Bay Area Air Quality Management District
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Permit Evaluation and Statement of Basis For Renewal of the Major Facility Review Permit for Chevron Products Company Facility #A0010

Facility Address:
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Title V Renewal Application #27756

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Title V Statement of Basis for the Chevron Products Company

A. Background

This facility is subject to the Operating Permit requirements of Title V of the federal Clean Air Act, Part 70 of Title 40 of the Code of Federal Regulations (CFR), and BAAQMD Regulation 2, Rule 6, Major Facility Review because it is a major facility as defined by BAAQMD Regulation 2-6-212. It is a major facility because it has the "potential to emit" (as defined by BAAQMD Regulation 2-6-218) more than 100 tons per year of a regulated air pollutant.

Major Facility Operating permits (Title V permits) must meet specifications contained in 40 CFR Part 70 as contained in BAAQMD Regulation 2, Rule 6. The permits must contain all "applicable requirements" (as defined in BAAQMD Regulation 2-6-202), monitoring requirements, recordkeeping requirements, and reporting requirements. The permit holders must submit reports of all monitoring at least every six months and compliance certifications at least every year.

In the Bay Area, state and District requirements are also applicable requirements and are included in the permit. These requirements can be federally enforceable or non-federally enforceable. All applicable requirements are contained in Sections I through VI of the permit.

Each facility in the Bay Area is assigned a facility identifier that consists of a letter and a 4-digit number. This identifier is also considered to be the identifier for the permit. The identifier for this facility is A0010.

This facility received its initial Title V permit under Application 16461 on December 1, 2003. The 1st renewal of the Title V permit was issued under Application 21614 on August 11, 2011. The Title V permit was significantly revised under Application 26254 on February 28, 2018. The proposed Application 27756 is for the 2nd renewal of the Title V permit. The above application was first received on February 9, 2016; was revised to incorporate applicable requirements for sources that are part of the Modernization Project; and was resubmitted on March 1, 2018.

Table 1 below incorporates Authorities to Construct and/or Permits to Operate that weren't included in the February 2018 Significant Revision (Application 25254) but have been included in the proposed permit (Application 27756).

Table 1		
Title V Application #	**Application Summary**	**Summary of changes in Title V permit**
14698 (NSR: 12842) Type of Revision: Significant Source(s) affected: S-4227, 4228, 4229, 4253, 4449, 4450, 4451, 4454, 4465, 4471, 4472, 6021, V-475, V-701, V-870	**"Modernization Project"** The District issued Chevron an Authority to Construct under NSR Application 12842 to replace equipment in the existing hydrogen plant with new equipment summarized in Table 2, perform hydrogen purity improvements by installing new equipment and modifying existing equipment summarized in Table 3, and altering five existing furnaces summarized in Table 4.	**Sulfur Recovery Units (S-4227 to 4229) and Stack Gas Heaters (S-4436 to 4438):** 1. Tables II.A.1, II.B 2. Tables IV and VII.A.3.1 3. Tables IV and VII.E.2.1 4. Permit conditions 19063, 24136 **TKC/FCC Feed Hydrotreater (S-4253):** 1. Tables II.A.1 2. Tables IV and VII.C.3.1 3. Permit conditions 469 (Part 5; Note 1), 24136 **Hydrogen Plant Trains #1 and #2 (S-4449, 4450):** 1. Tables II.A.1, II.B 2. Tables IV and VII.C.3.1 3. Tables IV and VII.H.2.1 4. Permit condition 24136 **Hydrogen Recovery Plant (S-4451):** 1. Tables II.A.1, II.B 2. Tables IV and VII.C.3.1 3. Tables IV and VII.H.2.1 **4.** Permit condition 24136 **#6 H2S Plant (S-4454):** 1. Tables II.A.1, II.B 2. Tables IV and VII.E.1.1 3. Permit condition 24136

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Title V Application #	**Application Summary**	**Summary of changes in Title V permit**
		Hydrogen Plant Cooling Water Tower(S-4465): 1. Tables II.A.1 2. Tables IV and VII.C.1.1 **3.** Permit condition 24136 **Hydrogen Plant Reformer Furnaces #1 and #2 (S-4471, 4472):** 1. Tables II.A.1, II.B 2. Tables IV and VII.A.3.3 3. Tables IV and VII.H.2.1 **4.** Permit condition 24136 **Hydrogen Plant Flare (S-6021/A-6021):** 1. Tables II.A.1, II.B 2. Tables IV and VII.A.2.1 3. Tables IV and VII.H.2.1 **4.** Permit condition 24136 **Fuel Gas Mix Drums (V-475, V-701, V-870):** 1. Permit condition 24136 (part 97) **2.** Table VII.A.3.2 (V-475)
19402 (NSR: 19091) Type of Revision: Administrative Amendment Source(s) affected: S-4227 to 4229, 4253	**Administrative permit condition amendment:** Note 2 in part 5 of permit condition 469 (for TKC unit S-4253) and parts 1 through 5 of permit condition 19063 (for SRUs S-4227 to 4229) were administratively amended under NSR Application 19091 to make them consistent with Modernization Project permit condition 24136.	**Sulfur Recovery Units (S-4227 to 4229):** 1. Permit condition 19063. **TKC/FCC Feed Hydrotreater (S-4253):** **1.** Permit condition 469 (Part 5; Note 2)
25631 (NSR: 25630) Type of Revision:	**Temporary carbon abatement system (A-629)**: Fugitive emissions from 15 pump casing seals at No. 17 Pump Station were abated by A-624	**Table II-B:** 1. Amended source numbers and descriptions for row entries corresponding to A-0620, 0622, 0623,

Table 1		
Title V Application #	**Application Summary**	**Summary of changes in Title V permit**
Minor Source(s) affected: S-32111	(Thermal Oxidizer). NSR Application 25630 was submitted to obtain a permit for A-629 because A-624 had malfunctioned and was not operating.	0624, 0627, and 0628. 2. Added A-0629. **Table II-C:** 1. Added fugitives S-32111 to 32116. **Table IV "Abatement":** 1. Added A-0629 to table header. 2. Added abatement devices A-0620, 0622, 0623, 0624, 0627, and 0628 for row entry corresponding to permit condition 8869. 3. Added part 5 to permit condition 8869. 4. Added permit condition 25703 for A-0629. 5. Replaced S-32103 with S-32111 to S-32116 for row entry corresponding to permit condition 8869. 6. Added permit condition 25703 that applies to S-32111. **Section VI:** 1. Amended permit condition 8869. 2. Added permit condition 25703. **Table VII "Abatement":** 1. Added abatement device A-0629 to table header. 2. Added TOC and Flow monitoring requirements pertaining to A-0629.

Table 1		
Title V Application #	**Application Summary**	**Summary of changes in Title V permit**
25747 (NSR: 25748) Type of Revision: Minor Source(s) affected: S-32114	**Backup carbon abatement system (A-632)**: Fugitive emissions from 19 pump casing seals at No. 21 Pump Station were abated by A-623 (Thermal Oxidizer). NSR Application 25748 was submitted to obtain a permit for A-632 in the event A-623 malfunctioned.	**Table II-B:** 1. Amended source numbers and descriptions for row entries corresponding to A-0622, 0627, and 0632. **Table IV "Abatement":** 1. Added A-0632 to table header. 2. Added part 6 to permit condition 8869. 3. Added permit condition 25835 for A-0632. **Section VI:** 1. Added part 6 to permit condition 8869. 2. Amended concentration limits in parts 7 to 10 of permit condition 25703. 3. Added permit condition 25835. **Table VII "Abatement":** 1. Added abatement device A-0632 to table header. 2. Added TOC and Flow monitoring requirements pertaining to A-0632.
26321 (NSR: 26319) Type of Revision: Significant Source(s) affected:	**Domed External Floating Roof Tank (S-3231)**: NSR Application 26319 was submitted to obtain a permit for 95,000 BBL Domed EFRT storing gasoline.	**Table II.A-1:** 1. Added S-3231. **Tables IV and VII.F.1.11:** 1. Added S-3231. 2. Added permit condition 25913. **Section VI:**

Table 1		
Title V Application #	**Application Summary**	**Summary of changes in Title V permit**
S-3231		1. Added permit condition 25913. **Table IX-B-3:** 1. Added S-3231.
26890 (NSR: 26889) Type of Revision: Minor Source(s) affected: S-3234	**Fixed Roof Tank (S-3234)**: NSR Application 26889 was submitted to obtain a permit for 27,430 BBL FRT storing molten sulfur (S-3234) which replaced S-3141.	**Table II.A-1:** 1. Added S-3234. **Table II.A-2:** 1. Deleted S-3141. **Table II.A-1:** 1. Deleted S-3141 and added S-3234 to sources abated by water scrubber A-0043. 2. Added caustic scrubber A-0044, since S-3234 will be abated by A-0043 and A-0044 in series. **Tables IV.E.3.1 and IV.F.1.2:** 1. Added S-3234 to table header. 2. Replaced all references to S-3141 with S-3234 in permit conditions 1046 and 25814 (part 4). **Section VI:** 1. Replaced S-3141 with S-3234 in permit condition 1046. 2. Replaced S-3141 with S-3234 in part 4 of permit condition 25814. **Tables VII.E.3.1 and VII.F.1.2:** 1. Added S-3234 to table header.

Table 1		
Title V Application #	**Application Summary**	**Summary of changes in Title V permit**
27949 (NSR: 27948) Type of Revision: Minor Source(s) affected: S-4251	**Solvent Deasphalting Plant (S-4251)**: NSR Application 27948 was submitted to allow hydrocarbon emissions from shaft seals associated with pumps P-130 and its backup P-130A in deasphalted oil service to be steam quenched instead of being routed to one/more furnaces S-4152 to 4155 in order to reduce seal failure at the pumps.	**Section VI:** 1. Amended part 1 of permit condition 8773.
28219 (NSR: 28218) Type of Revision: Minor Source(s) affected: S-4251	**Solvent Deasphalting Plant (S-4251)**: As required by the City of Richmond's Conditional Use Permit, NSR Application 28218 was submitted to reduce the daily and annual maximum permitted throughput limits for S-4251.	**Table II-A-2:** **1.** Amended annual and daily throughput limit column entries to 18,250,000 BBL and 50,000 BBL, respectively.
28338 (NSR: 28337) Type of Revision: Minor Source(s) affected: S-3225	**Installation of dome on External Floating Roof Tank (S-3225)**: As required by a "ROG Mitigation" measure in the City of Richmond's Conditional Use Permit, NSR Application 28337 was submitted to obtain a permit to dome an existing 108,300 BBL EFRT storing recovered oil/gasoline/aviation gasoline.	**Table II.A-1:** 1. Revised source description for S-3225. **Tables IV and VII.F.1.10:** 1. Deleted S-3225 and permit condition 18702. **Tables IV and VII.F.1.11:** 1. Added S-3225 and permit condition 18702. **Section VI:** **1.** Amended permit condition 18702.
28493 (NSR: 28492) Type of Revision: Minor	**Installation of flameless electric thermal oxidizer (A-4413) to abate Oil Water Separator (S-4413)**: Installing new process drains as part of the Modernization Project modified S-4413 and subjected the	**Table II-B:** 1. Added A-4413. **Tables IV and VII.G.1.4:** 1. Added permit condition 26721.

Table 1		
Title V Application #	**Application Summary**	**Summary of changes in Title V permit**
Source(s) affected: S-4413	OWS to NSPS QQQ. NSR Application 28492 was submitted to obtain a permit to install A-4413 to comply with NSPS QQQ.	**Tables IV and VII.F.1.11:** 1. Added S-3225 and permit condition 18702. **Section VI:** 1. Added permit condition 26721.
28628 (NSR: 28627) Type of Revision: Administrative Amendment Source(s) affected: S-4068, 4154, 4188	**Changes to NOx Box permit condition:** NSR Application 28627 was submitted before Application 29271. Application 29271 approved Chevron's request to change their compliance option with Regulation 9, Rule 10 from the Refinery-wide NOx Emission Limit in Regulation 9-10-301 to the Alternate NOx Compliance Plan in Regulation 9-10-308. Prior to Application 29271's approval, sources at Chevron not equipped with NOx CEMS were required by permit condition 21232 to operate within the confines of their "NOx box" operating window to demonstrate compliance with the refinery-wide NOx emission limit in Regulation 9-10-301. As part of NSR Application 28627 and in accordance with requirements in Regulation 9-10-502.1.1, Chevron installed NOx and O2 CEMS at S-4068 and S-4188. Therefore, NOx boxes for S-4068 and S-4188 were deleted , and the NOx box operating parameters for S-4154 was expanded based on source tests.	**Tables IV and VII.A.3.2:** 1. Deleted S-4068 and 4188 from row entry corresponding to Regulation 1-520, 1-520.8. Added permit condition 26721. **Section VI:** **1.** Amended "CEM" status for S-4068 and 4188 in part 1 of permit condition 21232. **2.** Deleted "NOx Box Limits" for S-4068 and 4188 in part 5A of permit condition 21232. **3.** Amended "NOx Box Limits" for S-4154.
29038 (NSR: 29037)	**Addition of supplemental (sweep + assist) natural gas to hydrogen**	**Tables IV and VII.A.2.1:**

Table 1		
Title V Application #	**Application Summary**	**Summary of changes in Title V permit**
Type of Revision: Minor Source(s) affected: S-6021/ A-6021	**plant flare (S-6021)**: NSR Application 29037 approved Chevron to install supplemental natural gas piping and add natural gas to S-6021/A-6021 to meet the MACT CC flare control efficiency requirements which became effective on January 30, 2019.	1. Added parts 119 to 125 of permit condition 24136 for S-6021. 2. Updated permit condition requirements to align with amended permit condition 24136. **Section VI:** **Permit condition 24136** 1. Appended combined annual limits to part 9.a. for S-4471, 4472, and 6021 when utilizing natural gas as supplemental fuel at S-6021. 2. Added parts 119 to 125 for S-6021 when utilizing natural gas as supplemental fuel.
29221 (NSR: 29220) Type of Revision: Minor Source(s) affected: S-4481 to 4483	**Installation of corrosion inhibitor storage tanks:** NSR Application 29220 approved Chevron to install three 540-gallon refillable polyethylene storage tanks for storing corrosion inhibitor for injection into the boiler feedwater and condensate systems in Hydrogen Plant Trains #1 (S-4449) and #2 (S-4450) that were built as part of the Modernization Project.	**Table II.A.1:** 1. Added S-4481 to 4483. **Tables IV and VII.F.1.0:** **1.** Added S-4481 to 4483. **2.** Added permit condition 26815. **Section VI:** 1. Added permit condition 26815.
29272 (NSR: 29271) Type of Revision: Administrative Amendment Source(s) affected:	**Regulation 9-10 compliance option change**: NSR Application 29271 approved Chevron's request to change their compliance option with Regulation 9, Rule 10 from the Refinery-wide NOx Emission Limit in Regulation 9-10-301 to the Alternate NOx Compliance Plan in Regulation 9-10-308.	**Table IV.A.3.2:** 1. Deleted Regulation 9-10-301. 2. Added Regulations 9-10-308, 405 through 407, 503, and 601 through 605. 3. Appended parts 11 through 13 to permit condition 21232.

Table 1		
Title V Application #	**Application Summary**	**Summary of changes in Title V permit**
Regulation 9, Rule 10 sources governed by permit condition 21232		**Table VII.A.3.2:** 1. Deleted Regulation 9-10-301. 2. Added Regulations 9-10-308 3. Appended part 11 to permit condition 21232. **Table IV.A.5.1:** 1. Deleted Regulation 9-10-301. 2. Added Regulations 9-10-308, 405 through 407, 503, and 601 through 605. 3. Appended parts 11 to 13 to permit condition 21232. **Table VII.A.5.1:** 1. Deleted Regulation 9-10-301. 2. Added Regulations 9-10-308 3. Appended part 11 to permit condition 21232. **Section VI:** Appended parts 11 to 13 to permit condition 21232.
No Title V Application (NSR: 23827) Source(s) affected: #17 Pump Station	**Installation of fugitive components at S-4441*:** NSR Application 23827 approved Chevron to install fugitive components in hydrocarbon service at #17 pump station. ***was renumbered to S-32103 and is currently listed as S-32111 in the proposed permit	**Table II.A.1:** 1. Added S-4441. **Section VI:** 1. Added permit condition 25176. **Table VII.H.2.1:** **1.** Added applicable requirements in permit condition 25176. 1.

Table 1		
Title V Application #	**Application Summary**	**Summary of changes in Title V permit**
No Title V Application (NSR: 25948) Source(s) affected: S-3229	**Alteration to domed EFRT S-3229:** NSR Application 25948 approved Chevron to install an exterior flexible barrier to cover all the slots in the guide pole/well of the tank.	**Section VI:** **Permit condition 25037** 1. Amended "Control Technique" in part 5 for "Guide pole/well" fitting. 2.
No Title V Application (NSR: 28535) Source(s) affected: S-6022 and 6023	**Installation of corrosion inhibitor totes:** NSR Application 28535 approved Chevron to install two totes (1 refillable 400 gallon active tote + 1 exempt 217 gallon standby tote to replenish active tote when empty) to store and dispense corrosion inhibitor via an injection skid into an overhead accumulator process line at the #4 crude unit (S-4236).	**Table II.A.1:** 1. Added S-6022. **Table II.C:** 1. Added S-6023. **Tables IV and VII.F.1.0:** **2.** Added S-6022. **3.** Added permit condition 26558. **Section VI:** 1. Added permit condition 26558. 3.
No Title V Application (NSR: 28904) Source(s) affected: S-4429	**Pump seal emissions reroute at #8 NH3/H2S plant in South Isomax Area:** NSR Application 28904 approved Chevron to reroute pump shaft seal emissions associated with eight pumps at S-4429 from hydrogen plant reforming furnaces (S-4170 and S-4171) that have been shutdown and replaced by Modernization Project equipment to five furnaces (S-4152, 4155, 4161, 4168, and 4169).	**Tables IV and VII.E.1.1:** 1. Added permit condition 26681. **Section VI:** 1. Added permit condition 26681. 4.
No Title V Application (NSR: 29005) Source(s) affected:	**Installation of backup knockout drum (V-705A):** NSR Application 29005 approved Chevron to install V-705A to operate in parallel with existing knockout drum V-705 when one of them is undergoing API inspections.	**Tables IV and VII.C.3.1:** 2. Added permit condition 26714. **Section VI:** 1. Added permit condition 26714.

Table 1		
Title V Application #	**Application Summary**	**Summary of changes in Title V permit**
S-4252, 4253, 4346		5.
No Title V Application (NSR: 29049) Source(s) affected: S-4349	**Alterations to S-4349**: Application 29049 approved Chevron's request to repurpose S-4349 to exclusively combust natural gas. Because S-4349 has a rated heat input of less than 10 MMBTU/hour, the furnace was exempted per Regulation 2-1-114.1.2 after source testing demonstrated compliance with the above exemption.	6. Deleted from Table II.A.1 7. Added to Table II.C because S-4349 is a "significant source" per Regulation 2-6-239 i.e., emits CO > 2 TPY. 8. Deleted Tables IV and VII.A.3.5. 9. Deleted references to and pertinent parts in RLOP permit condition 469 10. Deleted references in permit condition 22923
No Title V Application (NSR: 29160) Source(s) affected: Non-hydrogen plant flares S-6010, 6012, 6013, 6015, 6016, 6019, 6039	**Addition of supplemental natural gas to non-hydrogen plant flares (S-6010, 6012, 6013, 6015, 6016, 6019, 6039):** NSR Application 29160 approved Chevron to install supplemental natural gas piping and add natural gas to S-6010, 6012, 6013, 6015, 6016, 6019, 6039 to meet the MACT CC flare control efficiency requirements which became effective on January 30, 2019.	**Table IV.A.2.1:** 1. Replaced parts 1 through 7 of permit condition 18656 with parts 1 through 14. **Table VII.A.2.1:** 1. Updated permit condition requirements to align with amended permit condition 18656. **Section VI:** **Permit condition 18656** 1. Replaced parts 1 and 2 with parts 1 through 9. 2. Renumbered parts 3 through 7 to parts 10 through 14.
29495 (NSR: 29494) Type of Revision:	**Installation of dome on External Floating Roof Tank (S-3202)**: As required by a "ROG Mitigation" measure in the City of Richmond's Conditional Use Permit, NSR	**Table II.A-1:** 1. Revised source description for S-3202. **Tables IV and VII.F.1.10:**

Table 1		
Title V Application #	**Application Summary**	**Summary of changes in Title V permit**
Minor Source(s) affected: S-3202	Application 29494 was submitted to obtain a permit to dome an existing 101,600 BBL EFRT storing gasoline.	1. Deleted S-3202 and permit condition 13364. **Tables IV and VII.F.1.11:** 1. Added S-3202 and permit condition 13364. **Section VI:** Amended permit condition 13364.
No Title V Application (NSR: 29866) Type of Revision: Minor Source(s) affected: S-4449, S-4450, S-4471, S-4472	**Modernization Project permit condition changes (S-4449, S-4450, S-4471, S-4472)**: Amended parts 9 and 13 of permit condition 24136 to align with startup, shutdown, dry out/warm up time periods for hydrogen plant trains #1 and #2, and the associated reformer furnaces.	**Section VI:** Amended permit condition 24136.

In addition to incorporating recent District permit actions, this application updates the standard sections of the permit to include new permit effective dates. Also, as discussed in the following sections, various other corrections have been made to the permit. This statement of basis will include all proposed changes that are shown in the permit markup in ~~strikeout~~/underline format.

B. General Description of an Oil Refinery

This facility is a typical full-scale oil refinery, which processes crude oils and other feedstocks into refined petroleum products, primarily fuel products such as gasoline and fuel oils. It processes crude oil and distills it, under atmospheric pressure, into its primary components: gases (light ends), gasolines, kerosene and diesels (middle distillates), heavy distillates, and heavy bottoms. The heavy bottoms go on to a vacuum distillation unit to be distilled again, this time under a vacuum, to salvage any light ends or middle distillates that did not get separated under atmospheric pressure.

Other product components are processed by downstream units to remove less desirable impurities (hydrotreated), cracked (catalytic or hydrocracking), reformed (catalytic reforming), or alkylated (alkylation) to form gasolines and high-octane blending

components, or to have sulfur or other impurities removed to make over-the-road diesel (low sulfur) or off-road diesel (higher sulfur). Depending on the process units in a refinery and the crude oil input, an oil refinery can produce a wide range of salable products: many different grades of gasoline and gasoline blend stocks, several grades of diesel, kerosene, jet and aviation fuel, fuel oil, bunker fuels, waxes, solvents, sulfur, or chemical plant feedstocks.

A more detailed description of petroleum refinery processes and the resulting air emissions may be found in Chapter 5 of EPA's publication AP-42, Compilation of Air Pollutant Emission Factors. This document may be found at: https://www3.epa.gov/ttn/chief/ap42/ch05/index.html

C. Facility Description

The principal sources of air emissions from the Chevron Products Company refinery are:

- Combustion units (furnaces, boilers, and cogeneration facilities)
- FCC (Fluidized Catalytic Cracking)
- Storage tanks
- Fugitive emissions from pipe fittings, pumps, and compressors
- Sulfur plants
- Wastewater treatment facilities

Combustion unit emissions are generally controlled through the use of burner technology, steam injection (turbines), or selective catalytic reduction. Emissions from the FCCU are controlled through hydrotreating the feed, the use of catalysts to remove impurities, the use of improved catalyst regeneration, and electrostatic precipitators. Storage tank emissions are controlled through the use of add on control and or fitting loss control. Fugitive emissions have been minimized per Regulation 8-18 through the use of inspection and maintenance frequencies. Sulfur plants are equipped with tail gas units to reduce emissions. Wastewater treatment facilities are controlled by covering units, gasketing covers, and add on controls such as, carbon canisters.
On July 3, 1902, the Richmond Refinery began operations. At that time, it was by far the largest refining plant on the Pacific Coast and one of the largest in the world. Over the decades, the Richmond Refinery has steadily expanded. Today, this refinery produces primarily gasoline, jet and diesel fuels, and lubricants.

The refinery is permitted to process about 257,200 barrels of crude oil every day. All crude oil processed at the Richmond Refinery arrives by tanker. The Long Wharf consists of berths for four tankers and 2 barges. Ships dock at the Wharf and unload their cargo into storage tanks via pipes. The Wharf is equipped with a marine vapor recovery unit capable of achieving greater than 95% reduction of hydrocarbons as the ships are loaded. The refinery has hundreds of storage tanks for crude oil and refined products. The largest tanks on the property can hold 750,000 barrels.

The processing of crude consists of four basic steps: distillation, extraction, conversion, and treating. The refinery has three main processing areas: Distillation & Reforming, Cracking, and Hydroprocessing.

In the Distillation & Reforming Area, there is a single large two-stage crude unit that starts the separation of the crude into light (gas), medium (jet and diesel) and heavy (gas oils) components. It takes the residuum (the bottom of the crude unit) and sends it to the Solvent Deasphalting Plant in the Hydroprocessing Area. Gas oil is extracted from the residuum oil and mixed with a solvent that draws the gas oil away leaving only tar behind. The solvent is then distilled from the gas oil and recycled. The extracted gas oil becomes feedstock for the fluidized catalytic cracking unit (FCCU).

The Richmond Refinery converts gas oil into gasoline, jet and diesel fuels, and lubricating oil, using a series of processing plants. Most of the oil is treated with hydrogen to remove contaminants before the conversion processes begin. Heat and catalysts are then used to convert the gas oil to lighter products.

One conversion method is called cracking because it literally splits (cracks) the heavy hydrocarbon molecules into lighter ones. The Richmond Refinery uses two cracking methods: fluid catalytic cracking and hydrocracking. The FCCU located in the Cracking Area uses high temperature catalyst to crack heavy gas oil mostly into gasoline. Lighter gas oil is converted, using a process called hydrocracking, in the Isomax Unit located in the Hydroprocessing Area. Hydrocracking involves mixing gas oil, hydrogen and catalyst under high pressure and high temperature to make both jet fuel and gasoline. They blend most of the products from the FCCU and the Isomax directly into transportation fuels such as gasoline and jet fuel.

While the cracking process breaks most of the gas oil into gasoline and jet fuel, it also breaks off some pieces that are lighter than gasoline. Since Richmond Refinery's primary focus is on making transportation fuels, they recombine lighter components in the Alkylation Unit. This process takes the small molecules and recombines them in the presences of catalyst to convert them into gasoline components.

Much of the gasoline that comes from the Crude Unit or from the cracking units does not have enough octane to burn well in cars. The refinery's Distillation & Reforming Area contains two reformers, where they rearrange and change gasoline to give it the high-octane cars need. The reforming process removes hydrogen from the low-octane gasoline. The hydrogen is recycled for use in the hydrotreating units.

The products from the Crude Unit and the feeds to the conversion units contain some natural impurities, such as sulfur and nitrogen. Using a process called hydrotreating (a milder version of hydrocracking), these impurities can be removed to reduce air pollution when their fuels are used.

In addition to transportation fuels, the Richmond Refinery also makes lubricating oils. In the refinery's lube oil facility, heavy gas oil from the Crude Unit is converted into several grades of lubricating oil.

A final step is the blending of products. Chevron produces about 65percent of jet fuel for Bay Area airports including San Jose, Oakland, San Francisco, and Sacramento. Chevron produces about 20 percent of Bay Area gasoline and is the only lubricant base oil producer on the West Coast.

D. Permit Content

The legal and factual basis for the permit follows. The permit sections are described in the order presented in the permit.

Cover Page:

Updated contact information pertinent to the Responsible Official and Facility Contact.

I. Standard Conditions

This section contains administrative requirements and conditions that apply to all facilities. If the Title IV (Acid Rain) requirements for certain fossil-fuel fired electrical generating facilities or the accidental release (40 CFR § 68) programs apply, the section will contain a standard condition pertaining to these programs. Many of these conditions derive from 40 CFR § 70.6, Permit Content, which dictates certain standard conditions that must be placed in the permit. The language that the District has developed for many of these requirements has been adopted into the BAAQMD Manual of Procedures, Volume II, Part 3, Section 4, and therefore must appear in the permit.

The standard conditions also contain references to BAAQMD Regulation 1 and Regulation 2. These are the District's General Provisions and Permitting rules.

<u>Changes to permit</u>

- The adoption and amendment dates of the rules in Standard Condition I.A have been updated.
- Condition I.G – In basis, removed MOP Volume II, Part 3 Section 4.15 because it does not exist.

II. Equipment

This section of the permit lists all permitted or significant sources. Each source is identified by an S and a number (e.g., S-24).

Permitted sources are those sources that require a BAAQMD operating permit pursuant to BAAQMD Rule 2-1-302.

Significant sources are those sources that have a potential to emit of more than 2 tons per year of a "regulated air pollutant", as defined in BAAQMD Rule 2-6-222, or 400 pounds per year of a "hazardous air pollutant," as defined in BAAQMD Rule 2-6-210.

All abatement (control) devices that control permitted or significant sources are listed. Each abatement device whose primary function is to reduce emissions is identified by an A and a number (e.g., A-24). If a source is also an abatement device, such as when an engine controls VOC emissions, it will be listed in the abatement device table but will have an "S" number. An abatement device may also be a source (such as a thermal oxidizer that burns fuel) of secondary emissions. If the primary function of a device is to control emissions, it is considered an abatement (or "A") device. If the primary function of a device is a non-control function, the device is considered to be a source (or "S").

The equipment section is considered to be part of the facility description. It contains information that is necessary for applicability determinations, such as fuel types, contents or sizes of tanks, etc. This information is part of the factual basis of the permit.

Each of the permitted sources has previously been issued a permit to operate pursuant to the requirements of BAAQMD Regulation 2, Permits. These permits are issued in accordance with state law and the District's regulations. The capacities in the permitted sources table are the maximum allowable capacities for each source, pursuant to Standard Condition I.J and Regulation 2-1-403.

There are several instances in this document and the proposed permit that reference the Chevron Refinery Modernization Project (Modernization Project). Therefore, it is beneficial to review the following discussion before delving into this document and/or the proposed permit.

The Chevron Refinery Modernization Project:

The Bay Area Air Quality Management District (District) received New Source Review Application 12842 for the Chevron Energy and Hydrogen Renewal Project on June 22nd, 2005 and issued an Authority to Construct on September 19th, 2008. The original scope of Application 12842 consisted of the following five distinct project components, and sources affected by the project are governed by permit condition 24136:

1. Hydrogen Plant Replacement: Installing new equipment & Shutting down existing equipment

2. Reformer Replacement: Installing new equipment & Shutting down existing equipment

3. Power Plant Replacement: Installing new equipment & Shutting down existing equipment

4. Hydrogen Purity Improvements: Installing new equipment & Modifying existing equipment

5. Alterations to five existing furnaces to enhance Regulation 9-10 compliance.

The Chevron Energy and Hydrogen Renewal Project is currently referred to as the Chevron Refinery Modernization Project and its original project scope has reduced and only addresses the Hydrogen Plant Replacement (Table 2), the Hydrogen Purity Improvements (Table 3), and Alterations (~burner retrofits) to five existing furnaces (Table 4).

Table 2: HYDROGEN PLANT REPLACEMENT			
INSTALLATION OF NEW EQUIPMENT			
Source #	**Source Description**	**Capacity**	**Units**
S-4449	Hydrogen Plant Train#1	140	MMSCFD
S-4450	Hydrogen Plant Train#2	140	MMSCFD
S-4451	Hydrogen Recovery Plant	50	MMSCFD
S-4471	Hydrogen Plant Train #1 Reformer Furnace	950	MMBTU/hour (HHV)
S-4472	Hydrogen Plant Train #2 Reformer Furnace	950	MMBTU/hour (HHV)
S-4465	Hydrogen Plant Cooling Water Tower	36,000	Gallons/minute
S-6021/ A-6021	Hydrogen Plant Flare	1.60	MMBTU/hour (HHV)
SHUTDOWN OF EXISTING EQUIPMENT			
Source #.	**Source Description**	**Capacity**	**Units**
S-4250	Hydrogen Plant Trains A & B	150	MMSCFD
S-4170	Hydrogen Plant Train A Reformer Furnace F-305	820	MMBTU/hour
S-4171	Hydrogen Plant Train B Reformer Furnace F-355	820	MMBTU/hour
S-4348	Hydrogen Recovery Plant	1.10	ton/hour
S-4156	Feed Furnace F-320	41	MMBTU/hour
S-4157	Feed Furnace F-330	41	MMBTU/hour
S-4158	Feed Furnace F-340	41	MMBTU/hour

Table 3: HYDROGEN PURITY IMPROVEMENTS			
INSTALLATION OF NEW EQUIPMENT			
Source #	**Source Description**	**Capacity**	**Units**
S-4454	#6 H2S Plant Recycle Amine Generator	11	MMSCFD
S-4490	Sulfur Loading Rack	157	Long Tons/hour
A-4450	Acid Gas Scrubber (C-2440) abating #3 H2S Plant (S-4433), #4 H2S Plant (S-4434), #5 H2S Plant (S-4435), #6 H2S Plant Recycle Amine Generator (S-4454), #8 NH3-H2S Plant (S-4429), and #18 NH3-H2S Plant (S-4345)	11	MMSCFD
S-4456	Fresh Amine Storage Tank	70,000	Gallons
S-3227	Lean Amine Storage Tank	130,000	Gallons
S-3228	Caustic Storage Tank	200,000	Gallons
S-3229	Spent Caustic Storage Tank	400,000	Gallons
S-4436	F-2170 Stack Gas Heater No. 1 SRU	31.90	MMBTU/hour (HHV)
S-4437	F-2270 Stack Gas Heater No. 2 SRU	31.90	MMBTU/hour (HHV)
S-4438	F-2370 Stack Gas Heater No. 3 SRU	56.10	MMBTU/hour (HHV)
MODIFICATION OF EXISTING EQUIPMENT			
Source #	**Source Description**	**Capacity**	**Units**
S-4253	TKC/FCC Feed Hydrotreater	96,000	barrels/day
S-4435	No. 5 H2S Plant	9.60	MMSCFD
S-4227	SRU #1 abated by Tail Gas Unit Thermal Oxidizer (A-0020) and wet ESP (A-120); max. firing rate of A-0020 30.8 MMBTU/hour (HHV)	345	Long Tons/day
S-4228	SRU #2 abated by Tail Gas Unit Thermal Oxidizer (A-0021) and wet ESP (A-121); max. firing rate of A-0021 30.8 MMBTU/hour (HHV)	345	Long Tons/day
S-4229	SRU #3 abated by Tail Gas Unit Thermal Oxidizer (A-0022) and wet ESP (A-122); max. firing rate of A-0022 45.0 MMBTU/hour (HHV)	570	Long Tons/day
A-4451	Acid Gas Scrubber (C-840) abating #3 H2S Plant (S-4433), #4 H2S Plant (S-4434), #5 H2S Plant (S-4435), #6 H2S Plant Recycle Amine Generator (S-4454), #8 NH3-H2S Plant (S-4429), and #18 NH3-H2S Plant (S-4345)	12.50	MMSCFD

Table 4: ALTERATIONS TO EXISTING FURNACES			
Source #	**Source Description**	**Capacity**	**Units**
S-4161	TKN Furnace (F-510)	61	MMBTU/hour (HHV)
S-4162	TKN Furnace (F-520)	61	MMBTU/hour (HHV)
S-4163	TKN Furnace (F-530)	61	MMBTU/hour (HHV)
S-4188	Polymer Furnace (F-651)	27	MMBTU/hour (HHV)
S-4189	Polymer Furnace (F-661)	15	MMBTU/hour (HHV)

Table 5 summarizes changes to the source, abatement device, and exempt equipment tables grouped by their corresponding tables in the Title V permit.

Table 5:	
Sources/abatement devices/exempt equipment added/removed/moved	**Portions affected in Title V permit**
Table II.A.1	
Per Chevron's request, renumbered fixed roof tank (FRT) S-0025 to S-2801 to match tank field numbering	1. Table II.A.1 2. Tables IV and VII.F.1.0 3. Section VI → permit condition #15107
Deleted FRT S-0870	1. Table II.A.1 2. Section VI → permit condition #11208.
Deleted internal floating roof tank (IFRT) S-1645	3. Tank and Wastewater Cluster Index → Table IV.F.1.14 → IFRT Cluster 27 4. Table II.A.1 5. Tables IV and VII.F.1.14 6. Section VI → permit condition # 21307
Amended applicable permit condition reference for External floating roof tank (EFRT) S-3197 to #13535 from #8252	1. Table II.A.1 2. Tables IV and VII.F.1.10 3. Section VI → deleted permit condition #8252 and added permit condition #13535.
"Domed" EFRT S-3202	1. Because S-3202 was "domed" under Application 29494, it was deleted from EFRT Cluster 23 and was added to IFRT Cluster 24. 2. Revised source description for S-3202

Table 5:	
Sources/abatement devices/exempt equipment added/removed/moved	**Portions affected in Title V permit**
	from EFRT to domed EFRT. 3. Clarified tank in "Units" column that tank is permitted to store methanol or petroleum hydrocarbons other than methanol provided the vapor pressure is below 8.33 psia 4. Deleted S-3202 and permit condition 13364 from Tables IV and VII.F.1.10. 5. Added S-3202 and permit condition 13364 to Tables IV and VII.F.1.11. 6. Deleted S-3202 from Table IX-B-2, and added to Table IX-B-3.
Revised source description for S-3225 from EFRT to domed EFRT	1. Tank and Wastewater Cluster Index → Table IV.F.1.11 → IFRT Cluster 24 2. Table II.A.1 3. Deleted from Tables IV and VII.F.1.10 4. Added to Tables IV and VII.F.1.11 5. Section VI → updated permit condition #18702
Per Chevron's request, renumbered domed EFRT S-3230 to S-3228 to match tank field numbering	1. Tank and Wastewater Cluster Index → Table IV.F.1.11 → IFRT Cluster 24 2. Table II.A.1 3. Tables IV and VII.F.1.11 4. Section VI → updated permit condition #25848 5. Table IX-B-3
Added domed EFRT S-3231	1. Tank and Wastewater Cluster Index → Table IV.F.1.11 → IFRT Cluster 24 2. Table II.A.1 3. Tables IV and VII.F.1.11 4. Section VI → added permit condition #25913 5. Table IX-B-3
Added FRT S-3234 (replaced S-3141)	1. Table II.A.1 2. Table II.B → abated by A-0043 and A-0044 3. Tables IV and VII.E.3.1 4. Tables IV and VII.F.1.2 5. Section VI → updated permit conditions #1046 and 25814

Table 5:	
Sources/abatement devices/exempt equipment added/removed/moved	**Portions affected in Title V permit**
Deleted S-4032 and S-4033	1. Table II.A.1 2. Tables IV and VII.A.3.2 3. Section VI → permit condition # 22923
Deleted S-4046	1. Table II.A.1 2. Tables IV and VII.A.3.2 3. Section VI → permit conditions # 469, 22923
Deleted S-4156 and S-4157 that have been replaced by equipment that is part of Modernization Project	1. Table II.A.1, B 2. Tables IV and VII.A.3.2 3. Section VI → permit conditions # 469, 21232, 22923
Deleted S-4158 that have been replaced by equipment that is part of Modernization Project	1. Table II.A.1 2. Tables IV and VII.A.3.2, Table VI.A.5.1 3. Section VI → permit condition # 21232, 22923, 23872
Deleted S-4170 and S-4171 (where applicable) that have been replaced by equipment that is part of Modernization Project	1. Table II.A.1, B 2. Tables IV and VII.A.3.2, Table IV.A.5.1 3. Section VI → permit conditions # 469, 16679, 16686, 21232, 23201, 23872, 24136 (part 103)
Revised source description for S-4191 from Alkane to SRU cooling water tower	1. Table II.A.1 2. Tables IV and VII.C.1.1
Deleted S-4192 and S-4193 that have been replaced by equipment that is part of Modernization Project	1. Table II.A.1 2. Tables IV and VII.A.3.1.
Amended daily throughput limits for SRU #1, #2, #3 S-4227, 4228, and 4229 to reflect Post-Modernization Project limits	1. Table II.A.1 2. Added “Post-Modernization Modification” to entry corresponding to S-4229 to clarify that SRU#3 has not yet been modified – implying, the sulfur make at the SRU is subject to the current limit of 336 LTD (and not the future limit of ≤570 LTD).
Deleted S-4250 that has been replaced by	1. Table II.A.1, B 2. Tables IV and VII.C.3.1

Table 5:	
Sources/abatement devices/exempt equipment added/removed/moved	**Portions affected in Title V permit**
equipment that is part of Modernization Project	3. Section VI → permit conditions # 469, 22979, 24136 (part 103)
Amended daily and annual throughput limits for TKC S-4253 to reflect Post-Modernization Project limits	1. Table II.A.1 2. Table IV and VII.C.3.1
Deleted S-4348 that have been replaced by equipment that is part of Modernization Project	1. Table II.A.1, B 2. Tables IV and VII.C.3.1 and H.2.1 3. Section VI → permit conditions # 13369, 24433.
Exempted S-4349	1. Deleted from Tables II.A.1, IV & VII.A.3.5, and permit conditions #469, 22923 2. Added to Table II.C
Deleted S-4372	1. Table II.A.1 2. Tables IV and VII.F.1.0 3. Section VI → permit condition # 24606
Deleted S-4396	1. Tables II.A.1, II.B (sources abated by A-43 and A-44) 2. Tables IV and VII.E.3.1 3. Section VI → permit condition #'s 469 (preamble) and 25814.
Deleted S-4401	1. Table II.A.1 2. Tables IV and VII.A.4.1 3. Section VI → permit condition # 26127
Deleted S-4403, 4404	1. Tables II.A.1 and II.C 2. Section VI → permit condition # 469
Amended source descriptions for S-4426, and 4428	1. Table II.A.1
Deleted S-4427	1. Table II.A.1 2. Tables IV and VII.H.1.1 3. Section VI → permit condition #17527
Amended daily throughput limit for #5 H2S Plant S-4435 to reflect Post-Modernization Project limit	1. Table II.A.1
Moved S-4440 after S-4438	1. Table II.A.1

Table 5:	
Sources/abatement devices/exempt equipment added/removed/moved	**Portions affected in Title V permit**
Added SRU stack gas heaters #1, #2, #3 S-4436, 4437, 4438 to reflect Post-Modernization Project limits	2. Table II.A.1 3. Tables IV and VII.A.3.1 4. Tables IV and VII.E.2.1 3. Section VI → added permit condition # 24136
Added S-4441	1. Table II.A.1 2. Section VI → permit condition # 25176 3. Table VII.H.2.1
Added Hydrogen Plant Trains #1 and #2 S-4449 and S-4450 and Hydrogen Recovery Plant S-4451	1. Table II.A.1 2. Tables IV and VII.C.3.1 3. Tables IV and VII.H.2.1 4. Section VI → added permit condition # 24136
Added #6H2S Plant Recycle Amine Generator S-4454	1. Table II.A.1 2. Tables IV and VII.E.1.1 3. Section VI → added permit condition # 24136
Added Hydrogen Plant Cooling Water Tower S-4465	1. Table II.A.1 2. Tables IV and VII.C.1.1 3. Section VI → added permit condition # 24136
Added Hydrogen Plant Reformer Furnaces for Trains #1 and #2 S-4471 and S-4472	1. Table II.A.1 2. Tables IV and VII.A.3.3 3. Tables IV and VII.H.2.1 4. Section VI → added permit condition # 24136
Added Fixed Roof Tanks S-4481 to S-4483	1. Table II.A.1 2. Tables IV and VII.F.1.0 3. Section VI → added permit condition # 26815
Added Sulfur Loading Rack S-4490	4. Table II.A.1 5. Tables IV and VII.E.3.1 6. Section VI → deleted parts 78, 79, and 110 of permit condition # 24136.
Deleted Alkane Flare S-6017/A-6017	1. Table II.A.1, B, C 2. Tables IV and VII.A.2.1 3. Section VI → deleted from permit condition # 18656 and # 23735.
Deleted A-6018	1. Table II.B

Table 5:	
Sources/abatement devices/exempt equipment added/removed/moved	**Portions affected in Title V permit**
Added Hydrogen Plant Flare S-6021	2. Table II.A.1, B 3. Tables IV and VII.A.2.1 4. Tables IV and VII.H.2.1 4. Section VI → added permit condition # 24136
Added Refillable Tote S-6022	1. Table II.A.1 2. Tables IV and VII.F.1.0 3. Section VI → added permit condition # 26558
Emergency Standby Diesel Generator Set S-7013	4. Table II.A.1 → clarified 50 hours/year is for reliability and testing use only. 5. Tables IV and VII.A.4.1 6. Section VI → deleted permit condition # 22569; added to permit condition # 22850
Emergency Standby Diesel Generator Sets S-7534, 7535, 7536, 7538, 7539	1. Table II.A.1 → clarified 50 hours/year is for reliability and testing use only. 2. Tables IV and VII.A.4.1
Deleted Primary FCCU Pump Diesel Engine S-7537	1. Table II.A.1, B 2. Tables IV and VII.A.4.1 3. Section VI → deleted permit condition # 24022
Table II.A.2	
EFRTs S-399, 1292, 3180	1. Table II.A.2 → clarified material stored is non-exempt stock.
Deleted FRTs S-1908, 2917, 2918	1. Table II.A.2 2. Tables IV and VII.F.1.2 3. Section VI → deleted from permit condition # 4233
Deleted FRT S-1909	1. Table II.A.2 2. Tables IV and VII.F.1.0 3. Section VI → deleted from permit condition # 11208
Deleted FRT S-1911	1. Tables II.A.2 and II.C 2. Tables IV and VII.F.1.0 3. Section VI → permit condition #'s 4233, 11208
Deleted FRT S-2921	1. Table II.A.2 2. Tables IV and VII.F.1.0 3. Section VI → permit condition # 4233 4. Table VII.F.1.2

Table 5:	
Sources/abatement devices/exempt equipment added/removed/moved	**Portions affected in Title V permit**
Deleted FRT S-3141	1. Tables II.A.2, B 2. Tables IV and VII.E.3.1 3. Tables IV and VII.F.1.2 4. Section VI → permit condition # 1046, 25814
Revised capacity of Pressure Tank S-3192	1. Table II.A.2 Capacity of S-3192 revised to 2,600 gallons (from 2.6 million gallons).
Revised source descriptions for S-4076, 4172, 4173, 4187	2. Table II.A.2 3. Tables IV and VII.C.1.1
Reduced permitted throughput for S-4251 per Application 28218 review	1. Table II.A.2 2. Added “feed” in the “Units” column to clarify the daily and annual SDA throughputs pertain to feed to the unit.
Deleted S-4420	1. Table II.A.2 2. Table II.C 3. Tables IV and VII.H.1.1.
Deleted Oil Water Separator (OWS) S-6250	1. Tables II.A.2, B 2. Tables IV and VII.G.1.4 3. Tables IV and VII.G.1.8 4. Section VI → permit condition # 12842
Emergency Standby Diesel Generator Sets S-7501, 7507, 7508, 7509, 7511 through 7517, 7521, 7523, 7531	1. Table II.A.1 → clarified hours/year is for reliability and testing use only.
Deleted S-7530	1. Tables II.A.2 2. Tables IV and VII.A.4.1
Table II.A.3	
Deleted FRT S-0021	1. Tank and Wastewater Cluster Index → Table IV.F.1.3 → Fixed Roof Tank Cluster 02 2. Table II.A.3 3. Tables IV and VII.F.1.3 4. Section VI → permit condition # 5270
Deleted EFRT S-0232	1. Wastewater EFRT Tanks Cluster 11 → Table IV.F.1.5 and Wastewater EFRT Tanks Cluster 45.e → Table IV.G.1.6 2. Table II.A.3 3. Tables IV and VII.F.1.5

Table 5:	
Sources/abatement devices/exempt equipment added/removed/moved	**Portions affected in Title V permit**
	4. Tables IV and VII.G.1.6 1. Section VI → permit condition # 5270
Deleted EFRTs S-0297 and 0298	1. Wastewater EFRT Tanks Cluster 11 → Table IV.F.1.5 2. Table II.A.3 3. Tables IV and VII.F.1.5
Deleted EFRTs S-0634, 0953, 1686	1. EFRT Tanks Cluster 26 → Table IV.F.13 2. Table II.A.3 3. Tables IV and VII.F.1.13
Deleted FRT S-1431	1. Table II.A.3 2. Tables IV and VII.F.1.2 Fixed Roof Tank Cluster 01b
S-0990, 0991, 1287, 1289, 1459, 1491, 1504, 1687, 1688, 1843, 1966, 3071, 3072, 3073, 3128, 3129	1. Table II.A.3 → clarified material stored is non-exempt stock.
Deleted FRT S-3140	1. Tables II.A.3, B 2. Table VII.F.1.2
Marine Loading Berths (MLBs) S-9321 through 9324, S-9326	1. Table II.A.3 → deleted S-9325 (Berth #9) which is no longer in service; clarified annual throughput limit of ~147 million barrels is the sum-total of volume loaded (ship to shore + shore to ship) at MLBs. 2. Table II-B → deleted S-9325 from MLBs abated by A-900. 3. Deleted S-9325 from Tables IV and VII.B.5.1, and IX-A-3 4. Section VI → deleted S-9325 from preamble to permit condition #4714
Table II.B	
Deleted A-0008 and A-0094	1. Table II-B (S-4094 abated by A-0008 and A-0094 is archived and no longer in service) 2. Section VI → permit condition # 20791
Added Post-Modernization abatement scenario for SRU Tail Gas Unit Thermal Oxidizers (TGTOs)	The SRU abatement trains when modified as part of the Modernization Project are as shown below: SRU → TGTO → WESP → SGH S-4227 → A-20 → A-120 → S-4436

Table 5:	
Sources/abatement devices/exempt equipment added/removed/moved	**Portions affected in Title V permit**
A-0020, 0021, 0022 and Wet ESPs (WESPs) A-120, 121, 122	S-4228 → A-21 → A-121 → S-4437 S-4229 → A-22 → A-122 → S-4438 Where, TGTO → tail gas thermal oxidizer, WESP → wet electrostatic precipitators, and SGH →stack gas heaters. 5. Added above devices to Table II-B. 6. Added "Post-Modernization Modification" to entry corresponding to S-4229 to clarify that SRU#3 has not yet been modified. 7. Tables IV and VII.E.2.1. 8. Section VI → added permit condition #24136 (parts 81 through 95).
Deleted S-3140 and S-3141 abated by A-0043	1. Table II-B (molten sulfur storage tanks S-3140 and 3141 abated by A-0043 are archived and no longer in service; added S-3234 which replaced S-3141). 2. Deleted reference to "and Loading Racks" because A-0043 (and A-0044) that used to abate S-3226, 3234, and 4396 were repurposed to exclusively abate S-3226 and 3234 thus reducing their vapor load. 3. 4. S-3140 → Tables II.A.3, VII.F.1.2 5. S-3141 → Tables II.A.2, IV & VII.E.3.1, IV & VII.F.1.2, Section VI → permit condition #1046, #25814
Added caustic scrubber A-0044	1. Table II-B – because S-4396 has been removed from service, caustic scrubber will abate molten sulfur storage tanks (S-3226, 3234) 2. Deleted reference to "and Loading Racks" because A-0044 (and A-0043) that used to abate S-3226, 3234, and 4396 were repurposed to exclusively abate S-3226 and 3234 thus reducing their vapor load. 3. Tables IV & VII.E.3.1. 4. Section VI → permit condition #1046, #25814

Table 5:	
Sources/abatement devices/exempt equipment added/removed/moved	**Portions affected in Title V permit**
Deleted scrubbers A-0261 and A-0262 abating methanol emissions from deaerator vents associated with S-4250 that have been replaced by equipment that is part of Modernization Project	1. Table II-B 2. Section VI → permit condition # 15698
Added Selective Catalytic Reduction (SCR) A-0302, 0303	3. Table II-B – Each SCR will abate each of the two new hydrogen plant reformer furnaces (S-4471, 4472). 4. Tables IV & VII.A.3.3 5. Section VI → added permit condition #24136 (parts 5 through 20).
Deleted A-0607 and A-0611	1. Table II-B (S-605 and S-610 abated by A-0607 and A-0611 are archived and no longer in service)
Deleted A-0615	9. Table II-B (S-660 and S-6066 abated by A-0615 are archived and no longer in service)
Amended A-0620, A-0622, A-0623, A-0624, A-0627, A-0628 in Table II-B	1. Amended source description and #. 2. Amended monitoring and recordkeeping to align with permit condition# 8869. 3. Amended limit/efficiency to align with permit condition# 8869.
Amended A-0632 in Table II-B	1. Amended source description and #. 2. Amended monitoring and recordkeeping to align with permit condition# 25835. 10. Amended limit/efficiency to align with permit condition# 25835.
Deleted carbon abatement A-0630 and A-0631	1. Table II.B (S-6250 abated by A-0630 and A-0631 is archived and no longer in service) 2. Table IV and VII.G.1.8 3. Section VI → permit condition #12842
Added A-4413	1. Table II.B (abates S-4413) 2. Tables IV and VII.G.1.4 3. Section VI → permit condition #26721
Added acid gas scrubbers A-4450 and A-4451	1. Table II.B (abates S-4345, 4429, 4433 to 4435, 4454) 2. Table IV.E.2.1

Table 5:	
Sources/abatement devices/exempt equipment added/removed/moved	**Portions affected in Title V permit**
	3. Section VI → added permit condition #24136 (part 82)
Amended requirements for Flares A-6010, A-6012, A-6013, A-6015, A-6016, A-6019, A-6021, A-6039 in Table II-B	1. Added NSPS Ja, MACT CC flare requirements. 2. MACT CC compliance date for all flares, except S-6021, extended by the District till January 30, 2020. In contrast, S-6021 was required to comply with MACT CC flare requirements on January 30, 2019.
Deleted A-7537	1. Table II.B (S-7537 abated by A-7537 is archived and no longer in service)
Table II.C	
Added potentially applicable exemptions for: S-55, S-234, S-290, S-293, S-397, S-596, S-750, S-900, S-901, S-902, S-955, S-984, S-1052, S-1149, S-1292, S-1297, S-1428, S-1451, S-1456, S-1468, S-1470, S-1492, S-1493, S-1506, S-1546, S-1634, S-1636, S-1679, S-1685, S-1723, S-1724, S-1725, S-1825, S-1899, S-1910, S-1989, S-2903, S-3067, S-3074, S-3132, S-3138, S-3139, S-3157 to 3172, S-3179, S-3182, S-3186, S-3194 to 3195, S-3204, S-3215 to 3216, S-3310, S-4230, S-4239, S-4240 to 4241, S-4400	1. Table II-C
Deleted S-223, S-225, S-291, S-298, S-319, S-398, S-400, S-605, S-634, S-660, S-956, S-979, S-1289, S-1507, S-1911, S-3202, S-4403 to 4404, S-4420, S-	1. Table II-C

Table 5:	
Sources/abatement devices/exempt equipment added/removed/moved	**Portions affected in Title V permit**
4423, S-6005, S-6017, S-6039, S-6065	
Added S-6023	1. Table II-C
Added S-2420, S-2421, S-2426, S-2445	1. Tables II-C, IV and VII.F.1.2,
Added Spheres S-3206, 3223, 3224	1. Table II.C → spheres deemed exempt prior to initial Title V issuance in December 2003 but weren't included in permit.
Added S-3227, S-4349, S-4406, S-7547	1. Table II.C
Added fugitive sources S-32111 to 32116	1. Tables II.B, II.C, 2. Tables IV "Abatement", IV.H.2.1 3. Section VI → permit condition # 8869
Clarified/amended source descriptions: S-1455, S-9300	1. Table II.C

III. Generally Applicable Requirements

This section of the permit lists requirements that generally apply to all sources at a facility including insignificant sources and portable equipment that may not require a District permit. If a generally applicable requirement applies specifically to a source that is permitted or significant, the standard will also appear in Section IV and the monitoring for that requirement will appear in Sections IV and VII of the permit. Parts of this section apply to all facilities (e.g., particulate, architectural coating, odorous substance, and sandblasting standards). In addition, standards that apply to insignificant or unpermitted sources at a facility (e.g., refrigeration units that use more than 50 pounds of an ozone-depleting compound) are placed in this section.

Unpermitted sources are exempt from normal District permits pursuant to an exemption in BAAQMD Regulation 2, Rule 1. They may, however, be specifically described in a Title V permit if they are considered "significant sources" as defined in BAAQMD Rule 2-6-239.

Changes to permit

The dates of adoption or approval of the rules in Table III have been updated and/or rules added:

- BAAQMD Regulation 1
- BAAQMD Regulation 2, Rule 1
- SIP Regulation 2, Rule 1
- BAAQMD Regulation 2, Rule 2
- SIP Regulation 2, Rule 2
- BAAQMD Regulation 2, Rule 4
- SIP Regulation 2, Rule 4
- BAAQMD Regulation 2, Rule 5
- BAAQMD Regulation 2, Rule 6
- SIP Regulation 2, Rule 6
- BAAQMD Regulation 2, Rule 9
- BAAQMD Regulation 3
- BAAQMD Regulation 5
- BAAQMD Regulation 6, Rule 1
- BAAQMD Regulation 8, Rule 3
- BAAQMD Regulation 8, Rule 4
- SIP Regulation 8, Rule 5
- BAAQMD Regulation 8, Rule 9
- BAAQMD Regulation 8, Rule 10
- SIP Regulation 8, Rule 10
- BAAQMD Regulation 8, Rule 15
- BAAQMD Regulation 8, Rule 18
- SIP Regulation 8, Rule 18
- BAAQMD Regulation 8, Rule 28
- SIP Regulation 8, Rule 28
- BAAQMD and SIP Regulations 8, Rules 40 & 47
- BAAQMD Regulation 11, Rule 10
- BAAQMD Regulation 11, Rule 12
- BAAQMD Regulation 11, Rule 18
- BAAQMD Regulation 12, Rule 15
- BAAQMD Regulation 14, Rule 1
- CCR, Title 17, Section 93115
- CCR, Title 17, Section 93116
- 40 CFR Part 61, Subpart M
- 40 CFR Part 63, Subpart CC
- 40 CFR Part 82, Subpart F
- 40 CFR Part 82, Subpart H
- 40 CFR Part 82, Subpart H 82.270(b)

IV. Source-Specific Applicable Requirements

This section of the permit lists the applicable requirements that apply to permitted or significant sources. These applicable requirements are contained in tables that pertain to one or more sources that have the same requirements. The order of the requirements is:

- District Rules
- SIP Rules (if any) are listed following the corresponding District rules. SIP rules are District rules that have been approved by EPA for inclusion in the California State Implementation Plan. SIP rules are "federally enforceable" and a "Y" (yes) indication will appear in the "Federally Enforceable" column. If the SIP rule is the current District rule, separate citation of the SIP rule is not necessary and the "Federally Enforceable" column will have a "Y" for "yes". If the SIP rule is not the current District rule, the SIP rule or the necessary portion of the SIP rule is cited separately after the District rule. The SIP portion will be federally enforceable; the non-SIP version will not be federally enforceable, unless EPA has approved it through another program.
- Other District requirements, such as the Manual of Procedures, as appropriate.
- Federal requirements (other than SIP provisions)
- BAAQMD permit conditions. The text of BAAQMD permit conditions is found in Section VI of the permit.
- Federal permit conditions. The text of Federal permit conditions, if any, is found in Section VI of the permit.

Section IV of the permit contains citations to all applicable requirements. The text of the requirements is found in the regulations, which are readily available on the District or EPA websites, or in the permit conditions, which are found in Section VI of the permit. All monitoring requirements are cited in Section IV. Section VII is a cross-reference between the limits and monitoring requirements. A discussion of monitoring is included in Section C.VII of this permit evaluation/statement of basis.

Changes to the proposed renewal permit:

Regulatory names to BAAQMD, SIP, NSPS, and NESHAP regulations were updated for consistency throughput the permit.

Missing or incorrect federal enforceability status (Y or N) was updated in multiple tables.

Deleted future effective dates that have passed.

The dates of adoption or approval of the rules, rule/section descriptors, and their "federal enforceability" status in Section IV were updated for the following regulations:

- BAAQMD Regulation 1
- BAAQMD & SIP Regulation 2, Rule 1
- BAAQMD Regulation 6, Rule 1
- SIP Regulation 6
- BAAQMD Regulation 8, Rule 1

- BAAQMD Regulation 8, Rule 9
- SIP Regulation 8, Rule 10
- BAAQMD Regulation 8, Rule 18
- BAAQMD Regulation 8, Rule 32
- BAAQMD & SIP Regulation 8, Rule 44
- BAAQMD Regulation 9, Rule 1
- SIP Regulation 9, Rule 9
- BAAQMD & SIP Regulation 9, Rule 10
- CCR, Title 17, Section 93115
- 40 CFR 60 Subpart A; BAAQMD Regulation 10-1
- 40 CFR 60 Subpart Db; BAAQMD Regulation 10-4
- 40 CFR 60 Subpart J
- 40 CFR 60 Subpart Ka; BAAQMD Regulation 10-16
- 40 CFR 60 Subpart Kb
- 40 CFR 60 Subpart GG; BAAQMD Regulation 10-40
- 40 CFR 60 Subpart GGG; BAAQMD Regulation 10-59
- 40 CFR 60 Subpart QQQ; BAAQMD Regulation 10-69
- 40 CFR 60 Subpart VV; BAAQMD Regulation 10-52
- 40 CFR 61 Subpart A
- 40 CFR 61 Subpart FF; BAAQMD Regulation 11, Rule 12
- 40 CFR 61 Subpart M
- 40 CFR 63 Subpart A
- 40 CFR 63 Subpart Y
- 40 CFR 63 Subpart J
- 40 CFR 63 Subpart CC
- 40 CFR 63 Subpart UUU

Inconsistencies in the formatting of BAAQMD incorporation by reference of federal rules have corrected for consistency throughout the permit for the following:

- BAAQMD Regulation 10-1 and 40 CFR 60 Subpart A
- BAAQMD Regulation 10-4 and 40 CFR 60 Subpart Db
- BAAQMD Regulation 10-16 and 40 CFR 60 Subpart Ka
- BAAQMD Regulation 10-40 and 40 CFR 60 Subpart GG
- BAAQMD Regulation 10-52 and 40 CFR 60 Subpart VV
- BAAQMD Regulation 10-59 and 40 CFR 60 Subpart GGG
- BAAQMD Regulation 10-69 and 40 CFR 60 Subpart QQQ
- BAAQMD Regulation 11, Rule 12 and 40 CFR 61 Subpart FF

Source-specific applicability has been updated based on recent changes to, or adoption of, BAAQMD and federal regulations. The following sections summarize the applicability changes for the following new and revised BAAQMD and federal regulations:

BAAQMD

- Regulation 6, Rule 5
- Regulation 8, Rule 53
- Regulation 8, Rule 18
- Regulation 8, Rule 32
- Regulation 8, Rule 44
- Regulation 9, Rule 10
- Regulation 11, Rule 10

Federal

- 40 CFR 60 Subpart Ja for flares
- 40 CFR 63 Subpart CC for heat exchange systems
- 40 CFR 63 Subpart Y for marine terminals
- 40 CFR 63 Subpart EEE for CO Boilers
- 40 CFR 63 Subpart DDDDD, Boiler MACT

Applicability of BAAQMD Regulation 6, Rule 5: "Particulate Emissions from Refinery Fluidized Catalytic Cracking Units (FCCUs)"

This rule was adopted on December 16, 2015 and was amended on December 19, 2018. The purpose of this rule is to limit emissions of condensable particulate matter and precursors of secondary particulate matter from refinery FCCUs. For the purposes of this rule, commingled ammonia, condensable particulate matter, and sulfur dioxide emissions from a FCCU and one or more other sources from a single exhaust point are considered FCCU emissions.

The emissions train for Chevron's FCCU is as follows:
FCCU (S-4285) → ESP (A-14) → Emission Point (P-133) to atmosphere.

Effective January 1, 2018, Section 6-5-301 established a daily average FCCU ammonia emission limit of 10 ppmvd at 3% O2.

In lieu of complying with the ammonia emission limit in Section 6-5-301, a refinery may seek a limited exemption from the ammonia emission limit under Section 6-5-115 by establishing an enforceable ammonia emission limit by optimization of ammonia and/or urea injection pursuant to a District-approved Optimization and Demonstration Protocol, in accordance with Section 6-5-403. Section 6-5-403 requires a refinery to submit an Optimization and Demonstration Protocol by March 1, 2016, commence and complete an approved Optimization and Demonstration Protocol by June 30, 2017, and report the results of the Optimization and Demonstration Protocol and the proposed Optimized Ammonia Emissions Concentration by August 31, 2017.

Chevron has elected to optimize urea injection in accordance with Section 6-5-403 and seek a limited ammonia emission limit exemption under 6-5-115. The District will establish an enforceable emission limit pursuant to Section 6-5-403 when it completes its review of NSR Application 27796. The changes stemming from Application 27796 will be addressed in a future significant revision of the renewed permit under Title V Application 27797. Thus, the refinery is not subject to the ammonia emission limit in Section 6-5-301. Regulation 6-5 applicable requirements are codified in Table IV.C.2.1.

Applicability of BAAQMD Regulation 8, Rule 53: "Vacuum Truck Operations"

This rule was adopted on April 18, 2012. The purpose of this rule is to limit emissions of organic compounds from the use of vacuum trucks to move materials at petroleum refineries, bulk plants, bulk terminals, marine terminals, and organic liquid pipeline facilities.

Effective April 1, 2013, the rule includes an emission limit for any loading event (Section 8-53-301), limits for liquid and vapor leaks (Sections 8-53-302 and 303, respectively), and requirements for unloading of regulated material (Section 8-53-304). Reporting, monitoring, and recordkeeping requirements are addressed in Sections 8-53-400 and 500. Regulation 8-53 applicable requirements are codified in Table IV – D.1.1.

Applicability of BAAQMD Regulation 11, Rule 10:
"Hexavalent Chromium Emissions from All Cooling Towers and Total Hydrocarbon Emissions from Petroleum Refinery Cooling Towers"

This rule was adopted on November 15, 1989, was amended and adopted on December 16, 2015, and was revised and adopted on December 19, 2018. The rule's original scope was to limit hexavalent chromium emissions from all cooling towers. The recent amendments/revisions expanded the scope of the rule in order to limit total hydrocarbon emissions from cooling towers at petroleum refineries.

Effective January 1, 2019, total hydrocarbon leak monitoring for petroleum refinery cooling towers must be initiated using one of the options in Section 11-10-304. If monitoring results indicate that the applicable leak action levels in Section 11-10-204 have been exceeded, the leak action requirements of Section 11-10-305 shall be followed. Reporting and recordkeeping requirements are described in Sections 11-10-401 and 504. Regulation 11-10 applicable requirements are codified in Table IV.C.1.1.

Applicability of 40 CFR 60, Subpart Ja:
"Standards of Performance for Petroleum Refineries for which Construction, Reconstruction, or Modification Commenced after May 14, 2007"

The addition of supplemental natural gas to flares (S-6010, 6012, 6013, 6015, 6016, 6019, and 6039) reviewed under Application 29160 modified the flares per NSPS Subpart Ja §60.100a(c)(1). Hence, all references to NSPS Subpart J in Table IV.A.2.1 were deleted and applicable requirements in NSPS Subpart Ja were added to the table.

NSPS Subpart Ja applicable requirements were added to Tables IV and VII.A.2.1 for Hydrogen Plant flare S-6021 and Tables IV and VII.A.3.3 for Hydrogen Plant Reformer Furnaces associated with Train #1 (S-4471) and #2 (S-4472). The above sources were built as part of the Modernization Project.

Because SRUs (S-4227, 4228, 4229) will be modified after May 14, 2007 as part of the Modernization Project, NSPS Subpart Ja applicable requirements were added to Tables

IV and VII.E.2.1 and all references to NSPS Subpart J were deleted from the above tables.

Refinery MACT 1 and 2:

EPA initially promulgated NESHAP for major sources in the "Petroleum Refineries – Other Sources Not Distinctly Listed" source category on August 18, 1995. These standards are also referred to as maximum achievable control technology (MACT) standards and this NESHAP for petroleum refineries is commonly referred to as Refinery MACT 1. The 1995 Refinery MACT 1 rule regulated miscellaneous process vents, storage vessels, wastewater, equipment leaks, gasoline loading racks and marine tank vessel loading. On October 28, 2009, EPA promulgated amendments to Refinery MACT 1 to include MACT standards for heat exchange systems, which were not originally addressed in Refinery MACT 1. Portions in Chevron's permit affected by these changes are discussed under "Applicability of 40 CFR 63.654 in Subpart CC".

EPA completed a residual risk and technology review of Refinery MACT 1, and published the final amendments on December 1, 2015 which included revisions to the Refinery MACT 1 requirements for process vents designated as ''maintenance vents.'' Maintenance vents are those whose use is needed only during startup, shutdown, maintenance or inspection of equipment where the equipment is emptied, depressurized, degassed or placed into service. The December 1, 2015, final amendments required that the hydrocarbon content of the vapor in the equipment served by the maintenance vent to be less than or equal to 10-percent of the lower explosive limit (LEL) prior to venting to the atmosphere. The December 1, 2015, final rule also provided specific allowances for situations when the 10-percent LEL cannot be demonstrated or is technically infeasible. The compliance date included in the December 1, 2015, final rule for maintenance vents located at sources constructed on or before June 30, 2014, was February 1, 2016 (the effective date of the December 1, 2015, final amendments). In response to comments received and petitions filed, EPA revised the compliance date for maintenance vents located at sources constructed on or before June 30, 2014, from February 1, 2016, to August 1, 2017. Following the compliance extension procedure in 40 CFR 63.6(i), most refiners received a 12-month extension to August 1, 2018 to comply with the maintenance vent standards.

On November 8, 2018, EPA issued final amendments to the petroleum refinery NESHAP (referred to as Refinery MACT 1 and Refinery MACT 2) and to the NSPS for Petroleum Refineries. EPA's action finalized technical corrections and minor revisions for work practice standards, recordkeeping and reporting requirements for the Petroleum Refinery Sector rules; changed the compliance date for existing maintenance vents standards that apply during periods of startup, shutdown, maintenance or inspection for Refinery MACT 1 from August 1, 2017, to 30 days from the effective date of the final rule of January 30, 2019. Portions in Chevron's permit affected Refinery MACT 2 are discussed under "Applicability of NESHAP 40 CFR 63, Subpart UUU".

Group 1 Storage Vessels in Subpart CC (Refinery MACT 1): "National Emission Standards for Hazardous Air Pollutants from Petroleum Refineries"

Table 6 below summarizes the qualification criteria for Group 1 storage vessels (storage tanks) at existing sources (such as Chevron).

Table 6:		
Group 1 vessel	**Prior to February 1, 2016**	**On/after February 1, 2016**
At existing source if	Design capacity ≥46,759 gallons	Design capacity ≥40,000 gallons or Design capacity ≥20,000 gallons but <40,000 gallons
	Stored liquid maximum TVP ≥1.51 psia	Stored liquid maximum TVP ≥0.75 psia or Stored liquid maximum TVP ≥1.9 psia
	Stored liquid annual average TVP ≥1.2 psia	
	Annual average HAP liquid concentration >4% by wt. total organic HAP	Annual average HAP liquid concentration >4% by wt. total organic HAP
At new source if	Design capacity ≥39,890 gallons or	Design capacity ≥40,000 gallons or Design capacity ≥20,000 gallons but <40,000 gallons
	Stored liquid maximum TVP ≥0.50 psia	Stored liquid maximum TVP ≥0.50 psia or Stored liquid maximum TVP ≥1.9 psia
	Annual average HAP liquid concentration >2% by wt. total organic HAP	Annual average HAP liquid concentration >2% by wt. total organic HAP

Unlike the District's definition for "source" in Regulation 1-227 which pertains to "any operation that produces an/or emits air pollutants", an existing "source" defined in 40 CFR 63.2 "means the collection of equipment, activities, or both within a single contiguous area and under common control that is included in a section 112(c) source category or subcategory for which a section 112(d) standard or other relevant standard is established pursuant to section 112 of the Act."

The definition in 40 CFR 63.641 was amended and expanded to include storage tanks that wouldn't have otherwise qualified as Group 1 vessels prior to February 1, 2016. The net effect of the above change was intended to subject an increased number of tanks to the Group 1 applicable requirements in MACT CC.

Chevron isn't affected by the above change because the refinery conservatively subjected 51 of their storage tanks summarized in Table 7 that are currently subject to Regulation 8, Rule 5 to MACT CC even though compositional testing of materials stored in one or more tanks may demonstrate the tanks don't meet the Group 1 qualification criteria.

Table 7:	
Table IV	**Source #'s**
F.1.10 – External Floating Roof Tank Cluster 23	S-0399, 3180, 3189, 3191, 3193, 3196, 3197, 3198, 3201, 3213, 3214, 3220
F.1.11 – Internal Floating Roof Tank Cluster 24	S-1637, 3202, 3225, 3228, 3229
F.1.13 – External Floating Roof Tank Cluster 26	S-0679, 0990, 0991, 0992, 1287, 1292, 1296, 1459, 1488, 1489, 1491, 1504, 1514, 1518, 1687, 1688, 1843, 3071, 3072, 3073, 3100, 3103, 3104, 3105, 3106, 3107, 3126, 3128, 3133, 3134
F.1.14 – Internal Floating Roof Tank Cluster 27	S-1289
F.1.9 – External Floating Roof Tank Cluster 17	S-3101, 3102
G.1.6 – External Floating Roof Tank Cluster 45e	S-3127

Applicability of 40 CFR 63.654 in Subpart CC (Refinery MACT 1): "National Emission Standards for Hazardous Air Pollutants from Petroleum Refineries pertaining to Heat Exchange Systems"

Chevron owns and operates nine closed-loop heat exchange systems S-4073, S-4076, S-4172, S-4173, S-4187, S-4191, S-4329, S-4465*, and S-6051 that provide cooling water for petroleum refining process units that meet the applicability criteria in 40 CFR 63.640(a) in the LSFO plant, Isomax plant, FCC plant, Polymer plant, RLOP plant, ALKY plant, SRU plant, and the new Hydrogen Plant that was built as part of the Modernization Project and are in organic hazardous air pollutants service defined in 40 CFR 63.641. 40 CFR 63.654 applicable requirements are codified in Table IV.C.1.1.

*The December 2018 amendments to Regulation 11-10 excluded cooling towers that are not in petroleum refining process service from the total hydrocarbon emission requirements in the rule via the Limited Exemption in Regulation 11-10-107. Therefore, S-4465 associated with the new Hydrogen Plant that was built as part of the Modernization Project is exempt from Regulations 11-10-204, 304, and 305. Though Chevron contends S-4465 is exempt from the MACT CC monitoring requirements per the definition of "heat exchange system" and "in organic HAP service" their claims haven't been substantiated with a letter from US EPA exempting them. For the interim and as noted in Tables IV and VII.C.1.1, S-4465 is subject to and will be expected to comply with MACT CC.

Applicability of 40 CFR 63.670 in Subpart CC (Refinery MACT 1): "National Emission Standards for Hazardous Air Pollutants from Petroleum Refineries pertaining to "Requirements for Flare Control Devices"

Chevron owns and operates eight flares S-6010, S-6012, S-6013, S-6015, S-6016, S-6019, S-6021, and S-6039. S-6021 was constructed as part of the Modernization Project and is the newest of the eight flares. S-6021 is associated with the new Hydrogen Plant, and is subject to applicable requirements in permit condition 24136, NSPS Ja (§§60.103a(h), 60.107a(a)(2), etc.), and MACT CC (§§63.670 and 63.671). The mass spectrometer (MS) installed at S-6021 will enable Chevron to demonstrate compliance with the total sulfur monitor requirement in part 33 of permit condition 24136, the fuel gas hydrogen sulfide (H_2S) limit of 162 ppmv determined hourly on a 3-hour rolling average basis in NSPS Ja, and MACT CC.

