

Minor Modification to a Covered Source
Review Summary

Application No.: 0088-24

Permit No.: 0088-01-C

Applicant: Chevron Products Company

Facility Title: Petroleum Refinery
Located At: 91-480 Malakole Street, Kapolei, Oahu

Mailing Address: Chevron Products Company
91-480 Malakole Street
Kapolei, Hawaii 96707

Responsible Official: Mr. Jon Mauer
Refinery Manager
Chevron Products Company
Ph. (808) 682-5711

Point of Contact: Mr. Marcus Ruscio
Environmental Specialist
Chevron Products Company
Ph. (808) 682-2282

Application Dates: June 19, 2014

Proposed Project:

SICC 2911 (Petroleum Refining)

Chevron Products Company is applying for a Minor Modification to a Covered Source Permit. This modification will make EPA-established limits federally enforceable for the Chevron Hawaii Refinery's Fluid Catalytic Cracking Unit (FCCU) by incorporating them into the existing covered source permit. This application is in response to:

- Chevron is required by Consent Decree No. C-03-04650, Section V.A. to implement a program to reduce NO_x emissions from the FCCU through the use of a low NO_x combustion promoter and NO_x reduction additives.
- Chevron is required by Consent Decree No. C-03-04650, Section V.N. to submit applications to incorporate the emission limits into a federally enforceable minor or major new source review permit as soon as practicable, but no later than ninety (90) days after the establishment of any emission limits under Section V of the consent decree.
- EPA's letter dated October 9, 2014, in which EPA established final NO_x limits for the Chevron Hawaii Refinery, which are as follows:

PROPOSED

NO_x Emission Limit: 50 ppmvd @ 0% O₂ (365-day rolling average)* and
87.9 ppmvd @ 0% O₂ (7-day rolling average)**.

* applicable at all times, including periods of startup, shutdown, and malfunctions

** applicable at all times, excluding periods of startup, shutdown, and malfunctions

This modification is considered a minor modification since it:

- (1) Does not increase the emissions of any air pollutant above the permitted emission limits;
- (2) Does not result in or increase the emissions of any air pollutant not limited by permit to levels equal to or above:
 - (A) 500 pounds per year of a hazardous air pollutant, except lead;
 - (B) 300 pounds per year of lead;
 - (C) twenty-five (25) percent of significant amounts of emission as defined in section 11-60.1-1, paragraph (1) in the definition of "significant"; or
 - (D) two (2) tons per year of each regulated air pollutant not already identified above;
- (3) Does not violate any applicable requirement;
- (4) Does not involve significant changes to existing monitoring requirements or any relaxation or significant change to existing reporting or recordkeeping requirements in the permit. Any change to the existing monitoring, reporting, or recordkeeping requirements that reduces the enforceability of the permit is considered a significant change;
- (5) Does not require or change a case-by-case determination of an emission limitation or other standard, a source-specific determination for temporary sources of ambient impacts, or a visibility or increment analysis;
- (6) Does not seek to establish or change a permit term or condition for which there is no corresponding underlying applicable requirement, and that the source has assumed to avoid an applicable requirement to which the source would otherwise be subject. Such terms and conditions include:
 - (A) A federally enforceable emissions cap assumed to avoid classification as a modification pursuant to any provision of Title I of the Act or subchapter 7; and
 - (B) An alternative emissions limit approved pursuant to regulations promulgated pursuant to Section 112(i)(5) of the Act or subchapter 9; and
- (7) Is not a modification pursuant to any provision of Title I of the Act.

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

Equipment Description:

Fluid Catalytic Cracking Unit

Air Pollution Control Equipment:

NO_x emissions from the FCCU will be reduced through the use of a low NO_x combustion promoter and NO_x reduction additives.

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 11-60.1-32	Visible Emissions
HAR 11-60.1-37	Process Industries
HAR 11-60.1-38	Sulfur Oxides from Fuel Combustion
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
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

Federal Requirements

40 CFR Part 60 - Standards of Performance for New Stationary Sources (NSPS)

 Subpart A - General Provisions

 Subpart J - Standards of Performance for Petroleum Refineries

40 CFR Part 63 - National Emission Standards for Hazardous Air Pollutants for Source Categories (Maximum Achievable Control Technologies (MACT) Standards)

 Subpart A - General Provisions

 Subpart UUU (MACT II) - National Emission Standards for Hazardous Air Pollutants for Petroleum Refineries: Catalytic Cracking Units, Catalytic Reforming Units, and Sulfur Recovery Units

Non-Applicable Requirements:

Hawaii Administrative Rules (HAR)

Title 11, Chapter 60.1	Air Pollution Control
Subchapter 7	Prevention of Significant Deterioration
Subchapter 9	Hazardous Air Pollutant Sources
HAR 11.60.1-180	National Emission Standards for Hazardous Air Pollutants

Federal Requirements

40 CFR Part 52.21 – Prevention of Significant Deterioration of Air Quality

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

Best Available Control Technology (BACT):

A Best Available Control Technology (BACT) analysis is required for new covered sources and significant modifications to covered sources that have the potential to emit or increase emissions above significant levels as defined in HAR §11-60.1-1. Since this is a minor modification, a BACT analysis is not applicable.

