PROPOSED

Minor Modifications to a Covered Source
Review Summary

Application File Nos.: 0212-24/0212-25/0212-26

Permit No.: 0212-01-C

Applicant: Tesoro Hawaii Corporation

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

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Kapolei, HI 96707

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

Point of Contact: Mr. Theodore K. Metrose
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(808) 479-9886

Application Dates: 0212-24: January 21, 2008
0212-25: February 1, 2008
0212-26: February 4, 2008

Proposed Project:

SICC 2911 (Petroleum Refining)

Minor Modification No. 0212-24

This application is to modify permit conditions for the Visbreaker (VBK) and the Visbreaker Offgas Hydrotreater (VOT or VHT) as set forth in Attachment II(F) of the Title V permit.

There will be no physical modifications to process equipment or air pollution control equipment. The proposed changes are presented below:

- The 480 hour allowance to operate the VBK without the VHT will be eliminated. Also, the 9 lb/hr emission limit, applicable to the VBK when operated without the VHT, will be eliminated. The 9 lb/hr SO_2 limit is inappropriate because it is equivalent to approximately 1070 ppm of total sulfur in the fuel gas. The revised conditions will be more consistent with EPA's current interpretations regarding breakdowns/malfunctions and alternative operating scenarios under the Title V permit program. The VBK would not be authorized to operate without the VHT in service (unless it is as a result of a qualifying malfunction).

- Consistent with NSPS Subpart J and proposed Subpart Ja, a 20 ppm SO_2 limit will be added as a permit condition. The addition of this condition will also serve to eliminate the inference that the NSP limit may be exceeded while conducting maintenance on the VHT. Source testing, conducted prior to installation of the VHT, has indicated that operation of the VBK heater without the VHT in service would normally lead to SO_2 emissions in excess of 20 ppm (at 0% excess O_2), the alternative standard set forth in Subpart J at §60.105(a)(3)(iii) and Subpart Ja.

- The proposed changes will have the effect of lowering the maximum hourly emission rate from 9 to 2.2 lbs/hr. As a result, there will be a reduction in the Potential to Emit (PTE) of approximately 1.6 tons per year of SO_x emissions as calculated below.

  SO_x = MMBtu/hr x Dry Fuel Factor (Fd) dscf/MMBtu x 64 lb SO_2/mole x 20 ppm SO_2 / (385.3 scf @ 68 °F /mole)

  SO_x = (75 MMBtu/hr) x (8740 dscf/MMBtu) x (64 lb SO_2/mole) x 20 / (385.3 scf x 1,000,000) = 2.2 lb SO_2/hr

PTE reduction:

480 hours x (9-2.2 lbs/hr) = 3264 lbs/yr = 1.632 tpy

- The PTE reduction above is only that portion which is applicable to the Visbreaker heater. Additional PTE reductions would result because there is a common fuel gas system. The current Title V permit was based on maximum SO_2 emission rates (using 1070 ppm total sulfur) for the VBK heater (and all other refinery fuel gas combustion devices) with the VHT not operating. Elimination of the 480 hour maintenance allowance and addition of the new 20 ppm limit, will provide a more stringent PTE cap on SO_2 emissions, throughout the refinery. Those reductions will be quantified (and potentially modeled) as part of the refinery's Title V permit renewal. While the PTE reduction is meaningful for individual sources that burn exclusively RFG, it has virtually no impact on those combustion sources that are fired on fuel oil, with up to 0.5% sulfur.

- The H_2S in fuel gas limit of 0.10 grain of H_2S/dscf (approximately 162 ppm), applicable to all NSPS Subpart J fuel gas combustion devices will be retained, as will all related monitoring requirements.

- The total sulfur limit of 0.10 grain of H_2S /dscf, will be replaced with a limit of 258 ppm. The current total sulfur limit was originally established with the intent of making it equivalent to the alternative NSPS limit of 20 ppm SO_2. That objective is directly sufficed by the addition of the 20 ppm limit as an explicit permit condition. Since mercaptans and carbonyl sulfide are included in the total sulfur content, the 162 ppm total sulfur is substantially more stringent than the 162 ppm H_2S-only limit imposed on other NSPS facilities. The current total sulfur condition limit appears to have been based on an overly conservative assumption (setting the total sulfur limit equal to the H_2S limit). The total sulfur limit should be revised to more closely align with the alternative (and proposed) NSPS limit of 20 ppm as calculated below:

Molar Ratio (MR) = Moles of Flue Gas Produced per Moles of RFG Burned, at zero O_2
= Fd (dscf/MMBtu) x HHV (Btu/scf)
= (8740 dscf/MMBtu) x (1476 Btu/scf) / 1,000,00
= 12.9 moles Flue Gas / 1 mole of Refinery Fuel Gas (RFG)

Where: Fd is based on 40 CFR 60 Appendix A Method 19 and set equal to the value currently specified in the VBK permit.
HHV is the Higher Heating Value of the RFG as listed in several sections of the current Title V permit.

