

Covered Source Permit Review Summary

Application Nos.: 0212-21 (Renewal application)
0212-27 (Minor Modification application)
0212-28 (Minor Modification application)

Permit No.: 0212-01-C

Applicant: Tesoro Hawaii Corporation

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

Mailing Address: Tesoro Hawaii Corporation
91-325 Komohana Street
Kapolei, Hawaii 96707-1713

Responsible Official: Mr. Dan L. Carlson
Vice President and Refinery Manager

Point of Contact: Mr. Ted Metrose
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Application Dates: Application file no. 0212-21: March 28, 2005
Application file no. 0212-27: February 20, 2008
Application file no. 0212-28: August 3, 2008

Proposed Project:

SICC 2911 (Petroleum Refining)

This application is for the renewal of Covered Source Permit No. 0212-01-C. There have been no major modifications (triggering PSD) to the refinery since the original Title V permit was issued on July 6, 2000. However, numerous minor modifications and significant modifications have been issued since July 6, 2000, which will be consolidated into the permit renewal. They are as follows:

1. Minor Modification Application Nos. 0212-15, 0212-16, 0212-18, 0212-20, 0212-24, 0212-25, and 0212-26.
2. Significant Modification Application Nos. 0212-17, 0212-19, 0212-22, 0212-23,

The Tesoro Hawaii Corporation's petroleum refinery converts tanker-delivered crude oil into petroleum products. The refinery has a crude oil distillation capacity of 95,000 barrels per day. The facility operates 24 hours per day, 7 days per week, 52 weeks per year.

The refinery receives crude oil via tanker and produces a variety of petroleum products. The initial petroleum refining process separates crude oil into different fractions based upon boiling

point ranges. Light and intermediate fractions are blended into products; heavier fractions are further processed by cracking large hydrocarbon molecules into smaller ones. The structures of some molecules may be rearranged to provide desired components. Undesirable sulfur compounds are removed and transformed into useful compounds. Various hydrocarbon components are blended together according to product specifications. Supporting auxiliary operations includes hydrogen production, wastewater treatment, acid production and steam production.

An application fee of \$3000.00 for the renewal of a covered source permit was submitted by the applicant and processed.

Proposed Changes to Existing Permit:

1. Application File No. 0212-27 (Minor Modification)
Attachment II(I) – Cogeneration Unit (CGU) permit conditions

Tesoro has proposed the following changes to the covered source permit in the application:

- a. Remove all references implying that the cogeneration gas turbine can burn fuel gas. The cogeneration gas turbine can only burn liquid fuel, i.e., diesel fuel no. 2, jet and naphtha. Conversely, the GCU's duct burner is capable of only burning refinery fuel gas (RFG).
- b. The CEMS to measure stack gas NO_x concentration and stack flow rates shall meet EPA monitoring performance specifications 40 CFR §60.13, 40 CFR Part 60, Appendix B, Performance Specifications and 40 CFR Part 60, Appendix F, Quality Assurance Procedures.

A permit modification application fee of \$200.00 for a minor modification was submitted by the applicant and processed.

2. Application File No. 0212-28 (Minor Modification)
Attachment II(F) – Sulfix Injection Tank TK 912

Tesoro is proposing to operate a Sulfix injection tank (TK912) with a design capacity of 750 gallons and a working capacity of 675 gallons. Although Tank 912 currently does not store compounds containing HAPS, historically it has, and the refinery wants to retain that flexibility, should it elect to store a blend of sulfix which includes methanol or other HAPS. The emissions increase will be insignificant (less than 1 kg/hr) and no physical modifications will be required to facilitate the tank's change in service.

Equipment Description:

Type:	Vertical Fixed Roof Storage Tank
Diameter:	4 feet
Height:	8 feet
Design Capacity:	750 gallons
Working Capacity:	675 gallons
Roof Type:	Cone

Content Description:

Chemical Name:	Sulfix 9272
Composition:	10% methanol, 5% monoethanolamine, 60% proprietary alkanolamine
Vapor Pressure:	1.07 mm Hg at 38°C (100 °F)
Density:	8.96 lb/gallon
Viscosity:	17-18 cps at 16°C

Tank Use:

The sulfix storage and injection system is used to treat the tar rundown from the Visbreaker Unit. The injection of sulfix is necessary to ensure that the H₂S content of the vapor space of the industrial fuels, produced by the VBK and stored in tanks 304, 601, 602, and 607, are less than 100 ppm. The H₂S limit is not an environmental limit but rather a fuel specification design to ensure the safety of those who could be involved in storage, transfer and use of this fuel.