The remaining flares (non-S-6021) that were not reviewed as part of the Modernization Project though subject to NSPS Ja are potentially exempt from the H_2S monitoring in the rule per §60.107a(a)(3) because they only combust streams that are exempt per §60.103a(h). Exempt streams cited in §60.103a(h) include process upset gases, fuel gas released to the flare as a result of relief valve leakage, or other emergency malfunctions. Chevron will file deviations with the District's Compliance & Enforcement Division if any one of their flares combust gases other than exempt gases. The District granted Chevron an extension until January 30, 2020 for S-6010, S-6012, S-6013, S-6015, S-6016, S-6019, and S-6039 to come into compliance with the MACT CC flare requirements. Chevron will be installing MS's, which are designed to include H_2S measurements, for MACT CC compliance with §63.670(j), etc. on the above flares.

The applicable flare requirements for all flares is codified in Tables IV and VII.A.2.1.

Applicability of NESHAP 40 CFR 63, Subpart UUU (Refinery MACT 2): "National Emission Standards for Hazardous Air Pollutants for Petroleum Refineries: Catalytic Cracking Units, Catalytic Reforming Units, and Sulfur Recovery Units"

Chevron owns and operates sources affected by the Refinery Sector Rule revisions to 40 CFR63 Subpart UUU (Refinery MACT 2) that was published in the Federal Register on November 26, 2018. Changes incorporating the revised regulatory requirements were added to sources and/or the permit as summarized in Table 8 below.

Table 8:		
S# and source type	**Applicable requirements contained in Table IV**	**Target pollutants → Applicable requirements**
S-4285: Catalytic Cracking Unit	C.2.1	Metal HAP → 63.1564 Organic HAP → 63.1565
S-4237 and 4283: Semi-regenerative Catalytic Reforming Units	C.3.1	Organic HAP → 63.1566* Inorganic HAP → 63.1567**
S-4227, 4228, 4229: Claus/Wellman-Lord System Sulfur Recovery Units	E.2.1	HAP → 63.1568
Bypass lines	C.2.1 C.3.1 E.2.1	HAP → 63.1569

*Chevron's CRUs are not subject to the organic HAP requirements in MACT UUU per §63.1562 (f)(5), which states…
(f) This subpart does not apply to:
(5) Gaseous streams routed to a fuel gas system, provided that on and after January 30, 2019, any flares receiving gas from the fuel gas system are subject to §63.670.

De-pressure and purge gases from the CRUs (S-4237 and 4283) are routed to a fuel gas system. Gases from the fuel gas system are routed to the South Yard relief system consisting of the LSFO (S-6010) and D&R (S-6015) flares. The District granted Chevron an extension until January 30, 2020 for the above flares to come into compliance with the MACT CC flare requirements in §63.670.

**The initial source test at the CRUs established a site specific HCl daily average operating limit of 27 ppmv as measured by colormetric tube sampling system per Equation 4 in §63.1567 in the catalyst regenerator exhaust gas. Chevron clarified that the CRUs are equipped with an internal single-stage scrubbing system, and there are no add-on control devices. Inorganic gases generated at the CRU are scrubbed in a static mixer which is permanently installed in each CRU. Therefore, CMS/CEMS/COMS are not required and §§63.1572(c), (d), and 63.1576(b) don't apply.

Applicability of NESHAP 40 CFR 63, Subpart ZZZZ:
"National Emission Standards for Hazardous Air Pollutants for Stationary Internal Reciprocating Internal Combustion Engines"

Subpart ZZZZ establishes national emission limitations and operating limitations for hazardous air pollutants (HAP) emitted from stationary reciprocating internal combustion engines (RICE) located at major and area sources of HAP. This subpart also establishes requirements to demonstrate initial and continuous compliance with the emission limitations and operating limitations.

Under Subpart ZZZZ, a stationary RICE with a site rating of > 500 BHP is considered "new" if it was constructed or reconstructed on or after December 19, 2002. Else; it is considered "existing". Likewise, a stationary RICE with a site rating of ≤ 500 BHP is considered "new" if it was constructed or reconstructed on or after June 12, 2006. Else; it is considered "existing". Subpart ZZZZ is cited as an applicable requirement in Table IV.A.4.1.

Applicability of NESHAP 40 CFR 63, Subpart DDDDD:
"National Emission Standards for Hazardous Air Pollutants for Major Sources: Industrial, Commercial, and Institutional Boilers and Process Heaters"

Subpart DDDDD establishes national emission limitations and work practice standards for hazardous air pollutants (HAP) emitted from industrial, commercial, and institutional boilers and process heaters located at major sources of HAP. This subpart also establishes requirements to demonstrate initial and continuous compliance with the emission limitations and work practice standards.

Under Subpart DDDDD, a boiler or process heater is considered "new" if it was constructed or reconstructed on or after June 4, 2010. Else; it is considered "existing". Subpart DDDDD applicable requirements are codified in Tables IV.A.3.2, A.3.3, and IV.A.5.1.

Applicability of 40 CFR 64, Compliance Assurance Monitoring (CAM):

CAM was developed to provide assurance that facilities comply with applicable emissions limitations by adequately monitoring control devices. The CAM rule was effective on November 21, 1997. Facilities such as Chevron are not affected by CAM requirements until they submit an application to renew their Title V permit. As part of this renewal application, Chevron's applicability analysis for CAM is summarized in Appendix A.

CAM applies to a source of criteria pollutant or hazardous air pollutant (HAP) emissions if all the following requirements are met:

- The source is located at a major source for which a Title V permit is required; and
- The source is subject to a federally enforceable emission limitation or standard for a criteria pollutant or HAP; and
- The source uses a control device to comply with the federally enforceable emission limitation or standard; and
- The source has potential pre-control emissions of the regulated pollutant that are equal to or greater than the major source threshold for the pollutant (in BAAQMD, the major source thresholds are 100 tons per year for each criteria pollutant, 10 tons per year for a single HAP, and 25 tons per year for two or more HAPs); and
- The source is not otherwise exempt from CAM.

A source potentially subject to CAM may be exempt from the rule per the exemptions specified in 40 CFR 64.2(b)(1) – Exempt Emission Limitations or Standards. Exemptions in 40 CFR 64.2(b)(1) that reasonably apply to sources at Chevron are:

- 40 CFR 62(b)(1)(i) – Emission limitations or standards proposed by the Administrator after November 15, 1990, pursuant to section 111 or 112 of the ACT; or
- 40 CFR 62(b)(1)(vi) – Emission limitations or standards for which a Title V Permit specifies a continuous compliance determination method (a method, specified by the applicable standard or an applicable permit condition, which: (1) is used to determine compliance on a continuous basis, consistent with the averaging period established for the emission limitation or standard; and (2) Provides data either in units of the standard or correlated directly with the compliance limit).

Based on Chevron's analysis, which doesn't address Modernization Project sources, none of the sources at the refinery are subject to CAM requirements.

Table 9 summarizes changes to the Source-Specific Applicable Requirements.

Table 9:	
Table IV-#	**Summary of changes**
Abatement	1. Expanded permit condition 8869 requirements and added parts 5 and 6. 2. Added permit conditions 25703 and 25835
A.2.1 Combustion "Flares"	1. Deleted Alkane Flare (S-6017) because it is no longer in service. 2. Added Hydrogen Plant Flare (S-6021) that was built as part of the Modernization Project and was reviewed under Application 12842. 3. Added NSPS Subpart Ja because S-6021 was built after June 24, 2008 as part of the Modernization Project. 4. Replaced NSPS J requirements with NSPS Ja requirements because the addition of supplemental natural gas to flares (S-6010, 6012, 6013, 6015, 6016, 6019, and 6039) reviewed under

Table 9:	
Table IV-#	**Summary of changes**
	Application 29160 modified the above flares per §60.100a(c)(1). 5. Added MACT Subpart CC flare requirements. 6. Added parts of Modernization Project permit condition 24136 applicable to S-6021. 7. Deleted reference to "SRU" in table header
A.3.1 Combustion "Furnaces for which both BAAQMD Regulation 9 Rule 10 and NSPS do not apply"	1. Per Chevron's request, deleted SRU Stack Gas Heaters S-4436, 4437, 4194 (existing) and 4438 (new) from table and added them to Table IV.E.2.1 (Claus Units) because emissions from the above sources and the SRUs (S-4227, 4228, 4229) which are upstream of them share a common stack and all of the above sources have combined emission limits. 2. Deleted Tail Gas Heaters S-4192 and S-4193 that were replaced by Stack Gas Heaters S-4436 and S-4437, respectively. 1.
A.3.2 Combustion "Furnaces for which BAAQMD Regulation 9 Rule 10 and NSPS Subpart J both apply"	1. Deleted S-4032, S-4033, and S-4046 because they are no longer in service. 2. Deleted Hydrogen Plant Reformer Furnaces #1 (S-4471) and #2 (S-4472) that were built as part of the Modernization Project from the table and moved them to Table IV.A.3.3.. Unlike other sources in Table IV.A.3.2, S-4471 and S-4472 are not subject Regulation 9-10 per Regulation 9-10-110.6 because the Authority to Construct requiring BACT for NOx was issued on September 19, 2008. Likewise, NSPS Ja (and not NSPS J) is applicable to S-4471 and S-4472 because they were constructed after May 14, 2007. 3. The only sources in the table not equipped with CEMS are S-4069, S-4154, S-4156, S-4158, and S-4189. Though permitted, S-4156 is out of service. 4. References to S-4068 and S-4188 that are currently equipped with CEMS and don't need reprieve from Regulation 1-520 were deleted. 5. Application 29271 approved Chevron's request to change their compliance option with Regulation 9, Rule 10 from the Refinery-wide NOx Emission Limit in Regulation 9-10-301 to the Alternate NOx Compliance Plan in Regulation 9-10-308. Therefore, Regulation 9-10-301 was deleted and Regulations 9-10-308, 405 through 407, 503, and 601 through 605 were added to align with requirements in rule. 6. Added SIP Regulation 9-10 applicable requirements. 7. Added MACT DDDDD requirements. 8. Amended Regulation 9-10 requirements in applicable parts of permit condition 21232 to align with Alternate NOx Compliance

Table 9:	
Table IV-#	**Summary of changes**
	Plan in Regulation 9-10-308.
A.3.3 Combustion (Furnaces)	1. Repurposed table that was irrelevant and had erroneously remained in the permit for reformer furnaces S-4471 and S-4472 that are exempt from Regulation 9-10 and are not subject to NSPS J.
A.3.5 Combustion "Furnace for which BAAQMD Regulation 9 Rule 10 does not apply but NSPS does apply"	2. Deleted table because S-4349 was repurposed to exclusively combust natural gas under Application 29049 and qualified as an exempt source. S-4349 is listed in Table II.C.
A.4.1 Combustion "Internal Combustion Engines"	1. Deleted S-4401, S-7502 through 7505, 7527, 7530, 7537 because they are no longer in service. 2. Deleted Regulation 9-8 applicable requirements that aren't valid, or the sources to which they apply are no longer in service, or the sources are exempt per Regulation 9-8-110.5. 3. Deleted S-3235 (154 hp diesel fire pump engine) from being subject to Regulation 9-8-501. S-3235 was reviewed under Application 26168 and was issued a Permit to Operate on August 14, 2014. The above date is well past the initial source test cut off date of March 31, 2012 for CI engines subject to Regulation 9-8-304.1. Therefore, Regulation 9-8-501 doesn't apply 4. Expanded the applicability of sources subject to NSPS IIII and MACT ZZZZ. 5. Deleted permit conditions 20225, 22569, 24022, 26127 because they are either incorrect and/or don't belong in the permit because the sources to which they are linked to are no longer in service.
A.5.1 Combustion "Boilers"	1. Application 29271 approved Chevron's request to change their compliance option with Regulation 9, Rule 10 from the Refinery-wide NOx Emission Limit in Regulation 9-10-301 to the Alternate NOx Compliance Plan in Regulation 9-10-308. Therefore, Regulation 9-10-301 was deleted and Regulations 9-10-308, 405 through 407, 503, and 601 through 605 were added to align with requirements in rule. 2. Added SIP Regulation 9-10 applicable requirements. 3. Added MACT DDDDD requirements. 4. Amended Regulation 9-10 requirements in applicable parts of permit condition 21232 to align with Alternate NOx Compliance Plan in Regulation 9-10-308.
B.5.1	1. Deleted Regulation 8, Rule 44 sections pertaining to "marine

Table 9:	
Table IV-#	**Summary of changes**
Loading Terminals "Wharf"	vessel" applicable requirements per guidance from BAAQMD Legal Division. 2. Retained Regulation 8, Rule 44 sections pertaining to "marine terminal" applicable requirements per guidance from BAAQMD Legal Division. 3. Retained all SIP Regulation 8, Rule 44 sections except for Section 304, 501.5, and 501.7. 4. Deleted S-9325 (Berth #9) which is no longer in service.
C.1.1. Process Units "Cooling Water Towers"	1. Revised source descriptions for S-4076, 4172, 4173, 4187, 4191, 6051 in the table header. 2. Added S-4465 that was built as part of the Modernization Project. 3. The December 2018 amendments to Regulation 11-10 excluded cooling towers that are not in petroleum refining process service from the total hydrocarbon emission requirements in the rule via the Limited Exemption in Regulation 11-10-107. Therefore, S-4465 associated with the new Hydrogen Plant that was built as part of the Modernization Project is exempt from Regulations 11-10-204, 304, and 305. 4. Added Regulation 11, Rule 10 applicable requirements. 5. Added MACT A and CC "Heat Exchange System" requirements. 6. Added parts of Modernization Project permit condition 24136 applicable to S-4465.
C.2.1. Process Units "FCC"	1. Added Regulation 6, Rule 5 applicable requirements. 2. Added Regulation 8, Rule 9 applicable requirements. 3. Added BAAQMD and SIP Regulation 8, Rule 10 applicable requirements. 4. Added BAAQMD and SIP Regulation 8, Rule 18 applicable requirements. 5. Added BAAQMD and SIP Regulation 8, Rule 28 applicable requirements. 6. Deleted 9-1-313 requirements pertaining to sulfur removal operations. 7. Added NSPS Subpart A requirements. 8. Added MACT Subpart A requirements. 9. Added existing MACT UUU applicable requirements where deficient pertaining to metal HAP, organic HAP, and bypass lines.
C.3.1. Process Units "Miscellaneous Process Units"	1. Deleted S-4250 and S-4348 because they have been replaced by equipment that is part of Modernization Project 2. Added S-4449, 4450, and 4451 that were built as part of the Modernization Project. 3. Added Regulation 8, Rule 9 applicable requirements. 4. Added BAAQMD and SIP Regulation 8, Rule 10 applicable requirements. 5. Added BAAQMD and SIP Regulation 8, Rule 18 applicable

Table 9:	
Table IV-#	**Summary of changes**
	requirements. 6. Added BAAQMD and SIP Regulation 8, Rule 28 applicable requirements. 7. Added MACT Subpart A requirements. 8. Added existing MACT UUU applicable requirements where deficient pertaining to organic HAP, inorganic HAP, and bypass lines for catalytic reformers S-4237 and S-4283. 9. Deleted references to S-4250 from permit condition 469; permit conditions 15698 and 22979 because it is no longer in service. 10. Deleted references to S-4348 from permit condition 13369 because it is no longer in service. 11. Added parts of Modernization Project permit condition 24136 applicable to S-4449, 4450, and 4451. 12. Added parts of Modernization Project permit condition 24136 applicable to S-4253 (TKC Plant). 13. Added permit condition 26714 that applies to knockout drum (V-705A) that was reviewed under Application 29005 and is located downstream of S-4252/S-4346 and S-4253.
D.1.1. "Refinery"	1. Added existing MACT CC applicable requirements where deficient pertaining to the facility and sources operating within it. 2. Added parts of permit condition 24136 applicable to sources that are part of the Modernization Project.
E.1.1. Sulfur Recovery "H_2S Plants"	1. Added S-4454 that was built as part of the Modernization Project. 2. Added parts of Modernization Project permit condition 24136 applicable to S-4454. 3. Added permit condition 26681 for pumps (P-853, P-853A, P-851, P-851A, P-852, P-890, P-890A, and P-894) at S-4429 and fugitives that were reviewed under Application 28904.
E.2.1. Sulfur Recovery "Claus Plants"	1. Per Chevron's request, added SRU Stack Gas Heaters S-4436, 4437, 4194 (existing) and 4438 (new) that were built as part of the Modernization Project to the table and deleted them from Table IV.A.3.1 because emissions from the above sources and the SRUs (S-4227, 4228, 4229) which are upstream of them share a common stack and all of the above sources have combined emission limits. 2. Deleted Tail Gas Heaters S-4192 and S-4193 that were replaced by Stack Gas Heaters S-4436 and S-4437, respectively. Though S-4436 through S-4438 were issued permits under the Modernization Project, S-4438 hasn't yet replaced S-4194 and will do so when SRU#3 (S-4229) is modified. The SRU abatement trains modified as part of the Modernization Project are as shown below: SRU → TGTO → WESP → SGH

Table 9:	
Table IV-#	**Summary of changes**
	S-4227 → A-20 → A-120 → S-4436 S-4228 → A-21 → A-121 → S-4437 S-4229 → A-22 → A-122 → S-4438 Where, TGTO → tail gas thermal oxidizer, WESP → wet electrostatic precipitators, and SGH →stack gas heaters. 4. Added WESPs A-120, 121, and 122 to table header. 5. Added Regulation 1-522.10, BAAQMD Regulations 6-1-311, 330, 401, SIP Regulations 6-305, 9-1-313. 6. Added NSPS Subpart A requirements. 7. Added applicable NSPS Subpart Ja requirements because SRUs (S-4227, 4228, 4229) will be modified after May 14, 2007 as part of the Modernization Project. 8. Oxygen enrichment at SRUs modified them. Therefore, NSPS J requirements were deleted and have been superseded by NSPS Ja requirements. 9. Added MACT Subpart A requirements. 10. Added MACT UUU applicable requirements pertaining to HAP and bypass lines for SRUs. 11. Amended entries corresponding to permit condition 19063 to state they are superseded by Modernization Project permit condition 24136. 12. Added parts of Modernization Project permit condition 24136 applicable to SRU's (S-4227, 4228, 4229) and SGH's (S-4436 to 4438)..
E.3.1. Sulfur Recovery "Sulfur Racks"	1. Deleted S-3141 and S-4396 in table header because they have been replaced by S-3234 and S-4490, respectively. 2. Added venturi caustic scrubber (A-0044). 3. S-4396 has been taken out of service. Therefore, the existing scrubbers A-0043 and 0044 that used to abate S-3226, 3234, and 4396 have been repurposed to exclusively abate S-3226 and 3234 thus reducing their vapor load. 4. S-4490 (S-4396's replacement) will be abated by a water scrubber in series with a caustic scrubber (A-310). 5. Amended permit condition 1046 to reflect source/abatement device numbers added/replaced. 6. Deleted parts of Modernization Project permit condition 24136 applicable to the new molten sulfur loading truck rack (S-4490) because the requirements have been superseded by permit condition 25814 issued under Application 25793. 7. Amended permit condition 25814 to clarify throughput limits and

Table 9:	
Table IV-#	**Summary of changes**
	also reflect source/abatement device numbers added/replaced.
F.1.0 Storage Tanks "Tanks with Conditions Only"	1. Per Chevron's request, renumbered S-0025 to S-2801 to match tank field numbering. 2. Deleted S-1909, 1911, 2921, 4372 from table header because they are no longer in service. 3. Amended permit conditions 4233, 11208, 15107 to reflect source numbers renumbered/replaced. 4. Deleted permit condition 24606 linked to S-4372 because it is no longer in service. 5. Added S-4481 to 4483, and S-6022 to the table header. 6. Added permit conditions 26815 (for S-4481 to 4483) and 26558 (for S-6022).
F.1.1 Tanks (FRT's Cluster 10a)	1. Deleted table that is irrelevant and has erroneously remained in the permit.
F.1.2 Tanks "FRT, IFRT, and EFRT Cluster 0.1b"	2. Deleted S-0223, 0225, 0291, 0319, 0979, 1431, 1908, 2917, 2918, 3141 from the table header under Fixed Roof Tanks Cluster 01b and S-0956 from the table header under External Floating Roof Tanks Cluster 01b because they are no longer in service. . 3. Added S-2420, 2421, 2426, 2445, and 3234 to the table header under Fixed Roof Tanks Cluster 01b. 4. MACT CC requirements were updated where deficient and because 40 CFR 63.654 in the amended rule pertains to heat exchange systems. 5. Amended permit condition 1046 to reflect sources added/deleted. 6. Deleted permit condition 4233 linked to sources deleted.
F.1.3 Tanks "FRTs <10,000 gallon Cluster 02"	1. Deleted S-0021 because it is no longer in service.
F.1.4 Tanks "FRTs Wastewater Cluster 05"	1. Added "wastewater" to table header to clarify tank service. 2. Deleted S-0605 from the table header because it is no longer in service. 3. Deleted S-0660 and 6066 in table because they are no longer in service. 4. MACT CC requirements were updated where deficient and because 40 CFR 63.654 in the amended rule pertains to heat exchange systems. 5. Deleted permit condition 11193 linked to S-0605.
F.1.5 Tanks	1. Added "MACT CC Records" to table header to clarify intent of

Table 9:	
Table IV-#	**Summary of changes**
"EFRTs MACT CC Records Cluster 11"	applicable requirements in the table. 2. Deleted S-0232, 0297, 0298, 0398 from the table header because they are no longer in service. . 3. MACT CC requirements were updated where deficient and because 40 CFR 63.654 in the amended rule pertains to heat exchange systems.
F.1.6 Tanks "IFRTs MACT CC Records Cluster 12"	1. Added "MACT CC Records" to table header to clarify intent of applicable requirements in the table. 2. Deleted S-0660 and 6066 in table because they are no longer in service. 3. MACT CC requirements were updated where deficient and because 40 CFR 63.654 in the amended rule pertains to heat exchange systems.
F.1.7 Tanks "FRTs Cluster 13"	1. Deleted table because there are no tanks in Cluster 13.
F.1.9 Tanks "EFRTs NSPS K and MACT CC Cluster 17"	1. Added "NSPS K and MACT CC" to table header to clarify intent of applicable requirements in the table. 2. Unlike S-3072 and 3101, throughput limits were established for S-1514 and are listed in Table II.A-1. Therefore, S-1514 was deleted from the row entry for permit condition # 21237 in the table.
F.1.10 Tanks "EFRTs NSPS Kb and MACT CC Cluster 23"	1. Added "NSPS Kb and MACT CC" to table header to clarify intent of applicable requirements in the table. 2. Added S-3220 to table 3. Deleted S-3225 from the table header because tank was domed as part of Application 28337 and is now listed under IFRT Cluster 24 in Table IV.F.1.11. 4. Deleted S-3225 from the table header because tank was domed as part of Application 28337 and is now listed under IFRT Cluster 24 in Table IV.F.1.11. 5. Deleted permit condition 18702 because S-3225 was deleted from table and is now listed under IFRT Cluster 24 in Table IV.F.1.11. 6. Deleted S-3202 from the table header because tank was domed as part of Application 29494 and is now listed under IFRT Cluster 24 in Table IV.F.1.11. 7. Deleted permit condition 13364 because S-3202 was deleted from table and is now listed under IFRT Cluster 24 in Table IV.F.1.11. 8. Deleted reference to permit condition #8252 and replaced with permit condition #13535 for S-3197.
F.1.11 Tanks	1. Added "NSPS Kb and MACT CC" to table header to clarify intent of applicable requirements in the table. 2. Per Chevron's request, renumbered domed EFRT S-3230 to S-

Table 9:	
Table IV-#	**Summary of changes**
"IFRTs NSPS Kb and MACT CC Cluster 24"	3228 to match tank field numbering. 3. Replaced references to S-3230 with S-3228 in table and permit condition 25848. 4. Added S-3202, S-3225 and 3231. 5. Added permit conditions 13364 (for S-3202), 18702 (for S-3225) and 25913 (for S-3231).
F.1.12 Tanks "FRTs Wastewater Cluster 25"	1. Added "Wastewater" to table header to clarify intent of applicable requirements in the table. 2. Added 40 CFR 60.110b(d)(3) to clarify frac tanks S-6220 through 6239 are exempt from NSPS Kb because they are permanently attached to mobile vehicles such as trucks, railcars, barges, or ships. The exemption is supported by EPA Region 5 letter to Flint Hills Resources dated September 2, 2004 for similar sources operating at the Pine Bend Refinery in St. Paul, MN. 3. Clarified NSPS Kb applicable requirements apply to non-frac tanks S-3110 and 3111. 4. MACT CC requirements were updated where deficient and because 40 CFR 63.654 in the amended rule pertains to heat exchange systems.
F.1.13 Tanks "EFRTs MACT CC Cluster 26"	1. Added "MACT CC" to table header to clarify intent of applicable requirements in the table. 2. Deleted S-0634, 0953, 1686 because they are no longer in service. 3. Added S-1292, 1518, 1843, 3100 4. MACT CC requirements were updated where deficient and because 40 CFR 63.654 in the amended rule pertains to heat exchange systems. 5. Unlike S-3072 and 3101, throughput limits were established for S-1514 and are listed in Table II.A-1. Therefore, S-1514 was deleted from the row entry for permit condition # 21237 in the table.
F.1.14 Tanks "IFRTs subject to MACT CC and not subject to NSPS Cluster 27"	1. Clarified in table header S-1289 is subject to MACT CC and is not subject to NSPS. 2. Deleted S-1645 and permit condition 21307 because it is no longer in service. 3. MACT CC requirements were updated where deficient and because 40 CFR 63.654 in the amended rule pertains to heat exchange systems.
G.1.1 Wastewater "Treatment Cluster 10"	1. MACT CC requirements were updated where deficient and because 40 CFR 63.654 in the amended rule pertains to heat exchange systems.
G.1.2 Wastewater "Process Drains Cluster 20d – not	1. Added "NSPS" to table header before "QQQ". 2. MACT CC requirements were updated where deficient and because 40 CFR 63.654 in the amended rule pertains to heat

Table 9:	
Table IV-#	**Summary of changes**
subject to Subpart QQQ"	exchange systems.
G.1.3 Wastewater "Process Drains Cluster 20q – subject to Subpart QQQ"	1. Clarified in table header that process drains are subject to NSPS QQQ. 2. Added process drains subject to NSPS QQQ that weren't previously included. 3. MACT CC requirements were updated where deficient and because 40 CFR 63.654 in the amended rule pertains to heat exchange systems.
G.1.4 Wastewater "Separator Cluster 30c"	1. Deleted S-6250 because it is no longer in service. 2. MACT CC requirements were updated where deficient and because 40 CFR 63.654 in the amended rule pertains to heat exchange systems. 3. Added permit condition 26721 for S-4413 and A-4413.
G.1.5 Wastewater "Non-EFRT or IFRT Tanks Cluster 40b"	1. MACT CC requirements were updated where deficient and because 40 CFR 63.654 in the amended rule pertains to heat exchange systems. 2. Added "and fugitives" to row entry corresponding to permit condition 25037.
G.1.6 Wastewater "EFRT Tanks Cluster 45e"	1. Deleted S-0232, and references to S-0660 and 6066 in row entry corresponding to 8-5-306 because they are no longer in service. 2. MACT CC requirements were updated where deficient and because 40 CFR 63.654 in the amended rule pertains to heat exchange systems.
G.1.7 Wastewater "Bioreactor Cluster 50d"	1. MACT CC requirements were updated where deficient and because 40 CFR 63.654 in the amended rule pertains to heat exchange systems.
G.1.8 Wastewater "Containers (Portable Wastewater Handling Units) Cluster 60b"	1. Deleted S-6250 and permit conditions 12842 and 18137, because S-6250 abated by A-0630 and A-0631 is archived and no longer in service. 2. MACT CC requirements were updated where deficient and because 40 CFR 63.654 in the amended rule pertains to heat exchange systems.
H.1.1 VOC Sources "Cold Cleaners"	1. Deleted S-4420 and S-4427 because they are no longer in service.
H.2.1 VOC Sources "Fugitive Components	1. Added NSPS GGGa and NSPS VVa to matrix because Hydrogen Plant Trains #1 (S-4449) and #2 (S-4450) built as part of the Modernization Project are subject to the above rules, 2. Added Regulation 8-18 and MACT CC. 3. BAAQMD Regulation 8-18 requirements were updated to align with

Table 9:	
Table IV-#	**Summary of changes**
Applicability Matrix"	the version of rule that was adopted on December 16, 2015, and was revised and adopted on December 19, 2018. 4. SIP Regulation 8-18 requirements were updated where deficient. 5. NSPS QQQ requirements were updated where deficient. 6. NSPS VV requirements were updated where deficient. 7. Added NSPS GGGa requirements for sources built as part of the Modernization Project (S-4449, 4450, 4451, 4471, 4472, and 6021). 8. Added NSPS VVa requirements for sources built as part of the Modernization Project (S-4449, 4450, 4451, 4471, 4472, and 6021). 9. Made non-substantive editorial changes and corrected typographical errors pertaining to NESHAP FF requirements. 10. MACT CC requirements were updated where deficient and because 40 CFR 63.654 in the amended rule pertains to heat exchange systems. 11. Updated fugitive components subject to permit condition 8869. 12. Added parts of Modernization Project permit condition 24136 applicable to fugitive equipment associated with S-4449, 4450, 4451, 4471, 4472, and 6021. 13. Added permit condition 25703 that is applicable to fugitive components associated with #17 Pump Station (S-32111). 14. Clarified citations to align with pertinent rules.
H.3.1 VOC Sources "Paint Booth and Printers"	1. Updated BAAQMD Regulation 8-32 requirements where deficient and to align with version of rule that was adopted on August 5, 2009. 2. Updated SIP Regulation 8-32 requirements where deficient.
H.4.1 "Fenceline Monitoring"	1. Added applicable fence-line monitoring requirements in Regulation 12-15-207, 403, 404, 406, 407, and 501. 2. Regulation 12-15 was amended on December 19, 2018. Amended the "Future Effective Date" column to align with current rule. 3. Added applicable MACT CC fence-line monitoring requirements. 4. Deleted MACT CC compliance dates that have passed in the "Future Effective Date" column.

V. Schedule of Compliance

A schedule of compliance is required in all Title V permits pursuant to BAAQMD Regulation 2-6-409.10 which provides that a major facility review permit shall contain the following information and provisions:

"409.10 A schedule of compliance containing the following elements:

10.1 A statement that the facility shall continue to comply with all applicable requirements with which it is currently in compliance;

10.2 A statement that the facility shall meet all applicable requirements on a timely basis as requirements become effective during the permit term; and

10.3 If the facility is out of compliance with an applicable requirement at the time of issuance, revision, or reopening, the schedule of compliance shall contain a plan by which the facility will achieve compliance. The plan shall contain deadlines for each item in the plan. The schedule of compliance shall also contain a requirement for submission of progress reports by the facility at least every six months. The progress reports shall contain the dates by which each item in the plan was achieved and an explanation of why any dates in the schedule of compliance were not or will not be met, and any preventive or corrective measures adopted."

Since the District has not determined that the facility is out of compliance with an applicable requirement, the schedule of compliance for this permit contains only sections 2-6-409.10.1 and 2-6-409.10.2.

The BAAQMD Compliance and Enforcement Division has conducted a review of compliance over the past year and has no records of compliance problems at this facility during the past year. The compliance report is contained in Appendix A of this permit evaluation and statement of basis.

VI. Permit Conditions

During the Title V permit development, the District has reviewed the existing permit conditions, deleted the obsolete conditions, and, as appropriate, revised the conditions for clarity and enforceability. Each permit condition is identified with a unique numerical identifier, up to five digits.

When necessary to meet Title V requirements, additional monitoring, recordkeeping, or reporting requirements have been added to the permit.

All changes to existing permit conditions are clearly shown in "strike-out/underline" format in the proposed permit. When the permit is issued, all "strike-out" language will be deleted and all "underline" language will be retained, subject to consideration of comments received.

The existing permit conditions are derived from previously issued District Authorities to Construct (A/C) or Permits to Operate (P/O). Permit conditions may also be imposed or revised as part of the annual review of the facility by the District pursuant to California Health and Safety Code (H&SC) § 42301(e), through a variance pursuant to H&SC § 42350 et seq., an order of abatement pursuant to H&SC § 42450 et seq., or as an administrative revision initiated by District staff. After issuance of the Title V permit, permit conditions will be revised using the procedures in Regulation 2, Rule 6, Major Facility Review.

The District has reviewed and, where appropriate, revised or added new annual and daily throughput limits on sources so as to help ensure compliance with District rules addressing preconstruction review. The applicability of preconstruction review depends on whether a source has been "modified" as defined in District Rule 2-1-234. Whether there is a modified source depends in part on whether there has been an "increase" in the potential to emit of a source. Regulation 2-1-234 defines what is considered an increase in the potential to emit of a source.

Sources that were modified or constructed since the District began issuing new source review permits will have permits that contain throughput limits, and these limits are reflected in the Title V permit. Each limit has previously undergone District review, and is the legally binding "potential to emit" of the source for purposes of 2-1-234.1.1. By contrast, for older sources that have never been through preconstruction review (commonly referred to as "grandfathered" sources), an "increase" in "potential to emit" is addressed in 2-1-234.1.2. A grandfathered source is not subject to preconstruction review unless it undergoes a change that results in an increase in its potential to emit as defined in 2-1-234.1.2. The emissions increase shall be calculated as the difference between (i) the source's potential to emit after the change, and (ii) the source's adjusted baseline emissions before the change, calculated in accordance with Section 2-2-603. However, if the throughput capacity of a grandfathered source is limited by upstream or downstream equipment (i.e., is "bottlenecked"), or for any source that cannot physically operate to the full extent of the source's potential to emit, then the relaxing of that limitation ("debottlenecking") is considered a modification as defined in 2-1-234.1.2. In the case of a source that has undergone New Source Review and is subject to a limit on its potential to emit that it cannot physically attain, then any physical change, change in method of operation, change in throughput or production, or other similar change at the source that allows it to increase its potential to emit beyond this physical limit is also considered a modification.

The District has added throughput limits to the Title V permit for grandfathered sources. As discussed above, these limits were added so that the District could determine whether an increase in emission levels has occurred. The purpose of these limits is to facilitate implementation of the District's preconstruction review program. If these limits are exceeded, the facility would be expected to report the exceedance, and the District would treat the reported exceedance as presumptively establishing the occurrence of a modification. The facility would then be expected to apply for a preconstruction permit

addressing the modification and the District would consider whether an enforcement action was appropriate.

It is important to note the presumptive nature of throughput limits for grandfathered sources that are created in the Title V permit. These limits are generally based upon the District's review of information provided by the facility regarding the design capacity or highest documented capacity of the grandfathered source. To verify whether these limits reflect the true design, documented, or "bottlenecked" capacity (pursuant to 2-1-234.1.2) of each source is beyond the resource abilities of the District in this Title V process. Moreover, the District cannot be completely confident that the facility has had time or resources necessary to provide the most accurate information available in this regard. Creating throughput limits in the Title V permit for grandfathered sources is not required by either Part 70 or the District's Major Facility Review rules. Despite the lack of such a requirement, and despite the resource and information challenges presented in the Title V process, the District believes that writing presumptive limits for grandfathered sources into the Title V permit will provide a measure of predictability regarding the future applicability of the preconstruction review program, and that this increased predictability is universally beneficial.

It follows from the presumptive nature of these throughput limits for grandfathered sources that exceedance of these limits is not per se a violation of the permit. *Failure to report an exceedance would be a permit violation.* In this sense, the throughput limits function as monitoring levels, and are imposed pursuant to the District's authority to required monitoring that provide a reasonable assurance of compliance. If an exceedance occurs, the facility would have an opportunity to demonstrate that the throughput limit in fact did not reflect the appropriate limit for purposes of 2-1-234.1.2. If the facility can demonstrate this, no enforcement action would follow, and the permit would be revised at the next opportunity. It also follows that compliance with these limits is not a "safe harbor" for the facility. If evidence clearly shows that a source has undergone a "modification" as defined in 2-1-234.1.2, the District would consider that a preconstruction review-triggering event, notwithstanding compliance with the throughput limit in the Title V permit. In other words, the protection afforded the facility by complying with the throughput limit in the Title V permit is only as strong as the information on which it was based. There is no Title V "permit shield" associated with throughput limits for grandfathered sources, as they are being proposed. A shield may be provided if the District determines with certainty that a particular limit is appropriate with respect to 2-1-234.1.2.

Conditions that are obsolete or that have no regulatory basis have been deleted from the permit.

Conditions have also been deleted due to the following:

- Redundancy in recordkeeping requirements.
- Redundancy in other conditions, regulations and rules.
- The condition has been superseded by other regulations and rules.

The equipment has been taken out of service or is exempt.
- The event has already occurred (i.e. initial or start-up source tests).

The regulatory basis is listed following each condition. The regulatory basis may be a rule or regulation. The District is also using the following terms for regulatory basis:

- BACT: This term is used for a condition imposed by the Air Pollution Control Officer (APCO) to ensure compliance with the Best Available Control Technology in Regulation 2-2-301.
- Cumulative Increase: This term is used for a condition imposed by the APCO that limits a source's operation to the operation described in the permit application pursuant to BAAQMD Regulation 2-1-403.
- Offsets: This term is used for a condition imposed by the APCO to ensure compliance with the use of offsets for the permitting of a source or with the banking of emissions from a source pursuant to Regulation 2, Rules 2 and 4.
- PSD: This term is used for a condition imposed by the APCO to ensure compliance with a Prevention of Significant Deterioration permit issued pursuant to Regulation 2, Rule 2.
- TRMP: This term is used for a condition imposed by the APCO to ensure compliance with limits that arise from the District's Toxic Risk Management Policy.

Changes to the proposed renewal permit stemming from changes to existing permit conditions and/or from incorporating new permit conditions:

Permit condition #469 (aka RLOP cap):

1. Deleted S-4046, 4094, 4349, 6005, and 6017 in the preamble that lists sources subject to RLOP cap. With the exception of S-4349, the remaining sources have been archived and are no longer in service. S-4349 was reviewed under Application 29049 and was deemed exempt per Regulation 2-1-114.1.2 because it was repurposed to exclusively combust natural gas and has a rated heat input of less than 10 MMBTU/hour.
2. Made non-substantive editorial changes and added Notes 1 and 2 footnotes to Part 5 “Process Unit Design” pertaining to TKC unit (S-4253).
3. Deleted S-4349 from Part 6.E. “Combustion” because it is exempt per Regulation 2-1-114.1.2.

Permit condition #1046 (for molten sulfur FRT S-3234):

1. Deleted all references to S-3141 because S-3234 reviewed under Application 26889 replaced it.
2. Made non-substantive editorial changes to Parts 2 and 3.

Permit condition #1069 (for IFRT tank S-1637):

1. Made non-substantive editorial changes by adding “Basis:” and expanding permit condition requirement.

Permit condition #1162 (for Gas turbine/HRSG pairs):

1. Deleted incorrect reference to #2 NH3-H2S Plant (S-4345).

Permit condition #2238 (for EFRT tank S-3100):

1. Made non-substantive editorial change by adding “Basis:”.

Permit condition #2856 (for EFRT tank S-399):

1. Renumbered permit condition.
2. Made non-substantive editorial changes by adding “Basis:” and expanding permit condition requirement.

Permit condition #4233 (for FRT tanks S-1908, 1911, 2917, 2918, and 2921):

1. Deleted all references to S-1908, 1911, 2917, 2918, and 2921 in Parts 1 and 3

because they are no longer in service.

Permit condition #4714 (for Marine Loading Berths #1 through 4 (S-9321 to 9324):

1. Deleted S-9325 (Berth #9) which is no longer in service from preamble.
2. Made non-substantive editorial changes by adding “Basis:” and/or “Regulation”.

Permit condition #5270:

1. Deleted permit condition because S-21 because it is no longer in service..

Permit condition #5640 (for Spray Booth S-4410):

1. Made non-substantive editorial change by adding “Basis:”

Permit condition #5599 (for Abrasive Blast Cabinet S-4422):

1. Numbered permit condition and made non-substantive editorial change by adding “Basis: Cumulative Increase”.

Permit condition #7642 (for Methanol Tank S-3181 and Methanol Loading Rack S-6052):

1. Authorities to Construct (ACs) for S-3181, 6050 (MTBE plant), and 6052 were issued under Application 7304 in 1992. Because ACs for S-3181 and 6052 expired in 1995 and weren’t renewed, references to the above sources were deleted from the permit condition.

Permit condition #7880 (for Non-Retail Gasoline Dispensing Facility S-9304):

1. Numbered permit condition and made non-substantive editorial change by adding “Basis: TRMP”.

Permit condition #8180 (for Diesel Hydrotreater S-4235):

1. Made non-substantive editorial change by deleting reference to non-existent leak rates in permit condition. Clarified permit condition pertains to S-4235 which was reviewed under Application 9014 in 1992. Original permit condition cited leak rates for fugitive components and also cited Regulation 8-25 which was deleted from the District’s rule book on January 7, 1998. No additional changes required, because earlier Regulation 8-18 versions (ex. Sep. 2004) defined “leak” as follows:
   8-18-208 Leak: The concentration of total organic compounds above background, expressed as methane, as measured 1 centimeter or less from the leak using EPA Reference Method 21 in accordance with Section 8-18-602.

Permit condition #8252 (for EFRT S-3197):

1. Deleted permit condition issued under Application 9422 in September 1992 because it was superseded by permit condition #13535 issued under Application

15646 in February 1996.

Permit condition #8773 (for fugitive emissions at S-4251 Solvent De-Asphalting (SDA)):

2. Amended Part 1 per changes reviewed under Application 27948.
3. Made non-substantive editorial change by adding “Basis: ” and expanding permit condition requirement.

Permit condition #8869 (for fugitive sources associated with pump stations):

1. Replaced S-32103 with S-32111 through 32116 in the preamble to the permit condition.
2. Clarified in the preamble what Parts of the permit condition are applicable when claiming an exemption from Regulation 8-18 requirements.
3. Added Part 5 per changes reviewed in Application 25630.
4. Added Part 6 per changes reviewed in Application 25747.

Permit condition #9048 (for fugitive emissions from TKC unit S-4253):

1. Made non-substantive editorial change by adding “basis: BACT” to Part 3.

Permit condition #10909 (for EFRT S-992):

1. Made non-substantive editorial change by adding “basis: recordkeeping” to Part 4.

Permit condition #11025 (for EFRT S-3106):

1. Made non-substantive editorial change by adding “Basis:” to Parts 1, 3 to 6.

Permit condition #11066 (for FCC S-4285):

1. Made non-substantive editorial change by adding “Basis:” to Parts 3.b., 3.c., 6.b., 6.c., 10(A), and 16.
2. Per EPA’s directive to Chevron, added Consent Decree # 03-04650 Sections 20

and 29 to Parts 6.d. and 16, respectively.

Permit condition #11208 (for FRTs S-870, S-1909 and 1911):

1. Deleted S-870, S-1909 and S-1911 in the preamble to the permit condition.
2. Deleted permit conditions pertaining to S-870, S-1909 and S-1911.

Permit condition #11228 (for FRT S-957):

1. Corrected typographical error in Part 3.

Permit condition #11436 (for FRT S-1653):

1. Made non-substantive editorial change to Part 4.

Permit condition #12139 (for EFRT S-3213):

1. Replaced S-3214 with S-3213 in Part 2.

Permit condition #12842 (for OWS S-6250):

1. Deleted permit condition because S-6250 is archived and no longer in service.

Permit condition #13008 (for EFRT S-3201):

1. Made non-substantive editorial change by adding “basis:” to Part 1.

Permit condition #13364 (for domed EFRT S-3202):

1. Amended permit condition per Application 29494 review which permitted Chevron to install a dome on EFRT S-3202 to comply with the “ROG Mitigation” measure 4.3-5f. of the City of Richmond Conditional Use Permit for the Chevron Modernization Project.
2. Made non-substantive editorial change by adding “basis:” to Parts 1 to 5.

Permit condition #13366 (for S-3207):

1. Deleted permit condition since S-3207 is an exempt butane sphere and not a FCC heavy gasoline tank.

Permit condition #13535 (for EFRT S-3197):

1. Added permit condition issued under Application 15646 in February 1996 that superseded permit condition #8252 issued under Application 9422 in September

1992.

Permit condition #13597 (for EFRT S-1798):

1. Made non-substantive editorial change by adding “basis:” to Part 1.

Permit condition #14596 (for CWT S-6051):

1. Made non-substantive editorial changes by adding “basis:” to Parts 3 to 8.

Permit condition #14701 (for Alky plant S-4291 and TAME plant S-4356):

1. Made non-substantive editorial change to Part 10.

Permit condition #15107 (for Alky plant S-4291 and TAME plant S-4356):

1. Per Chevron’s request, renumbered S-25 to S-2801 to match tank field numbering.
2. Made non-substantive editorial change to Part 3 by adding “basis: Records”. .

Permit condition #15698 (for deaerator methanol vent scrubbers A-261 and A-262 abating old hydrogen plant S-4250 and bioreactor (S-4393)):

1. Made non-substantive editorial change to Part 1 by adding “Basis:” and deleting an extra “cumulative increase”.
2. Because S-4250 is no longer in service, deleted Part 1 through 10 and Part 1 (old Part 11) now pertains to S-4393.

Permit condition #16686 (for various combustion sources):

1. Made non-substantive editorial change to Part 1 by adding “Basis: Regulation 2-1-234”.

Permit condition #17527 (for cold cleaners):

1. Deleted references to S-4427 because it is archived and no longer in service.

Permit condition #18337 (for Butamer plant S-4354):

1. Expanded acronym in Part 1 (cum inc → cumulative increase)
2. Made non-substantive editorial change to Parts 1, 3, and 4 by adding “Basis:”.

Permit condition #18655 (for SRU’s S-4227 to S-4229):

1. Made non-substantive editorial change to Part 1 by adding “Basis: Regulation 2-1-403”.
2. Amended Regulation 6-330 in Part 2 to Regulation 6-1-330 to align with Regulation 6-1 that was adopted on August 1, 2018.

Permit condition #18656 (for existing flares S-6010, S-6012, S-6013, S-6015, S-6016, S-6019, and S-6039):

1. Amended permit condition per Application 29160 review which permitted Chevron to install supplemental natural gas piping at the above flares to meet the MACT CC flare control efficiency requirements which became effective January

30, 2019.
2. Amended part 11.c. per Chevron's request.

Permit condition #18680 (for non-retail GDF S-9304):
1. Made non-substantive editorial change by separating out Parts 1 and 2.

Permit condition #18702 (for domed EFRT S-3225):
1. Amended permit condition per Application 28337 review which permitted Chevron to install a dome on EFRT S-3225 to comply with the "ROG Mitigation" measure 4.3-5f. of the City of Richmond Conditional Use Permit for the Chevron Modernization Project.

Permit condition #18945 (for #2 and #8 NH3/H2S plants S-4345 and S-4429, respectively; and #3, #4, and #5 H2S plants S-4433 to S-4435, respectively):
1. Expanded acronym (cum inc → cumulative increase) and added "basis" to parts in Parts 1 through 6.
2. Made non-substantive editorial change to Part 7 by adding "basis:".

Permit condition #19063 (for SRU's S-4227 to S-4229):
1. Amended permit condition per Application 19402 review to state the calendar day and annual throughput limits in parts 1 to 3 will be superseded by Modernization Project permit condition 24136 after S-4227 to S-4229 are modified as proposed under Application 12842.
2. Amended part 4.a. per Application 19402 review to state the H2S concentration limit of 10 ppmv at the outlet of the tail gas units (A-20 to A-22) abating and downstream of S-4227 to S-4229 will be superseded by Modernization Project permit condition 24136 after S-4227 to S-4229 are modified as proposed under Application 12842.
3. Made non-substantive editorial change to Parts 1 through 5 by adding "Basis:"; replaced "cumulative increase" with "Recordkeeping" in Part 5; and deleted Part 6 because it is redundant since the requirement is addressed in Part 5.

Permit condition #19425 (for EFRT S-990):
1. Made non-substantive editorial change to Parts 1 through 4 by adding "Basis:"

Permit condition #20225 (for Emergency Standby Diesel Generator Set S-7501):
1. Deleted permit condition because it is superseded by permit condition 22820 because the diesel exhaust PM (DEPM) emission rate of S-7501 (Parts 1 through 3), and S-7507, 7511, 7512, 7515 to 7517, 7521, and 7531 (Parts 4 and 5) is greater than 0.15 g/BHP-hr – which is the District's BACT (Regulation 2-2-

301)/TBACT (Regulation 2-5-301) limit.

Permit condition #20330 (for Temporary Odor Control Scrubber A-4429 abating #8 NH3/H2S plant S-4429):

1. Expanded acronym (cum inc → cumulative increase) and added "basis" to Parts 1 through 5.

Permit condition #20791 (for Thermofor Kiln Stack Burner S-4094 abated by afterburner A-94):

1. Deleted permit condition because S-4094 is archived and no longer in service.

Permit condition #20863 (for Heavy Oil Transloading Operation S-4405):

1. Expanded acronym (cum inc → cumulative increase); added "basis" to Parts 1 through 8; added "Regulation" to Part 8.

Permit condition #20944 (for FCC Polymer Plant S-4292):

1. Expanded acronym (cum inc → cumulative increase); added "basis" to Parts 1 through 3; added "Regulation" to Part 3.

Permit condition #21165 (for Paint Booth S-4424):

1. Expanded acronym (cum inc → cumulative increase); added "basis" to Parts 1 through 4; replaced Table 2-1-316 to Table 2-5-1 and replaced "basis" from Regulation 2-1-316 to Regulation 2-5 in Part 3; added "Regulation" to Parts 3 and 4.

Permit condition #21232 (Regulation 9-10 refinery wide compliance for various combustion sources):

1. Amended permit condition per Application 28627 and 29271 review.
2. Under Application 28627, part 1 was revised to reflect S-4068 and 4188 are equipped with CEMS; deleted NOx Box parameters for S-4068 and 4188 in part 5.A since the above sources now equipped with CEMS are no longer required to operate within the confines of the NOx Box in part 5.A.; clarified the %O2 correction for the CO concentration limit in part 4.c.; corrected the successor reference in part 4.f. from part 5.c. to part 5.A; added a NOx box operating range for S-4154 that isn't equipped with CEMS.
3. Under Application 29271, revised Chevron's compliance option with Regulation 9, Rule 10 from the Refinery-wide NOx Emission Limit in Regulation 9-10-301 to the Alternate NOx Compliance Plan in Regulation 9-10-308. The above change is reflected in the "Basis:" to Part 1, and Parts 11 through 13.
4. Made non-substantive editorial changes to Parts 2 through 7, and 10.

Permit condition #21237 (for EFRTs S-1514, 3072, and 3101):

1. Made non-substantive editorial changes to Part 1.
2. Unlike S-3072 and 3101, throughput limits were established for S-1514 and are listed in Table II.A-1. Therefore, S-1514 was deleted from permit condition #

21237.

Permit condition #21815 (for TKC Isomax furnaces S-4159, 4160):

1. Made non-substantive editorial changes to Part 1.

Permit condition #21307 (for IFRT S-1645):

1. Deleted permit condition because S-1645 is archived and no longer in service.

Permit condition #22262 (for Gas Turbines S-4350, 4352 and SRU's S-4227 to S-4229):

1. Made non-substantive editorial changes to Parts 1 and 2.

Permit condition #22266 (for Inkjet Printing Operation):

1. Made non-substantive editorial changes to Parts 1 through 3.

Permit condition #22569 (for Emergency Standby Diesel Generator Set S-7501):

1. Deleted permit condition because it has been superseded by permit condition 22850.

Permit condition #22641 (for EFRTs S-1296, 1514 and FCC Gasoline Hydrotreater S-4226):

1. Made non-substantive editorial changes to Parts 1 through 7.

Permit condition #2282<u>0</u> (for Emergency Standby Diesel Generator Sets whose reliability testing hours are limited to 20 hours/year/engine):

1. Amended preamble to state engines subject to permit condition are S-7501, 7507 to 7509, 7511, 7512, 7515 to 7517, 7521, and 7531.

Permit condition #2285<u>0</u> (for Emergency Standby Diesel Generator Sets whose reliability testing hours are limited to 50 hours/year/engine):

1. Amended preamble to include S-7013.
2. Note that S-7539 is subject to permit conditions 22850 and 24285 because it is considered a "new" engine under CARB's ATCM and is abated by diesel particulate filter (A-7539). Because the ATCM makes a distinction between "in-use" and "new" engines, S-7539 is not listed under permit condition 24070.

Permit condition #22923 (for various combustion sources deemed NSPS J fuel gas combustion devices):

1. Deleted S-4032, S-4033, and S-4046 because they are no longer in service.
2. S-4349 was reviewed under Application 29049 when it was repurposed to exclusively combust natural gas. S-4349 was deleted because it no longer combusts fuel gas as defined in §60.101(d).

Permit condition #22951 (for non-retail GDF S-9304):

1. Made non-substantive editorial changes by renumbering permit condition and

separating out Part 4.

Permit condition #22979 (for Hydrogen Manufacturing Plant S-4250):

1. Deleted because S-4250 has been replaced by equipment that is part of Modernization Project

Permit condition #23001 (for Chemical Additives Tank S-4940):

1. Made non-substantive editorial changes by updating chemical stored in tank, and replacing “Rule” with “Regulation” in Parts 1 and 3.

Permit condition #23262 (for EFRT S-3127):

1. Made non-substantive editorial change by adding “basis:” to Parts 1 to 6.

Permit condition #23735 (for flares subject to NSPS J):

1. Deleted Alkane flare (S-6017) that was shut down on November 1, 2003.

Permit condition #23765 (for Perchloroethylene storage tank S-4360):

1. Made non-substantive editorial change by expanding “Regulation” in Part 8.

Permit condition #23773 (for Perchloroethylene storage tank S-4363):

1. Made non-substantive editorial change by expanding “Regulation” in Part 8.

Permit condition #23774 (for Perchloroethylene storage tank S-4364):

1. Made typo correction in Part 2 and non-substantive editorial change by expanding “Regulation” in Part 8.

Permit condition #24022 (for Primary FCCU Pump Diesel Engine S-7537):

1. Deleted permit condition because S-7537 is archived and no longer in service.

Permit condition #24070 (for Emergency Standby Diesel Generator Sets considered “in-use” under CARB’s ATCM abated by diesel particulate filters and whose reliability testing hours are limited to 50 hours/year/engine):

1. Deleted references to S-7526 and A-7526 that have been archived and are no longer in service.

Permit condition #24136 (Modernization Project permit conditions):

1. Added permit condition for new/modified sources reviewed under Application 12842. Table 10 below summarizes the requirements for sources affected by the project.

Table 10:			
Key Project Component/Requirement	**Sources affected**	**Source/abatement device #**	**Part(s)**
HYDROGEN PURITY IMPROVEMENTS	Fugitive equipment		1 to 4
	Hydrogen Plant Trains	S-4449, 4450	5 to 20

Table 10:			
Key Project Component/Requirement	**Sources affected**	**Source/abatement device #**	**Part(s)**
HYDROGEN PLANT REPLACEMENT	Hydrogen Recovery Unit: Hydrogen Plant Reformer Furnaces	S-4451 S-4471, 4472	
	Hydrogen plant Cooling Water Tower	S-4465	21 to 25
	Hydrogen Plant Flare	S-6021/A-6021	26 to 34
	Hydrogen Plant Fugitives	Pertaining to S-4449, 4450, 4451, 4471, 4472, and 6021	35 to 36
	Hydrogen Plant Recordkeeping	Pertaining to S-4449, 4450, 4451, 4471, 4465, 4472, 6021, and abatement devices A-302, 303, 6021	37 to 38
HYDROGEN PURITY IMPROVEMENTS	#6 H2S Plant TKC/FCC Feed Hydrotreater	S-4454 S-4253	77, 80,
	Sulfur Recovery Units	S-4227, 4228, 4229	81 to 95
FUEL GAS SYSTEM	Fuel Gas Mix Drums	V-475, 870, 701	97 , 98
COMMISSIONING PERIOD	All	All	100, 103, 104, 106, 107, 108
GENERAL RECORDKEEPING	All	All	109 to 112
GENERAL SOURCE TESTING	All	All	113, 114
TAC/HAP SOURCE TESTING	All	All	115 to 118
HYDROGEN PLANT FLARE SUPPLEMENTAL NATURAL GAS	Hydrogen Plant Flare	S-6021/A-6021	119 to 125

2. Amended parts 9.a) and b), and 13.d) through g), 13.i), and 13.j) to align with startup, shutdown, dry out/warm up time periods for hydrogen plant trains #1 and #2 (S-4449 and S-4450), and the associated reformer furnaces (S-4471 and S-4472). .

Permit condition #24285 (for Emergency Standby Diesel Generator Set S-7539 considered "new" under CARB's ATCM abated by diesel particulate filter A-7539):

1. Made non-substantive editorial change by adding "basis:" to Part 3.

Permit condition #24452 (for FRT S-4365):

1. Expanded acronym (cum inc → cumulative increase) in Parts 1 and 2, added

"basis" to all Parts; added "Regulations" to Part 3.

Permit condition #24604 (for FRT S-4366):

1. Expanded acronym (cum inc → cumulative increase) in Parts 1 through 6; added "basis" to all Parts; added "Regulation(s)" to Parts 6 and 7.

Permit condition #24606 (for FRT S-4372):

1. Deleted permit condition because S-4372 is archived and no longer in service.

Permit condition #24671 (for fugitive components associated with Jet Additives Project S-4440):

1. Made non-substantive editorial change by adding "basis:" to Part 7.

Permit condition #24921 (for Refinery Waste Gas flare S-6015):

1. Made non-substantive editorial change by adding "Basis:" to Parts 6 and 18.

Permit condition #25001 (for FRT S-4373):

1. Expanded acronym (cum inc → cumulative increase) in Parts 1 and 2; added "basis" to Parts 1, 2, 3, 4; and 9; added "Regulation(s)" to Parts 2 and 3.

Permit condition #25037 (for domed EFRT S-3229):

1. Made non-substantive editorial change by adding "Basis:" to Parts 1 to 7, and 16; added "Regulation" to Part 4
2. Amended "Guide pole/well" control technique requirements in Part 5 per Application 25948 review.
3. Reworded sentence in Part 7.

Permit condition #25144 (for EFRT S-1292):

1. Made non-substantive editorial change by adding "Basis:" to all parts; added "Regulation" to Parts 2, 4 to 7.

Permit condition #25176 (for fugitive components at #17 Pump Station S-4441):

1. Added permit condition for fugitive components at #17 Pump Station (S-4441) per Application 23827 review.
2. Chevron provided fugitive component counts. Therefore, parts 1 and 2 were deleted.

Permit condition #25479 (for FRT S-4374):

1. Expanded acronym (cum inc → cumulative increase) in Parts 1 and 2; added "Basis" to Parts 1, 2, 3, 4; and 9; added "Regulation(s)" to Parts 2 and 3.

Permit condition #25703 (for fugitive components S-32111 abated at #17 Pump Station):

1. Added permit condition for fugitive components S-32111 abated at #17 Pump

Station per Application 25630 review.
2. Amended parts 7, 9.b., 10, and 12 to align with Application 25747.

Permit condition #25814 (for Sulfur Loading Rack S-4490):

1. Amended Part 2 of permit condition by instilling an hourly molten sulfur limit, a daily annual average molten sulfur limit, and correcting the calendar day molten sulfur limit per the October 2018 Addendum to Application 25630.
2. Deleted S-3141 in Part 4 because S-3234 reviewed under Application 26889 replaced it.

Permit condition #25835 (for fugitive components S-32114 abated at #21 Pump Station):

1. Added permit condition for fugitive components S-32114 abated at #21 Pump Station per Application 25747 review.

Permit condition #25848 (for domed ERFT S-3228):

1. Per Chevron's request, replaced reference to S-3230 with S-3228 in Parts 1, 2, 4, 9, 10, and 11 to match tank field numbering.
2. Updated "as proposed" fugitive counts in Part 4 with "as installed" values. Chevron provided fugitive component counts. Therefore, first sentence was

deleted.

Permit condition #25913 (for domed ERFT S-3231):

1. Added permit condition per Application 26319 review.

Permit condition #26127 (for prime diesel genset S-4401):

1. Deleted permit condition because S-4401 is no longer in service.

Permit condition #26558 (for Refillable corrosion inhibitor toteS-6022):

1. Added permit condition per Application 28535 review.

Permit condition #26681 (for pumps at S-4429 #8 NH3/H2S Plant):

1. Added permit condition per Application 28904 review.

Permit condition #26714 (for knockout drum downstream of S-4252/S-4346 and S-4253):

1. Added permit condition per Application 29005 review.

Permit condition #26721 (for Flameless Thermal Oxidizer A-4413 abating #2a OWS S-4413):

2. Added permit condition per Application 28492 review.

Permit condition #26815 (for Fixed Roof Tanks S-4481 to 4483 storing corrosion inhibitor):

1. Added permit condition per Application 29220 review.

VII. Applicable Limits and Compliance Monitoring Requirements

This section of the permit is a summary of numerical limits and related monitoring requirements for each source. The summary includes a citation for each monitoring requirement, frequency of monitoring, and type of monitoring. The applicable requirements for monitoring are completely contained in Sections IV, Source-Specific Applicable Requirements, and VI, Permit Conditions, of the permit.

Table 11 summarizes changes to the Applicable Limits and Compliance Monitoring Requirements.

Table 11:	
Table VII-#	**Summary of changes**
Abatement	1. Deleted A-0094, 0921, 0920, 0414 from table header because they are no longer in service. 2. Amended table header to clarify thermal oxidizers (A-0620, 0622, 0623, 0624, 0627, and 0628) and carbon adsorbers (A-0629, 0632, 0917, 0919, 0922). 3. Clarified applicability of limits in permit condition 8869 as it pertains to the thermal oxidizers. 4. Added A-0629 reviewed as part of Application 25630 and subject to permit condition 25703. 5. Added A-0632 reviewed as part of Application 25747 and subject to permit condition 25835.
A.1.1 Combustion "Cogeneration"	1. Replaced "Particulates" with "Particles" in "Limit" column for row entry corresponding to Regulation 6-1-305 to align with August 1, 2018 rule.
A.2.1 Combustion "Flares"	1. Deleted Alkane Flare (S-6017). 2. Added Hydrogen Plant Flare (S-6021) that was built as part of the Modernization Project and was reviewed under Application 12842. 3. Amended "Monitoring Requirement Citation" column for row entry corresponding to "Opacity" pertaining to Regulation 6-1-301 for flares other than S-6021 and S-6021. 4. Corrected permit condition # 18656 references in "Citation of Limit" and "Monitoring Requirement Citation" columns for row entry corresponding to "Opacity" for flares S-6015 and S-6039. 5. Replaced "Particulates" with "Particles" in "Limit" column for row entry corresponding to Regulation 6-1-305 to align with August 1, 2018 rule. 6. Amended "Monitoring Requirement Citation" column for row entry corresponding to Regulation 6-1-310 for flares other than S-6021 and S-6021. 7. Amended "Citation of Limit" and "Monitoring Requirement Citation" column for row entry corresponding to Regulation 6-1-311 for flares other than S-6021 and S-6021. 8. Added NSPS Subpart Ja H2S monitoring requirements for S-6021 because it was built after June 24, 2008 as part of the

Table 11:	
Table VII-#	**Summary of changes**
	Modernization Project. 9. Added MACT Subpart CC flare monitoring requirements. 10. Added parts of Modernization Project permit condition 24136 applicable to S-6021. 11. Replaced reference to permit condition #13370 with Regulation 12-11-504; replaced measurements with monitoring in "Limit" column and amended "Monitoring Requirement Citation" column row entry. 12. Corrected typographical errors in row entries corresponding to vent gas flow, purge & pilot gas flow, and fugitive. 13. Deleted redundant 8-18-304 in Fugitive row. 14. Deleted reference to "SRU" in table header. 15. Corrected opacity monitoring requirement reference in permit condition 18656 to part 11 (from part 4). 16. Corrected opacity limit and monitoring requirement references for S-6015 and S-6039 in permit condition 18656 to part 14 (from part 7) and to part 13 (from part 6), respectively. 17. Added "For S-6021" for PONSCO limits to clarify the emission limits in Modernization Project permit condition 24136 pertain to S-6021 – the hydrogen plant flare.
A.3.1 Combustion "Furnaces for which both BAAQMD Regulation 9 Rule 10 and NSPS do not apply"	1. Deleted Tail Gas Heaters S-4192 and S-4193 that were replaced by Stack Gas Heaters S-4436 and S-4437, respectively under the Modernization Project . Though issued a permit under the Modernization Project, S-4438 will replace S-4194 when SRU#3 (S-4229) is modified. 2. The Tail Gas Heater requirements are now listed with the Claus Units in Table VII.E.2.1, and the scope of Table VII.A.3.1. is limited to S-4107. 3. Replaced "Particulates" with "Particles" in "Limit" column for row entry corresponding to Regulation 6-1-305 to align with August 1, 2018 rule.
A.3.2 Combustion "Furnaces for which BAAQMD Regulation 9 Rule 10 and NSPS Subpart J both apply"	1. Deleted S-4032, S-4033, and S-4046 in table header because they are no longer in service. 2. Deleted Hydrogen Plant Reformer Furnaces #1 (S-4471) and #2 (S-4472) that were built as part of the Modernization Project from the table and moved them to Table VII.A.3.3. Unlike other sources in Table VII.A.3.2, S-4471 and S-4472 are not subject Regulation 9-10 per Regulation 9-10-110.6 because the Authority to Construct requiring BACT for NOx was issued on September 19, 2008. Likewise, NSPS Ja (and not NSPS J) is applicable to S-4471 and S-4472 because they were constructed after May 14, 2007. 3. Deleted S-4156, S-4157, S-4158, S-4170, and S-4171 because they have been replaced by equipment that is part of Modernization Project. 4. The only sources in the table not equipped with CEMS are S-4069,

Table 11:	
Table VII-#	**Summary of changes**
	S-4154, and S-4189. Therefore, the above sources are required to operate within the confines of the NOx box in permit condition 21232. 5. S-4068 and S-4188 are equipped with CEMS and the pertinent NOx box requirements in permit condition 21232 were deleted. 6. Application 29271 approved Chevron's request to change their compliance option with Regulation 9, Rule 10 from the Refinery-wide NOx Emission Limit in Regulation 9-10-301 to the Alternate NOx Compliance Plan in Regulation 9-10-308. Therefore, Regulation 9-10-301 was deleted and Regulations 9-10-308, 405 through 407, 503, and 601 through 605 were added to align with requirements in rule. 7. Added parts of permit condition 21232 that contains the mass emission limits for sources affected by changes stemming from Application 29271. 8. MACT DDDDD requirements. 9. Per their January 7, 2019 letter to the District, Chevron notified US EPA on November 6, 2018 that fuel gas streams inherently low in sulfur that are combusted at S-4152, S-4155, S-4161, S-4168, and S-4169 are exempt from H2S monitoring requirements of 40 CFR 60.105(a)(4). The above discussion has been noted in the table. Refer to Appendix E.
A.3.3 Combustion (Furnaces)	1. Repurposed table that was irrelevant and had erroneously remained in the permit for reformer furnaces S-4471 and S-4472 that are exempt from Regulation 9-10 and are not subject to NSPS J. 2. Per Chevron letters to US EPA Region 9 dated November 26, 2018 and January 9, 2019, Chevron notified US EPA that per 40 CFR 60.107a(a)(3) fuel gas streams inherently low in sulfur and combusted at the reformer furnaces are exempt from the SO2 and H2S monitoring requirements in 40 CFR 60.107a(a)(1) and (2). The above discussion has been noted in the table. Refer to Appendix E.
A.3.5 Combustion "Furnace for which BAAQMD Regulation 9 Rule 10 does not apply but NSPS does apply"	1. Deleted table because S-4349 was repurposed to exclusively combust natural gas under Application 29049 and qualified as an exempt source. S-4349 is listed in Table II.C.
A.4.1 Combustion	1. Deleted S-4401, S-7502 through 7505, 7527, 7530, 7537 which are

Table 11:	
Table VII-#	**Summary of changes**
"Internal Combustion Engines"	no longer in service. 2. Deleted permit condition 24022 since S-7537 is no longer in service. 3. Deleted permit condition 26127 since S-4401 is no longer in service. 4. Replaced "Particulates" with "Particles" in "Limit" column for row entry corresponding to Regulation 6-1-305 to align with August 1, 2018 rule. 5. Deleted Regulation 9-8 applicable requirements that aren't valid any more, or the sources to which they apply are no longer in service, or the sources are exempt per Regulation 9-8-110.5. 6. Deleted permit conditions 20225 and 22569 because they are either incorrect and/or don't apply because the sources to which they apply are no longer in service.
A.5.1 Combustion "Boilers"	1. Application 29271 approved Chevron's request to change their compliance option with Regulation 9, Rule 10 from the Refinery-wide NOx Emission Limit in Regulation 9-10-301 to the Alternate NOx Compliance Plan in Regulation 9-10-308. Therefore, Regulation 9-10-301 was deleted. 2. Regulation 9-10-308 and applicable parts of permit condition 21232 that align with Alternate NOx Compliance Plan were added. 3. Replaced "Particulates" with "Particles" in "Limit" column for row entry corresponding to Regulation 6-1-305 to align with August 1, 2018 rule.
B.1.1 Loading Terminals "Asphalt"	1. Replaced "Particulates" with "Particles" in "Limit" column for row entry corresponding to Regulation 6-1-305 to align with August 1, 2018 rule.
B.2.1 Loading Terminals "Gasoline"	1. Added part # reference of permit condition 7880 in "Citation of Limit" column for row entry corresponding to "Throughput".
B.5.1 Loading Terminals "Wharf"	1. Deleted Regulation 8, Rule 44 sections pertaining to "marine vessel" applicable requirements and retained Regulation 8-44 sections pertaining to "marine terminal" applicable requirements per guidance from BAAQMD Legal Division. 2. Retained all SIP Regulation 8, Rule 44 sections except for Section 304, 501.5, and 501.7. 3. Added permit condition 4714. 4. Deleted S-9325 (Berth #9) which is no longer in service.
C.1.1. Process Units "Cooling Water Towers"	1. Revised source descriptions for S-4076, 4172, 4173, 4187, 4191, 6051 in table header. 2. Added S-4465 that was built as part of the Modernization Project. 3. The December 2018 amendments to Regulation 11-10 excluded

Table 11:	
Table VII-#	**Summary of changes**
	cooling towers that are not in petroleum refining process service from the total hydrocarbon emission requirements in the rule via the Limited Exemption in Regulation 11-10-107. Therefore, S-4465 associated with the new Hydrogen Plant that was built as part of the Modernization Project is exempt from Regulations 11-10-204, 304, and 305. 4. Replaced formula cited in the old Regulation 6-1 rule for estimating the allowable emission rate with “TSP Weight Limits” in “Limit” column for row entry corresponding to Regulation 6-1-311 to align with August 1, 2018 rule. 5. Added Regulation 11, Rule 10 applicable requirements. 6. Added MACT A and CC “Heat Exchange System” requirements. 7. Because S-4465 is a “new” source, it is subject to the more stringent leak action levels in Regulation 11-10 and MACT CC. 8. Added parts of Modernization Project permit condition 24136 applicable to S-4465. 9. Chevron has contented cooling water towers associated with the Poly plant (S-4187), SRU plant (S-4191), Alky plant (S-6051), and the new hydrogen plant (S-4465) are not in organic HAP service. Therefore, none of the CWTs are subject to MACT CC monitoring. A note pertaining to the above discussion has been added to the table.
C.2.1. Process Units “FCC”	1. Amended source description to match Table IV. 2. Added Regulation 6-1, SIP Regulation 6, NSPS J requirements where deficient. 3. Added MACT UUU applicable requirements where deficient as it relates to metal HAP, organic HAP, and bypass lines. 4. Added “TSP Weight Limits” in “Limit” column for row entry corresponding to Regulation 6-1-311 to align with August 1, 2018 rule. 5. Added Regulation 6, Rule 5 applicable requirements. 6. Added BAAQMD and SIP Regulation 8, Rule 10 applicable requirements. 7. Added BAAQMD and SIP Regulation 8, Rule 18 applicable requirements. 8. Added BAAQMD and SIP Regulation 8, Rule 28 applicable requirements. 9. Added Regulation 8, Rule 53 applicable requirements. 10. Deleted 9-1-313 requirements pertaining to sulfur removal operations.
C.3.1.	1. Added S-4449, 4450, and 4451 that were built as part of the Modernization Project. 2. Deleted S-4250 and S-4348 that have been replaced by equipment

Table 11:	
Table VII-#	**Summary of changes**
Process Units "Miscellaneous Process Units"	that is part of Modernization Project. 3. Deleted permit conditions 15698 and 22979, since S-4250 is no longer in service. 4. Added parts of Modernization Project permit condition 24136 applicable to S-4253 (TKC Plant). 5. Added parts of Modernization Project permit condition 24136 applicable to S-4449, 4450, and 4451. 6. Added BAAQMD and SIP Regulation 8, Rule 10 applicable requirements. 7. Added BAAQMD and SIP Regulation 8, Rule 18 applicable requirements. 8. Added BAAQMD and SIP Regulation 8, Rule 28 applicable requirements. 9. Added MACT UUU applicable requirements where deficient as it relates to organic HAP, inorganic HAP, and bypass lines for catalytic reformers S-4237 and S-4283. 10. Added permit condition 26714 for knockout drum (V-705A) that was reviewed under Application 29005 and is located downstream of S-4252/S-4346 and S-4253. 11. Instilled HCl limit of 27 ppm applicable during coke burn-off and catalyst rejuvenation at CRUs (S-4237 and 4283) established during initial source test for row entry corresponding to MACT UUU 63.1567(a)(2).
D.1.1. "Refinery"	1. Made non-substantive changes to row entry pertaining to NESHAP FF 61.349 "Closed-vent system and control device" standards. 2. Added MACT CC applicable requirements where deficient pertaining to "Miscellaneous process vents" and benzene "Fenceline monitoring". 3. Deleted MACT CC 63.654(h)(1) that does not exist. 4. Replaced MACT CC 63.654(g) with 63.655(g) because 63.654 in the amended rule pertains to heat exchange systems. 5. Added facility-wide requirements of Modernization Project permit condition 24136.
E.1.1. Sulfur Recovery "H_2S Plants"	1. Added S-4454 that was built as part of the Modernization Project. 2. Added parts of Modernization Project permit condition 24136 applicable to S-4454. 3. Added permit condition 26681 for pumps (P-853, P-853A, P-851, P-851A, P-852, P-890, P-890A, and P-894) at S-4429 and fugitives that were reviewed under Application 28904.
E.2.1. Sulfur Recovery "Claus Plants"	The SRU abatement trains modified as part of the Modernization Project are as shown below: SRU → TGTO → WESP → SGH

Table 11:	
Table VII-#	**Summary of changes**
	S-4227 → A-20 → A-120 → S-4436 S-4228 → A-21 → A-121 → S-4437 S-4229 → A-22 → A-122 → S-4438 Where, TGTO → tail gas thermal oxidizer, WESP → wet electrostatic precipitators, and SGH →stack gas heaters. 1. Added Stack Gas Heaters S-4436 and S-4437 that replaced Tail Gas Heaters S-4192 and S-4193, respectively. Though S-4436 through S-4438 were issued permits under the Modernization Project, S-4438 hasn't yet replaced S-4194 and will do so when SRU#3 (S-4229) is modified. 2. Added SRU Stack Gas Heaters (SGHs) #1 (S-4436), #2 (S-4437), and #3 (S-4438) to table header that were built as part of the Modernization Project. 3. Added parts of Modernization Project permit condition 24136 applicable to S-4436 to S-4438. 4. 5. Added TGTOs A-20 to A-22 and WESPs A-120 to A-122 to table header. 6. Added MACT UUU applicable requirements where deficient pertaining to HAP and bypass lines for SRUs. 7. Added applicable NSPS Subpart Ja requirements because SRUs (S-4227, 4228, 4229) will be modified after May 14, 2007 as part of the Modernization Project. 8. Oxygen enrichment at SRUs modified them. Therefore, NSPS J requirements were deleted and have been superseded by NSPS Ja requirements. 9. Added parts of Modernization Project permit condition 24136 applicable to SRU's (S-4227, 4228, 4229). 10. Replaced formula cited the old Regulation 6-1 rule for estimating the allowable emission rate with "TSP Weight Limits" in "Limit" column for row entry corresponding to Regulation 6-1-311 to align with August 1, 2018 rule. 11. Amended entries corresponding to permit condition 19063 to state they will be superseded by Modernization Project permit condition 24136. 12. Added "Post-Modernization Modification" to entries corresponding to S-4229 and A-122 to clarify that S-4229 has not yet been modified and therefore, A-122 has not been installed.
E.3.1. Sulfur Recovery "Sulfur Racks"	1. Deleted S-3141 in table header because it was replaced by S-3234. 2. Added venturi caustic scrubber (A-0044). 3. S-4396 has been taken out of service. Therefore, the existing

Table 11:	
Table VII-#	**Summary of changes**
	scrubbers A-0043 and 0044 that used to abate S-3226, 3234, and 4396 will be repurposed to exclusively abate S-3226 and 3234 thus reducing their vapor load. 4. S-4490 (S-4396's replacement) will be abated by a water scrubber in series with a caustic scrubber (A-310). 5. Added permit condition 25814 issued under Application 25793.
F.1.0 Storage Tanks "Tanks with Conditions Only"	1. Per Chevron's request, renumbered S-0025 to S-2801 to match tank field numbering. 2. Deleted S-1909, 1911, 2921, 4372 from table header and table since they are no longer in service. 3. Amended permit conditions 4233, 11208, 15107 to reflect source numbers renumbered/replaced. 4. Deleted permit condition 24606 linked to S-4372. 5. Added S-4481 to 4483, and S-6022 to the table header. 6. Added permit conditions 26815 (for S-4481 to 4483) and 26558 (for S-6022).
F.1.1 Tanks (FRT's Cluster 10a)	1. Deleted table that is irrelevant and has erroneously remained in the permit.
F.1.2 Tanks "FRT, IFRT, and EFRT Cluster 0.1b"	1. Deleted S-0223, 0225, 0291, 0319, 0979, 1431, 1908, 2917, 2918, 3141 from the table header under Fixed Roof Tanks Cluster 01b and S-0956 from the table header under External Floating Roof Tanks Cluster 01b because they are no longer in service. 2. Added S-2420, 2421, 2426, 2445, and 3234 to the table header under Fixed Roof Tanks Cluster 01b. 3. Deleted S-3140 in row entry corresponding to permit condition 18137 since it is no longer in service. 4. Deleted S-1908, 1911, 2917, 2918, and 2921 in row entry corresponding to permit condition 4233 since they are no longer in service.
F.1.3 Tanks "FRTs <10,000 gallon Cluster 02"	1. Deleted S-0021 and permit condition 18137 because it is no longer in service.
F.1.4 Tanks "FRTs Wastewater Cluster 05"	1. Added "wastewater" to table header to clarify tank service. 2. Deleted all references to S-0605 which is no longer in service. 3. Deleted permit condition 11193 linked to S-0605.
F.1.5 Tanks	1. Added "MACT CC Records" to table header to clarify intent of

Table 11:	
Table VII-#	**Summary of changes**
"EFRTs MACT CC Records Cluster 11"	applicable requirements in the table. 2. Deleted out of service S-0232, 0297, 0298, 0398 from the table header.
F.1.6 Tanks "IFRTs MACT CC Records Cluster 12"	1. Added "MACT CC Records" to table header to clarify intent of applicable requirements in the table.
F.1.7 Tanks "FRTs Cluster 13"	1. Deleted table because there are no tanks in Cluster 13.
F.1.8 Tanks "FRTs Cluster 16"	1. Deleted table because there are no tanks in Cluster 16.
F.1.9 Tanks "EFRTs NSPS K and MACT CC Cluster 17"	1. Added "NSPS K and MACT CC" to table header to clarify intent of applicable requirements in the table.
F.1.10 Tanks "EFRTs NSPS Kb and MACT CC Cluster 23"	1. Added "NSPS Kb and MACT CC" to table header to clarify intent of applicable requirements in the table. 2. Added S-3220 to the table. 3. Deleted S-3225 from the table header because tank was domed as part of Application 28337 and is now listed under IFRT Cluster 24 in Table VII.F.1.11. 4. Deleted permit condition 18702 because S-3225 was deleted from table and is now listed under IFRT Cluster 24 in Table VII.F.1.11. 5. Deleted S-3202 from the table header because tank was domed as part of Application 29494 and is now listed under IFRT Cluster 24 in Table VII.F.1.11. 6. Deleted permit condition 13364 because S-3202 was deleted from table and is now listed under IFRT Cluster 24 in Table VII.F.1.11. 7. Deleted reference to permit condition #8252 and replaced with permit condition #13535 for S-3197.
F.1.11 Tanks "IFRTs NSPS Kb and MACT CC Cluster 24"	1. Added "NSPS Kb and MACT CC" to table header to clarify intent of applicable requirements in the table. 2. Per Chevron's request, renumbered domed EFRT S-3230 to S-3228 to match tank field numbering. 3. Replaced references to S-3230 with S-3228 in table and permit

Table 11:	
Table VII-#	**Summary of changes**
	condition 25848. 4. Added S-3202, S-3225 and S-3231 to table header. 5. Added permit conditions 13364 (for S-3202),18702 (for S-3225) and 25913 (for S-3231).
F.1.12 Tanks "FRTs Wastewater Cluster 25"	1. Added "Wastewater" to table header to clarify intent of applicable requirements in the table.
F.1.13 Tanks "EFRTs MACT CC Cluster 26"	1. Added "MACT CC" to table header to clarify intent of applicable requirements in the table. 2. Deleted S-0634, 0953, 1686 that are no longer in service. 3. Added S-1292, 1518, 1843, 3100. 4. Unlike S-3072 and 3101, throughput limits were established for S-1514 and are listed in Table II.A-1. Therefore, S-1514 was deleted from the row entry for permit condition # 21237 in the table.
F.1.14 Tanks "IFRTs subject to MACT CC and not subject to NSPS Cluster 27"	1. Clarified in table header S-1289 is subject to MACT CC and is not subject to NSPS. 2. Deleted S-1645 that is no longer in service and its associated permit condition 21307.
G.1.2 Wastewater "Process Drains Cluster 20d – not subject to Subpart QQQ"	1. Added "NSPS" to table header before "QQQ".
G.1.3 Wastewater "Process Drains Cluster 20q – subject to Subpart QQQ"	1. Clarified in table header that process drains are subject to NSPS QQQ. 2. Added process drains subject to NSPS QQQ that weren't previously included. 3.
G.1.4 Wastewater "Separator Cluster 30c"	1. Clarified in table header that table pertains to Separator Cluster 30c. 2. Deleted S-6250 because it is no longer in service. 3. MACT CC requirements were updated where deficient and because 40 CFR 63.654 in the amended rule pertains to heat exchange systems. 4. Added permit condition 26721 for S-4413 and A-4413 that was reviewed under Application 28492.