Total Sulfur ppm = 20 SO_2/MM Flue x (12.9 mole Flue/ 1 mole RFG) x (1 mole H_2S/1 mole SO_2)
= 258 H_2S/MM RFG
= 258 ppm total sulfur (reported as H_2S) in the RFG

- The sampling frequency for the total sulfur content would be reduced to reflect the fact that the VHT must be in operation at all times the VBK is in operation. Instead of weekly, the fuel gas bomb sample would be taken no fewer than 2 times a month.

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

Minor Modification No. 0212-25

This is an application to operate a Sulfix storage tank (TK 913) with a design capacity of 6,000 gallons and a working capacity of 5,400 gallons. This tank is currently empty and had previously been used to store caustic. The change in service triggers the applicability of 40 CFR 63 Subpart CC and therefore should be listed in the Title V permit. 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:	10 feet
Height:	10 feet, 6 inches
Design Capacity:	6,000 gallons
Working Capacity:	5,400 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 H_2S 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 H_2S 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 m^3 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 m^3 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 TK913 is located at an existing source.
- Tank TK913's design capacity is 6,000 gallons or 22.7 m^3 (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 1971. There has been no reconstruction performed on the tank after 1971.

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

Minor Modification No. 0212-26

This is an application to operate a 350 gallon Methanol storage tote. There is a small pump and related valve systems which are used to continuously inject methanol in to the CRU at approximately 3.5 gallons per day. The methanol converts to methane and water and is used to control the water content of the hydrogen recycle gas. The water properly distributes chloride throughout the CRU catalyst to maintain activity. Chloride is also continuously injected into the CRU in the form of perchloroethylene. Continuous injection of methanol and chloride is a basic design requirement for the CRU. As such, the injection of methanol was approved as part of the original CRU permit application. This minor modification application is being submitted principally to ensure that the permit reflects that the storage tote is uniquely bound by a different set of standards under 40 CFR 63 Subpart CC.

Equipment Description:

Type:	Vertical Fixed Roof Storage Tote
Length:	4 feet
Width:	3.5 feet
Height:	3.5 feet
Design Capacity:	350 gallons
Working Capacity:	330 gallons
Roof Type:	Flat
Content Throughput:	3.6 gallons/day
Shell:	Aluminum base, not painted

Content Description:

Chemical Name:	Methanol
CAS No.:	67-56-1
Molecular Weight:	32.04 lb/lbmol
Vapor Pressure:	3.1 psia at 85°F

Tank Category:

In accordance with 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 m^3 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 m^3 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 regulation, the proposed tote is considered a Group 2 storage tank because:

- Although Methanol true vapor pressure at its average liquid temperature (85 °F) is 3.1 psia or 21.37 kPa (larger than 8.3 kPa), the tote's design capacity is 350 gallons or 1.32 m^3 (less than 177 m^3).

In accordance with 40 CFR §63.640(i), a storage vessel is considered a new source if it meets the following criteria:

- It is constructed after July 14, 1994, and
- The addition has the potential to emit 10 tons per year or more of any hazardous air pollutant or 25 tons per year or more of any combination of hazardous air pollutant.

Pursuant to the above regulation, the proposed tote is not a new source because although it was constructed after July 14, 1994, it does not has the potential to emit 10 tons per year or more of any hazardous air pollutant or 25 tons per year or more of any combination of hazardous air pollutants.

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

Applicable Requirements:

Minor Modification No. 0212-24

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 8 Standards of Performance for Stationary Sources

Federal Requirements
40 CFR Part 60 - Standards of Performance for New Stationary Sources (NSPS)
Subpart J - Standards of Performance for Petroleum Refineries

Minor Modification No. 0212-25

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.

Minor Modification No. 0212-26

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 8 Standards of Performance for Stationary 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 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:

Minor Modification No. 0212-24

Hawaii Administrative Rules (HAR)

Title 11, Chapter 60.1 Air Pollution Control
Subchapter 7 Prevention of Significant Deterioration
Subchapter 9 Hazardous Air Pollutant Sources

Federal Requirements

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

Minor Modification No. 0212-25

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

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 913 was initially constructed in 1971. The latest recorded modification to the tank was conducted in 1997 to modify the ports and flanges to accommodate the storage of KOH. 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 m^3 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)

Minor Modification No. 0212-26

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

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. Although the tote construction was commenced after July 23, 1984, in accordance with the applicability definition specified in 40 CFR Part 60 Subpart Kb, §60.110b(a), the provision does not apply to the proposed tote because its capacity is less than 75 m^3.