Tank Category:

In accordance with the 40 CFR §63.641, a storage vessel is considered a Group 1 storage tank if it has the following criteria, otherwise it will be considered a Group 2 storage tank:

- Located at an existing source with a design capacity greater than or equal to 177 m³ and stored-liquid maximum true vapor pressure is greater than or equal to 10.4 kilopascals and stored-liquid annual average true vapor pressure is greater than or equal to 8.3 kilopascals and annual average HAP liquid concentration is greater than 4% by weight total organic HAP.
- OR
- Located at a new source with a design capacity greater than or equal to 151 m³ and stored-liquid maximum true vapor pressure is greater than or equal to 3.4 kilopascals and annual average HAP liquid concentration is greater than 2% by weight total organic HAP.

Pursuant to the above-mentioned regulation, the proposed tank is considered a Group 2 storage tank because:

- Tank TK912 is located at an existing source.
- Tank TK912's design capacity is 750 gallons or 2.8 m³ (less than 177 m³).
- Sulfix's true vapor pressure is 1.07 mmHg (0.14 kPa) at 100 °F (less than 8.3 kPa).

Pursuant to 40 CFR §63.640(i) and (j), the proposed tank is not a new source because it was not constructed or reconstructed after July 14, 1994. The tank was initially constructed in 1996. There has been no reconstruction performed on the tank after 1996.

A permit modification application fee of \$200.00 for a minor modification was submitted by the applicant and processed.

3. Relocate Boiler No. 3 (Steam Generator) ID No. SG1102 from Attachment II(A): Special Conditions - Crude Distillation Unit to Attachment II(I): Special Conditions – Cogeneration Unit.

4. Remove the reference to oxygen enrichment and the corresponding permit limits in Attachment II(H): Special Conditions – Sulfur Recovery Plant. The level of SO₂ emissions with oxygen enrichment are not accounted for in the maximum potential to emit. The oxygen enrichment system has not yet been built (and it has probably been 20 years since it was permitted).

Equipment:

Refinery equipment consists of a crude distillation unit (CDU), a naphtha hydrotreater (NHT) and catalytic reformer unit (CRU), a hydrogen generation unit (HGU), a distillate hydrocracker unit (DHC), a sulfur recovery plant, a cogeneration unit (CGU) and package boiler, a vacuum distillation unit (VDU), a visbreaker unit (VBK), an asphalt heater and loading rack, a wastewater treatment unit (WTU), mercaptan treatment units, petroleum storage tanks, a flare, a light end recovery unit (LERU), and an amine treating unit (ATU). There is also a propane load rack and cylinder filling station. The maximum capacity of the refinery is 95,000 barrels of crude oil per day. For the purposes of the covered source permit, facility equipment is grouped according to common function and/or common applicable requirements, as follows:

1. Crude Distillation Unit (CDU) and Boiler No. 3
 - a. Crude Heaters No. 1, ID no. H101A (154 MMBtu/hr) and 2, ID no. H101B (144 MMBtu/hr)
 - b. Stabilizer Heaters No. 1, ID no. H102A (18 MMBtu/hr) and 2, ID no. H102B (8 MMBtu/hr)
 - c. Boiler No. 3 (Steam Generator), ID no. SG1102 (82 MMBtu/hr)
2. Naphtha Hydrotreater (NHT) and Catalytic Reformer Unit (CRU)
 - a. Naphtha Hydrotreater Charge Heater, ID no. H401 (26 MMBtu/hr)
 - b. Naphtha Hydrotreater Reboiler, ID no. H402 (17 MMBtu/hr)
 - c. Catalytic Reformer Charge Heater, ID no. H501 (124.4 MMBtu/hr)
 - d. Interheaters, ID no. H502 (96.4 MMBtu/hr), ID no. H503 (44.5 MMBtu/hr), and ID no. H504 (21.7 MMBtu/hr)
 - e. Methanol Storage Tote
3. Vacuum Distillation Unit (VDU)
 - a. Vacuum Unit Charge Heater, ID no. H175 (86 MMBtu/hr)
 - b. Vacuum Distillation Tower, ID no. T175
4. Distillate Hydrocracker Unit (DHC)
 - a. Hydrocracker Second Stage Charge Heater, ID no. H601 (40 MMBtu/hr)
 - b. Hydrocracker Fractionator Inlet Heater, ID no. H602 (77 MMBtu/hr)
 - c. Hydrocracker First Stage Charge Heater, ID no. H603 (76 MMBtu/hr)
5. Asphalt Heating and Loading
 - a. Asphalt Heater, ID no. H801 (33 MMBtu/hr)
 - b. Asphalt Loading Rack