Table 11:	
Table VII-#	**Summary of changes**
G.1.5 Wastewater "Non-EFRT or IFRT Tanks Cluster 40b"	1. Deleted NESHAP FF note that is irrelevant. 2. Changed monitoring to "C".
G.1.6 Wastewater "EFRT Tanks Cluster 45e"	1. Deleted S-0232. 2. Corrected typographical errors in row entries corresponding to Regulation 8-8-305.1.
G.1.8 Wastewater "Containers (Portable Wastewater Handling Units) Cluster 60b"	1. Deleted S-6250 and permit conditions 12842 and 18137, because S-6250 abated by A-0630 and A-0631 is archived and no longer in service. 2. Though the preamble in the 61.354(c) of NESHAP FF requires continuous monitoring of control device operation, 61.354(c) was deleted because Chevron contends the carbon beds aren't regenerated directly on site in the control device (i.e., carbon canister). Therefore, the continuous monitoring requirements for carbon adsorption systems that regenerate the carbon bed directly in the control device such as a fixed-bed carbon adsorber in 61.354(c)(7) don't apply.
H.1.1 VOC Sources "Cold Cleaners"	4. Deleted S-4420 and S-4427 because they are no longer in service. 1. .
H.2.1 VOC Sources "Fugitive Components Applicability Matrix"	1. Updated Regulation 8-18 requirements to align with the version of rule adopted on December 16, 2015. 2. Added NSPS VVa requirements for sources constructed/modified under the Modernization Project. 3. Added permit condition 25176 for fugitive components reviewed under Application 23827. 4. Added permit condition 24136 applicable to fugitive equipment reviewed as part of the Modernization Project.
H.3.1 VOC Sources "Paint Booth and Printers"	1. Expanded applicability of table to include "Printers" and added S-7601, which has been operating at Chevron since 2005 but wasn't included in the table.
H.4.1 "Fenceline Monitoring"	1. Added applicable MACT CC fence-line monitoring requirements.

VIII. Test Methods

This section of the permit lists test methods that are associated with standards in District or other rules. It is included only for reference. In most cases, the test methods in the rules are source test methods that can be used to determine compliance but are not required on an ongoing basis. They are not "applicable requirements" as defined by Regulation 2-6-202.

If a rule or permit condition requires ongoing testing, the requirement will also appear in Section IV of the permit.

Changes to permit:

Regulatory names and dates of adoption for the NSPS and NESHAP regulations were updated for consistency throughput the permit.

Revisions to make method citations and references consistent throughout the section, and updates to add new/updated regulations to Section VIII, including but not limited to:

a. BAAQMD Regulation 6 Rule 5
b. BAAQMD Regulation 8 Rule 18
c. BAAQMD Regulation 8 Rule 44
d. BAAQMD Regulation 8 Rule 53
e. BAAQMD Regulation 11 Rule 10
f. NSPS 40 CFR 60 Subpart Ja, Kb, VVa
g. NESHAP 40 CFR 63 Subpart CC Heat Exchange requirements
h. NESHAP 40 CFR 63 Subpart UUU

IX. Permit Shield:

The District rules allow two types of permit shields. The permit shield types are defined as follows: (1) A provision in a major facility review permit explaining that specific federally enforceable regulations and standards do not apply to a source or group of sources, or (2) A provision in a major facility review permit explaining that specific federally enforceable applicable requirements for monitoring, recordkeeping and/or reporting are subsumed because other applicable requirements for monitoring, recordkeeping, and reporting in the permit will assure compliance with all emission limits.

The second type of permit shield is allowed by EPA's "White Paper 2 for Improved Implementation of the Part 70 Operating Permits Program." The District uses the second type of permit shield for all streamlining of monitoring, recordkeeping, and reporting requirements in Title V permits. The District's program does not allow other types of streamlining in Title V permits.

This facility has both types of permit shield.

Changes to permit:

- Table IX A – 3
  Deleted S-9325 (Berth #9) which is no longer in service.

- Table IX B – 2
  Chevron will subsume compliance with the fill or refill notification requirements in NSPS Kb and MACT CC via Regulation 8-5-111.1 for External Floating Roof Tanks that are in Cluster 23.

  Added S-3220

  Deleted S-3202

- Table IX B – 3
  Chevron will subsume compliance with the fill or refill notification requirements in NSPS Kb and MACT CC via Regulation 8-5-111.1 for Internal Floating Roof Tanks that are in Cluster 24.

Added S-3202, S-3225, S-3228, S-3229, and S-3231

X. Glossary

Changes to permit:

- Added NHV_{vg} – Net heating value of flare vent gas (Btu/scf).
- Added V_{max} – Maximum allowed flare tip velocity (ft/sec).

Major Facility Review Certification Statement:

The responsible official for Chevron Refinery submitted a signed Certification Statement form dated October 21, 2019. On this form, the responsible official certified that the following statements are true:

Based on information and belief formed after reasonable inquiry, the source(s) identified in the Title V Renewal Application will comply with future-effective applicable requirement(s), on a timely basis;

Based on information and belief formed after reasonable inquiry, information on application forms, all accompanying reports, and other required certifications is true, accurate, and complete;

All fees required by Regulation 3, including Schedule P have been paid.

Appendix A

CAM Analysis

Shawn Lee
Manager

Health, Environment & Safety
Chevron Products Company
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May 6, 2016

Mr. Bhagavan Krishnaswamy
Bay Area Air Quality Management District
939 Ellis Street
San Francisco, CA 94109-7799

RE: Response to Information Request, Application 27756
Chevron Products Company – Richmond Refinery (Plant #A0010)

Dear Mr. Krishnaswamy:

This letter is submitted in response to your letter dated March 9, 2016 requesting information regarding Chevron's Title V Permit Application number 27756. The fee payment requested in your letter was submitted April 27, 2016. Questions from the Bay Area Air Quality Management District (District) appear in **bold** font below followed by Chevron's responses. We understand that a letter containing the same questions, where applicable, was sent to all five Bay Area refineries regardless of whether the questions were answered previously. Several of the questions were answered in Chevron's Title V permit renewal application (Application) dated February 8, 2016 as noted below.

1. **Provide a list of all sources not owned or operated by Chevron (i.e., contractors' sources) including their description and design capacity (permitted or unpermitted by the District) that are operating at the refinery for periods greater than 12 months.**

   Please see Chevron's Application Section 1.5.1.

2. **Submit all approved Alternate Monitoring Plans (AMPs), including those available for portable sources or abatement devices (thermal oxidizer, scrubber, etc).**

   Please see Chevron's Application Section 1.5.2 and Attachment D.

3. **In the 2011 Title V Renewal, the Compliance Assurance Monitoring (CAM) analysis for the refinery was incomplete. Please provide comprehensive CAM analyses. An example of a comprehensive CAM analyses is enclosed for your information. Complete the attached "Form CAM" for all significant sources. Detailed CAM plan submissions required by 40 CFR 64.4 may be submitted separately.**

   Please see Attachment A to this letter.

Application 27756 Response to Information Request
Chevron Products Company
May 6, 2016
Page 2

4. **Provide a list of all significant sources, as defined in Regulation 2, Rule 6, Section 239, with potential to emit more than 2 tons per year of any regulated air pollutant, or more than 400 lbs per year of any hazardous air pollutant, that are currently not included in the Title V permit.**

   Please see Chevron's Application Section 1.5.4.

5. **Update all bubble permit conditions to reflect the most current regulatory requirements. Rules that may impact bubble emission limits include 8-5, 8-18, 9-1, 9-8, 9-9, 9-10, NSPS J, MACT UUU, CARB 93118.2 Marine Vessels, CARB 93118.5 Harbor Craft, and Consent Decrees.**

   Please see Chevron's Application Section 1.5.5.

6. **Ocean Going Vessel (OGV) emissions should be based on current rules, regulations, and methodologies. Rules that may impact OGV emissions may include 8-18, 8-44, 9-1, 9-8, MACT R, MACT CC, CARB 93118.2 Marine Vessels, CARB 93118.5 Harbor Craft, and Consent Decrees.**

   In Chevron's Application Section 1.5.5, Chevron requested the basis of the OGV emission factors that the District wrote into Chevron's bubble permit. The bubble permit condition was already revised and emission credits were issued to Chevron for the regulatory change in OGV fuel standards. It is unclear what change the District is requesting to the OGV emissions estimation method. Also, Chevron is evaluating whether there is a regulatory need to revise emissions estimation methodologies and limits of OGVs in Condition #469 following a change in OGV regulations.

7. **Compliance demonstration for all emission limits that do not have monitoring requirements. For emission limits that do not have monitoring to demonstrate compliance, provide source tests demonstrating compliance with each limit, or provide other justification in support of the Certification Statement.**

   Table VII of Chevron's Title V permit identifies monitoring requirements for each emission limit, except limits where the compliance demonstration method is outlined below.

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Chevron Products Company
May 6, 2016
Page 3

Source	Citation of Limit	Limit	Compliance Demonstration Method
Furnaces	SIP 6-310	0.15 grain/dscf	Visual Inspection
4170	Condition 16679 Part 1	120 lb NH3/hr	NH3 injection is hydraulically limited to less than 120 lb/hr.
4285, 4227, 4228, 4229	9-1-313.2	Removal and recovery of 95% of H2S in refinery fuel gas and 95% of H2S in process water streams on a refinery-wide basis	Recordkeeping
4227, 4228, 4229	9-1-313.2	Removal of 95% of ammonia in process water streams	Recordkeeping
4227, 4228, 4229	Condition 19063 part 4	10 ppmv H2S	Source tests conducted and submitted to the District annually

Please contact Ms. Laurie Mintzer at (510) 242-5271 if you have any questions regarding this submittal.

Sincerely,

Shawn Young for

Shawn Lee

Enclosures

ATTACHMENT A

DETAILED COMPLIANCE ASSURANCE MONITORING ANALYSIS

Chevron Richmond Refinery, Facility #A0010
Compliance Assurance Monitoring (CAM) Applicability Analysis
(40 CFR 64)

Source # [1]	Source Description	Pollutant	Control Device Used for Compliance 40 CFR 64.2(a)(2)	Federally Enforceable Emissions Limit or Standard 40 CFR 64.2(a)(1) Emission Limit	Basis	Continuous Compliance Determination Method in Title V Permit? 40 CFR 64.2(b)(1)(vi)	Limit or Standard Proposed > 11/15/90? 40 CFR 64.2(b)(1)(i)	Pre-Control PTE > MST? 40 CFR 64.2(a)(3)	Uncontrolled Emissions [2] PTE (tons/yr)	Subject to CAM?
4285	FCC Plant	PM	A-0014, K-13, FCC Electrostatic Precipitator, Single Stage Electrostatic Precipitator	0.15 grain FP/dscf, 40 lb/hr PM	SIP 6-310, SIP 6-311	COMS	No	Not applicable [exempt per (b)(1)(vi)]	N/A	Exempt - 40 CFR 64.2(b)(1)(i) and (b)(1)(vi)
				20% opacity for no more than 3 minutes/hour	SIP 6-302		No	Not applicable [exempt per (b)(1)(vi)]		
				30% opacity, except for one 6 minute average opacity reading in 1 hour	40 CFR 60 Subpart J, 40 CFR 63 Subpart UUU		Yes - 40 CFR 63, Subpart UUU proposed 9/11/1998	Not applicable [exempt per 40 CFR 64.2(b)(1)(i) and (b)(1)(vi)]		
				1.0 kg of PM per 1000 kg of coke burn off						
		VOC	A-6016, FCC Flare V 731,Refinery Waste Gas Flare	90% destruction of organics	8-1-110.3	No	No	Not applicable [inherent process equipment is not considered a control device]	N/A	No. The flare is "inherent process equipment", not a control device, because it is necessary for the safe functioning of the refining process equipment (40 CFR 64.1).
		H2S	A-6016, FCC Flare V 731,Refinery Waste Gas Flare	<162 ppmv 3-hour rolling average H2S in fuel gas except during malfunctions	40 CFR 60 Subpart Ja	No	Yes - 40 CFR 60, Subpart Ja promulgated 6/24/2008	Not applicable [inherent process equipment is not considered a control device]	N/A	No. The flare is "inherent process equipment", not a control device, because it is necessary for the safe functioning of the refining process equipment (40 CFR 64.1).
		SO2	SOx reduction additive	1000 ppmv	9-1-310.1	SO2 CEMS	Not necessary to evaluate [exempt per 40 CFR 64.2(b)(1)(vi)]	Not applicable [exempt per 40 CFR 64.2(b)(1)(vi)]	N/A	Exempt - 40 CFR 64.2(b)(1)(vi)
				< 9.8 kg of SOx per 1000 kg of coke burn-off	40 CFR 60 Subpart J					
4192	F-2170 Stack Gas Heater #1 SRU CAT Crack.	PM	A-0020, Tail Gas Unit for 2100 Plant, #1 SRU Train, Absorption and Regeneration	Ringelmann No. 1 for no more than 3 minutes/hour	SIP 6-301	No	No	Not applicable [inherent process equipment is not considered a control device]	N/A	No. The tail gas unit is "inherent process equipment", not a control device, because it is necessary for the safe functioning of the refining process equipment and is material recovery equipment (40 CFR 64.1).
				0.15 grain/dscf	SIP 6-310	No	No			
4913	F-2270 Tail Gas Heater #2 SRU	PM	A-0021, Tail Gas Unit for 2200 Plant, #2 SRU Train, Absorption and Regeneration	Ringelmann No. 1 for no more than 3 minutes/hour	SIP 6-301	No	No	Not applicable [inherent process equipment is not considered a control device]	N/A	No. The tail gas unit is "inherent process equipment", not a control device, because it is necessary for the safe functioning of the refining process equipment and is material recovery equipment (40 CFR 64.1).
				0.15 grain/dscf	SIP 6-310	No	No			
4194	F-2370 Tail Gas Heater #3 SRU	PM	A-0022, Tail Gas Unit for 2300 Plant, #3 SRU Train, Absorption and Regeneration	Ringelmann No. 1 for no more than 3 minutes/hour	SIP 6-301	No	No	Not applicable [inherent process equipment is not considered a control device]	N/A	No. The tail gas unit is "inherent process equipment", not a control device, because it is necessary for the safe functioning of the refining process equipment and is material recovery equipment (40 CFR 64.1).
				0.15 grain/dscf	SIP 6-310	No	No			

Chevron Richmond Refinery, Facility #A0010
Compliance Assurance Monitoring (CAM) Applicability Analysis
(40 CFR 64)

Source # [1]	Source Description	Pollutant	Control Device Used for Compliance 40 CFR 64.2(a)(2)	Federally Enforceable Emissions Limit or Standard 40 CFR 64.2(a)(1) Emission Limit	Basis	Continuous Compliance Determination Method in Title V Permit? 40 CFR 64.2(b)(1)(vi)	Limit or Standard Proposed > 11/15/90? 40 CFR 64.2(b)(1)(i)	Pre-Control PTE > MST? 40 CFR 64.2(a)(3)	Uncontrolled Emissions [2] PTE (tons/yr)	Subject to CAM?
4227	SRU #1 Train	SO2	A-0020, Tail Gas Unit for 2100 Plant, #1 SRU Train, Absorption and Regeneration	250 ppmv SO2, dry, at 0% oxygen	9-1-307, 40 CFR 60 Subpart J, 40 CFR 63 Subpart UUU	SO2 CEMS	Yes - 40 CFR 63, Subpart UUU proposed 9/11/1998	Not applicable [inherent process equipment is not considered a control device]	N/A	No. The tail gas unit is "inherent process equipment", not a control device, because it is necessary for the safe functioning of the refining process equipment and is material recovery equipment (40 CFR 64.1).
		PM	A-0020, Tail Gas Unit for 2100 Plant, #1 SRU Train, Absorption and Regeneration	Ringelmann No. 1 for no more than 3 minutes/hour	SIP 6-301	No	No	Not applicable [inherent process equipment is not considered a control device]	N/A	No. The tail gas unit is "inherent process equipment", not a control device, because it is necessary for the safe functioning of the refining process equipment and is material recovery equipment (40 CFR 64.1).
				0.15 grain/dscf	SIP 6-310	No	No			
		VOC	A-6019, Alky-Poly Flare, Refinery Waste Gas Flare, V 732A	90% destruction of organics	8-1-110.3	No	No	Not applicable [inherent process equipment is not considered a control device]	N/A	No. The flare is "inherent process equipment", not a control device, because it is necessary for the safe functioning of the refining process equipment (40 CFR 64.1).
		H2S	A-6019, Alky-Poly Flare, Refinery Waste Gas Flare, V 732A	<162 ppmv 3-hour rolling average H2S in fuel gas except during malfunctions	40 CFR 60 Subpart Ja	No	Yes - 40 CFR 60, Subpart Ja promulgated 6/24/2008	Not applicable [inherent process equipment is not considered a control device]	N/A	No. The flare is "inherent process equipment", not a control device, because it is necessary for the safe functioning of the refining process equipment (40 CFR 64.1).
4228	SRU #2 Train	SO2	A-0021, Tail Gas Unit for 2200 Plant, #2 SRU Train, Absorption and Regeneration	250 ppmv SO2, dry, at 0% oxygen	9-1-307, 40 CFR 60 Subpart J, 40 CFR 63 Subpart UUU	SO2 CEMS	Yes - 40 CFR 63, Subpart UUU proposed 9/11/1998	Not applicable [inherent process equipment is not considered a control device]	N/A	No. The tail gas unit is "inherent process equipment", not a control device, because it is necessary for the safe functioning of the refining process equipment and is material recovery equipment (40 CFR 64.1).
		PM	A-0021, Tail Gas Unit for 2200 Plant, #2 SRU Train, Absorption and Regeneration	Ringelmann No. 1 for no more than 3 minutes/hour	SIP 6-301	No	No	Not applicable [inherent process equipment is not considered a control device]	N/A	No. The tail gas unit is "inherent process equipment", not a control device, because it is necessary for the safe functioning of the refining process equipment and is material recovery equipment (40 CFR 64.1).
				0.15 grain/dscf	SIP 6-310	No	No			
		VOC	A-6019, Alky-Poly Flare, Refinery Waste Gas Flare, V 732A	90% destruction of organics	8-1-110.3	No	No	Not applicable [inherent process equipment is not considered a control device]	N/A	No. The flare is "inherent process equipment", not a control device, because it is necessary for the safe functioning of the refining process equipment (40 CFR 64.1).
		H2S	A-6019, Alky-Poly Flare, Refinery Waste Gas Flare, V 732A	<162 ppmv 3-hour rolling average H2S in fuel gas except during malfunctions	40 CFR 60 Subpart Ja	No	Yes - 40 CFR 60, Subpart Ja promulgated 6/24/2008	Not applicable [inherent process equipment is not considered a control device]	N/A	No. The flare is "inherent process equipment", not a control device, because it is necessary for the safe functioning of the refining process equipment (40 CFR 64.1).
4229	SRU #3 Train	SO2	A-0022, Tail Gas Unit for 2300 Plant, #3 SRU Train, Absorption and Regeneration	250 ppmv SO2, dry, at 0% oxygen	9-1-307, 40 CFR 60 Subpart J, 40 CFR 63 Subpart UUU	SO2 CEMS	Yes - 40 CFR 63, Subpart UUU proposed 9/11/1998	Not applicable [inherent process equipment is not considered a control device]	N/A	No. The tail gas unit is "inherent process equipment", not a control device, because it is necessary for the safe functioning of the refining process equipment and is material recovery equipment (40 CFR 64.1).
		PM	A-0022, Tail Gas Unit for 2300 Plant, #3 SRU Train, Absorption and Regeneration	Ringelmann No. 1 for no more than 3 minutes/hour	SIP 6-301	No	No	Not applicable [inherent process equipment is not considered a control device]	N/A	No. The tail gas unit is "inherent process equipment", not a control device, because it is necessary for the safe functioning of the refining process equipment and is material recovery equipment (40 CFR 64.1).
				0.15 grain/dscf	SIP 6-310	No	No			
		VOC	A-6019, Alky-Poly Flare, Refinery Waste Gas Flare, V 732A	90% destruction of organics	8-1-110.3	No	No	Not applicable [inherent process equipment is not considered a control device]	N/A	No. The flare is "inherent process equipment", not a control device, because it is necessary for the safe functioning of the refining process equipment (40 CFR 64.1).
		H2S	A-6019, Alky-Poly Flare, Refinery Waste Gas Flare, V 732A	<162 ppmv 3-hour rolling average H2S in fuel gas except during malfunctions	40 CFR 60 Subpart Ja	No	Yes - 40 CFR 60, Subpart Ja promulgated 6/24/2008	Not applicable [inherent process equipment is not considered a control device]	N/A	No. The flare is "inherent process equipment", not a control device, because it is necessary for the safe functioning of the refining process equipment (40 CFR 64.1).

Chevron Richmond Refinery, Facility #A0010
Compliance Assurance Monitoring (CAM) Applicability Analysis
(40 CFR 64)

Source # [1]	Source Description	Pollutant	Control Device Used for Compliance 40 CFR 64.2(a)(2)	Federally Enforceable Emissions Limit or Standard 40 CFR 64.2(a)(1)		Continuous Compliance Determination Method in Title V Permit? 40 CFR 64.2(b)(1)(vi)	Limit or Standard Proposed > 11/15/90? 40 CFR 64.2(b)(1)(i)	Pre-Control PTE > MST? 40 CFR 64.2(a)(3)	Uncontrolled Emissions [2] PTE (tons/yr)	Subject to CAM?
				Emission Limit	Basis					
4415	Asphalt Tank Truck Loading Racks	PM	A-0037, Mist Eliminator Scrubber, Fibrous Packed Scrubber – Asphalt Loading Racks	Ringelmann No. 1 for no more than 3 minutes/hour	SIP 6-301	No	No	No	< 3	No. Exempt per 40 CFR 64.2(a)(3) asphalt plant max. production and permitting emission factor for hydrocarbon, assumes 100% of hydrocarbon is PM
				0.15 grain/dscf	SIP 6-310	No	No	No		
4330	HNHF Reactor Furnace, F 1610	NOx	A-0065, Hydrofinisher SCR Unit (HNHF, LNHF, Hot Oil Furnace), Unclassified Abatement Device	40 ppm NOx @ 3% O2, 8 hr average	BAAQMD Condition #469 [6.B]	NOx CEMS	Not necessary to evaluate [exempt per 40 CFR 64.2(b)(1)(vi)]	Not applicable [exempt per 40 CFR 64.2(b)(1)(vi)]	N/A	Exempt - 40 CFR 64.2(b)(1)(vi)
4331	LNHF Reactor Furnace, F 1310	NOx	A-0065, Hydrofinisher SCR Unit (HNHF, LNHF, Hot Oil Furnace), Unclassified Abatement Device	40 ppm NOx @ 3% O2, 8 hr average	BAAQMD Condition #469 [6.B]	NOx CEMS	Not necessary to evaluate [exempt per 40 CFR 64.2(b)(1)(vi)]	Not applicable [exempt per 40 CFR 64.2(b)(1)(vi)]	N/A	Exempt - 40 CFR 64.2(b)(1)(vi)
4332	Hot Oil Furnace, F 1360	NOx	A-0065, Hydrofinisher SCR Unit (HNHF, LNHF, Hot Oil Furnace), Unclassified Abatement Device	40 ppm NOx @ 3% O2, 8 hr average	BAAQMD Condition #469 [6.B]	NOx CEMS	Not necessary to evaluate [exempt per 40 CFR 64.2(b)(1)(vi)]	Not applicable [exempt per 40 CFR 64.2(b)(1)(vi)]	N/A	Exempt - 40 CFR 64.2(b)(1)(vi)
4333	TKC Vacuum Furnace, F 1750	NOx	A-0066, TKC SCR Unit; Unclassified Abatement Device, (TKC Vac Furnace, LNC)	40 ppm NOx @ 3% O2, 8 hr average	BAAQMD Condition #469 [6.B]	NOx CEMS	Not necessary to evaluate [exempt per 40 CFR 64.2(b)(1)(vi)]	Not applicable [exempt per 40 CFR 64.2(b)(1)(vi)]	N/A	Exempt - 40 CFR 64.2(b)(1)(vi)
4334	LNC Atmos Furnace, F 1200	NOx	A-0066, TKC SCR Unit; Unclassified Abatement Device, (TKC Vac Furnace, LNC)	40 ppm NOx @ 3% O2, 8 hr average	BAAQMD Condition #469 [6.B]	NOx CEMS	Not necessary to evaluate [exempt per 40 CFR 64.2(b)(1)(vi)]	Not applicable [exempt per 40 CFR 64.2(b)(1)(vi)]	N/A	Exempt - 40 CFR 64.2(b)(1)(vi)
4335	LNC Vacuum Furnace, F 1250	NOx	A-0066, TKC SCR Unit; Unclassified Abatement Device, (TKC Vac Furnace, LNC)	40 ppm NOx @ 3% O2, 8 hr average	BAAQMD Condition #469 [6.B]	NOx CEMS	Not necessary to evaluate [exempt per 40 CFR 64.2(b)(1)(vi)]	Not applicable [exempt per 40 CFR 64.2(b)(1)(vi)]	N/A	Exempt - 40 CFR 64.2(b)(1)(vi)
4336	HNC Reactor Furnace, F 1410	NOx	A-0067, HNC Hydrocracker SCR Unit, Unclassified Abatement Device	40 ppm NOx @ 3% O2, 8 hr average	BAAQMD Condition #469 [6.B]	NOx CEMS	Not necessary to evaluate [exempt per 40 CFR 64.2(b)(1)(vi)]	Not applicable [exempt per 40 CFR 64.2(b)(1)(vi)]	N/A	Exempt - 40 CFR 64.2(b)(1)(vi)
4337	HNC Atmos Furnace, F 1500	NOx	A-0067, HNC Hydrocracker SCR Unit, Unclassified Abatement Device	40 ppm NOx @ 3% O2, 8 hr average	BAAQMD Condition #469 [6.B]	NOx CEMS	Not necessary to evaluate [exempt per 40 CFR 64.2(b)(1)(vi)]	Not applicable [exempt per 40 CFR 64.2(b)(1)(vi)]	N/A	Exempt - 40 CFR 64.2(b)(1)(vi)
4338	HNC Vacuum Furnace, F 1550	NOx	A-0067, HNC Hydrocracker SCR Unit, Unclassified Abatement Device	40 ppm NOx @ 3% O2, 8 hr average	BAAQMD Condition #469 [6.B]	NOx CEMS	Not necessary to evaluate [exempt per 40 CFR 64.2(b)(1)(vi)]	Not applicable [exempt per 40 CFR 64.2(b)(1)(vi)]	N/A	Exempt - 40 CFR 64.2(b)(1)(vi)
4339	LNC Reactor Furnace, F 1110	NOx	A-0067, HNC Hydrocracker SCR Unit, Unclassified Abatement Device	40 ppm NOx @ 3% O2, 8 hr average	BAAQMD Condition #469 [6.B]	NOx CEMS	Not necessary to evaluate [exempt per 40 CFR 64.2(b)(1)(vi)]	Not applicable [exempt per 40 CFR 64.2(b)(1)(vi)]	N/A	Exempt - 40 CFR 64.2(b)(1)(vi)

Chevron Richmond Refinery, Facility #A0010
Compliance Assurance Monitoring (CAM) Applicability Analysis
(40 CFR 64)

Source # [1]	Source Description	Pollutant	Control Device Used for Compliance 40 CFR 64.2(a)(2)	Federally Enforceable Emissions Limit or Standard 40 CFR 64.2(a)(1) Emission Limit	Basis	Continuous Compliance Determination Method in Title V Permit? 40 CFR 64.2(b)(1)(vi)	Limit or Standard Proposed > 11/15/90? 40 CFR 64.2(b)(1)(i)	Pre-Control PTE > MST? 40 CFR 64.2(a)(3)	Uncontrolled Emissions [2] PTE (tons/yr)	Subject to CAM?
4350	Gas Turbine with Steam Injection	NOx	A-0072, Cogeneration Unit Train 1000 SCR Unit; SCR NOx Reduction Catalyst , Unclassified Abatement Device	NOx <10ppm @15% O2 – 3-hr average; except startup/ shutdown	BAAQMD Condition #1162 Part 6	NOx CEMS	Not necessary to evaluate [exempt per 40 CFR 64.2(b)(1)(vi)]	Not applicable [exempt per 40 CFR 64.2(b)(1)(vi)]	N/A	Exempt - 40 CFR 64.2(b)(1)(vi)
				0.20 lb/MMBtu as a 30-day rolling average	40 CFR 60 Subpart Db					
				25 ppmv @15% O2	9-9-301.1.3					
		CO	A-0070, Cogeneration Unit Train 1000 CO/HC Catalyst Unit, Unclassified Abatement Device	CO reduced by 80%	BAAQMD Condition #1162 Part 10	CO CEMS	Not necessary to evaluate [exempt per 40 CFR 64.2(b)(1)(vi)]	Not applicable [exempt per 40 CFR 64.2(b)(1)(vi)]	N/A	Exempt - 40 CFR 64.2(b)(1)(vi)
		VOC	A-0070, Cogeneration Unit Train 1000 CO/HC Catalyst Unit, Unclassified Abatement Device	VOC reduced by 50%	BAAQMD Condition #1162 Part 11	CO CEMS	Not necessary to evaluate [exempt per 40 CFR 64.2(b)(1)(vi)]	Not applicable [exempt per 40 CFR 64.2(b)(1)(vi)]	N/A	Exempt - 40 CFR 64.2(b)(1)(vi)
4351	Heat Recovery Steam Generator	NOx	A-0072, Cogeneration Unit Train 1000 SCR Unit; SCR NOx Reduction Catalyst , Unclassified Abatement Device	NOx <10ppm @15% O2 – 3-hr average; except startup/ shutdown	BAAQMD Condition #1162 Part 6	NOx CEMS	Not necessary to evaluate [exempt per 40 CFR 64.2(b)(1)(vi)]	Not applicable [exempt per 40 CFR 64.2(b)(1)(vi)]	N/A	Exempt - 40 CFR 64.2(b)(1)(vi)
				0.20 lb/MMBtu as a 30-day rolling average	40 CFR 60 Subpart Db					
				25 ppmv @15% O2	9-9-301.1.3					
		CO	A-0070, Cogeneration Unit Train 1000 CO/HC Catalyst Unit, Unclassified Abatement Device	CO reduced by 80%	BAAQMD Condition #1162 Part 10	CO CEMS	Not necessary to evaluate [exempt per 40 CFR 64.2(b)(1)(vi)]	Not applicable [exempt per 40 CFR 64.2(b)(1)(vi)]	N/A	Exempt - 40 CFR 64.2(b)(1)(vi)
		VOC	A-0070, Cogeneration Unit Train 1000 CO/HC Catalyst Unit, Unclassified Abatement Device	VOC reduced by 50%	BAAQMD Condition #1162 Part 11	CO CEMS	Not necessary to evaluate [exempt per 40 CFR 64.2(b)(1)(vi)]	Not applicable [exempt per 40 CFR 64.2(b)(1)(vi)]	N/A	Exempt - 40 CFR 64.2(b)(1)(vi)
4352	Gas Turbine with Steam Injection	NOx	A-0073, Cogeneration Unit Train 2000 SCR Unit; SCR NOx Reduction Catalyst, Unclassified Abatement Device	NOx <10ppm @15% O2 – 3-hr average; except startup/ shutdown	BAAQMD Condition #1162 Part 6	NOx CEMS	Not necessary to evaluate [exempt per 40 CFR 64.2(b)(1)(vi)]	Not applicable [exempt per 40 CFR 64.2(b)(1)(vi)]	N/A	Exempt - 40 CFR 64.2(b)(1)(vi)
				0.20 lb/MMBtu as a 30-day rolling average	40 CFR 60 Subpart Db					
				25 ppmv @15% O2	9-9-301.1.3					
		CO	A-0071, Cogeneration Unit Train 2000 CO/HC Catalyst Unit, Unclassified Abatement Device	CO reduced by 80%	BAAQMD Condition #1162 Part 10	CO CEMS	Not necessary to evaluate [exempt per 40 CFR 64.2(b)(1)(vi)]	Not applicable [exempt per 40 CFR 64.2(b)(1)(vi)]	N/A	Exempt - 40 CFR 64.2(b)(1)(vi)
		VOC	A-0071, Cogeneration Unit Train 2000 CO/HC Catalyst Unit, Unclassified Abatement Device	VOC reduced by 50%	BAAQMD Condition #1162 Part 11	CO CEMS	Not necessary to evaluate [exempt per 40 CFR 64.2(b)(1)(vi)]	Not applicable [exempt per 40 CFR 64.2(b)(1)(vi)]	N/A	Exempt - 40 CFR 64.2(b)(1)(vi)
4353	Heat Recovery Steam Generator	NOx	A-0073, Cogeneration Unit Train 2000 SCR Unit; SCR NOx Reduction Catalyst, Unclassified Abatement Device	NOx <10ppm @15% O2 – 3-hr average; except startup/ shutdown	BAAQMD Condition #1162 Part 6	NOx CEMS	Not necessary to evaluate [exempt per 40 CFR 64.2(b)(1)(vi)]	Not applicable [exempt per 40 CFR 64.2(b)(1)(vi)]	N/A	Exempt - 40 CFR 64.2(b)(1)(vi)
				0.20 lb/MMBtu as a 30-day rolling average	40 CFR 60 Subpart Db					
				25 ppmv @15% O2	9-9-301.1.3					
		CO	A-0071, Cogeneration Unit Train 2000 CO/HC Catalyst Unit, Unclassified Abatement Device	CO reduced by 80%	BAAQMD Condition #1162 Part 10	CO CEMS	Not necessary to evaluate [exempt per 40 CFR 64.2(b)(1)(vi)]	Not applicable [exempt per 40 CFR 64.2(b)(1)(vi)]	N/A	Exempt - 40 CFR 64.2(b)(1)(vi)
		VOC	A-0071, Cogeneration Unit Train 2000 CO/HC Catalyst Unit, Unclassified Abatement Device	VOC reduced by 50%	BAAQMD Condition #1162 Part 11	CO CEMS	Not necessary to evaluate [exempt per 40 CFR 64.2(b)(1)(vi)]	Not applicable [exempt per 40 CFR 64.2(b)(1)(vi)]	N/A	Exempt - 40 CFR 64.2(b)(1)(vi)

Chevron Richmond Refinery, Facility #A0010
Compliance Assurance Monitoring (CAM) Applicability Analysis
(40 CFR 64)

Source # [1]	Source Description	Pollutant	Control Device Used for Compliance 40 CFR 64.2(a)(2)	Federally Enforceable Emissions Limit or Standard 40 CFR 64.2(a)(1) Emission Limit	Basis	Continuous Compliance Determination Method in Title V Permit? 40 CFR 64.2(b)(1)(vi)	Limit or Standard Proposed > 11/15/90? 40 CFR 64.2(b)(1)(i)	Pre-Control PTE > MST? 40 CFR 64.2(a)(3)	Uncontrolled Emissions [2] PTE (tons/yr)	Subject to CAM?
4170	F 305 H2 Reforming Furnace, H2 Plant	NOx	A-260, Hydrogen A-Train SCR Unit (Furnace F-305), Unclassified Abatement Device	0.20 lbs NOx/MMBtu	9-10-303	NOx CEMS	Not necessary to evaluate [exempt per 40 CFR 64.2(b)(1)(vi)]	Not applicable [exempt per 40 CFR 64.2(b)(1)(vi)]	N/A	Exempt - 40 CFR 64.2(b)(1)(vi)
4250	Hydrogen Manufacturing Plant	VOC	A-261, Scrubber for De-aerator Vent Methanol Abatement for Hydrogen Plant "A" Train, (V 311) and A-262, Scrubber/Condenser for De-aerator Vent Methanol Abatement for Hydrogen Plant (S-4250) "B" Train (V 361)	Emission < 15 lbs C/day or < 300 ppm C dry, 3-hr average water temperature < 80F, 3-hr average vent flow < 5 Klb/hr, 3-hr average water flow > 30 gpm, water/vent flow ratio >11.6	BAAQMD Condition #15698	Continuously monitor (CPMS): Washwater Temperature, Vent Flow, Washwater Flow	Not necessary to evaluate [exempt per 40 CFR 64.2(b)(1)(vi)]	Not applicable [exempt per 40 CFR 64.2(b)(1)(vi)]	N/A	Exempt - 40 CFR 64.2(b)(1)(vi)
			A-6012, Refinery Waste Gas Flare, V 282, South Isomax Flare	90% destruction of organics	8-1-110.3	No	No	Not applicable [inherent process equipment is not considered a control device]	N/A	No. The flare is "inherent process equipment", not a control device, because it is necessary for the safe functioning of the refining process equipment (40 CFR 64.1).
		H2S	A-6012, Refinery Waste Gas Flare, V 282, South Isomax Flare	<162 ppmv 3-hour rolling average H2S in fuel gas except during malfunctions	40 CFR 60 Subpart Ja	No	Yes - 40 CFR 60, Subpart Ja promulgated 6/24/2008	Not applicable [inherent process equipment is not considered a control device]	N/A	No. The flare is "inherent process equipment", not a control device, because it is necessary for the safe functioning of the refining process equipment (40 CFR 64.1).
6066	Process Water Tank	VOC	A-0615, Carbon Canisters (2 in series)	Minimum VOC destruction removal efficiency 95% by concentration weight, or outlet < 500 ppmv organics	BAAQMD Condition #11193 40 CFR 61 Subpart FF	No	No	No	16.2	No. Exempt per 40 CFR 64.2(a)(3) based on A/N 11562, 0.234 SCFM x 1 lbmol/379 ft3 x 100 lb/lbmol x 1440 min/d x 365 d/yr x 1 tn/2000 lb, conservatively assumes total flow of both trains to S-6066
32112	LPG abated pump and compressor seals	VOC	A-0620, Thermatrix, Model ES-300, Thermal Oxidizer, LPG Racks	When used for Rule 8-18-110 exemption, VOC destruction efficiency 95% by weight	BAAQMD Condition #8869	Temperature CPMS	Not necessary to evaluate [exempt per 40 CFR 64.2(b)(1)(vi)]	Not applicable [exempt per 40 CFR 64.2(b)(1)(vi)]	N/A	Exempt - 40 CFR 64.2(b)(1)(vi)
32113	Yard DIB abated pump and compressor seals	VOC	A-0622, Thermatrix, Model ES-60H, Thermal Oxidizer, Yard DIB	When used for Rule 8-18-110 exemption, VOC destruction efficiency 95% by weight	BAAQMD Condition #8869	Temperature CPMS	Not necessary to evaluate [exempt per 40 CFR 64.2(b)(1)(vi)]	Not applicable [exempt per 40 CFR 64.2(b)(1)(vi)]	N/A	Exempt - 40 CFR 64.2(b)(1)(vi)
32114	No. 21 Pump Station abated pump and compressor seals	VOC	A-0623, Thermatrix, Model ES-60H, Thermal Oxidizer, 21 PS	When used for Rule 8-18-110 exemption, VOC destruction efficiency 95% by weight	BAAQMD Condition #8869	Temperature CPMS	Not necessary to evaluate [exempt per 40 CFR 64.2(b)(1)(vi)]	Not applicable [exempt per 40 CFR 64.2(b)(1)(vi)]	N/A	Exempt - 40 CFR 64.2(b)(1)(vi)
32111	No. 17 Pump Station abated pump and compressor seals	VOC	A-0624, Thermatrix, Model ES-60H, Thermal Oxidizer, 17 PS	When used for Rule 8-18-110 exemption, VOC destruction efficiency 95% by weight	BAAQMD Condition #8869	Temperature CPMS	Not necessary to evaluate [exempt per 40 CFR 64.2(b)(1)(vi)]	Not applicable [exempt per 40 CFR 64.2(b)(1)(vi)]	N/A	Exempt - 40 CFR 64.2(b)(1)(vi)
32115	FCC abated pump and compressor seals	VOC	A-0627, Thermatrix, Model ES-300, Thermal Oxidizer, FCC Unit (backup)	When used for Rule 8-18-110 exemption, VOC destruction efficiency 95% by weight	BAAQMD Condition #8869	Temperature CPMS	Not necessary to evaluate [exempt per 40 CFR 64.2(b)(1)(vi)]	Not applicable [exempt per 40 CFR 64.2(b)(1)(vi)]	N/A	Exempt - 40 CFR 64.2(b)(1)(vi)
32116	Alkylation Plant abated pump and compressor seals	VOC	A-0628, Thermatrix, Model ES-300, Thermal Oxidizer, Alkylation Plant	When used for Rule 8-18-110 exemption, VOC destruction efficiency 95% by weight	BAAQMD Condition #8869	Temperature CPMS	Not necessary to evaluate [exempt per 40 CFR 64.2(b)(1)(vi)]	Not applicable [exempt per 40 CFR 64.2(b)(1)(vi)]	N/A	Exempt - 40 CFR 64.2(b)(1)(vi)
32111	No. 17 Pump Station abated pump and compressor seals	VOC	A-0629, Temporary Carbon System Vent Scrub Vapor Phase Adsorbers	When used for Rule 8-18-110 exemption, minimum 95% TOC abatement efficiency, maximum 10 ppmv TOC to atmosphere, maximum flow of 4.0 cfm	BAAQMD Condition #25747	No	Yes, condition 25747 was written post 1990	No	15.4	Exempt - 40 CFR 64.2(b)(1)(i) and 40 CFR 64.2(a)(3) conservative estimate based on CAPCOA Table IV-1a emission factor of 0.114 kg/hr/pump, 14 pumps, 8,760 hr/yr

Chevron Richmond Refinery, Facility #A0010
Compliance Assurance Monitoring (CAM) Applicability Analysis
(40 CFR 64)

Source # [1]	Source Description	Pollutant	Control Device Used for Compliance 40 CFR 64.2(a)(2)	Federally Enforceable Emissions Limit or Standard 40 CFR 64.2(a)(1) Emission Limit	Basis	Continuous Compliance Determination Method in Title V Permit? 40 CFR 64.2(b)(1)(vi)	Limit or Standard Proposed > 11/15/90? 40 CFR 64.2(b)(1)(i)	Pre-Control PTE > MST? 40 CFR 64.2(a)(3)	Uncontrolled Emissions [2] PTE (tons/yr)	Subject to CAM?
6250	Oil Water Separator	VOC	A-0630 and A-0631, DEBRU Carbon Abatement Containers for Spent Carbon Regeneration, Adsorption, Activated Carbon/Charcoal	95% reduction of organics, or outlet < 500 ppmv organics	40 CFR 61 Subpart FF, Condition #12842 Parts 2 and 3	No	No	No	1.1	Exempt - 40 CFR 64.2(a)(3) per A/N 25134 showing 2,218 lbs VOCs/yr unabated
32114	No. 21 Pump Station abated pump and compressor seals	VOC	A-0632, Temporary Carbon System Vent Scrub Vapor Phase Adsorbers	When used for Rule 8-18-110 exemption, minimum 95% TOC abatement efficiency, maximum 10 ppmv TOC to atmosphere, maximum flow of 4.0 cfm	BAAQMD Condition #25835	No	Yes, condition 25835 was written post 1990	No	16.5	Exempt - 40 CFR 64.2(b)(1)(i) and 40 CFR 64.2(a)(3) conservative estimate based on CAPCOA Table IV-1a emission factor of 0.114 kg/hr/pump, 15 pumps, 8,760 hr/yr
9321	Marine Loading Berth #1	VOC	A-0900, Emission Reduction Device (Thermal Oxidizer) – Marine Vapor Recovery	Minimum VOC destruction efficiency 95% by weight, or < 2 lb/1000 bbl loaded	BAAQMD Condition #4714, SIP 8-44	Temperature CPMS	Not necessary to evaluate [exempt per 40 CFR 64.2(b)(1)(vi)]	Not applicable [exempt per 40 CFR 64.2(b)(1)(vi)]	N/A	Exempt - 40 CFR 64.2(b)(1)(vi)
9322	Marine Loading Berth #2	VOC	A-0900, Emission Reduction Device (Thermal Oxidizer) – Marine Vapor Recovery	Minimum VOC destruction efficiency 95% by weight, or < 2 lb/1000 bbl loaded	BAAQMD Condition #4714, SIP 8-44	Temperature CPMS	Not necessary to evaluate [exempt per 40 CFR 64.2(b)(1)(vi)]	Not applicable [exempt per 40 CFR 64.2(b)(1)(vi)]	N/A	Exempt - 40 CFR 64.2(b)(1)(vi)
9323	Marine Loading Berth #3	VOC	A-0900, Emission Reduction Device (Thermal Oxidizer) – Marine Vapor Recovery	Minimum VOC destruction efficiency 95% by weight, or < 2 lb/1000 bbl loaded	BAAQMD Condition #4714, SIP 8-44	Temperature CPMS	Not necessary to evaluate [exempt per 40 CFR 64.2(b)(1)(vi)]	Not applicable [exempt per 40 CFR 64.2(b)(1)(vi)]	N/A	Exempt - 40 CFR 64.2(b)(1)(vi)
9324	Marine Loading Berth #4	VOC	A-0900, Emission Reduction Device (Thermal Oxidizer) – Marine Vapor Recovery	Minimum VOC destruction efficiency 95% by weight, or < 2 lb/1000 bbl loaded	BAAQMD Condition #4714, SIP 8-44	Temperature CPMS	Not necessary to evaluate [exempt per 40 CFR 64.2(b)(1)(vi)]	Not applicable [exempt per 40 CFR 64.2(b)(1)(vi)]	N/A	Exempt - 40 CFR 64.2(b)(1)(vi)
9325	Marine Loading Berth #9	VOC	A-0900, Emission Reduction Device (Thermal Oxidizer) – Marine Vapor Recovery	Minimum VOC destruction efficiency 95% by weight, or < 2 lb/1000 bbl loaded	BAAQMD Condition #4714, SIP 8-44	Temperature CPMS	Not necessary to evaluate [exempt per 40 CFR 64.2(b)(1)(vi)]	Not applicable [exempt per 40 CFR 64.2(b)(1)(vi)]	N/A	Exempt - 40 CFR 64.2(b)(1)(vi)
3110	Fixed Roof Tank	VOC	A-3200, Abatement 4 Crude Unit Furnace 1100B – DEBRU (See S-4071 – F1100B 4 Crude Furnace). [Note: the abatement device is the firebox of the process heater (F-1100B)]	98.5% by weight VOC abatement, or POC emissions <1 lb/day	BAAQMD Condition #4650	Temperature CPMS	Not necessary to evaluate [exempt per 40 CFR 64.2(b)(1)(vi)]	Not applicable [exempt per 40 CFR 64.2(b)(1)(vi)]	N/A	Exempt - 40 CFR 64.2(b)(1)(vi)
				Reduce organics by 95 wt % OR <20 ppmv organics dry basis	40 CFR 61 Subpart FF					
				95% control efficiency or greater	8-18-110					
3111	Fixed Roof Tank	VOC	A-3200, Abatement 4 Crude Unit Furnace 1100B – DEBRU (See S-4071 – F1100B 4 Crude Furnace). [Note: the abatement device is the firebox of the process heater (F-1100B)]	98.5% by weight VOC abatement, or POC emissions <1 lb/day	BAAQMD Condition #4650	Temperature CPMS	Not necessary to evaluate [exempt per 40 CFR 64.2(b)(1)(vi)]	Not applicable [exempt per 40 CFR 64.2(b)(1)(vi)]	N/A	Exempt - 40 CFR 64.2(b)(1)(vi)
				Reduce organics by 95 wt % OR <20 ppmv organics dry basis	40 CFR 61 Subpart FF					
				95% control efficiency or greater	8-18-110					
3192	Tank (Pressure Tank)	VOC	A-3200, Abatement 4 Crude Unit Furnace 1100B – DEBRU (See S-4071 – F1100B 4 Crude Furnace). [Note: the abatement device is the firebox of the process heater (F-1100B)]	98.5% by weight VOC abatement, or POC emissions <1 lb/day	BAAQMD Condition #4650	Temperature CPMS	Not necessary to evaluate [exempt per 40 CFR 64.2(b)(1)(vi)]	Not applicable [exempt per 40 CFR 64.2(b)(1)(vi)]	N/A	Exempt - 40 CFR 64.2(b)(1)(vi)
				Reduce organics by 95 wt % OR <20 ppmv organics dry basis	40 CFR 61 Subpart FF					
				95% control efficiency or greater	8-18-110					

Chevron Richmond Refinery, Facility #A0010
Compliance Assurance Monitoring (CAM) Applicability Analysis
(40 CFR 64)

Source # [1]	Source Description	Pollutant	Control Device Used for Compliance 40 CFR 64.2(a)(2)	Federally Enforceable Emissions Limit or Standard 40 CFR 64.2(a)(1) Emission Limit	Basis	Continuous Compliance Determination Method in Title V Permit? 40 CFR 64.2(b)(1)(vi)	Limit or Standard Proposed > 11/15/90? 40 CFR 64.2(b)(1)(i)	Pre-Control PTE > MST? 40 CFR 64.2(a)(3)	Uncontrolled Emissions [2] PTE (tons/yr)	Subject to CAM?
4240	Asphalt Tank Truck Loading Rack	PM	A-4241, Mist Eliminator Scrubber, Fibrous Packed Scrubber – Asphalt Loading Racks	Ringelmann No. 1 for no more than 3 minutes/hour	SIP 6-301	No	No	No	3	No. Exempt per 40 CFR 64.2(a)(3) asphalt plant max. production and permitting emission factor for hydrocarbon, assumes 100% of hydrocarbon is PM
				0.15 grain/dscf	SIP 6-310	No	No	No		
4241	Asphalt Tank Truck Loading Rack	PM	A-4241, Mist Eliminator Scrubber, Fibrous Packed Scrubber – Asphalt Loading Racks	Ringelmann No. 1 for no more than 3 minutes/hour	SIP 6-301	No	No	No	3	No. Exempt per 40 CFR 64.2(a)(3) asphalt plant max. production and permitting emission factor for hydrocarbon, assumes 100% of hydrocarbon is PM
				0.15 grain/dscf	SIP 6-310	No	No	No		
4233	#1 Jet Hydrotreater	VOC	A-6010, High Level Flare, LSFO Refinery Waste Gas Flare A-6015, Refinery Waste Gas Flare D&R A-6020, K3950, Flare Gas Recovery Compressor System, Cooper/Penn. Unclassified Abatement Device	90% destruction of organics, 95% control efficiency or greater	8-1-110.3, 8-18-110	No	No	Not applicable [inherent process equipment is not considered a control device]	N/A	No. The flare is "inherent process equipment", not a control device, because it is necessary for the safe functioning of the refining process equipment (40 CFR 64.1).
		H2S	A-6010, High Level Flare, LSFO Refinery Waste Gas Flare A-6015, Refinery Waste Gas Flare D&R	<162 ppmv 3-hour rolling average H2S in fuel gas except during malfunctions	40 CFR 60 Subpart Ja	No	Yes - 40 CFR 60, Subpart Ja promulgated 6/24/2008	Not applicable [inherent process equipment is not considered a control device]	N/A	No. The flare is "inherent process equipment", not a control device, because it is necessary for the safe functioning of the refining process equipment (40 CFR 64.1).
4234	No. 5 Naphtha Hydrotreater	VOC	A-6010, High Level Flare, LSFO Refinery Waste Gas Flare A-6015, Refinery Waste Gas Flare D&R A-6020, K3950, Flare Gas Recovery Compressor System, Cooper/Penn. Unclassified Abatement Device	90% destruction of organics, 95% control efficiency or greater	8-1-110.3, 8-18-110	No	No	Not applicable [inherent process equipment is not considered a control device]	N/A	No. The flare is "inherent process equipment", not a control device, because it is necessary for the safe functioning of the refining process equipment (40 CFR 64.1).
		H2S	A-6010, High Level Flare, LSFO Refinery Waste Gas Flare A-6015, Refinery Waste Gas Flare D&R	<162 ppmv 3-hour rolling average H2S in fuel gas except during malfunctions	40 CFR 60 Subpart Ja	No	Yes - 40 CFR 60, Subpart Ja promulgated 6/24/2008	Not applicable [inherent process equipment is not considered a control device]	N/A	No. The flare is "inherent process equipment", not a control device, because it is necessary for the safe functioning of the refining process equipment (40 CFR 64.1).

Chevron Richmond Refinery, Facility #A0010
Compliance Assurance Monitoring (CAM) Applicability Analysis
(40 CFR 64)

Source # [1]	Source Description	Pollutant	Control Device Used for Compliance 40 CFR 64.2(a)(2)	Federally Enforceable Emissions Limit or Standard 40 CFR 64.2(a)(1) Emission Limit	Basis	Continuous Compliance Determination Method in Title V Permit? 40 CFR 64.2(b)(1)(vi)	Limit or Standard Proposed > 11/15/90? 40 CFR 64.2(b)(1)(i)	Pre-Control PTE > MST? 40 CFR 64.2(a)(3)	Uncontrolled Emissions [2] PTE (tons/yr)	Subject to CAM?
4235	Diesel Hydrotreater	VOC	A-6010, High Level Flare, LSFO Refinery Waste Gas Flare A-6015, Refinery Waste Gas Flare D&R A-6020, K3950, Flare Gas Recovery Compressor System, Cooper/Penn. Unclassified Abatement Device	90% destruction of organics, 95% control efficiency or greater	8-1-110.3, 8-18-110	No	No	Not applicable [inherent process equipment is not considered a control device]	N/A	No. The flare is "inherent process equipment", not a control device, because it is necessary for the safe functioning of the refining process equipment (40 CFR 64.1).
		H2S	A-6010, High Level Flare, LSFO Refinery Waste Gas Flare A-6015, Refinery Waste Gas Flare D&R	<162 ppmv 3-hour rolling average H2S in fuel gas except during malfunctions	40 CFR 60 Subpart Ja	No	Yes - 40 CFR 60, Subpart Ja promulgated 6/24/2008	Not applicable [inherent process equipment is not considered a control device]	N/A	No. The flare is "inherent process equipment", not a control device, because it is necessary for the safe functioning of the refining process equipment (40 CFR 64.1).
4236	No. 4 Crude Unit	VOC	A-6010, High Level Flare, LSFO Refinery Waste Gas Flare	90% destruction of organics	8-1-110.3	No	No	Not applicable [inherent process equipment is not considered a control device]	N/A	No. The flare is "inherent process equipment", not a control device, because it is necessary for the safe functioning of the refining process equipment (40 CFR 64.1).
		H2S	A-6010, High Level Flare, LSFO Refinery Waste Gas Flare	<162 ppmv 3-hour rolling average H2S in fuel gas except during malfunctions	40 CFR 60 Subpart Ja	No	Yes - 40 CFR 60, Subpart Ja promulgated 6/24/2008	Not applicable [inherent process equipment is not considered a control device]	N/A	No. The flare is "inherent process equipment", not a control device, because it is necessary for the safe functioning of the refining process equipment (40 CFR 64.1).
4237	No. 5 Rheniformer	VOC	A-6010, High Level Flare, LSFO Refinery Waste Gas Flare A-6015, Refinery Waste Gas Flare D&R A-6020, K3950, Flare Gas Recovery Compressor System, Cooper/Penn. Unclassified Abatement Device	90% destruction of organics, 95% control efficiency or greater	8-1-110.3, 8-18-110	No	No	Not applicable [inherent process equipment is not considered a control device]	N/A	No. The flare is "inherent process equipment", not a control device, because it is necessary for the safe functioning of the refining process equipment (40 CFR 64.1).
		H2S	A-6010, High Level Flare, LSFO Refinery Waste Gas Flare A-6015, Refinery Waste Gas Flare D&R	<162 ppmv 3-hour rolling average H2S in fuel gas except during malfunctions	40 CFR 60 Subpart Ja	No	Yes - 40 CFR 60, Subpart Ja promulgated 6/24/2008	Not applicable [inherent process equipment is not considered a control device]	N/A	No. The flare is "inherent process equipment", not a control device, because it is necessary for the safe functioning of the refining process equipment (40 CFR 64.1).
4251	Solvent Deasphalting (SDA) Plant	VOC	A-6012, Refinery Waste Gas Flare, V 282, South Isomax Flare	90% destruction of organics	8-1-110.3	No	No	Not applicable [inherent process equipment is not considered a control device]	N/A	No. The flare is "inherent process equipment", not a control device, because it is necessary for the safe functioning of the refining process equipment (40 CFR 64.1).
		H2S	A-6012, Refinery Waste Gas Flare, V 282, South Isomax Flare	<162 ppmv 3-hour rolling average H2S in fuel gas except during malfunctions	40 CFR 60 Subpart Ja	No	Yes - 40 CFR 60, Subpart Ja promulgated 6/24/2008	Not applicable [inherent process equipment is not considered a control device]	N/A	No. The flare is "inherent process equipment", not a control device, because it is necessary for the safe functioning of the refining process equipment (40 CFR 64.1).

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Compliance Assurance Monitoring (CAM) Applicability Analysis
(40 CFR 64)

Source # [1]	Source Description	Pollutant	Control Device Used for Compliance 40 CFR 64.2(a)(2)	Federally Enforceable Emissions Limit or Standard 40 CFR 64.2(a)(1) Emission Limit	Basis	Continuous Compliance Determination Method in Title V Permit? 40 CFR 64.2(b)(1)(vi)	Limit or Standard Proposed > 11/15/90? 40 CFR 64.2(b)(1)(i)	Pre-Control PTE > MST? 40 CFR 64.2(a)(3)	Uncontrolled Emissions [2] PTE (tons/yr)	Subject to CAM?
4348	H2 Recovery Plant	VOC	A-6012, Refinery Waste Gas Flare, V 282, South Isomax Flare	90% destruction of organics	8-1-110.3	No	No	Not applicable [inherent process equipment is not considered a control device]	N/A	No. The flare is "inherent process equipment", not a control device, because it is necessary for the safe functioning of the refining process equipment (40 CFR 64.1).
		H2S	A-6012, Refinery Waste Gas Flare, V 282, South Isomax Flare	<162 ppmv 3-hour rolling average H2S in fuel gas except during malfunctions	40 CFR 60 Subpart Ja	No	Yes - 40 CFR 60, Subpart Ja promulgated 6/24/2008	Not applicable [inherent process equipment is not considered a control device]	N/A	No. The flare is "inherent process equipment", not a control device, because it is necessary for the safe functioning of the refining process equipment (40 CFR 64.1).
4434	#4 H2S Plant	VOC	A-6012, Refinery Waste Gas Flare, V 282, South Isomax Flare	90% destruction of organics	8-1-110.3	No	No	Not applicable [inherent process equipment is not considered a control device]	N/A	No. The flare is "inherent process equipment", not a control device, because it is necessary for the safe functioning of the refining process equipment (40 CFR 64.1).
		H2S	A-6012, Refinery Waste Gas Flare, V 282, South Isomax Flare	<162 ppmv 3-hour rolling average H2S in fuel gas except during malfunctions	40 CFR 60 Subpart Ja	No	Yes - 40 CFR 60, Subpart Ja promulgated 6/24/2008	Not applicable [inherent process equipment is not considered a control device]	N/A	No. The flare is "inherent process equipment", not a control device, because it is necessary for the safe functioning of the refining process equipment (40 CFR 64.1).
4429	#8 Plant	VOC	A-6012, Refinery Waste Gas Flare, V 282, South Isomax Flare	90% destruction of organics	8-1-110.3	No	No	Not applicable [inherent process equipment is not considered a control device]	N/A	No. The flare is "inherent process equipment", not a control device, because it is necessary for the safe functioning of the refining process equipment (40 CFR 64.1).
		H2S	A-6012, Refinery Waste Gas Flare, V 282, South Isomax Flare	<162 ppmv 3-hour rolling average H2S in fuel gas except during malfunctions	40 CFR 60 Subpart Ja	No	Yes - 40 CFR 60, Subpart Ja promulgated 6/24/2008	Not applicable [inherent process equipment is not considered a control device]	N/A	No. The flare is "inherent process equipment", not a control device, because it is necessary for the safe functioning of the refining process equipment (40 CFR 64.1).
4252	TKN Isocracker	VOC	A-6013, North Isomax Flare V 281, Refinery Waste Gas Flare	90% destruction of organics	8-1-110.3	No	No	Not applicable [inherent process equipment is not considered a control device]	N/A	No. The flare is "inherent process equipment", not a control device, because it is necessary for the safe functioning of the refining process equipment (40 CFR 64.1).
		H2S	A-6013, North Isomax Flare V 281, Refinery Waste Gas Flare	<162 ppmv 3-hour rolling average H2S in fuel gas except during malfunctions	40 CFR 60 Subpart Ja	No	Yes - 40 CFR 60, Subpart Ja promulgated 6/24/2008	Not applicable [inherent process equipment is not considered a control device]	N/A	No. The flare is "inherent process equipment", not a control device, because it is necessary for the safe functioning of the refining process equipment (40 CFR 64.1).
4253	TKC Plant	VOC	A-6013, North Isomax Flare V 281, Refinery Waste Gas Flare	90% destruction of organics	8-1-110.3	No	No	Not applicable [inherent process equipment is not considered a control device]	N/A	No. The flare is "inherent process equipment", not a control device, because it is necessary for the safe functioning of the refining process equipment (40 CFR 64.1).
		H2S	A-6013, North Isomax Flare V 281, Refinery Waste Gas Flare	<162 ppmv 3-hour rolling average H2S in fuel gas except during malfunctions	40 CFR 60 Subpart Ja	No	Yes - 40 CFR 60, Subpart Ja promulgated 6/24/2008	Not applicable [inherent process equipment is not considered a control device]	N/A	No. The flare is "inherent process equipment", not a control device, because it is necessary for the safe functioning of the refining process equipment (40 CFR 64.1).
4282	Penhex Isomerization Unit	VOC	A-6015, Refinery Waste Gas Flare D&R, 3MMBtu/h A-6020, K3950, Flare Gas Recovery Compressor System, Cooper/Penn. Unclassified Abatement Device	90% destruction of organics, 95% control efficiency or greater	8-1-110.3, 8-18-110	No	No	Not applicable [inherent process equipment is not considered a control device]	N/A	No. The flare is "inherent process equipment", not a control device, because it is necessary for the safe functioning of the refining process equipment (40 CFR 64.1).
		H2S	A-6015, Refinery Waste Gas Flare D&R, 3MMBtu/h	<162 ppmv 3-hour rolling average H2S in fuel gas except during malfunctions	40 CFR 60 Subpart Ja	No	Yes - 40 CFR 60, Subpart Ja promulgated 6/24/2008	Not applicable [inherent process equipment is not considered a control device]	N/A	No. The flare is "inherent process equipment", not a control device, because it is necessary for the safe functioning of the refining process equipment (40 CFR 64.1).

Chevron Richmond Refinery, Facility #A0010
Compliance Assurance Monitoring (CAM) Applicability Analysis
(40 CFR 64)

Source # [1]	Source Description	Pollutant	Control Device Used for Compliance 40 CFR 64.2(a)(2)	Federally Enforceable Emissions Limit or Standard 40 CFR 64.2(a)(1) Emission Limit	 Basis	Continuous Compliance Determination Method in Title V Permit? 40 CFR 64.2(b)(1)(vi)	Limit or Standard Proposed > 11/15/90? 40 CFR 64.2(b)(1)(i)	Pre-Control PTE > MST? 40 CFR 64.2(a)(3)	Uncontrolled Emissions [2] PTE (tons/yr)	Subject to CAM?
4283	No. 4 Catalytic Reformer	VOC	A-6015, Refinery Waste Gas Flare D&R, 3MMBtu/h A-6020, K3950, Flare Gas Recovery Compressor System, Cooper/Penn. Unclassified Abatement Device	90% destruction of organics, 95% control efficiency or greater	8-1-110.3, 8-18-110	No	No	Not applicable [inherent process equipment is not considered a control device]	N/A	No. The flare is "inherent process equipment", not a control device, because it is necessary for the safe functioning of the refining process equipment (40 CFR 64.1).
		H2S	A-6015, Refinery Waste Gas Flare D&R, 3MMBtu/h	<162 ppmv 3-hour rolling average H2S in fuel gas except during malfunctions	40 CFR 60 Subpart Ja	No	Yes - 40 CFR 60, Subpart Ja promulgated 6/24/2008	Not applicable [inherent process equipment is not considered a control device]	N/A	No. The flare is "inherent process equipment", not a control device, because it is necessary for the safe functioning of the refining process equipment (40 CFR 64.1).
4435	#5 H2S Plant	VOC	A-6015, Refinery Waste Gas Flare D&R, 3MMBtu/h A-6020, K3950, Flare Gas Recovery Compressor System, Cooper/Penn. Unclassified Abatement Device	90% destruction of organics, 95% control efficiency or greater	8-1-110.3, 8-18-110	No	No	Not applicable [inherent process equipment is not considered a control device]	N/A	No. The flare is "inherent process equipment", not a control device, because it is necessary for the safe functioning of the refining process equipment (40 CFR 64.1).
		H2S	A-6015, Refinery Waste Gas Flare D&R, 3MMBtu/h	<162 ppmv 3-hour rolling average H2S in fuel gas except during malfunctions	40 CFR 60 Subpart Ja	No	Yes - 40 CFR 60, Subpart Ja promulgated 6/24/2008	Not applicable [inherent process equipment is not considered a control device]	N/A	No. The flare is "inherent process equipment", not a control device, because it is necessary for the safe functioning of the refining process equipment (40 CFR 64.1).
4286	Light Ends Recovery	VOC	A-6019, Alky-Poly Flare, Refinery Waste Gas Flare, V 732A	90% destruction of organics	8-1-110.3	No	No	Not applicable [inherent process equipment is not considered a control device]	N/A	No. The flare is "inherent process equipment", not a control device, because it is necessary for the safe functioning of the refining process equipment (40 CFR 64.1).
		H2S	A-6019, Alky-Poly Flare, Refinery Waste Gas Flare, V 732A	<162 ppmv 3-hour rolling average H2S in fuel gas except during malfunctions	40 CFR 60 Subpart Ja	No	Yes - 40 CFR 60, Subpart Ja promulgated 6/24/2008	Not applicable [inherent process equipment is not considered a control device]	N/A	No. The flare is "inherent process equipment", not a control device, because it is necessary for the safe functioning of the refining process equipment (40 CFR 64.1).
4291	H2SO4 Alkylation Plant	VOC	A-6018, Flare Relief Drum – V780 Poly Flare, FCC A-6019, Alky-Poly Flare, Refinery Waste Gas Flare, V 732A	90% destruction of organics	8-1-110.3	No	No	Not applicable [inherent process equipment is not considered a control device]	N/A	No. The flare is "inherent process equipment", not a control device, because it is necessary for the safe functioning of the refining process equipment (40 CFR 64.1).
		H2S	A-6018, Flare Relief Drum – V780 Poly Flare, FCC A-6019, Alky-Poly Flare, Refinery Waste Gas Flare, V 732A	<162 ppmv 3-hour rolling average H2S in fuel gas except during malfunctions	40 CFR 60 Subpart Ja	No	Yes - 40 CFR 60, Subpart Ja promulgated 6/24/2008	Not applicable [inherent process equipment is not considered a control device]	N/A	No. The flare is "inherent process equipment", not a control device, because it is necessary for the safe functioning of the refining process equipment (40 CFR 64.1).
4292	FCC Polymer Plant	VOC	A-6018, Flare Relief Drum – V780 Poly Flare, FCC A-6019, Alky-Poly Flare, Refinery Waste Gas Flare, V 732A	90% destruction of organics	8-1-110.3	No	No	Not applicable [inherent process equipment is not considered a control device]	N/A	No. The flare is "inherent process equipment", not a control device, because it is necessary for the safe functioning of the refining process equipment (40 CFR 64.1).
		H2S	A-6018, Flare Relief Drum – V780 Poly Flare, FCC A-6019, Alky-Poly Flare, Refinery Waste Gas Flare, V 732A	<162 ppmv 3-hour rolling average H2S in fuel gas except during malfunctions	40 CFR 60 Subpart Ja	No	Yes - 40 CFR 60, Subpart Ja promulgated 6/24/2008	Not applicable [inherent process equipment is not considered a control device]	N/A	No. The flare is "inherent process equipment", not a control device, because it is necessary for the safe functioning of the refining process equipment (40 CFR 64.1).
4355	Deisobutanizer Plant	VOC	A-6019, Alky-Poly Flare, Refinery Waste Gas Flare, V 732A	90% destruction of organics	8-1-110.3	No	No	Not applicable [inherent process equipment is not considered a control device]	N/A	No. The flare is "inherent process equipment", not a control device, because it is necessary for the safe functioning of the refining process equipment (40 CFR 64.1).
		H2S	A-6019, Alky-Poly Flare, Refinery Waste Gas Flare, V 732A	<162 ppmv 3-hour rolling average H2S in fuel gas except during malfunctions	40 CFR 60 Subpart Ja	No	Yes - 40 CFR 60, Subpart Ja promulgated 6/24/2008	Not applicable [inherent process equipment is not considered a control device]	N/A	No. The flare is "inherent process equipment", not a control device, because it is necessary for the safe functioning of the refining process equipment (40 CFR 64.1).