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

Best Available Control Technology (BACT):

Minor Modification Nos. 0212-24, 0212-25, 0212-26

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 there are no net emissions increases above significant levels from the proposed modifications.

Prevention of Significant Deterioration (PSD):

Minor Modification Nos. 0212-24, 0212-25, 0212-26

These minor modifications are not subject to PSD review as the modifications are not considered major modifications to a major stationary source as defined in HAR §11-60.1-131.

Consolidated Emissions Reporting Rule (CERR):

Minor Modification Nos. 0212-24, 0212-25, 0212-26

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 1.

TABLE 1. - CERR/IN-HOUSE REPORTING APPLICABILITY

Pollutant	Type A CER Triggering Levels [1,2] (tpy)	Type B CER Triggering Levels [1] (tpy)	Pollutant	In-house Total Facility Triggering Levels [3] (tpy)
NO_x	≥2500	≥100	NO_x	≥25
SO_x	≥2500	≥100	SO_x	≥25
CO	≥2500	≥1000	CO	≥250
$PM_{10}/PM_{2.5}$	≥250/250	≥100/100	PM/PM_{10}	≥25/25
VOC	≥250	≥100	VOC	≥25
			HAPS	≥5

[1] Based on actual emissions
[2] Type A sources are a subset of Type B sources and are the larger emitting sources by pollutant
[3] 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):

Minor Modification Nos. 0212-24, 0212-25, 0212-26

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

Synthetic Minor Source:

Minor Modification Nos. 0212-24, 0212-25, 0212-26

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

Insignificant Activities:

Minor Modification Nos. 0212-24, 0212-25, 0212-26

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

Alternate Operating Scenarios:

Minor Modification Nos. 0212-24, 0212-25, 0212-26

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

Project Emissions:

Minor Modification No. 0212-24

PTE reduction: 480 hours x (9-2.2 lbs/hr) = 3264 lbs/yr = 1.632 tpy

Minor Modification No. 0212-25

Source	HAPs (lb/yr)	ROG (lb/yr)
TK 913	32	103
Fugitive Emissions	107	345
Total	139	448

EPA Tanks 4.09d program used to calculate emissions.

Fugitive emissions from the pumps, valves, and ports of the proposed tank were estimated using Protocol of Equipment Leaks published by EPA in November 1995. Control efficiencies were applied to account for the periodic Leak Detection and Repair (LDAR) program implemented by Tesoro. The existing permit conditions set forth in the Miscellaneous Section of the permit are sufficient to convey that fugitive components related to the tank are to be monitored in accordance with the Refinery MACT standards.

Minor Modification No. 0212-26

Project Emissions:

Methanol Tote	Methanol (lb/yr)
Storage Loss Emissions	1.34
Working Loss Emissions	2.98
Fugitive Emissions	230.63
Total Emissions	234.95

EPA AP-42, Section .1 Organic Liquid Storage Tank (11/06) was used to calculate potential methanol emission rates for the tote. The tote input parameters were assumed to represent a reasonable worst-case operational scenario at the refinery. This tote assignment and throughput represent a realistic upper bound emission rate from the proposed tote. Fugitive emissions from the pumps, valves, and ports of the proposed tote were estimated using Protocol of Equipment Leaks (11/95). Control efficiencies were applied to account for the periodic Leak Detection and Repair (LDAR) program implemented by Tesoro. The existing permit conditions set forth in the Miscellaneous Section of the permit are sufficient to convey that fugitive components related to the tank and the entire CRU are to be monitored in accordance with the Refinery MACT standards.

Ambient Air Quality Assessment:

Minor Modification No. 0212-24

An Ambient Air Quality Impact Assessment (AAQIA) was not performed since there are no emission increases.

Minor Modification No. 0212-25

An Ambient Air Quality Impact Assessment (AAQIA) was not performed on the tank, since there are no ambient air quality standards for ROG and HAPs.

Minor Modification No. 0212-26

An Ambient Air Quality Impact Assessment (AAQIA) was not performed on the tote, since there are no ambient air quality standards for HAPs.