PROPOSED

6. Visbreaker Unit (VBK)
 - a. Visbreaker Heater, ID no. H901 (75 MMBtu/hr)
 - b. Visbreaker Offgas Treater
 - c. Sulfix Storage Tank, TK 913
 - d. Sulfix Injection Tank, TK 912
7. Hydrogen Generation Unit (HGU)
 - a. Hydrogen Reformer Furnace, ID no. H2001(172.8 MMBtu/hr)
8. Sulfur Recovery Plant
 - a. Sulfur Recovery Unit No. 2 (SRU#2), ID no. BR1371 (2.5 MMBtu/hr)
 - b. Sulfur Recovery Unit No. 3 (SRU#3), ID no. BR 1381 (3.9 MMBtu/hr)
 - c. SCOT Tail Gas Treatment Unit, ID no. BR1393 (1.0 MMBtu/hr)
 - d. Tail Gas Incinerator, ID no. H1353 (3.8 MMBtu/hr)
 - e. Tail Gas Incinerator, ID no. H1391 (4.4 MMBtu/hr)
9. Cogeneration Unit (CGU) and Package Boiler
 - a. General Electric LM2500 Gas Turbine, ID no. TU2301 (230 MMBtu/hr)
 - b. Cogeneration Duct Burner (37 MMBtu/hr)
 - c. Waste Heat Boiler (heat recovery steam generator), ID no. SG2301
 - d. Packaged Boiler, ID no. SG1103 (126 MMBtu/hr)
10. Wastewater Treatment Unit (WTU)
 - a. Oil-Water Separator System
 - b. Recovered Oil System
 - c. Oily Sludge Dewatering System
 - d. Thermal Oxidizer (6.5 MMBtu/hr)
 - e. Activated Sludge System
 - f. Biosludge Dewatering System
 - g. Demineralizer Wastewater Treatment
 - h. Wastewater Collection System
11. Mercaptan Treatment Units
 - a. LPG Mercaptan Extraction Unit
 - b. Deisopentanizer (DIP) Overhead Sweetening Unit
 - c. Deisopentanizer (DIP) Bottoms Sweetening Unit
 - d. Kerosene Sweetening Unit
12. Flare (air or steam-assisted)
13. Petroleum Storage Tanks
 - a. Eight (8) Crude Oil Storage Tanks
(Tanks 101, 102, 103, 104, 105, 106, 107, 108)

- b. Seven (7) Recovered Oil/Wastewater Storage Tanks
(Tanks 109, 110, 111, 902, 3520, 3522, 3526)
 - c. Fifteen (15) Naphtha/Gasoline Storage Tanks
(Tanks 201, 202, 203, 204, 405, 509, 406, 407, 408, 501, 502, 510, 605, 610, 611)
 - d. Forty-One (41) Heavy Oil Storage Tanks
(Tanks 112, 200, 205, 206, 301, 302, 207, 303, 304, 305, 306, 307, 603, 606, 607, 311, 401, 402, 403, 404, 503, 504, 505, 506, 507, 508, 511, 512, 513, 514, 515, 516, 601, 602, 604, 608, 609, 903, 905, 1103, 2301)
14. Propane Load Rack and Cylinder Filling Station
- a. One (1) Propane Load Rack with six (6) truck loading stations
 - b. One (1) Cylinder Filling Station with two (2) cylinder filling positions
15. Miscellaneous Emission Sources and Requirements

Air Pollution Control Description:

Air pollution control technologies employed on various equipment are identified as follows:

1. The Vacuum Unit Charge Heater H175 is equipped with low-NO_x burners to minimize NO_x formation in combustion.
2. The Hydrocracker Fractionator Inlet Heater H602 and the Hydrocracker First Stage Charge Heater H603 are equipped with low-NO_x burners to minimize NO_x formation in combustion.
3. Tail gas from Sulfur Recovery Units Nos. 2 and 3 is absorbed in a SCOT tail gas unit and trace sulfur compounds from the tail gas unit are burned in a tail gas incinerator.
4. The Cogeneration Unit combustion turbine is equipped with water injection to minimize formation of NO_x in the combustor.
5. NSPS-Regulated Equipment – Some of the VOC equipment leaks subject to NSPS Subpart GGG are vented and directed to the flare for VOC destruction.
6. The Wastewater Treatment Unit (WTU) has a thermal oxidizer for VOC destruction.
7. The Visbreaker Offgas Treater is used to treat mercaptans, carbonyl sulfide and other reduced sulfur compounds.
8. The Flare is used for the incineration of large quantities of gases and liquids in the event of emergency releases from various refinery processes.
9. The petroleum storage tanks are equipped with external floating roofs or internal floating roofs for VOC control.

Insignificant Activities:

1. *Per HAR 11-60.1-82(f)(1)*
Organic liquid storage tanks smaller than 40,000 gallons:
 - a. Aboveground gasoline refueling tank
 - b. Aboveground diesel refueling tank
 - c. Tank 221 - Emulsion breaker
 - d. Tank 150 - Emulsion breaker

2. *Per HAR 11-60.1-82(f)(5)*
Emergency diesel generators:
 - a. EMG1 Tank farm emergency generator
 - b. EMG2 DHC emergency generator
 - c. EMG3 CGU blackstart generator
 - d. EMG-M1 emergency generator
 - e. EMG-M2 emergency generator

3. *Per HAR 11-60.1-82(f)(7)*
Activities deemed to be insignificant on a case by case basis by the Director:
 - a. Sulfur plant molten sulfur pit vents
 - b. Clay treaters
 - c. Process safety valve emissions
 - d. Degassing and other tank cleaning activities
 - e. Degassing and other shutdown and turnaround activities
 - f. Emissions from machining equipment
 - g. Emissions from handheld soldering equipment
 - h. Steam cleaning activities which may release grease or oil mists and volatiles
 - i. Hydroblasting and pressure hydrotesting activities which may release volatiles
 - j. Painting activities
 - k. Welding activities
 - l. Sandblasting activities
 - m. Activities involving the use of aerosol solvents, paints adhesives and lubricants
 - n. Abrasive blast cabinet (glovebox type)
 - o. Vehicle maintenance activities
 - p. Piping and equipment modifications that are minor in nature
 - q. Office activities
 - r. Onsite catalyst regeneration in the Catalytic Reformer Unit
 - s. Decoking emissions from the removal of carbon deposits from heater tubes during turnarounds
 - t. Unheated solvent rinse tanks
 - u. Emissions from fixed roofs tanks storing low vapor pressure products, i.e., tanks storing fuel oil, residual oil and asphalts
 - v. Gasoline and diesel dispenser used for plant vehicles
 - w. Continuous emissions monitor vent lines
 - x. Catalyst handling activities
 - y. Fugitive dust activities from vehicle operations not in violation of HAR 11-60.1-33
 - z. Vacuum truck activities within the facility
 - aa. Emissions from pest and weed control activities

