid Storage Vessels) for which construction or modification commenced after July 13, 1984.
- 40 CFR Part 63 - National Emission Standards for Hazardous Air Pollutants for Source Categories (Maximum Achievable Control Technologies (MACT) Standards)
  - Subpart CC - National Emission Standards for Hazardous Air Pollutants from Petroleum Refineries

**Non-Applicable Requirements:**

Hawaii Administrative Rules (HAR)

Title 11, Chapter 60.1	Air Pollution Control
Subchapter 7	Prevention of Significant Deterioration

Federal Requirements

- 40 CFR Part 60 - Standards of Performance for New Stationary Sources (NSPS)
  - Subpart GGG – Standards of Performance for Equipment Leaks of VOC in Petroleum Refineries (not applicable since the tank farm is not a process unit)

**Best Available Control Technology (BACT):**

A Best Available Control Technology (BACT) analysis is applicable only to new covered sources and significant modifications to covered sources that have the potential to emit or a net emissions increase above significant levels as defined in HAR §11-60.1-1. A BACT analysis is not applicable since the potential to emit for proposed crude oil storage tank no. 108 is below the significant level for VOCs. See Table 1.

**Table 1 – Emissions Summary for Crude Oil Storage Tank No. 108**

Pollutant	Potential Emissions (tpy)	Significant Level (tpy)	Significant?
VOC	3.0	40	No

**Prevention of Significant Deterioration (PSD):**

This significant modification is not subject to PSD review as the modification is not considered a major modification to a major stationary source as defined in HAR §11-60.1-131.

**Consolidated Emissions Reporting Rule (CERR):**

40 CFR Part 51, Subpart A - Emission Inventory Reporting Requirements, determines CER based on the emissions of criteria air pollutants from Type A and Type B point sources (as defined in 40 CFR Part 51, Subpart A), that emit at the CER triggering levels shown in Table 2.

**Table 2. – CERR/In-House Reporting Applicability**

Pollutant	Type A CER Triggering Levels <sup>1,2</sup> (tpy)	Type B CER Triggering Levels <sup>1</sup> (tpy)	Pollutant	In-house Total Facility Triggering Levels <sup>3</sup> (tpy)
NO <sub>x</sub>	≥2500	≥100	NO <sub>x</sub>	≥25
SO <sub>x</sub>	≥2500	≥100	SO <sub>x</sub>	≥25
CO	≥2500	≥1000	CO	≥250
PM <sub>10</sub> /PM <sub>2.5</sub>	≥250/250	≥100/100	PM/PM <sub>10</sub>	≥25/25
VOC	≥250	≥100	VOC	≥25
			HAPS	≥5

<sup>1</sup>Based on actual emissions

<sup>2</sup>Type A sources are a subset of Type B sources and are the larger emitting sources by pollutant

<sup>3</sup>Based on potential emissions

There is no change from Covered Source Permit No. 0212-01-C. This Type A facility emits above the Type A CER and in-house triggering levels. Therefore, CER and annual emissions reporting requirements are applicable. Also, annual emissions reporting is required for covered sources.

**Compliance Assurance Monitoring (CAM):**

No change from Covered Source Permit No. 0212-01-C. This facility is subject to CAM at 1<sup>st</sup> permit renewal.

**Synthetic Minor Source:**

No change from Covered Source Permit No. 0212-01-C. This facility is not a synthetic minor.

**Insignificant Activities:**

No change from Covered Source Permit No. 0212-01-C.

**Alternate Operating Scenarios:**

No change from Covered Source Permit No. 0212-01-C.

**Project Emissions:**

**Table 3 – Estimated Emissions for Crude Oil Storage Tank No. 108**

<b>Pollutant Component</b>	<b>Emissions using EPA Tanks 4.09d Program (lb/yr)</b>	<b>Max Emissions<sup>1</sup> (lb/yr)</b>	<b>Fugitive Max Emissions (lb/yr)</b>	<b>Total Emissions (lb/yr)</b>
benzene	11.15	12.52	1.70	14.23
cyclohexane	30.98	34.79	4.74	39.53
ethylbenzene	3.44	3.86	0.53	4.39
naphthalene	0.75	0.84	0.11	0.96
n-hexane	90.74	101.90	13.87	115.77
toluene	16.96	19.05	2.59	21.64
m-xylene	7.56	8.49	1.16	9.65
o-xylene	4.06	4.56	0.62	5.18
p-xylene	3.98	4.47	0.61	5.08
<b>Subtotal HAPS</b>	<b>169.62</b>	<b>190.48</b>	<b>25.93</b>	<b>216.41</b>
unidentified	4551.33	5111.14	695.77	5806.91
trimethylbenzene	4.61	5.18	0.70	5.88
<b>Total ROG<sup>2</sup></b>	<b>4725.56</b>	<b>5306.80</b>	<b>722.40</b>	<b>6029.20</b>

<sup>1</sup>Design production rate = 95,000 bbls/day

2006 production rate = 84,595 bbls/day

Crude rate adjustment factor = 1.123

<sup>2</sup>Reactive Organic Gases

**Table 4 – Tank Emissions**

<b>Tank losses</b>	<b>Emissions using EPA Tanks 4.09d Program (lb/yr)</b>	<b>Max Emissions (lb/yr)</b>
Rim seal loss	2201.24	2471.99
Withdrawal loss	1233.48	1385.20
Deck fitting loss	1290.84	1449.61
Deck seam loss	0	0
<b>Total</b>	<b>4725.56</b>	<b>5306.80</b>
Standing loss	3492.08	3921.61

**Table 5 – Fugitive Emissions**

Equipment Type	Number	Refinery Screening Ranges Emission Factors (<10,000 ppmv) <sup>†</sup> (kg/hr/source)	Emissions (lb/yr)
Pump seals	2	0.012	463.6
Pressure relief valves	0	0.0447	0
Connectors/flanges	10	0.00006	11.6
Valves	4	0.0017	131.3
Open-ended lines	2	0.0015	57.9
sampling connections	2	0.0015	57.9
<b>Total Fugitive Emissions</b>			<b>722.4</b>

<sup>†</sup>Based on Protocol for Equipment Leak Emission Estimates, 1995

**Table 6 – Emissions Summary**

Source	ROG (lbs/yr)	HAPS (lbs/yr)
Tank 108	5307	190
Fugitive	722	26
Total	6029	216

**Ambient Air Quality Assessment:**

An Ambient Air Quality Impact Assessment (AAQIA) was not performed for the proposed project since there are no ambient standards for VOCs and the emissions are fugitive in nature.

**Significant Permit Conditions:**

The proposed crude oil storage tank no. 108 will be subject to the same permit conditions as petroleum storage tank no. 107 in Covered Source Permit No. 0212-01-C.

**Conclusion and Recommendations:**

Recommend issuance of the significant modification to existing Covered Source Permit No. 0212-01-C based on the significant permit conditions shown above. The proposed project will allow the applicant to construct and operate a new crude oil storage tank no. 108. Compliance with all State and Federal regulations will be maintained, including the State and National ambient air quality standards. A 30-day public comment period and a 45-day EPA review period are also required before issuance of the permit modification.

Reviewer: Darin Lum

Date: 12/07