Significant Permit Conditions:

Minor Modification No. 0212-24

The following permit conditions in Attachment II(F) of Covered Source Permit (CSP) No. 0212-01-C were modified as shown. As is custom when modifying regulatory language, new language is underlined, while [deleted language is shown in brackets].

Minor Modification No. 0212-25

The Sulfix Storage Tank 913 will be included in the Equipment Description section of Covered Source Permit (CSP) No. 0212-01-C, Attachment II(F): Special Conditions – Visbreaker Unit.

Minor Modification No. 0212-26

The methanol tank will be included in the Equipment Description section of Covered Source Permit (CSP) No. 0212-01-C, Attachment II(B): Special Conditions – Naphtha Hydrotreater and Catalytic Reformer Unit.

Conclusion and Recommendations:

Minor Modification Nos. 0212-24, 0212-25, 0212-26

Recommend issuance of the minor modifications to existing Covered Source Permit No. 0212-01-C based on the significant permit conditions shown above. Compliance with all State and Federal regulations will be maintained, including the State and National ambient air quality standards. A 45-day EPA review period is also required before issuance of the permit modifications.

Reviewer: Darin Lum
Date: 6/08

ATTACHMENT II(F): SPECIAL CONDITIONS
COVERED SOURCE PERMIT NO. 0212-01-C

Visbreaker Unit

Amended Date: **Expiration Date: November 5, 2012**

In addition to the standard conditions of the Covered Source Permit, the following special conditions shall appy to the permitted facility:

Section A. Equipment Description

1. This portion of the Covered Source Permit encompasses the following equipment and associated appurtenances of the Visbreaker Unit (VBK):

    a. Visbreaker Heater, ID no. H901

        i. 75 MMBtu/hr heat input

    b. Visbreaker Offgas Treater

    c. Sulfix Storage Tank, TK 913

        i. Vertical Fixed Roof
        ii. 6000 gallons capacity

    (Auth.: HAR §11-60.1-3)

2. The permittee shall permanently attach an identification tag or nameplate on each piece of equipment which identifies the model number, serial or I.D. number and manufacturer. The identification tag or nameplate shall be attached to the equipment in a conspicuous location.

    (Auth.: HAR §11-60.1-5, §11-60.1-90)

Section B. Applicable Federal Regulations

1. The visbreaker heater H901 is subject to the provisions of the following federal regulations:

    a. 40 CFR Part 60, New Source Performance Standards (NSPS)

        i. Subpart A, General Provisions; and
        ii. Subpart J, Standards of Performance for Petroleum Refineries.

    The permittee shall comply with all applicable requirements of these standards, including all emission limits, notification, reporting, monitoring, testing and recordkeeping requirements. The major requirements of these standards are detailed in the special conditions of this permit.

(Auth.: HAR §11-60.1-3, §11-60.1-90, §11-60.1-161; 40 CFR §60.1, §60.100) [1]

Section C. Operational and Emission Limitations

1. The visbreaker heater shall be fired only on refinery fuel gas (RFG) with a hydrogen sulfide (H_2S) content not to exceed 230 mg/dscm (0.10 gr/dscf).

   (Auth.: HAR §11-60.1-3, §11-60.1-90, §11-60.1-161; 40 CFR §60.104) [1]

2. At all times the permittee shall operate and maintain a visbreaker offgas treater to treat mercaptans, carbonyl sulfide and other reduced sulfur compounds generated by the visbreaker. The total of all sulfur compounds in the refinery fuel gas (RFG) burned in the refinery shall not exceed the total sulfur equivalent of 258 ppm. [0.10 grains H_2S/dscf of fuel gas except when the Visbreaker Offgas Hydrotreater (VHT) is undergoing maintenance; such periods not to exceed 480 hours per year, exclusive of those hours during which the visbreaker unit is not operating.]

   (Auth.: HAR §11-60.1-3, §11-60.1-90, §11-60.1-161, 40 CFR §60.104)[1]

3. Maximum Emission Limits

   a. The visbreaker heater shall not discharge or cause the discharge into the atmosphere emissions of nitrogen oxides (as NO_2) in excess of 0.12 lb/MMBtu.

   b. [During periods when the visbreaker offgas treater is undergoing maintenance,] The visbreaker heater shall not discharge or cause the discharge into the atmosphere emissions of sulfur dioxides (SO_2) in excess of 20 ppm (dry basis, zero percent excess air)[9.0 lb/hr (3-hour average). Such periods shall not exceed 480 hours per year.]

   (Auth.: HAR §11-60.1-3, §11-60.1-90)

4. The visbreaker heater is exempt from a Prevention of Significant Deterioration (PSD) review due to the emissions restrictions listed above. Any relaxation in these limits that results in an emissions increase [increases your potential to emit] above the [applicable] significant PSD threshold will require a full PSD review of the source [as though construction had not yet commenced on the source].