- bb. Benzene Separation Project
 - cc. Second Amine Stripper in Amine Treating Unit
 - dd. Hydrotreating of diesel in the Distillate Hydrocracker (DHC) to produce ultra low sulfur diesel (ULSD)
4. *Per HAR 11-60.1-82(g)(2)*
Diesel engine equipments rated at less than 200 hp each which are used during power outages or intermittently for maintenance and repair purposes
 - a. compressors, pumps, and welding machines
 5. *Per HAR 11-60.1-82(g)(3)*
Hand-held equipment used for buffing, polishing, carving, cutting, drilling, machining, routing, sanding, sawing, surface grinding, or turning of ceramic air work, precision parts, leather, metal, plastics, fiberboard, masonry, carbon, glass, or wood
 6. *Per HAR 11-60.1-82(g)(4)*
Laboratory equipment used exclusively for chemical and physical analyses.
 - a. Fume hoods; 23 hoods with 12 exhaust vents
 - b. Laboratory bench top gas burners
 - c. Venting of unused gas samples
 - d. Laboratory vacuum pump exhaust vented to the roof
 - e. Laboratory knock test engines.
 7. *Per HAR 11-60.1-82(g)(8)*
Firewater system pumps dedicated for fire fighting and fired on diesel.
 - a. Emergency firewater pump, P-1105B
 - b. Emergency firewaer pump, P-1259
 8. *Per HAR 11-60.1-82(g)(9)*
Smoke generating systems used exclusively for certified fire fighting training facilities
 - a. Fire training pit
 9. *Per HAR 11-60.1-82(g)(10)*
Mobile internal combustion engines
 - a. Trucks, pickups, forklifts, manlifts, etc.
 10. *Per HAR 11-60.1-82(g)(13)*
Ovens, stoves, grills for preparing food in private dwellings, restaurants
 - a. Barbeque grills used on special occasions
 11. *Per HAR 11-60.1-82(g)(14)*
Stack or vents to prevent escape of sewer gases through plumbing traps
 - a. Refinery domestic sewer system

- 12. *Per HAR 11-60.1-82(g)15*
Air conditioning or ventilation systems
 - a. All building air conditioning systems

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 Prohibitions

HAR 11-60.1-31: Applicability

HAR 11-60.1-32: Visible Emissions

HAR 11-60.1-38: Sulfur Oxides from Fuel Combustion

HAR 11-60.1-39: Storage of Volatile Organic Compounds

HAR 11-60.1-40: Volatile Organic Compound Water Separation

HAR 11-60.1-41: Pump and Compressor Requirements

HAR 11-60.1-42: Waste Gas Disposal

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

Subchapter 7: Prevention of Significant Deterioration Review

Subchapter 8: Standards of Performance for Stationary Sources

HAR 11-60.1-161: New Source Performance Standards

Subchapter 9: Hazardous Air Pollutant Sources

HAR 11-60.1-174: Maximum Achievable Control Technology (MACT) Emission Standards

HAR 11-60.1-180: National Emission Standards for Hazardous Air Pollutants

Federal Requirements

40 CFR 60: New Source Performance Standards (NSPS)

Subpart A: General Provisions

Subpart J: Standards of Performance for Petroleum Refineries

(applies to following units)

Crude Heater No. 2 (H101B)

Boiler No. 3 (SG1102)

Naphtha Hydrotreater Charge Heater (H401)

Naphtha Hydrotreater Reboiler (H402)

Catalytic Reformer Charge Heater (H501)

Interheater (H502), Interheater (H503), Interheater (H504)

Vacuum Unit Charge Heater (H175)

Hydrocracker Second Stage Charge Heater (H601)

Hydrocracker Fractionator Inlet Heater (H602)

Hydrocracker First Stage Charge Heater (H603)

Asphalt Heater (H801)
Visbreaker Heater (H901)
Hydrogen Reformer Furnace (H2001)
SRU No. 2 and SRU No. 3
SCOT Tail Gas Unit
Tail Gas Incinerator (H1353)
Tail Gas Incinerator (H1391)
Cogeneration Gas Turbine (TU2301)
Package Boiler (SG1103)
WTU Thermal Oxidizer

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

(applies to the following petroleum storage tanks)

106, 406, 510, 407, 408, 605

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

(applies to the following petroleum storage tank)

902

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

(applies to the following petroleum storage tanks)

107, 108, 109, 110, 111, 610, 611, 3520, 3522, 3526

Subpart GG: Standards of Performance for Stationary Gas Turbines

(applies to the following unit)

Cogeneration Gas Turbine (TU2301)

Subpart GGG: Standards of Performance for Equipment Leaks of VOC in Petroleum Refineries

(applies to the following)

All valves, pumps, pressure relief devices, sampling connections, open-ended valves or lines, and flanges or other connectors in VOC service as defined in §60.481 of 40 CFR Part 60, Subpart VV, at the following units:

Crude Distillation Unit (CDU)

Vacuum Distillation Unit (VDU)

Distillate Hydrocracker Unit (DHC)