Chevron Richmond Refinery, Facility #A0010
Compliance Assurance Monitoring (CAM) Applicability Analysis
(40 CFR 64)

Source # [1]	Source Description	Pollutant	Control Device Used for Compliance 40 CFR 64.2(a)(2)	Federally Enforceable Emissions Limit or Standard 40 CFR 64.2(a)(1) Emission Limit	Basis	Continuous Compliance Determination Method in Title V Permit? 40 CFR 64.2(b)(1)(vi)	Limit or Standard Proposed > 11/15/90? 40 CFR 64.2(b)(1)(i)	Pre-Control PTE > MST? 40 CFR 64.2(a)(3)	Uncontrolled Emissions [2] PTE (tons/yr)	Subject to CAM?
4340	Light Neutral Hydrocracker (LNC)	VOC	A-6039, V 3501; Lube RLOP Flare	90% destruction of organics	8-1-110.3	No	No	Not applicable [inherent process equipment is not considered a control device]	N/A	No. The flare is "inherent process equipment", not a control device, because it is necessary for the safe functioning of the refining process equipment (40 CFR 64.1).
		H2S	A-6039, V 3501; Lube RLOP Flare	<162 ppmv 3-hour rolling average H2S in fuel gas except during malfunctions	40 CFR 60 Subpart Ja	No	Yes - 40 CFR 60, Subpart Ja promulgated 6/24/2008	Not applicable [inherent process equipment is not considered a control device]	N/A	No. The flare is "inherent process equipment", not a control device, because it is necessary for the safe functioning of the refining process equipment (40 CFR 64.1).
4341	Light Neutral Hydrofinisher (LNHF)	VOC	A-6039, V 3501; Lube RLOP Flare	90% destruction of organics	8-1-110.3	No	No	Not applicable [inherent process equipment is not considered a control device]	N/A	No. The flare is "inherent process equipment", not a control device, because it is necessary for the safe functioning of the refining process equipment (40 CFR 64.1).
		H2S	A-6039, V 3501; Lube RLOP Flare	<162 ppmv 3-hour rolling average H2S in fuel gas except during malfunctions	40 CFR 60 Subpart Ja	No	Yes - 40 CFR 60, Subpart Ja promulgated 6/24/2008	Not applicable [inherent process equipment is not considered a control device]	N/A	No. The flare is "inherent process equipment", not a control device, because it is necessary for the safe functioning of the refining process equipment (40 CFR 64.1).
4342	Heavy Neutral Hydrocracker (HNC)	VOC	A-6039, V 3501; Lube RLOP Flare	90% destruction of organics	8-1-110.3	No	No	Not applicable [inherent process equipment is not considered a control device]	N/A	No. The flare is "inherent process equipment", not a control device, because it is necessary for the safe functioning of the refining process equipment (40 CFR 64.1).
		H2S	A-6039, V 3501; Lube RLOP Flare	<162 ppmv 3-hour rolling average H2S in fuel gas except during malfunctions	40 CFR 60 Subpart Ja	No	Yes - 40 CFR 60, Subpart Ja promulgated 6/24/2008	Not applicable [inherent process equipment is not considered a control device]	N/A	No. The flare is "inherent process equipment", not a control device, because it is necessary for the safe functioning of the refining process equipment (40 CFR 64.1).
4343	Heavy Neutral Hydrofinisher (HNHF)	VOC	A-6039, V 3501; Lube RLOP Flare	90% destruction of organics	8-1-110.3	No	No	Not applicable [inherent process equipment is not considered a control device]	N/A	No. The flare is "inherent process equipment", not a control device, because it is necessary for the safe functioning of the refining process equipment (40 CFR 64.1).
		H2S	A-6039, V 3501; Lube RLOP Flare	<162 ppmv 3-hour rolling average H2S in fuel gas except during malfunctions	40 CFR 60 Subpart Ja	No	Yes - 40 CFR 60, Subpart Ja promulgated 6/24/2008	Not applicable [inherent process equipment is not considered a control device]	N/A	No. The flare is "inherent process equipment", not a control device, because it is necessary for the safe functioning of the refining process equipment (40 CFR 64.1).
4345	No 2 NH3-H2S Plant (WWT)	VOC	A-6039, V 3501; Lube RLOP Flare	90% destruction of organics	8-1-110.3	No	No	Not applicable [inherent process equipment is not considered a control device]	N/A	No. The flare is "inherent process equipment", not a control device, because it is necessary for the safe functioning of the refining process equipment (40 CFR 64.1).
		H2S	A-6039, V 3501; Lube RLOP Flare	<162 ppmv 3-hour rolling average H2S in fuel gas except during malfunctions	40 CFR 60 Subpart Ja	No	Yes - 40 CFR 60, Subpart Ja promulgated 6/24/2008	Not applicable [inherent process equipment is not considered a control device]	N/A	No. The flare is "inherent process equipment", not a control device, because it is necessary for the safe functioning of the refining process equipment (40 CFR 64.1).
4346	Gas Recovery Unit (GRU)	VOC	A-6039, V 3501; Lube RLOP Flare	90% destruction of organics	8-1-110.3	No	No	Not applicable [inherent process equipment is not considered a control device]	N/A	No. The flare is "inherent process equipment", not a control device, because it is necessary for the safe functioning of the refining process equipment (40 CFR 64.1).
		H2S	A-6039, V 3501; Lube RLOP Flare	<162 ppmv 3-hour rolling average H2S in fuel gas except during malfunctions	40 CFR 60 Subpart Ja	No	Yes - 40 CFR 60, Subpart Ja promulgated 6/24/2008	Not applicable [inherent process equipment is not considered a control device]	N/A	No. The flare is "inherent process equipment", not a control device, because it is necessary for the safe functioning of the refining process equipment (40 CFR 64.1).
6200	Portable Polyethylene Storage Container	VOC	A-6200, Two each Vapor Phase Carbon Canisters in Series for Baker/Poly Tanks, Activated Carbon/Charcoal	Control efficiency >99%, or <100 ppm outlet hydrocarbon concentration	BAAQMD Condition #10761	No	No	No	3.5	Exempt - 40 CFR 64.2(a)(3) - tanks calculation using FR tank, maximum throughput and vapor pressure limit
6201	Portable Polyethylene Storage Container	VOC	A-6201, Two each Vapor Phase Carbon Canisters in Series for Baker/Poly Tanks, Activated Carbon/Charcoal	Control efficiency >99%, or <100 ppm outlet hydrocarbon concentration	BAAQMD Condition #10761	No	No	No	3.5	Exempt - 40 CFR 64.2(a)(3) - tanks calculation using FR tank, maximum throughput and vapor pressure limit
6202	Portable Polyethylene Storage Container	VOC	A-6202, Two each Vapor Phase Carbon Canisters in Series for Baker/Poly Tanks, Activated Carbon/Charcoal	Control efficiency >99%, or <100 ppm outlet hydrocarbon concentration	BAAQMD Condition #10761	No	No	No	3.5	Exempt - 40 CFR 64.2(a)(3) - tanks calculation using FR tank, maximum throughput and vapor pressure limit

Chevron Richmond Refinery, Facility #A0010
Compliance Assurance Monitoring (CAM) Applicability Analysis
(40 CFR 64)

Source # [1]	Source Description	Pollutant	Control Device Used for Compliance 40 CFR 64.2(a)(2)	Federally Enforceable Emissions Limit or Standard 40 CFR 64.2(a)(1)		Continuous Compliance Determination Method in Title V Permit? 40 CFR 64.2(b)(1)(vi)	Limit or Standard Proposed > 11/15/90? 40 CFR 64.2(b)(1)(i)	Pre-Control PTE > MST? 40 CFR 64.2(a)(3)	Uncontrolled Emissions [2] PTE (tons/yr)	Subject to CAM?
				Emission Limit	Basis					
6203	Portable Polyethylene Storage Container	VOC	A-6203, Two each Vapor Phase Carbon Canisters in Series for Baker/Poly Tanks, Activated Carbon/Charcoal	Control efficiency >99%, or <100 ppm outlet hydrocarbon concentration	BAAQMD Condition #10761	No	No	No	3.5	Exempt - 40 CFR 64.2(a)(3) - tanks calculation using FR tank, maximum throughput and vapor pressure limit
6204	Portable Polyethylene Storage Container	VOC	A-6204, Two each Vapor Phase Carbon Canisters in Series for Baker/Poly Tanks, Activated Carbon/Charcoal	Control efficiency >99%, or <100 ppm outlet hydrocarbon concentration	BAAQMD Condition #10761	No	No	No	3.5	Exempt - 40 CFR 64.2(a)(3) - tanks calculation using FR tank, maximum throughput and vapor pressure limit
6205	Portable Polyethylene Storage Container	VOC	A-6205, Two each Vapor Phase Carbon Canisters in Series for Baker/Poly Tanks, Activated Carbon/Charcoal	Control efficiency >99%, or <100 ppm outlet hydrocarbon concentration	BAAQMD Condition #10761	No	No	No	3.5	Exempt - 40 CFR 64.2(a)(3) - tanks calculation using FR tank, maximum throughput and vapor pressure limit
6206	Portable Polyethylene Storage Container	VOC	A-6206, Two each Vapor Phase Carbon Canisters in Series for Baker/Poly Tanks, Activated Carbon/Charcoal	Control efficiency >99%, or <100 ppm outlet hydrocarbon concentration	BAAQMD Condition #10761	No	No	No	3.5	Exempt - 40 CFR 64.2(a)(3) - tanks calculation using FR tank, maximum throughput and vapor pressure limit
6207	Portable Polyethylene Storage Container	VOC	A-6207, Two each Vapor Phase Carbon Canisters in Series for Baker/Poly Tanks, Activated Carbon/Charcoal	Control efficiency >99%, or <100 ppm outlet hydrocarbon concentration	BAAQMD Condition #10761	No	No	No	3.5	Exempt - 40 CFR 64.2(a)(3) - tanks calculation using FR tank, maximum throughput and vapor pressure limit
6208	Portable Polyethylene Storage Container	VOC	A-6208, Two each Vapor Phase Carbon Canisters in Series for Baker/Poly Tanks, Activated Carbon/Charcoal	Control efficiency >99%, or <100 ppm outlet hydrocarbon concentration	BAAQMD Condition #10761	No	No	No	3.5	Exempt - 40 CFR 64.2(a)(3) - tanks calculation using FR tank, maximum throughput and vapor pressure limit
6209	Portable Polyethylene Storage Container	VOC	A-6209, Two each Vapor Phase Carbon Canisters in Series for Baker/Poly Tanks, Activated Carbon/Charcoal	Control efficiency >99%, or <100 ppm outlet hydrocarbon concentration	BAAQMD Condition #10761	No	No	No	3.5	Exempt - 40 CFR 64.2(a)(3) - tanks calculation using FR tank, maximum throughput and vapor pressure limit
6210	Portable Polyethylene Storage Container	VOC	A-6210, Two each Vapor Phase Carbon Canisters in Series for Baker/Poly Tanks, Activated Carbon/Charcoal	Control efficiency >99%, or <100 ppm outlet hydrocarbon concentration	BAAQMD Condition #10761	No	No	No	3.5	Exempt - 40 CFR 64.2(a)(3) - tanks calculation using FR tank, maximum throughput and vapor pressure limit
6211	Portable Polyethylene Storage Container	VOC	A-6211, Two each Vapor Phase Carbon Canisters in Series for Baker/Poly Tanks, Activated Carbon/Charcoal	Control efficiency >99%, or <100 ppm outlet hydrocarbon concentration	BAAQMD Condition #10761	No	No	No	3.5	Exempt - 40 CFR 64.2(a)(3) - tanks calculation using FR tank, maximum throughput and vapor pressure limit
6212	Portable Polyethylene Storage Container	VOC	A-6212, Two each Vapor Phase Carbon Canisters in Series for Baker/Poly Tanks, Activated Carbon/Charcoal	Control efficiency >99%, or <100 ppm outlet hydrocarbon concentration	BAAQMD Condition #10761	No	No	No	3.5	Exempt - 40 CFR 64.2(a)(3) - tanks calculation using FR tank, maximum throughput and vapor pressure limit
6213	Portable Polyethylene Storage Container	VOC	A-6213, Two each Vapor Phase Carbon Canisters in Series for Baker/Poly Tanks, Activated Carbon/Charcoal	Control efficiency >99%, or <100 ppm outlet hydrocarbon concentration	BAAQMD Condition #10761	No	No	No	3.5	Exempt - 40 CFR 64.2(a)(3) - tanks calculation using FR tank, maximum throughput and vapor pressure limit
6214	Portable Polyethylene Storage Container	VOC	A-6214, Two each Vapor Phase Carbon Canisters in Series for Baker/Poly Tanks, Activated Carbon/Charcoal	Control efficiency >99%, or <100 ppm outlet hydrocarbon concentration	BAAQMD Condition #10761	No	No	No	3.5	Exempt - 40 CFR 64.2(a)(3) - tanks calculation using FR tank, maximum throughput and vapor pressure limit
6215	Portable Polyethylene Storage Container	VOC	A-6215, Two each Vapor Phase Carbon Canisters in Series for Baker/Poly Tanks, Activated Carbon/Charcoal	Control efficiency >99%, or <100 ppm outlet hydrocarbon concentration	BAAQMD Condition #10761	No	No	No	3.5	Exempt - 40 CFR 64.2(a)(3) - tanks calculation using FR tank, maximum throughput and vapor pressure limit
6216	Portable Polyethylene Storage Container	VOC	A-6216, Two each Vapor Phase Carbon Canisters in Series for Baker/Poly Tanks, Activated Carbon/Charcoal	Control efficiency >99%, or <100 ppm outlet hydrocarbon concentration	BAAQMD Condition #10761	No	No	No	3.5	Exempt - 40 CFR 64.2(a)(3) - tanks calculation using FR tank, maximum throughput and vapor pressure limit
6217	Portable Polyethylene Storage Container	VOC	A-6217, Two each Vapor Phase Carbon Canisters in Series for Baker/Poly Tanks, Activated Carbon/Charcoal	Control efficiency >99%, or <100 ppm outlet hydrocarbon concentration	BAAQMD Condition #10761	No	No	No	3.5	Exempt - 40 CFR 64.2(a)(3) - tanks calculation using FR tank, maximum throughput and vapor pressure limit

Chevron Richmond Refinery, Facility #A0010
Compliance Assurance Monitoring (CAM) Applicability Analysis
(40 CFR 64)

Source # [1]	Source Description	Pollutant	Control Device Used for Compliance 40 CFR 64.2(a)(2)	Federally Enforceable Emissions Limit or Standard 40 CFR 64.2(a)(1) Emission Limit	Basis	Continuous Compliance Determination Method in Title V Permit? 40 CFR 64.2(b)(1)(vi)	Limit or Standard Proposed > 11/15/90? 40 CFR 64.2(b)(1)(i)	Pre-Control PTE > MST? 40 CFR 64.2(a)(3)	Uncontrolled Emissions [2] PTE (tons/yr)	Subject to CAM?
6218	Portable Polyethylene Storage Container	VOC	A-6218, Two each Vapor Phase Carbon Canisters in Series for Baker/Poly Tanks, Activated Carbon/Charcoal	Control efficiency >99%, or <100 ppm outlet hydrocarbon concentration	BAAQMD Condition #10761	No	No	No	3.5	Exempt - 40 CFR 64.2(a)(3) - tanks calculation using FR tank, maximum throughput and vapor pressure limit
6219	Portable Polyethylene Storage Container	VOC	A-6219, Two each Vapor Phase Carbon Canisters in Series for Baker/Poly Tanks, Activated Carbon/Charcoal	Control efficiency >99%, or <100 ppm outlet hydrocarbon concentration	BAAQMD Condition #10761	No	No	No	3.5	Exempt - 40 CFR 64.2(a)(3) - tanks calculation using FR tank, maximum throughput and vapor pressure limit
6220	Portable Steel Storage Container	VOC	A-6220, Two each Vapor Phase Carbon Canisters in Series for Baker/Poly Tanks, Activated Carbon/Charcoal	Control efficiency >99%, or <100 ppm outlet hydrocarbon concentration	BAAQMD Condition #10761	No	No	No	9	Exempt - 40 CFR 64.2(a)(3) - tanks calculation using FR tank, maximum throughput and vapor pressure limit
6221	Portable Steel Storage Container	VOC	A-6221, Two each Vapor Phase Carbon Canisters in Series for Baker/Poly Tanks, Activated Carbon/Charcoal	Control efficiency >99%, or <100 ppm outlet hydrocarbon concentration	BAAQMD Condition #10761	No	No	No	9	Exempt - 40 CFR 64.2(a)(3) - tanks calculation using FR tank, maximum throughput and vapor pressure limit
6222	Portable Steel Storage Container	VOC	A-6222, Two each Vapor Phase Carbon Canisters in Series for Baker/Poly Tanks, Activated Carbon/Charcoal	Control efficiency >99%, or <100 ppm outlet hydrocarbon concentration	BAAQMD Condition #10761	No	No	No	9	Exempt - 40 CFR 64.2(a)(3) - tanks calculation using FR tank, maximum throughput and vapor pressure limit
6223	Portable Steel Storage Container	VOC	A-6223, Two each Vapor Phase Carbon Canisters in Series for Baker/Poly Tanks, Activated Carbon/Charcoal	Control efficiency >99%, or <100 ppm outlet hydrocarbon concentration	BAAQMD Condition #10761	No	No	No	9	Exempt - 40 CFR 64.2(a)(3) - tanks calculation using FR tank, maximum throughput and vapor pressure limit
6224	Portable Steel Storage Container	VOC	A-6224, Two each Vapor Phase Carbon Canisters in Series for Baker/Poly Tanks, Activated Carbon/Charcoal	Control efficiency >99%, or <100 ppm outlet hydrocarbon concentration	BAAQMD Condition #10761	No	No	No	9	Exempt - 40 CFR 64.2(a)(3) - tanks calculation using FR tank, maximum throughput and vapor pressure limit
6225	Portable Steel Storage Container	VOC	A-6225, Two each Vapor Phase Carbon Canisters in Series for Baker/Poly Tanks, Activated Carbon/Charcoal	Control efficiency >99%, or <100 ppm outlet hydrocarbon concentration	BAAQMD Condition #10761	No	No	No	9	Exempt - 40 CFR 64.2(a)(3) - tanks calculation using FR tank, maximum throughput and vapor pressure limit
6226	Portable Steel Storage Container	VOC	A-6226, Two each Vapor Phase Carbon Canisters in Series for Baker/Poly Tanks, Activated Carbon/Charcoal	Control efficiency >99%, or <100 ppm outlet hydrocarbon concentration	BAAQMD Condition #10761	No	No	No	9	Exempt - 40 CFR 64.2(a)(3) - tanks calculation using FR tank, maximum throughput and vapor pressure limit
6227	Portable Steel Storage Container	VOC	A-6227, Two each Vapor Phase Carbon Canisters in Series for Baker/Poly Tanks, Activated Carbon/Charcoal	Control efficiency >99%, or <100 ppm outlet hydrocarbon concentration	BAAQMD Condition #10761	No	No	No	9	Exempt - 40 CFR 64.2(a)(3) - tanks calculation using FR tank, maximum throughput and vapor pressure limit
6228	Portable Steel Storage Container	VOC	A-6228, Two each Vapor Phase Carbon Canisters in Series for Baker/Poly Tanks, Activated Carbon/Charcoal	Control efficiency >99%, or <100 ppm outlet hydrocarbon concentration	BAAQMD Condition #10761	No	No	No	9	Exempt - 40 CFR 64.2(a)(3) - tanks calculation using FR tank, maximum throughput and vapor pressure limit
6229	Portable Steel Storage Container	VOC	A-6229, Two each Vapor Phase Carbon Canisters in Series for Baker/Poly Tanks, Activated Carbon/Charcoal	Control efficiency >99%, or <100 ppm outlet hydrocarbon concentration	BAAQMD Condition #10761	No	No	No	9	Exempt - 40 CFR 64.2(a)(3) - tanks calculation using FR tank, maximum throughput and vapor pressure limit
6230	Portable Steel Storage Container	VOC	A-6230, Two each Vapor Phase Carbon Canisters in Series for Baker/Poly Tanks, Activated Carbon/Charcoal	Control efficiency >99%, or <100 ppm outlet hydrocarbon concentration	BAAQMD Condition #10761	No	No	No	9	Exempt - 40 CFR 64.2(a)(3) - tanks calculation using FR tank, maximum throughput and vapor pressure limit
6231	Portable Steel Storage Container	VOC	A-6231, Two each Vapor Phase Carbon Canisters in Series for Baker/Poly Tanks, Activated Carbon/Charcoal	Control efficiency >99%, or <100 ppm outlet hydrocarbon concentration	BAAQMD Condition #10761	No	No	No	9	Exempt - 40 CFR 64.2(a)(3) - tanks calculation using FR tank, maximum throughput and vapor pressure limit
6232	Portable Steel Storage Container	VOC	A-6232, Two each Vapor Phase Carbon Canisters in Series for Baker/Poly Tanks, Activated Carbon/Charcoal	Control efficiency >99%, or <100 ppm outlet hydrocarbon concentration	BAAQMD Condition #10761	No	No	No	9	Exempt - 40 CFR 64.2(a)(3) - tanks calculation using FR tank, maximum throughput and vapor pressure limit

Chevron Richmond Refinery, Facility #A0010
Compliance Assurance Monitoring (CAM) Applicability Analysis
(40 CFR 64)

Source # [1]	Source Description	Pollutant	Control Device Used for Compliance 40 CFR 64.2(a)(2)	Federally Enforceable Emissions Limit or Standard 40 CFR 64.2(a)(1) Emission Limit	Basis	Continuous Compliance Determination Method in Title V Permit? 40 CFR 64.2(b)(1)(vi)	Limit or Standard Proposed > 11/15/90? 40 CFR 64.2(b)(1)(i)	Pre-Control PTE > MST? 40 CFR 64.2(a)(3)	Uncontrolled Emissions [2] PTE (tons/yr)	Subject to CAM?
6233	Portable Steel Storage Container	VOC	A-6233, Two each Vapor Phase Carbon Canisters in Series for Baker/Poly Tanks, Activated Carbon/Charcoal	Control efficiency >99%, or <100 ppm outlet hydrocarbon concentration	BAAQMD Condition #10761	No	No	No	9	Exempt - 40 CFR 64.2(a)(3) - tanks calculation using FR tank, maximum throughput and vapor pressure limit
6234	Portable Steel Storage Container	VOC	A-6234, Two each Vapor Phase Carbon Canisters in Series for Baker/Poly Tanks, Activated Carbon/Charcoal	Control efficiency >99%, or <100 ppm outlet hydrocarbon concentration	BAAQMD Condition #10761	No	No	No	9	Exempt - 40 CFR 64.2(a)(3) - tanks calculation using FR tank, maximum throughput and vapor pressure limit
6235	Portable Steel Storage Container	VOC	A-6235, Two each Vapor Phase Carbon Canisters in Series for Baker/Poly Tanks, Activated Carbon/Charcoal	Control efficiency >99%, or <100 ppm outlet hydrocarbon concentration	BAAQMD Condition #10761	No	No	No	9	Exempt - 40 CFR 64.2(a)(3) - tanks calculation using FR tank, maximum throughput and vapor pressure limit
6236	Portable Steel Storage Container	VOC	A-6236, Two each Vapor Phase Carbon Canisters in Series for Baker/Poly Tanks, Activated Carbon/Charcoal	Control efficiency >99%, or <100 ppm outlet hydrocarbon concentration	BAAQMD Condition #10761	No	No	No	9	Exempt - 40 CFR 64.2(a)(3) - tanks calculation using FR tank, maximum throughput and vapor pressure limit
6237	Portable Steel Storage Container	VOC	A-6237, Two each Vapor Phase Carbon Canisters in Series for Baker/Poly Tanks, Activated Carbon/Charcoal	Control efficiency >99%, or <100 ppm outlet hydrocarbon concentration	BAAQMD Condition #10761	No	No	No	9	Exempt - 40 CFR 64.2(a)(3) - tanks calculation using FR tank, maximum throughput and vapor pressure limit
6238	Portable Steel Storage Container	VOC	A-6238, Two each Vapor Phase Carbon Canisters in Series for Baker/Poly Tanks, Activated Carbon/Charcoal	Control efficiency >99%, or <100 ppm outlet hydrocarbon concentration	BAAQMD Condition #10761	No	No	No	9	Exempt - 40 CFR 64.2(a)(3) - tanks calculation using FR tank, maximum throughput and vapor pressure limit
6239	Portable Steel Storage Container	VOC	A-6239, Two each Vapor Phase Carbon Canisters in Series for Baker/Poly Tanks, Activated Carbon/Charcoal	Control efficiency >99%, or <100 ppm outlet hydrocarbon concentration	BAAQMD Condition #10761	No	No	No	9	Exempt - 40 CFR 64.2(a)(3) - tanks calculation using FR tank, maximum throughput and vapor pressure limit
3235	Diesel Engine	PM	A-3235, Diesel Particulate Filter	Ringelmann No. 2 for no more than 3 minutes/hour	SIP 6-303	No	No	No	0.01	Exempt - 40 CFR 64.2(a)(3) based on 2.2 E-3 lb/(BHP-hr) AP-42 emission factor, 154 BHP engine size, 50 hr/yr
				0.15 grain/dscf	SIP 6-310	No	No			
7513	Diesel Engine	PM	A-7513, Diesel Particulate Filter	Ringelmann No. 2 for no more than 3 minutes/hour	SIP 6-303	No	No	No	0.02	Exempt - 40 CFR 64.2(a)(3) based on 2.2 E-3 lb/(BHP-hr) AP-42 emission factor, 450 BHP engine size, 50 hr/yr
				0.15 grain/dscf	SIP 6-310	No	No			
7514	Diesel Engine	PM	A-7514, Diesel Particulate Filter	Ringelmann No. 2 for no more than 3 minutes/hour	SIP 6-303	No	No	No	0.02	Exempt - 40 CFR 64.2(a)(3) based on 2.2 E-3 lb/(BHP-hr) AP-42 emission factor, 450 BHP engine size, 50 hr/yr
				0.15 grain/dscf	SIP 6-310	No	No			
7517	Diesel Engine	PM	A-7517, Diesel Particulate Filter	Ringelmann No. 2 for no more than 3 minutes/hour	SIP 6-303	No	No	No	0.01	Exempt - 40 CFR 64.2(a)(3) based on 2.2 E-3 lb/(BHP-hr) AP-42 emission factor, 163 BHP engine size, 50 hr/yr
				0.15 grain/dscf	SIP 6-310	No	No			
7521	Diesel Engine	PM	A-7521, Diesel Particulate Filter	Ringelmann No. 2 for no more than 3 minutes/hour	SIP 6-303	No	No	No	0.02	Exempt - 40 CFR 64.2(a)(3) based on 2.2 E-3 lb/(BHP-hr) AP-42 emission factor, 435 BHP engine size, 50 hr/yr
				0.15 grain/dscf	SIP 6-310	No	No			
7523	Diesel Engine	PM	A-7523, Diesel Particulate Filter	Ringelmann No. 2 for no more than 3 minutes/hour	SIP 6-303	No	No	No	0.02	Exempt - 40 CFR 64.2(a)(3) based on 2.2 E-3 lb/(BHP-hr) AP-42 emission factor, 435 BHP engine size, 50 hr/yr
				0.15 grain/dscf	SIP 6-310	No	No			
7539	Diesel Engine	PM	A-7539, Diesel Particulate Filter	Ringelmann No. 2 for no more than 3 minutes/hour	SIP 6-303	No	No	No	0.02	Exempt - 40 CFR 64.2(a)(3) based on 2.2 E-3 lb/(BHP-hr) AP-42 emission factor, 440 BHP engine size, 50 hr/yr
				0.15 grain/dscf	SIP 6-310	No	No			

Notes:
1. This list only includes sources/pollutants that are abated by control equipment.
2. Uncontrolled emissions (PTE) are only included for sources where PTE < MST is used to exempt the source from CAM.
PTE = Potential to Emit
MST = Major Source Threshold
CEMS = Continuous Emissions Monitoring System
CPMS = Continuous Parametric Monitoring System
N/A = Not Applicable
BAAQMD = Bay Area Air Quality Management District
Per 40 CFR 64, a control device does not include passive control measures that act to prevent pollutants from forming, such as the use of seals, lids, or roofs to prevent the release of pollutants, use of low-polluting fuel or feedstocks, or the use of combustion or other process design features or characteristics.

Appendix B

Chevron Response to Information Request Regarding Contractor-Owned Equipment

Chevron

Shawn Lee
Manager

Health, Environment & Safety
Chevron Products Company
P. O. Box 1272
Richmond, CA 94802-0272
Tel 510 242 1400
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May 6, 2016

Mr. Bhagavan Krishnaswamy
Bay Area Air Quality Management District
939 Ellis Street
San Francisco, CA 94109-7799

RE: Response to Information Request, Application 27756
Chevron Products Company – Richmond Refinery (Plant #A0010)

Dear Mr. Krishnaswamy:

This letter is submitted in response to your letter dated March 9, 2016 requesting information regarding Chevron's Title V Permit Application number 27756. The fee payment requested in your letter was submitted April 27, 2016. Questions from the Bay Area Air Quality Management District (District) appear in **bold** font below followed by Chevron's responses. We understand that a letter containing the same questions, where applicable, was sent to all five Bay Area refineries regardless of whether the questions were answered previously. Several of the questions were answered in Chevron's Title V permit renewal application (Application) dated February 8, 2016 as noted below.

1. **Provide a list of all sources not owned or operated by Chevron (i.e., contractors' sources) including their description and design capacity (permitted or unpermitted by the District) that are operating at the refinery for periods greater than 12 months.**

   Please see Chevron's Application Section 1.5.1.

2. **Submit all approved Alternate Monitoring Plans (AMPs), including those available for portable sources or abatement devices (thermal oxidizer, scrubber, etc).**

   Please see Chevron's Application Section 1.5.2 and Attachment D.

3. **In the 2011 Title V Renewal, the Compliance Assurance Monitoring (CAM) analysis for the refinery was incomplete. Please provide comprehensive CAM analyses. An example of a comprehensive CAM analyses is enclosed for your information. Complete the attached "Form CAM" for all significant sources. Detailed CAM plan submissions required by 40 CFR 64.4 may be submitted separately.**

   Please see Attachment A to this letter.

1.5 Additional Information

Mr. Krishnaswamy indicated in an e-mail dated October 26, 2015 that the following additional information was requested from a refinery that recently submitted its Title V permit renewal application and the same information will be needed for Chevron's Title V permit renewal.

- A list of all contractor owned or operated sources including their description and design capacity (permitted or unpermitted by the District) that are operating at the refinery for periods greater than 12 months.
- Approved Alternate Monitoring Plans (AMP), including those available for portable sources or abatement devices (thermal oxidizer, scrubber, etc.).
- A comprehensive compliance assurance monitoring (CAM) analysis
- A list of all significant sources, as defined in Regulation 2, Rule 6, Section 239, with potential to emit more than 2 tons per year of any regulated air pollutant, or more than 400 lbs per year of any hazardous air pollutant, that are currently not included in the Title V permit.
- Update all bubble permit conditions to reflect the most current regulatory requirements.

Chevron's response to the District's request for information follows.

1.5.1 Contractor Owned or Operated Sources Operating at the Refinery Greater Than 12 Months

Chevron does not have any contractor owned or operated stationary sources that operate in the same functional use at the refinery for greater than 12 months that have not received a Permit to Operate. Chevron and its rental diesel equipment contractor track the number of months that rental equipment operates in the same location to ensure that any equipment that operates in the same location greater than 12 months receives a Permit To Operate.

Mr. Krishnaswamy verbally asked whether Chevron or its contractors keep the same tank degassing equipment, such as thermal oxidizers or engines, on-site for more than 12 months. Tank degassing equipment is not kept on-site for more than 12 months.

As part of Chevron's diligence to comply with permitting requirements, Chevron obtained Authority to Construct permits for the following diesel engines, which could have operated temporarily as portable sources. Chevron permitted the engines as stationary sources, because the engines will operate in the same functional use at the same location for greater than 12 months. All of the following engines as well as an engine rated less than 50 horsepower were added to the Title V permit in Attachment A.

Table 1: Diesel Engines in Permit To Operate

Source	Application Number
3235	26168
4401	26684
7541	24892
7542	24892
7543	25410

The following excerpts from the California Air Pollution Control Officers Association (CAPCOA) *"Explanation and Examples of Uses of PERP"* dated March 12, 2014 indicate that portable equipment may operate at various locations within the same refinery for more than 12 months in accordance with the California Portable Engine Registration Program (PERP) and not require a local air district permit as long as the functional use is not an integral part of the operation of the stationary source.

"Any equipment which is an integral part of the operation of a stationary source or used to supplement or expand its operation would in general be considered 'part of' or its own stationary source. On the other hand, districts believe that there are valid uses of PERP at stationary sources, such as equipment performing maintenance or

repair activities (so long as that use continues to meet the definition of portable as provided in §2452(dd) of the PERP regulation)."

"Some examples of such use is equipment registered under PERP that is used for construction, repair and/or maintenance activities. In these cases, PERP equipment can be used at multiple locations within a facility or at various locations outside of a facility provided the location is consistent with the functional use of the equipment and the equipment is not used at the same location for more than 12 consecutive months. The term functional is used in conjunction with location to ensure that there is a legitimate operational need to move the equipment, so as to not circumvent the definition of location just to restart the 12-month period."

Chevron's rented diesel equipment is used to support maintenance, repair, and construction projects, not to support ongoing operation of process units. The equipment continues to meet the definition of "portable" in §2452(dd) of the California Health and Safety Code. Chevron does not have any seasonal sources mentioned in the definition of "portable," nor does Chevron move rental equipment from one location to another in an attempt to circumvent the portable residence time requirements.

1.5.2 Approved Alternative Monitoring Plans

In response to the District's request for Chevron's approved alternative monitoring plans, a letter dated December 5, 2005 from Ms. Deborah Jordan (Environmental Protection Agency) to Mr. Jeff Hartwig (Chevron) containing Chevron's approved alternative monitoring plans for 40 CFR 60 Subpart J is provided in Attachment D.

1.5.3 Comprehensive CAM Analysis

Chevron submitted a detailed, comprehensive CAM analysis September 2, 2008 contained in Attachment E, which was approved by the District and EPA in the issuance of the August 2011 version of the Title V permit. Chevron plans to discuss with the District and provide the specific additional information that the District seeks to obtain.

1.5.4 Significant Sources Not In the Title V Permit

Chevron obtained Authorizations To Construct numerous, small sources since the last version of the Title V permit and updated the Title V permit in Attachment A accordingly to include those sources. Additionally, the following equipment meeting new source review permit exemption criteria in Rule 2-1 with potential emissions greater than two tons of precursor organic compounds per year are added to the Title V permit Table II C Exempt Equipment List.

Source Number	Equipment Description	Rule 2-1 Exemption
4406	Pentamer and Tetramer Loading Rack	2-1-123.3.2
3217	T-3217 Diesel Tank	2-1-123.3.2, 2-1-123.3.3, or 2-1-123.3.10
3227	T-3227 Diesel Tank	2-1-123.3.2, 2-1-123.3.3, or 2-1-123.3.10

Potential emission calculations demonstrating that the equipment meets the exemption criteria in Rule 2-1-319 are provided in Attachment F. T-3217 and T-3227 are identically sized tanks holding diesel. Thus, potential emissions from T-3217 and T-3227 are approximately the same.

1.5.5 Bubble Permit Conditions Update

Chevron's Title V permit contains one bubble permit condition, which is condition 469, issued April 8, 1982. The condition was revised in 1992 to reduce the sulfur dioxide emission limit to account for the change from fuel oil use on ships to diesel fuel. Chevron does not have access to the calculations the District developed to set the emission caps. If the District can provide the basis of the calculations, Chevron can assist with evaluating whether the emission limits should be reduced.

Appendix C

EPA Applicability Determination for 40 CFR 60, Subpart Kb

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 5
77 WEST JACKSON BOULEVARD
CHICAGO, IL 60604-3590

SEP 0 2 2004

REPLY TO THE ATTENTION OF:

(AE-17J)

Ken Corney
Sr. Air Technical Advisor
Flint Hills Resources L.P.
Pine Bend Refinery
P.O. Box 64596
St. Paul, MN 55164-0596

RE: Request for Applicability Determination
40 C.F.R. Part 60, Subpart Kb

On June 13, 2004, Flint Hills Resources L.P. ("FHR") submitted to the United States Environmental Protection Agency ("EPA" or "we") a letter requesting an applicability determination for 40 C.F.R. Part 60, Subpart Kb - Standards of Performance for Volatile Organic Liquid Storage Vessels (NSPS Subpart Kb). The letter requests EPA to determine whether mobile temporary liquid storage tanks (called "frac tanks" in FHR's letter) which meet the vapor pressure and volume applicability requirements in NSPS Subpart Kb are affected facilities thereunder. In summary, we have determined that frac tanks are not affected facilities under NSPS Subpart Kb.

NSPS Subpart Kb at 40 C.F.R. §60.110b(d)(3) specifically exempts "vessels permanently attached to mobile vehicles such as trucks, railcars, barges, or ships." According to FHR, frac tanks are equipped with a permanently attached wheel assembly and a truck hitch. It is our interpretation that frac tanks are not affected facilities under NSPS Subpart Kb because of the §60.110b(d)(3) exemption. To qualify for this exemption, it is not necessary that the vessel be permanently attached to a self-propelled vehicle, it is only necessary that the vessel be permanently attached to a "mobile vehicle." Therefore, vessels must be intended to be portable and permanently equipped with the means of transportation in order to qualify for this exemption.

We have coordinated this response with the Office of Enforcement and Compliance Assurance. If you have any questions regarding this determination, please call Nathan A. Frank, P.E., of my staff, at (312) 886-3850.

notification requirement under 40 CFR § 60.7(a)(1)[1] or, if the facility is exempt from this notification, as an attachment to the notification required by 40 CFR § 60.7(a)(2)[2].

Not only do these provisions and others appear to be intended for long-term installations of equipment, it is not clear how an operator could comply with these requirements for one time and short term uses. FHR currently uses up to 30 rental frac tanks during a turnaround and potentially half of these hold liquids subject to NSPS Subpart Kb. It would be infeasible to apply the Subpart Kb requirements to such a situation, particularly where the time frame of the tanks' service is less than that in which compliance with key components of the NSPS rules could be effected.

As noted above, in some instances, frac tanks may be used for a longer period of time (in very rare cases, a tank might remain stationary and in the same service for a year or more). Even in those cases; however, Subpart Kb compliance is still impractical due to the physical configuration of the tank, as discussed above. Also, when the facility moves the tank to that area, it may not know on the front end precisely how long the tank will need to be there. Thus, a Subpart Kb applicability determination that was contingent on the time period a frac tank is in one place would not be workable.

We believe this issue to be straightforward. However, recognizing the importance of having consensus about these issues from the government agencies involved, we request your concurrence with the views as set forth above.

If there are any questions, please call me at (651) 437-0590.

Sincerely,

K R Comey

Ken Comey
Sr. Environmental Technical Advisor

cc: Compliance Tracker - MPCA
Scott Parr - MPCA

[1] This requirement shall not apply in the case of mass-produced facilities which are purchased in complete form. Frac tanks meet this description.
[2] The anticipated startup notification required by 40 CFR 60.7(a)(2) was eliminated pursuant to 64 FR 7463 on February 12, 1999, thus, NSPS Subpart Kb currently references a defunct citation.

Appendix D

NSR Application Evaluation Reports

Title V Applications
25631
25748

NSR Applications
12842
19402 (amendments to PC 469 18945)
23827
25630 (memo to file – revised conditions
25630 NCM
25747 (NCM eval - revised
25948
26319 (Domed EFR S-3231)
26889
27948
28218
28337
28492
28535
28627
28904
29005
29037
29049
29160
29220
29271

ENGINEERING EVALUATION
Chevron Products Company
Application: 25631
Plant: 10
841 Chevron Way, Richmond, CA 94801

BACKGROUND

In Application 25630, Chevron Products Company (Chevron) applied to obtain a Permit to Operate (PTO) under the Accelerated Permitting Program from the Bay Area Air Quality Management District (BAAQMD or "District") for the following equipment:

A-629 Temporary Carbon System for Abating No. 17 Pump Station Fugitive Emissions (S-32111)
Vent-Scrub Vapor Phase Adsorbers, Model: VSC-200,
2 Sets of 3 Drums, 4 CFM

A Permit to Operate for A-629 was issued to Chevron. This application incorporates the necessary changes to Chevron's Title V Operating Permit resulting from Application 25630.

The following changes are required to Chevron's Title V Operating Permit.

Section II. EQUIPMENT

Table II B – Abatement Devices

Abatement Device Number	Description	Source(s) Controlled	Applicable Requirements	Operating Parameters	Limit or Efficiency
A-0620	Thermatrix, Model ES300, Thermal Oxidizer, LPG Racks	LPG Racks - Pumps and compressor seals ~~S-32103~~ S-32112	Condition # 8869	Continuous temperature monitor	Minimum temperature of 1500 degrees F, Minimum VOC destruction efficiency 95% by weight
A-0622	Thermatrix, Model ES60H, Thermal Oxidizer, Yard DIB	Yard DIB - Pumps and compressor seals S-32103	Condition # 8869	Continuous temperature monitor	Minimum temperature of 1500 degrees F, Minimum VOC destruction efficiency 95% by weight
A-0623	Thermatrix, Model ES60H, Thermal Oxidizer, 21 PS	No. 21 Pump Station - Pumps and compressor seals ~~S-32103~~ S-32114	Condition # 8869	Continuous temperature monitor	Minimum temperature of 1500 degrees F, Minimum VOC destruction efficiency 95% by weight
A-0624	Thermatrix, Model ES60H, Thermal Oxidizer, 17 PS	No. 17 Pump Station - Pumps and compressor seals ~~S-32103~~ S-32111	Condition # 8869	Continuous temperature monitor	Minimum temperature of 1500 degrees F, Minimum VOC destruction efficiency 95% by weight

Table II B – Abatement Devices

Abatement Device Number	Description	Source(s) Controlled	Applicable Requirements	Operating Parameters	Limit or Efficiency
A-0627	Thermatrix, Model ES300, Thermal Oxidizer, FCC Unit (backup)	FCC Unit - Pumps and compressor seals ~~S-32103~~ S-32115	Condition # 8869	Continuous temperature monitor	Minimum temperature of 1500 degrees F, Minimum VOC destruction efficiency 95% by weight
A-0628	Thermatrix, Model ES300, Thermal Oxidizer, Alkylation Plant	Alkylation Plant - Pumps and compressor seals ~~S-32103~~ S-32116	Condition # 8869	Continuous temperature monitor	Minimum temperature of 1500 degrees F, Minimum VOC destruction efficiency 95% by weight

Table II C – Exempt Equipment List

Source Number	Source Code	Source Description	Proposed Annual Limit	Proposed Daily Limit	Units	Comments
32111	G9060000	Fugitive Sources – No 17 Pump Station – Pumps & Compressor Seals	N A	NA		Exempt per PTO
32112	G9060000	Fugitive Sources – LPG Racks – Pumps & Compressor Seals	NA	NA		Exempt per PTO
32113	G9060000	Fugitive Sources – Yard DIB – Pumps & Compressor Seals	NA	NA		Exempt per PTO
32114	G9060000	Fugitive Sources – No. 21 Pump Station – Pumps & Compressor Seals	NA	NA		Exempt per PTO
32115	G9060000	Fugitive Sources – FCC Unit – Pumps & Compressor Seals	NA	NA		Exempt per PTO
32116	G9060000	Fugitive Sources – Alkylation Plant – Pumps & Compressor Seals	NA	NA		Exempt per PTO

Section IV. SOURCE-SPECIFIC APPLICABLE REQUIREMENTS

Table IV.Abatement
Source-specific Applicable Requirements
Abatement
A-0620, A-0622, A-0623, A-0624, A-0627, A-0628, A-0629

Applicable Requirement	Regulation Title or Description of Requirement	Federally Enforceable (Y/N)	Future Effective Date
BAAQMD Condition 8869	**Applies to A-0620, A-0622, A-0623, A-0624, A-0627, and A-0628**		
Part 1	95% destruction efficiency and minimum temperature of 1500F (applies to A620, A-627, and A-628)	Y	
Part 2	95% destruction efficiency and minimum temperature of 1565F (applies to A-622, A-623, and A-624	Y	
Part 3	Temperature and flow monitor	Y	
Part 4	Record keeping	Y	
Part 5	Continuous operation	Y	
BAAQMD Condition 25703	**Applies to A-0629**		
Part 1	Abatement requirement	Y	
Part 2	Single carbon train operation limitation	Y	
Part 3	FID daily monitoring	Y	
Part 4	Representative monitoring	Y	
Part 5	Daily recordkeeping	Y	
Part 6	95% abatement efficiency	Y	
Part 7	TOC outlet concentration limit of 2.0 ppmv	Y	
Part 8	First carbon vessel breakthrough definition	Y	
Part 9	Second carbon vessel breakthrough definition	Y	
Part 10	Last carbon vessel breakthrough definition	Y	
Part 11	Flow rate limit of 4.0 cubic feet per minute	Y	
Part 12	Flow meter verification	Y	
Part 13	Maintenance requirements	Y	
Part 14	Recordkeeping	Y	

Table IV.H.2.1 VOC Sources
Source-specific Applicable Requirements

Fugitive Components

Applicable Requirement	Regulation Title or Description of Requirement	Federally Enforceable (Y/N)	Future Effective Date
Condition # 8869	Applies to ~~S-32103~~S-32111, S-32112, S-32113, S-32114, S-32115, and S-32116	Y	
Condition # 23201	Applies to A-620, A-622, A-623, A-624, A-627, and A-628		
Part 1	Sources subject to NSPS Subparts A and J	Y	
Condition # 24433	Applies to S-4252, S-4253, S-4348, S-4435	N	
Condition # 24671	Applies to S-4440	N	
Condition # 25703	Applies to S-32111	Y	

Section VI. PERMIT CONDITIONS

Condition #8869 For S-3211~~03~~, S-32112, S-32113, S-32114, S-32115, and S-32116:

Fugitive Sources – Pumps & Compressor Seals:
S-32111 – Fugitive Sources – No. 17 Pump Station
S-32112 – Fugitive Sources – LPG
S-32113 – Fugitive Sources – Yard DIB
S-32114 – Fugitive Sources – No. 21 Pump Station
S-32115 – Fugitive Sources – FCC Unit
S-32116 – Fugitive Sources – Alkylation Plant

Application # 10361, Plant # 10 (2/4/1993) – Thermal Oxidizers (Parts 1 – 4)
Application # 25630, Plant # 10 (8/19/2013) – Abatement Clarification (Part 5)

Condition Parts 1, 2, and 4 only apply when A-620, A-622, A-623, A-624, A-627, or A-628 is used to exempt an applicable source from Regulation 8, Rule 18 requirements per the exemption of Regulation 8-18-110:

1. The owner/operator of A-620, A-627, and A-628 Thermal Oxidizers (Model ES-300) shall maintain each at a minimum VOC destruction efficiency of 95% by weight. The owner/operator shall operate each A-620, A-627, and A-628 (Model ES-300) at a minimum temperature of 1500 deg F. (~~b~~Basis: BACT, 40 CFR 60.482-10 (c), 40 CFR 60.692-5 (a), and 40 CFR 61.242-11 (c))

2. The owner/operator of A-622 through 624 Thermal Oxidizers (Model ES-60H) shall maintain each at a minimum VOC destruction efficiency of 95% by weight. The owner/operator shall operate each A- 622 through 624 (Model ES-60H) at a minimum temperature of 1565 deg F. (~~b~~Basis: BACT, 40 CFR 60.482-10 (c), 40 CFR 60.692-5 (a), and 40 CFR 61.242-11 (c))

3. The owner/operator of each Thermal Oxidizer (A-620, A-622, A-623, A624, A-627, and A-628) shall have a continuous temperature monitor. Each pump duct shall be equipped with a continuous flow monitor. (~~b~~Basis: BACT)

4. The owner/operator shall monitor twice daily and record in a District approved log the temperature of each of the thermal oxidizers (A- 620, A-622, A-623, A-624, A-627, and A-628). These records shall be kept on site and made available for District inspection upon request for a period of 60 months from the date of entry. (~~b~~Basis: BACT)

5. At all times, the owner/operator of each source shall comply with Regulation 8, Rule 18 requirements. The exemption of Regulation 8-18-110 does not apply unless Chevron can demonstrate abatement using a District-approved abatement device that reduces VOC emissions by a minimum of 95% by weight where reduction efficiency = VOC collection efficiency x VOC destruction efficiency. Unless usage of an abatement device (in accordance with manufacturer's specification) is not able to comply with Regulation 8, Rule 18 limits, a source shall not be placed on the Regulation 8, Rule 18 non-repairable list if an associated abatement device (or District-approved alternative) is operable.
(Basis: 2-1-403)

Condition 25703 for S-32111

Conditions for A-629 Temporary Carbon System Vent-Scrub Vapor Phase Adsorbers, Model: VSC-200, 2 sets of 3 drums, 200 lbs each
Abating S-32111 No. 17 Pump Station Fugitive Emissions
Application # 25630, Plant # 10 (08/19/2013)

1. Whenever A-624 (thermal oxidizer) is taken out of service, the owner/operator may abate S-32111 (No. 17 Pump Station) emissions by abatement device A-629 (temporary carbon system) consisting of two separate trains, each containing three 200 lb activated carbon vessels arranged in series.

[Basis: 2-1-106, 2-1-403]

2. The owner/operator shall only operate one of the two A-629 carbon trains at any given time. Whenever one of the A-629 trains is in use, the other train shall be physically prevented (e.g. block valve) from accepting flow.

[Basis: 2-1-403, Cumulative Increase]

3. The owner/operator shall use a Flame Ionization Detector (FID) to monitor at least daily for total organic compounds (TOC), as C1, at the inlet of A-629 and at the outlet of each carbon vessel in series. The FID monitor shall have a resolution of at least 0.01 parts per million (ppm). Monitoring is only required when A-629 and the abated source (S-32111 No. 17 Pump Station) are in operation. The FID shall be calibrated and maintained according to U.S. EPA Method 21 and FID manufacturer specifications. For each period of A-629 operation, the owner/operator may propose for District review, based on actual measurements taken at the site during operation of the source, that monitoring frequency be changed, after the first six days of A-629 operation, based on the decline in organic emissions and/or the demonstrated breakthrough rates of the carbon vessels. Written approval by the District's Engineering Division must be received by the owner/operator prior to a change to the monitoring frequency.

[Basis: 2-1-106, 2-1-403]

4. All TOC monitor samples shall be representative. The owner/operator shall conduct all TOC monitoring using a monitor probe fitted with a rubber stopper (or similar device) to prevent ambient air from entering the sample inlet and diluting the sample. The owner/operator shall introduce and hold the monitor probe directly into the A-629 emissions stream at each sample point. If the sample point consists of a t-joint, the monitor probe must be inserted into the main exhaust stream. The owner/operator shall design, construct, and operate the carbon system (A-629) and sampling system to allow representative sampling as defined in District Manual of Procedures, Volume IV.

[Basis: 2-1-403]

5. The owner/operator shall record all TOC monitor readings in a daily monitoring log at the time the readings are taken.

[Basis: 2-1-403]

6. The owner/operator of A-629 shall abate TOC emissions, as C1, by at least 95 percent or greater. The A-629 abatement efficiency shall be determined using the TOC monitoring results of Part 3.

[Basis: 2-1-106, 2-1-403]

7. The owner/operator of A-629 shall not exceed a TOC concentration at the A-629 outlet of 2.0 parts per million by volume, as C1.

[Basis: 2-1-106, 2-1-403]

8. The owner/operator shall change out the first carbon vessel with unspent carbon upon breakthrough, defined as the detection at the vessel out of the higher of the following:
   a. 10% of the inlet stream concentration to the carbon vessel, or
   b. 200 ppmv or greater (as C1)

[Basis: Cumulative Increase]

9. The owner/operator shall change out the second to last carbon vessel with unspent carbon upon breakthrough, defined as the detection at the vessel out of the higher of the following:
   a. 10% of the inlet stream concentration to the carbon vessel, or
   b. 20 ppmv or greater (as C1)

[Basis: Cumulative Increase]

10. The owner/operator shall change out the last carbon vessel with unspent carbon upon detection at its outlet of 2 ppmv or greater (as C1).

[Basis: 2-1-106, 2-1-403]

11. The owner/operator of A-629 shall not exceed a flow rate of 4.0 cubic feet per minute. The owner/operator shall install variable area float gauges (ball floats or similar devices) on each A-629 train to indicate A-629 flow rate and verify compliance with the 4.0 cubic feet per minute limit. The gauges shall have a minimum resolution of 0.2 cubic feet per minute.

[Basis: 2-1-106, 2-1-403]

12. Whenever TOC monitoring is conducted, the owner/operator of A-629 shall also take readings of the flow meter required in Part 10 at the same time and record the flow rate

readings in the same daily monitoring log required in Part 5. The owner/operator of A-629 shall first verify that the flow meter is working (by tapping the sight glass to verify ball indicator is not stuck).
[Basis: 2-1-106, 2-1-403]

13. As A-629 shall only be used when A-624 is taken out of service, the owner/operator shall maintain A-624 according to manufacturer recommendations. All maintenance on A-624 shall be recorded in a log made available to the APCO upon request. A copy of the manufacturer preventative maintenance recommendations shall be made available to the APCO upon request.
[Basis: 2-1-403]

14. The owner/operator shall maintain the following records onsite for at least five years from date of last entry:
    a. all TOC monitoring results,
    b. all flow meter readings,
    c. FID monitor serial number and identification,
    d. FID monitor calibration results,
    e. Monitor operator name,
    f. reason for any periods where TOC readings were not taken,
    g. date and time of all readings, and
    h. date each carbon drum was taken out of service.
[Basis: 2-1-403]

Section VII. APPLICABLE LIMITS AND COMPLIANCE MONITORING REQUIREMENTS

Table VII – Abatement
Applicable Limits and Compliance Monitoring Requirements

Abatement Devices (In Table II-B, but not included in Table IV)
A-0094, A-0620, A-0622, A-0623, A-0624, A-0627, A-0628, A-0629, A-0917, A-919, A-0921, A-0920, A-0922

Type of Limit	Citation of Limit	FE Y/N	Future Effective Date	Limit	Monitoring Requirement Citation	Monitoring Frequency (P/C/N)	Monitoring Type
A-0414, A-0620, A-0622, A-0623, A-0624, A-0627, A-0628 Thermal Oxidizers							
POC	Condition # 8869 ~~Part s1~~ Parts 1 and 2	Y		Minimum temperature of 1500 and 1565 degrees F, minimum VOC destruction efficiency 95% by weight	Condition #8869 Part 3	C	Temperature monitor
A-0629							
TOC	Condition # 25703 Part 6, and 7	Y		Minimum TOC destruction efficiency of 95% by weight, Outlet TOC < 2.0 ppmv as C1	Condition # 25703 Part 3	P/D	FID monitor, Records
Flow	Condition # 25703 Part 11	Y		Maximum exhaust flow rate of 4.0 CFM	Condition # 25703 Parts 11 and 12	C	Variable area float gauge, Records

STATEMENT OF COMPLIANCE

Regulation 2, Rule 6

Section 2-6-215 (Minor Permit Revision)
Per Section 2-6-215, a minor permit revision is a revision that is not a significant permit revision or an administrative permit amendment. This application does not meet the definitions of administrative permit amendment per Section 2-6-201 nor significant permit revision per Section 2-6-226. Therefore, this application is considered a minor permit revision of Chevron's Title V operating permit.

Section 2-6-402 (Fees)
Chevron has pad the required fees as specified in Regulation 3 including Schedule P.

Section 2-6-406 (Application for a Minor Permit Revision)
Chevron provided the required documents specified in Section 2-6-406.

Regulation 3

Regulation 3 requires payment of permit fees. Fees have been invoiced and paid by Chevron.

RECOMMENDATION

Revise Chevron's Title V Operating Permit to incorporate required changes related to the following sources:

A-629 Temporary Carbon System for Abating No. 17 Pump Station Fugitive Emissions (S-32103)
Vent-Scrub Vapor Phase Adsorbers, Model: VSC-200,
2 Sets of 3 Drums, 4 CFM

S-32111 Fugitive Sources – No. 17 Pump Station – Pumps & Compressor Seals
Abated by: A624 Thermal Oxidizer
A629 Temporary Carbon System

S-32112 Fugitive Sources – LPG Racks – Pumps & Compressor Seals
Abated by: A620 Thermal Oxidizer

S-32113 Fugitive Sources – Yard DIB – Pumps & Compressor Seals
Abated by: A622 Thermal Oxidizer

S-32114 Fugitive Sources – No. 21 Pump Station – Pumps & Compressor Seals
Abated by: A623 Thermal Oxidizer

S-32115 Fugitive Sources – FCC Unit – Pumps & Compressor Seals
Abated by: A627 Thermal Oxidizer

S-32116 Fugitive Sources – Alkylation Plant – Pumps & Compressor Seals
Abated by: A628 Thermal Oxidizer

_____

Nicholas C. Maiden, P.E.
Principal Air Quality Engineer

ENGINEERING EVALUATION
Chevron Products Company
Application: 25748
Plant: 10
841 Chevron Way, Richmond, CA 94801

BACKGROUND

In Application 25747, Chevron Products Company (Chevron) applied to an Authority to Construct and Permit to Operate from the Bay Area Air Quality Management District (BAAQMD or "District") for the following equipment:

A-632 Carbon System – Backup Abatement – No. 21 Pump Station Fugitive Emissions
Vent-Scrub Vapor Phase Adsorbers, Model: VSC-200,
2 Sets of 3 Drums, 4 CFM

as well as a change in permit conditions for:

A-629 Carbon System – Backup Abatement - No. 17 Pump Station Fugitive Emissions
Vent-Scrub Vapor Phase Adsorbers, Model: VSC-200,
2 Sets of 3 Drums, 4 CFM

and a change in description for:

A-622 Thermal Oxidizer, Afterburner
Model Number: ES60H

A-627 Thermal Oxidizer, Afterburner
Model Number: ES300

This application incorporates the necessary changes to Chevron's Title V Operating Permit resulting from Application 25747.

The following changes are required to Chevron's Title V Operating Permit. The tables include required changes made for a similar abatement application (Application 25630) that are documented in Title V Minor Revision Application 25631.

Section II. EQUIPMENT

Table II B – Abatement Devices

Abatement Device Number	Description	Source(s) Controlled	Applicable Requirements	Operating Parameters	Limit or Efficiency
A-0622	Thermatrix, Model ES60H, Thermal Oxidizer, Yard DIB	Yard DIB - Pumps and compressor seals ~~S-32103~~S-32113	Condition # 8869	Continuous temperature monitor	Minimum temperature of 1500 degrees F, Minimum VOC destruction efficiency 95% by weight

Table II B – Abatement Devices

Abatement Device Number	Description	Source(s) Controlled	Applicable Requirements	Operating Parameters	Limit or Efficiency
A-0627	Thermatrix, Model ES300, Thermal Oxidizer, FCC Unit (backup)	FCC Unit - Pumps and compressor seals ~~S-32103~~ S-32115	Condition # 8869	Continuous temperature monitor	Minimum temperature of 1500 degrees F, Minimum VOC destruction efficiency 95% by weight
A-0632	Carbon System – Backup Abatement – No. 21 Pump Station	No. 21 Pump Station – Pumps and compressor seals S-32114	Condition # 25835		Minimum TOC destruction efficiency 95% by weight, or outlet < 10 ppmv (as C1)

Section IV. SOURCE-SPECIFIC APPLICABLE REQUIREMENTS

Table IV.Abatement
Source-specific Applicable Requirements
Abatement
A-0620, A-0622, A-0623, A-0624, A-0627, A-0628, A-0629, A-0632

Applicable Requirement	Regulation Title or Description of Requirement	Federally Enforceable (Y/N)	Future Effective Date
BAAQMD Condition 8869	**Applies to A-0620, A-0622, A-0623, A-0624, A-0627, and A-0628**		
Part 1	95% destruction efficiency and minimum temperature of 1500F (applies to A620, A-627, and A-628)	Y	
Part 2	95% destruction efficiency and minimum temperature of 1565F (applies to A-622, A-623, and A-624	Y	
Part 3	Temperature and flow monitor	Y	
Part 4	Record keeping	Y	
Part 5	Continuous operation	Y	
Part 6	Backup allowance		
BAAQMD Condition 25703	**Applies to A-0629**		
Part 1	Abatement requirement	Y	
Part 2	Single carbon train operation limitation	Y	
Part 3	FID daily monitoring	Y	
Part 4	Representative monitoring	Y	
Part 5	Daily recordkeeping	Y	

Table IV.Abatement
Source-specific Applicable Requirements
Abatement
A-0620, A-0622, A-0623, A-0624, A-0627, A-0628, A-0629, A-0632

Applicable Requirement	Regulation Title or Description of Requirement	Federally Enforceable (Y/N)	Future Effective Date
Part 6	95% abatement efficiency	Y	
Part 7	TOC outlet concentration limit of 10.0 ppmv	Y	
Part 8	First carbon vessel breakthrough definition	Y	
Part 9	Second carbon vessel breakthrough definition	Y	
Part 10	Last carbon vessel breakthrough definition	Y	
Part 11	Flow rate limit of 4.0 cubic feet per minute	Y	
Part 12	Flow meter verification	Y	
Part 13	Maintenance requirements	Y	
Part 14	Recordkeeping	Y	
BAAQMD Condition 25835	**Applies to A-0632**		
Part 1	Backup abatement allowance	Y	
Part 2	Prohibition against using more than one train	Y	
Part 3	FID daily monitoring	Y	
Part 4	Representative monitoring	Y	
Part 5	Daily TOC log	Y	
Part 6	95% abatement efficiency requirement	Y	
Part 7	First carbon vessel breakthrough definition	Y	
Part 8	Second carbon vessel breakthrough definition	Y	
Part 9	Last carbon vessel breakthrough definition	Y	
Part 10	Flow rate limit of 4.0 cubic feet per minute	Y	
Part 11	Flow meter verification	Y	
Part 12	Maintenance requirements	Y	
Part 13	Recordkeeping	Y	

Section VI. PERMIT CONDITIONS

Condition #8869 For S-32111, S-32112, S-32113, S-32114, S-32115, and S-32116:

Fugitive Sources – Pumps & Compressor Seals:
S-32111 – Fugitive Sources – No. 17 Pump Station
S-32112 – Fugitive Sources – LPG
S-32113 – Fugitive Sources – Yard DIB
S-32114 – Fugitive Sources – No. 21 Pump Station
S-32115 – Fugitive Sources – FCC Unit
S-32116 – Fugitive Sources – Alkylation Plant

Application # 10361, Plant # 10 (2/4/1993) – Thermal Oxidizers (Parts 1 – 4)
Application # 25630, Plant # 10 (8/19/2013) – Abatement Clarification (Part 5)

Condition Parts 1, 2, and 4 only apply when A-620, A-622, A-623, A-624, A-627, or A-628 is used to exempt an applicable source from Regulation 8, Rule 18 requirements per the exemption of Regulation 8-18-110:

1. The owner/operator of A-620, A-627, and A-628 Thermal Oxidizers (Model ES-300) shall maintain each at a minimum VOC destruction efficiency of 95% by weight. The owner/operator shall operate each A-620, A-627, and A-628 (Model ES-300) at a minimum temperature of 1500 deg F. (Basis: BACT, 40 CFR 60.482-10 (c), 40 CFR 60.692-5 (a), and 40 CFR 61.242-11 (c))

2. The owner/operator of A-622 through 624 Thermal Oxidizers (Model ES-60H) shall maintain each at a minimum VOC destruction efficiency of 95% by weight. The owner/operator shall operate each A- 622 through 624 (Model ES-60H) at a minimum temperature of 1565 deg F. (Basis: BACT, 40 CFR 60.482-10 (c), 40 CFR 60.692-5 (a), and 40 CFR 61.242-11 (c))

3. The owner/operator of each Thermal Oxidizer (A-620, A-622, A-623, A624, A-627, and A-628) shall have a continuous temperature monitor. Each pump duct shall be equipped with a continuous flow monitor. (Basis: BACT)

4. The owner/operator shall monitor twice daily and record in a District approved log the temperature of each of the thermal oxidizers (A- 620, A-622, A-623, A-624, A-627, and A-628). These records shall be kept on site and made available for District inspection upon request for a period of 60 months from the date of entry. (Basis: BACT)

5. At all times, the owner/operator of each source shall comply with Regulation 8, Rule 18 requirements. The exemption of Regulation 8-18-110 does not apply unless Chevron can demonstrate abatement using a District-approved abatement device that reduces VOC emissions by a minimum of 95% by weight where reduction efficiency = VOC collection efficiency x VOC destruction efficiency. Unless usage of an abatement device (in accordance with manufacturer's specification) is not able to comply with Regulation 8, Rule 18 limits, a source shall not be placed on the Regulation 8, Rule 18 non-repairable list if an associated abatement device (or District-approved alternative) is operable.
(Basis: 2-1-403)

6. The owner/operator of A-622 and A-627 may use A-622 and A-627 as back up devices to thermal oxidizers A-620, A-623, A-624, and A-628. (Basis: 2-1-403)

Condition 25703 for S-32111

Conditions for A-629 Temporary Carbon System Vent-Scrub Vapor Phase Adsorbers, Model: VSC-200, 2 sets of 3 drums, 200 lbs each
Abating S-32111 No. 17 Pump Station Fugitive Emissions
Application # 25630, Plant # 10 (08/19/2013)

1. Whenever A-624 (thermal oxidizer) is taken out of service, the owner/operator may abate S-32111 (No. 17 Pump Station) emissions by abatement device A-629 (temporary carbon system) consisting of two separate trains, each containing three 200 lb activated carbon vessels arranged in series.
   [Basis: 2-1-106, 2-1-403]

4. The owner/operator shall only operate one of the two A-629 carbon trains at any given time. Whenever one of the A-629 trains is in use, the other train shall be physically prevented (e.g. block valve) from accepting flow.
   [Basis: 2-1-403, Cumulative Increase]

5. The owner/operator shall use a Flame Ionization Detector (FID) to monitor at least daily for total organic compounds (TOC), as C1, at the inlet of A-629 and at the outlet of each carbon vessel in series. The FID monitor shall have a resolution of at least 0.01 parts per million (ppm). Monitoring is only required when A-629 and the abated source (S-32111 No. 17 Pump Station) are in operation. The FID shall be calibrated and maintained according to U.S. EPA Method 21 and FID manufacturer specifications. For each period of A-629 operation, the owner/operator may propose for District review, based on actual measurements taken at the site during operation of the source, that monitoring frequency be changed, after the first six days of A-629 operation, based on the decline in organic emissions and/or the demonstrated breakthrough rates of the carbon vessels. Written approval by the District's Engineering Division must be received by the owner/operator prior to a change to the monitoring frequency.
   [Basis: 2-1-106, 2-1-403]

6. All TOC monitor samples shall be representative. The owner/operator shall conduct all TOC monitoring using a monitor probe fitted with a rubber stopper (or similar device) to prevent ambient air from entering the sample inlet and diluting the sample. The owner/operator shall introduce and hold the monitor probe directly into the A-629 emissions stream at each sample point. If the sample point consists of a t-joint, the monitor probe must be inserted into the main exhaust stream. The owner/operator shall design, construct, and operate the carbon system (A-629) and sampling system to allow representative sampling as defined in District Manual of Procedures, Volume IV.
   [Basis: 2-1-403]

7. The owner/operator shall record all TOC monitor readings in a daily monitoring log at the time the readings are taken.
   [Basis: 2-1-403]

8. The owner/operator of A-629 shall abate TOC emissions, as C1, by at least 95 percent or greater. The A-629 abatement efficiency shall be determined using the TOC monitoring results of Part 3.
[Basis: 2-1-106, 2-1-403]

9. The owner/operator of A-629 shall not exceed a TOC concentration at the A-629 outlet of 10~~2~~.0 parts per million by volume, as C1.
[Basis: 2-1-106, 2-1-403]

10. The owner/operator shall change out the first carbon vessel with unspent carbon upon breakthrough, defined as the detection at the vessel out of the higher of the following:
a. 10% of the inlet stream concentration to the carbon vessel, or
b. ~~2~~1000 ppmv or greater (as C1)
[Basis: Cumulative Increase]

11. The owner/operator shall change out the second to last carbon vessel with unspent carbon upon breakthrough, defined as the detection at the vessel out of the higher of the following:
a. 10% of the inlet stream concentration to the carbon vessel, or
b. ~~2~~1000 ppmv or greater (as C1)
[Basis: Cumulative Increase]

12. The owner/operator shall change out the last carbon vessel with unspent carbon upon detection at its outlet of 10~~2~~ ppmv or greater (as C1).
[Basis: 2-1-106, 2-1-403]

13. The owner/operator of A-629 shall not exceed a flow rate of 4.0 cubic feet per minute. The owner/operator shall install variable area float gauges (ball floats or similar devices) on each A-629 train to indicate A-629 flow rate and verify compliance with the 4.0 cubic feet per minute limit. The gauges shall have a minimum resolution of 0.2 cubic feet per minute.
[Basis: 2-1-106, 2-1-403]

14. Whenever TOC monitoring is conducted, the owner/operator of A-629 shall also take readings of the flow meter required in Part 10 at the same time and record the flow rate readings in the same daily monitoring log required in Part 5. The owner/operator of A-629 shall first verify that the flow meter is working (by tapping the sight glass to verify ball indicator is not stuck).
[Basis: 2-1-106, 2-1-403]

15. As A-629 shall only be used when A-624 is taken out of service, the owner/operator shall maintain A-624 according to manufacturer recommendations. All maintenance on A-624 shall be recorded in a log made available to the APCO upon request. A copy of the manufacturer preventative maintenance recommendations shall be made available to the APCO upon request.
[Basis: 2-1-403]

16. The owner/operator shall maintain the following records onsite for at least five years from date of last entry:
a. all TOC monitoring results,
b. all flow meter readings,
c. FID monitor serial number and identification,

d. FID monitor calibration results,
e. Monitor operator name,
f. reason for any periods where TOC readings were not taken,
g. date and time of all readings, and
h. date each carbon drum was taken out of service.

[Basis: 2-1-403]

Condition 25835

Conditions for A-632 Temporary Carbon System Vent-Scrub Vapor Phase Adsorbers, Model: VSC-200, 2 sets of 3 drums, 200 lbs each
Abating S-32114 No. 21 Pump Station Fugitive Emissions
Application # 25747, Plant # 10 (October 2013)

1. Whenever A-623 (thermal oxidizer) is taken out of service, the owner/operator may abate S-32114 (No. 21 Pump Station) emissions by abatement device A-632 (temporary carbon system) consisting of two separate trains, each containing three 200 lb or greater activated carbon vessels arranged in series.
[Basis: 2-1-403]

2. The owner/operator shall only operate one of the two A-632 carbon trains at any given time. Whenever one of the A-632 trains is in use, the other train shall be physically prevented (e.g. block valve) from accepting flow.
[Basis: 2-1-403, Cumulative Increase]

3. The owner/operator shall use a Flame Ionization Detector (FID) to monitor at least daily for total organic compounds (TOC), as C1, at the inlet of A-632 and at the outlet of each carbon vessel in series. The FID monitor shall have a resolution of at least 0.01 parts per million (ppm). Monitoring is only required when A-632 and the abated source (S-32114 No. 21 Pump Station) are in operation. The FID shall be calibrated and maintained according to U.S. EPA Method 21 and FID manufacturer specifications. For each period of A-632 operation, the owner/operator may propose for District review, based on actual measurements taken at the site during operation of the source, that monitoring frequency be changed, after the first six days of A-632 operation, based on the decline in organic emissions and/or the demonstrated breakthrough rates of the carbon vessels. Written approval by the District's Engineering Division must be received by the owner/operator prior to a change to the monitoring frequency.
[Basis: 2-1-403]

4. All TOC monitor samples shall be representative. The owner/operator shall conduct all TOC monitoring using a monitor probe fitted with a rubber stopper (or similar device) to prevent ambient air from entering the sample inlet and diluting the sample. The owner/operator shall introduce and hold the monitor probe directly into the A-632 emissions stream at each sample point. If the sample point consists of a t-joint, the monitor probe must be inserted into the main exhaust stream. The owner/operator shall design, construct, and operate the carbon system (A-632) and sampling system to allow representative sampling as defined in District Manual of Procedures, Volume IV.
[Basis: 2-1-403]

5. The owner/operator shall record all TOC monitor readings in a daily monitoring log at the time the readings are taken.
[Basis: 2-1-403]

6. The owner/operator of A-632 shall abate TOC emissions, as C1, by at least 95 percent or greater. The A-632 abatement efficiency shall be determined using the TOC monitoring results of Part 3. [Basis: 2-1-403]

7. The owner/operator shall change out the first carbon vessel with unspent carbon upon breakthrough, defined as the detection at the vessel out of the higher of the following:
   a. 10% of the inlet stream concentration to the carbon vessel, or
   b. 1000 ppmv or greater (as C1)
   [Basis: Cumulative Increase]

8. The owner/operator shall change out the second to last carbon vessel with unspent carbon upon breakthrough, defined as the detection at the vessel out of the higher of the following:
   a. 10% of the inlet stream concentration to the carbon vessel, or
   b. 100 ppmv or greater (as C1)
   [Basis: Cumulative Increase]

9. The owner/operator shall change out the last carbon vessel with unspent carbon upon detection at its outlet of 10 ppmv or greater (as C1).
   [Basis: 2-1-403]

10. The owner/operator of A-632 shall not exceed a flow rate of 4.0 cubic feet per minute. The owner/operator shall install variable area float gauges (ball floats or similar devices) on each A-632 train to indicate A-632 flow rate and verify compliance with the 4.0 cubic feet per minute limit. The gauges shall have a minimum resolution of 0.2 cubic feet per minute.
    [Basis: 2-1-403]

11. Whenever TOC monitoring is conducted, the owner/operator of A-632 shall also take readings of the flow meter required in Part 10 at the same time and record the flow rate readings in the same daily monitoring log required in Part 5. The owner/operator of A-632 shall first verify that the flow meter is working (by tapping the sight glass to verify ball indicator is not stuck).
    [Basis: 2-1-403]

12. As A-632 shall only be used when A-623 is taken out of service, the owner/operator shall maintain A-623 according to manufacturer recommendations. All maintenance on A-623 shall be recorded in a log made available to the APCO upon request. A copy of the manufacturer preventative maintenance recommendations shall be made available to the APCO upon request.
    [Basis: 2-1-403]

13. The owner/operator shall maintain the following records onsite for at least five years from date of last entry:
    a. all TOC monitoring results,
    b. all flow meter readings,
    c. FID monitor serial number and identification,
    d. FID monitor calibration results,
    e. Monitor operator name,
    f. reason for any periods where TOC readings were not taken,
    g. date and time of all readings, and
    h. date each carbon drum was taken out of service.
    [Basis: 2-1-403]

Section VII. APPLICABLE LIMITS AND COMPLIANCE MONITORING REQUIREMENTS

Table VII – Abatement
Applicable Limits and Compliance Monitoring Requirements

Abatement Devices (In Table II-B, but not included in Table IV)
A-0094, A-0620, A-0622, A-0623, A-0624, A-0627, A-0628, A-0629, A-0917, A-919, A-0921, A-0920, A-0922

Type of Limit	Citation of Limit	FE Y/N	Future Effective Date	Limit	Monitoring Requirement Citation	Monitoring Frequency (P/C/N)	Monitoring Type
A-0414, A-0620, A-0622, A-0623, A-0624, A-0627, A-0628 Thermal Oxidizers							
POC	Condition # 8869 ~~Part s1~~ Parts 1 and 2	Y		Minimum temperature of 1500 and 1565 degrees F, minimum VOC destruction efficiency 95% by weight	Condition #8869 Part 3	C	Temperature monitor
A-0629							
TOC	Condition # 25703 Part 6, and 7	Y		Minimum TOC destruction efficiency of 95% by weight, Outlet TOC < 2.0 ppmv as C1	Condition # 25703 Part 3	P/D	FID monitor, Records
Flow	Condition # 25703 Part 11	Y		Maximum exhaust flow rate of 4.0 CFM	Condition # 25703 Parts 11 and 12	C	Variable area float gauge, Records

STATEMENT OF COMPLIANCE

Regulation 2, Rule 6

Section 2-6-215 (Minor Permit Revision)
Per Section 2-6-215, a minor permit revision is a revision that is not a significant permit revision or an administrative permit amendment. This application does not meet the definitions of administrative permit amendment per Section 2-6-201 nor significant permit revision per Section 2-6-226. Therefore, this application is considered a minor permit revision of Chevron's Title V operating permit.