   (Auth.: HAR §11-60.1-3, §11-60.1-90)

5. Visible Emissions (V.E.)

   For any six (6) minute averaging period, the visbreaker heater shall not exhibit visible emissions of twenty (20) percent opacity or greater, except as follows: during startup, shutdown, or equipment breakdown, the visbreaker heater may exhibit visible emissions

greater than twenty (20) percent opacity but not exceeding sixty (60) percent opacity for a period aggregating not more than six (6) minutes in any sixty (60) minutes.

(Auth.: HAR §11-60.1-3, §11-60.1-32, §11-60.1-90; SIP §11-60-24) [2]

Section D. Monitoring and Recordkeeping Requirements

1. Compliance, on a continuous basis, with the sulfur limits imposed in Special Condition No. C.2. of this Attachment shall be determined by total sulfur analysis in the fuel gas using ASTM methods D5504-94, D5453-93 or other methods approved by the Department of Health. The fuel gas shall be analyzed a minimum of twice a month[once weekly] to ensure continuing compliance.

   (Auth.: HAR §11-60.1-3, §11-60.1-90)

2. Continuous Emissions Monitoring System (CEMS)

   a. The permittee shall operate and maintain a continuous emission monitoring system (CEMS) for continuously monitoring and recording the concentration (dry basis) of H_2S in the RFG before being burned in the visbreaker heater.

   b. The CEMS shall meet the following requirements:

      i. The span value for the CEMS is 425 mg/dscm (300 ppmv) H_2S.

      ii. All fuel gas combustion devices, including the visbreaker heater, having a common source of fuel gas may be monitored at one location, if monitoring at this location accurately represents the concentration of H_2S in the RFG being burned.

      iii. Performance evaluations for the H_2S CEMS shall be in accordance with 40 CFR §60.13. The H_2S CEMS shall meet 40 CFR Part 60, Appendix B, Performance Specification 7, Specifications and Test Procedures for Hydrogen Sulfide Continuous Emissions Monitoring Systems in Stationary Sources; and Appendix F, Quality Assurance Procedures. 40 CFR Part 60, Appendix A, Method 11 shall be used in conducting any relative accuracy test audit (RATA).

      iv. Cylinder Gas Audits (CGA) shall be conducted on a quarterly basis in accordance with 40 CFR Part 60, Appendix F, Section 5.1.2. Since performance specification test procedures are only intended for the initial test of the H_2S CEMS, RATAs need not be performed on an annual basis, unless requested by the Department of Health; or there is a significant change or performance deficiency of the CEMS.

      v. Calibration Drift (CD) assessments shall be performed on a daily basis pursuant to 40 CFR Part 60, Appendix F, Section 4.1.

   (Auth.: HAR §11-60.1-3, §11-60.1-90, §11-60.1-161; 40 CFR §60.105) [1]

3. Visible Emissions (V.E.)

   a. The permittee shall conduct **monthly** *(calendar month)* V.E. observations for each equipment subject to opacity limitations in accordance with 40 CFR Part 60, Appendix A, Method 9 or by use of a Ringelmann's chart as provided. For each period, two (2) observations shall be taken at fifteen (15) second intervals for six (6) consecutive minutes for each equipment. Records shall be completed and maintained in accordance with the *Visible Emissions Form Requirements*.

   b. The permittee shall conduct **annually** *(calendar year)* V.E. observations for each equipment subject to opacity limits by a certified reader in accordance with 40 CFR Part 60, Appendix A, Method 9. For each period, two (2) observations shall be taken at fifteen (15) second intervals for six (6) consecutive minutes for each equipment. Records shall be completed and maintained in accordance with the *Visible Emissions Form Requirements*.

   c. Upon written request and justification, the Department of Health may waive the requirements for the **annual** V.E. observations. The waiver request is to be submitted prior to the required test and must include documentation justifying such action. Documentation should include, but is not limited to, the results of the prior tests indicating compliance by a wide margin, documentation of continuing compliance, and further that operations of the source have not changed since the previous **annual** V.E. observations. The annual V.E. observations shall not be waived for more than two consecutive years.

   (Auth.: HAR §11-60.1-3, §11-60.1-11, §11-60.1-32, §11-60.1-90; SIP §11-60-15, §11-60-24)[2]

4. The permittee shall report [maintain a file for] any period in which the visbreaker offgas treater is not operating [undergoes maintenance] while the visbreaker is in operation, in accordance with Standard Condition No. 17 of Attachment I. [The file shall include the maintenance dates and the corresponding emission rates of SO_2.]