Asphalt Manufacturing Unit (AMU)

Visbreaker Unit (VBK)

Mercaptan Treatment Units

Amine Treatment Unit (ATU)

Light Ends Recovery Unit (LERU) except for T2501 (Deethanizer) and

T2502 (C3/C4 Splitter)

Fuel Gas System in the Utilities Area

Flare Vapor Recovery System

Compressors C103, C602C, C901, C1108 and C2503

Naphtha Hydrotreater (NHT)

Catalytic Reformer Unit (CRU)
Hydrogen Generating Unit (HGU)
Flare

Subpart QQQ: Standards of Performance for VOC Emissions From Petroleum Refinery
Wastewater Systems

(applies to the following)

All individual drain systems, as defined in §60.691 of 40 CFR Part 60, Subpart QQQ, and for which construction, modification, or reconstruction is commenced after May 4, 1987, at the following units:

Crude Distillation Unit (CDU)
Asphalt Manufacturing Unit (AMU)
Visbreaker Unit (VBK)
Catalytic Reformer Unit (CRU)
Light Ends Recovery Unit (LERU)
Hydrogen Compressor
Compressor C604
Wastewater Treatment Unit (WTU)

40 CFR Part 61: National Emission Standards for Hazardous Air Pollutants (NESHAP)

Subpart A: General Provisions

Subpart FF: National Emission Standard for Benzene Waste Operations

(applies to the following unit)

Wastewater Treatment Unit (WTU)

40 CFR Part 61: National Emission Standards for Hazardous Air Pollutants (NESHAP)

Subpart A: General Provisions

Subpart J: National Emission Standard for Equipment Leaks (Fugitive Emission Sources) of Benzene

(applies to the following)

All pumps, compressors, pressure relief devices, sampling connection systems, open-ended valves or lines, valves, flanges and other connectors, product accumulator vessels, control devices or systems intended to operate in benzene service as defined in §61.111 of 40 CFR Part 61, Subpart J

40 CFR Part 63: National Emission Standards for Hazardous Air Pollutants for Source Categories (MACT)

Subpart A: General Provisions

Subpart CC: National Emission Standards for Hazardous Air Pollutants from Petroleum Refineries

(applies to the following)

All pumps, compressors, pressure relief devices, sampling connection systems, open-ended valves or lines, valves, or instrumentation systems in organic hazardous air pollutant service, as defined in 63.641 of 40 CFR Part 63, Subpart CC

Flare
Petroleum Storage Tanks
Wastewater Treatment Unit (WTU)
Mercaptan Treatment Units

Subpart DDDDD: National Emission Standards for Hazardous Air Pollutants for Industrial, Commercial, and Institutional Boilers and Process Heaters
(applies to the following unit)
Asphalt Heater (H801)

40 CFR Part 68, Chemical Accident Prevention Provisions
(applies to the storage and use of flammable substances in this facility)

Application File No. 0212-28 (Minor Modification)

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

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 9: Hazardous Air Pollutant Sources

HAR 11-60.1-174: Maximum Achievable Control Technology (MACT) Emission Standards

Federal Requirements

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

The proposed tank is subject to 40 CFR §63.640(a) because:

- The proposed tank is located at a plant site that is a major source.
- The tank's content, Sulfix, contains methanol, a chemical listed as a hazardous air pollutant in 40 CFR Part 63 Subpart CC.

The proposed tank is also subject to 40 CFR §63.640(c) because it is considered as a storage vessel associated with petroleum refining process units meeting the criteria in 40 CFR §63.640(a).

The proposed tank is subject to 40 CFR §63.640(l) as a miscellaneous storage vessel that meets the criteria in 40 CFR §63.640(c), that is added to an existing petroleum refinery and is not subject to the new source requirements. In compliance with this regulation, the following requirements apply to the proposed tank:

- The tank's emission point is subject to the requirements for an existing source.
- The tank's emission point shall be in compliance upon initial startup.

- If the tank's emission point becomes a Group 1 emission point, compliance to Group 1 emission point requirements shall be completed upon initial startup.
- Comply with the reporting and recordkeeping requirements that are applicable to existing sources.
- Notification of compliance status for pumps, sampling connection system, and valves of the proposed tank is not required.