Section 2-6-402 (Fees)
Chevron has pad the required fees as specified in Regulation 3 including Schedule P.

Section 2-6-406 (Application for a Minor Permit Revision)
Chevron provided the required documents specified in Section 2-6-406.

Regulation 3

Regulation 3 requires payment of permit fees. Fees have been invoiced and paid by Chevron.

RECOMMENDATION

Revise Chevron's Title V Operating Permit to incorporate required changes related to the following sources:

A-629 Temporary Carbon System for Abating No. 17 Pump Station Fugitive Emissions (S-32103)
Vent-Scrub Vapor Phase Adsorbers, Model: VSC-200,
2 Sets of 3 Drums, 4 CFM

A-632 Carbon System – Backup Abatement – No. 21 Pump Station Fugitive Emissions
Vent-Scrub Vapor Phase Adsorbers, Model: VSC-200,
2 Sets of 3 Drums, 4 CFM

_____
Nicholas C. Maiden, P.E.
Principal Air Quality Engineer

Bay Area Air Quality Management District
Engineering Evaluation Report
Application No. 12842
Chevron Energy and Hydrogen Renewal Project

Chevron Richmond Refinery
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BAAQMD Plant No. 10

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A#12842
9/19/2008

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BACKGROUND

Chevron Products Co. (Chevron or applicant) has submitted to the Bay Area Air Quality Management District (District or BAAQMD) a permit application for an Authority to Construct/Permit to Operate for the Energy & Hydrogen Renewal Project (Renewal Project or Project) at its Richmond Refinery (Refinery or facility). The Renewal Project is intended to improve the reliability, flexibility, and energy efficiency of the Refinery. The Project does not include an increase in the permitted throughput of crude oil at the Refinery. The Project is comprised of four main components:

- Hydrogen Plant Replacement
- Reformer Replacement
- Power Plant Replacement
- Hydrogen Purity Improvements

HYDROGEN PLANT REPLACEMENT

The existing 40+ year-old two-train Hydrogen Plant (180 million standard cubic feet per day (MMSCFD) total capacity) at the Refinery would be replaced with a new two-train Hydrogen Plant (280 MMSCFD total capacity). As part of the replacement of the Hydrogen Plant, the existing Hydrogen Recovery Unit (50 MMSCFD) would be replaced with a new Hydrogen Recovery Unit (50 MMSCFD). A new Cooling Tower and Flare would also be constructed as part of the Hydrogen Plant replacement.

Hydrogen is essential to produce current cleaner transportation fuels such as California gasoline. For instance, hydrogen is used by refineries for cracking and to remove impurities such as sulfur, which is required by California fuel standards. The existing Hydrogen Plant is energy inefficient, and produces relatively impure hydrogen (95% purity).

The new Hydrogen Plant would be capable of handling several different feeds including refinery process gas (RPG), refinery fuel gas (RFG), natural gas, liquefied petroleum gas (LPG, including propane), and ammonia (NH_3). RPG is gas produced by the refinery at its process units prior to going to the RFG drums where it is mixed/blended and leaves as RFG. Each train would include back-end pressure swing adsorption (PSA) units for hydrogen purification. The tail gas from the PSA units would be used to fuel the Hydrogen Plant Reformer Furnaces. The Hydrogen Plant Reformer Furnaces would normally be fired on a combination of natural gas and PSA tail gas.

During normal operation, Chevron's new Hydrogen Plant would have the capability to use RPG, natural gas, or a combination of the two, as a feedstock to the Hydrogen Plant. Chevron would prefer to start up in most instances using as much RPG as possible as a feedstock from the beginning, but that cannot be confirmed until Chevron has operating experience with the RPG portion. Chevron may instead have to use only natural gas feedstock for startup until satisfactory hydrogen product purity is achieved, and then introduce the RPG. The duration of startup should not be significantly impacted by the feedstock combination.

The feedstock composition would be that of pipeline quality natural gas whenever 100 percent natural gas feedstock is used, and a natural gas and RPG mixture during normal operation, except that the sulfur in both feedstock streams would be removed to less than 100 parts per billion (ppb). The actual use of RPG as part of the feedstock would be contingent upon stable and safe operation of the Reformers. During turndown, the natural gas flow is decreased but the RPG flow usually is not, so the RPG provides a higher percentage of the feedstock flow for that case as compared to normal operation.

Each Hydrogen Plant Reformer Furnace would be abated by Selective Catalytic Reduction (SCR). Each furnace would have a separate SCR unit and defined exhaust point. The two trains of the Hydrogen Plant would share a Cooling Tower and a Flare.

The normal operating temperature of the Hydrogen Plant Reformer Furnace will be in excess of 1,900 degrees Fahrenheit (F). The Hydrogen Plant Reformer Furnace supplier has recommended a target warm-up rate of 90 F/hour. At this rate, it would take slightly more than 20 hours of heating to reach 1,900 F. An additional four hours would be necessary to purge the nitrogen out of the PSA unit, achieve hydrogen purity (@ 99% purity), and fully route the tail gas to the furnace. As a result, a period of 24 continuous hours would be required for startup of the Hydrogen Plant.

The dryout/warmup is a series of steps that gently removes the excess moisture present in castable monolithic refractory linings. This is accomplished by heating the Hydrogen Plant Reformer Furnace at a rate no greater than 35 F/hour. In addition, several temperature hold steps are required. When the furnace temperature reaches one of the hold steps, it is held at that temperature by maintaining a constant firing rate. The hold steps occur at approximately 200 F, 400 F, 750 F, and 1,000 F. The duration of the hold steps can be as long as 24 hours each. The length of the hold step is dependent on the thickness of the castable monolithic refractory linings. After the 1,000 F hold step, the furnace is cooled at a rate of 90 F/hour until it is brought back to ambient temperature. In total, this process can take upwards of 120 hours to ensure the proper dryout of the castable monolithic refractory linings.

The SCR units are not operated during the dryout/warmup period. Dryout/warmup periods are necessary when there are significant refractory changes or refractory replacement. There are two reasons for SCR not being used during dryout/warmup. First, during this period the temperature at the SCR does not reach the minimum required temperature of 500 F in order to inject ammonia for oxides of nitrogen (NO_x) reduction. Second, should there be any dust remaining on the castable monolithic refractory linings from construction, or generated during the dryout/warmup process, it would get trapped in, and blind (or masks), the SCR.

The new Hydrogen Plant will be owned and operated by Praxair, Inc.. However, the Hydrogen Plant will be considered to be part of the Refinery for regulatory purposes including, but not limited to, the flare monitoring and control rule requirements of District Regulations 12-11 and 12-12, and the Major Facility Review requirements of Title V.

New Equipment

The proposed new equipment (i.e., sources) for the Hydrogen Plant Replacement is as follows:

S-4449 Hydrogen Plant Train #1, 140 MMSCFD Hydrogen Produced maximum capacity

S-4450 Hydrogen Plant Train #2, 140 MMSCFD Hydrogen Produced maximum capacity

S-4451 Hydrogen Recovery Unit, 50 MMSCFD Hydrogen Recovered maximum capacity

S-4471 Hydrogen Plant Train #1 Reformer Furnace, 950 million British Thermal Units per hour (MMBtu/hr) maximum firing rate higher heating value (HHV), equipped with Low-NO_x Burners abated by **A-0302** Hydrogen Plant Train #1 SCR [Vented to **P-0302** Hydrogen Plant Train #1 Furnace Exhaust]

S-4472 Hydrogen Plant Train #2 Reformer Furnace, 950 MMBtu/hr maximum firing rate HHV, equipped with Low-NO_x Burners abated by **A-0303** Hydrogen Plant Train #2 SCR [Vented to **P-0303** Hydrogen Plant Train #2 Furnace Exhaust]

S-4465 Hydrogen Plant Cooling Tower, 36,000 gallons/minute maximum capacity [Vented to **P-0304** Hydrogen Plant Cooling Tower Exhaust]

S-6021/A-6021 Hydrogen Plant Flare, 1.6 MMBtu/hr Pilot maximum capacity HHV, [Vented to **P-0305** Hydrogen Plant Flare Exhaust]

Shutdown of Existing Equipment

The following existing equipment would be shutdown as a result of the proposed Hydrogen Plant Replacement:

S-4250 Hydrogen Plant, Trains A and B, (Total Combined Capacity 150 MMSCFD) Train A abated by **A-261** Packed Bed Scrubber De-aerator Vent (Methanol), Exhaust to P-261 and Train B abated by **A-262** Packed Bed Scrubber De-aerator Vent (Methanol), Exhaust to P-262

S-4170 Hydrogen Plant Train A Reformer Furnace F-305 (820 MMBtu/hr), Exhaust to P-126 abated by **A-260** Hydrogen Plant Train A SCR System

S-4171 Hydrogen Plant Train B Reformer Furnace F-355 (820 MMBtu/hr), Exhaust to P-127, P-128, P-129, P-130

S-4348 Hydrogen Recovery Unit (1.1 ton/hour max), Exhaust to S-6039

S-4156 Feed Furnace F-320 (41 MMBtu/hr), Exhaust to P-114

S-4157 Feed Furnace F-330 (41 MMBtu/hr, Multi-fuel), Exhaust to P-115

S-4158 Feed Furnace F-340 (48 MMBtu/hr), Exhaust to P-116

REFORMER REPLACEMENT

Reforming is a refining process that increases the octane of gasoline components. Chevron's two existing naphtha octane Reformers that were originally constructed in the 1960s and 1970s would be replaced with new equipment. The existing units utilize semi-regenerative technology that requires the Reformers to shutdown twice a year to regenerate the catalyst. The existing Reformers have a combined capacity of 71,300 barrels per day (BPD) as listed on the current Refinery Title V permit. A single Reformer would replace the two existing units. The new Reformer would utilize a Continuous Catalyst Regeneration technology that would reduce shutdowns and would operate on a three to five year turnaround cycle. The new Continuous Catalyst Regeneration Reformer (CCRR) would have a capacity of 71,300 BPD. Replacing the two existing Reformers with a single unit would reduce the number of Reformer Furnaces from eight to four. The improved operation of the new CCRR, and improved hydrogen purity, would enable the Refinery to produce more California gasoline.

New Equipment

The proposed Reformer Replacement includes the following new sources and abatement devices:

S-4452 Continuous Catalyst Regeneration Reformer, 71,300 BPD maximum capacity [Vented to **P-0308** CCRR Regeneration Vent]

S-4477 Reformer Furnace #1, 201 MMBtu/hr maximum firing rate HHV, equipped with Low-NO_x Burners abated by **A-0309** SCR

S-4478 Reformer Furnace #2, 402 MMBtu/hr maximum firing rate HHV equipped with Low-NO_x Burners abated by **A-0309** SCR

S-4479 Reformer Furnace #3, 201 MMBtu/hr maximum firing rate HHV equipped with Low-NO_x Burners abated by **A-0309** SCR

S-4480 Reformer Furnace #4, 201 MMBtu/hr maximum firing rate HHV equipped with Low-NO_x Burners abated by **A-0309** SCR

A-0309 SCR for CCRR Furnaces #1 - #4 (S-4477, S-4478, S-4479, S-4480) [Vented to **P-0309** Reformer Furnaces #1 - #4 (S-4477, S-4478, S-4479, S-4480)]

Shutdown of Existing Equipment

The following existing equipment would be shutdown as a result of the proposed Reformer Replacement:

S-4283 No. 4 Catalytic Reformer (40.3 MBPD)

S-4038 No. 4 Rheniformer Furnace, F-3550 (187 MMBtu/hr), Exhaust P-40, P-41

S-4039 No. 4 Rheniformer Furnace, F-3560 (170 MMBtu/hr), Exhaust P-40, P-41

S-4040 No. 4 Rheniformer Furnace, F-3570 (152 MMBtu/hr), Exhaust P-40, P-41

S-4041 No. 4 Rheniformer Furnace, F-3580 (77 MMBtu/hr), Exhaust P-40, P-41

S-4237 No. 5 Catalytic Reformer (31 MBPD)

S-4042 No. 5 Rheniformer Furnace, F550 (198 MMBtu/hr), Exhaust P-42, P-43
Unit Equipped with 36-Ultra Low NO_x Burners

S-4043 No. 5 Rheniformer Furnace, F-560 (133 MMBtu/hr), Exhaust P-42, P-43

S-4044 No. 5 Rheniformer Furnace, F-570 (78 MMBtu/hr), Exhaust P-42, P-43

S-4045 No. 5 Rheniformer Furnace, F-580 (51 MMBtu/hr), Exhaust P-42, P-43

POWER PLANT REPLACEMENT

The Renewal Project includes the shutdown of the five existing Boilers of Power Plant No. 1 that were constructed in the 1930s and 1940s. Each of these Boilers has a maximum firing rate ranging from 233 to 272 MMBtu/hr. These Boilers would be replaced with a new Gas Turbine utilizing Heat Recovery Steam Generation Units with Duct Burners and abated by SCR and Oxidation Catalyst. The Gas Turbine would be fired on either natural gas, or a combination of natural gas and LPG. Aqueous or anhydrous ammonia is injected into the SCR catalyst to control NO_x emissions. The Duct Burners would be fired on RFG or a combination of natural gas and RFG. Chevron currently operates two other Cogeneration Units (S-4350 through S-4353).

New Equipment

The proposed Power Plant Replacement includes the following new sources and abatement devices:

S-4473 3rd Cogeneration Gas Turbine, 550 MMBtu/hr maximum firing rate HHV. Combined Gas Turbine and HRSG equipped with Duct Burners 860 MMBtu/hr firing rate (calendar day). Combined Gas Turbine and HRSG equipped with Duct Burners 840 MMBtu/hr maximum firing rate (annual average)

S-4474 3rd Cogeneration Heat Recovery Steam Generator (HRSG) equipped with Duct Burners, equipped with Low-NO_x Burners, 350 MMBtu/hr Duct Burner maximum firing rate HHV. Combined Gas Turbine and HRSG equipped with Duct Burners 860 MMBtu/hr firing rate (calendar day). Combined Gas Turbine and HRSG with Duct Burners 840 MMBtu/hr maximum firing rate (annual average)

A-74 SCR abating both 3rd Cogeneration Gas Turbine and Heat Recovery Steam Generator

A-75 Oxidation Catalyst abating both 3rd Cogeneration Gas Turbine and Heat Recovery Steam Generator [Vented to **P-0306** 3rd Cogeneration Gas Turbine/Heat Recovery Steam Generator]

Shutdown of Existing Equipment

The following existing equipment would be shutdown as a result of the proposed Power Plant Replacement:

S-4129 Boiler No. 1 (233 MMBtu/hr)

S-4131 Boiler No. 3 (236 MMBtu/hr)

S-4132 Boiler No. 4 (235 MMBtu/hr)

S-4133 Boiler No. 5 (237 MMBtu/hr)

S-4135 Boiler No. 7 (272 MMBtu/hr)

HYDROGEN PURITY IMPROVEMENTS

The Renewal Project includes the modification of existing equipment, and the installation of new process equipment, for improving hydrogen purity. The Hydrogen Purity Improvements would include the installation of new or modified equipment at the Fluidized Catalytic Cracking (FCC) Feed Hydrotreater, Sulfur Recovery Units (SRUs), and the No. 5 H_2S Unit.

New equipment to remove hydrogen sulfide (H_2S) from the FCC Feed Hydrotreater recycle hydrogen stream includes an Amine Contactor, Amine Regenerator, and Amine Storage Tanks. Alterations of the FCC Feed Hydrotreater furnaces and modifications of he FCC Feed Hydrotreater process equipment would also be part of the Hydrogen Purity Improvements. Alterations of the TKN and Poly plant furnaces are being made in order to comply with District Regulation 9, Rule 10. The current capacity of the FCC Feed Hydrotreater (S-4253 TKC Unit) is 65,000 BPD. The proposed modifications to the FCC Feed Hydrotreater would increase the capacity to 96,000 BPD.

Nine hydrogen compressors located throughout the Refinery would be modified as part of the Hydrogen Purity Improvements to preserve the present capacity with purer hydrogen streams.

The SRU modifications include a capacity increase, new process equipment, oxygen storage capability, new Sulfur Degassing Vessel, new Sulfur Loading Rack, and the installation of an additional Acid Gas Scrubber.

Hydrogen is used in several refining processes that remove impurities that naturally occur in crude oil, and in processes that convert oil to blending stocks for transportation fuels. The purity of hydrogen affects the performance of these refinery processes. The replacement of the Hydrogen Plant and Catalytic Reformer would also significantly improve the purity of hydrogen supplied to other processing units. Within these process units, hydrogen is circulated and it removes contaminants, such as nitrogen and sulfur, from the various process streams. These improvements would enhance the Refinery's ability to refine crude oil and other refinery feedstocks, or intermediates, from around the world.

The Hydrogen Purity Improvements consist of installing equipment needed to remove H_2S from the recycle hydrogen stream in the FCC Feed Hydrotreater (S-4253 TKC Unit). The following equipment would be used for this purpose: S-4454 No. 6 H2S Plant, Recycle Amine Regenerator, and S-4456 Fresh Amine Storage Tank.

The capacity of three existing SRUs, S-4227 through S-4229, would be increased as part of this project. The modifications to the SRUs include adding process equipment and oxygen storage capability to allow oxygen enrichment into the Reaction Furnace.

Chevron would install an Acid Gas Scrubber A-4450 as part of the Hydrogen Purity Improvements. This additional acid gas scrubbing capacity, with existing A-4451, C-840 Emergency Scrubber, along with load shedding of the acid gas, would provide up to 3 hours of emergency scrubbing capacity or result in acid gas generating sources to be shutdown. Chevron would be given a permit condition limiting the acid gas feed to the three SRUs to that of the emergency scrubbing capacity. A-4450 Acid Gas Scrubber would abate #3 H2S Plant (S-4433), #4 H2S Plant (S-4434), #5 H2S Plant (S-4435), Recycle Amine Regenerator (S-4454), and the #8 NH3-H2S Plant (S-4429) and #18 NH3-H2S Plant (S-4345). The Acid Gas Scrubber (A-4450) would also be used to prevent the release of acid gas during an unscheduled loss of SRU capacity.

Each SRU would be abated by a new dedicated Wet Electrostatic Precipitator (Wet ESP), which would be installed to abate sulfuric acid (H_2SO_4) mist emissions from the SRUs. The installation of the Wet ESPs will keep the H_2SO_4 emissions from the Project from exceeding the Prevention of Significant Deterioration (PSD) trigger level. The Wet ESPs would also ensure that particulate matter (PM_{10}) emissions do not increase above the baseline emissions since the Wet ESPs would reduce the PM_{10} emissions by 90% or greater by weight. District PM_{10} Best Available Control Technology (BACT) requirements would be satisfied through the use of the Wet ESPs.

Some other changes proposed by Chevron to improve the performance of the SRUs and to comply with both sulfur dioxide (SO_2) and carbon monoxide (CO) BACT requirements include the following:

- Reduce H_2S bypassing at the thermal oxidizer, which contributes to both SO_2 formed in the stack heater and the CO destruction efficiency;
- Improve scrubbing of SO_2, which should result in more stable operation at the higher sulfur loading; and
- Reduce the number and size of upsets caused by hydrocarbon in the acid gas feed to the

SRUs, which impacts both SO_2 and CO emissions.

New Equipment

The proposed Hydrogen Purity Improvements includes the following new sources and abatement devices:

S-4436 F-2170 Stack Gas Heater No. 1 SRU, 31.9 MMBtu/hr maximum firing rate HHV [vented to **P-0151** SRU Train #1 Exhaust]

S-4437 F-2270 Stack Gas Heater No. 2 SRU, 31.9 MMBtu/hr maximum firing rate HHV [Vented to **P-0152** SRU Train #2 Exhaust]

S-4438 F-2370 Stack Gas Heater No. 3 SRU, 56.1 MMBtu/hr maximum firing rate HHV [Vented to **P-0153** SRU Train #3 Exhaust]

S-4454 #6 H_2S Plant, Recycle Amine Regenerator, 11 MMSCFD maximum capacity

S-4490 Sulfur Loading Rack, 157 LT/hour maximum capacity abated by **A-0310** Sulfur Loading Rack Caustic Scrubber [Vented to **P-0310** Sulfur Loading Rack Caustic Scrubber Exhaust]

A-4450 Acid Gas Scrubber (C-2440), 11 MMSCFD Acid Gas for abatement of: #3 H_2S Plant
(S-4433), #4 H2S Plant (S-4434), #5 H2S Plant (S-4435), Recycle Amine Regenerator (S-4454), #8 NH_3-H_2S Plant (S-4429), and #18 NH3-H2S Plant (S-4345)

A-4451 Acid Gas Scrubber (C-840), 12.5 MMSCFD Acid Gas for abatement of: #3 H_2S Plant (S-4433), #4 H_2S Plant (S-4434), #5 H_2S Plant (S-4435), Recycle Amine Regenerator (S-4454), the #8 NH_3-H_2S Plant (S-4429), and #18 NH3-H2S Plant (S-4345)

S-4456 Fresh Amine Storage Tank, 70,000 gallon maximum capacity

S-3227 Lean Amine Storage Tank, 130,000 gallon maximum capacity

S-3228 Caustic Storage Tank, 200,000 gallon maximum capacity

S-3229 Spent Caustic Storage Tank, 400,000 gallon maximum capacity

Modification of Existing Equipment

The following existing equipment (i.e., sources) would be modified as a result of the proposed Hydrogen Purity Improvements:

S-4253 TKC/FCC Feed Hydrotreater, 96,000 BPD maximum capacity

S-4435 No. 5 H_2S Plant, 9.6 MMSCFD maximum capacity

S-4227 Sulfur Recovery Unit Train #1, 345 LTD maximum capacity, abated by both **A-0020** SRU#1 Tail Gas Unit Thermal Oxidizer, 30.8 MMBtu/hr HHV maximum firing rate and **A-120** Wet Electrostatic Precipitator (ESP)

S-4228 Sulfur Recovery Unit Train #2, 345 LTD maximum capacity, abated by **A-0021** SRU#2 Tail Gas Unit Thermal Oxidizer, 30.8 MMBtu/hr HHV maximum firing rate and **A-121** Wet Electrostatic Precipitator (ESP)

S-4229 Sulfur Recovery Unit Train #3, 570 LTD maximum capacity, abated by **A-0022** SRU#3 Tail Gas Unit Thermal Oxidizer, 45.0 MMBtu/hr HHV maximum firing rate and **A-122** Wet Electrostatic Precipitator (ESP)

Other Altered Equipment

Retrofitting of Existing Furnaces with Low NO_x Burners (Reg. 9-10 Compliance)

S-4161 F-510 TKN Furnace, 61 MMBtu/hr maximum firing rate HHV, equipped with Low-NO_x Burners [Vented to **P-0311** TKN Furnace Exhaust]

S-4162 F-520 TKN Furnace, 61 MMBtu/hr maximum firing rate HHV, equipped with Low-NO_x Burners [Vented to **P-0311** TKN Furnace Exhaust]

S-4163 F-530 TKN Furnace, 61 MMBtu/hr maximum firing rate HHV, equipped with Low-NO_x Burners [Vented to **P-0311** TKN Furnace Exhaust]

S-4188 F-651 Polymer Furnace, 27 MMBtu/hr maximum firing rate HHV, equipped with Low-NO_x Burners [Vented to **P-0312** Polymer Furnace Exhaust]

S-4189 F-661 Polymer Furnace, 15 MMBtu/hr maximum firing rate HHV, equipped with Low-NO_x Burners [Vented to **P-0313** Polymer Furnace Exhaust]

PROJECT EMISSIONS

PLANT CUMULATIVE INCREASE

In general, estimates of criteria pollutant emissions (precursor organic compounds (POC), nitrogen oxides (NO_x), particulate matter (PM_{10}), sulfur dioxide (SO_2), and carbon monoxide (CO)) from the Renewal Project fall into the following categories: Combustion, fugitive components, cooling tower, and process units/miscellaneous.

Project combustion sources, including Furnaces, Cogeneration Units (Gas Turbine/Duct Burner), and Flare

The District uses a number of methodologies to estimate emissions. For combustion sources subject to the District BACT requirements, where NO_x and CO concentrations are limited, emissions are estimated using the permit condition concentration limits and either the maximum, or permitted maximum, exhaust flow rate. For SO_2 emission estimates, the total sulfur concentration contained in the fuel combusted is assumed to convert 100 percent to SO_2 emissions. For the other criteria pollutants (PM_{10} and POC), and sources which are not limited by concentration, emission factors are used to estimate the emissions. These emission factors may be available from either a vendor/manufacturer guarantee or a suitable United States Environmental Protection Agency (EPA) AP-42 emission factor.

Combustion sources in the Renewal Project, with the exception of the flare, would be equipped with continuous emission monitors for both NO_x and CO emissions. For SO_2 emissions, both the total sulfur concentrations contained in the fuel and the fuel flow would be continuously monitored. Periodic source testing will be required for the other criteria pollutants.

Project Fugitive Components

The District performed fugitive emission estimates for this project using the Correlation Equation Method in the "California Implementation Guidelines for Estimating Mass Emissions of Fugitive Hydrocarbon Leaks at Petroleum Facilities (February 1999)." The District verified that Chevron's leak detection and repair program (LDAR) would be using the approved 10,000 parts per million (ppm) pegged leaker emission factor as opposed to the 100,000 ppm emission factor, since the latter was developed using very few data points. The District also reserves the right, in the permit conditions, to approve the calculation methodology to be used in order to demonstrate compliance with emission estimates, offsets, etc. on an ongoing basis. The emission factors used in the emissions estimate are based on Chevron's LDAR for similar source categories within the Refinery. The emission factors used correspond to an average leak rate much less than the 100 ppm limit in District Regulation 8-18, or current District BACT guidelines. The LDAR program will be used to demonstrate compliance with the emission limits specified in the permit conditions that also correspond to the specific number of components associated with this project. A more detailed description of the fugitive emissions estimate is contained in the BACT section of this document.

Project Cooling Tower

The Hydrogen Plant Cooling Tower PM_{10} emissions calculation is based on a maximum drift rate (as percent of circulation) of 0.0005%. The derivation of the emission factor (0.208 pounds of PM_{10} per million gallons of water circulation rate (lb PM_{10}/MMgal)) used in the Emissions Worksheet is presented in Table 1.

Table 1 – Hydrogen Plant Cooling Tower Emissions Worksheet	
Parameter	**Value**

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A#12842
9/19/2008

Table 1 – Hydrogen Plant Cooling Tower Emissions Worksheet	
Maximum total dissolved solids (TDS) content of circulating water, mg/L or parts per million by weight (ppmw)	5,000
Maximum drift rate, % of circulation rate	0.0005%
Emission factor, lb PM_{10}/MMgal circulation rate (0.0005% * 8.33 lb/gal * 5,000 ppmw)	0.208

When this emission factor is used in the Emissions Worksheet with a maximum circulation rate of 36,000 gallons per minute (gpm), the resulting emission rate is:

(36,000 gpm) * 60 * 24 * 365/ 1,000,000 = 18,922 MMgal/year
18,922 MMgal/year * 0.208 pound (lb) PM_{10}/MMgal / 2000 = 1.97 tons/year PM_{10}

The POC emissions from the Hydrogen Plant Cooling Tower were estimated using an emission factor from EPA AP-42.

Project Process Units/Miscellaneous Units including: Sulfur Recovery Units, CCRR Vent, and Sulfur Loading Rack

Whenever available, the District uses maximum, or permitted maximum, concentrations with maximum, or permitted maximum, exhaust flow rates to determine the respective emissions. In other cases, the District uses either vendor or manufacturer's guarantees, EPA AP-42 emission factors, or other appropriate emission factors or studies. Verification of emissions is to be done either through continuous emission monitors or source testing.

Detailed Emissions Estimates contained in Appendix A

The detailed methodology used to determine the Plant Cumulative Increase/Criteria Pollutant Emissions Estimates is provided in Appendix A. Appendix A contains calculation spreadsheets (or tables) that are organized by criteria pollutant, followed by an explanation of the calculation method for each pollutant, organized by source. Each spreadsheet in Appendix A also includes the basis for the criteria pollutant emission estimates, by source.

Any reductions in emissions presented in Appendix A represent actual emission reductions used for California Environmental Quality Act (CEQA) and Prevention of Significant Deterioration (PSD) purposes only. These reductions have not been Reasonably Available Control Technology (RACT) adjusted or otherwise reviewed for compliance with District banking or offset requirements. Table 2 provides a summary of emission offsets that are required for the Renewal Project.

Table 2 – Plant Cumulative (Criteria Pollutant) Emissions Increase and Offsets required for the Renewal Project

Pollutant	Project Emission Increases (cumulative, in tons per year)	Project Emission Offsets Required (in tons per year)	Refinery Emission Reduction Credits Available (in tons per year)	Emission Reduction Credits (Banking Certificate #)
POC	69.34	79.74	236.22	TBD
NO_x	141.20	162.38	162.46	TBD
PM_{10}	47.95	47.95	45.32	TBD
SO_2	58.50	58.50	134.67	TBD
CO	147.03	Not applicable	Not applicable	Not applicable

Table 2 does not list the specific Emission Reduction Credits (ERCs) that would be used for the Project. Chevron has requested that the District issue the Authority to Construct using its existing banked ERCs, and review at a later date the ERCs from shutdown sources associated with the Renewal Project. Again, the emission reductions identified in Appendix A were used for CEQA and PSD purposes only. ERCs from the shutdown sources will be evaluated in another application to be submitted by Chevron.

For PM_{10} emissions, Chevron does not have sufficient PM_{10} ERCs in the District bank. For CEQA and PSD purposes, the Project PM10 reductions are 89.15 tons per year, since the Project increase is 47.95 tons per year, this should be adequate to offset the PM_{10} emissions increases. The banked PM_{10} ERCs of 45.32 tons per year and the shutdown of one of the Project's large Hydrogen Plant Furnaces (S-4171) alone should adequately offset the PM_{10} emissions increases. Additionally, other Project furnaces will be shutdown and Chevron has SO2 ERCs in the bank that may be used to offset PM_{10} emissions increases when adjusted by an appropriate offset ratio.

Table 3 provides a summary of PSD Emissions Increases, Contemporaneous Reductions, and Net Emissions

Table 3 – PSD Emissions Increases, Contemporaneous Reductions, and Net Emissions for the Renewal Project				
Pollutant	Project PSD Emission Increases (in tons/year or lb/day)	Contemporaneous Actual Emission Reductions for Netting (in tons/year or lb/day)	Net Emissions (in tons/year or lb/day)	PSD Trigger Levels (in tons/year or lb/day)
POC	69.87	63.09	6.78 tons/year	40 tons/year
NO_x	174.90	220.47	-45.57 tons/year	40 tons/year
PM_{10}	66.06	89.15	-23.09 tons/year	15 tons/year
SO_2	116.14	104.65	11.49 tons/year	40 tons/year
CO	278.75	184.39	94.36 tons/year	100 tons/year
H_2SO_4	16.5	18.97	-2.47 tons/year	7 tons/year
H_2SO_4	90.41 lb/day	103.94 lb/day	-13.53 lb/day	38 lb/day
H_2S	4.83	n/d*	< 10 tons/year	10 tons/year
H_2S	27.12 lb/day	n/d*	< 55 lb/day	55 lb/day

* Note: The Renewal Project H2S emissions increases alone did not exceed the PSD trigger levels without taking into account any reductions from shutdown sources at the Refinery for netting purposes.

Shakedown Period and PSD Netting

EPA regulations and guidance indicate when to start counting emission increases from a new or replacement unit at a facility for the purpose of determining applicability of PSD requirements.

According to 40 CFR 52.21(b)(3)(viii) the definition of "net emissions increase" specifies that "an increase that results from a physical change at a source occurs when the emissions unit on which construction occurred becomes operational and begins to emit a particular pollutant. Any replacement unit that requires a shakedown becomes operational only after a reasonable shakedown period, not to exceed 180 days."

The EPA's October 1990 draft "NSR Manual" (at page A.38) also provides guidance on the issue:

"An increase resulting from a physical change at a source occurs when the new emissions unit becomes operational and begins to emit a pollutant. A replacement that requires a shakedown period becomes operational only after a reasonable shakedown period, not to exceed 180 days. Since the date construction actually will commence is unknown at the time the applicability determination takes place and is simply a scheduled date projected by the source, the contemporaneous period may shift if construction does not commence as scheduled. Many States have developed PSD regulations that allow different time frames for definitions of contemporaneous. Where approved by EPA, the time periods specified in these regulations govern the contemporaneous timeframe."

Similar to EPA regulations, the maximum length of the "shakedown period" allowed under District regulations is 180 days, as specified in Regulation 2-1-411 (note that the District uses the analogous term "start-up period" instead of "shakedown period"). District Regulation 2-2-

410 provides an additional requirement for replacement sources whereby the simultaneous operation of existing and new sources involved in the replacement may not exceed 90 days. Consistent with federal PSD requirements, the District will determine PSD applicability based on emissions starting at the end of the start-up period for a replacement source (subject to the additional District requirement of no more than 90 days of simultaneous operation of the existing and new sources involved in the replacement).

Baseline Period Emissions (For Sources to be Shutdown)

The baseline period for the Renewal Project was established to be the three years prior to the submittal of the District permit application. For new/modified sources, the emission calculation procedure specified in District Regulation 2-2-605 was followed. Regulation 2-2-605 requires that the baselines be RACT-adjusted. RACT is defined differently for sources that will continue to operate or that are being shutdown, as is specified in the definition given below. As was previously indicated, for PSD and CEQA purposes a RACT adjustment is not required and, therefore, was not performed.

2-2-243 Reasonably Available Control Technology (RACT): For sources which are to continue operating, RACT is the lowest emission limit that can be achieved by the specific source by the application of control technology taking into account technological feasibility and cost-effectiveness, and the specific design features or extent of necessary modifications to the source. For sources which are or will be shut-down, RACT is the lowest emission limit that can be achieved by the application of control technology to similar, but not necessarily identical categories of sources, taking into account technological feasibility and cost-effectiveness of the application of the control technology to the category of sources only and not to the shut-down source.

TOXIC AIR CONTAMINANT EMISSIONS

The District performed a Regulation 2, Rule 5 Health Risk Screening Analysis (HRSA) as part of the evaluation of the Renewal Project permit application. The toxic air contaminant emissions calculations are shown in Appendix B. The HRSA considers the emissions from new and modified sources, and does not consider reductions in emissions that will result from the shutdown of existing sources. Table 4 includes a summary of the toxic air contaminant emission rates, in both pounds per hour and pounds per year, and the acute and chronic risk screening trigger levels specified in Regulation 2, Rule 5.

Table 4 – Renewal Project Toxic Air Contaminant Summary Table

Toxic Air Contaminant	Project Wide lb/year	Project Wide lb/hour	Acute Risk Screening Trigger Level (lb/hour)	Chronic Risk Screening Trigger Level (lb/year)
Acetaldehyde	1.80E+03	2.66E-01	None	6.40E+01
Antimony	9.96E+00	1.62E-03	None	7.70E+00
Ammonia @ 10 ppm slip	1.92E+05	2.53E+01	7.10E+00	7.70E+03
Arsenic	1.89E+01	3.06E-03	4.20E-04	1.20E-02
Benzene	1.52E+03	2.28E-01	2.90E+00	6.40E+00

Table 4 – Renewal Project Toxic Air Contaminant Summary Table				
Toxic Air Contaminant	Project Wide lb/year	Project Wide lb/hour	Acute Risk Screening Trigger Level (lb/hour)	Chronic Risk Screening Trigger Level (lb/year)
Benzo(a)anthracene	4.89E-01	7.79E-05	None	None
Benzo(a)pyrene	1.17E+00	1.89E-04	None	1.10E-02
Benzo(b)fluoranthene	6.23E-01	9.87E-05	None	None
Benzo(k)fluoranthene	3.62E-01	5.74E-05	None	None
Berylium	0.00E+00	0.00E+00	None	8.00E-02
Bromine & Compounds	9.50E-01	1.08E-04	None	86.60E+01
1,3-Butadiene	6.84E+00	7.81E-04	None	1.10E+00
Cadmium	6.87E+01	8.94E-03	None	4.50E-02
Carbon disulfide	9.03E+02	1.24E-01	1.40E+01	3.10E+04
Chlorine	1.42E+03	1.95E-01	4.60E-01	7.70E+00
Chloroform	3.19E+01	3.64E-03	3.30E-01	3.40E+01
Chromium Total	0.00E+00	0.00E+00	None	None
Chrysene	3.37E-01	4.29E-05	None	None
Copper	1.69E+02	2.58E-02	2.20E-01	9.30E+01
Cresols (fugitive only)	7.96E+00	9.08E-04	None	2.30E+04
Dibenz (a,h)anthrac ene	3.06E-02	3.74E-06	None	None
Diethanolaim ine (DEA) fugitive only	1.61E+03	1.82E-01	None	1.20E+02
Ethylbenzene	7.99E+02	1.11E-01	None	7.70E+04
Ehylene Dibromide (EDB) (fugitive only)	0.00E+00	0.00E+00	None	2.60E+00
Formaldehyde	3.09E+03	4.67E-01	2.10E-01	3.00E-04
n-Hexane	3.93E-02	4.48E-02	None	2.70E+05
Hydrogen Chloride	9.88E+03	2.70E+00	4.60E+00	3.40E+02
Hydrogen sulfide	1.25E+04	1.45E+00	9.30E-02	3.90E+02
Indeno(1,2,3-c-d)pyrene	1.36E+00	2.20E-04	None	None
Lead	6.65E+01	1.03E-02	None	5.40E+00
Manganese	4.84E+02	6.33E-02	None	7.70E+00
Mercury	2.85E+01	3.70E-03	4.00E-03	5.60E-01
Methanol	1.10E+00	1.51E-04	6.20E+01	1.50E+05
Methyl tert-Butyl Ether (MTBE) (fugitive only)	0.00E+00	0.00E+00	None	3.60E+02
Methyl Ethyl Ketone (MEK) (fugitive only)	0.00E+00	0.00E+00	2.90E+01	3.90E+04
Naphthalene	2.23E+02	2.68E-02	None	None
Nickel	2.20E+03	2.73E-01	1.30E-02	7.30E-01
Perchloroethylene (fugitive only)	8.44E+01	1.90E-02	4.40E+01	3.00E+01
Phenol	5.79E+02	7.46E-02	1.30E+01	7.70E+03
Phosphorus	1.45E+02	1.77E-02	None	2.70E+00
Polychlorinated dioxins/furans	4.82E-05	9.97E-09	None	5.70E-07
Propylene (fugitive only)	7.32E+02	8.25E-02	None	1.20E+05
Selenium	2.36E+02	3.33E-02	None	7.70E+02
Styrene	8.78E+00	1.00E-03	4.60E+01	3.50E+04
Sulfuric acid mist	4.93E+04	2.14E+01	2.60E-01	3.90E+01
Toluene	4.00E+03	6.15E-01	8.20E+01	1.20E+04
Xylenes	2.65E+04	3.31E+00	4.90E+01	2.70E+04
Zinc	4.38E+02	6.66E-02	None	1.40E+03

Table 4 – Renewal Project Toxic Air Contaminant Summary Table				
Toxic Air Contaminant	Project Wide lb/year	Project Wide lb/hour	Acute Risk Screening Trigger Level (lb/hour)	Chronic Risk Screening Trigger Level (lb/year)
Cyanide	8.94E-03	1.22E-06	7.50E-01	3.50E+02

STATEMENT OF COMPLIANCE

This section summarizes the applicable District Rules and Regulations, and describes how the proposed Renewal Project will comply with them.

District Regulation 2, Rule 2: New Source Review

The primary requirements of the District's New Source Review (NSR) rule that apply to the Renewal Project are Regulation 2-2-301: "Best Available Control Technology Requirement," Section 2-2-302: "Offset Requirements, Precursor Organic Compounds and Nitrogen Oxides, NSR," and Section 2-2-303: "Offset Requirements, PM_{10} and Sulfur Dioxide, NSR." Section 2-2-304: "PSD Air Quality Analysis" is not triggered due to the netting of emissions created by the emission reductions from shutdown sources occurring at the Refinery as a result of the Renewal Project.

Best Available Control Technology Determinations

Pursuant to District Regulation 2-2-206, BACT is defined as the more stringent of:

(a) "The most effective control device or technique which has been successfully utilized for the type of equipment comprising such a source; or

(b) The most stringent emission limitation achieved by an emission control device or technique for the type of equipment comprising such a source; or

(c) Any emission control device or technique determined to be technologically feasible and cost-effective by the APCO; or

(d) The most effective emission control limitation for the type of equipment comprising such a source which the EPA states, prior to or during the public comment period, is contained in an approved implementation plan of any state, unless the applicant demonstrates to the satisfaction of the APCO that such limitations are not achievable. Under no circumstances shall the emission control required be less stringent than the emission control required by any applicable provision of federal, state or District laws, rules or regulations."

The type of BACT described in definitions (a) and (b) above must have been demonstrated in practice and approved by a local Air Pollution Control District, California Air Resources Board

(CARB), or the EPA, and is referred to as "BACT 2." This type of BACT is also referred to as "achieved in practice." The BACT category described in definition (c) is referred to as "technologically feasible/cost-effective" and it must be commercially available, demonstrated to be effective and reliable on a full-scale unit, and shown to be cost-effective on the basis of dollars per ton of pollutant abated. This is referred to as "BACT 1." BACT specifications (for both the "achieved in practice" and "technologically feasible/cost-effective" categories) for various source categories have been compiled in the District's BACT/Toxics Best Available Control Technology (TBACT) Workbook. The BACT/TBACT Workbook is a guideline document and may not in all cases represent current BACT or the latest information available.

Table 5 indicates the sources in the Renewal Project that are required to use BACT.

Table 5 - Renewal Project Sources subject to BACT

Source	Description	NO_x	CO	POC	PM_{10}	SO_2	NPOC
Hydrogen Plant Replacement, New Sources							
S-4449	Hydrogen Plant Train No. 1	No	No	Yes	No	No	No
S-4450	Hydrogen Plant Train No. 2	No	No	Yes	No	No	No
S-4451	Hydrogen Recovery Unit	No	No	No	No	No	No
S-4471	Hydrogen Plant Train No. 1, Reformer Furnace	Yes	Yes	Yes	Yes	Yes	No
S-4472	Hydrogen Plant Train No. 2, Reformer Furnace	Yes	Yes	Yes	Yes	Yes	No
S-4465	Hydrogen Plant Cooling Tower	No	No	Yes	Yes	No	No
S-6021	Hydrogen Plant Flare	Yes	Yes	Yes	No	Yes	No
Reformer Replacement, New Sources							
S-4452	Continuous Catalyst Regeneration Reformer	No	Yes	No	No	No	No
S-4477	Reformer Furnace No. 1	Yes	Yes	Yes	Yes	Yes	No
S-4478	Reformer Furnace No.	Yes	Yes	Yes	Yes	Yes	No

Table 5 - Renewal Project Sources subject to BACT							
Source	**Description**	**NO_x**	**CO**	**POC**	**PM_{10}**	**SO_2**	**NPOC**
	2						
S-4479	Reformer Furnace No. 3	Yes	Yes	Yes	Yes	Yes	No
S-4480	Reformer Furnace No. 4	Yes	Yes	Yes	Yes	Yes	No
Power Plant Replacement							
S-4473	3rd Cogeneration Gas Turbine	Yes	Yes	Yes	Yes	Yes	No
S-4474	3rd Cogeneration Heat Recovery Steam Generator with Duct Burners	Yes	Yes	Yes	Yes	Yes	No
Hydrogen Purity Improvements, New Sources							
S-4454	Recycle Amine Regenerator	No	No	No	No	No	No
S-4490	Sulfur Loading Rack	No	No	No	No	No	No
S-4456	Fresh Amine Storage Tank	No	No	No	No	No	No
S-3227	Lean Amine Storage Tank	No	No	No	No	No	No
S-3228	Caustic Storage Tank	No	No	No	No	No	No
S-3229	Spent Caustic Storage Tank	No	No	No	No	No	No
Hydrogen Purity Improvements, Modified Sources							
S-4253	FCC Feed Hydrotreater	No	No	No	No	No	No
S-4435	No.5 H2S Plant	No	No	No	No	No	No
S-4227	Sulfur Recovery Unit No. 1	Yes	No	No	No	Yes	No
S-4436	Stack Gas Heater for SRU No. 1	Yes	No	No	No	Yes	No
S-4228	Sulfur Recovery Unit No. 2	Yes	No	No	No	Yes	No

Table 5 - Renewal Project Sources subject to BACT							
Source	Description	NO_x	CO	POC	PM_{10}	SO_2	NPOC
S-4437	Stack Gas Heater for SRU No. 2	Yes	No	No	No	Yes	No
S-4229	Sulfur Recovery Unit No. 3	Yes	No	No	No	Yes	No
S-4438	Stack Gas Heater for SRU No. 3	Yes	No	No	No	Yes	No

Notes: SO_2 Emissions from sources burning Refinery Fuel Gas are limited by permit limits on the sulfur content of the Refinery Fuel Gas System.
CCRR Reformer Furnaces S-4477 through S-4480 share a common exhaust point.
Each SRU and corresponding Stack Gas Heater share a common exhaust point.
Sources being retrofitted with Low NO_x burners to meet District Regulation 9, Rule 10 requirements are exempt from BACT per Regulation 1-115 and are not included in this Table.

BACT for Fugitive Components

The fugitive components (i.e., valves, flanges, pumps, compressors, etc.) to be installed as part of the Renewal Project would satisfy the District BACT requirements.

BACT for petroleum refinery fugitive components per the District's BACT/TBACT Workbook is the following:

- Flanges leak level of 100 ppm as methane (BACT Level 2, Level 1 not determined (n/d)).
- Valves leak level of 100 ppm as methane (BACT Level 2, Level 1 n/d).
- Pumps leak level of 100 ppm as methane (BACT Level 2).
- Compressors leak level of 100 ppm as methane (BACT Level 2).
- Pressure Relief Valves, Emergency releases vented to fuel gas recovery system, furnace, or flare with a recovery/destruction efficiency ≥98%.

The "Typical Technologies" listed in the BACT/TBACT Workbook for each component type are indicated below:

- Flanges require: graphitic gaskets.
- Valves require: Bellows Valves, Diaphragm Valves, Quarter Turn Valves, Live Loaded Valves, or Other Low-Emission Valves (District Approved).
- Pumps require: Double Mechanical Seals with Barrier Fluid, Magnetically Coupled Pumps, Canned Pumps, Magnetic Fluid Sealing Technology, or Gas Seal System vented to District-approved control device.
- Compressors require: Double Mechanical Seals with Barrier Fluid, oil ring seals with non-VOC seal/barrier fluid, or Gas Seal System vented to District-approved control device.
- District-approved fugitive component inspection and maintenance program.

The District can approve equivalent technologies. The District also requires quarterly inspections for all component types except for flanges and connectors, which require biannual inspections.

For the Renewal Project, BACT for fugitive components in heavy liquid service is defined for materials with a flash point of less than or equal to 250 F. The District's Regulation 8-18 contains a limited exemption for monitoring of fugitive components with a boiling point greater than 302 F. For this project, the District has increased the population of components that is subject to control and monitoring beyond that of Regulation 8-18 to those components in hydrocarbon service up to, and including, a flashpoint of 250 F. This hydrocarbon service definition was based on SCAQMD requirements, and is achieved in practice in that district.

For this project, Chevron proposed using results of its current LDAR program to determine emission factors for each component type. Historically, project fugitive emission estimates have used a less refined method based on the maximum allowable emissions under District Regulation 8-18 (i.e., each component at 100 ppm plus allowable pegged leaker emissions) for the purposes of determining both cumulative increase and offsets. The new approach creates a much lower allowable emissions level for the total project fugitive emissions. Any individual component would still be subject to the 100 ppm BACT limit, but, for the purposes of cumulative increase and/or offsets, the LDAR results were used for the emissions estimate. This lower emissions estimate will be enforced through the LDAR program and a permit condition corresponding to the emissions estimate using this approach for the specified component counts. Chevron must demonstrate compliance with the permitted emissions level on an ongoing basis.

The Renewal Project fugitive components that are in hydrocarbon service with a flash point less than or equal to 250 F, will be subject to permit conditions that require all fugitive components associated with the Renewal Project to meet BACT requirements, including the use of low-emission equipment, individual concentration limits, inspection and maintenance frequencies, and quarterly mass emissions calculations demonstrating compliance with a mass emissions limit corresponding to the permitted component counts.

BACT for Refinery Process Heaters (>50 MMBtu/hr)

The following BACT guidelines were reviewed for determining BACT emission rates for the Renewal Project combustion sources with a firing rate greater than 50 MMBtu/hr: BAAQMD, SCAQMD, CARB BACT Clearinghouse, and the EPA BACT/LAER Clearinghouse. The applicable BACT guidelines, and the required BACT standards for the Renewal Project, are shown in Table 6.

The Renewal Project sources with emission increases that are subject to BACT requirements are: the Hydrogen Plant Reformer Furnaces (S-4471, S-4472) and the Continuous Catalytic Regenerative Reformer Furnaces (S-4477 through S-4480).

Hydrogen Plant Furnaces

S-4471 Hydrogen Plant Train #1 Reformer Furnace (950 MMBtu/hr)

S-4472 Hydrogen Plant Train #2 Reformer Furnace (950 MMBtu/hr)

These Hydrogen Plant Reformer Furnaces will normally be fired on a combination of natural gas and Pressure Swing Absorber tail gas. Each furnace will be abated by an SCR unit and have a separate exhaust stack. The required emission limits for NO_x and CO shown in Table 6 are more stringent than those in the current District BACT/TBACT Workbook, which is being updated as a result of this Project, and are in agreement with other recent District BACT determinations. BACT for POC and PM_{10} emissions includes utilizing good combustion practice, and the use of natural gas or treated RFG with low sulfur content, rather than a specific numerical emission limit. BACT for SO_2 is the use of low-sulfur natural gas mixed with Pressure Swing Absorber tail gas, which is also low in sulfur. The Hydrogen Plant Furnaces (S-4471, S-4472) will satisfy the BACT requirement of District Regulation 2-2-301.

Continuous Catalytic Regenerative Reformer Furnaces

S-4477 CCRR Reformer Furnace (201 MMBtu/hr)
S-4478 CCRR Reformer Furnace (402 MMBtu/hr)
S-4479 CCRR Reformer Furnace (201 MMBtu/hr)
S-4480 CCRR Reformer Furnace (201 MMBtu/hr)

These CCRR Reformer Furnaces are normally fired on RFG, but would also have the capability to burn natural gas. All four furnaces will share a common exhaust stack and will be abated by a single SCR unit. The proposed emission limits for NO_x and CO (5 and 10 ppm, respectively) shown in Table 6 below meet the current District BACT guidelines. BACT for POC and PM_{10} emissions includes utilizing good combustion practice, and the use of natural gas or treated RFG with low sulfur content, rather than a specific numerical emission limit. BACT for SO_2 is a refinery-wide permit limit on the sulfur content on the RFG system, including both short-term and long-term total sulfur (TS) and H_2S limits. Short-term (or daily) limits on fuel gas would be: 100 ppm TS and 50 ppm H_2S. Long-term (or annual average) limits on fuel gas would be: 30.85 ppm TS and 18.83 ppm H_2S. The long-term limits on the RFG system will be used to create SO_2 ERCs. The continuous catalyst regeneration reformer furnaces meet the BACT requirement of District Regulation 2-2-301.

Table 6 – BACT Guidelines for Refinery Process Heaters, >50 MMBtu/hr, @3% O2

District	NO_x (ppmvd)	POC (ppmvd)	CO (ppmvd)	PM_{10} (lb/MMBtu)	SO_2 (ppmvd)
BAAQMD Achieved in Practice	10	Good Combustion Practice	50	Good Combustion Practice, Fuel Selection	Fuel Selection
BAAQMD Technologically Feasible	n/d	n/d	n/d	n/d	Fuel Selection

Table 6 – BACT Guidelines for Refinery Process Heaters, >50 MMBtu/hr, @3% O2					
District	NO_x (ppmvd)	POC (ppmvd)	CO (ppmvd)	PM_{10} (lb/MMBtu)	SO_2 (ppmvd)
SCAQMD Application No. 352869 Natural Gas Fired	5	n/d	10	n/d	n/d
SCAQMD Application No. 411357 Refinery Gas and PSA Tail Gas Fired Hydrogen Reformer	5	n/d	10	n/d	n/d
SCAQMD Application No. 337979 Natural Gas and PSA Tail Gas Fired Hydrogen Reformer	5	n/d	10	n/d	n/d
SCAQMD Application No. 341340 Refinery Gas Fired Hydrogen Reformer	5	n/d	25	n/d	n/d
SCAQMD Application No. 389926 PSA Tail Gas Fired Hydrogen Reformer	5	n/d	400	n/d	n/d
SCAQMD Application No. 326118 Refinery Gas and PSA Tail Gas Fired Hydrogen Reformer	7	n/d	n/d	n/d	n/d
BAAQMD Chevron Renewal Project S-4471, S-4472 Proposed Permit Limits	5	0.00288 lb/MMBtu	10	0.00257 lb/MMBtu	PUC-quality Natural Gas
Chevron Renewal Project S-4477 through S-4480	5	0.00539 lb/MMBtu	10	0.00745 lb/MMBtu	Refinery Fuel Gas System Sulfur Limits

Note: n/d = not determined.

BACT for Hydrogen Plant Cooling Tower

Under District NSR requirements, the Hydrogen Plant Cooling Tower S-4465 is subject to BACT for PM_{10} since emissions of PM_{10} from this source would be greater than 10 lb/day.

The District's BACT/TBACT Workbook does not specify BACT for PM_{10} emissions from Wet Cooling Towers. However, the CARB BACT Clearinghouse cites a BACT specification for PM_{10} emissions for the proposed La Paloma Power Plant Cooling Tower as the use of drift eliminators with a maximum drift rate of 0.0006%. The cooling towers for the Los Medanos Energy Center, Delta Energy Center, and Metcalf Energy Center are equipped with drift eliminators with a guaranteed drift rate of 0.0005%.

The proposed Hydrogen Plant Cooling Tower would also be equipped with drift eliminators with a drift rate of 0.0005%. The Cooling Tower drift rate is based on an equipment vendor guarantee. This technology will satisfy the BACT requirement for PM_{10} emissions from this source.

BACT for POC from a cooling tower is a combination of monitoring and repair frequency. Praxair/Chevron will be required in the permit conditions to inspect the Cooling Tower riser chamber in the cooling water return line daily for hydrocarbon leaks. The District will not require the installation of a hydrocarbon analyzer at this time since the Hydrogen Plant Cooling Tower would be permitted to only 15 days of hydrocarbon leakage during any consecutive 12-month period. Praxair/Chevron asserts that a hydrocarbon leak is unlikely. Should a hydrocarbon leak be detected, the leak must be repaired within 15 calendar days, which is consistent with other BACT determinations. If it is determined in the future that POC emissions for the Hydrogen Plant Cooling Tower are greater than originally estimated, at either a maximum daily emission rate of 36 lb/day or a maximum annual emission rate of 0.27 ton per year (which corresponds to 15 leaking days), then Chevron must submit a permit application to the District.

BACT for Hydrogen Plant Flare

The Hydrogen Plant Flare S-6021 is subject to BACT since it would emit more than 10 pounds per highest day of NO_x, CO, SO_2, and POC. BACT is not triggered for PM_{10}.

The main purpose of the flare is to dispose of hydrogen (H_2), methane (CH_4) and CO in an emergency, for safety reasons. Hydrogen and methane are not considered pollutants. The Hydrogen Plant Flare will only be used during periods of planned startup/shutdown, and periods of flaring caused by an emergency as allowed in the District-approved Flare Minimization Plan (FMP). This is consistent with BACT2 for refinery flares, which limits the flare operation to periods of emergency plant upset or breakdown. It also requires that routine venting of process gases be routed to a fuel gas recovery system. The process stream of most concern is associated with PSA 3, which handles the RPG received from Chevron. Praxair will operate a process compressor on this stream and will use this same compressor to return RPG to Chevron during most upset conditions. However, Praxair has identified certain instances where a small amount of RPG will need to be flared. These instances will be reviewed in greater detail through the District' FMP process.

The District will be including enforceable, permit condition-like, language into the Praxair FMP that will limit the operation of the flare, since this flare has triggered NSR review.

The District's BACT/TBACT Workbook states that an enclosed ground-level flare with a control efficiency of 98.5% for POC is BACT1. BACT1 for CO is undetermined at this point. The District has determined that an enclosed ground-level flare is not cost-effective for this project. This determination was based on information submitted by Chevron regarding the cost of installing an enclosed ground-level flare.

BACT2 for POC, CO, and NOx is an elevated flare, steam- or air-assisted, POC destruction efficiency >98% by weight: use of natural gas or LPG as pilot fuel. Praxair has agreed to use steam-assist to satisfy BACT during all flaring events. BACT for SO2 is not determined in the BACT/TBACT Workbook. However, the flare pilot will be fired exclusively on natural gas, which will minimize SO_2 emissions.

Also, the Hydrogen Plant Flare will be subject to the District's flare monitoring and control regulations, Regulation 12, Rule 11 and 12.

The proposed Hydrogen Plant Flare is expected to achieve a BACT2 level control efficiency of 98% by weight for POC and CO. This 98% control efficiency is based on the EPA AP-42 chapter on industrial flares and a previous determination made by the District's Advisory Council. District Regulation 12-11-401.9 requires that an efficiency of 93% be used when the heating value is less than 300 Btu/scf. However, for the purposes of both the District permit conditions and permitted emission estimates, a 98% destruction efficiency by weight may be used if the owner/operator satisfies the required parameters (H_2 content, tip velocity, and lower heating value) specified in the EPA Emission Standards Division Report ("Basis and Purpose Document on Specifications for Hydrogen-Fueled Flares," dated March 1998) and adequately monitors these required parameters. If there are any problems related to the monitoring of the parameters required to meet the 98% destruction efficiency, then 93% destruction efficiency must be used for both Regulation 12-11-401.9 and the permitted emissions.

The Hydrogen Plant Flare S-6021 will satisfy BACT2 for CO, POC, NO_x, and SO2 as required by District Regulation 2-2-301.

BACT for Continuous Catalyst Regenerative Reformer

The CCRR S-4452 is subject to BACT since it emits more than 10 pounds per highest day of CO. Chevron has adjusted the emission factors supplied by the equipment vendor due to the uncertainty of the emission values from this unit. Based on the limited emissions information available for this source category, the permitted emissions for PM10, NOx, POC and SO2 would not exceed 10 lb/highest day based on the maximum permitted concentrations and flowrate for this source. Chevron has accepted District permit conditions to limit the criteria pollutant emissions below 10 lb/highest day for all criteria pollutants other than CO.

The following BACT guidelines were reviewed for determining BACT emission rates for the CCRR vent: BAAQMD, SCAQMD, CARB BACT Clearinghouse, and the EPA BACT Clearinghouse. No applicable BACT guidelines are available for this source category.

The CCRR CO emissions were calculated using an emission factor supplied by the equipment vendor that was adjusted by Chevron for compliance assurance to 5.48 x 10^{-4} lb per barrel.

As part of the process design, UOP (the equipment vendor) estimated the CCRR vent gas CO concentration to be 252 parts per million by weight (ppmw) (270 parts per million by volume (ppmv)). CCRR vent gas CO concentrations are not well documented. Further, there are metallurgical limits on the temperature at which the regenerator can be operated, and this limits the amount of CO destruction that can occur in the regenerator. As a result, UOP will not guarantee a maximum CO concentration.

To find a suitable compliance limit, Chevron and its consultants conducted an independent search of existing regulations for limits on CO emissions from catalytic reformers but were unable to find any limits directly relevant to this application. The Refinery maximum available control technology (MACT) II rule[1] however does specify a 500 ppmv (dry basis) standard for CO from Fluid Catalytic Cracking (FCC) regenerator vents.

The District was unable to locate any BACT determinations for CO emissions from a CCRR vent. The District determined that the referenced MACT II limit for FCCs represents an appropriate CO emission limit for the CCRR vent gas. Compliance with the 500 ppmv limit will be confirmed through the periodic source testing requirements specified in Permit Conditions Parts 57, 58, and 59.

Table 7 - CCR Vent CO Emissions - Adjustments from UOP Estimates to Maximums

Pollutant	UOP Est. Concentration ppmw	UOP Estimated Emissions	Maximum Concentration ppmv	Maximum Emissions lb/yr	Maximum Emissions tons/yr
CO	252	7560 lb/yr 20.71 lb/day	500	13,993	7.0

BACT for Cogeneration Gas Turbine and Heat Recovery Steam Generator with Duct Burners

Nitrogen Oxides (NO_x)

The District BACT/TBACT Workbook specifies BACT Level 1 for NO_x for a combined-cycle Gas Turbine with a power rating ≥ 40 megawatt (MW) as a NO_x concentration not to exceed 2.0 ppmvd @ 15% O_2, averaged over one hour for natural gas firing. This emissions level has been achieved through the use of SCR with ammonia injection in conjunction with combustion modifications. BACT Level 2 is a concentration not to exceed 2.5 ppmvd @ 15% O_2 (averaged over 3 hours) when firing a combination of natural gas and RFG.

[1] 40CFR Part 63 Subpart UUU Table 8; National Emission Standards for Hazardous Air Pollutants for Petroleum Refineries: Catalytic Cracking Units, Catalytic Reforming Units, and Sulfur Recovery Units.

Since there is no published BACT determination for a Gas Turbine fired on natural gas and a combination of natural gas and liquefied petroleum gas (LPG) with HRSG Duct Burners firing RFG or a combination of RFG and natural gas, a case-by-case BACT analysis has been performed. The District has determined that BACT for NO_x for this Project is an SCR system designed to achieve 2.0 parts per million, volumetric dry (ppmvd) @ 15% O_2 (three-hour average) and 2.5 ppmvd @ 15% O2 (one-hour average). The permit condition is written using the word "and" instead of "or" since using "and" means that both limits must be exceeded to be out of compliance. This determination is based on a review of NO_x continuous emission monitoring (CEM) data that demonstrated that these emissions levels are achieved in practice at the Valero Cogeneration project permitted in 2001 (Application No. 2488 and 2695). Similar to Valero, Chevron will be required to adjust its fuel selection in order to satisfy the NO_x BACT requirement.

Two relatively new technologies are capable, under some conditions, of controlling NO_x emissions from a gas turbine to 2 ppmvd or below. These are: $SCONO_x$, manufactured by Goal Line Environmental Technologies, and XONON, manufactured by Catalytica, Inc. The District has reviewed these technologies to determine if the technologies are appropriate for this application. $SCONO_x$ is the more established of the two technologies. This system uses a potassium carbonate coated catalyst to remove both NO_x and CO, without the use of a reagent such as ammonia. There are two systems in commercial operation on a Gas Turbine of comparable size to that being used in the Renewal Project. This system has demonstrated that $SCONO_x$ can consistently achieve NO_x levels comparable to those achieved by SCR on medium-sized (~50 MW) turbines. The District considers this technology equivalent to the use of SCR for medium-sized turbines, and would approve a project that proposed its use.

XONON, developed by Catalytica, Inc., is another promising new technology for NO_x emissions control. This technology uses a flameless catalyst located inside the combustion chamber itself, which allows for the combustion reaction to proceed at a lower temperature than in conventional turbines, thus minimizing the formation of NO_x.

At the present time, the commercial availability of XONON technology is extremely limited. To date, District staff is aware of only one application, a 1.5 MW turbine in Santa Clara, California. There is no information available regarding the operation of such a system on a turbine the size of the one to be installed for the Renewal Project, which is over 25 times larger. Based on this information, XONON does not represent a technologically feasible control option for the Renewal Project.

In summary, XONON is not technologically feasible for this project. SCR and $SCONO_x$ are both feasible, and achieve equivalent NO_x reductions. Chevron's choice of SCR to achieve the NO_x BACT control levels described above are therefore acceptable.

The SCR unit will inject aqueous or anhydrous ammonia into the SCR catalyst to control NO_x emissions. The ammonia slip will be limited by permit condition to 10.0 ppmvd. While some recent projects using natural gas have been approved with ammonia slip at 5.0 ppmvd, the 10 ppmvd level is reasonable for this source because the variability of RFG qualities require some

additional allowance for ammonia slip. SCR for controlling NO_x emissions is a proven control technology that is technologically feasible, cost-effective, and achieved in practice in a wide variety of applications.

Carbon Monoxide (CO)

The District BACT/TBACT Workbook specifies BACT Level 2 for CO, firing natural gas, for a Gas Turbine with a power rating $\geq$ 40 MW, as CO emissions $\leq$ 4.0 ppmvd @ 15% O_2, achieved through the use of an oxidation catalyst. CO emissions are also minimized through the use of good combustion practices. BACT Level 1 has not been determined for this source category.

The District has determined that BACT Level 2 for the Gas Turbine firing natural gas with the HRSG Duct Burners firing refinery fuel gas is 6 ppmvd @ 15% O_2. BACT Level 1 has not been determined. This determination is based on the Valero Cogeneration project permitted in 2001 (Application No. 2488 and 2695).

The CO emissions from a Gas Turbine fired on natural gas or LPG and the duct burners fired on RFG would be reduced through the use of an oxidation catalyst to a CO concentration level not to exceed 6.0 ppmvd @ 15% O_2, averaged over any consecutive three-hour period.

In summary, achieved in practice BACT for CO is deemed to be 6.0 ppmvd CO @15% O_2, averaged over any consecutive three-hour period, for the combined exhaust from the Gas Turbine and HRSG Duct Burners during all modes of operation, except startup and shutdown. Chevron will achieve compliance with this limit through the use of good combustion practices and CO Oxidation Catalyst. Furthermore, the Renewal Project's new Cogeneration Unit will be equipped with a CO and O_2 CEM system.

Precursor Organic Compounds (POC)

The District BACT/TBACT Workbook specifies BACT Level 2 for POC, on natural gas, for a Gas Turbine with a power rating $\geq$ 40 MW, as POC emissions $\leq$ 2.0 ppmvd @ 15% O_2, achieved through the use of an oxidation catalyst or efficient Dry Low-NO_x Combustors. BACT Level 1 has not been determined. The POC emissions from the Renewal Project Gas Turbine firing natural gas, or a combination of natural gas and LPG, and the HRSG Duct Burners firing RFG, or a combination of RFG and natural gas will be reduced through good combustion practice and the use of an oxidation catalyst to a level not to exceed 2.0 ppmvd POC @ 15% O_2, based on a District-approved source test. This control technology represents BACT for this cogeneration project.

In order to demonstrate compliance with both the POC and PM_{10} emission estimates, Chevron must conduct an initial source test within 120 days of startup. The POC emission concentration limit is 2.0 ppmvd @ 15% O_2, based on a District-approved source test. After the initial source test, Chevron must conduct three quarterly tests followed by two semi-annual tests, and annual source tests thereafter. The permit conditions have been written to allow the District to require more frequent source testing if any of the test results are greater than or equal to 90% of an emissions estimate or limit.

Sulfur Dioxide (SO_2)

The proposed Cogeneration Unit (S-4473, S-4474) would have the gas turbine fired on natural gas or a combination of natural gas with LPG, and the HRSG Duct Burners fired on RFG/natural gas. The District BACT/TBACT Workbook specifies BACT for SO_2 emissions as the use of PUC quality natural gas with sulfur content not to exceed 1.0 grain/100 scf (Grains are equal to 1/7000 of a pound). A case-by-case BACT analysis was performed. To control SO_2 emissions, the sulfur levels in the RFG would need to be at the lowest achievable level.

The District has determined that in order to avoid triggering BACT for SO_2 emissions increases from existing combustion sources firing on RFG, permit conditions limiting the sulfur levels in the RFG to baseline levels for both H_2S and TS are required. The baseline RFG concentrations are 30.85 ppmvd TS and 18.83 ppmvd H_2S (for any consecutive 365-day period). Based on records provided by Chevron, the Refinery currently routinely achieves these sulfur levels in its RFG. Both blending with natural gas and scrubbing to maintain this level on an ongoing basis are feasible.

The District will also impose a permit condition consistent with other BACT determinations made at other Bay Area refineries with the maximum daily limit for the RFG of a TS concentration at 100 ppmvd (averaged over any calendar day). The maximum daily limit for the RFG is an H_2S concentration of 50 ppmvd (averaged over a calendar day).

The Renewal Project's proposal to handle crude slates with increased sulfur levels require these RFG conditions since the RFG may otherwise experience an increase in sulfur, which would result in increased SO_2 emissions from all combustion sources using RFG. Instead of accepting limits on the total fuel flow at each drum, Chevron requested a limit on the total SO_2 emissions (approximately 53 tons/year) from the RFG system plus the Cogeneration Unit Gas Turbine and Heat Recovery Steam Generator. The mass emissions limit of approximately 49 tons per year of SO_2 combined with the concentration limits creates an implied fuel flow limit.

Particulate Matter (PM_{10})

The proposed Cogeneration Unit (S-4473, S-4474) would have the Gas Turbine firing natural gas, or a combination of natural gas and liquefied petroleum gas (LPG), and the HRSG Duct Burners firing RFG or a combination of RFG and natural gas. According to the District BACT/TBACT Workbook, PM_{10} BACT Level 2 for combustion sources, such as the Cogeneration Unit, is firing California Public Utilities Commission (PUC)-quality natural gas with sulfur content not to exceed 1.0 grain/100 scf. PM_{10} BACT Level 1 has not been determined. The District BACT/TBACT Workbook does not specify a typical technology or PM_{10} emission limits for this source category. PM_{10} emissions from the Cogeneration Unit are subject to BACT requirements, and the District reviewed available emissions data to set a permit limit with a reasonable compliance margin.

The District has determined that the BACT Level 2 for the Gas Turbine firing natural gas or a combination of RFG and natural gas with the HRSG Duct Burners firing RFG or a combination

of RFG and natural gas is 0.00574 lb/MMBtu. This BACT determination is based on the Valero Cogeneration project permitted in 2001 (Application Nos. 2488 and 2695), using multiple fuels including RFG and/or natural gas or a combination of the two fuels. Chevron proposes to fire the Refinery's Gas Turbine and Duct Burners on similar multi-fuels. The Valero Cogeneration project has a permit limit of 4.65 lb/hour and a maximum firing rate of 810 MMBtu/hr for the Gas Turbine and HRSG Duct Burners. These values correspond to the 0.00574 lb/MMBtu limit, which is achieved in practice. Compliance with the PM_{10} emission limit has been consistently demonstrated since 2003 through a District-approved quarterly source testing requirement on the Valero Cogen Gas Turbine. PM_{10} emissions from the Renewal Project would be controlled by using clean-burning natural gas/treated (low-sulfur) RFG and good combustion practices.

A District permit condition would include a caveat that allows the District to re-review this PM_{10} limit if source testing demonstrates that the limit cannot be achieved while operating with a fuel selection that satisfies a BACT-level of control. Moreover, the source test policy for combustion sources utilizing SCR allows for the subtraction of ammonium sulfates, which creates a compliance margin. The District anticipates that Chevron will be able to achieve compliance with the PM_{10} emissions that Valero achieves. However, Chevron will accept permit conditions on the sulfur level in the RFG and be required to conduct source tests to demonstrate compliance with short-term and long-term emission limits.

In addition, the CO CEM will be a good indicator of good combustion practice at each source. Low CO emissions generally correspond to low particulate emissions since each is a product of incomplete combustion.

BACT for Modified Sulfur Recovery Units

As part of the Renewal Project, Chevron is modifying three existing Sulfur Recovery Units S-4227, S-4228, and S-4229 that use Wellman-Lord Tail Gas Units. Each SRU has a corresponding Stack Gas Heater S-4436, S-4437, and S-4438. This BACT determination is for each SRU and Stack Gas Heater combined.

For this application, BACT for the SRU will be triggered for SO_2, NO_x. BACT is not triggered for PM_{10}, CO, or POC. Per Regulation 2-2-301 BACT is required for modified sources with an increase in emissions which have the potential to emit 10 pounds or more per highest day. The requested increase in capacity and/or production rate from all three SRUs from the currently permitted level and the increase in both daily and annual SO_2 emissions make these SRUs modified sources per Regulation 2-1-234.1. PM_{10} emissions from SRU 1 and SRU 2 and POC emissions from all three SRUs would not exceed 10 pounds per highest day and are not subject to BACT. Chevron has accepted permit conditions to demonstrate that emissions of these pollutants from these sources would remain below 10 pounds per highest day. PM_{10} emissions from SRU 3 will be greater than 10 pounds per highest day, however there will be no increase in either the daily or annual PM_{10} emissions from SRU 3. The reduction in PM_{10} emissions from the three SRUs is due to the installation of the Wet ESPs. Chevron's proposed SRU modifications also include a significant increase in flowrate, which impacts both daily and annual emissions.

The last BACT determination for an SRU made by the District was in 2007 for the ConocoPhillips Clean Fuels Expansion Project. Prior to that, the last BACT determination made by the District for an SRU was in Application 8407 for the Shell Martinez Refinery in 1993. Both of these SRUs have SCOT Tail Gas Units. A summary of the SRU BACT determination for ConocoPhillips follows:

SO_2: 50 ppmv @ 0% O2 averaged over any consecutive 24-hours (based on Shell Application 8407, 1993 BACT determination)
NOx: 42.2 ppmv @ 7% O2 one-hour averaging (based on ConocoPhillips Ferndale Refinery)
CO: 75 ppmv @ 7% O2 one-hour averaging (based on ConocoPhillips Ferndale Refinery)

SO_2 BACT:

The SO_2 BACT determination for Chevron's SRUs included both an SO_2 emissions limit and technological control measures. This approach was taken since limited information was available on Wellman-Lord SRUs, and the District will keep the limits similar to the known performance of SCOT units. Chevron suggested some of the technological methods of operation and equipment improvements that would result in reductions of SO_2 emissions.

- 50.0 ppmv SO_2 @ 0% O2, averaged over any calendar day as determined by an SO_2 CEM. (Based on the EPA BACT/LAER Clearinghouse/BAAQMD BACT/TBACT Workbook).
- Reduce H_2S bypassing at the Thermal Oxidizer: Performance tests have detected some H_2S bypassing and breakthrough from the Thermal Oxidizers, which contributes to SO_2 formed in the stack heater. To address this (and CO destruction), Chevron will modify the Thermal Oxidizer internals for better mixing, improve the control of excess O_2 and, if deemed necessary or beneficial by the District based on computational fluid dynamics (CFD) modeling conducted by Chevron, relocate the sulfur pit vent line to the tail gas inlet line. Chevron will be using an engineering firm to perform computational fluid dynamic analysis (flow modeling) of the Thermal Oxidizers to assist in optimizing the performance.
- Improve scrubbing of SO_2: The operation of the SO_2 Absorbers will be improved by increasing the makeup sodium sulfite rate, and upgrading the piping and controls and caustic make-up rate to meet the SO2 concentration limit specified above. The controls for caustic makeup will also be upgraded for more stable operation.
- Reduce the number and size of upsets caused by hydrocarbon in the acid gas feed to the SRUs: The new 6H_2S Recovery Unit, which generates the largest acid gas feed stream, will follow Best Practice design guidelines for hydrocarbon removal. This includes sizing and internal design of the amine flash drum and carbon filtration of the amine. Improvements will be made in vent gas cooling and separation at the FCC feed hydrotreater by added/upgraded coolers in three locations. This will reduce C3 and C4 carryover into vent gas and acid gas. The PSA tail gas, which currently goes to the RLOP Gas Recovery Unit, will be re-routed to the Hydrogen Plant feed or the refinery

fuel gas system. This will reduce the GRU feedrate and improve cooling and separation at the RLOP GRU.

NO_x BACT:

The NOx BACT determination for the SRUs presented several issues, the main being the establishment of a short-term limit. As mentioned above, both ConocoPhillips Ferndale and Rodeo have had NOx BACT determinations made on their SRUs. Arizona Clean Fuels Yuma LLC also had a NOx BACT determination for a new SRU done in 2005. The Arizona permit proposed a NOx limit of 0.06 lb/MMBtu. None of these sources utilize the Wellman-Lord tail gas process used on the Chevron SRUs.