   (Auth.: HAR §11-60.1-3, §11-60.1-90)

5. The permittee shall maintain a file containing records of the concentration of hydrogen sulfide in RFG, as measured by the continuous emission monitoring system.

   (Auth.: HAR §11-60.1-3, §11-60.1-11, §11-60.1-90, §11-60.1-161; 40 CFR §60.7) [1]

6. The permittee shall maintain a file of all measurements and monitoring data, including the continuous monitoring system performance evaluations; continuous monitoring system calibration checks; adjustments and maintenance performed on the monitoring system or devices; and all other information required to be recorded by 40 CFR §60.13 in a permanent form suitable for inspection.

(Auth.: HAR §11-60.1-3, §11-60.1-11, §11-60.1-90, §11-60.1-161; 40 CFR §60.7) [1]

7. All records, including supporting information, shall be maintained at the facility for at least five (5) years from the date of the monitoring sample, measurements, tests, reports, or application. Support information includes all calibration and maintenance records and copies of all reports required by the permit. These records shall be in a permanent form suitable for inspection and made available to the Department of Health or their representatives upon request.

(Auth.: HAR §11-60.1-3, §11-60.1-11, §11-60.1-90)

Section E. Notification and Reporting Requirements

1. Excess Emissions

a. The permittee shall submit an excess emissions and monitoring systems performance report pursuant to 40 CFR §60.7(c) to the Department of Health for **every semi-annual calendar period**. The report shall include the following:

i. The magnitude of excess emissions computed in accordance with 40 CFR §60.13(h), any conversion factors used, and the date and time of commencement and completion of each time period of excess emissions;
ii. Specific identification of each period of excess emissions that occurs during startups, shutdowns, and malfunctions of the visbreaker heater. The nature and cause of any malfunction (if known), and the corrective action taken or preventive measures adopted, shall also be reported;
iii. The date and time identifying each period during which the continuous emissions monitoring system was inoperative except for zero and span checks. The nature of each system repair or adjustment shall be described; and
iv. The report shall so state if no excess emissions have occurred. Also, the report shall so state if the continuous emissions monitoring system operated properly during the period and was not subject to any repairs or adjustments except zero and span checks.

b. All reports shall be postmarked by the **30th day following the end of each semi-annual calendar period**. The enclosed **Excess Emissions and Monitoring System Performance Summary Report** form or an equivalent form shall also be submitted in addition to the excess emissions and monitoring systems performance report.

c. Excess emissions shall be defined as any rolling 3-hour period during which the average concentration of H_2S in RFG, as measured by the continuous emissions monitoring system, exceeds 230 mg/dscm (0.10 gr/dscf).

d. Excess emissions indicated by the continuous emissions monitoring system shall be considered violations of the applicable emission and concentration limits for the purposes of the permit.

(Auth.: HAR §11-60.1-3, §11-60.1-11, §11-60.1-90, §11-60.1-161; 40 CFR §60.7, §60.105) [1]

2. The permittee shall submit **semi-annually** written reports to the Department of Health for monitoring purposes. The reports shall be submitted **within sixty (60) days** *after the end of each semi-annual calendar period (January 1 to June 30 and July 1 to December 31)* and shall include the following:

   a. The average 1-hour H_2S concentration on a daily, monthly and annual basis. All total sulfur lab results along with a semi-annual average thereof.

   b. Any opacity exceedances as determined by the required V.E. monitoring. Each exceedance reported shall include the date, six (6) minute average opacity reading, possible reason for exceedance, duration of exceedance, and corrective actions taken. If there were no exceedances, the permittee shall submit in writing a statement indicating that for each equipment there were no exceedances for that semi-annual period.

      The enclosed **Monitoring Report Form: Visible Emissions** or an equivalent form shall be used.

   c. Any deviations from permit requirements shall be clearly identified.

   (Auth.: HAR §11-60.1-3, §11-60.1-32, §11-60.1-90, SIP §11-60-24)[2]

3. Annual Emissions

   As required by Attachment IV and in conjunction with the requirements of Attachment III, Annual Fee Requirements, the permittee shall submit **on an annual basis** the total tons per year emitted of each regulated air pollutant, including hazardous air pollutants. The reporting of annual emissions is due within **sixty (60) days** *following the end of each calendar year*. The enclosed **Annual Emissions Report Form: Refinery Equipment - Fuel Consumption** or an equivalent form, shall be used in reporting fuel usage.