Non-Applicable Requirements:

Hawaii Administrative Rules (HAR)

Title 11, Chapter 60.1: Air Pollution Control

Subchapter 7: Prevention of Significant Deterioration

Subchapter 8: Standards of Performance for Stationary Sources

Subchapter 9: Hazardous Air Pollutant Sources

HAR 11-60.1-180: National Emission Standards for Hazardous Air Pollutants

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 for which Construction, Reconstruction, or Modification Commenced after July 23, 1984. The proposed TK 912 was initially constructed in 1996. The latest recorded modification to the tank was conducted in 2005, where the tank was changed from storing KOH to sulfix. Although the tank modification was commenced after July 23, 1984, 40 CFR Part 60 Subpart Kb does not apply to the proposed tank because the tank has a capacity of less than 75 m³ storing a liquid with a maximum true vapor pressure of less than 3.4 kpa.

40 CFR Part 61 - National Emission Standards for Hazardous Air Pollutants (NESHAPS)

Prevention of Significant Deterioration (PSD):

The facility did not trigger a PSD review since this facility is not a *new* major stationary source nor does the application propose any *major modifications* to a major stationary source as defined in HAR 11-60.1-131.

Best Available Control Technology (BACT):

A BACT analysis is required for new covered sources and significant modifications to covered sources that have the potential to emit or a cause a net emissions increase above significant levels as defined in HAR §11-60.1-1. Since this is not a new source nor are there any modifications proposed that have the potential to cause a significant net increase in air pollutant emissions, a BACT analysis is not required.

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 or Type B point sources (as defined in 40 CFR Part 51, Subpart A), that emit at the CER triggering levels as show in the table below.

PROPOSED

Pollutant	Type A CER Triggering Levels ¹ (tpy)	Type B CER Triggering Levels ¹ (tpy)	Pollutant	In-house Total Facility Triggering Levels ² (tpy)	Total Facility Emissions ² (tpy)
NO _x	≥ 2500	≥ 100	NO _x	≥ 25	2475
SO _x	≥ 2500	≥ 100	SO _x	≥ 25	2629
CO	≥ 2500	≥ 1000	CO	≥ 250	786
PM ₁₀ /PM _{2.5}	≥ 250/250	≥ 100/100	PM/PM ₁₀	≥ 25/25	PM = 292, PM ₁₀ = 259, PM _{2.5} = 160
VOC	≥ 250	≥ 100	VOC	≥ 25	490
			HAPS	≥ 5	78

¹ Based on actual emissions
² Based on potential emissions

This facility emits above the CER triggering levels. Therefore, CER requirements are applicable.

The Clean Air Branch also requests annual emissions reporting for all covered sources and from those facilities that have facility-wide emissions of a single air pollutant exceeding in-house triggering levels. Annual emissions reporting is required for this facility for in-house recordkeeping purposes because it is a covered source and facility-wide emissions of NO_x, SO_x, CO, PM/PM₁₀, VOC and HAPS exceed in-house triggering levels.

Compliance Assurance Monitoring (CAM):

40 CFR Part 64

Applicability of the CAM Rule is determined on a pollutant specific basis for each affected emission unit. Each determination is based upon a series of evaluation criteria. In order for a source to be subject to CAM, each source must:

- Be located at a major source per Title V of the Clean Air Act Amendments of 1990;
- Be subject to federally enforceable applicable requirements;
- Have pre-control device potential emissions that exceed applicable major source thresholds;
- Be fitted with an “active” air pollution control device; and
- Not be subject to certain regulations that specifically exempt it from CAM.

Emission units are any part or activity of a stationary source that emits or has the potential to emit any air pollutant.

There are no CAM plans required to be submitted with this renewal application, nor are any additional CAM requirements needed to be incorporated into the refinery’s covered source permit.

Alternate Operating Scenarios:

None proposed.

Project Emissions:

The tables below summarizes estimated total annual emissions of criteria pollutants and hazardous air pollutants from the various sources within the refinery. These emissions represent only an estimate of the potential emissions assuming each source operates at its full capacity for the entire year. The actual annual emissions in any given operating year may be significantly less than the emissions presented in these tables.