BACT determinations are often characterized as either standard or technology driven. This BACT determination is clearly technology driven, as opposed to standard driven, since at the time of issuance it was difficult to determine the extent of the reductions that will be achieved through the use of this technology. A summary of the requirements to satisfy NO_x BACT for each SRU follows:

- 50 ppmv NO_x @ 0% O_2, 3-hour average (condition to install CEM consistent with El Segundo Chevron Refinery SRUs). After reviewing 6 months worth of NO_x CEM data from the El Segundo Refinery, which also uses a Wellman-Lord Tail Gas Unit, it was determined that the highest 3-hour average concentration was 54 ppmv @ 0% O_2, from the lowest NO_x emitting SRU, which is equipped with its original burners from the 1970's. Based on discussions with a burner manufacturer, the District believes that, with the retrofit of ultra Low-NOx Burners and other technologies listed below, the Thermal Oxidizers and stack gas heaters can achieve NOx emissions below the 50 ppmv level on a continuous basis.
- Installation of pre-approved ultra Low-NO_x Burners and fuel induced recirculation (FIR) at both the Thermal Oxidizers and Stack Gas Heaters.
- Require the use of oxygen enrichment when operating at levels above original design capacities since this is how Chevron asserts it will achieve no emissions increases beyond original design levels (150 long tons per day (LTD), 150 LTD, 300 LTD). Discussions with the SRU vendor supports Chevron's assertion.
- Installation of NO_x CEMs in order to demonstrate compliance with short-term limits and annual mass emissions limits when used in conjunction with a flowmeter.
- Installation of a flowmeter. The flowmeter shall be installed in order to demonstrate compliance with the mass emissions limits from each SRU.

CO BACT ANALYSIS:

The District determined that BACT for CO was not triggered for each SRU since Chevron agreed to accept permit conditions limiting both daily and annual CO emissions at current operating levels. The daily CO emission limits correspond with the District's estimated actual daily baseline CO emissions for each SRU. The annual CO emission limits will be less than the current estimated annual CO emissions for each SRU.

In order to prevent CO BACT from being triggered, Chevron has agreed to the following requirements for each SRU as follows:

- New (ultra) Low-NO_x Burners with fuel-induced recirculation (FIR) at both the Thermal Oxidizers and Stack Gas Heaters, improved combustion/mixing efficiency, and increased Thermal Oxidizer temperature (to 1,400 F).
- The following daily and annual CO emission limits at each SRU.

SRU #1	222.72 lb/day	28.08 TPY (12 month rolling average)
SRU #2	173.52 lb/day	28.08 TPY (12 month rolling average)
SRU #3	325.44 lb/day	57.64 TPY (12 month rolling average)

- Minimum temperature set point at the Thermal Oxidizer of 1,400 F.
- Install CO CEM and flowmeter in order to demonstrate compliance with daily and annual CO emission limits at each SRU.

Chevron requested annual emissions levels that correspond to lower throughput levels and lower concentration levels than what is currently being requested on the latest data form submittal. There is a direct link between throughput and emissions and the District's emissions inventory relies on throughput in order to determine emissions per throughput for this source category. However, since Chevron will be accepting permit conditions that require both a CO CEM and a flow monitoring device these annual emissions limits shall be enforceable and will assist the District in determining the allowable annual throughput conditions that correspond to compliance with all emissions limits on each SRU.

The permit conditions are written in a manner that allows the District to finalize the throughput condition limits after compliance with all emissions limits is demonstrated. This approach was taken since there is a relationship between throughput and emissions for the three SRUs. Chevron has requested that the District use emissions estimates that correspond to lower annual throughput levels than the levels requested in the permit application. For example, Chevron requested that the Renewal Project emissions estimates be based on the flow rates that corresponds to 225 long tons (LT)/day, 225 LT/day, and 450 LT/day. Chevron recently requested SRU throughputs of 345 LT/day, 345 LT/day, and 570 LT/day. The District determined that an approach to handle Chevron's request is to use compliance with the emissions estimates to determine the corresponding allowable throughput levels. The District has determined that both throughput and emissions limits are warranted for this source category.

The SRUs' baseline CO emissions were not established by using CEM data since the three SRUs currently do not have CO CEMs. The baseline was determined using CO source test data from each of the SRUs. The CO baseline used was not adjusted downward for RACT since it was decided that there was no RACT adjustment to be made for CO emissions from the combined Thermal Oxidizer and Stack Gas Heater. The District was unable to locate any regulations in place that specifically limit the CO emissions from a Wellman-Lord Tail Gas Unit. The analysis was limited to reviewing only Wellman-Lord units operating at 1,350 F. The District staff was unable to accurately determine the reduction in CO emissions caused by raising the Thermal Oxidizer temperature from 1,350 F to 1,400 F and the reductions in CO emissions associated with upgrading the burners from a straight pipe with a pilot to ultra low-NO_x burner technology.

SRU CO emissions are abated by a Thermal Oxidizer. Source tests submitted by Chevron to the District demonstrate that increasing the Thermal Oxidizer temperature results in significant reductions in CO emissions. Chevron stated that historically the Thermal Oxidizer set point was 1,350 F. Both the increased Thermal Oxidizer set point temperature of 1,400 F and the CO CEM with flow monitoring device will help ensure that each modified SRU will comply with both the daily and annual CO emissions limits.

PM_{10} BACT:

Each SRU will be abated by a dedicated new Wet ESP, which would ensure that PM_{10} emissions do not increase above the baseline emissions. Wet ESPs typically reduce the PM_{10} emissions by 90% or greater by weight. Although SRU 3's potential to emit is greater than 10 pounds per highest day, SRU 3 (S-4229) does not trigger BACT since its PM_{10} emissions will not be increasing. The District is unaware of any Wellman-Lord SRUs being equipped with Wet ESPs. All three SRUs (S-4227 to S-4229) will be abated by Wet ESPs in order to control both PM_{10} and H_2SO_4 emissions from the SRUs. The installation of the Wet ESPs prevented these three SRUs from triggering BACT.

The District permit conditions have established placeholder-type parametric permit conditions that will ensure compliance with emissions reductions associated with the proper operation of the Wet ESPs. These parameter placeholders were selected based on discussions with Wet ESP vendors and on CARB compliance assistance program reference materials. Some of the identified parameters may include: inlet water flow rate (in gpm), transformer rectifier (TR) set secondary current readings (in milliamps), maximum inlet temperature, and pH of the water system. The District also left an opening to include any new parameters identified by either the Wet ESP manufacturer or the District. Short-term emissions limits for both PM_{10} and H_2SO_4 will be monitored through periodic source testing. The source test results will be used to demonstrate compliance with annual emission estimates.

POC BACT:

POC emissions do not trigger BACT since the highest days emissions estimate is less than 10 pounds of POC per day. The required increased Thermal Oxidizer temperature of 1,400 F will help to control any POC emissions increase. The new Low-NO_x Burners equipped with fuel induced recirculation (FIR) in both the Thermal Oxidizers and the Stack Gas Heaters of each of the SRUs should also minimize POC emissions due to better mixing and combustion.

Offsets:

Project emission increases from new/modified sources are presented in Table 2. The emission increases will be offset using the appropriate offset ratio per District Regulation 2-2. Chevron intends to use a combination of contemporaneous emission reductions and banked Emission Reduction Credits (ERCs). Contemporaneous emission reductions maintain net emissions below federal major NSR and PSD thresholds. A combination of existing banked ERCs and

contemporaneous emissions reductions would be used to offset any emissions increase associated with the Renewal Project.

Contemporaneous Emission Reductions

Chevron originally requested that the District use the POC emissions factor (0.003 lb/MMBtu) for combustion sources to be shut down that is used in condition #469 Richmond Lube Oil Project (RLOP)/Bubble. In Chevron's efforts to not exceed either the CEQA significance thresholds or PSD triggers, Chevron later requested that the District use the current EPA AP-42 combustion POC emissions factor (0.0054 lb/MMBtu) for the combustion sources to be shutdown. District Regulation 2-2-605.4 describes the process for establishing the baseline for a fully offset source stating that the baseline throughput and emission rate shall be based on levels allowed by the permit condition. Since the sources involved are included in a bubble, the "levels allowed by the permit" are the bubble limit. Providing the incremental offsets for the shutdown sources based on the difference between the emission factors assures that credits are not provided for emissions that have not been previously offset at the correct ratios. The District determined that for the combustion sources that are being shutdown as part of the Renewal Project, Chevron would provide POC offsets at an offset ratio of 1.15 to 1.0 to account for the difference in the two emissions factors.

Contemporaneous emission reductions can be used without a RACT adjustment for both CEQA and PSD purposes. The definition of Emission Reduction Credit per District Regulation 2-2-201.3 clearly states that for PSD purposes emissions are not RACT adjusted. A majority of the contemporaneous emission reductions for this project come from the shutdown of several furnaces.

All emissions reductions are subject to District Regulation 2-2-605 per many sections including: 2-2-201, 302, 303, and 606. District Regulation 2-2-243 defines RACT and the definition is broken into two parts. The first part of the definition discusses sources that would continue to operate (i.e. modified sources) and the second part pertains to closures or shutdown sources. The main difference is that RACT for sources continuing to operate is the lowest achievable emission limit but takes into account the "specific source" whereas for shutdowns RACT is the lowest emission limit that can be achieved by the application of control technology to similar, but not necessarily identical categories of sources, taking into account technological feasibility and cost-effectiveness of the application of the control technology to the category of sources only and not to the shut-down source. This ensures that ERCs given for shutdowns is fairly distributed since it uses the lowest emission rate achievable by similar but not necessarily identical categories of sources and will not penalize the low emitters.

General Requirements

Pursuant to District Regulation 2-2-302, federally enforceable emission offsets are required for POC and NO_x (as NO_2) emission increases from permitted sources at facilities, which will emit 10 tons per year or more on a pollutant-specific basis. For facilities that will emit more than 35 tons per year of NO_x (as NO_2), offsets must be provided by the applicant/permittee at a ratio of 1.15 to 1.0. Pursuant to Regulation 2-2-302.2, POC offsets may be used to offset emission

increases of NO_x.

Pursuant to District Regulation 2-2-303, emission offsets are required (at a ratio of 1.0:1.0) for PM_{10} and/or SO_2 emission increases from new/modified sources at a Major Facility if emissions of these pollutants will increase by more than 1.0 tons per year. Pursuant to Regulation 2-2-303.1, emission reduction credits of nitrogen oxides or sulfur dioxide may be used to offset PM_{10} emission increases at offset ratios determined by the District's Air Pollution Control Officer (APCO) to result in a net air quality benefit. This determination is based upon a case-by-case analysis that includes modeling, public notice, opportunity for public comment, and US EPA concurrence.

In the case of POC and NO_x offsets, District regulations do not require consideration of the location of the source of the emission reduction credits relative to the location of the proposed emission increases that will be offset. Chevron will provide offsets for this Project exclusively from offsets created at the Refinery.

Timing for Provision of Offsets

Pursuant to District Regulation 2-2-311, the applicant must provide the required valid emission reduction credits to mitigate the emission increases for the proposed project prior to the issuance of the Authority to Construct. However, District Regulation 2-2-421, allows the applicant to defer providing the offsets until the time of the annual permit renewal provided the applicant has valid Banking Certificates adequate to cover the offset obligation and that the facility does not have a cumulative increase greater than 15 tons per year for the pollutant or pollutants subject to the offset requirement(s). Chevron has provided emissions estimates and Banking Certificate inventories that show these provisions are met.

Offset Requirements by Pollutant

The quantity of offsets required is summarized in Table 2. Chevron has proposed to fully offset the cumulative increases requiring emission reduction credits from this project using its currently banked emission reduction credits. This approach assists the District expediting the issuance of the Authority to Construct since a banking/offsetting analysis, including any necessary RACT adjustments, will not be required prior to issuance. Chevron is planning to apply to bank any remaining reductions from the shutdown equipment. However, both the PSD netting and CEQA analysis used some portion of any available credits consistent with Regulation 2-4-303.2.2, and all emission reduction credits from these shutdowns must comply with the requirements in Regulations 2-4 and 2-2-605.

POC Offsets

Because the Refinery emissions are greater than 35 tons of POC per year, the POC emissions must be offset at a ratio of 1.15 to 1.0 pursuant to District Regulation 2-2-302. The cumulative increase in POC emissions from the Renewal Project is 69.34 tons per year (tpy); using an offset ratio of 1.15:1.0 requires 79.74 tpy of POC offsets.

NO_x Offsets

Because the Refinery emissions are greater than 35 tons per year of NO_x from permitted sources, Chevron must provide ERCs of NO_x at a ratio of 1.15 to 1.0 pursuant to District Regulation 2-2-302. Pursuant to District Regulation 2-2-302.2, Chevron has the option to provide POC ERCs to offset the proposed NO_x emission increases at a ratio of 1.15 to 1.0. The cumulative increase in NO_x emissions from the Renewal Project is 141.20 tpy; using an offset ratio of 1.15:1.0 requires 162.38 tpy of NO_x offsets.

PM_{10} Offsets

The cumulative increase in PM_{10} emissions from the Renewal Project is 47.95 tpy; using an offset ratio per District Regulation 2-2-303 of 1.0:1.0 requires 47.95 tpy of PM_{10} emission reduction credits.

SO_2 Offsets

The cumulative increase in SO_2 emissions from the Renewal Project is 58.50 tpy; using an offset ratio per District Regulation 2-2-303 of 1.0:1.0 requires 58.50 tpy of SO_2 emission reduction credits.

PREVENTION OF SIGNIFICANT DETERIORATION AIR QUALITY IMPACT ANALYSIS

Pursuant to District Regulation 2-2-414.1, Chevron was not required to submit a modeling analysis that estimates the air quality impacts of the Renewal Project.

PSD is not triggered by this application since the net emissions from the Renewal Project do not exceed the PSD trigger levels in Regulation 2, Rule 2. The District's PSD Agreement with EPA Region IX requires that EPA be notified of projects that net out of PSD. A letter informing the EPA that this project will net out of PSD will be sent to EPA Region IX after the Authority to Construct has been issued.

HEALTH RISK SCREENING ANALYSIS

Pursuant to the District Regulation 2, Rule 5, the District conducted a Health Risk Screening Analysis (HRSA) to determine the potential impact on public health resulting from the emissions of toxic air contaminants (TAC) from the Renewal Project's new/modified sources. The detailed HRSA results, health-risk-weighted TAC emissions input, and methodology used are presented in Appendix C of this report. Note that the District Regulation 2-5 HRSA addresses only the increase in health risks from new/modified sources, and not the reductions in health risks associated with the shut-down of existing sources.

Results:

Results of the HRSA indicate that, for this Project, the maximum incremental cancer risk is

estimated at 2 in a million, the chronic hazard index is 0.3, and the acute hazard index is 1.0. In accordance with District Regulation 2, Rule 5, these risk levels are considered acceptable. None of the individual source emissions result in a cancer risk that is greater than one in a million, nor a chronic hazard that is greater than 0.20. At these risk levels, none of the sources trigger the requirement for TBACT (Best Available Control Technology for Toxics). In addition, the Project, with a 30-day maximum lead concentration of 0.0022 $\mu g/m^3$, is approvable per the ARB Risk Management Guidelines for New, Modified and Existing Sources of Lead.

OTHER APPLICABLE DISTRICT RULES AND REGULATIONS

Regulation 1, Section 301: Public Nuisance

The proposed project's sources of air contaminants are not expected to cause injury, detriment, nuisance, or annoyance to any considerable number of persons with respect to any impacts resulting from the emissions regulated by the District.

Regulation 1, Section 521, 522, 523: CEMS, Parametric Monitoring

The District will require NO_x and CO CEMs for all of the Renewal Project furnaces and cogeneration sources. Additionally, the SRUs will be equipped with SO_2, NOx, and CO CEMs. These sources will be subject to the continuous emission monitoring requirements identified in District Regulation 1, Sections 520.4 and 522.

The District will also require many Renewal Project sources to monitor key process parameters that demonstrate compliance with permit limits, such as ammonia injection rate on units that are abated by SCR units. The sources required to install instruments to monitor process information that would be used to demonstrate compliance with permit limits are subject to the parametric monitoring requirements in District Regulation 1-523.

Regulation 2, Rule 1, Sections 301 and 302: Authority to Construct and Permit to Operate

Pursuant to District Regulation 2-1-301 and 2-1-302, Chevron has submitted an application to the District to obtain an Authority to Construct and Permit to Operate for the Renewal Project proposed sources.

Regulation 2, Rule 1, Sections 426: CEQA-Related Information Requirements

As the Lead Agency for the proposed Renewal Project, the City of Richmond is responsible for compliance with CEQA requirements. The draft and final EIR issued by the City for the Project meet the CEQA-information requirements of District Regulation 2-1-426.

Regulation 2, Rule 6: Major Facility Review

Pursuant to District Regulation 2-6-404.1, the owner/operator of the Refinery must submit an application to the District for a major facility review permit modifications prior to commencing operation of the proposed new sources in accordance with District Regulation 2-6-404.3.

Regulation 2, Rule 7: Acid Rain

S-4473 gas turbine and S-4474 heat recovery steam generator with duct burners may be subject to portions of Title IV of the federal Clean Air Act. The requirements of the Acid Rain Program are outlined in 40 Code of Federal Regulations (CFR) Part 72. The specifications for the type and operation of CEMs for pollutants that contribute to the formation of acid rain are given in 40 CFR Part 75.

District Regulation 2, Rule 7 incorporates by reference the provisions of 40 CFR Part 72. Pursuant to 40 CFR Part 72.30(b)(2)(ii), depending on the amount of power sold to the commercial grid, the cogeneration unit may become subject to the Acid Rain permit program. If the Cogeneration unit becomes subject to the Acid Rain permit program provisions, then Chevron must submit an Acid Rain permit application to the District at least 24 months prior to the date on which the unit commences operation. Pursuant to 40 CFR Part 72.2, "commence operation" includes the start-up of the unit's combustion chamber.

Provisions in §§72.2 through 72.6, and §§72.10 through 72.13 may apply to this facility. The new cogeneration unit is expected to comply with the applicable sections of 40 CFR Part 72, which will be reviewed in the future Acid Rain permit application.

Regulation 6, Rule 1: Particulate Matter and Visible Emissions – General Requirements

The Renewal Project sources are expected to comply with District Regulation 6-1, including Sections 301: Ringelmann No. 1 Limitation, 302: Opacity Limitation, with visible emissions not to exceed 20% opacity, and Section 310: Particulate Weight Limitation, with particulate matter emissions of less than 0.15 grains per dry standard cubic foot (dscf) of exhaust gas volume.

All Renewal Project combustion sources are fueled with gaseous fuels and are expected to comply with the grain loading limit indicated in District Regulation 6-1-310.

The S-4465 Hydrogen Plant Cooling Tower, is also expected to comply with the requirements of Regulation 6-1 since the Cooling Tower PM_{10} emissions are controlled by the use of a Cooling Water Tower equipped with drift eliminators with a guaranteed drift rate of 0.0005%.

PM_{10} emissions associated with the construction of the Renewal Project sources are exempt from District permit requirements but are subject to Regulation 6-1. The EIR for the project includes mitigation measures for construction activities that would require the use of water and/or chemical dust suppressants to minimize PM_{10} emissions and prevent visible particulate emissions.

The Renewal Project turbines, heat recovery steam generators, process heaters, and combustion sources all burn gaseous fuels and are expected to comply with District Regulation 6-1. These sources are subject to Regulations 6-1-301, 6-1-305, and 6-1-310.3. Regulation 6-1-301 is a requirement that visible emissions may not exceed 1.0 Ringelmann for more than 3 minutes/hour. Regulation 6-1-305 is a requirement that a unit may not emit visible particles that

fall outside of the facility's property. Regulation 6-1-310.3 is the grain-loading limit for heat transfer operations of 0.15 grains filterable particulate/dscf @ 6% O2. The sources burn gaseous fuels and are expected to comply with these requirements.

The SRUs are subject to District Regulations 6-1-301, 6-1-305, 6-1-310, 6-1-311, 6-1-330, and 6-1-501. Regulations 6-1-301 and 6-1-305 were described in the paragraph above. Regulation 6-1-310 is the general grain-loading limit of 0.15 grains filterable particulate/dscf. Regulation 6-1-311 is the process weight limit. Regulation 6-1-330 has a limit of 0.08 grains/dscf of SO_3 or H_2S0_4, or both, expressed as 100% H_2S0_4, exceeding 0.08 grains/dscf of exhaust gas volume. "Filterable particulate" means particulate as measured by District Source Test Method ST-15, Particulate.

The PM_{10} emissions from each of the SRUs will be abated by Wet ESPs. Therefore the SRUs are expected to comply with Regulations 6-1-301, 6-1-305, 6-1-311, and 6-1-330. The SRUs are not generally sources of visible emissions and testing for the sulfuric acid mist standard in District Regulation 6-1-330 is feasible and will be performed on a periodic basis. It is not feasible to test the existing units for the filterable particulate standards in Regulations 6-1-310 and 6-1-311 at this time because the SRUs do not have the required ports for source testing. The new unit will have the ports and will be tested on an annual basis.

In order to demonstrate compliance with PM_{10} emission estimates, Chevron must conduct an initial source test within 120 days of startup. After the initial source test, Chevron must conduct three quarterly tests followed by two semi-annual tests and annual source tests thereafter. The permit conditions have been written to allow the District to require more frequent source testing if any of the results are either greater than or equal to 90% of an emissions estimate or limit.

The magnitude of the limit in Section 6-1-311 is determined by the process weight rate of the unit. The facility will be required to perform an initial and annual source test to assure compliance with Sections 6-1-310, 6-1-311, and 6-1-330. At this time, the filterable particulate concentration and mass emissions will be determined. The SRUs are expected to comply with Sections 6-1-310 and 6-1-311, especially because controlled sulfur recovery units generally do not have visible emissions, which are indicators of high particulate emissions.

Therefore, the SRUs are expected to comply with all of the Regulation 6-1 standards.

Regulation 7: Odorous Substances

The purpose of Regulation 7 is the general control of odorous compounds. All of the Renewal Project sources are expected to comply with Regulation 7. Ammonia is mentioned specifically in Regulation 7. H_2S is not specifically mentioned in Regulation 7 other than to direct the reader to Regulation 9, Rule 2. However, Regulation 7-301 and 302 have a general limit on odorous substances and a limit on odorous substances at or beyond the property line that may apply to H_2S emissions.

Ammonia

Regulation 7-302 prohibits the discharge of odorous substances, which remain odorous beyond the facility property line after dilution with four parts odor-free air. Regulation 7-302 limits ammonia emissions to 5,000 ppmvd. Because the ammonia slip emissions from the proposed combustion sources equipped with SCR will be limited by permit condition to 10 ppmvd, the facility is expected to comply with the requirements of Regulation 7.

The Renewal Project includes process heaters with SCR and modifications to SRUs, which are sources of ammonia. Ammonia is used at process heaters with SCR for abatement of NOx. SRUs burn ammonia that is concentrated in the sour gas. District Regulation 7-303 limits the concentration of ammonia from Type A emission points to 5,000 ppm. A Type A emission point is defined in District Regulation 1-230 as: "An emission point, having sufficiently regular geometry so that both flow volume and contaminant concentrations can be measured and where the nature and extent of air contaminants do not change substantially between a sampling point and the emission point." There is no correction for oxygen concentration. The heaters will comply because the heaters have a limit of 10 ppmv ammonia @ 3% oxygen. It is expected that the SRU will comply because tests for ammonia at the other SRUs have measured concentrations less than 10 ppm @ 15% O2. The concentration of ammonia in the stacks of both source categories will be measured by source test after construction.

Regulation 8: Organic Compounds

The S-4473 Gas Turbine is exempt from District Regulation 8, Rule 2: "Miscellaneous Operations" per District Regulation 8-2-110 since natural gas and LPG will be fired exclusively at those sources.

The remaining Renewal Project combustion sources are fired on gaseous fuels and are expected to comply with the requirements of Regulation 8, Rule 2.

Cooling towers are exempt from this rule, in accordance with Section 8-2-114, if best modern practices are used. The District has determined best modern practices for cooling towers are as follows: daily visual inspection, water sampling and analysis for indicators of hydrocarbon leaks once per shift. Chevron will use best modern practices.

The use of solvents for cleaning and maintenance at the Renewal Project sources is expected to comply with District Regulation 8, Rule 4, "General Solvent and Surface Coating Operations," Section 302.1 by emitting less than 5 tons per year of volatile organic compounds.

Regulation 8, Rule 10: Process Vessel Depressurization

Process vessels contained in components of the Renewal Project (Hydrogen Plant, Continuous Catalytic Regenerative Reformer, and Hydrogen Purity Improvements) will be subject to Regulation 8, Rule 10. Section 301 of the rule requires that the emissions during depressurizing be controlled by an abatement device or the fuel gas system until the vessel is as close to atmospheric pressure as possible, but at least until the partial pressure of organic compounds in the vessel is less than 4.6 psig. Section 302 requires that no process vessel may be opened to the atmosphere unless the internal concentration of total organic compounds has been reduced prior

to release to the atmosphere to less than 10,000 ppmvd, with the following exception - vessels may be opened when the concentration of total organic compounds is 10,000 ppmvd or greater provided that the total number of such vessels opened with such concentration during any consecutive five year period does not exceed 10% of the total process vessel population, the organic compound emissions from the opening of these vessels does not exceed 15 pounds per day and the vessels are not opened on any day on which the APCO predicts an exceedance of a National Ambient Air Quality Standard for ozone or declares a Spare the Air Day. The Renewal Project sources that are subject to Regulation 8, Rule 10 are expected to comply with these requirements.

Regulation 8, Rule 18: Equipment Leaks

The Renewal Project fugitive components - valves, flanges, pumps, compressors, pressure relief devices - are subject to District Regulation 8, Rule 18. The rule has total organic leak limits of 100 ppmvd for valves and flanges, and 500 ppmvd for pumps, compressors, and pressure relief devices. These are "work-practice" standards. The facility is obligated to test the components for leaks on a periodic basis and to repair the leaks. A small percentage of non-repairable leaks are allowed until the next turnaround or five years, whichever is sooner. The facility has an inspection program for this regulation and is expected to comply with these standards for the new sources because the components will meet BACT, which was defined in Section 3.4 of this evaluation.

Regulation 8, Rule 28: Episodic Releases from Pressure Relief Devices at Petroleum Refineries and Chemical Plants

District Regulation 8, Rule 28 applies to pressure relief devices (PRD) installed on refinery equipment. Regulation 8-28-302 applies to PRDs on new or modified sources. It requires that these PRDs comply with all requirements of Regulation 2, Rule 2, including BACT. BACT Level 1 is currently a rupture disk with a vent to a fuel gas recovery system, furnace, or flare with a recovery/destruction efficiency of 98%. The District has determined that rupture disks may not be feasible where there are a high number of pressure cycles and high temperatures and would require additional maintenance since the rupture disks would have to replaced/repaired if a rupture occurs. The perceived advantage of the rupture disks is that it indicates whether there has been flow to the fuel gas recovery system. If an event occurs associated with flaring, knowing that the vessel was vented to the flare would aid in a causal analysis. District Regulation 12, Rule 11 monitoring and Refinery data will enable the District staff to determine whether venting of the vessel occurred by reviewing the pressure data available for all vessels.

Existing PRDs associated with the Renewal Project's modified process units are also subject to the standard. These PRDs will be subject to BACT Level 2, which is a vent to a fuel gas recovery system, furnace, or flare with a recovery/destruction efficiency of 98%.

The sulfur pits are not subject to Regulation 8, Rule 28, because Section 8-28-101 states that the rule applies to equipment handling gaseous organic compounds at petroleum refineries. The sulfur pits do not handle gaseous organic compounds.

Permit conditions with the BACT requirement will be added to these units. The Refinery is expected to comply with this requirement.

Regulation 9: Inorganic Gaseous Pollutants

Regulation 9, Rule 1: Sulfur Dioxide

Regulation 9, Rule 1 establishes emission limits for sulfur dioxide from all sources and applies to the combustion sources at this facility. Section 301 (Limitations on Ground Level Concentrations) prohibits emissions which would result in ground level SO_2 concentrations in excess of 0.5 ppmvd continuously for 3 consecutive minutes, 0.25 ppmvd averaged over 60 consecutive minutes, or 0.05 ppmvd averaged over 24 hours. Section 302 (General Emission Limitation) prohibits SO_2 emissions in excess of 300 ppmvd (dry). The Renewal Project sources are not expected to cause ground level SO_2 concentrations in excess of the limits specified in Regulation 9-1-301 and should comply with Section 302. The SO_2 emissions from combustion sources will be limited on a refinery-wide basis by permit limits on the refinery fuel gas system. The fuel gas system will be limited to: 50 ppmvd H_2S averaged over a calendar day, 18.83 ppmvd H_2S averaged over any consecutive 365 day period, 100 ppmvd total sulfur averaged over a calendar day, and to 30.85 ppmvd total sulfur over any consecutive 365 day period. It is anticipated that SO_2 emissions at the facility will be decreased due to the implementation of the Renewal Project.

The combustion sources and the modified SRUs are sources of SO_2 emissions. These sources are not subject to the 300-ppm limit in District Regulation 9-1-301 because the refinery complies with the exemption in Regulation 9-1-110. The exemption requires ground level monitoring and compliance with the ground level concentration limit.

The modified SRUs are subject to the limit of 250 ppmv SO_2, dry, at zero percent O_2, in Regulation 9-1-307. The sources will be subject to continuous monitoring by Regulations 1-520, 1-522, and 9-1-502, which will ensure compliance.

Regulation 9, Rule 2, Hydrogen Sulfide

The Refinery is subject to the requirements of District Regulation 9, Rule 2. The Refinery utilizes ground level monitoring of H_2S to ensure compliance with the ground level concentration limits of 0.06 ppmvd averaged over three consecutive minutes or 0.03 ppmvd averaged over any 60 consecutive minutes.

H_2S is very odorous and is one of the compounds generated by various pieces of equipment in the refinery. Most of the H_2S in the refinery is concentrated in sour gas streams that are sent to the SRUs, where H_2S is converted to elemental sulfur. The SRUs are not expected to be a significant source of H_2S because any residual H_2S that exits the SRU will be burned in a stack gas heater.

Many pieces of equipment that are included in the Renewal Project can be sources of fugitive H_2S. After the implementation of the Renewal Project, the Refinery is required to continue to

monitor for H_2S and demonstrate ongoing compliance with Regulation 9, Rule 2. Therefore, the facility is expected to comply with the requirement.

The Sulfur Loading Rack, will handle molten sulfur that contains less than 10 ppmw H_2S. Additionally, the tank and truck rack H_2S emissions will also be controlled by a scrubber.

The District maintains and operates three air monitoring stations that measure ambient H_2S levels in the vicinity of the Refinery located at: (1) Point Richmond, (2) Richmond - 7th Street, and (3) Rodeo. Chevron operates three H_2S ground level monitoring stations. Each is located on Refinery property on the perimeter of the Refinery. One is located at the Castro Street side of the Refinery (Castro Street), the second is located at the Gertrude Street side of the Refinery (Gertrude Street), and the third is located above the Refinery on the bluff where tanks are located (Golden Gate).

Also, Chevron maintains an H_2S monitoring system at the SRUs. This system detects ambient levels of H_2S and, when required, activates an alarm system, which indicates the location and concentration of leaks. When H_2S levels exceed 10 ppm, a panel low alarm sounds in the SRU control house for that location. If levels exceed 20 ppm, a second panel high alarm sounds. Each event activates a field warble horn and a Control Board alarm for initiation of appropriate operational emergency response.

The monitoring system consists of 19 Model S214 and one Model S4000T General Monitors Smart H_2S Sensor Units (Electrical Classification Class I, Division 1) that are strategically located throughout the SRU Complex at the Refinery. Sensor elements within each unit utilize continuous diffusion adsorption type metal oxide semiconductor (MOS) technology to detect H_2S. In 2002, all units were upgraded from Model Type ST200 to Model Type S214. One unit was upgraded to Model S4000T in 2006. MOS sensors elements have a typical lifespan of three to five years. Regardless, because the units are classified as safety devices, Chevron tests and calibrates each sensor element on a monthly schedule. Defective sensor elements, if any, are replaced accordingly.

Regulation 9, Rule 3: Nitrogen Oxides from Heat Transfer Operations

The Renewal Project combustion sources listed below will comply with the Regulation 9-3-303 NO_x limits by complying with more stringent permit limits. This rule only applies to heaters greater than 250 MMBtu/hour.

> S-**4471** Hydrogen Plant Train #1 Reformer Furnace, 950 MMBtu/hour maximum firing rate higher heating value (HHV), equipped with Low-NO_x Burners abated by **A-0302** Hydrogen Plant Train #1 Selective Catalytic Reduction (SCR) [Vented to **P-0302** Hydrogen Plant Train #1 Furnace Exhaust]
>
> S-**4472** Hydrogen Plant Train #2 Reformer Furnace, 950 MMBtu/hour maximum firing rate HHV, equipped with Low-NO_x Burners abated by **A-0303** Hydrogen Plant Train #2 SCR [Vented to **P-0303** Hydrogen Plant Train #2 Furnace Exhaust]

S-4474 3rd Cogeneration Heat Recovery Steam Generator (HRSG) equipped with Duct Burners, equipped with Low-NO_x Burners, 350 MMBtu/hr Duct Burner maximum firing rate HHV. Combined Gas Turbine and HRSG equipped with Duct Burners 860 MMBtu/hr firing rate (calendar day). Combined Gas Turbine and HRSG with Duct Burners 840 MMBtu/hr maximum firing rate (annual average)

S-4478 Reformer Furnace #2, 402 MMBtu/hour maximum firing rate HHV equipped with Low-NO_x Burners abated by **A-0309** SCR

Regulation 9, Rule 7: Nitrogen Oxides and Carbon Monoxide from Industrial, Institutional, and Commercial Boilers, Steam Generators, and Process Heaters

The proposed Renewal Project Heat Recovery Steam Generators are exempt from the standards of Regulation 9, Rule 7, Section 301, which limits NO_x emissions to 30 ppmvd dry @ 3% O_2 and CO emissions to 400 ppmvd dry @ 3% O_2 per Regulation 9-7-110.5.

Regulation 9, Rule 9, Nitrogen Oxides from Stationary Gas Turbines

The proposed combustion Gas Turbine S-4473 will be limited by permit condition to NO_x emissions of 2.5 ppmvd (1-hour average) or 2.0 ppmvd (3-hour average) @ 15% O_2. The Turbine will therefore comply with the less stringent District Regulation 9-9-301.3 NO_x limitation of 9 ppmvd @ 15% O_2.

Regulation 9, Rule 10, Nitrogen Oxides and Carbon Monoxide from Boilers, Steam Generators and Process Heaters in Petroleum Refineries

All new and/or modified process heaters will be subject to current BACT limits for NO_x and CO, which are more stringent, instead of the Regulation 9, Rule 10 limits, which apply to existing process heaters.

Regulation 10: Standards of Performance for New Stationary Sources

District Regulation 10 incorporates by reference the provisions of Title 40 CFR Part 60. The applicable subparts of 40 CFR Part 60 include Subpart A, "General Provisions" and Subpart KKKK, "Standards of Performance for Stationary Combustion Turbines." Subpart KKKK exempts sources subject to it from Subparts Da, Db, Dc, and GG. The proposed Gas Turbines and Heat Recovery Steam Generators comply with all applicable standards and limits prescribed by these regulations. The applicable emission limitations are summarized in Table 8 below:

Table 8			
Source	**Requirement**	**Emission Limitation**	**Compliance Verification**
Gas Turbine and HRSG with Duct Burners S-4473, S-4474	Subpart KKKK	25 ppm NO_x at 15% oxygen on natural gas	Sources limited by permit condition to 2.5 ppmvd NO_x averaged over any 1-hour at 15% O_2, dry and 2.0 ppmvd NOx averaged over any 3-hour period @ 15% O_2
		74 ppm NO_x at 15% oxygen on other fuels other than natural gas	Sources limited by permit condition to 2.5 ppmvd NO_x averaged over any 1-hour at 15% O_2, dry and 2.0 ppmvd NOx averaged over any 3-hour period @ 15% O_2
		0.06 lb SO_2/MMBtu heat input	Project maximum SO_2 content in fuel of 0.0019 lb SO2/MMBtu
		0.9 lb SO_2/MW-hour	Projected emissions of 0.019 lb SO_2/MW-hour from the proposed Renewal Project Gas Turbine alone

Regulation 11, Rule 10: Hexavalent Chromium Emissions from Cooling Towers

The Refinery has not used chromium based water treatment since 1989, and is expected to continue to comply with the requirements of District Regulation 11, Rule 10.

Regulation 11, Rule 12: NESHAP from Benzene Waste Operations

The Refinery is currently subject to the general provision portions of 40 CFR Part 60 Subpart FF. The Refinery will continue to be subject to 40 CFR Part 60 Subpart FF after implementation of the Renewal Project and is expected to comply with this regulation.

Regulation 12, Rule 11, Flare Monitoring at Petroleum Refineries and Regulation 12, Rule 12, Flares at Petroleum Refineries

The new Hydrogen Plant will have a Hydrogen Plant Flare S-6021 that will only flare hydrogen, pressure swing absorption gas, and refinery fuel/process gas during startups and shutdowns, or if there is an emergency upset. District Regulation 12, Rules 11 and 12, applies to petroleum refineries, which are defined for the purposes of the rule as: "A facility that processes petroleum, as defined in the North American Industrial Classification Standard No. 32411 and including any associated sulfur recovery plant."

Since the Hydrogen Plant may handle refinery process gas, the Hydrogen Plant Flare will be subject to BAAQMD Regulation 12, Rules 11 and 12. The flare will be used exclusively to burn hydrogen, pressure swing absorption gas, and refinery process/fuel gas that is generated or

received by the plant, and will fire natural gas exclusively in the pilots for the flare. The process streams and the natural gas pilot both have inherently low sulfur content. The Hydrogen Plant will use refinery process/fuel gas as a feed stream. The Hydrogen Plant Flare will also be subject to the monitoring requirements of District Regulation 12, Rules 11 and 12. Regulation 12-12 requires refineries such as Chevron to reduce emissions from flares by minimizing the frequency and magnitude of flaring. Both Chevron and Praxair have submitted Flare Minimization Plan (FMP) updates for the Renewal Project per Regulation 12-12.

STATE REQUIREMENTS

The Refinery is subject to the Air Toxic "Hot Spots" (ATHS) Program contained in the California Health and Safety Code Section 44300 et seq. Chevron has previously prepared a facility-wide Health Risk Assessment under the ATHS program, and is required to update its toxics emissions inventory on an annual basis. The Renewal Project is not expected to change the facility's ATHS program status (i.e., "Level 0").

OTHER FEDERAL REQUIREMENTS

40 CFR Part 60 - Subpart A, NSPS General Provisions

The Refinery is currently subject to the general provision portions of 40 CFR Part 60 Subpart A. According to documents included in the permit application submitted to the District, the Refinery will continue to be subject to 40 CFR Part 60 Subpart A after implementation of the Renewal Project and is expected to continue to comply with this regulation.

40 CFR Part 60 - Subpart J, NSPS for Petroleum Refineries

The following sources are subject to Subpart J: S-4227 Sulfur Plant Claus Unit, S-4228 Sulfur Plant Claus Unit, S-4229 Sulfur Plant Claus Unit, S-4471 Train 1 Hydrogen Plat Furnace, S-4472 Train 2 Hydrogen Plant Furnace, S-4473 Hydrogen Plant Cogeneration Turbine 3, S-4474 Heat Recovery Steam Generation 3, S-4477 CCRR 1 Preheat Furnace, S-4478 CCRR 2 Reheat Furnace, S-4479 CCR 3 Reheat Furnace, S-4480 CCRR 4 Reheat Furnace.

60.104 Standards for Sulfur Oxides.

60.104(a)(1): Fuel gas H_2S limited to 230 mg/dscm (0.10 gr/dscf) except for gas burned as a result of process upset or at flares from relief valve leaks or other emergency malfunctions.
60.104(a)(2)(i): Limit on sulfur dioxide emissions from Claus sulfur recovery plants of 250 ppmv, dry at 0% O2.

The Refinery's fuel system and the Claus units are already subject to these respective emission limits and will continue to be subject.

60.105: Monitoring of emissions and operations.

The Refinery's fuel system is already equipped with H_2S CEMs, which will remain in service. Claus units S-4227, S-4228 and S-4229 are already equipped with SO_2 CEMs, which will remain in service.

According to documents included in the permit application submitted to the District, the sulfur content of the pipeline natural gas will be documented using information provided by the gas supplier and will be required to do so by permit condition on a daily basis.

On June 24, 2008, EPA published in the Federal Register final amendments to the current standards of performance for petroleum refineries and separate standards of performance for new, modified, or reconstructed process units at petroleum refineries (New Source Performance Standards, Subparts J and Ja, published at 73 Federal Register 35838). Subpart J provides for an effective date of June 24, 2008 for flare requirements, an effective date of May 14, 2007 for FCC Regenerators, fuel gas combustion devices, and Sulfur Recovery Units. Subpart Ja has an effective date of June 24, 2008 for flare requirements, and an effective date of May 14, 2007 for FCCUs, FCUs/cokers, fuel gas combustion devices, process heaters, and Sulfur Recovery Units. The EPA stayed the effective date of the rule (Subpart Ja) for the newly promulgated standards of performance for new, modified, or reconstructed process units at petroleum refineries. The effective date for the final rule promulgating amendments to the current standards (Subpart J) of performance for petroleum refineries is not changing and remains June 24, 2008. When the EPA stay ends, the District will re-evaluate applicability based on the outcome of the changes.

40 CFR Part 60 - Subpart Kb, NSPS for Volatile Organic Liquid Storage Vessels

The Refinery is currently subject to the general provision portions of 40 CFR Part 60 Subpart Kb. The Refinery will continue to be subject to 40 CFR Part 60 Subpart Kb after implementation of the Renewal Project and according to documents included in the permit application submitted to the District, is expected to continue to comply with this regulation.

40 CFR Part 60 - Subpart GG, NSPS for Stationary Gas Turbines

See Discussion for District Regulation 10.

Equipment Leaks:

40 CFR Part 60 - Subpart VV, NSPS for Leaks of VOC in the Synthetic Organic Chemicals Manufacturing Industry for which Construction, Reconstruction, or Modification Commenced After January 5, 1981, and on or Before November 7, 2006

40 CFR Part 60 - Subpart GGG, NSPS for Equipment Leaks of VOC in Petroleum Refineries

40 CFR Part 61 - Subpart J, NESHAP for Equipment Leaks (Fugitive Emission Sources) of Benzene

40 CFR Part 63 - Subpart H, NESHAP MACT for Equipment Leaks

The Refinery is currently subject to the equipment leak provisions of 40 CFR Parts 60, 61 and 63. The Refinery will continue to be subject to these requirements after implementation of the Renewal Project and according to documents included in the permit application, is expected to continue to comply with this regulation.

40 CFR Part 60 - Subpart QQQ, NSPS for Petroleum Refinery Wastewater Systems

The Refinery is currently subject to the general provision portions of 40 CFR Part 60 Subpart QQQ. The Refinery will continue to be subject to 40 CFR Part 60 Subpart QQQ after implementation of the Renewal Project and according to documents included in the permit application, is expected to continue to comply with this regulation.

40 CFR 60 - Subpart KKKK, NSPS for Stationary Combustion Turbines

See discussion above on District Regulation 10 compliance. The refinery is in compliance with more stringent District requirements.

40 CFR Part 61 - Subpart FF, NESHAP for Hazardous Air Pollutants from Benzene Waste Operations

See District Regulation 11-11 (NESHAP requirements for this source category are incorporated by reference).

40 CFR Part 61 - Subpart V, NESHAP for Equipment Leaks (Fugitive Emission Sources)

See Discussion for District Regulation 11, Rule 7 (Standard incorporated by reference)

40 CFR Part 63 - Subpart Q, NESHAP MACT for Industrial Process Cooling Towers

According to documents included in the permit application submitted to the District, the Refinery has not used chromium based water treatment since 1989 and is expected to continue to comply with the requirements of 40 CFR Part 63 Subpart Q.

40 CFR Part 63, - Subpart CC, NESHAP MACT for Petroleum Refineries

The Refinery is an existing affected source as defined in 63.640(c) and is subject to Subpart CC. Pursuant to 63.648(a), for components containing or contacting hazardous air pollutants (HAPs). According to documents included in the permit application submitted to the District, the Refinery shall continue to comply with the provisions of 40 CFR part 60 subpart VV.

40 CFR Part 63 - Subpart UUU, NESHAP MACT for Hazardous Pollutants for Petroleum Refineries: Catalytic Cracking Units, Catalytic Reforming Units, and Sulfur Recovery Units

S-4227, S-4228 and S-4229, Sulfur Recovery Unit Trains #1, #2 and #3 are subject to 40 CFR

63, Subpart UUU. This standard is essentially equivalent to the SO_2 standard in 40 CFR 60, Subpart J. According to documents included in the permit application submitted to the District, these units will comply with the SO_2 standard and with the requirement for continuous SO_2 monitoring. The CCRR will comply with the requirements for catalytic reforming units.

40 CFR 63 - Subpart DDDDD, NESHAP MACT for Industrial, Commercial, and Institutional Boilers and Process Heaters

S-4471 and S-4472 Reformer Furnaces for Hydrogen Plant Trains #1, and #2; and S-4477, S-4478, S-4479 and S-4480 Reformer Furnaces #1, #2, #3 and #4 are subject to 40 CFR 63, Subpart DDDDD, National Emission Standards for Hazardous Air Pollutants for Industrial, Commercial, and Institutional Boilers and Process Heaters. The Washington DC Circuit Court vacated this standard on June 8, 2007. Where there is no MACT for a new source and the deadline for promulgation of a standard by the EPA is past, local agencies must determine on a case-by-case basis, MACT for the new source, in accordance with 40 CFR 63.52(a). The emission limit for these sources in the vacated standard was 400 ppm CO. There were no other limits for gaseous-fueled boilers. A CO CEM was not required for units under 100 MMBtu/hour.

The reason that the court gave for vacating the MACT standard was that the EPA had inappropriately classified solid waste incineration units that were subject to Section 129 of the Clean Air Act as solid fuel units that were subject to the MACT standard. This classification greatly increased the number of units subject to the MACT standard and therefore skewed the determination of the MACT floor. The court stated that the "universe of units … will be far smaller and more homogenous [sic]" after the solid waste units were taken out of the group of units affected. The court expects that the rule will change substantially when the EPA considers the smaller pool of units.

One possible outcome is that the standards may become more stringent because the HAP emissions from the solid waste incineration units are expected to be higher. The MACT "floor" is based on the performance of the top 12 percent of the units in a category.

The EPA had determined that CO was an appropriate surrogate for organic HAPs. The argument was that high CO was indicative of poor combustion and therefore, poor destruction of organic HAPs. This is a reasonable assumption.

The District does not have the resources to survey all industrial, commercial, and institutional boilers and process heaters in the United States and determine the MACT "floor." However, the District notes that the CO BACT limit in the District's BACT workbook for boilers over 50 MMBtu/hr has been 50 ppmv since 2005. For refinery process heaters over 50 MMBtu/hr, the BACT limit has been 50 ppmv since 1994. The South Coast AQMD has had BACT limits for CO of 50 ppm for boilers since 2000.

On page 1680, column 3, second paragraph, of the MACT proposal published on January 13, 2003, the EPA states:

"The approach that we use to calculate the MACT floors for new sources is somewhat

> different from the approach that we use to calculate the MACT floors for existing sources. While the MACT floors for existing units are intended to reflect the average performance achieved by a representative group of sources, the MACT floors for new units are meant to reflect the emission control that is achieved in practice by the best-controlled source. Thus, for existing units, we are concerned about estimating the central tendency of a set of multiple units, while for new units, we are concerned about estimating the level of control that is representative of that achieved by a single best controlled source."

Since the District agrees with the EPA that low CO levels indicate low levels of organic HAPs, then lower CO levels are better than higher CO levels. Considering that the "best-controlled sources" have CO levels that are 50 ppm or lower, and the Project will be limited to a CO level of 10 ppm CO at 3% O2, this level of control will be considered to be the presumptive MACT level for these sources until the EPA re-proposes and re-promulgates MACT.

All these sources will be equipped with NO_x and CO CEMs.

40 CFR 64, Compliance Assurance Monitoring

According to documents included in the permit application submitted to the District, all subject sources shall comply with the requirements of 40 CFR Part 64.

40 CFR 70, Title V, Operating Permits

The Refinery is subject to the Title V program because it is a major facility as defined by BAAQMD Regulation 2-6-206. The date of initial issuance of the Refinery's Title V permit was December 1, 2003. The Title V permit has been revised several times after initial issuance, and an application for the five-year renewal has been submitted.

The changes proposed in this application require a significant revision of the Title V permit because the Renewal Project is subject to the following District regulations:

- 2-6-226.2: The incorporation of a change considered a modification under 40 CFR Parts 60 (NSPS) and 63 (MACT)
- 2-6-226.4: The establishment of or change to a permit term or condition allowing a facility to avoid an applicable requirement
- 2-6-226.5: The establishment of or change to a case-by-case determination of any emission limit or other standard

The required revisions to the Title V permit will be prepared at a later date and are subject to publication and public comment, and EPA review.

40 CFR 72-78, Acid Rain

S-4473 3rd Cogeneration Gas Turbine and S-4474 3rd Cogeneration HRSG with Duct Burners may be subject to the requirements of Title IV of the federal Clean Air Act. The requirements of the Acid Rain Program are outlined in 40 CFR Part 72. The specifications for the type and

operation of continuous emission monitors (CEMs) for pollutants that contribute to the formation of acid rain are given in 40 CFR Part 75. District Regulation 2, Rule 7 incorporates by reference the provisions of 40 CFR Part 72. Pursuant to 40 CFR Part 72.30(b)(2)(ii), should the cogeneration unit become subject to the Acid Rain Program, Chevron must submit an Acid Rain Permit Application to the District at least 24 months prior to the date on which each unit commences operation. Pursuant to 40 CFR Part 72.2, "commence operation" includes the start-up of the unit's combustion chamber.

PUBLIC NOTICE/COMMENTS

Requirements for publication and public comment of preliminary permit decisions are specified in District Regulation 2-2-405. The Renewal Project permit application is not subject to these requirements because: (1) it is not a new major facility, (2) it is not a major modification of an existing major facility as defined in Regulation 2-2-221, (3) it does not require a PSD analysis, and (4) it is not subject to the MACT Requirement as defined in Regulation 2-2-317.

It is clear that this project's net emissions (i.e., emission increases from new, modified sources minus contemporaneous actual emission reductions from sources to be shutdown) do not exceed any of the emissions thresholds that would constitute a major modification under Regulation 2-2-221. These are 40 tons per year of POC, NOx or SO_2; 100 tons per year of CO; and 15 tons per year of PM_{10}.

The term "PSD Analysis" is not defined in Regulation 2-2, however, "PSD Air Quality Analysis" is defined in Regulation 2-2-414. The District has consistently interpreted that the terms "PSD Analysis" and "PSD Air Quality Analysis" are interchangeable and synonymous. In other words, a PSD Analysis or PSD Air Quality Analysis only occurs when a facility hits a PSD trigger, and does not apply when PSD netting demonstrates that no trigger has been hit.

The term "MACT Requirement" is defined in Regulation 2-2-317. This Section refers to Regulation 2-2-114, which provides a series of exemptions. The MACT Requirement would apply if any of the sources in the Project were subject to case-by-case MACT determination under Clean Air Act Section 112(g). This is not the case.

Although it is not required by regulation, due to the public interest in the Renewal Project, the Executive Officer/Air Pollution Control Officer decided that the District, in collaboration with the City of Richmond Planning Department, should hold a community meeting in Richmond to discuss air quality issues associated with the Renewal Project and the District's permit process. This well-attended community meeting was held on February 13, 2008 in Richmond. District staff also attended numerous public meetings held regarding the City of Richmond's EIR certification and conditional use permit issuance.

Some of the public comments expressed at the meetings concerned air quality issues. In particular, because the Renewal Project would allow Chevron to run a crude oil blend with a higher sulfur content than current blends, many of these comments requested a "Comprehensive Crude Cap" on the Refinery. Under this approach, a Comprehensive Crude Cap would limit the sulfur content of incoming crude and gas oils to that of historical baseline levels. Limits would

also be similarly established for other constituents in these incoming materials to be refined at the facility.

On April 30, 2008, the District met with representatives of Communities for a Better Environment (CBE) to discuss the comprehensive crude cap issue. At the meeting, CBE representatives presented a graph, which asserted that crude sulfur content correlates to flare SO_2 emissions. The District has reviewed the graph, as well as other data provided by CBE, and is not convinced that this correlation is valid. Furthermore, the District is confident that District Regulation 12-12 will continue to identify and implement reductions in flaring events.

The City of Richmond hired Dr. Ranajit Sahu, an environmental engineering consultant, to respond to the "Comprehensive Crude Cap" comments from the public. Appendix D contains Dr. Sahu's responses to comments from Communities for a Better Environment (CBE). At the June 5th Planning Commission meeting, Dr. Sahu indicated that there is not a clear nexus from crude sulfur content to SO_2 flaring emissions. The District is satisfied that limiting the sulfur content in the refinery fuel gas, and subjecting the modified SRUs to BACT, adequately address the increased sulfur loading from the Renewal Project. Flare SO_2 emissions will be addressed on an ongoing basis through District Regulations 12-11 and 12-12.

District staff was present at the Planning Commission meeting on June 5th, where Dr. Sahu presented his responses to the comments. Dr. Sahu identified the Solvent Deasphalting (SDA) Plant, S-4251, as a bottleneck for the handling of heavier, higher sulfur, crude slates after a thorough review of Chevron's refining process. Dr. Sahu recommended that a reduced throughput limit at the SDA Plant would limit the Refinery's ability to handle heavier crudes. The District has determined that the City of Richmond's Conditional Use Permit conditions and review adequately addressed the comments on this issue. Pursuant to the Use Permit's Condition C12, Chevron has submitted a permit application for a revision to its Major Facility Review (Title V) Permit to decrease the daily and annual throughput limits of the SDA Plant in the Refinery's Title V permit. The District received the minor revision permit application on August 15, 2008 (District Permit Application No. 18740).

District staff has worked closely with City of Richmond Planning Division, the preparers of the Environmental Impact Report (EIR) for the Renewal Project, and Dr. Sahu regarding the Renewal Project. District staff has considered public input expressed in recommending a final action on this application. The District is satisfied that the SDA Plant condition in the City of Richmond's Conditional Use Permit, the permit application to establish a new lowered SDA Plant throughput limit, District-imposed permit conditions on the RFG and SRUs, and numerous other permit conditions that monitor and limit the emissions or various regulated air pollutants adequately address this issue.

CEQA

CEQA requires public agencies to evaluate the potential environmental impacts of certain types of "projects" before approving the project. (Public Resources Code §21080). In accordance with District Regulation 2-1-310.3, the District may not issue an Authority to Construct for this project until final action has been taken by the CEQA Lead Agency.

The City of Richmond is the CEQA Lead Agency for the Renewal Project. A draft EIR for the Project was issued by the City's Planning Department in May 2007. The District, as a CEQA Responsible Agency, provided comments on the draft EIR. These comments, as well as others, were addressed in a Final EIR. An electronic copy of the Final EIR is available for review at the following link: http://www.ci.richmond.ca.us/index.asp?NID=832.

The Richmond Planning Commission certified that the Final EIR was prepared in compliance with the California Environmental Quality Act. The Richmond Planning Commission considered the EIR at noticed public hearings on April 10, 2008, and June 5, 2008. The Final EIR was certified on July 17, 2008. The City of Richmond filed a Notice of Determination on August 5, 2008.

Final action by the District will be taken only after careful review and consideration of the information in the Project's certified EIR. As a Responsible Agency, the District has prepared findings for the purposes of CEQA. The findings are attached in Appendix F.

RECOMMENDATIONS

The District recommends that the Chevron Richmond Refinery be issued a Conditional Authority to Construct for the following:

HYDROGEN PLANT REPLACEMENT

New Equipment

S-4449 Hydrogen Plant Train #1, 140 MM SCFD Hydrogen Produced maximum capacity

S-4450 Hydrogen Plant Train #2, 140 MM SCFD Hydrogen Produced maximum capacity

S-4451 Hydrogen Recovery Unit, 50 MM SCFD Hydrogen Recovered maximum capacity

S-4471 Hydrogen Plant Train #1 Reformer Furnace, 950 MMBtu/hr maximum firing rate higher heating value (HHV), equipped with Low-NO_x Burners abated by **A-0302** Hydrogen Plant Train #1 Selective Catalytic Reduction (SCR) [Vented to **P-0302** Hydrogen Plant Train #1 Furnace Exhaust]

S-4472 Hydrogen Plant Train #2 Reformer Furnace, 950 MMBtu/hr maximum firing rate HHV, equipped with Low-NO_x Burners abated by **A-0303** Hydrogen Plant Train #2 SCR [Vented to **P-0303** Hydrogen Plant Train #2 Furnace Exhaust]

S-4465 Hydrogen Plant Cooling Tower, 36,000 gal/min maximum capacity

S-6021/A-6021 Hydrogen Plant Flare, 1.6 MMBtu/hr Pilot maximum capacity HHV, [Vented to **P-0305** Hydrogen Plant Flare Exhaust]

Shutdown of Existing Equipment

S-4250 Hydrogen Plant, Trains A and B, (Total Combined Capacity 150 MMSCFD) Train A abated by: **A-261** Packed Bed Scrubber De-aerator Vent (Methanol), Exhaust to P-261 and Train B abated by: **A-262** Packed Bed Scrubber De-aerator Vent (Methanol), Exhaust to P-262

S-4170 Hydrogen Plant Train A Reformer Furnace F-305 (820 MMBtu/hr) Exhaust to P-123, P-124, P-125, P-126 abated by **A-260** Hydrogen Plant Train A SCR System

S-4171 Hydrogen Plant Train B Reformer Furnace F-355 (820 MMBtu/hr)
Exhaust to P-127, P-128, P-129, P-130

S-4348 Hydrogen Recovery Unit (1.1 ton/hour max), Exhaust to S-6039

S-4156 Feed Furnace F-320 (41 MMBtu/hr), Exhaust to P-114

S-4157 Feed Furnace F-330 (41 MMBtu/hr, Multi-fuel), Exhaust to P-115

S-4158 Feed Furnace F-340 (48 MMBtu/hr), Exhaust to P-116

REFORMER REPLACEMENT

New Equipment

S-4452 Continuous Catalyst Regeneration Reformer, 71,300 BPD maximum capacity [Vented to **P-0308** CCRR Regeneration Vent]

S-4477 Reformer Furnace #1, 201 MMBtu/hr maximum firing rate HHV, equipped with Low-NO_x Burners abated by **A-0309** SCR

S-4478 Reformer Furnace #2, 402 MMBtu/hr maximum firing rate HHV equipped with Low-NO_x Burners abated by **A-0309** SCR

S-4479 Reformer Furnace #3, 201 MMBtu/hr maximum firing rate HHV equipped with Low-NO_x Burners abated by **A-0309** SCR

S-4480 Reformer Furnace #4, 201 MMBtu/hr maximum firing rate HHV equipped with Low-NO_x Burners abated by **A-0309** SCR

A-0309 SCR for CCRR Furnaces #1 - #4 (S-4477, S-4478, S-4479, S-4480) [Vented to **P-0309** Reformer Furnaces #1 - #4 (S-4477, S-4478, S-4479, S-4480)]

Shutdown of Existing Equipment

S-4283 No. 4 Catalytic Reformer (28 MBPD)

S-4038 No. 4 Rheniformer Furnace, F-3550 (187 MMBtu/hr), Exhaust P-40, P-41

S-4039 No. 4 Rheniformer Furnace, F-3560 (170 MMBtu/hr), Exhaust P-40, P-41

S-4040 No. 4 Rheniformer Furnace, F-3570 (152 MMBtu/hr), Exhaust P-40, P-41

S-4041 No. 4 Rheniformer Furnace, F-3580 (77 MMBtu/hr), Exhaust P-40, P-41

S-4237 No. 5 Catalytic Reformer (23 MBPD)

S-4042 No. 5 Rheniformer Furnace, F550 (198 MMBtu/hr), Exhaust P-42, P-43
Unit Equipped with 36-Ultra Low NO_x Burners

S-4043 No. 5 Rheniformer Furnace, F-560 (133 MMBtu/hr), Exhaust P-42, P-43

S-4044 No. 5 Rheniformer Furnace, F-570 (78 MMBtu/hr), Exhaust P-42, P-43

S-4045 No. 5 Rheniformer Furnace, F-580 (51 MMBtu/hr), Exhaust P-42, P-43

POWER PLANT REPLACEMENT

New Equipment

S-4473 3rd Cogeneration Gas Turbine, 550 MMBtu/hr maximum firing rate HHV. Combined Gas Turbine and HRSG equipped with Duct Burners 860 MMBtu/hr firing rate (calendar day). Combined Gas Turbine and HRSG equipped with Duct Burners 840 MMBtu/hr maximum firing rate (annual average)

S-4474 3rd Cogeneration Heat Recovery Steam Generator (HRSG) equipped with Duct Burners, equipped with Low-NO_x Burners 350 MMBtu/hr Duct Burner maximum firing rate HHV. Combined Gas Turbine and HRSG equipped with Duct Burners 860 MMBtu/hr firing rate (calendar day). Combined Gas Turbine and HRSG with Duct Burners 840 MMBtu/hr maximum firing rate (annual average)

A-74 SCR abating both 3rd Cogeneration Gas Turbine and Heat Recovery Steam Generator

A-75 Oxidation Catalyst abating both 3rd Cogeneration Gas Turbine and Heat Recovery Steam Generator [Vented to **P-0306** 3rd Cogeneration Gas Turbine/Heat Recovery Steam Generator]

Shutdown of Existing Equipment

S-4129 Boiler No. 1 (233 MMBtu/hr)

S-4131 Boiler No. 3 (236 MMBtu/hr)

S-4132 Boiler No. 4 (235 MMBtu/hr)

S-4133 Boiler No. 5 (237 MMBtu/hr)

S-4135 Boiler No. 7 (272 MMBtu/hr)

HYDROGEN PURITY IMPROVEMENTS

New Equipment

S-4454 #6 H2S Plant, Recycle Amine Regenerator, 11 MMSCFD maximum capacity

S-4490 Sulfur Loading Rack, 157 LT/hr maximum capacity abated by **A-0310** Sulfur Loading Rack Caustic Scrubber [Vented to **P-0310** Sulfur Loading Rack Caustic Scrubber Exhaust]

A-4450 Acid Gas Scrubber (C-2440), 11 MMSCFD Acid Gas for abatement of: #3 H2S Plant (S-4433), #4 H2S Plant (S-4434), #5 H2S Plant (S-4435), Recycle Amine Regenerator (S-4454), and the #8 NH3-H2S Plant (S-4429) and #18 NH3-H2S Plant (S-4345)

S-4436 F-2170 Stack Gas Heater No. 1 SRU, 31.9 MMBtu/hr maximum firing rate HHV [vented to **P-0151** SRU Train #1 Exhaust]

S-4437 F-2270 Stack Gas Heater No. 2 SRU, 31.9 MMBtu/hr maximum firing rate HHV [Vented to **P-0152** SRU Train #2 Exhaust]

S-4438 F-2370 Stack Gas Heater No. 3 SRU, 56.1 MMBtu/hr maximum firing rate HHV [Vented to **P-0153** SRU Train #3 Exhaust]

S-4456 Fresh Amine Storage Tank, 70,000 gal maximum capacity

S-3227 Lean Amine Storage Tank, 130,000 gallon maximum capacity

S-3228 Caustic Storage Tank, 200,000 gallon maximum capacity

S-3229 Spent Caustic Storage Tank, 400,000 gallon maximum capacity

Modification of Existing Equipment

S-4253 TKC/FCC Feed Hydrotreater, 96,000 BPD maximum capacity

S-4435 No. 5 H2S Plant, 9.6 MMSCFD maximum capacity

S-4227 Sulfur Recovery Unit Train #1, 345 LTD maximum capacity abated by both **A-0020** SRU#1 Tail Gas Unit Thermal Oxidizer 30.8 MMBtu/hr HHV maximum firing rate and **A-120** Wet Electrostatic Precipitator (ESP)

S-4228 Sulfur Recovery Unit Train #2, 345 LTD maximum capacity abated by **A-0021** SRU#2 Tail Gas Unit Thermal Oxidizer 30.8 MMBtu/hr HHV maximum firing rate and **A-121** Wet Electrostatic Precipitator (ESP)

S-4229 Sulfur Recovery Unit Train #3, 570 LTD maximum capacity abated by **A-0022** SRU#3 Tail Gas Unit Thermal Oxidizer 45.0 MMBtu/hr HHV maximum firing rate and

A-122 Wet Electrostatic Precipitator (ESP)

The District recommends that the Chevron Richmond Refinery be issued a Conditional Permit to Operate for the following:

A-4451 Acid Gas Scrubber (C-840), 12.5 MMSCFD Acid Gas for abatement of: #3 H2S Plant (S-4433), #4 H2S Plant (S-4434), #5 H2S Plant (S-4435), Recycle Amine Regenerator (S-4454), and the #8 NH3-H2S Plant (S-4429) and #18 NH3-H2S Plant (S-4345).

OTHER ALTERED EQUIPMENT

Retrofitting of Existing Furnaces with Low NO_x Burners (Reg. 9-10 Compliance)

S-4161 F-510 TKN Furnace, 61 MMBtu/hr maximum firing rate HHV, equipped with Low-NO_x Burners

S-4162 F-520 TKN Furnace, 61 MMBtu/hr maximum firing rate HHV equipped with Low-NO_x Burners

S-4163 F-530 TKN Furnace, 61 MMBtu/hr maximum firing rate HHV equipped with Low-NO_x Burners [Vented to **P-0311** TKN Furnace Exhaust]

S-4188 F-651 Polymer Furnace, 27 MMBtu/hr maximum firing rate HHV equipped with Low-NO_x Burners [Vented to **P-0312** Polymer Furnace Exhaust]

S-4189 F-661 Polymer Furnace, 15 MMBtu/hr maximum firing rate HHV equipped with Low-NO_x Burners [Vented to **P-0313** Polymer Furnace Exhaust]

CONDITIONS

See Attached Conditions.

APPENDICES

Appendix A
Criteria Emissions Calculations

Appendix B
HAP Emissions Calculations

Appendix C
Health Risk Screening Analysis

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Dr. Sahu's responses to comments from CBE

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DR. SAHU'S RESPONSES TO COMMENTS FROM CBE

APPENDIX E
CEQA FINDINGS DOCUMENT

ENGINEERING EVALUATION
Plant 10: Chevron Products Company
Application 19402: Amendments to permit conditions 469 and 19063

BACKGROUND

Chevron Products Company (Chevron) has submitted this permit application to amend permit conditions for the following sources:

S-4227 Sulfur Recovery Unit Train #1
S-4228 Sulfur Recovery Unit Train #2
S-4229 Sulfur Recovery Unit Train #3
S-4253 TKC/FCC Feed Hydrotreater

The scope of Application 19402 is to amend permit conditions 19063 (S-4227, S-4228, and S-4229) and 469 (S-4253) as discussed below.

The District reissued Chevron an Authority to Construct (ATC) for the "Modernization Project" on February 11th, 2015. New/modified sources that were part of the "Modernization Project" ATC were reviewed under Application 12842, and the operation of sources affected by the Project is governed by permit condition 24136. The reissued ATC will permit Chevron to construct new sources and also modify certain existing sources (S-4227, S-4228, S-4229, and S-4253).

Rather than have permit conditions list different throughput rates for the same sources, Chevron has requested the District to amend throughput rates in permit conditions 19063 and 469 to make them consistent with throughput rates in permit condition 24136 for S-4227 through
S-4229, and S-4253, respectively. Proposed amendments to permit conditions 19063 and 469 are as shown below:

Permit condition 19063:

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1. The owner/operator of S-4227 shall not exceed
   189.6 long tons of total sulfur produced in any
   calendar day and shall not exceed 150 long tons
   per day averaged over any consecutive 12 month
   period. Applicable requirements, throughput
   limits and/or mass emission limits and/or
   concentration limits in permit condition 24136
   will supersede this permit condition after S-4227
   is modified. (Basis: Cumulative Increase)

2. The owner/operator of S-4228 shall not exceed
   179.0 long tons of total sulfur produced in any
   calendar day and shall not exceed 150 long tons
   per day averaged over any consecutive 12 month
   period. Applicable requirements, throughput
   limits and/or mass emission limits and/or
   concentration limits in permit condition 24136
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will supersede this permit condition after S-4228 is modified.(Basis: Cumulative Increase)

3. The owner/operator of S-4229 shall not exceed 336 long tons of total sulfur produced in any calendar day and 292.7 long tons per day averaged over any consecutive 12 month period. Applicable requirements, throughput limits and/or mass emission limits and/or concentration limits in permit condition 24136 will supersede this permit condition after S-4229 is modified. (Basis: Cumulative Increase)

4a. The owner/operator of the tail gas units A-20, A-21, and A-22 shall each not exceed 10 ppmv H_2S. Applicable requirements, mass emission limits and/or concentration limits in permit condition 24136 will supersede this permit condition after S-4227, S-4228, and/or S-4229 are modified. (Basis: CEQA/BACT)

4b. The owner/operator of each tail gas units A-20, A-21 and A-22 shall not exceed 250 ppmv SO_2, corrected to 0% O_2 on a 12-hour basis except during periods of startup, shutdown or malfunction of the SRP or SRU, or during malfunction of the TGU. The sulfur Recovery Plants shall be affected facilities under Subpart J and shall comply with all applicable provisions of Subparts A and J. (Basis: NSPS Subpart J, Consent Decree case No. 03-04650, 6/27/05)

5. The owner/operator of S-4227, S-4228, and S-4229 shall maintain a district approved daily log with monthly summaries of all sulfur production at each S-4227, S-4228, and S-4229 in order to demonstrate compliance with conditions #1 through 3. This log shall be kept on site for 5 years from the date of entry and be made available to district staff upon request. Recordkeeping requirements in permit condition 24136 will supersede this permit condition after S-4227, S-4228, and/or S-4229 are modified. (Basis: Recordkeeping)

Part 5 of permit condition 469:

5. Process Unit Design
The owner/operator shall not exceed the throughput limits below. The following process unit design rates reflect the design and specifications outlined in the permit application and were used to calculate allowable emissions from the modified refinery:

UNIT	DESIGN PROCESS RATE
Light Neutral Hydrocracker(S-4340)	16,500 BPOD
Light Neutral Hydrofinisher(S-4341)	22,000 BPOD
Heavy Neutral Hydrocracker(S-4342)	26,000 BPOD
Heavy Neutral Hydrofinisher(S-4343)	12,000 BPOD
TKC Unit 65,000 BPOD	

Note 1:
S-4253 design process rate changed from 52K
to 65 K by BGY on 3/1/95.

Note 2:
The 65,000 BPOD throughput limit in part 5 of this permit condition for the TKC unit will be superseded by applicable throughput limits and recordkeeping requirements in permit condition 24136 after S-4253 is modified.

These units shall be designed and built to the above specifications, and annual/daily emissions caused by these units shall not exceed the amount that would be produced if the unit were operated at no more than the above design process rates for a calendar year/day.

The proposed amendments to permit conditions 19063 and 469 are administrative, and will not result in a "net increase" in emissions from S-4227 through S-4229, and S-4253.

EMISSIONS CALCULATION

The proposed amendments to permit conditions 19063 and 469 will not result in a "net increase" in emissions from S-4227 through S-4229, and S-4253. Therefore, the cumulative increase in emissions is zero.

BACT & OFFSETS:

The proposed amendments to permit conditions 19063 and 469 are administrative in nature. Therefore, the cumulative increase in emissions is zero, BACT is not triggered and offsets are not required.

STATEMENT OF COMPLIANCE:

The proposed amendments to permit conditions 19063 and 469 will not affect applicable requirements for S-4227 through S-4229, and S-4253. The District's Compliance & Enforcement staff will verify the compliance of the above sources with applicable requirements and permit conditions during their routine inspections.

The proposed amendments to permit conditions 19063 and 469 are categorically exempt from CEQA per Regulation 2-1-312.1. Chevron has submitted Appendix H "Environmental Information Form" in accordance with Regulation 2-1-312.

This project is over 1,000 feet from the nearest public school and is therefore not subject to the public notification requirements of Regulation 2-1-412.

PERMIT CONDITIONS:

Amend permit conditions 19063 and 469 as proposed.

RECOMMENDATION:

Issue Chevron a Permit to Operate with:

Amended permit condition 19063 for:

S-4227 Sulfur Recovery Unit Train #1
S-4228 Sulfur Recovery Unit Train #2
S-4229 Sulfur Recovery Unit Train #3

Amended part 5 of permit condition 469 for:

S-4253 TKC/FCC Feed Hydrotreater

_____
K. R. Bhagavan

EVALUATION REPORT
CHEVRON PRODUCTS COMPANY
PLANT NUMBER 10
APPLICATION NUMBER 23827

Background

Chevron Products Company (Chevron) is proposing to install several new fugitive components at its #17 Pump Station and combine all Pump Stations (#'s 1, 2, 7, 8, 17, 18, 21, 23, and 24) into a single source S-4441 at its facility located in Richmond. Chevron is requesting that the Pump Stations be given a source number similar to S-4440 Jet Additives Project Fugitive Components in Application 21980. Chevron was also requesting that the new source be considered a process unit in order to be exempted in the future per 2-1-128.2. However, the district does not consider this Pump Station source to be a process unit.

The Pump Stations are used to pump products to and from the refinery's tank farm. The components to be replaced are on the relief system side, which receives material from thermal relief valves that release small amounts of material to relieve pressure in the lines. All of the relief piping is less than 2 inches in diameter. These relief line materials are collected in an enclosed sump and returned to the tanks for re-blending. Most of the fugitive components will be replacements, which are considered new per the definition of a new source contained in section 2-1-232.4.

Fugitive Component locations for this application are at No.17 Pump Station, which is located near the tank farm. The fugitive components do not qualify for the exemption since this is a new project and is not associated with an existing permitted process unit as required within the exemption.

Chevron has requested to accept an emissions limit associated with the fugitive components that only includes 1 pegged leaker for a maximum of 6 months in any consecutive 12 month period. This emissions calculation does not provide much room for leakers but Chevron asserts that the pegged leakers are a rare occurrence. The proposed emissions limit may be violated if there's more than one pegged leaker or if there's a pegged leaker for more than one quarter in any consecutive 12 month period.

All fugitive components in the project are required to meet both BACT and the standards in Regulation 8-18. Chevron agreed to meet the BACT requirements as opposed to accepting an emissions limit less than 10 pounds per highest day in order to avoid triggering BACT and the monitoring requirements in order to demonstrate compliance with that emissions limit. The project would not be exempt from permit requirements per Regulation 2-1-118.21 since Regulation 8-18 allows for the emissions from this project to exceed 10 pounds/highest day and these new components are associated with a new project that are not linked to an existing permitted process unit. Chevron will accept a permit condition that requires it to demonstrate that emissions from components in hydrocarbon service from this application will not exceed the annual permitted level. In other words, if Chevron has a pegged leaker from any of these new components during any quarter, it will provide an emissions estimate demonstrating both whether adequate offsets have been provided and if the proposed emissions limit has been exceeded. Chevron will also be required to conduct an annual

emissions estimate to demonstrate compliance with the emission limit since it is possible to exceed the emissions limit without a pegged leaker.

Emission Calculations

The emissions associated with this project are POC emissions from all the new (which includes replaced) fugitive components.

The emission factors are derived from the Correlation Equation Method (Method 3) of the "California Implementation Guidelines for Estimating Mass Emissions of Fugitive Hydrocarbon Leaks at Petroleum Facilities" prepared by the California Air Pollution Control Officers Association Engineering Managers Committee and the California Air Resources Board.

The screening values used in the correlation equations for each type of fugitive components are the allowable leak rates in Regulation 8-18, and are coherent to the current leak detection and repair program at Chevron.