   Upon written request of the permittee, the deadline for reporting annual emissions may be extended if the Department of Health determined that reasonable justification exists for the extension.

   (Auth.: HAR §11-60.1-3, §11-60.1-5, §11-60.1-90, §11-60.1-114)

4. Additional notification and reporting requirements shall be conducted in accordance with the standard conditions found in Attachment I, Standard Conditions 16, 17 and 25, respectively. These notifications shall include, but not be limited to:

   a. Intent to shutdown air pollution control equipment for necessary scheduled maintenance;

b. Emissions of air pollutants in violation of HAR, Chapter 11-60.1 or this permit (excluding technology-based emission exceedances due to emergencies); and

c. Permanent discontinuance of construction, modification, relocation or operation of the facility covered by this permit.

(Auth.: HAR §11-60.1-8, §11-60.1-15, §11-60.1-16, §11-60.1-90)

5. The permittee shall report in writing **within five (5) working days** *any deviations from permit requirements*, including those attributable to upset conditions, the probable cause of such deviations and any corrective actions or preventative measures taken. Corrective actions may include a requirements for more frequent monitoring, or could trigger implementation of a corrective action plan.

(Auth.: HAR §11-60.1-3, §11-60.1-15, §11-60.1-16, §11-60.1-90)

6. Compliance Certification

During the permit term, the permittee shall submit at least **annually** to the Department of Health and U.S. EPA Region 9, a compliance certification pursuant to HAR §11-60.1-86. The permittee shall indicate whether or not compliance is being met with each term or condition of this permit. The compliance certification shall be submitted within **ninety (90) days** *after the end of each calendar year*, and shall be signed and dated by a responsible official. The compliance certification shall include at a minimum the following information:

a. The identification of each term or condition of the permit that is the basis of the certification;

b. The compliance status;

c. Whether compliance was continuous or intermittent;

d. The methods used for determining the compliance status of the source currently and over the reporting period;

e. Any additional information indicating the source's compliance status with any applicable enhanced monitoring and compliance certification including the requirements of Section 114 (a)(3) of the Clean Air Act or any applicable monitoring and analysis provisions of Section 504(b) of the Clean Air Act; and

f. Any additional information as required by the Department of Health including information to determine compliance.

Upon written request of the permittee, the deadline for submitting the compliance certification may be extended, if the Department of Health determines that reasonable justification exists for the extension.

(Auth.: HAR §11-60.1-4, §11-60.1-86, §11-60.1-90)

7. **At least thirty (30) calendar days prior** to the following events, the permittee shall notify the Department of Health in writing of:

   a. Conducting a performance specification test on the CEMS. The testing date shall be in accordance with the performance test date identified in 40 CFR §60.13.

   b. Conducting a source performance test as required by this Attachment, Section F, Testing Requirements.

   (Auth.: HAR §11-60.1-3, §11-60.1-90, §11-60.1-161)

Section F. Testing Requirements

1. The permittee shall conduct or cause to be conducted performance tests on the visbreaker heater. Performance tests shall be conducted for nitrogen oxides (NO_x as NO_2) and sulfur dioxides (SO_2) while fired on refinery fuel gas (RFG). All performance test shall be conducted at the maximum expected operating capacity of the visbreaker heater, or at other operating loads as may be specified by the Department of Health. Performance test shall be conducted on an annual basis or at such times as may be specified by the Department of Health.

   (Auth.: HAR §11-60.1-3, §11-60.1-11, §11-60.1-90)

2. Performance tests for the emissions of NO_x and SO_2 shall be conducted using EPA Method 1 to 4, 6 and 7, or EPA-approved equivalent methods with prior written approval from the Department of Health. Performance tests for SO_2 may be conducted at any fuel gas combustion device having a common source of fuel gas.

   (Auth.: HAR §11-60.1-3, §11-60.1-11, §11-60.1-90, 40 CFR §0.105(a)(3))

3. For each run, the emissions of nitrogen oxides (as NO_2) expressed in lbs/MMBtu shall be determined by the following procedure:

   $E = (C_d F_d)(46.01)(K_1)[(20.9)/(20.9 - \% O_{2d})]$

   Where:
   (a) E = pollutant emission (lb/MMBtu)
   (b) C_d = pollutant concentration, dry basis ([lb/dscf] ppmv)
   (c) $\% O_{2d}$ = oxygen content by volume (expressed as percent), dry basis, as determined by Method 3.
   (d) F_d = a factor representing a ratio of the volume of dry flue gases generated to the calorific value of the fuel combusted. For the refinery fuel gas, the factor is F_d = 8740

dscf/MMBtu at standard conditions of 68 °F and 29.92 in. Hg. or the actual value of the F_d factor may be used as determined by laboratory methods by the permittee.