Emissions were quantified by the same general methods as used in the original Title V permit application. Updated emission factors, more stringent permit condition changes, and revised source test data resulted in the lowering of all pollutant emissions (except for CO) when compared to the original Title V permit application. Note that the CO emissions are greater than the original Title V permit application due to the updated AP-42 emission factors for RFG burning.

Emissions Summary - Criteria Pollutants

Emission Unit	NO_x (tpy)	SO₂ (tpy)	CO (tpy)	VOC (tpy)	PM(tot) (tpy)	PM₁₀ (tpy)	PM_{2.5} (tpy)	H₂S (tpy)	Pb (tpy)
Heaters & Boilers, Cogen	2434.1	2140.4	702.8	32.5	288.8	255.9	157.0	2.3	0.1
SRU/TGU/H1391	3.9	0.6	1.6	0.1	0.1	0.1	0.1	0	0
Incinerators H802,H1353, TOU	24.5	21.7	12.1	0.8	1.1	1.1	1.1	0.1	0
Flare	13	466	70	26.4	1	1	1	2	0
Fugitive Equipment Leaks	0	0	0	204.7	0	0	0	0	0
Drains	0	0	0	43.3	0	0	0	0	0
Tanks	0	0	0	178.8	0	0	0	0	0
Loading Racks	0	0	0	3.2	0.9	0	0	0	0
Total	2475	2629	786	490	292	259	160	5	0.1

PROPOSED

Emissions Summary – Hazardous Air Pollutants (HAPS)

Specific Compound	Heaters & Boilers (lbs/yr)	Cogen & Duct Burner (lbs/yr)	Incinerators H802,H1353, TOU (lbs/yr)	Flare (lbs/yr)	Tanks (lbs/yr)	Drains (lbs/yr)	Fugitive Equipment Leaks (lbs/yr)	Loading Racks (lbs/yr)	Total (lbs/yr)
Antimony	248								248
Arsenic	63	22	0	0					86
Beryllium	1	1	0	0					2
Cadmium	25	10	0	0					36
Chromium	48	23	0	1					71
Cobalt	284	0	0	0					284
Lead	74	28	0	0					103
Manganese	144	1592	0	0					1736
Mercury	7	3	0	0					9
Nickel	3996	10	1	1					4008
Phosphorus	446								46
Selenium	32	50	0	0					83
Benzene	22	12	1	1	3566	11685	7919		23205
Toluene	3				2916	9553	9265		21736
Ethylbenzene	311	1	1	1	254	832	1913		3313
m-xylene					1479	4847	4748		11073
o-xylene	5				194	634	2898		3731
p-xylene					239	782	2549		3570
Methane							6355		6355
Ethane							8293		8293
Propane							26723		26723
n-butane							14403		14403
Isobutane							12373		12373
n-Pentane							13191		13191
Isopentane							14697		14697
n-Hexane					17766	58211	10574		86551
Ethylene Dichloride							401		401
Hydrogen							24453		24453
Ammonia							120		120
Hydrogen Sulfide							816		816
Cumene					2	7			9
Formaldehyde	1971	588	22	28					2608
Dichlorobenzene	7	0	0	0					
Trichloroethane	11								
Naphthalene	57	71	0	0	14	45	105		291
POM (excluding Naphthalene)	3	10	0	0					15
Total	7758	2421	25	33	26429	86596	40370		156503

Ambient Air Quality Analysis:

No significant modifications such as the installation of new equipment (emission sources) or relaxation of permit conditions are being proposed. Since there will be no increase in the emissions of any air pollutant due to a physical change or a change in the method of operation, nor will any air pollutant not previously permitted be released, an ambient air quality impact assessment is not required. Modeling conducted for the original Title V permit demonstrated that even when the refinery is emitting its maximum or worst case emissions, ambient air quality standards are not exceeded. The ambient impacts predicted to occur for the petroleum refinery are all below the State of Hawaii and the National Ambient Air Standards.

Discussion of Results and Conclusion:

For this covered source permit renewal, previous significant modifications and minor modifications to the existing covered source permit were consolidated into the permit renewal. Permit language were also updated and clarified. There are no new equipment or relaxation of permit conditions in the permit renewal. Recommend issuance of the draft covered source permit, subject to the following:

1. 30-day public comment period; and
2. 45-day EPA review period.

Reviewer: Darin Lum
Date: 12/2009