Since Regulation 8-18 allows for certain percentages of non-repairable fugitive components (aka, pegged leakers) to exceed the screening values, the total emissions estimated for this project includes the emissions resulting from those non-repairable or parts not complying with the allowable leak rates.

The total POC emissions for this project are estimated to potentially be greater than 10.0 lb/highest day and 1707.37 lb/year (=0.854 tons/yr). This emissions estimate assumes approximately 1 pegged leaker (≥10,000 ppm) for only 6 months. The worst-case daily emissions estimate assumes compliance with Regulation 8-18, which allows for more than one component type to be a pegged leaker. The worst-case daily emissions estimate would exceed 10 pounds per highest day, which triggers BACT. Chevron agreed to accept an emissions limit that corresponds to less than the emissions allowed per Regulation 8-18. Chevron will accept a permit condition that requires a district-approved emissions calculation to demonstrate compliance with the annual emissions limit both annually and quarterly when there is one or more pegged leaker(s) from this project.

Maximum daily emissions: 7.23 lb/day

Maximum annual emissions: 1707.37 lb/yr

Toxic emissions estimate

The toxic emissions estimate is based on maximum concentrations (in weight percent) of materials identified by Chevron in a 1/23/12 email from Garett Estadt.

Toxic	max day	max year
Benzene (2%)	0.14 lb/day	34.15 lb/yr
Ethyl benzene (2%)	0.14 lb/day	34.15 lb/yr
Hexane (2%)	0.14 lb/day	34.15 lb/yr
Naphthalene (0.5%)	0.04 lb/day	8.54 lb/yr
Toluene (10%)	0.72 lb/day	170.74 lb/yr

Xylene (10%)	0.72 lb/day	170.74 lb/yr

Plant Cumulative Increase (tons per year)

POC = 0.854 tpy (new) – 0.854(1.15)(offsets) = 0.0 tpy

Toxic Risk Screening

HAP	Emission Rate	Trigger level
Benzene	0.01 #/h, 34.15 #/y	2.9 #/h, 3.8 #/y
Ethyl benzene	34.15 #/y	4.3E1 #/y
Hexane	34.15 #/y	2.7E5 #/y
Naphthalene	8.54 #/y	6.9E-3 #/y
Toluene	0.72 #/h, 170.74 #/y	8.2E1 #/h, 1.2E4 #/y
Xylene	0.72 #/h, 170.74 #/y	4.9E1 #/h, 2.7E4 #/y

A Health Risk Screening Analysis (HRSA) was performed for the fugitives associated with the #17 Pump Station. The maximum cancer risk for the project using the conservative emissions estimate is estimated at 0.05 in a million and the chronic hazard index is 0.0002 and the acute hazard index is 0.01. In accordance with the District's Regulation 2-5 the risk levels are considered to be acceptable. With the emissions limit proposed by Chevron, the project will not trigger TBACT.

Statement of Compliance

All fugitive components involved in this project are subject to Regulation 8-18. Chevron is expected to comply with the allowable leak rates in Regulation 8-18-302, 303, 304, and 305 the non-repairable equipment requirement in Regulation 8-18-306. To comply with Regulation 8-18 regarding equipment leaks, Chevron stated that it has an LDAR (Leak Detection and Repair) program that will ensure continued compliance with this rule.

This application is considered to be ministerial under the District's Regulation 2-1-311 and therefore is not subject to CEQA review. The engineering review for this project requires only the application of standard permit conditions and standard emission factors in accordance with Permit Handbook Chapter 3.4.

BACT (Best Available Control Technology):
This application should not trigger BACT since the maximum daily permitted emissions are expected to be less than 10 pounds POC per highest day. However, Chevron has agreed to install BACT complying components, BACT concentration limits, and monitoring consistent with a BACT level. BACT level monitoring is quarterly for valves and biannual (2x per year) for connectors and flanges.

Offsets:
Chevron is required to provide POC offset credits at a 1.15 to1.0 ratio for this project since the facility emissions are greater than 35 tons of POC per year. This application requires 0.982 tons per year of POC offset credits. The offset amount corresponds to emissions estimated for all fugitive components emissions with a small allowance for

pegged leakers. Chevron has agreed to use Banking Certificate # 1169 from the refinery to provide the offset credits.

NSPS (New Source Performance Standard):
Fugitive components at Chevron are subject to 40 CFR 60 Subpart GGGa – Standards of Performance for Equipment Leaks of VOC in Petroleum Refineries. In this subpart, the leak standards are 500 ppm or more. Since the allowable leak rates in the District Regulation 8-18 are 500 ppm or less, the project is also expected to comply with the standards in Subpart GGGa

NESHAPS and PSD do not apply to this application.

Permit Conditions

Plant 10
Application 23827

1. Within 30 days of District's issuance of the Permit to Operate for Application 23827or the completion of the installation of fugitive components at #17 Pump Station (S-4441), the Owner/Operator shall provide the District's Engineering Division with a final count of all fugitive components and each component's unique permanent identification codes in this project. The owner/operator has been permitted to install the following fugitive components:

86 valves in hydrocarbon service;
246 flanges in hydrocarbon service;
145 connectors in hydrocarbon service;

[Basis: Cumulative Increase, offsets, Regulation 2-5]

2. If any of the fugitive component counts exceed a count stated in Part 1, the plant's cumulative emissions for the project shall be adjusted, subject to APCO approval, to reflect the difference between emissions based on predicted versus actual component counts. The Owner/Operator shall provide to the District all additional required offsets at an offset ratio of 1.15:1 no later than 21 days after submittal of the final POC fugitive count. However, if the increase requires additional review, the owner/operator shall submit an application to address the additional components emissions and review. The Owner/Operator submitted 0.982 tons per year of POC offset credits corresponding to the component counts in Part 1. If the actual component count is less than the predicted, the total emissions in Part 2 may be adjusted accordingly, subject to APCO approval, and all emission offsets applied by the owner/operator in excess of the fully offset permitted total POC emissions may be credited back to the owner/operator upon approval by the APCO.
[Basis: offsets]

3. The Owner/Operator of S-4441 shall as part of the #17 Pump Station fugitive component replacement project install only the following types of valves in hydrocarbon service: (1) bellows sealed, (2) live loaded, (3) graphitic packed, (4) quarter-turn (e.g., ball valves or plug valves), or equivalent as determined by the APCO.
[Basis: BACT, cumulative increase]

4. The Owner/Operator of S-4441 shall comply with a leak standard of 100 ppm of TOC (measured as C1) at any valves installed as part of the #17 Pump Station fugitive component replacement project in hydrocarbon service unless the Owner/Operator complies with the applicable minimization and repair provisions contained in Regulation 8-18.
[Basis: BACT, cumulative increase, Regulation 8 Rule 18]

5. The Owner/Operator of S-4441 shall install graphitic-based gaskets, metal ring joints, or equivalent technology as determined by the APCO on all flanges or connectors installed as part of the #17 Pump Station fugitive component replacement project in hydrocarbon service.
[Basis: BACT, cumulative increase]

6. The Owner/Operator of S-4441 shall comply with a leak standard of 100 ppm of TOC (measured as C1) at any flanges and/or connectors installed as part of the #17 Pump Station fugitive component replacement project in hydrocarbon service unless the Owner/Operator complies with the applicable minimization and repair provisions contained in Regulation 8-18.
[Basis: BACT, cumulative increase, Regulation 8 Rule 18]

7. The Owner/Operator shall conduct inspections of fugitive components installed as part of the #17 Pump Station fugitive component replacement project in hydrocarbon service in accordance with the frequency below:

Valves: Quarterly
Connectors (Not Flanges): Biannual
Flanges: Biannual

[Basis: BACT, cumulative increase, Regulations 8 Rule 18]

8. The Owner/Operator of S-4441 shall not exceed 0.854 tons of POC emissions per consecutive 365-day period measured as C1 from for all fugitive components installed as part of the #17 Pump Station fugitive component replacement project in hydrocarbon service. Compliance with this provision shall be verified quarterly using methods described in part 9. The results shall be submitted to the District within 30 days of the close of each calendar quarter after the completion of the #17 Pump Station fugitive component replacement project or the District's issuance of the Permit to Operate for Application 23827.
[Basis: Cumulative Increase, offsets]

9. If none of the fugitive components installed as part of the #17 Pump Station fugitive component replacement project in hydrocarbon service are leaking at a rate equal to or greater than 10,000 ppm of TOC (measured as C1) in any consecutive 12 month period, no further verification and no submittal of the results shall be required. For any calendar quarter in which one or more of these components is leaking at a rate equal to or greater than 10,000 ppm of TOC (measured as C1), the Owner/Operator shall calculate and submit a report of fugitive emissions from all #17 Pump Station fugitive component replacement project fugitive components in hydrocarbon service utilizing District approved methods. The owner/operator shall submit the emissions report within 30 days of the end of each quarter requiring an emissions calculation. This calculation shall continue each quarter until there is a consecutive 12 month period that does not

contain a component with a leak rate equal to or greater than 10,000 ppm of TOC (measured as C1). For leaking components the owner/operator shall use the modified trapezoidal method and LeakDAS as documented within the application 12842 or other method pre-approved by the District. The Owner/Operator shall include emissions estimates from all #17 Pump Station fugitive component replacement project fugitive components in hydrocarbon service regardless of the component Rule 8-18 repair status in order to demonstrate compliance with part 8.
[Basis: Cumulative Increase, BACT, Offsets]

10. The Owner/Operator shall keep a District-approved monthly log of fugitive component counts of the #17 Pump Station fugitive component replacement project, each component's unique permanent identification codes, monitoring results, and any annual emissions estimates required per parts 8 and 9 for at least five years from date of entry. The log shall be retained on site and made available to district staff upon request.
[Basis: offsets, recordkeeping]

Recommendation

Grant an Authority to Construct to Chevron for the installation of the fugitive components at the following source:

S-4441 Pump Stations (#'s 1, 2, 7, 8, 17, 18, 21, 23, and 24) Piping Replacement Project Fugitive Components at #17

by Greg Solomon date 2/9/12
Greg Solomon
Senior Air Quality Engineer

INTEROFFICE MEMORANDUM
May 06, 2014

To: FILE Via: Greg Stone, Supervising Air Quality Engineer

From: Nicholas Maiden, Air Quality Engineer II

Subject: Chevron Plant # 10 – Application # 25630 Revised Conditions

In Application # 25630, Chevron applied to install a carbon system for use when an existing thermal oxidizer was down for maintenance. The thermal oxidizer abated fugitive pump seal emissions at Chevron's Number 17 Pump Station and had malfunctioned. Chevron applied under the Accelerated Permitting Program as Chevron thought continual use of the thermal oxidizer was required. Under that assumption, a revised Permit Condition # 8869 and new Permit Condition # 25703 were issued.

Shortly after the conditions were issued, subsequent research by Chevron, and verified by the District, determined that the thermal oxidizers were installed voluntarily to exempt the pump seals from regulatory leak standard requirements (originally Regulation 8, Rule 25, now Regulation 8, Rule 18). Emission reduction credits were never issued as a result of the abatement installation. As the thermal oxidizers were not regulatory-mandated and that Chevron had the option to follow Regulation 8, Rule 18 requirements; Chevron appealed the permit conditions.

In discussions with Chevron, Chevron stated a desire to maintain operational and abatement flexibility. During a visit to Chevron, the District determined that Chevron could not verify the collection efficiency of the abatement system to meet the abatement exemption requirements (95 percent reduction) of Regulation 8-18-110. As Chevron could not demonstrate the collection efficiency and, therefore, the overall reduction efficiency of the abatement system; Chevron agreed to expressly subject the pump seals to Regulation 8, Rule 18 requirements. To alleviate a District Enforcement concern that a pump seal would be placed on the Regulation 8-18 non-repairable list rather than using an available abatement device; Chevron agreed to a condition requiring such usage provided a pump seal may be placed on the list if such usage could not meet regulatory limits. Permit Condition # 8869 has been revised per the information above.

As usage of the thermal oxidizer, and therefore the carbon system, was not regulatory-mandated; Permit Condition # 25703 has been revised as well.

Revised Permit Conditions # 8869 and # 25703 have been attached for review.

I recommend that revised Permit Conditions # 8869 and # 25703 be issued for Plant # 10.

NCM:ncm
Attachments

PERMIT CONDITIONS

Condition #8869 For S-32111, S-32112, S-32113, S-32114, S-32115, and S-32116:

Fugitive Sources – Pumps & Compressor Seals:
S-32111 – Fugitive Sources – No. 17 Pump Station
S-32112 – Fugitive Sources – LPG
S-32113 – Fugitive Sources – Yard DIB
S-32114 – Fugitive Sources – No. 21 Pump Station
S-32115 – Fugitive Sources – FCC Unit
S-32116 – Fugitive Sources – Alkylation Plant

Application # 10361, Plant # 10 (2/4/1993) – Thermal Oxidizers (Parts 1 – 4)
Application # 25630, Plant # 10 (8/19/2013) – Abatement Clarification (Part 5)

Condition Parts 1, 2, and 4 only apply when A-620, A-622, A-623, A-624, A-627, or A-628 is used to exempt an applicable source from Regulation 8, Rule 18 requirements per the exemption of Regulation 8-18-110:

1. The owner/operator of A-620, A-627, and A-628 Thermal Oxidizers (Model ES-300) shall maintain each at a minimum VOC destruction efficiency of 95% by weight. The owner/operator shall operate each A-620, A-627, and A-628 (Model ES-300) at a minimum temperature of 1500 deg F. (Basis: BACT, 40 CFR 60.482-10 (c), 40 CFR 60.692-5 (a), and 40 CFR 61.242-11 (c)) [Basis: 2-1-106, 2-1-403]

17. The owner/operator of A-622 through 624 Thermal Oxidizers (Model ES-60H) shall maintain each at a minimum VOC destruction efficiency of 95% by weight. The owner/operator shall operate each A- 622 through 624 (Model ES-60H) at a minimum temperature of 1565 deg F. (Basis: BACT, 40 CFR 60.482-10 (c), 40 CFR 60.692-5 (a), and 40 CFR 61.242-11 (c))

18. The owner/operator of each Thermal Oxidizer (A-620, A-622, A-623, A624, A-627, and A-628) shall have a continuous temperature monitor. Each pump duct shall be equipped with a continuous flow monitor. (Basis: BACT)

19. The owner/operator shall monitor twice daily and record in a District approved log the temperature of each of the thermal oxidizers (A- 620, A-622, A-623, A-624, A-627, and A-628). These records shall be kept on site and made available for District inspection upon request for a period of 60 months from the date of entry. (Basis: BACT)

20. At all times, the owner/operator of each source shall comply with Regulation 8, Rule 18 requirements. The exemption of Regulation 8-18-110 does not apply unless Chevron can demonstrate abatement using a District-approved abatement device that reduces VOC emissions by a minimum of 95% by weight where reduction efficiency = VOC collection efficiency x VOC destruction efficiency. Unless usage of an abatement device (in accordance with manufacturer's specification) is not able to comply with Regulation 8, Rule 18 limits, a source shall not be placed on the Regulation 8, Rule 18 non-repairable list if an associated abatement device (or District-approved alternative) is operable.

(Basis: 2-1-403)

20. The owner/operator of each Thermal Oxidizer (A-620, A-622, A-623, A-624, A-627, and A-628) shall continuously operate each Thermal Oxidizer whenever the abated source is operated. Thermal Oxidizer A-620 shall abate S-32112 emissions at all times. Thermal Oxidizer A-622 shall abate S-32113 emissions at all times. Thermal Oxidizer A623 shall abate S-32114 emissions at all times. Thermal Oxidizer A-624 shall abate S-32111 emissions at all times. Thermal Oxidizer A-627 shall abate S-32115 emissions at all times. Thermal Oxidizer A-628 shall abate S-32116 emissions at all times. (Basis: cumulative increase)

COND# 25703 ----------

Conditions for A-629 Temporary Carbon System Vent-Scrub Vapor Phase Adsorbers, Model: VSC-200, 2 sets of 3 drums, 200 lbs each
Abating S-32111 No. 17 Pump Station Fugitive Emissions
Application # 25630, Plant # 10 (08/19/2013)

1. Whenever A-624 (thermal oxidizer) is taken out of service, the owner/operator shall abatemay abate S-32111 (No. 17 Pump Station) emissions at all times by abatement device A-629 (temporary carbon system) consisting of two separate trains, each containing three 200 lb activated carbon vessels arranged in series.

2. The owner/operator shall only operate one of the two A-629 carbon trains at any given time. Whenever one of the A-629 trains is in use, the other train shall be physically prevented (e.g. block valve) from accepting flow.
[Basis: 2-1-403, Cumulative Increase]

3. The owner/operator shall use a Flame Ionization Detector (FID) to monitor at least daily for total organic compounds (TOC), as C1, at the inlet of A-629 and at the outlet of each carbon vessel in series. The FID monitor shall have a resolution of at least 0.01 parts per million (ppm). Monitoring is only required when A-629 and the abated source (S-32111 No. 17 Pump Station) are in operation. The FID shall be calibrated and maintained according to U.S. EPA Method 21 and FID manufacturer specifications. For each period of A-629 operation, the owner/operator may propose for District review, based on actual measurements taken at the site during operation of the source, that monitoring frequency be changed, after the first six days of A-629 operation, based on the decline in organic emissions and/or the demonstrated breakthrough rates of the carbon vessels. Written approval by the District's Engineering Division must be received by the owner/operator prior to a change to the monitoring frequency.
[Basis: 2-1-106, 2-1-403]

4. All TOC monitor samples shall be representative. The owner/operator shall conduct all TOC monitoring using a monitor probe fitted with a rubber stopper (or similar device) to prevent ambient air from entering the sample inlet and diluting the sample. All TOC monitor samples shall be representative, as determined by the APCO, of the A-629 emissions stream at all sample points. The owner/operator shall introduce and hold the monitor probe directly into the A-629 emissions stream at each sample point. If the sample point consists of a t-joint, the monitor probe must be inserted into the main exhaust stream. The owner/operator shall design, construct, and operate the carbon system (A-629) and sampling system to allow representative sampling as defined in District Manual of Procedures, Volume IV. If sample dilution is found

~~to occur or monitor sampling by the owner/operator is not representative of the emission stream, a violation of this Part shall be deemed to have occurred.~~
[Basis: 2-1-403]

5. The owner/operator shall record all TOC monitor readings in a daily monitoring log at the time the readings are taken.
[Basis: 2-1-403]

6. The owner/operator of A-629 shall abate TOC emissions, as C1, by at least 95 percent or greater. The A-629 abatement efficiency shall be determined using the TOC monitoring results of Part 3.
[Basis: 2-1-106, 2-1-403]

7. The owner/operator of A-629 shall not exceed a TOC concentration at the A-629 outlet of 2.0 parts per million by volume, as C1.
[Basis: 2-1-106, 2-1-403]

8. The owner/operator shall change out the first carbon vessel with unspent carbon upon breakthrough, defined as the detection at the vessel out of the higher of the following:
   a. 10% of the inlet stream concentration to the carbon vessel, or
   b. 200 ppmv or greater (as C1)
[Basis: Cumulative Increase]

9. The owner/operator shall change out the second to last carbon vessel with unspent carbon upon breakthrough, defined as the detection at the vessel out of the higher of the following:
   a. 10% of the inlet stream concentration to the carbon vessel, or
   b. 20 ppmv or greater (as C1)
[Basis: Cumulative Increase]

10. The owner/operator shall change out the last carbon vessel with unspent carbon upon detection at its outlet of 2 ppmv or greater (as C1).
[Basis: 2-1-106, 2-1-403]

11. The owner/operator of A-629 shall not exceed a flow rate of 4.0 cubic feet per minute. The owner/operator shall install variable area float gauges (ball floats or similar devices) on each A-629 train to indicate A-629 flow rate and verify compliance with the 4.0 cubic feet per minute limit. The gauges shall have a minimum resolution of 0.2 cubic feet per minute.
[Basis: 2-1-106, 2-1-403]

12. Whenever TOC monitoring is conducted, the owner/operator of A-629 shall also take readings of the flow meter required in Part 10 at the same time and record the flow rate readings in the same daily monitoring log required in Part 5. The owner/operator of A-629 shall first verify that the flow meter is working (by tapping the sight glass to verify ball indicator is not stuck).
[Basis: 2-1-106, 2-1-403]

13. As A-629 shall only be used when A-624 is taken out of service, the owner/operator shall maintain A-624 according to manufacturer recommendations. All maintenance on A-624 shall be recorded in a log ~~book~~ available to the APCO upon request. A copy of the manufacturer preventative maintenance recommendations shall be made available to the APCO upon request. ~~kept with the A-624 maintenance log book~~.
[Basis: 2-1-403]

14. The owner/operator shall maintain the following records onsite for at least five years from date of last entry:
    a. all TOC monitoring results,
    b. all flow meter readings,
    c. FID monitor serial number and identification,
    d. FID monitor calibration results,
    e. Monitor operator name,
    f. reason for any periods where TOC readings were not taken,
    g. date and time of all readings, and
    h. date each carbon drum was taken out of service.

    [Basis: 2-1-403]

ENGINEERING EVALUATION
Chevron Products Company
Application: 25630
Plant: 10
841 Chevron Way, Richmond, CA 94801

BACKGROUND

Chevron Products Company (Chevron) has applied to obtain a Permit to Operate (PTO) under the Accelerated Permitting Program from the Bay Area Air Quality Management District (BAAQMD or "District") for the following equipment:

A-629 Temporary Carbon System for Abating No. 17 Pump Station Fugitive Emissions (S-32111)
Vent-Scrub Vapor Phase Adsorbers, Model: VSC-200,
2 Sets of 3 Drums, 4 CFM

Fugitive emissions (S-32103) from 15 pump casing seals at Chevron's No. 17 Pump Station are currently abated by A-624 (Thermal Oxidizer). At the time of application submittal, A-624 was not operating as a result of a malfunction. In the course of an investigation by the District's Enforcement Division, A-624 was found not to have been maintained, contrary to manufacturer recommendations. As a result of an Enforcement agreement, Chevron has submitted this application.

While A-624 is repaired and during times of maintenance and malfunction periods of A-624, Chevron is requesting the use of a dual train, temporary carbon system each comprising of three 200 pound (lb) carbon canisters in series with only one train used at any given time. The parallel train would allow continuous abatement of No. 17 pump station fugitive emissions while swapping out carbon canisters during periods of carbon saturation (carbon breakthrough). A compressed air operated eductor located at the exit of the carbon train will create a vacuum in the system and pull No. 17 Pump Station fugitive emissions through the carbon train.

Although the use of the system would be temporary, the abatement device would remain permanently on site.

In discussions with Chevron, Chevron was unsure if A-624 were required to continuously abate Chevron's No. 17 Pump Station as Permit Condition # 8869 did not explicitly state the requirement. However, in the original permit application (Application 10361), Chevron stated A-624 would continuously abate No. 17 Pump Station emissions. The BAAQMD Application 10361 engineering evaluation report also stated that A-624 would continuously abate No. 17 Pump Station emissions. Further, Application 10361 included eight thermal oxidizers all with statements that all of them would continuously abate their respective sources and all given the same Permit Condition # 8869.

For clarification purposes, Condition # 8869 will be modified to explicitly state that the abatement devices must continuously abate as stated in the original permit application and assumed in the

BAAQMD engineering evaluation report. Without such clarification, Chevron may inadvertently not abate and would therefore be in violation of providing false information in a permit application and/or not operating as stated in their permit application and would potentially be in violation since the date of the permit application (1992).

District Source number S-32103 was created in the early 1990's and assigned as a general source number for all fugitive emissions from pump seals and compressors at Chevron. However, fugitive emissions from certain pump seals and compressors are abated by several abatement devices. As it would be inappropriate to apply an abatement factor to unabated emissions or one abatement factor to represent multiple abatement efficiencies when calculating annual emission inventory estimates, new source numbers will be created for those pump stations that have abated fugitive emissions. The following new exempt source numbers will be created:

S-32111 Fugitive Sources – No. 17 Pump Station – Pumps & Compressor Seals
Abated by: A624 Thermal Oxidizer
A629 Temporary Carbon System

S-32112 Fugitive Sources – LPG Racks – Pumps & Compressor Seals
Abated by: A620 Thermal Oxidizer

S-32113 Fugitive Sources – Yard DIB – Pumps & Compressor Seals
Abated by: A622 Thermal Oxidizer

S-32114 Fugitive Sources – No. 21 Pump Station – Pumps & Compressor Seals
Abated by: A623 Thermal Oxidizer

S-32115 Fugitive Sources – FCC Unit – Pumps & Compressor Seals
Abated by: A627 Thermal Oxidizer

S-32116 Fugitive Sources – Alkylation Plant – Pumps & Compressor Seals
Abated by: A628 Thermal Oxidizer

Because the above source numbers are created as a result of how the District's database system calculates emission inventories and do not represent new physical sources, fees have not been invoiced for S-32111 through S-32116. Further, the above sources were previously permitted as one exempt source prior to the change in Regulation 3 (Fees) when exempt sources had no permit fees.

EMISSIONS

To meet the limited exemption eligibility criteria of the Accelerated Permitting Program in Regulation 2-1-106, Chevron must certify that the replacement abatement device is as efficient as or more efficient than the abatement device being replaced.

The temporary carbon system (A-629) would replace a thermal oxidizer (A-624) during periods of A-624 non-operation and therefore A-629 must be as efficient as or more efficient than A-624 to qualify for the Accelerated Permitting Program.

BAAQMD Permit Condition Number 8869 Part 2 requires an A-624 control efficiency of 95 percent.

A search of the District's source test database revealed that the District has not conducted a source test on A-624 nor have any third-party-conducted source test results been provided to the District. However, a third-party, Best Environmental, has conducted a 2006 District-approved source test on A-623, an identical thermal oxidizer abating fugitive emissions from the No. 21 pump station seals.

Results of the 2006 source test on A-623, as provided by Chevron, indicated an inlet flow rate of 4 cubic feet per minute (CFM) and a total organic compound (TOC) inlet concentration, expressed as methane (CH_4), of approximately 8,000 parts per million by volume (ppmv). The results indicated an outlet TOC concentration of less than 2 ppmv after abatement.

Because the response of a flame ionization detector (FID), used in the source test, is equal to the number of carbon atoms present in the sample, TOC analysis will be done using the same number of carbon atoms as expressed in the source test results, one carbon atom (C_1).

To ensure that after-abatement mass emissions from A-629 do not exceed those of A-624, Chevron has proposed to limit the carbon system, A-629, flow rate to 4 CFM and TOC exhaust concentration to 2 ppmv TOC as C_1.

Basis:

Inlet TOC:	8,000 ppmv as C_1
Outlet TOC:	2 ppmv as C_1
Flow Rate:	4 CFM
TOC Molar Mass (M):	12 lb/mol (molar mass of carbon)
Molar volume:	379.48 cubic feet per lb-mol at 60° F.
Exhaust Temperature:	70° F
Exhaust Pressure:	Atmospheric
Hours of Operation:	24 hours/day, 365 days/year

Emissions for A-629
Although emissions will be conditioned to remain approximately equal to or less than those of A-624, emission estimates are still required to ascertain if the application meets the Accelerated Permitting Program (Regulation 2-1-106) criteria.

Therefore, emissions are estimated using the following equation converting standard conditions to ambient conditions:

$$PPM \; x \; M_{pollutant} \; x \frac{1 \; lb-mol}{379.48 \; ft^3} \; x \frac{519.67 \; R \; (60 \; deg.F + 459.67)}{529.67 \; R \; (70 \; deg.F + 459.67)} \; x \frac{ft^3}{minute} \; x \frac{60 \; minutes}{hour} = \frac{lbs_{pollutant}}{hour}$$

Uncontrolled Emissions:

$$\frac{8{,}000}{1{,}000{,}000}\ x\ 12\frac{lb\ POC}{mol}\ x\frac{1\ lb-mol}{379.48\ ft^3}\ x\frac{519.67\ R\ (60\ deg.F+459.67)}{529.67\ R\ (70\ deg.F+459.67)}\ x\frac{4\ ft^3}{minute}\ x\frac{60\ minutes}{hour}=\frac{0.06\ lbs_{POC}}{hour}$$

$$\frac{0.06\ lbs_{pollutant}}{hour}\ x\frac{24\ hours}{day}=\ 1.43\frac{lbs_{POC}}{day}$$

Controlled Emissions:

$$\frac{2}{1{,}000{,}000}\ x\ 12\ lb\ x\frac{1\ lb-mol}{379.48\ ft^3}\ x\frac{519.67\ R\ (60\ deg.F+459.67)}{529.67\ R\ (70\ deg.F+459.67)}\ x\frac{4\ ft^3}{minute}\ x\frac{60\ minutes}{hour}=\frac{1.5\ E^{-5}\ lbs_{POC}}{hour}$$

$$\frac{1.5\ E^{-5}\ lbs_{POC}}{hour}\ x\frac{24\ hours}{day}=\frac{3.6\ E^{-4}\ lbs_{POC}}{day}$$

$$\frac{3.6\ E^{-4}\ lbs_{POC}}{day}\ x\frac{365\ days}{year}=\ 0.13\frac{lbs_{POC}}{year}$$

PLANT CUMULATIVE INCREASE

Emissions will not increase with this application because the carbon system (A-629) does not produce secondary emissions in the abatement process, A-629 will only be operated when A-624 does not, and mass emissions from A-629 will be conditioned to be equal to or less than those produced by A-624. Therefore, the abated source is not considered a modified source per Regulation 2-1-234. As such, the offset requirements of Regulation 2-2-302 do not apply and cumulative increase is not required.

TOXIC RISK SCREENING ANALYSIS

Toxic emissions from A-629 occur as benzene in the abated emissions stream. Even with a conservative assumption that the entire exhaust stream is benzene, estimated A-629 emissions would not exceed the Regulation 2-5 Table 2-5-1 benzene acute trigger level of 2.9 lbs per hour or the benzene chronic trigger level of 3.8 lbs per year. Therefore, this application does not require a toxic risk screening analysis.

STATEMENT OF COMPLIANCE

Regulation 2, Rule 1

Section 2-1-106:
The replacement of A-624 with A-629 during maintenance or malfunction periods is eligible for the Accelerated Permitting Program provided that uncontrolled emissions of TOC are less than 10 lbs per highest day, that toxic emissions do not exceed Regulation 2-5 Table 2-5-1 levels, and a public notice is not required. As discussed in the Emissions Section, estimated emissions are less than 10 lbs per highest day and toxic emissions are not expected to exceed the trigger levels of Table 2-5-1.

The replacement abatement device must also be certified to be as efficient as or more efficient than the abatement device being replaced. Chevron has provided the certification as well as

agreed to TOC concentration and mass emission limits to ensure mass emissions from A-629 would not exceed those that would be produced by A-624.

Public Notice - Schools
This source is not within 1,000 feet from the nearest school and therefore is not subject to the public notification requirements of Regulation 2-1-412.

Section 2-1-316:
BAAQMD Regulation 2-1-316 requires a permit if a toxic risk screening analysis is required or if a new or modified source emits 2.5 tons or more per year of any single hazardous air pollutant (HAP) or 6.25 tons or more per year of any combination of HAPs. The carbon system, A-629, is not a new or modified source nor will this application allow an increase in emissions at the abated source, S-32103. Therefore, this section is not applicable to A-629.

Section 2-1-317:
BAAQMD Regulation 2-1-317 requires a permit for any source that has received a public nuisance violation within any consecutive 180-day period. A search of the District's IRIS database revealed that no public nuisance violation notices have been issued to this facility for Number 17 Pump Station (Source S-32103).

Section 2-1-318:
BAAQMD Regulation 2-1-318 requires a permit for any new or modified source that emits more than 0.6 ton per year of lead, 0.007 ton per year of asbestos, 0.0004 ton per year of beryllium, 0.1 ton per year of mercury, 1 ton per year of vinyl chloride, 3 tons per year of fluorides, 7 tons per year of sulfuric acid mist, or 10 tons per year of reduced sulfur compounds (including hydrogen sulfide). The abated source, S-32103, will not be modified with the application and A-629 is not considered a new source. Therefore, this section is not applicable.

Section 2-1-319:
BAAQMD Regulation 2-1-319 requires permitting of any new or modified source emitting a regulated air pollutant greater than 5 tons per year, after abatement, as well as any source subject to Regulation 2-1-316, Regulation 2-1-317, or Regulation 2-1-318. As previously discussed, A-629 is not a new or modified source nor will this application modify the abated source S-32103 (Number 17 Pump Station Seals).

Section 2-1-403:
BAAQMD Regulation 2-1-403 states that the APCO may impose any permit condition that he deems reasonably necessary to insure compliance.

As discussed and agreed to by Chevron during an initial meeting resulting from Enforcement action, the carbon system volumetric flow rate and TOC exhaust concentration will be limited and monitored on a daily basis. These limits will ensure that the basis for the Accelerated Permit is maintained. A conditioned mass limit would not be appropriate as it would require a source test to demonstrate compliance and would be monitored less frequently than using an installed flow meter and a portable TOC instrument (Flame Ionization Device). Further, a mass limit and associated

source test would not be commensurate with conditions placed on other carbon abatement systems at Chevron and other refineries.

As A-629 use will be limited, used only during periods when A-624 is down for maintenance; daily monitoring will be required to ensure carbon breakthrough has not occurred.
Because an eductor is used to pull a vacuum on the carbon system and t-branch joints are used for exhaust sampling between each carbon drum and stack, it may be possible that ambient air would be pulled into any sample point (rather than exhausted out) and any TOC monitoring would be diluted by incoming air. Therefore, for representative sampling a stopper will be required to prevent dilution by incoming air. It will also be required that the TOC monitor probe must be inserted into the exhaust stream to prevent sampling from a "dead leg". Chevron has agreed to use such a device and to monitor as such. Because a dilution prevention device will be used and the probe will be inserted directly into the exhaust stream, EPA Method 21 (fugitive TOC monitoring) is not appropriate in this instance as EPA Method 21 allows for monitoring at up to one centimeter away from the sample opening.

To alleviate an Enforcement concern regarding representative sampling, a requirement for representative sampling will be imposed. This is similar to all requirements inherent in any source test per Part 1.2.2 of Volume IV of the District's Manual of Procedures. On-going compliance demonstrations will not be required. However, if the District determines that sample dilution is intentionally occurring, a violation will be deemed to have occurred.

Because this application is the result of Chevron not following manufacturer-recommended maintenance for A-624 and A-629 will only be used when A-624 is maintained, a maintenance log for A-624 will be required to be kept with A-624. This will ensure that maintenance is readily recorded and easily verifiable in the field by District Inspectors.

Records of all A-629 sample monitoring and A-624 maintenance will be required along with the name of any monitoring personnel. The names of monitoring personnel will be recorded in case there are any questions by District Inspectors regarding a monitor reading.

The serial number(s) and Chevron identification(s) of the TOC monitors used will also be required to be recorded as that will allow District Inspectors to verify that TOC monitors have been properly calibrated and maintained and monitor readings are valid.

Regulation 2, Rule 2

Best Available Control Technology (BACT)

Best Available Control Technology is required if emissions of any criteria pollutant are greater than 10 pounds per highest day. As shown in the Emissions Section, estimated emissions from A-629 are less than 10 pounds per day. Therefore, BACT is not required.

Offsets

Because emissions from A-629 will be conditioned to remain at or below current estimated rates from A-624, the source abated by A-629, S-32103 is not considered new or modified in this application. Therefore, the offset provisions of Regulation 2-2-302 do not apply.

CEQA
This application is considered to be exempt under the District's Regulation 2-1-312.2 and therefore is not subject to CEQA review. Chevron has provided CEQA-related information (a completed BAAQMD Appendix H form).

PSD
PSD is not triggered.

Regulation 3
Regulation 3 requires payment of permit fees. Fees have been invoiced and paid by Chevron.

Regulation 8, Rule 18
The abated source, S-32111, is subject to Regulation 8, Rule 18 and therefore the abatement device, A-629, is also subject to Regulation 8, Rule 18. An eductor at the exhaust of A-629 will create a vacuum to pull the abated stream through the carbon train. Therefore, new components installed with A-629 will be in a vacuum service and eligible for the limited exemption of Regulation 8-18-116 (exemption from monitoring, identification, and recordkeeping). However, new components will still be subject to the fugitive emissions leak standards listed in the Regulation 8-18-300 Section and subject to Enforcement action if a leak is discovered.

As new components will operate in a vacuum, compliance with the regulation is expected.

New Source Performance Standards (NSPS)
The abated source, S-32103, is subject to Title 40, Part 60, Subpart GGG of the Code of Federal Regulations (40 CFR 60 Subpart GGG – NSPS for Equipment Leaks of VOC in Petroleum Refineries for which Construction, Reconstruction, or Modification Commenced After January 4, 1982, and on or Before November 7, 2006). 40 CFR 60.592(a) requires complying with the requirements listed in 40 CFR 60.482-1 to 60.482-10 of 40 CFR 60 Subpart VV.

40 CFR 60.482-10(b) requires that A-629 meet an abatement efficiency of 95 percent or greater or a VOC exit concentration of 20 ppmv, whichever is less stringent. A-629 will be conditioned to comply with these requirements.

National Emissions Standards for Hazardous Air Pollutants (NESHAP)
The abated source, S-32103, is subject to 40 CFR 63 Subpart CC (NEHSAP from Petroleum Refineries). 40 CFR 63.648(a) requires complying with 40 CFR 60 Subpart VV. As discussed above, A-629 is expected to comply with the provisions of 40 CFR 60 Subpart VV and therefore with 40 CFR 63 Subpart CC.

PERMIT CONDITIONS

Condition #8869 For S-3211103, S-32112, S-32113, S-32114, S-32115, and S-32116:

Fugitive Sources – Pumps & Compressor Seals:
S-32111 – Fugitive Sources – No. 17 Pump Station
S-32112 – Fugitive Sources – LPG
S-32113 – Fugitive Sources – Yard DIB
S-32114 – Fugitive Sources – No. 21 Pump Station
S-32115 – Fugitive Sources – FCC Unit
S-32116 – Fugitive Sources – Alkylation Plant

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1. The owner/operator of A-620, A-627, and A-628 Thermal Oxidizers (Model ES-300) shall maintain each at a minimum VOC destruction efficiency of 95% by weight. The owner/operator shall operate each A-620, A-627, and A-628 (Model ES-300) at a minimum temperature of 1500 deg F. (~~b~~Basis: BACT, 40 CFR 60.482-10 (c), 40 CFR 60.692-5 (a), and 40 CFR 61.242-11 (c))

2. The owner/operator of A-622 through 624 Thermal Oxidizers (Model ES-60H) shall maintain each at a minimum VOC destruction efficiency of 95% by weight. The owner/operator shall operate each A- 622 through 624 (Model ES-60H) at a minimum temperature of 1565 deg F. (~~b~~Basis: BACT, 40 CFR 60.482-10 (c), 40 CFR 60.692-5 (a), and 40 CFR 61.242-11 (c))

3. The owner/operator of each Thermal Oxidizer (A-620, A-622, A-623, A624, A-627, and A-628) shall have a continuous temperature monitor. Each pump duct shall be equipped with a continuous flow monitor. (~~b~~Basis: BACT)

4. The owner/operator shall monitor twice daily and record in a District approved log the temperature of each of the thermal oxidizers (A- 620, A-622, A-623, A-624, A-627, and A-628). These records shall be kept on site and made available for District inspection upon request for a period of 60 months from the date of entry. (~~b~~Basis: BACT)

5. The owner/operator of each Thermal Oxidizer (A-620, A-622, A-623, A-624, A-627, and A-628) shall continuously operate each Thermal Oxidizer whenever the abated source is operated. Thermal Oxidizer A-620 shall abate S-32112 emissions at all times. Thermal Oxidizer A-622 shall abate S-32113 emissions at all times. Thermal Oxidizer A623 shall abate S-32114 emissions at all times. Thermal Oxidizer A-624 shall abate S-32111 emissions at all times. Thermal Oxidizer A-627 shall abate S-32115 emissions at all times. Thermal Oxidizer A-628 shall abate S-32116 emissions at all times. (Basis: cumulative increase)

COND# 25703 ----------

Conditions for A-629 Temporary Carbon System Vent-Scrub Vapor Phase Adsorbers, Model: VSC-200, 2 sets of 3 drums, 200 lbs each
Abating S-32111 No. 17 Pump Station Fugitive Emissions
Application # 25630, Plant # 10 (08/19/2013)

2. Whenever A-624 (thermal oxidizer) is taken out of service, the owner/operator shall abate S-32111 (No. 17 Pump Station) emissions at all times by abatement device A-629 (temporary carbon system) consisting of two separate trains, each containing three 200 lb activated carbon vessels arranged in series.

3. The owner/operator shall only operate one of the two A-629 carbon trains at any given time. Whenever one of the A-629 trains is in use, the other train shall be physically prevented (e.g. block valve) from accepting flow.
[Basis: 2-1-403, Cumulative Increase]

4. The owner/operator shall use a Flame Ionization Detector (FID) to monitor at least daily for total organic compounds (TOC), as C1, at the inlet of A-629 and at the outlet of each carbon vessel in series. The FID monitor shall have a resolution of at least 0.01 parts per million (ppm). Monitoring is only required when A-629 and the abated source (S-32111 No. 17 Pump Station) are in operation. The FID shall be calibrated and maintained according to U.S. EPA Method 21 and FID manufacturer specifications.
[Basis: 2-1-106, 2-1-403]

4. The owner/operator shall conduct all TOC monitoring using a monitor probe fitted with a rubber stopper (or similar device) to prevent ambient air from entering the sample inlet and diluting the sample. All TOC monitor samples shall be representative, as determined by the APCO, of the A-629 emissions stream at all sample points. The owner/operator shall introduce and hold the monitor probe directly into the A-629 emissions stream at each sample point. If the sample point consists of a t-joint, the monitor probe must be inserted into the main exhaust stream. The owner/operator shall design, construct, and operate the carbon system (A-629) and sampling system to allow representative sampling. If sample dilution is found to occur or monitor sampling by the owner/operator is not representative of the emission stream, a violation of this Part shall be deemed to have occurred.
[Basis: 2-1-403]

5. The owner/operator shall record all TOC monitor readings in a daily monitoring log at the time the readings are taken.
[Basis: 2-1-403]

6. The owner/operator of A-629 shall abate TOC emissions, as C1, by at least 95 percent or greater. The A-629 abatement efficiency shall be determined using the TOC monitoring results of Part 3.
[Basis: 2-1-106, 2-1-403]

7. The owner/operator of A-629 shall not exceed a TOC concentration at the A-629 outlet of 2.0 parts per million by volume, as C1.
[Basis: 2-1-106, 2-1-403]

8. The owner/operator shall change out the first carbon vessel with unspent carbon upon breakthrough, defined as the detection at the vessel out of the higher of the following:
    a. 10% of the inlet stream concentration to the carbon vessel, or
    b. 200 ppmv or greater (as C1)
[Basis: Cumulative Increase]

9. The owner/operator shall change out the second to last carbon vessel with unspent carbon upon breakthrough, defined as the detection at the vessel out of the higher of the following:
    a. 10% of the inlet stream concentration to the carbon vessel, or
    b. 20 ppmv or greater (as C1)
[Basis: Cumulative Increase]

10. The owner/operator shall change out the last carbon vessel with unspent carbon upon detection at its outlet of 2 ppmv or greater (as C1).
[Basis: 2-1-106, 2-1-403]

11. The owner/operator of A-629 shall not exceed a flow rate of 4.0 cubic feet per minute. The owner/operator shall install variable area float gauges (ball floats or similar devices) on each A-629 train to indicate A-629 flow rate and verify compliance with the 4.0 cubic feet per minute limit. The gauges shall have a minimum resolution of 0.2 cubic feet per minute.
[Basis: 2-1-106, 2-1-403]

12. Whenever TOC monitoring is conducted, the owner/operator of A-629 shall also take readings of the flow meter required in Part 10 at the same time and record the flow rate readings in the same daily monitoring log required in Part 5. The owner/operator of A-629 shall first verify that the flow meter is working (by tapping the sight glass to verify ball indicator is not stuck).
[Basis: 2-1-106, 2-1-403]

13. As A-629 shall only be used when A-624 is taken out of service, the owner/operator shall maintain A-624 according to manufacturer recommendations. All maintenance on A-624 shall be recorded in a log book available to the APCO upon request. A copy of the manufacturer preventative maintenance recommendations shall be kept with the A-624 maintenance log book.
[Basis: 2-1-403]

14. The owner/operator shall maintain the following records onsite for at least five years from date of last entry:
    a. all TOC monitoring results,
    b. all flow meter readings,
    c. FID monitor serial number and identification,
    d. FID monitor calibration results,
    e. Monitor operator name,
    f. reason for any periods where TOC readings were not taken,
    g. date and time of all readings, and
    h. date each carbon drum was taken out of service.
    [Basis: 2-1-403]

RECOMMENDATION

Issue conditional Permits to Operate to Chevron Products Company for:

A-629 Temporary Carbon System for Abating No. 17 Pump Station Fugitive Emissions (S-32103)
Vent-Scrub Vapor Phase Adsorbers, Model: VSC-200,
2 Sets of 3 Drums, 4 CFM

S-32111 Fugitive Sources – No. 17 Pump Station – Pumps & Compressor Seals
Abated by: A624 Thermal Oxidizer
A629 Temporary Carbon System

S-32112 Fugitive Sources – LPG Racks – Pumps & Compressor Seals
Abated by: A620 Thermal Oxidizer

S-32113 Fugitive Sources – Yard DIB – Pumps & Compressor Seals
Abated by: A622 Thermal Oxidizer

S-32114 Fugitive Sources – No. 21 Pump Station – Pumps & Compressor Seals
Abated by: A623 Thermal Oxidizer

S-32115 Fugitive Sources – FCC Unit – Pumps & Compressor Seals
Abated by: A627 Thermal Oxidizer

S-32116 Fugitive Sources – Alkylation Plant – Pumps & Compressor Seals
Abated by: A628 Thermal Oxidizer

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Nicholas C. Maiden, P.E.
Air Quality Engineer II

ENGINEERING EVALUATION
Chevron Products Company
Application: 25747
Plant: 10
841 Chevron Way, Richmond, CA 94801

BACKGROUND

Chevron Products Company (Chevron) has applied to obtain an Authority to Construct and Permit to Operate from the Bay Area Air Quality Management District (BAAQMD or "District") for the following equipment:

A-632 Carbon System – Backup Abatement – No. 21 Pump Station Fugitive Emissions
Vent-Scrub Vapor Phase Adsorbers, Model: VSC-200,
2 Sets of 3 Drums, 4 CFM

as well as a change in permit conditions for:

A-629 Carbon System – Backup Abatement - No. 17 Pump Station Fugitive Emissions
Vent-Scrub Vapor Phase Adsorbers, Model: VSC-200,
2 Sets of 3 Drums, 4 CFM

and a change in description for:

A-622 Thermal Oxidizer, Afterburner
Model Number: ES60H

A-627 Thermal Oxidizer, Afterburner
Model Number: ES300

Fugitive emissions (S-32114) from 19 pump casing seals at Chevron's No. 21 Pump Station are currently abated by A-623 (Thermal Oxidizer).

During times of maintenance and malfunction periods of A-623, Chevron is requesting the use of a dual train, temporary carbon system each comprising of three 200 pound (lb) carbon canisters in series with only one train used at any given time. The parallel train would allow continuous abatement of No. 21 pump station fugitive emissions while swapping out carbon canisters during periods of carbon saturation (carbon breakthrough). A compressed air operated eductor located at the exit of the carbon train will create a vacuum in the system and pull No. 21 Pump Station fugitive emissions through the carbon train.

Although the use of the system would be temporary, the abatement device would remain permanently on site.

Chevron recently permitted a similar temporary carbon back up system, A-629, in Application # 25630 under the Accelerated Permitting Program. Within that application and to meet the requirements of

the Accelerated Permitting Program, Chevron agreed to a Total Organic Compound (TOC) concentration limit of 2 parts per million by volume (ppmv) at the outlet of the last carbon drum. Subsequent to that application, it was determined that that primary abatement device, A-624 thermal oxidizer was not regulatory required but was voluntarily installed by Chevron in order to meet the fugitive monitoring exemption of previous District Regulation 8, Rule 25 and current District Regulation 8, Rule 18. As the thermal oxidizer and carbon system are not regulatory required and represent voluntary emissions reductions, Chevron is requesting that the TOC limit be raised to 10 ppmv limit as listed in the District's Permit Handbook chapter on carbon abatement system permit conditions.

In the same application as A-623, thermal oxidizers A-622 and A-627 were also voluntarily installed to meet a regulatory exemption (previously Regulation 8-25-113, now Regulation 8-18-110).

Chevron is requesting the use of A-622 and A-627 as back up devices to other existing thermal oxidizers A-620, A-623, A-624, and A-628. Each thermal oxidizer abates fugitive emissions from separate pump stations: S-32111 (No. 17 Pump Station), S-32112 (LPG), S-32113 (Yard DIB), S-32114 (No. 21 Pump Station), S-32115 (FCC Unit), and S-32116 (Alkylation Plant).

A-620, A-627, and A-628 thermal oxidizers are Model ES-300 and have a larger flow capacity of 540 standard cubic feet per hour (SCFH) than A-622, A-623, and A-624, which are Model ES-60H and rated at 240 SCFH. Chevron is requesting the use of A-622 and A-627 as back up devices to non-identical model thermal oxidizers.

Sources S-32111 through S-32116 are subject to the same Permit Condition # 8869 that requires following the requirements of Regulation 8-18 at all times.

EMISSIONS

Emissions for A-632

As A-632 will only be used when A-623 is not operating, emissions from the abated source (S-32114) are not expected to increase above regulatory allowable limits.

Using the CAPCOA fugitive emissions calculation methodology[1], S-32114 has an uncontrolled, potential to emit fugitive emissions of:

Uncontrolled:

$$19\ Pump\ Seals\ x\ \frac{2.2\ kilograms}{lb}\ x\ 5.07E-05\ x\ (500\ ppm\ POC)^{0.622}\ x\frac{24\ hours}{day} = 2.4\ \frac{lbs_{POC}}{day}$$

Per Permit Condition # 8869, A-623 is required to have an abatement efficiency of 95 percent. Therefore, controlled emissions from S-31114 using A-623 are:

[1] CAPCOA, *California Implementation Guidelines for Estimating Mass Emissions of Fugitive Hydrocarbon Leaks at Petroleum Facilities*, February 1999

Controlled (using A-623):

$$\frac{2.4\ lbs_{POC}}{hour}\ x\ \frac{(100\ percent - 95\ percent\ abatement)}{100\ Percent} = 0.12\ \frac{lbs_{POC}}{day}$$

Per the standard District Permit Handbook permit conditions for carbon abatement, POC emissions from A-632 will be limited to 10 ppmv. Therefore, controlled emissions from A-632 are estimated as:

Controlled (using A-632):

$$\frac{10}{1{,}000{,}000}\ x\ 12\ lb\ x\frac{1\ lb-mol}{379.48\ ft^3}\ x\frac{519.67\ R\ (60\ deg.F + 459.67)}{529.67\ R\ (70\ deg.F + 459.67)}\ x\frac{4\ ft^3}{minute}\ x\frac{60\ minutes}{hour} = \frac{0.002\ lbs_{POC}}{hour}$$

As shown above, usage of A-632 will not increase emissions above allowable uncontrolled or current controlled rates.

Emissions for A-629

Although emissions will slightly increase with an increase in the TOC permit limit of 2 ppmv to 10 ppmv, use of A-629 is voluntary and the facility may opt to follow the requirements of Regulation 8-18. Regulation 8-18-303 allows fugitive emission leaks of up to 500 ppmv. Therefore, using the same CAPCOA methodology as above, S-32111 has an allowable, uncontrolled potential to emit of:

Uncontrolled:

$$15\ Pump\ Seals\ x\ \frac{2.2\ kilograms}{lb}\ x\ 5.07E-05\ x\ (500\ ppm\ POC)^{0.622}\ x\frac{24\ hours}{day} = 1.9\ \frac{lbs_{POC}}{day}$$

$$1.9\ \frac{lbs_{POC}}{day}\ x\ \frac{1\ day}{24\ hours} = 0.08\ \frac{lbs_{POC}}{hour}$$

Controlled emissions from A-629 with the existing limit are:

Controlled (using A-629 at 2 ppmv):

$$\frac{2}{1{,}000{,}000}\ x\ 12\ \frac{lb}{lb-mol}\ x\frac{1\ lb-mol}{379.48\ ft^3}\ x\frac{519.67\ R\ (60\ deg.F + 459.67)}{529.67\ R\ (70\ deg.F + 459.67)}\ x\frac{4\ ft^3}{minute}\ x\frac{60\ mins}{hour} = \frac{0.0004\ lbs_{POC}}{hour}$$

Controlled emissions from A-629 with the standard District Permit Handbook carbon abatement limit of 10 ppmv are:

Controlled (using A-629 at 10 ppmv):

$$\frac{10}{1{,}000{,}000}\ x\ 12\ \frac{lb}{lb-mol}\ x\frac{1\ lb-mol}{379.48\ ft^3}\ x\frac{519.67\ R\ (60\ deg.F + 459.67)}{529.67\ R\ (70\ deg.F + 459.67)}\ x\frac{4\ ft^3}{minute}\ x\frac{60\ mins}{hour} = \frac{0.002\ lbs_{POC}}{hour}$$

As shown above, raising the limit of A-629 to 10 ppmv will not increase emissions above allowable uncontrolled rates.

Therefore, emissions will not increase.

Emissions for A-622 and A-627

If A-622 and A-627 is used to back up identical model thermal oxidizers, emissions will remain unchanged.

If A-622 (Model ES-60H, 240 SCFH) is used to back-up a larger flow capacity, Model ES-300 thermal oxidizer (A-620, A-628), emissions should decrease as inlet concentration will remain unchanged and inlet flow will drop from 540 SCFH to 240 SCFH.

If A-627 (Model ES-300, 540 SCFH) is used to back up a smaller flow capacity, Model ES-60H thermal oxidizer (A-623, A-624), emissions will increase as shown below.

Basis:

Inlet Concentration:	8,000 PPM	(from source tests)
Inlet Flow Rates:	240 SCFH	(Model ES-60H)
	540 SCFH	(Model ES-300)
Abatement Efficiency:	95 Percent	(permit condition requirement)

Uncontrolled (Model ES-60H thermal oxidizer):

$$\frac{8{,}000}{1{,}000{,}000}\ x\ 12\ \frac{lb}{lb-mol}\ x\frac{1\ lb-mol}{379.48\ ft^3}\ x\frac{519.67\ R\ (60\ deg.F+459.67)}{529.67\ R\ (70\ deg.F+459.67)}\ x\frac{240\ ft^3}{hour}=\frac{1.3\ lbs_{POC}}{hour}$$

Controlled (Model ES-60H thermal oxidizer):

$$\frac{1.3\ lbs_{POC}}{hour}\ x\frac{(100-95\ Abatement\ Efficiency)}{100}=\frac{0.06\ lbs_{POC}}{hour}$$

Uncontrolled (A-627, Model ES-300 thermal oxidizer):

$$\frac{8{,}000}{1{,}000{,}000}\ x\ 12\ \frac{lb}{lb-mol}\ x\frac{1\ lb-mol}{379.48\ ft^3}\ x\frac{519.67\ R\ (60\ deg.F+459.67)}{529.67\ R\ (70\ deg.F+459.67)}\ x\frac{540\ ft^3}{hour}=\frac{2.8\ lbs_{POC}}{hour}$$

Controlled (Model ES-60H thermal oxidizer):

$$\frac{2.8\ lbs_{POC}}{hour}\ x\frac{(100-95\ Abatement\ Efficiency)}{100}=\frac{0.14\ lbs_{POC}}{hour}$$

As shown above, controlled emissions from using A-627 as a back up to a smaller flow capacity Model ES-60H thermal oxidizer (A-623, A-624) is estimated to result in an emissions increase of 0.08 lbs/day). However, as discussed above, use of the thermal oxidizers is voluntary in order to meet exemption eligibility requirements of Regulation 8, Rule 18. Therefore, although emissions may increase by 0.08 lbs/day up to 0.14 lbs per day.

PLANT CUMULATIVE INCREASE

As shown in the Emissions Section, emissions will not increase with this application. Therefore, the abated source is not considered a modified source per Regulation 2-1-234. As such, the offset requirements of Regulation 2-2-302 do not apply and cumulative increase is not required.

TOXIC RISK SCREENING ANALYSIS

Toxic emissions from A-632 occur as benzene in the abated emissions stream. Even with a conservative assumption that the entire exhaust stream is benzene, estimated A-632 emissions would not exceed the Regulation 2-5 Table 2-5-1 benzene acute trigger level of 2.9 lbs per hour or the benzene chronic trigger level of 3.8 lbs per year. Therefore, this application does not require a toxic risk screening analysis.

STATEMENT OF COMPLIANCE

Regulation 2, Rule 1

Public Notice - Schools

This source is not within 1,000 feet from the nearest school and therefore is not subject to the public notification requirements of Regulation 2-1-412.

Section 2-1-316:

BAAQMD Regulation 2-1-316 requires a permit if a toxic risk screening analysis is required or if a new or modified source emits 2.5 tons or more per year of any single hazardous air pollutant (HAP) or 6.25 tons or more per year of any combination of HAPs. The carbon system, A-632, is not a new or modified source nor will this application allow an increase in emissions at the abated source, S-32114. Therefore, this section is not applicable to A-632.

Section 2-1-317:

BAAQMD Regulation 2-1-317 requires a permit for any source that has received a public nuisance violation within any consecutive 180-day period. A search of the District's IRIS database revealed that no public nuisance violation notices have been issued to this facility for Number 21 Pump Station (Source S-32114).

Section 2-1-318:

BAAQMD Regulation 2-1-318 requires a permit for any new or modified source that emits more than 0.6 ton per year of lead, 0.007 ton per year of asbestos, 0.0004 ton per year of beryllium, 0.1 ton per year of mercury, 1 ton per year of vinyl chloride, 3 tons per year of fluorides, 7 tons per year of sulfuric acid mist, or 10 tons per year of reduced sulfur compounds (including hydrogen sulfide). The abated source, S-32114, will not be modified with the application and A-632 is not considered a new source. Therefore, this section is not applicable.

Section 2-1-319:

BAAQMD Regulation 2-1-319 requires permitting of any new or modified source emitting a regulated air pollutant greater than 5 tons per year, after abatement, as well as any source subject to Regulation 2-1-316, Regulation 2-1-317, or Regulation 2-1-318. As previously discussed, A-6232 is not a new or

modified source nor will this application modify the abated source S-32114 (Number 21 Pump Station Seals).

Regulation 2, Rule 2

Best Available Control Technology (BACT)

Best Available Control Technology is required if emissions of any criteria pollutant are greater than 10 pounds per highest day. As shown in the Emissions Section, estimated emissions from A-632 are less than 10 pounds per day. Therefore, BACT is not required.

Offsets
As shown in the Emissions Section, emissions will not increase with this application. Therefore, the abated sources are not considered modified sources per Regulation 2-1-234. As such, the offset requirements of Regulation 2-2-302 do not apply and cumulative increase is not required.

CEQA
This application is considered to be exempt under the District's Regulation 2-1-312.2 and therefore is not subject to CEQA review. Chevron has provided CEQA-related information (a completed BAAQMD Appendix H form).

PSD
PSD is not triggered.

Regulation 3
Regulation 3 requires payment of permit fees. Fees have been invoiced and paid by Chevron.

Regulation 8, Rule 18
The abated sources (S-32111 through S-32116) are subject to Regulation 8, Rule 18 and therefore the abatement devices (A-622, A-627, A-629, and A-632) are also subject to Regulation 8, Rule 18.

An eductor at the exhaust of A-632 will create a vacuum to pull the abated stream through the carbon train. Therefore, new components installed with A-632 will be in a vacuum service and eligible for the limited exemption of Regulation 8-18-116 (exemption from monitoring, identification, and recordkeeping). However, new components will still be subject to the fugitive emissions leak standards listed in the Regulation 8-18-300 Section and subject to Enforcement action if a leak is discovered.

As new components will operate in a vacuum, compliance with the regulation is expected.

New Source Performance Standards (NSPS)
The abated sources (S-32111 through S-32116) are subject to Title 40, Part 60, Subpart GGG of the Code of Federal Regulations (40 CFR 60 Subpart GGG – NSPS for Equipment Leaks of VOC in Petroleum Refineries for which Construction, Reconstruction, or Modification Commenced After January 4, 1982, and on or Before November 7, 2006). 40 CFR 60.592(a) requires complying with the requirements listed in 40 CFR 60.482-1 to 60.482-10 of 40 CFR 60 Subpart VV.

40 CFR 60.482-10(b) requires that A-632 meet an abatement efficiency of 95 percent or greater or a VOC exit concentration of 20 ppmv, whichever is less stringent. A-632 will be conditioned to comply with these requirements.

National Emissions Standards for Hazardous Air Pollutants (NESHAP)

The abated sources (S-32111 through S-32116) are subject to 40 CFR 63 Subpart CC (NEHSAP from Petroleum Refineries). 40 CFR 63.648(a) requires complying with 40 CFR 60 Subpart VV. As discussed above, A-632 is expected to comply with the provisions of 40 CFR 60 Subpart VV and therefore with 40 CFR 63 Subpart CC.

PERMIT CONDITIONS

CONDITION #8869 ----------

Fugitive Sources – Pumps & Compressor Seals:
S-32111 – Fugitive Sources – No. 17 Pump Station
S-32112 – Fugitive Sources – LPG
S-32113 – Fugitive Sources – Yard DIB
S-32114 – Fugitive Sources – No. 21 Pump Station
S-32115 – Fugitive Sources – FCC Unit
S-32116 – Fugitive Sources – Alkylation Plant

Application # 10361, Plant # 10 (2/4/1993) – Thermal Oxidizers (Parts 1 – 4)
Application # 25630, Plant # 10 (8/19/2013) – Abatement Clarification (Part 5)
Application # 25747, Plant # 10 (10/2013) – (Part 6)

Condition Parts 1, 2, and 4 only apply when A-620, A-622, A-623, A-624, A-627, or A-628 is used to exempt an applicable source from Regulation 8, Rule 18 requirements per the exemption of Regulation 8-18-110:

1. The owner/operator of A-620, A-627, and A-628 Thermal Oxidizers (Model ES-300) shall maintain each at a minimum VOC destruction efficiency of 95% by weight. The owner/operator shall operate each A-620, A-627, and A-628 (Model ES-300) at a minimum temperature of 1500 deg F. (Basis: BACT, 40 CFR 60.482-10 (c), 40 CFR 60.692-5 (a), and 40 CFR 61.242-11 (c))

2. The owner/operator of A-622 through 624 Thermal Oxidizers (Model ES-60H) shall maintain each at a minimum VOC destruction efficiency of 95% by weight. The owner/operator shall operate each A- 622 through 624 (Model ES-60H) at a minimum temperature of 1565 deg F. (Basis: BACT, 40 CFR 60.482-10 (c), 40 CFR 60.692-5 (a), and 40 CFR 61.242-11 (c))

3. The owner/operator of each Thermal Oxidizer (A-620, A-622, A-623, A624, A-627, and A-628) shall have a continuous temperature monitor. Each pump duct shall be equipped with a continuous flow monitor. (Basis: BACT)

4. The owner/operator shall monitor twice daily and record in a District approved log the temperature of each of the thermal oxidizers (A- 620, A-622, A-623, A-624, A-627, and A-628). These records shall be kept on site and made available for District inspection upon request for a period of 60 months from the date of entry. (Basis: BACT)

5. At all times, the owner/operator of each source shall comply with Regulation 8, Rule 18 requirements. The exemption of Regulation 8-18-110 does not apply unless Chevron can demonstrate abatement using a District-approved abatement device that reduces VOC emissions by

a minimum of 95% by weight where reduction efficiency = VOC collection efficiency x VOC destruction efficiency. At no time shall a source be placed on the Regulation 8, Rule 18 non-repairable equipment list if an associated abatement device (or District-approved alternative) is operable unless such usage (in accordance with manufacturer's specifications) is unable to comply with Regulation 8, Rule 18 limits.
(Basis: 2-1-403)

~~5.~~6. The owner/operator of A-622 and A-627 may use A-622 and A-627 as back up devices to thermal oxidizers A-621, A-623, A-624, and A-628. The owner/operator of A-622 and A-627 shall only use A-622 or A-627 as back up devices to thermal oxidizers of identical make and model.
(Basis: 2-1-403)

CONDITION # 25703 ----------

Conditions for A-629 Temporary Carbon System Vent-Scrub Vapor Phase Adsorbers, Model: VSC-200, 2 sets of 3 drums, 200 lbs each
Abating S-32111 No. 17 Pump Station Fugitive Emissions
Application # 25630, Plant # 10 (08/19/2013)

1. Whenever A-624 (thermal oxidizer) is taken out of service, the owner/operator may abate S-32111 (No. 17 Pump Station) emissions by abatement device A-629 (temporary carbon system) consisting of two separate trains, each containing three 200 lb or greater activated carbon vessels arranged in series.
[Basis: 2-1-106, 2-1-403]

2. The owner/operator shall only operate one of the two A-629 carbon trains at any given time. Whenever one of the A-629 trains is in use, the other train shall be physically prevented (e.g. block valve) from accepting flow.
[Basis: 2-1-403, Cumulative Increase]

3. The owner/operator shall use a Flame Ionization Detector (FID) to monitor at least daily for total organic compounds (TOC), as C1, at the inlet of A-629 and at the outlet of each carbon vessel in series. The FID monitor shall have a resolution of at least 0.01 parts per million (ppm). Monitoring is only required when A-629 and the abated source (S-32111 No. 17 Pump Station) are in operation. The FID shall be calibrated and maintained according to U.S. EPA Method 21 and FID manufacturer specifications. For each period of A-629 operation, the owner/operator may propose for District review, based on actual measurements taken at the site during operation of the source, that monitoring frequency be changed, after the first six days of A-629 operation, based on the decline in organic emissions and/or the demonstrated breakthrough rates of the carbon vessels. Written approval by the District's Engineering Division must be received by the owner/operator prior to a change to the monitoring frequency.
[Basis: 2-1-106, 2-1-403]

4. All TOC monitor samples shall be representative. The owner/operator shall conduct all TOC monitoring using a monitor probe fitted with a rubber stopper (or similar device) to prevent ambient air from entering the sample inlet and diluting the sample. The owner/operator shall introduce and hold the monitor probe directly into the A-629 emissions stream at each sample point. If the sample point consists of a t-joint, the monitor probe must be inserted into the main exhaust stream. The owner/operator shall design, construct, and operate the carbon system (A-629) and sampling system to allow representative sampling as defined in District Manual of Procedures, Volume IV.
[Basis: 2-1-403]

5. The owner/operator shall record all TOC monitor readings in a daily monitoring log at the time the readings are taken.
[Basis: 2-1-403]

6. The owner/operator of A-629 shall abate TOC emissions, as C1, by at least 95 percent or greater. The A-629 abatement efficiency shall be determined using the TOC monitoring results of Part 3.
[Basis: 2-1-106, 2-1-403]

7. The owner/operator of A-629 shall not exceed a TOC concentration at the A-629 outlet of 10~~2.0~~ parts per million by volume, as C1.
[Basis: 2-1-106, 2-1-403]

8. The owner/operator shall change out the first carbon vessel with unspent carbon upon breakthrough, defined as the detection at the vessel out of the higher of the following:
   a. 10% of the inlet stream concentration to the carbon vessel, or
   b. 1000~~200~~ ppmv or greater (as C1)
[Basis: Cumulative Increase]

9. The owner/operator shall change out the second to last carbon vessel with unspent carbon upon breakthrough, defined as the detection at the vessel out of the higher of the following:
   a. 10% of the inlet stream concentration to the carbon vessel, or
   b. 100~~20~~ ppmv or greater (as C1)
[Basis: Cumulative Increase]

10. The owner/operator shall change out the last carbon vessel with unspent carbon upon detection at its outlet of 10~~2~~ ppmv or greater (as C1).
[Basis: 2-1-106, 2-1-403]

11. The owner/operator of A-629 shall not exceed a flow rate of 4.0 cubic feet per minute. The owner/operator shall install variable area float gauges (ball floats or similar devices) on each A-629 train to indicate A-629 flow rate and verify compliance with the 4.0 cubic feet per minute limit. The gauges shall have a minimum resolution of 0.2 cubic feet per minute.
[Basis: 2-1-106, 2-1-403]

12. Whenever TOC monitoring is conducted, the owner/operator of A-629 shall also take readings of the flow meter required in Part 11 at the same time and record the flow rate readings in the same daily monitoring log required in Part 5. The owner/operator of A-629 shall first verify that the flow meter is working (by tapping the sight glass to verify ball indicator is not stuck).
[Basis: 2-1-106, 2-1-403]

13. As A-629 shall only be used when A-624 is taken out of service, the owner/operator shall maintain A-624 according to manufacturer recommendations. All maintenance on A-624 shall be recorded in a log made available to the APCO upon request. A copy of the manufacturer preventative maintenance recommendations shall be made available to the APCO upon request.
[Basis: 2-1-403]

14. The owner/operator shall maintain the following records onsite for at least five years from date of last entry:
   a. all TOC monitoring results,
   b. all flow meter readings,
   c. FID monitor serial number and identification,

d. FID monitor calibration results,
e. Monitor operator name,
f. reason for any periods where TOC readings were not taken,
g. date and time of all readings, and
h. date each carbon drum was taken out of service.

[Basis: 2-1-403]

Condition 25835 ----------

Conditions for A-632 Temporary Carbon System Vent-Scrub Vapor Phase Adsorbers, Model: VSC-200, 2 sets of 3 drums, 200 lbs each
Abating S-32114 No. 21 Pump Station Fugitive Emissions
Application # 25747, Plant # 10 (October 2013)

1. Whenever A-623 (thermal oxidizer) is taken out of service, the owner/operator may abate S-32114 (No. 21 Pump Station) emissions by abatement device A-632 (temporary carbon system) consisting of two separate trains, each containing three 200 lb or greater activated carbon vessels arranged in series.
[Basis: 2-1-403]

2. The owner/operator shall only operate one of the two A-632 carbon trains at any given time. Whenever one of the A-632 trains is in use, the other train shall be physically prevented (e.g. block valve) from accepting flow.
[Basis: 2-1-403, Cumulative Increase]

3. The owner/operator shall use a Flame Ionization Detector (FID) to monitor at least daily for total organic compounds (TOC), as C1, at the inlet of A-632 and at the outlet of each carbon vessel in series. The FID monitor shall have a resolution of at least 0.01 parts per million (ppm). Monitoring is only required when A-632 and the abated source (S-32114 No. 21 Pump Station) are in operation. The FID shall be calibrated and maintained according to U.S. EPA Method 21 and FID manufacturer specifications. For each period of A-632 operation, the owner/operator may propose for District review, based on actual measurements taken at the site during operation of the source, that monitoring frequency be changed, after the first six days of A-632 operation, based on the decline in organic emissions and/or the demonstrated breakthrough rates of the carbon vessels. Written approval by the District's Engineering Division must be received by the owner/operator prior to a change to the monitoring frequency.
[Basis: 2-1-403]

4. All TOC monitor samples shall be representative. The owner/operator shall conduct all TOC monitoring using a monitor probe fitted with a rubber stopper (or similar device) to prevent ambient air from entering the sample inlet and diluting the sample. The owner/operator shall introduce and hold the monitor probe directly into the A-632 emissions stream at each sample point. If the sample point consists of a t-joint, the monitor probe must be inserted into the main exhaust stream. The owner/operator shall design, construct, and operate the carbon system (A-632) and sampling system to allow representative sampling as defined in District Manual of Procedures, Volume IV.
[Basis: 2-1-403]

5. The owner/operator shall record all TOC monitor readings in a daily monitoring log at the time the readings are taken.
[Basis: 2-1-403]

6. The owner/operator of A-632 shall abate TOC emissions, as C1, by at least 95 percent or greater. The A-632 abatement efficiency shall be determined using the TOC monitoring results of Part 3. [Basis: 2-1-403]

7. The owner/operator shall change out the first carbon vessel with unspent carbon upon breakthrough, defined as the detection at the vessel out of the higher of the following:
   i. 10% of the inlet stream concentration to the carbon vessel, or
   j. 1000 ppmv or greater (as C1)
   [Basis: Cumulative Increase]

8 The owner/operator shall change out the second to last carbon vessel with unspent carbon upon breakthrough, defined as the detection at the vessel out of the higher of the following:
   b. 10% of the inlet stream concentration to the carbon vessel, or
   c. 100 ppmv or greater (as C1)
   [Basis: Cumulative Increase]

The owner/operator shall change out the last carbon vessel with unspent carbon upon detection at its outlet of 10 ppmv or greater (as C1).
[Basis: 2-1-403]

9 The owner/operator of A-632 shall not exceed a flow rate of 4.0 cubic feet per minute. The owner/operator shall install variable area float gauges (ball floats or similar devices) on each A-632 train to indicate A-632 flow rate and verify compliance with the 4.0 cubic feet per minute limit. The gauges shall have a minimum resolution of 0.2 cubic feet per minute.
[Basis: 2-1-403]

10 Whenever TOC monitoring is conducted, the owner/operator of A-632 shall also take readings of the flow meter required in Part 10 at the same time and record the flow rate readings in the same daily monitoring log required in Part 5. The owner/operator of A-632 shall first verify that the flow meter is working (by tapping the sight glass to verify ball indicator is not stuck).
[Basis: 2-1-403]

11 As A-632 shall only be used when A-623 is taken out of service, the owner/operator shall maintain A-623 according to manufacturer recommendations. All maintenance on A-623 shall be recorded in a log made available to the APCO upon request. A copy of the manufacturer preventative maintenance recommendations shall be made available to the APCO upon request.
[Basis: 2-1-403]

12 The owner/operator shall maintain the following records onsite for at least five years from date of last entry:
   d. all TOC monitoring results,
   e. all flow meter readings,
   f. FID monitor serial number and identification,
   g. FID monitor calibration results,
   h. Monitor operator name,
   i. reason for any periods where TOC readings were not taken,
   j. date and time of all readings, and
   k. date each carbon drum was taken out of service.
   [Basis: 2-1-403]

RECOMMENDATION

Issue a conditional Authority to Construct to Chevron Products Company for:

A-632 Temporary Carbon System for Abating No. 21 Pump Station Fugitive Emissions
Vent-Scrub Vapor Phase Adsorbers, Model: VSC-200,
2 Sets of 3 Drums, 4 CFM

Issue revised Permit Conditions # 8869 and # 25703.

_____
Nicholas C. Maiden, P.E.
Air Quality Engineer II

ENGINEERING EVALUATION REPORT
Plant 10: Chevron Products Company
Application 25948: Alterations to S-3229 (Domed EFR tank storing recovered oil)

BACKGROUND

Chevron Products Company (Chevron) has applied to obtain a Permit to Operate (PTO) to alter the following equipment:

S-3229 Domed External Floating Roof Tank; Heated (180ºF)
Material stored: Recovered oil; TVP ≤ 10.3 psia
Tank volume: 101,000 barrel (BBL)
Permitted throughput: 38,000 BBL/day; 6,000,000 BBL/year

S-3229 was reviewed under Application 22722 and was issued an Authority to Construct (ATC) on August 24th, 2011, which is valid until August 23rd, 2015. BACT was triggered because S-3229' highest daily POC emissions were 16.4 pounds/day. As part of BACT 2, the District required Chevron to dome S-3229 and install specific tank fittings. The operation of S-3229 is governed by permit condition (PC) 25037.