(e) K_1 = 2.59 E-09 Conversion Factor (lb-mole/dscf * MM)

For each run, the emission of sulfur dioxide (SO_2) expressed in ppm at zero percent excess oxygen shall be determined by the following procedure:

Where:

C_{adj} = pollutant concentration adjusted zero percent oxygen, ppm or g/dscm
C_{meas} = pollutant concentration measured dry basis, ppm or g/dscm
20.9 = oxygen concentration in air, percent
$\%O_2$ = oxygen concentration measured dry basis, percent

(Auth.: HAR §11-60.1-3, §11-60.1-11, §11-60.1-90, §11-60.1-161; 40 CFR 60.106) [1]

4. For each run, the refinery fuel gas feed rate in dry standard cubic feet per hour (dscf/hr) shall be provided. The permittee shall document the methodology by which each refinery gas feed rate was determined. The refinery gas shall be sampled and analyzed for the heating value per dscf on the day of the test. The heater fuel gas firing rate on the basis of HHV in the terms of MMBtu/hr shall be determined and included in the source test report.

   (Auth.: HAR §11-60.1-3, §11-60.1-11, §11-60.1-90)

5. The performance test shall consist of three (3) separate runs using the applicable test method. For the purpose of determining compliance with an applicable regulation, the arithmetic mean of the results from the three (3) runs shall apply. For Method 7, each run shall consist of four (4) separate samples collected at approximately 15 minute intervals.

   (Auth.: HAR §11-60.1-3, §11-60.1-11, §11-60.1-90)

6. The permittee shall provide sampling and testing facilities at its own expense. The tests shall be conducted at the operating capacities identified in Special Condition No. F.1. of this Attachment, and the Department may monitor the tests.

   (Auth.: HAR §11-60.1-3, §11-60.1-5, §11-60.1-11, §11-60.1-90)

7. **At least thirty (30) calendar days prior** *to performing a test*, the permittee shall submit a written *performance test plan* to the Department of Health that describes the test duration, test locations, test methods, source operation and other parameters that may affect test results. Such a plan shall conform to U.S. EPA guidelines including quality assurance procedures. A test plan or quality assurance plan that does not have the approval of the Department of Health may be grounds to invalidate any test and require a retest.

   (Auth.: HAR §11-60.1-3, §11-60.1-11, §11-60.1-90)

8. Any deviations from these conditions, test methods, or procedures may be cause for rejection of the test results unless such deviations receive written approval by the Department of Health before the tests.

   (Auth.: HAR §11-60.1-11, §11-60.1-90)

9. **Within sixty (60) days after** *completion of the performance test*, the permittee shall submit to the Department of Health and U.S. EPA Region 9 (Attention: AIR-3), the test report which shall include the operating conditions of the visbreaker heater at the time of the test, the analysis of the fuel, the summarized test results, comparative results with the permit emission limits, and other pertinent field and laboratory data.

   (Auth.: HAR §11-60.1-11, §11-60.1-90)

10. Upon written request and justification, the Department of Health may waive the requirement for a specific annual source test. The waiver request is to be submitted prior to the required test and must include documentation justifying such action. Documentation should include, but is not limited to, the results of the prior tests indicating compliance by a wide margin, documentation of continuing compliance, and further that operations of the source have not changed since the previous source test. The source performance test shall not be waived for more than two consecutive years.

    (Auth.: HAR §11-60.1-11, §11-60.1-90)

11. Upon the Department of Health's request, or if a significant change or performance deficiency occurs with the CEMS, performance tests for the H_2S levels in the RFG shall be conducted and results reported in accordance with the instructions and test methods set forth in 40 CFR §60.106, and Appendix A, Method 11.

    (Auth.: HAR §11-60.1-11, §11-60.1-90)

Section G. Agency Notification

1. Any document (including reports) required to be submitted by this Covered Source Permit shall be in accordance with Attachment I, Standard Conditions, Condition 29.

   (Auth.: HAR §11-60.1-4, §11-60.1-90)

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[1] The citations to the Code of Federal Regulations (CFR) identified under a particular condition, indicate that the permit condition complies with the specified provision(s) of the CFR. Due to the integration of the preconstruction and operating permit requirements, permit conditions may incorporate more stringent requirements than those set forth in the CFR.

[2] The citations to the State Implementation Plan (SIP) identified under a particular condition, indicate that the permit condition complies with the specified provision(s) of the SIP.