Prevention of Significant Deterioration (PSD):

A PSD major modification is defined as a project at an existing major stationary source that will result in a significant emissions increase and a significant net emissions increase of any pollutant subject to regulations approved pursuant to the Clean Air Act as defined in 40 CFR §52.21. Since there are no significant emission increases for these modifications, PSD is not triggered.

Air Emissions Reporting Requirements (AERR):

40 CFR Part 51, Subpart A – Air Emissions Reporting Requirements, is based on the emissions of criteria air pollutants from Type A and B point sources (as defined in 40 CFR Part 51, Subpart A), that emit at the AERR triggering levels as shown in the table below:

Pollutant	Type A Triggering Levels ^{1,2} (tpy)	Type B Triggering Levels ¹ (tpy)	Pollutant	In-house Total Facility Triggering Levels ¹ (tpy)
NO _x	≥2500	≥100	NO _x	≥25
SO ₂	≥2500	≥100	SO ₂	≥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
Pb		≥0.5 (actual)	Pb	≥5
			HAPS	≥5

¹ Based on potential emissions

² Type A sources are a subset of Type B sources and are the larger emitting sources by pollutant

The Chevron Hawaii petroleum refinery exceeds the Type A triggering levels. Therefore, AERR requirements are applicable.

The Clean Air Branch also requests annual emissions reporting from those facilities that have facility-wide emissions of a single air pollutant exceeding in-house triggering levels or is a covered source. Annual emissions reporting for the facility will be required for in-house recordkeeping purposes since this is a covered source.

Compliance Assurance Monitoring (CAM):

No change from Covered Source Permit No. 0088-01-C.

Synthetic Minor Source:

No change from Covered Source Permit No. 0088-01-C.

Insignificant Activities:

No change from Covered Source Permit No. 0088-01-C.

Alternate Operating Scenarios:

No change from Covered Source Permit No. 0088-01-C.

Project Emissions:

Potential Emissions from FCCU

Pollutant	Potential Emission Rate (lb/hr)	Potential Emission Rate (tpy)
SO ₂	26.2	57.37
NO _x	65.08 (33.1)	285.07 (82.47)
CO	114.6	502.0
PM ₁₀	25.1	110.0
VOC	1.71	7.50
Lead	0.0013	0.0055

Notes:

1. Maximum total VGO feed rate = 22,000 bbl of feed/day
2. SO₂ = 50 ppm * 64 lb/lb-mol * 52,579 scfm * 1.557 E-07 (lb-mol/ft³)(min/hr) = 26.2 lb/hr
3. SO₂ = 25 ppm * 64 lb/lb-mol * 52,579 scfm * 1.557 E-07 (lb-mol/ft³)(min/hr) * 8760 hr/yr * ton/2000 lb = 57.37 tpy
4. CO = 500 ppm * 28 lb/lb-mol * 52,579 scfm * 1.557 E-07 (lb-mol/ft³)(min/hr) * 8760 hr/yr * ton/2000 lb = 502.0 tpy
5. VOC emission based on 1.71 lb/hr from averaging 1996 and 1999 source test results
VOC = 1.71 lb/hr * 8760 hrs/yr * ton/2000 lb = 7.50 tpy
6. NO_x emission factor from AP-42, Table 5.1-1, (1/95), FCC with ESP
NO_x = 71 lb NO_x/1000 bbl of feed * 22,000 bbl of feed/day * day/24 hr * 8760 hr/yr * ton/2000 lb = 285.07 tpy
7. NO₂ = 87.9 ppm * 46 lb/lb-mol * 52,579 scfm * 1.557 E-07 (lb-mol/ft³)(min/hr) = 33.1 lb/hr
8. NO₂ = 50 ppm * 46 lb/lb-mol * 52,579 scfm * 1.557 E-07 (lb-mol/ft³)(min/hr) * 8760 hr/yr * ton/2000 lb = 82.47 tpy
9. PM emission rate = 1 lb PM/1000 lb of coke * 306 lb of feed/bbl of feed * 22,000 bbl of feed/day * 8.95% lb of coke/lb of feed * day/24 hr * 8760 hr/yr * ton/2000 lb = 110.0 tpy

Ambient Air Quality Impact Assessment:

An ambient air quality impact analysis (AAQIA) is not required for minor modifications.

Significant Permit Conditions:

The following permit conditions and forms in the covered source permit were modified or added. As is custom when modifying regulatory language, new language is underlined, while [deleted language is shown in brackets].

- Revised Attachment II(I), Special Condition No. C.6

6. Emission Limits

The permittee shall not discharge or cause the discharge from the FCCU emissions in excess of the following:

- a. PM Emission Limit: 1.0 pounds of PM per 1000 pounds (1.0 kg/Mg or 2.0 lb/ton) of coke burn-off in the catalyst regenerator (three-hour (3-hr) average)**.
- b. CO Emission Limit: 500 ppmvd @ 0% O₂ (one-hour (1-hr) average)**.
- c. SO₂ Emission Limit: 25 ppmvd @ 0% O₂ (365-day rolling average)* and fifty (50) ppmvd @ 0% O₂ (seven-day (7-day) rolling average)**.
- d. NO_x Emission Limit: fifty (50) ppmvd @ 0% O₂ (365-day rolling average)* and 87.9 ppmvd @ 0% O₂ seven-day (7-day rolling average)**.

* Applicable at all times, including periods of startup, shutdown, and malfunctions

** Applicable at all times, excluding periods of startup, shutdown, and malfunctions

- Added Attachment II(I), Special Condition No. D.8

8. Continuous Emissions Monitoring System (CEMS) for NO_x

- a. The permittee shall install, operate and maintain a continuous emissions monitoring system (CEMS) for continuously monitoring and recording the concentration by volume (dry basis) of NO_x emissions from the FCCU.
- b. The CEMS shall meet the following requirements:
 - i. Performance evaluations for the NO_x CEMS shall be in accordance with 40 CFR §60.13. The NO_x CEMS shall meet 40 CFR Part 60, Appendix B, Performance Specification 2, Specifications and Test Procedures for SO₂ and NO_x Continuous Emission Monitoring Systems in Stationary Sources; and Appendix F, Quality Assurance Procedures. 40 CFR Part 60, Appendix A, Method 7, 7A, 7B, 7C, 7D or 7E shall be used in conducting any relative accuracy test audit (RATA). In lieu of the requirements of 40 CFR Part 60, Appendix F, Sections 5.1.1, 5.1.3, and 5.1.4, the permittee must conduct either a Relative Accuracy Audit (RAA) or a Relative Accuracy Test Audit (RATA) at least once every three (3) years. The permittee shall conduct a Cylinder Gas Audit (CGA) each calendar quarter during which a RAA or a RATA is not performed.
 - ii. Cylinder Gas Audits (CGA) shall be conducted in accordance with 40 CFR Part 60, Appendix F, Section 5.1.2.
 - iii. Calibration Drift (CD) assessments shall be performed on a daily basis pursuant to 40 CFR Part 60, Appendix F, Section 4.1.

- Revised Attachment II(I), Special Condition No. E.5.h.iii.
- iii. For purposes of reports under 40 CFR §60.7(c), periods of excess emissions for the FCCU and F-5300 furnace that shall be determined and reported are defined as follows:
- (1) Opacity. All one-hour (1-hour) periods that contain two (2) or more six-minute (6-minute) periods during which the average opacity, as measured by the continuous opacity monitoring system, exceeds twenty (20) percent.
 - (2) Carbon Monoxide. All one-hour (1-hour) periods during which the average CO concentration, as measured by the CO continuous monitoring system under 40 CFR §60.105(a)(2), exceeds 500 ppmvd @ 0% O₂.
 - (3) H₂S. All rolling three-hour (3-hour) periods during which the average concentration of H₂S in RFG, as measured by the H₂S continuous emissions monitoring system, exceeds 230 mg/dscm (160 ppmv).
 - (4) Sulfur Dioxide. All rolling 365-day periods during which the average SO₂ concentration, as measured by the SO₂ continuous emissions monitoring system, exceeds twenty-five (25) ppmvd @ 0% O₂ and all rolling seven-day (7-day) periods during which the average SO₂ concentration, as measured by the SO₂ continuous emissions monitoring system, exceeds 50 ppmvd @ 0% O₂.
 - (5) Nitrogen Oxides. All rolling 365-day periods during which the average NO_x concentration, as measured by the NO_x continuous emissions monitoring system, exceeds 50 ppmvd @ 0% O₂ and all rolling 7-day periods during which the average NO_x concentration, as measured by the NO_x continuous emissions monitoring system, exceeds 87.9 ppmvd @ 0% O₂.
- Revised Attachment II(I), Special Condition No. E.6
6. At least **thirty (30) days** prior to the following events, the permittee shall notify the Department of Health in writing of:
- a. Conducting a performance specification test on any of the CEMS (CO, SO₂, NO_x, O₂ or H₂S) or COMS (opacity).
 - b. Conducting a source performance test as required by this Attachment, Section F, Testing Requirements.

Conclusion and Recommendations:

Recommend issuance of the minor modification to existing Covered Source Permit No. 0088-01-C, subject to the significant permit conditions above. All other permit conditions issued with CSP No. 0088-01-C on February 22, 1999 and amended on January 22, 2002, April 16, 2002, March 3, 2003, June 28, 2006, April 24, 2007, August 13, 2007, November 8, 2007, July 22, 2008, September 11, 2009, November 4, 2009, April 22, 2013, September 30, 2014, and June 23, 2015 shall not be affected and shall remain valid. A forty-five-day (45-day) EPA review period is also required.

Reviewer: Darin Lum
Date: 8/2015