Among other requirements, part 5 of PC 25037 states the following:

> "The owner/operator shall control organic emissions from S-3229 by a liquid-mounted primary mechanical seal and a zero-gap secondary wiper seal. There shall be no ungasketed roof fittings. Except for roof legs, each roof fitting shall be of the design, which yields the minimum roof fitting losses. The following list indicates the type of control required for a variety of typical roof fittings.
>
> Control techniques for roof fittings not included in this list shall be subject to prior District approval, prior to installing the roof on the tank. (BACT)

Fitting Type	Control Technique
Access hatch	Bolted cover, gasketed
Guide pole/Well	Slotted with a pole sleeve that projects below liquid surface a zero-gap pole wiper and gasketed sliding cover w/float
Gauge float well	Bolted cover, gasketed
Gauge hatch/Sample well	Weighted mechanical actuation, gasketed
Vacuum breaker	Weighted mechanical actuation, gasketed
Roof drain	None
Roof leg	Adjustable, w/vapor seal boot
Rim vent	Weighted mechanical actuation, gasketed

(BACT)"

Chevron has submitted this application (# 25948) requesting the District to amend part 5 of PC 25037. Specifically, the guide pole/well is required to be slotted and be equipped with "a pole sleeve that projects below the liquid surface, a zero-gap pole wiper and gasketed sliding cover with a float". Refer to portions highlighted in the above table. Chevron has stated that the tank requires the use of electronic level sensing technology which precludes the use of a float. To comply with BACT 2 and also minimize POC

emissions from the slotted guide pole when the slots are exposed above the floating roof deck, Chevron has proposed to install an exterior flexible barrier (or accordion sock sleeve[2]) that would cover all slots which extend above the floating roof deck. Chevron has contended that similar installations have been installed with District approval at a number of other tanks at the refinery. One such example is S-3100.

Modifications to S-3100, which triggered BACT, were reviewed under Application 8452 and its operation is governed by PC 2238. Among other requirements, part 5 of permit condition 2238 states the control technique for the "Guide pole/Well" be:

> "Slotted with a pole sleeve that projects below liquid surface, a zero-gap pole wiper, and **an exterior flexible barrier/cover that covers all of the slots**"

The TANKS 4.0.9d model was used to estimate the base case (Pre-Project) and post case (Post-Project) POC emissions from S-3229 to check if the change in fitting type would result in an emissions increase. Installing the exterior flexible barrier would result in a net reduction in daily and annual POC emissions. Refer to Table 4 in Attachment 1. Also attached is the base/post case TANKS runs (max. daily & annual).

Therefore, part 5 of PC 25037 will be amended (refer to portions in strikeout/underline) as follows:

> "The owner/operator shall control organic emissions from S-3229 by a liquid-mounted primary mechanical seal and a zero-gap secondary wiper seal. There shall be no ungasketed roof fittings. Except for roof legs, each roof fitting shall be of the design, which yields the minimum roof fitting losses. The following list indicates the type of control required for a variety of typical roof fittings.
>
> Control techniques for roof fittings not included in this list shall be subject to prior District approval, prior to installing the roof on the tank. (BACT)

Fitting Type	Control Technique
Access hatch	Bolted cover, gasketed
Guide pole/Well	Slotted with a pole sleeve that projects below liquid surface a zero-gap pole wiper and ~~gasketed sliding cover w/float~~an exterior flexible barrier/cover that covers all of the slots
Gauge float well	Bolted cover, gasketed
Gauge hatch/Sample well	Weighted mechanical actuation, gasketed
Vacuum breaker	Weighted mechanical actuation, gasketed
Roof drain	None
Roof leg	Adjustable, w/vapor seal boot
Rim vent	Weighted mechanical actuation, gasketed

(BACT)"

[2] Video of the sleeve in action can be seen at: http://www.mesarubber.com/guide-pole-covers.htm

EMISSIONS SUMMARY
Amending part 5 of PC 25037 as proposed will not result in an emissions increase.
Refer to Table 4 in Attachment 1.

CUMULATIVE INCREASE
Amending part 5 of PC 25037 as proposed will not result in a POC emissions increase. Therefore, there is no cumulative increase in criteria pollutant emissions.

TOXIC HEALTH RISK SCREENING ANALYSIS (HRSA)
Amending part 5 of PC 25037 as proposed will not result in an emissions increase of toxic air contaminants. Therefore, a Health Risk Screening Analysis (HRSA) is not required.

BACT (BEST AVAILABLE CONTROL TECHNOLOGY)
Per Regulation 2-2-301, BACT is only triggered when emissions from a new source or an increase in emissions from a modified source has the potential to emit 10 lbs or more per highest day of emissions. In other words, BACT is a source and pollutant specific requirement. Amending part 5 of PC 25037 as proposed will not result in an emissions increase. Therefore, S-3229 is not a modified source, and BACT is not triggered.

OFFSETS
The proposed amendments to part 5 of PC 25037 will not increase emissions. Therefore, there is no cumulative increase in criteria pollutant emissions and offsets are not required.

STATEMENT OF COMPLIANCE
S-3229 is subject to and is expected to comply with Regulation 8 “Organic Compounds”, Rule 5 “Storage of Organic Liquids”. Specifically, the tank is subject to Reg. 8-5-301 (control requirements for storage tanks), 320 (fitting requirements for floating roof tanks), 321 (primary seal requirements), 322 (secondary seal requirements), 328 (tank degassing requirements), 331 (tank cleaning requirements), and 332 (sludge handling requirements). The District’s Compliance and Enforcement staff will verify S-3229’ compliance with the above sections during their routine inspections.

S-3229 is subject to and is expected to comply with the requirements of 40 CFR 60 Subpart Kb (NSPS Kb) “Standards of Performance for Volatile Organic Liquid Storage Vessels (Including Petroleum Liquid Storage Vessels) for Which Construction, Reconstruction, or Modification Commenced after July 23, 1984”.

Because S-3229’ design will meet the alternative standards for tanks in 61.351, it is subject to and is expected to comply with the requirements of 40 CFR 61, Subpart FF (BWON) “National Emission Standards for Benzene Waste Operations”.

S-3229 will comply with 63.640 (n) in 40 CFR 63, Subpart CC (MACT CC) “National Emission Standards for Hazardous Air Pollutants from Petroleum Refineries” via NSPS Kb.

Installing the exterior flexible barrier will not result in an increase in fugitive components at S-3229. Therefore, the fugitive components previously reviewed under Application 22722 will continue to comply with the applicable standards in Regulation 8 “Organic Compounds”, Rule 18 “Equipment Leaks”.

This application is considered to be ministerial under the District's Regulation 2-1-311 and therefore is not subject to CEQA review. The engineering review for this project requires only the application of standard permit conditions and standard emission factors in accordance with Permit Handbook Chapter 4 “Organic Liquid Storage Tank”.

S-3229 is greater than 1,000 feet from the nearest K-12 school and therefore is not subject to the public notification requirements of Regulation 2-1-412.

The proposed amendments to part 5 of PC 25037 will not trigger a PSD review.

RECOMMENDATION

Waive the Authority to Construct and issue Chevron an Alteration for the following equipment:

S-3229 Domed External Floating Roof Tank; Heated (180ºF)
Material stored: Recovered oil; TVP ≤ 10.3 psia
Tank volume: 101,000 barrel (BBL)
Permitted throughput: 38,000 BBL/day; 6,000,000 BBL/year

_____
K. R. Bhagavan
Air Quality Engineer
Engineering Division

ENGINEERING EVALUATION REPORT
Plant 10: Chevron Products Company
Application 26319: S-3231 (New Domed EFR tank storing gasoline)

BACKGROUND

Chevron Products Company (Chevron) has applied to obtain an Authority to Construct (ATC) the following equipment:

S-3231 Domed External Floating Roof Tank (T-3231) (unheated)
Tank location: Blending & Shipping (B&S) Area Business Unit
Material stored: Gasoline; TVP < 11 psia (76 kPa)
Tank volume: 95,000 barrel (BBL)[3]; 15,104 m^3
Tank dimension: Diameter (110 feet) x height (66 feet)
Throughput: 10,000,000 BBL/year

EMISSIONS SUMMARY

The US EPA TANKS 4.0.9d model was used to estimate S-3231' maximum daily and annual POC emissions. Tank attributes summarized in Table 1 below were used to perform the TANK model runs.

Table 1:
Tank details and fittings info

Roof	Pontoon
Construction	Welded
Primary seal	Mechanical shoe
Secondary seal	Rim-mounted
Access Hatch (24-in. Diam.)/Bolted Cover, Gasketed	3
Vacuum Breaker (10-in. Diam.)/Weighted Mechanical Actuation, Gasketed	2
Slotted Guide-Pole/Sample Well/Gask Sliding Cover, with Float, Sleeve, Wiper, and an external flexible barrier/cover that covers all the slots	1
Gauge-Hatch/Sample Well (8-in. Diam.)/Weighted Mechanical Actuation, Gasketed	1
Roof Leg (3-in. Diameter)/Adjustable, Pontoon Area, Sock	20
Roof Leg (3-in. Diameter)/Adjustable, Center Area, Sock	24

Assuming 1 tank turnover per day, the maximum daily POC emissions from S-3231 was estimated via the TANKS model to be 16.09 lbs/day. The maximum annual POC emissions from S-3231 was estimated to be 3,568 lbs/year assuming 10 million barrels of gasoline would be throughput annually and that the tank would go through 108 tank turnovers per year (10,000,000 ÷ 92,900[4]). The fugitive components (41 valves, 51 flanges, 10 connectors, 1 pump, 4 pressure relief device (PRD), and 0 catch basin/manhole) that will be installed at S-3231 will result in POC emissions of 5.42 lbs/day and 718 lbs/year. The combined (tank + fugitive) daily and annual POC emissions from S-3231 are 22 lbs/day (16.09 + 5.42) and 4,286 (3,568 + 718) lbs/year, respectively.

Though the TANKS model runs for S-3231 were performed assuming gasoline would be stored in it; Chevron has proposed to use the tank to store aviation gasoline/motor gasoline/motor gasoline components. Because the tank will be used to store materials other than gasoline, toxic air contaminants (TAC) emissions of chemicals such as cresol (0.1% by wt.), ethylene dibromide (1% by wt.), and tetraethyl lead (1% by wt.), that are found in aviation gasoline were quantified along with emissions of TACs found in gasoline. POC and toxic air contaminant (TAC) emissions from S-3231 and its associated fugitive components are summarized in Table's 1 through 5 of Attachment 1.

CUMULATIVE INCREASE

The cumulative increase in POC emissions from S-3231 and its fugitive components is 2.14 TPY.

[3] Per Table 0-1 "Summary of Chevron Refinery Replacement and New Tanks" in document titled "Initial Study/Draft Mitigated Negative Declaration for Chevron Tank Replacements" prepared by the City of Richmond.
[4] Though the volume of the tank is 95,000 bbl, the working capacity of the tank is 92,900 bbl.

TOXIC HEALTH RISK SCREENING ANALYSIS (HRSA)

A HRSA was required because the annual emissions of benzene (178 lbs/year from S-3231 and 36 lbs/year from S-3231' fugitive components), ethylbenzene (143 lbs/year from S-3231), naphthalene (71 lbs/year from S-3231 and 14 lbs/year from S-3231' fugitive components), ethylene bromide (36 lbs/year from S-3231 and 7 lbs/year from S-3231' fugitive components), and tetraethyl lead (36 lbs/year from S-3231 and 7 lbs/year from S-3231' fugitive components) exceeded their corresponding chronic toxic air contaminant trigger levels of 3.8 lbs/year (for benzene), 43 lbs/year (for ethylbenzene), 3.2 lbs/year (for naphthalene), 1.5 lbs/year (for ethylene bromide), and 3.2 lbs/year (for lead) in Table 2-5-1 of Reg. 2-5.

The HRSA estimated the incremental health risks resulting from S-3231 & its associated fugitive components and the combined risks associated with related projects such as S-3230 & its associated fugitive components that were evaluated under Application 26252. Results from the HRSA for the combined project (S-3230 and S-3231) determined the maximum incremental cancer risk to be 1.0 in a million, the chronic hazard index to be of 0.003, and the acute hazard index to be 0.004, and found the above risk levels to be acceptable.

BACT (BEST AVAILABLE CONTROL TECHNOLOGY)

Per Regulation 2-2-301, BACT is only triggered when emissions from a new source or modified source have the potential to emit 10 lbs or more per highest day. The maximum daily emissions from S-3231 and its associated fugitive components are 22 lbs/day. Therefore, BACT is triggered.

A BACT analysis was completed and is included as Appendix A. As shown in the analysis, BACT 1 as listed in Document # 167.1.2 dated September 19th, 2011 in Section 4 of the BACT/TBACT Workbook was determined to be not cost effective. Therefore, BACT 2 ("Achieved in Practice") will be required. Per the BACT/TBACT Workbook, "Achieved in Practice" BACT for S-3231 is the following:

- a District approved roof with a liquid mounted primary seal and zero gap secondary seal,
- no ungasketed roof penetrations,
- no slotted pipe guide pole unless equipped with float and wiper seals,
- no adjustable roof legs unless fitted with vapor seal boots or equivalent, and
- a dome.

Permit conditions requiring the above will be attached to the permit to confirm compliance with BACT.

OFFSETS

The cumulative increase in POC emissions of 2.14 TPY will be offset via ERC Certificate # 70.

STATEMENT OF COMPLIANCE

S-3231 is subject to and is expected to comply with Regulation 8 "Organic Compounds", Rule 5 "Storage of Organic Liquids". Specifically, the tank is subject to Reg. 8-5-301 (control requirements for storage tanks), 320 (fitting requirements for floating roof tanks), 321 (primary seal requirements), 322 (secondary seal requirements), 328 (tank degassing requirements), 331 (tank cleaning requirements), and 332 (sludge handling requirements). The District's Compliance and Enforcement staff will verify S-3231' compliance with the above sections during their routine inspections.

S-3231 is subject to and is expected to comply with the requirements of 40 CFR 60 Subpart Kb (NSPS 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" per 60.110 b (a) because its storage capacity is ≥ 75 m^3 (15,104 m^3); it will be constructed after July 23, 1984; and it will be used to store a volatile organic liquid which can emit volatile organic compounds (as defined in 40 CFR 51.100) into the atmosphere.

S-3231 will not be used to store benzene waste streams. Instead the tank will be used to store finished gasoline product/gasoline components/aviation gasoline product/aviation gasoline components that could

contain up to 5% by wt. benzene as one of their components. Therefore, 40 CFR 61, Subpart FF (BWON) "National Emission Standards for Benzene Waste Operations" does not apply to S-3231.

S-3231 will comply with 63.640 (n) in 40 CFR 63, Subpart CC (MACT CC) "National Emission Standards for Hazardous Air Pollutants from Petroleum Refineries" via NSPS Kb.

S-3231' tank fittings summarized in Table 1 above are exempt from Regulation 8 "Organic Compounds", Rule 18 "Equipment Leaks" per Reg. 8-18-115. However, Reg. 8-18 requirements apply to S-3231' fugitive components (41 valves, 51 flanges, 10 connectors, 1 pump, 1 PRD, and 0 catch basin/manhole). The only exception to the above is the PRD. If the PRD is installed on S-3231 then it is subject to Reg. 8-5-303 and is exempt from Reg. 8-18 per Reg. 8-18-115. The PRD is also exempt from Regulation 8 "Organic Compounds", Rule 28 "Episodic Releases From Pressure Relief Devices at Petroleum Refineries and Chemical Plants" per Reg. 8-28-112.

This application is considered to be ministerial under the District's Regulation 2-1-311 and therefore is not subject to CEQA review. The engineering review for this project requires only the application of standard permit conditions and standard emission factors in accordance with Permit Handbook Chapter 4 "Organic Liquid Storage Tank".

Chevron has stated that S-3231 is not part of the Renewal Project[5] (currently referred to as the Modernization Project). The City of Richmond reviewed a Replacement Tanks Project that included S-3231 and determined that the Tank Replacement Project had independent utility from the Chevron Renewal Project and proceeded under a separate CEQA process. The City of Richmond issued Chevron a Mitigated Negative Declaration for S-3231 and four other organic liquid storage tanks on January 18th, 2011. Chevron began construction of the replacement tanks in 2012 including obtaining Authorities to Construct for two tanks (T-3228 and T-3229) in separate permit applications[6]. Although not part of the Modernization Project, the Replacement Tanks Project was identified in the Modernization Project EIR as a cumulative project. The District has reviewed the information provided by Chevron and is satisfied that there is no necessary functional interrelationship between the Modernization Project and the Tank Replacement Project. The Modernization Project does not depend on the Tank Replacement Project, and the Tank Replacement Project has independent utility even if the Modernization Project does not move forward.

S-3231 is greater than 1,000 feet from the nearest K-12 school and therefore is not subject to the public notification requirements of Regulation 2-1-412.

The proposed issuance of an ATC to S-3231 will not trigger a PSD review.

PERMIT CONDITIONS

Chevron Richmond Refinery (Plant # 10)
S-3231 Gasoline Storage Tank (T-3231)
Application 26319 – November 2014

PC 25913

1. The owner/operator of S-3231 (one 95,000 barrel domed external floating roof storage tank) shall not exceed the following throughput limit during any consecutive twelve-month period: Gasoline (TVP < 11 psia) – 10,000,000 barrels. (Basis: Cumulative Increase)

[5] Refer to footnote 1 in document titled "Initial Study/Draft Mitigated Negative Declaration for Chevron Tank Replacements" prepared by the City of Richmond.
[6] T-3228 (S-3230) and T-3229 (S-3229) were reviewed under Applications 26252 and 22722, respectively.

2. The owner/operator may store alternate liquid(s) other than the material specified in Part 1 and/or usage in excess of those specified in Part 1, provided that the owner/operator can demonstrate that all of the following are satisfied:

    a. Total POC emissions (including fugitive component emissions) from S-3231 do not exceed 22 pounds per day or 4,286 pounds per year in any consecutive twelve month period; and
    b. The use of these materials does not increase toxic emissions above any risk screening trigger level of Table 2-5-1 in Regulation 2-5.

    (Basis: Cumulative Increase; Toxics)

3. To determine compliance with the above parts, the owner/operator shall maintain the following records and provide all of the data necessary to evaluate compliance with the above parts, including the following information:
    a. Quantities of each type of liquid stored at this source on a monthly basis.
    b. If a material other than those specified in Part 1 is stored, POC/NPOC and toxic component contents of each material used; and mass emission calculations to demonstrate compliance with Part 2, on a monthly basis;
    c. Monthly throughput and/or emission calculations shall be totaled for each consecutive twelve-month period.

    All records shall be retained on-site for five years, from the date of entry, and made available for inspection by District staff upon request. These recordkeeping requirements shall not replace the recordkeeping requirements contained in any applicable District Regulations.
    (Basis: Cumulative Increase; Toxics)

4. Not more than 30 days after the start-up of S-3231, the owner/operator shall provide the District's Engineering Division with a final count of fugitive components installed. The owner/operator has been permitted for an increase in the following fugitive components in liquid service: Valves: 41; Flanges: 51; Connectors: 10; Pump seals: 1; PRD: 4; and Catch basin/manhole: 0
    (Basis: Cumulative Increase, offsets, toxics risk screen)

5. If there is an increase in the total fugitive component emissions, the plant's cumulative emissions for the project shall be adjusted to reflect the difference between emissions based on predicted versus actual component counts. The owner/operator shall provide to the District all additional required offsets at an offset ratio of 1.15:1 no later than 14 days after submittal of the final POC fugitive count. If the actual component count is less than the predicted, the total will be adjusted accordingly and all emission offsets applied by the owner/operator in excess of the actual total fugitive emissions will be credited back to the owner/operator.
    (Basis: offsets)

6. The owner/operator shall install valves, in light hydrocarbon service, that are of District approved BACT compliant technology (bellows valves, diaphragm valves, live loaded valves, or the equivalent) such that fugitive organic emissions shall not exceed 100 ppm.
    (Basis: BACT, Regulation 8-18, toxics risk screen)

7. The owner/operator shall install flanges and connectors, in light hydrocarbon service, that are of District approved BACT compliant technology (graphitic gaskets or the equivalent) such that fugitive organic emissions shall not exceed 100 ppm.
    (Basis: BACT, Regulation 8-18, toxics risk screen)

8. The owner/operator shall install pump seals, in light hydrocarbon service, that are of District approved BACT compliant technology (double mechanical seals with barrier fluid or the equivalent) such that fugitive organic emissions shall not exceed 500 ppm.
    (Basis: BACT, Regulation 8-18, toxics risk screen)

9. The owner/operator shall ensure pressure relief valves installed on S-3231 complies with Regulation 8-5-303. If the owner/operator installs additional pressure relief valves, they shall meet applicable requirements of Regulation 8, Rule 5, Rule 18, Rule 28
(Basis: Regulation 8-5)

10. In accordance with the provisions of Regulation 8-18, the owner/operator shall integrate all new fugitive equipment in organic service installed as part of S-3231 into the facility fugitive equipment monitoring and repair program.
(Basis: BACT, Regulation 8-18)

11. The owner/operator shall control organic emissions from S-3231 by a liquid-mounted primary mechanical seal and a zero-gap secondary wiper seal that meet the design criteria in Regulation 8, Rule 5. There shall be no ungasketed roof penetrations. Each roof fitting shall be of the design, which yields the minimum roof fitting losses. The following list indicates the type of control required for a variety of typical roof fittings. Control techniques for roof fittings not included in this list shall be subject to prior District approval, prior to installing the roof on the tank. (BACT)

Fitting Type	Control Technique
Access hatch	Bolted cover, gasketed
Guide pole/Well	Slotted with a pole sleeve that projects below liquid surface a zero-gap pole wiper and an exterior flexible barrier/cover that covers all of the slots
Gauge float well	Bolted cover, gasketed
Gauge hatch/Sample well	Weighted mechanical actuation, gasketed
Vacuum breaker	Weighted mechanical actuation, gasketed
Roof drain	none
Roof leg	Adjustable, fitted with vapor seal boots
Rim vent	Weighted mechanical actuation, gasketed

(BACT)

RECOMMENDATION

Issue Chevron an Authority to Construct for the following equipment:

S-3231 Domed External Floating Roof Tank (T-3231) (unheated)
Tank location: Blending & Shipping (B&S) Area Business Unit
Material stored: Gasoline; TVP < 11 psia (76 kPa)
Tank volume: 95,000 barrel (BBL); 15,104 m^3
Tank dimension: Diameter (110 feet) x height (66 feet)
Throughput: 10,000,000 BBL/year

_____
K. R. Bhagavan
Air Quality Engineer
Engineering Division

APPENDIX A

BACT Analysis

POC Best Available Control Technology (BACT) Analysis
External Floating Roof Tank
Chevron Products Company – Richmond Refinery
Richmond, California

1. Process Description

This BACT analysis is for POC emissions from a new domed, external floating roof storage tank with a storage capacity of 95,000 barrels and an annual gasoline throughput of 10,000,000 barrels per year at the Chevron Richmond Refinery.

2. BACT Applicability

District Regulation 2-2-301.1 states that BACT shall be applied to a new source if the source has the potential to emit 10.0 pounds or more per highest day of POC emissions.

The storage tank's potential to emit uncontrolled POC emissions is estimated to be 22 pounds per day. Therefore, BACT is required.

3. BACT Analysis Methodology

District Regulation 2-2-206 defines BACT as the more stringent of either:

- *The most effective emission control device or technique which has been successfully utilized for the type of equipment compromising such a source; or*
- *The most stringent emission limitation achieved by an emission control device or technique for the type of equipment compromising such a source; or*
- *Any emission control device or technique determined to be technologically feasible and cost-effective by the APCO; or*
- *The most effective emission control limitation for the type of equipment compromising such a source which the EPA states, prior to or during the public comment period, is contained in an approved implementation plan of any state, unless the applicant demonstrates to the satisfaction of the APCO that such limitations are not achievable. Under no circumstances shall the emission control required be less stringent than the emission control required by any applicable provision of federal, state or District laws, rules or regulations.*

The first two definitions are called "achieved in practice" whereas the third definition is "technologically feasible and cost effective".

Regulation 2-2-206 also requires the APCO to "*publish and periodically update a BACT/TBACT Workbook specifying the requirements for commonly permitted sources, BACT will be determined for a source by using the workbook as a guidance document or, on a case-by-case basis, using the most stringent definition of this Section 2-2-206*".

Within the District's BACT/TBACT Workbook, BACT defined as "technologically feasible and cost effective" is designated BACT 1 whereas BACT defined as "achieved in practice" is designated BACT 2.

Section 4 ("*Storage tank – External Floating Roof, Organic Liquids*" - Document # 167.1.2, dated 9/19/2011) of the BACT/TBACT Workbook has BACT guidelines for external floating roof storage tanks. Because the guidelines were last updated within the past three years, a comprehensive BACT analysis of identifying and ranking all control technologies by technological feasibility is not warranted. Therefore, the technologically feasible option (BACT 1) listed in the guidelines will be analyzed for cost effectiveness. If determined cost effective, BACT 1 will be required. If not, the "achieved in practice" BACT 2 will be required.

4. POC BACT Determination

4.1 Identify All Control Technologies

As discussed above, this step is not required. Per the BACT Workbook, BACT 1 for an external floating roof tank is a vapor recovery system with an overall system efficiency equal to or greater than 98 percent. The typical technology is listed as a thermal incinerator.

4.2 Eliminate Technologically Infeasible Options

As discussed above, this step is not required.

4.3 Rank Remaining Options By Control Effectiveness

As discussed above, this step is not required.

4.4 Cost Effectiveness Analysis

Per the BACT/TBACT Workbook, the District has adopted the "levelized cash flow method", commonly referred to as the annualized cost method. In this method, the capital cost of installing the abatement equipment is converted to an annualized cost over the expected life of the equipment through a capital recovery factor (CRF).

Cost data from a Chevron-supplied estimate for the installed equipment cost is shown in Table 1.

DESCRIPTION	Capital			Expense			Total
	Materials	Labor	Contract	Materials	Labor	Contract	
DIRECT COSTS							
Thermal Oxidizer	$100,000	$14,100					$114,100
Site Development			$63,636				$63,636
Foundations/Concrete			$406,200				$406,200
Structural		$38,874	$47,600				$86,474
Piping	$127,808	$446,032					$573,840
Electrical	$19,450	$60,729	$32,000				$112,179
Instrumentation	$32,745	$46,560					$79,305
Insulation/Painting	$24,800	$58,300	$78,612				$161,712
Fire Protection					$75,075		$75,075
Cranes			$38,300				$38,300
SUBTOTAL DIRECT COSTS	$304,803	$664,595	$666,348		$75,075		$1,710,821
TOTAL DIRECT COSTS	$1,635,746			$75,075			$1,710,821
INDIRECT COSTS							
Consumables/Tools		$19,937			$2,252		$22,189
Engineering		$408,936			$18,768		$427,704
Equipment Rental		$19,937					$19,937
Contaminated Material Disposal	$3,048						$3,048
Fees & Permits	$6,646						$6,646
Field Supervision		$66,459			$7,507		$73,966
Freight	$18,288						$18,288
Safety Train/Mobilization		$19,937					$19,937
Tax (expenses)	$29,718						$29,718
Temporary Facilities		$26,618					$26,618
Inspection		$33,229					$33,229

SUBTOTAL INDIRECT COSTS	$57,700	$595,053			$28,527		$681,280
TOTAL INDIRECT COSTS	$652,753			$28,527			$681,280
Contingency	$36,927	$125,952	$66,652		$10,398		$239,299
Construction Cost Subtotal	$398,800	$1,385,600	$733,000		$114,000		
CONSTRUCTION COST	$2,517,400			$114,000			$2,631,400
TOTAL INSTALLED EQUIPMENT COST							**$2,631,400**

Table 1 – Installed Equipment Costs

Per the BACT/TBACT Workbook, the capital recovery factor (CFR) is determined using the following equation:

$$CRF = \frac{i\,(1+i)^n}{(1+i)^n - 1}$$

where i = interest rate and
n= lifetime of the abatement system

Per the BACT/TBACT Workbook, the interest rate is estimated by benchmarking the interest rate on United States Treasury Securities with a maturity that most closely approximates the project horizon (typically 10 years), adding 2 percentage points for incremental risk, and then rounding the total up to the next higher integer.

Assuming the abatement equipment lasts at least 10 years, and the previous six month average of the 10-Year Treasury Note interest rate is about 2.48 percent for the period (June 2014 – November 2014) [7]. Therefore, the CRF interest rate is 5 percent (2.48 + 2 = 4.48 rounded up to 5).

Using the equation above, the CRF is equal to 0.130.

Per the BACT/TBACT Workbook, the annualized cost is obtained using the following equation:

$$Annualized\ Cost = Installed\ Equipment\ Cost\ x\ [CRF + Tax + Insurance + G\&A + Annual\ O\&M]\ Factors$$

where:

CRF	= 0.130
Tax	= 0.01
Insurance	= 0.01
G & A	= 0.02
O&M	= 0.05

The annualized cost is therefore = $ 2,631,400 x [0.130 + 0.01 + 0.01 + 0.02 + 0.05] = $ 578,908

Per the BACT/TBACT Workbook, control technology is deemed cost effective if the annualized cost divided by the reductions in emissions is less than $17,500/per ton of POC reduced.

The storage tank (tank + fugitive) is estimated to have a potential to emit of 4,286 pounds of POC per year. The control technology is required by BACT 1 to have an abatement efficiency of least 98 percent. Therefore, the control technology is expected to reduce at least 4,200 pounds (or 2.1 tons) of POC per year.

[7] United States Treasury Department website: http://www.treasury.gov/resource-center/data-chart-center/interest-rates/Pages/TextView.aspx?data=yieldYear&year=2014, accessed July 10, 2014

The annualized cost per ton of POC reduced is estimated to be $275,670/ton POC reduced. This is greater than the BACT/TBACT Workbook cost effectiveness threshold of $17,500/ton of pollutant. Therefore, BACT 1 as listed in the workbook is not cost effective.

4.5 Select BACT

As discussed above, BACT 1 is not cost effective. Therefore, the "achieved in practice" BACT 2 applies and will be required for the new external floating roof. Per the BACT/TBACT Workbook, achieved in practice BACT is all of the following:

- a District approved roof with a liquid mounted primary seal and zero gap secondary seal,
- no ungasketed roof penetrations,
- no slotted pipe guide pole unless equipped with float and wiper seals,
- no adjustable roof legs unless fitted with vapor seal boots or equivalent, and
- a dome.

All of the above BACT 2 requirements are included in part 11 of the proposed permit condition for S-3231.

ENGINEERING EVALUATION
Plant 10: Chevron Products Company
Application 26889: Replacement Sulfur Tank (T-3234)

BACKGROUND

Chevron Products Company (Chevron) has submitted this permit application to obtain an Authority to Construct (ATC) for the following source:

S-3234 Sulfur Storage Tank T-3234
Product stored: Molten sulfur
Fixed Roof (heated and insulated); Volume: 1.152 Million gallons
Tank diameter: 70 feet; Tank height: 32 feet
Abated by 2-stage venturi scrubber (A-43: water & A-44: caustic)

Chevron has proposed to replace S-3141 (an existing fixed roof tank in similar service) with S-3234. S-3141 was removed from service several years ago and was recently dismantled. When installed, combined emissions from S-3226 (an existing fixed roof tank in similar service) and S-3234 will be abated by A-43 and A-44, and their operation will be governed by permit condition 1046. Permit condition 1046, which is discussed toward the end of this evaluation report, currently allows emissions from the tanks to exhaust into the atmosphere unabated for 612 hours in any consecutive 12-month period when the scrubbers are taken out of service for maintenance.

Chevron would like to begin constructing S-3234 as soon as possible because S-3226 (the existing sulfur tank) has to be taken out of service for its scheduled 10-year inspection and maintenance in November 2015. Therefore, Chevron has to install and begin operating S-3234 before November 2015.

EMISSIONS CALCULATION

Molten sulfur stored in S-3226 and S-3234 is routed to them from the Claus units. In the Claus units, hydrogen sulfide (H2S) contained in the sour gas is converted to molten sulfur at the refinery's Sulfur Recovery Unit (SRU) – S-4227, S-4228, and S-4229. S-3234 is a functionally identical replacement for S-3141, except that it is eight feet shorter than its predecessor. The tank will be built upon S-3141's foundation, which will be modified to provide a slope to enable the product within S-3234 to drain completely on one side.

The molten sulfur stored in S-3226 and S-3234 will be stored at approximately 380°F and will contain small quantities of sulfur dioxide (SO_2) and H_2S. Molten sulfur displaced within the tanks can result in particulate (PM_{10}) emissions, and Chevron does not expect volatile organic compounds to be present in the molten sulfur exiting the SRUs. The headspaces within the tanks will be connected to a two-stage vapor scrubber. The first stage will consist of a water scrubber A-43 to remove the sulfur particulates, followed, by a caustic scrubber A-44 in the second stage to remove H_2S and SO_2 from the vent gas stream. Both scrubbers employ a venturi design to maintain vapor flow and enable intimate mixing of the scrubber liquids with the vent gas streams. The abated vent gases would exhaust into the atmosphere through emission point P-193.

Emissions from new sulfur tank S-3234:

Each scrubber (A-43 & A-44) is designed to handle 600 ACFM from each sulfur tank (1,200 ACFM total) and has a PM_{10} removal efficiency of 95%. The scrubber system would reduce the H_2S content of the vent gas stream from approximately 1,000 PPM to approximately 20 PPM, and the SO_2 content of the vent gas stream will be reduced from approximately 150 PPM to approximately 5 PPM. Table's 1 and 2 summarize the emissions from S-3234 during normal operation and when the scrubbers are down for maintenance.

Operating Scenario	Table 1: Emissions (normal operation)								
	PM_{10}			H_2S			SO_2		
	lbs/hour	lbs/day	lbs/year	lbs/hour	lbs/day	lbs/year	lbs/hour	lbs/day	lbs/year
With Induced draft air flow (unabated)	1.47	35.32	11,992.19	6.46	155.02	52,628.77	1.82	43.77	14,859.89
With Induced draft air flow (abated)	0.07	1.77	599.61	0.13	3.10	1,052.58	0.06	1.46	495.33

Operating Scenario	Table 2: Unabated Emissions (scrubber downtime)								
	PM_{10}			H_2S			SO_2		
	lbs/hour	lbs/day	lbs/year	lbs/hour	lbs/day	lbs/year	lbs/hour	lbs/day	lbs/year
Without Induced draft air flow when SRUs are processing 900 LTD of molten sulfur for 612 hours/year	0.014	0.33	8.49	0.06	1.50	38.18	0.39	9.39	239.54
Without Induced draft air flow when SRUs are processing 750 LTD of molten sulfur for 612 hours/year	0.012	0.28	7.07	0.05	1.25	31.81	0.33	7.83	199.61

Emissions during normal operation with induced draft air flow summarized in Table 1:

PM_{10} Emissions:
Estimated temperature in tank headspace = 300ºF
Vapor pressure of sulfur at 300ºF = 0.184 mm Hg
Combined induced draft air from scrubbers (A-43 & A-44) = 1,200 ft^3/min

Sulfur emission rate at scrubber inlet (*Pre-Control*)
= (0.184 mm Hg/760 mm Hg) x (1,200 ft^3/min) x (60 min/hr) x (lb-mole/379 ft^3) x (32 lbs/lb-mole)
= 1.47 lbs/hour (35.32 lbs/day[8]; 11,992.19 lbs/year[9])

Post-Control sulfur emission rate (assuming 95% scrubber efficiency) at scrubber outlet: 0.07 lbs/hour

Therefore, *daily* and *annual* sulfur (PM_{10}) emissions from S-3234 are = 1.77 lbs/day[10] and 599.61 lbs/year[11]

H_2S Emissions:
Pre-control H_2S emission rate at scrubber inlet
= (1,000/1,000,000) x (1,200 ft^3/min) x (60 min/hr) x (lb-mole/379 ft^3) x (34 lbs/lb-mole)
= 6.46 lbs/hour (155.02 lbs/day[12]; 52,628.77 lbs/year[13])

Post-control H_2S emission rate at scrubber outlet
= (20/1,000,000) x (1,200 ft^3/min) x (60 min/hr) x (lb-mole/379 ft^3) x (34 lbs/lb-mole)
= 0.13 lbs/hour

Therefore, *daily* and *annual* H_2S emissions from S-3234 are = 3.10 lbs/day[14] and 1,052.58 lbs/year[15]
A source test performed by the District at scrubbers A-43 & A-44 abating S-3140 (S-3226' predecessor) & S-3141 (that will be replaced by S-3234) on May 14, 1998 – Report 98275, dated June 8, 1998 estimated the H_2S emissions to be less than 0.1 lbs/hour. A similar document referencing the above report but dated July 20, 1998 estimated the H_2S emissions to be less than 0.0001 lbs/hour. To be conservative, the post-control emission rate at the scrubber outlet is assumed to be equal to 0.13 lbs/hr as shown in Table 1.

SO_2 Emissions:
Pre-control SO_2 emission rate at scrubber inlet
= (150/1,000,000) x (1,200 ft^3/min) x (60 min/hr) x (lb-mole/379 ft^3) x (64 lbs/lb-mole)
= 1.82 lbs/hour (43.77 lbs/day[16]; 14,859.89 lbs/year[17])

Post-control SO_2 emission rate at scrubber outlet
= (5/1,000,000) x (1,200 ft^3/min) x (60 min/hr) x (lb-mole/379 ft^3) x (64 lbs/lb-mole)
= 0.06 lbs/hour

[8] 1.47 lbs/hr x 24 hrs/day = 35.32 lbs/day
[9] Hours per year = 8,760; permitted number of hours/year emissions could exhaust unabated = 612;
Annual abated emissions = (1.47) x (8760 – 612) = 11,992.19 lbs/year
[10] 1.47 lbs/hr x 24 hrs/day x 0.05 = 1.77 lbs/day
[11] Hours per year = 8,760; permitted number of hours/year emissions could exhaust unabated = 612;
Annual abated emissions = (1.47) x (8760 – 612) x (0.05) = 599.61 lbs/year
[12] 6.46 lbs/hr x 24 hrs/day = 155.02 lbs/day
[13] Days per year = 365; permitted number of hours/year emissions could exhaust unabated = 612 (25.5 days/year);
Annual unabated emissions = (155.02) x (365 – 25.5) = 52,628.77 lbs/year
[14] 0.13 lbs/hr x 24 hrs/day = 3.10 lbs/day
[15] Days per year = 365; permitted number of hours/year emissions could exhaust unabated = 612 (25.5 days/year);
Annual abated emissions = (3.10) x (365 – 25.5) = 1,052.58 lbs/year
[16] 1.82 lbs/hr x 24 hrs/day = 43.77 lbs/day
[17] Days per year = 365; permitted number of hours/year emissions could exhaust unabated = 612 (25.5 days/year);
Annual abated emissions = (43.77) x (365 – 25.5) = 14,859.89 lbs/year

Therefore, *daily* and *annual* SO_2 emissions from S-3234 are = 1.46 lbs/day[18] and 495.33 lbs/year[19]

Emissions during scrubber maintenance summarized in Table 2:

The SRU is comprised of sources S-4227, S-4228, and S-4229 and the total sulfur produced in any calendar day from the above sources is collectively governed by permit condition 19063. Parts 1, 2, and 3 of the above permit condition limit the daily total sulfur throughputs at the above sources to 189.6 long tons, 179 long tons, and 336 long tons, respectively. Permit condition 19063 will soon be replaced by permit condition 24136[20] that is associated with the Chevron Modernization Project (Application 12842). The above permit condition will limit the combined sulfur make at the SRUs to 900 LTD (maximum) and 750 LTD (average)[21]. The calculations that follow are conservatively based on the above throughput limits. During scrubber downtime there is no induced draft airflow. Airflow during scrubber downtime results from the movement of sulfur from the SRU into the tanks. The refinery operating standards limit the maximum concentration of SO_2 and H_2S in the tank headspace to 5,000 PPM (0.005 mole fraction) and 1,500 PPM (0.0015 mole fraction), respectively. In light of the above, the unabated emissions of the above pollutants from displacement of sulfur in the sulfur tanks can be estimated as follows:
Total sulfur flow/calendar day = 900 long tons (2,016,000 lbs)[22]
Estimated temperature in the headspace = 300ºF;
Specific volume of air in the headspace[23] = 555 ft^3/lb-mole
Volume of air displaced per calendar day
= (2,016,000 lbs/day x 0.134 ft^3/gal) / (16.6 lbs/gal) = 16,280 ft^3/day
Moles displaced per calendar day = (16,280 ft^3/day) / (555 ft^3/lb-mole) = 29 lb-moles/day

Therefore, unabated emissions are equal to:

- PM_{10} = (0.184 mm Hg/760 mm Hg) x (16,280 ft^3/day) x (lb-mole/379 ft^3) x (32 lbs/lb-mole)
  = 0.33 lbs/day (0.014 lbs/hour[24]; 8.49 lbs/year[25])

- H_2S = 29 lb-moles/day x 34 lbs/lb-mole x 0.0015
  = 1.50 lbs/day (0.06 lbs/hour[26]; 38.18 lbs/year[27])

- SO_2 = 29 lb-moles/day x 64 lbs/lb-mole x 0.005
  = 9.39 lbs/day (0.39 lbs/hour[28]; 239.54 lbs/year[29])

The above calculation methodology was used to estimate unabated emissions of PM10, H2S, and SO2 when processing 750 LTD of molten sulfur.

[18] 0.06 lbs/hr x 24 hrs/day = 1.46 lbs/day
[19] Days per year = 365; permitted number of hours/year emissions could exhaust unabated = 612 (25.5 days/year);
Annual abated emissions = (1.46) x (365 – 25.5) = 495.33 lbs/year
[20] Part 85 of permit condition 24136.
[21] Part 87.d. of permit condition 24136.
[22] 1 long ton = 2,240 lbs/ton
[23] Assume air in the headspace made up of ideal gas i.e. V = RT/P; R = 10.7314 psia.ft^3/lb-mol.R; T = 759.67R (300F); P = 14.7 psia (1 atm).
Therefore, V = 554.6 ft^3/lb-mol.
[24] 0.014 lbs/hour = 0.33 lbs/day ÷ 24 hours/day
[25] 8.49 lbs/year = 0.014 lbs/year x 612 hours/year
[26] 0.06 lbs/hour = 1.50 lbs/day ÷ 24 hours/day
[27] 38.18 lbs/year = 0.06 lbs/hour x 612 hours/year
[28] 0.39 lbs/hour = 9.39 lbs/day ÷ 24 hours/day
[29] 239.54 lbs/year = 0.39 lbs/hour x 612 hours/year

TOXIC HEALTH RISK SCREEN ANALYSIS (HRSA)

The Toxic Air Contaminant (TAC) of concern is H2S. Table's 3 and 4 summarize the abated and unabated H2S emissions that are expected to occur when processing 900 LTD and 750 LTD of molten sulfur at the SRUs, and compare's the resulting emissions to the acute and chronic TAC trigger levels in Table 2-5-1 to determine if a HRSA is required.

Table 3:				
Emissions when processing 900 LTD of molten sulfur	Abated emissions (normal operation)	Unabated (scrubber downtime)	Total	Table 2-5-1 Trigger Level
lbs/hour	0.13	0.06	0.19	0.093
lbs/year	1,052.58	38.18	1,090.75	390

Table 4:				
Emissions when processing 750 LTD of molten sulfur	Abated emissions (normal operation)	Unabated (scrubber downtime)	Total	Table 2-5-1 Trigger Level
lbs/hour	0.13	0.05	0.18	0.093
lbs/year	1,052.58	31.81	1,084.39	390

It is seen from Table 3 and 4 that a HRSA is required because the acute and chronic trigger levels for H2S are exceeded when processing 750 LTD and 900 LTD of molten sulfur at the SRUs.

Assuming the worst-case (900 LTD) and 8,760 hours of operation and the worst-case emissions summarized in Table 3, the HRSA performed by the District determined the maximum acute hazard index to be 0.3 and the maximum chronic hazard index to be 0.006, and concluded the above risk levels are considered acceptable.

Cumulative Increase

Assuming the worst-case (900 LTD), the cumulative increase in PM_{10} and SO_2 emissions from S-3234 are summarized in Table 5.

Table 5:			
Pollutant	Abated emissions (normal operation) TPY	Unabated (scrubber downtime) TPY	Total TPY
PM_{10}	0.30	0.004	0.30
SO_2	0.25	0.12	0.37

BACT

Assuming the worst-case (900 LTD), Table 6 summarizes the daily PM_{10} and SO_2 emissions from S-3234.

Table 6:		
Pollutant	Abated emissions (normal operation) Lbs/day	Unabated (scrubber downtime) Lbs/day
PM_{10}	1.77	0.33
SO_2	1.46	9.39

It can be seen from Table 6 that emissions of SO_2 and PM_{10} are each below the BACT trigger level of 10 lbs/day under each one of the two mutually exclusive operating scenarios. Therefore, BACT is not triggered.

Offsets

Per Regulation 2-2-303 an increase in emissions for a given pollutant from a new or modified source needs to be offset only if the cumulative increase in emissions for that pollutant minus any contemporaneous emission reduction credits provided by a facility for that pollutant since April 5, 1991 exceeds 1 TPY. Per information in the District's database, Chevron owes about 3.4 tons of PM_{10} (3.202 tons attributable to Modernization Project Application 12842). Because the scope of the Modernization Project reduced significantly, Chevron is reviewing their records to confirm the amount of PM_{10} offsets they owe the District. For the interim and per Regulation 2-2-421, the District will allow Chevron to defer providing offsets until the time of their annual permit renewal.

STATEMENT OF COMPLIANCE

Source S-3234 is potentially subject to and is expected to comply with Sections 301, 305, 310, and 311 in Regulation 6, Rule 1 "Particulate Matter - General Requirements" as discussed below.

The post-control PM_{10} exhaust stream will exit the scrubbers at 0.07 lbs/hour (refer to Table 1), and the abated effluent stream will not contain particulate matter entrained in it in quantities high enough to cause an exceedance of the Ringlemann No. 1 opacity limitation in Section 301 and/or result in visible particles that will fall on real property not owned by Chevron to result in a violation of Section 305.

Section 310 limits particulate matter emissions to 0.15 gr/dscf. Each one of the two scrubbers is designed to handle 600 ACFM and the abated effluent stream would exit the scrubbers at 0.07 lbs/hour (0.033 gr/dscf[30]). Therefore, S-3234 will comply with Section 310.

[30] (0.07 lbs/hr) x (7,000 grains/lb) / (60 mins/1 hr) x (600 ft^3/min) = 0.033 grains/ ft^3

Regulation 6-1-311 limits the emission rate of particulates from "general operations." The allowable emission rate (E, in lbs/hr) = 4.10 $P^{0.67}$, where P is the process weight rate of in tons/hour.
Part 87.d of permit condition 24136 associated with the Chevron Modernization Project (Application 12842) limits the combined sulfur make at SRU's S-4227, S-4228, and S-4229 to 900 LTD (maximum) and 750 LTD (average). Assuming a combined sulfur make of 900 LTD and substituting the value of "P" equal to 42 tons/hour[31] in the above equation yields 50.16 lbs/hour. The allowable particulate matter emission rate per Table 1 of the above section is 40 lbs/hour. It can be seen from Tables 1 and 2 that the abated and unabated particulate matter emissions from S-3234 are 0.07 lbs/hour and 0.014 lbs/hour, respectively. Therefore, the combined particulate matter emission (0.084 lbs/hour) from S-3234 will comply with Section 311.

Molten sulfur stored in S-3234 has a low vapor pressure[32] i.e., less than 0.5 psia, and is therefore exempt from Regulation 8, Rule 5 per Section 8-5-117. Source 3234 will not be used to store volatile organic liquids and is therefore exempt from 40 CFR Part 60, 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". The recordkeeping and reporting requirements for storage tanks outlined in 40 CFR 63, Subpart CC "National Emission Standards for Hazardous Air Pollutants from Petroleum Refineries" is applicable to S-3234[33].

Section 307 in Regulation 9, Rule 1 "Inorganic Gaseous Pollutants - Sulfur Dioxide" limits SO_2 emissions from sulfur recovery plants to 250 ppm by volume (dry), calculated at zero percent oxygen. Section 209 in the above rule defines Sulfur Recovery plants as:
"A process unit which processes sulfur and ammonia containing material and produces a final product of elemental sulfur."

Source S-3234 is used to store molten sulfur exiting the SRUs. Therefore S-3234 neither processes nor produces elemental sulfur. However, due to the lack of a better emission limit addressing sources such as S-3234 in the above rule, it is assumed that compliance with Section 307 will assure compliance with Regulation 9, Rule 1. Calculations in this report assume the concentration of SO_2 exhausting out of S-3234 and entering scrubbers A-43 & A-44 will be reduced from 150 ppm to 5 ppm. Therefore, S-3234 will comply with Regulation 9, Rule 1.

Section 301 in Regulation 9, Rule 2 "Inorganic Gaseous Pollutants - Hydrogen Sulfide" states the following: "A person shall not emit during any 24 hour period, hydrogen sulfide in such quantities as to result in ground level concentrations in excess of 0.06 ppm averaged over three consecutive minutes or 0.03 ppm averaged over any 60 consecutive minutes."

A source test performed by District staff at A-43 & A-44 abating molten sulfur tanks (S-3140[34] & S-3141) on May 14, 1998 – Report 98275, dated June 8, 1998 estimated the concentration of the H_2S emissions to be less than 15 ppbv (0.015 ppm) averaged over 5 minutes. Therefore, it is reasonable to assume the abated H_2S emissions from S-3234 will comply with the above rule.
The Air District has determined that the issuance of an Authority to Construct in Permit Application No. 26889 is exempt from CEQA because the permitting of the project involved no expansion of use beyond that existing at the time of the Air District's CEQA determination. (CEQA § 21084; Guidelines § 15301) and Air District Regulation 2-1-312.7. Issuance of this Authority to Construct does not authorize expansion of the existing use of S-3141. In addition, even if the project did constitute an expansion of an existing use, the applicant has included in its permit application CEQA-related information (CEQA Appendix H) that demonstrates with certainty that the project has no potential for resulting in any additional or different environmental impacts beyond what is already entailed in the applicant's existing use of S-3141, and the project would therefore also be subject to the "Common Sense" exemption (Guidelines § 15061(b)(3)).

Source S-3234 is not located within 1,000 feet of the nearest public school and hence the project to permit the source is not subject to the public notification requirements contained in Regulation 2-1-412.
S-3234 does not trigger PSD and NSPS requirements.

[31] 42 tons/hour = (900 LTD x 2,240 lb/LT) ÷ (2,000 lb/ton x 24 hour/day)

[32] Vapor pressure of sulfur at 300F = 0.184 mm Hg (0.004 psia)

[33] S-3226 (existing sulfur tank) is subject to MACT CC requirements summarized in Table IV.F.1.2 in Chevron's Title V permit dated August 11, 2011.

[34] S-3141 was archived on October 18, 2002 in the District's database.

PERMIT CONDITIONS

Parts 1, 2, and 3 of permit condition 19063 currently limits the sulfur throughput at Chevron's SRUs S-4227, S-4228, and S-4229 to 189.6 long tons/day (LTD), 179 LTD, and 336 LTD, respectively. Permit condition 19063 will soon be replaced by permit condition 24136 that is associated with the Chevron Modernization Project (Application 12842). Part 87.d. of permit condition 24136 will limit the combined sulfur make at Chevron's SRUs to 900 LTD (maximum) and 750 LTD (average).

Because molten sulfur received and stored in the new (S-3234) and existing (S-3226) sulfur tanks is routed to them from the SRUs, a separate molten sulfur throughput limit for the sulfur tanks hasn't been instilled in permit condition 1046.

The District's HRSA for S-3234 was performed using H_2S emission rates associated with the worst-case combined molten sulfur throughput of 900 LTD, and determined the maximum acute hazard index to be 0.3 and the maximum chronic hazard index to be 0.006. Because the health risks posed by H_2S from the new tank were found to be acceptable, the proposed amendments to permit condition 1046 will not require Chevron to source test S-3234 for H_2S.

Modify permit condition 1046 as shown below:

*1. The owner/operator shall not operate sulfur storage tanks S-~~3141~~ 3234 and S-3226 unless they are abated by the properly maintained and properly operated A-43 and A-44 Venturi Scrubbers at all times of operation, except during preventative maintenance at A-43 and A-44 scrubbers and/or during the American Petroleum Institute (API) internal inspections of the pressure vessels, which are expected to be conducted once every ten years at scrubbers A-43 and A-44. (basis: cumulative increase)

*2. The owner/operator shall minimize downtime of the A-43 and A-44 scrubbers to the extent practicable, and shall minimize emissions from S-~~3141~~ 3234 and S-3226 to the extent practicable during periods of preventative maintenance and/or during periods when API inspections are conducted. Additionally, liquid transfers into S-~~3141~~ 3234 and S-3226 shall be minimized during periods of preventative maintenance and/or API inspections. In no event shall preventative maintenance downtime and/or API inspection and subsequent repair exceed 612 hours in any consecutive 365-day period. (basis: cumulative increase)

*3. The owner/operator of S-~~3141~~ 3234 and S-3226 shall maintain records of preventative maintenance downtime and/or API inspections to confirm compliance with above conditions. These records shall be kept on site for at least 60 months from the date of entry. (basis: cumulative increase)

RECOMMENDATION

Modify permit condition 1046 as proposed and issue Chevron an Authority to Construct the following equipment:

S-3234 Sulfur Storage Tank T-3234
Product stored: Molten sulfur
Fixed Roof (heated and insulated); Volume: 1.152 Million gallons
Tank diameter: 70 feet; Tank height: 32 feet
Abated by 2-stage venturi scrubber (A-43: water & A-44: caustic)

K. R. Bhagavan

DRAFT
ENGINEERING EVALUATION
Chevron Products Company
Richmond Refinery
Plant Number: 10
Application Number: 27948

BACKGROUND

The Applicant has submitted an application to remove two pumps from the requirements of Condition 8773, Part 1 for the following source:

S-4251 Solvent Deasphalting (SDA) Plant

The Solvent Deasphalting Plant (SDA) plant separates residuum into oil and heavy tar by solvent extraction and consists of six major sections: Solvent Extraction, Oil-Solvent Separation, Oil Stripping, Tar Stripping, Solvent Cooling and Collection, and Hot Oil Heating. The SDA plant operates with 9 pumps in light-liquid service and 6 pumps in heavy-liquid service. In addition, there are 10 spare light-liquid pumps and 5 spare heavy-liquid pumps.

Part 1 of Condition 8773 requires that all light-liquid pumps at S-4251 have their shaft seals vented to a furnace except for temporary repair and maintenance shutdowns. Chevron has indicated that pumps in Deasphalted Oil (DAO) service require steam quenching of the seals in order to prevent the DAO from clogging the seal springs which leads to seal failure. The SDA plant is fitted with a permanent hard piped steam quenching system to address this situation. Chevron classified all pumps in DAO service as being heavy-liquid service pumps which are not required to be vented to the furnaces. However, there are two pumps in DAO service (130 and 130A) that process streams with a percentage of pentane high enough to classify the pumps as light-liquid service. In September 2015, Chevron began venting the shaft seals of P-130 and P-130A to the furnaces in order to comply with Condition 8773. However, venting to the furnaces is not compatible with steam quenching of the seals and Chevron had to suspend the steam quenching in order to vent those shaft seals to the furnace. Without the steam quenching Chevron has experienced a marked increase in seal failure at these pumps – several times a month as opposed to once every twenty years. In addition, this situation has raised safety concerns with regard to the operation of the SDA plant. The high frequency of seal failure results in a higher potential for liquid hydrocarbon leaks which pose a fire risk in the elevated temperature environment of this plant. Therefore, Chevron is requesting that pumps P-130 and P-130A be removed from venting their seals to the furnaces. There was no change in the type or amount of material processed at S-4251 to precipitate Chevron's request for an alteration and change in conditions. Furthermore, removing these pumps from the venting system will not involve any changes to the overall SDA process with regards to the type or amount of material processed by S-4251.

In 1992 the District issued an Authority to Construct under Application 9163 for upgrades to S-4251 that increased the yield of oil from the plant. The Permit to Operate for this upgrade was issued August 1, 1994. Specifically, the upgrade allowed the use of a heavier oil solvent, pentane instead of propane and butane. The Engineering Evaluation for this application indicated that there was no net change in the number of pumps at the plant; there was an overall reduction in POC emissions; and BACT was not triggered for the upgrade project. In addition, records show that Chevron proposed the vapor recovery system for the light-liquid pumps at the SDA in order to utilize an exemption that was available at that time under Regulation 8-25-113[35] (deleted 1/7/98). This operating scenario was formalized as Part 1 of Permit Condition 8773.

In 2003 the District issued a Permit to Operate for Change in Conditions for S-4251 under Application 7756 to clarify the description of compliance for venting the seals to the furnaces and to add an accommodation for the temporary shutdown for repair or maintenance of the vent system not to exceed 14 days in any consecutive twelve-month period. Any pumps operating during the allowed temporary shutdown of the vent system were required to

[35] **8-25-113** **Exemption, Controlled Seal Systems For Pumps**: Except for Section 8-25-504, the provisions of this Rule shall not apply to pump seals vented to a vapor recovery or disposal system which reduces the emissions of organic compounds from the pump seals to less than 0.3 pound per day. (Amended August 4, 1982; July 20, 1983; March 4, 1992; June 1, 1994, Deleted January 7, 1998*)*

comply with Regulation 8-18 during all periods that the vent system is shut down. The Engineering Evaluation for this application indicated that the pumps meet the exemption of Regulation 8-18-110[36] when the seals are vented to a furnace. Since the vent system is being used to meet an exemption and not a regulatory requirement, emissions were conservatively calculated at 0.42 tpy POC for all 18 pumps at the DAS plant using the Correlation Equations assuming a Regulation 8-18 complying leak rate of 500 ppmv for 365 days per year. The evaluation also determined that the pumps comply with 8-18-303 during repair and maintenance, the application did not trigger BACT, toxic emissions did not exceed trigger levels, and S-4251 will continue to comply with NSPS subpart GGG. Finally, 0.483 tons per year of POC offsets were required to cover the 0.42 tpy POC emission increase.

EMISSION CALCULATIONS:

The Correlation Equation Method from the CAPCOA Implementation Guideline for Estimating Mass Emissions of Fugitive Hydrocarbon Leaks at Petroleum Facilities (Feb. 1999) was used to calculate the emissions from the pumps in 2003. These emission factors are considered current and are presently used to calculate emissions from new sources. The emissions calculated in 2003 did not include any abatement efficiency, did not include pegged leakers, assumed a regulatory compliance limit of 500 ppmv, and covered 365 days per year operation. This same scenario applies to the two pumps when they are not vented to the furnaces. As such there is no increase in emissions resulting from the proposed changes to Condition 8773. As a point of reference, the derivation of the Emission Factor and the emission calculation associated with the two pumps is shown below:

Correlation Equation for pump seals[37] = $5.07E\text{-}05(SV)^{0.622}$ kg/s/hr
Where: SV = component screening value = 500 ppm

$$\left[\frac{5.07E-05(500)^{0.622}\ kg}{hr}\right]\left[\frac{2.2\ lb}{kg}\right]\left[\frac{24\ hr}{day}\right] = 0.1278 \text{ lb/s/day}$$

Emission Factor (lb/s/day)	Number of Components	Max Daily Emission (lb POC/day)	Annual Emissions @ 365 days per yr (lb POC/yr)	Annual Emissions @ 365 days per yr (ton POC/yr)
0.12780	2	.25	93.27	0.047

Chevron has provided Method 21 Monitoring Data for the period April 6, 2011 to May 3, 2016. These records show that, except for when the seals failed due to suspending the steam quench, fugitive emissions never exceeded 60 ppm. This highlights the fact that the original emission calculations under Application 7756 are very conservative and there will not be an increase in emissions if these two pumps are removed from venting their shaft seals to furnaces.

Toxic Pollutants
Since there is no increase in overall emissions it is not necessary to quantify toxic emissions.

Cumulative Increase
POC emissions equivalent to the proposed operation of the two pumps were calculated and added to the cumulative increase under Application 7756 therefore, there is no change to the cumulative increase for this application.

STATEMENT OF COMPLIANCE:

Regulation 2 - Permits, Rule 1 – General Requirements

[36] **8-18-110 Exemption, Controlled Seal Systems and Pressure Relief Devices:** The provisions of this Rule shall not apply to seal systems and pressure relief devices vented to a vapor recovery or disposal system which reduces the emissions of organic compounds from the equipment by 95% or greater as determined according to Section 8-18-603. (Amended, Renumbered 1/7/98; Amended 1/21/04)

[37] Table IV-3a CAPCOA-Revised 1995 EPA Correlation Equations and Factors for Refineries and Marketing Terminals

Definition, Alter (2-1-233)

To make any physical change to, or change in the method of operation of, a source which may affect emissions. Such changes require a permit to operate, and may require permit conditions, whether or not the alteration results in an emission increase.

>The change in condition removing pumps P-130 and P-130 from venting their shaft seals to furnaces is considered a change in the method of operation at the SDA plant (S-4251). Therefore, this project is considered an alteration and requires an authority to construct and permit to operate.

Ministerial Projects (Section 2-1-311)

An application that is classified as ministerial is exempt from the CEQA requirement of *Section 2-1-310 Applicability of CEQA.* To be classified as ministerial the engineering evaluation and basis for approval or denial of the permit application is subject to specific procedures, fixed standards and objective measurements set forth in the District's Permit Handbook and BACT/TBACT Workbook.

>Chapter *3.4 Petroleum Refinery Fugitive Emissions* of the District's Permit Handbook sets forth evaluation guidelines and was used to evaluate this application. As such, this application is ministerial and exempt from CEQA review with regards to air quality.

Other Categories of Exempt Projects (Section 2-1-312.1)

Applications to modify permit conditions for existing or permitted sources or facilities that do not involve any increases in emissions or physical modifications are categorically exempt from CEQA review with respect to air quality provided the applicant submits CEQA related information in the form of an Appendix H.

> Removing these pumps from the venting system will not involve an increase in emissions or any changes to the overall SDA process with regards to the type or amount of material processed by S-4152. In addition, Chevron has submitted Appendix H describing the project and its environmental impacts. As such this application is categorically exempt from CEQA with respect to air quality.

Public Notice, Schools (Section 2-1-412)

A new or modified source located within 1,000 feet of the outer boundary of a K-12 school site which results in the increase in emissions of a toxic air contaminant in Table 2-5-1 of *Regulation 2, Rule 5 New Source Review of Toxic Air Contaminants* shall prepare and distribute a public notice in accordance with subsections 412.1 and 412.2 of *Regulation 2, Rule1 General Requirements*.

>According to the District's Databank program school.pub there are no K-12 schools within 1,000 feet of this facility.

Regulation 2 - Permits, Rule 2 – New Source Review

Best Available Control Technology Requirement (Section 2-2-301)

Any new or modified source that has the potential to emit 10.0 pounds or more per highest day of precursor organic compounds (POC), non-precursor organic compounds (NPOC), nitrogen oxides (NOx), sulfur dioxide (SO_2), PM_{10} or carbon monoxide (CO) is required to use Best Available Control Technology as defined in *Regulation 2-2-206 Best Available Control Technology (BACT)*.

>This project does not involve new or modified sources and therefore the requirements of this section do not apply to this application.

Offset Requirements, POC and NOx (Section 2-2-302)

Federally enforceable emission offsets shall be provided for any new or modified source at a facility that that emits or will be permitted to emit more than 10 tons per year, on a pollutant specific basis, of POC or NOx. In addition, emission offsets shall be provided from the District's Small Facility Bank at a 1.0 to 1.0 ratio for new or modified sources at a facility which emits or will be permitted to emit more than 10 tons per year but less than 35 tons per year, on a pollutant specific basis, of POC or NOx. Offsets shall be provided for the emissions from the new or modified source and any pre-existing cumulative increase that has not yet been offset.

>This project does not involve new or modified sources and therefore the requirements of this section do not apply to this application.

Offset Requirement, PM_{10} and Sulfur Dioxide, NSR (2-2-303)

Regulation 2-2-303 establishes emission offset requirements for PM10 and Sulfur Dioxide from new or modified sources located at a Major Facility.

>This project does not emit PM_{10} or SO_2 and therefore Regulation 2-2-303 does not apply.

Prevention of Significant Deterioration (PSD) (Section 2-2-304)

New major facilities and major modifications at major facilities must meet modeling requirements of *Regulation 2-2-304 PSD Requirement.*

>Chevron is not a new major facility; nor is this project a major modification of a major facility and therefore PSD modeling is not required for this application.

Regulation 2- Permits, Rule 5 New Source Review of Toxic Air Contaminants

General (2-5-100)

Regulation 2-5-101 –Description states that any new or modified source of toxic air contaminant (TAC) shall be evaluated for potential public exposure and health risk. *Regulation 2-5-110 Exemption, Low Emission Levels* provides an exemption if, for each toxic air contaminant, the increase in emissions from the project is below the trigger levels listed in Table 2-5-1 of Regulation 2-5.

>Since there is no increase in emissions from this project the requirements of Regulation 2-5 do not apply.

Best Available Control Technology for Toxics (TBACT) Requirement (2-5-301)

The applicant shall apply TBACT to any new or modified source of TACs where the source risk is a cancer risk greater than 1.0 in one million and/or a chronic hazard index greater than 0.20.

>This project does not involve new or modified sources and therefore the requirements of this section do not apply to this application.

Regulation 8 - Organic Compounds, Rule 18 – Equipment Leaks

Standards (8-18-301through 8-20-304)

A person shall not use any valve, pump, or connector that leaks total organic compounds in excess of the following limits:

Valve	100 ppm
Pump	500 ppm
Connector (Flange)	500 ppm

>Chevron has been and will continue to and comply with these limits.

Regulation 10 – Standards of Performance for New Stationary Sources

New Source Performance Standards (NSPS)

Any new or modified source is required to comply with *Regulation 10, Standard of Performance for New Stationary Sources* – which is Title 40, Part 60 of the Code of Federal Regulation incorporated by reference. Subpart GGG sets fort the Standards of Performance for Equipment Leaks of VOC in Petroleum Refineries for which Construction, Reconstruction, or Modification Commenced after January 4, 1983, and on or Before November 7, 2006

> The SDA plant is subject to and will continue to comply with this subpart of the NSPS.

Regulation 11 – National Emission Standards for Hazardous Air Pollutants

National Emission Standards for Hazardous Air Pollutants (NESHAP)

40 CFR Part 63 sets emission and/or performance standards for hazardous pollutants.

> S-4251 is not subject to NESHAPs per Chevron's Title V permit.

Conditions

The propose changes to Condition 8773 are highlighted below:

For fugitive emissions at S-4251, Plant 10:

1. Except for two light-liquid pumps (P-130 and P-130A) in Deasphalted Oil (DAO) service that require steam quench on the shaft seals, ~~All~~all light-liquid pumps at S-4251 shall have their shaft seals vented to at least one of the following furnaces S-4152, S-4153, S-4154, or S-4155. Any furnace to which pump seals are vented shall be properly operated and maintained at all times that the pumps are operating. Vent gas shall be exhausted directly into a gas burner flame and shall not exhaust into an unlit burner. The seal vent system shall be equipped with continuous flow monitors in order to demonstrate that all vent gases are flowing to an operating furnace. Sections of the vent system may be temporarily shutdown for repair or maintenance while the pumps are in service as long as the pumps and other fugitive components that are normally abated by the vent system comply with the requirements of Regulation 8-18. These temporary shutdowns for repair and maintenance shall not exceed 14 days in any consecutive 12 month period. The owner/operator shall monitor

the fugitive components for compliance with Regulation 8-18 within 24 hours of repair or maintenance period commencing. The owner/operator shall operate non-leaking pumps if available during these periods of maintenance and repair of the vent gas system.

. (Basis: Cumulative Increase)

Recommendation

I recommend that an Authority to Construct be waived and Permit to Operate with the amended condition be issued for the following alteration to:

S-4251 Solvent Deasphalting (SDA) Plant:
Remove two light-liquid pumps in DAO service from venting their shaft seals to furnaces

_____

Anne C. Werth Date

ENGINEERING EVALUATION
Plant 10: Chevron Products Company
Application 28218: SDA unit rate change

BACKGROUND

Chevron Products Company (Chevron) has submitted this permit application to reduce the daily and annual throughput limits in Table II-A.2 "Permitted Sources (Non-Grandfathered and Non-New Source Review)" of their Title V permit for the following source:

S-4251 Solvent Deasphalting (SDA) Plant
Make: M.W. Kellog
Throughput: 56,000 BPD; 20,440,000 BPY

Condition B.2. of the City of Richmond Conditional Use Permit (see attached) required Chevron to file a complete permit application with the District to reduce the maximum permitted throughput limit for the SDA to 50,000 barrels per day (BPD) on an annual average basis, and the District memorialized the above requirement into part 118 of the Modernization Project permit condition 24136 (see attached).

Because the existing daily limit of 56,000 BPD is an annual average (20,440,000 ÷ 365), the proposed annual limit for the SDA will be amended to 18,250,000 barrels per year (BPY) i.e., 50,000 x 365. The proposed reduction in SDA throughput will not modify the SDA as defined in Regulation 2-1-234. Therefore, the SDA will be considered an altered source as defined in Regulation 2-1-233. Hence, this evaluation report has determined the proposed changes to Chevron's Title V permit will not result in a "net increase" in POC and/or TAC emissions from S-4251.

EMISSIONS CALCULATION

This evaluation report has determined S-4251 is an altered source as discussed below. Therefore, the "net increase" in POC and/or TAC emissions from S-4251 is zero.

Vacuum residuum from the #4 crude unit and wax rerun bottoms are separated in the SDA into de-asphalted oil (DAO) that is further processed in the Taylor Kinetic Cracking (TKC)/is sent to tankage, and tar that is sent to tankage. Since the SDA is not equipped with an exhaust stack or process vent, emissions from S-4251 occur as fugitive emissions from equipment leaks. No correlation has been found between throughput and fugitive emissions. Because the permitted SDA throughput is being reduced, emissions should not increase from previously estimated amounts.

A decrease in SDA throughput will result in lower fuel usage at F-100 and F-120 Asphalt Solution Heaters (S-4152 and S-4154, respectively), and F-135 Hot Oil Furnace (S-4155) that are associated with the SDA. Therefore, combustion emissions from S-4152, S-4154, and S-4155 will also reduce. Because emissions from S-4152, S-4154, and S-4155 are based on the amount of heating required, emissions from the above heaters and furnace are expected to decrease with a decrease in throughput at S-4251.

As such emissions from the proposed project will remain the same or result in a decrease.

BACT & OFFSETS:

As discussed above, this evaluation report has determined S-4251 is an altered source. Therefore, the cumulative increase in BACT pollutants defined in Regulation 2-2-210 is zero, BACT is not triggered, and offsets are not required.

STATEMENT OF COMPLIANCE:

Reducing the daily and annual maximum permitted throughput limit for S-4251 in Table II.A.2 "Permitted Sources (Non-Grandfathered & Non-New Source Review)" to 50,000 BPD (from 56,000 BPD) and 18,250,000 BPY (from 20,440,000 BPY) will not result in any changes to applicable requirements in Tables IV. and VII.C.3.1 "Miscellaneous Process Units", IV. and VII.G.1.3 "Process Drains Cluster 20q", and/or to permit condition 8773 in Chevron's Title V permit.

The proposed change is categorically exempt from CEQA per Regulation 2-1-312.9 and 2-1-312.11.1. The change is exempt per Regulation 2-1-312.9 per Section 15281 of Article 18 "Statutory Exemptions" in Title 14 "California Code of Regulations", of Chapter 3 "Guidelines for Implementation of the California Environmental Quality Act" because CEQA Guidelines do not apply to the issuance, modification, amendment, or renewal of any permit by an air pollution control district or air quality management district pursuant to Title V, as defined in Section 39053.3 of the Health and Safety Code, or pursuant to an air district Title V program established under Sections 42301.10, 42301.11, and 42301.12 of the Health and Safety Code, unless the issuance, modification, amendment, or renewal authorizes a physical or operational change to a source or facility.

The change is exempt per Regulation 2-1-312.11.1 per Section 15061(b)(3) of Article 5 "Preliminary Review of Projects and Conduct of Initial Study" in Title 14 "California Code of Regulations", of Chapter 3 "Guidelines for Implementation of the California Environmental Quality Act" because it can be seen with certainty that there is no possibility that reducing the daily and annual maximum permitted throughput limit for S-4251 will have a significant effect on the environment.

Chevron has submitted Appendix H "Environmental Information Form" in accordance with Regulation 2-1-312.

This project is over 1,000 feet from the nearest public school and is therefore not subject to the public notification requirements of Regulation 2-1-412.

PERMIT CONDITIONS:
None

Title V Statement of Basis (SOB):

The proposed change is a minor permit revision per Regulation 2-6-215.

Table II A-2 – Permitted Sources (Non-Grandfathers & Non-New Source Review)

Each of the following sources has been issued a permit to operate pursuant to the requirements of BAAQMD Regulation 2, Permits. The capacities in this table are the maximum allowable capacities for each source, pursuant to Standard Condition J.1 and Regulation 2-1-301. All combustion sources are fired on natural gas or refinery fuel gas, except where noted in permit conditions.

Source Number	Description	Make or Type	Model	Capacity	Annual Throughput Limits	Daily Throughput Limits	Units	Basis
								RLOP
S-4251	Solvent Deasphalting (SDA) Plant	M.W. Kellog	N/A		~~20,440,000~~ 18,250,000	~~56,000~~ 50,000	Bbl	App.#9163

RECOMMENDATION:

- Reduce the daily and annual maximum permitted throughput limit for S-4251 in Table II.A.2 "Permitted Sources (Non-Grandfathered & Non-New Source Review)" to 50,000 BPD (from 56,000 BPD) and 18,250,000 BPY (from 20,440,000 BPY) in Chevron's Title V permit.

- Issue Chevron a Permit to Operate to alter:
  S-4251 Solvent Deasphalting (SDA) Plant
  Make: M.W. Kellog
  Throughput: 50,000 BPD; 18,250,000 BPY

_____
K. R. Bhagavan

ENGINEERING EVALUATION REPORT
Plant 10: Chevron Products Company
Application 28337: S-3225 (Installation of a dome on an EFR tank storing gasoline)

BACKGROUND:

Chevron Products Company (Chevron) has applied to obtain an Authority to Construct (AC) to alter the following equipment:

S-3225 External Floating Roof Tank (T-3225) (unheated)
Tank location: Blending & Shipping (B&S) Area Business Unit
Pole Yard Tank Field
Material stored: Recovered Oil or Gasoline or Aviation Gasoline
Tank volume: 108,300 barrel (BBL); 17,218 m^3
Tank dimension: Diameter (110 feet) x height (64 feet)
Throughput: 10,832,000 BBL in any consecutive 12-month period.

Chevron has proposed to install a dome at S-3225 to comply with the "ROG Mitigation" measure 4.3-5f. of the City of Richmond Conditional Use Permit for the Chevron Modernization Project[38]. Measure 4.3-5f. requires Chevron to dome S-3225 to reduce Precursor Organic Compound (POC) emissions prior to the start of Modernization Project operations. When Chevron started construction of the Modernization Project in June 2016, January 1, 2018 was the projected date for the start of Modernization Project operations. Chevron communicated a commitment to the City of Richmond to install the dome on S-3225 by January 1, 2018.

S-3225 dome installation was reviewed and issued an Authority to Construct (AC) under Application 3380 in year 2002. Emissions from S-3225 were modelled using the US EPA TANKS 4.09d model assuming it would store gasoline (TVP < 9 psia). POC emissions from S-3225 were estimated under Application 3380 without a dome to be 6,563 #/year. POC emissions from S-3225 estimated via the TANKS model with a dome under this application (# 28337) are 2,311 #/year.

Please refer to Table 1 in Attachment A and TANKS model runs.

EMISSIONS SUMMARY:

The TANKS model was used to estimate S-3225's maximum daily and annual POC emissions using information summarized in Table 1 below.

Table 1: Tank details and fittings info	
Roof	Pontoon
Construction	Welded
Primary seal	Mechanical shoe
Secondary seal	Rim-mounted
Access Hatch (24-in. Diam.)/Bolted Cover, Gasketed	3
Vacuum Breaker (10-in. Diam.)/Weighted Mechanical Actuation, Gasketed	2
Slotted Guide-Pole/Sample Well/Gask Sliding Cover, with Pole Sleeve, Wiper	2
Gauge-Hatch/Sample Well (8-in. Diam.)/Weighted Mechanical Actuation, Gasketed	1
Roof Leg (3-in. Diameter)/Adjustable, Pontoon Area, Sock	31
Sample pipe or Well (24-in. diameter)/Slotted Pipe Sliding Cover, Gasketed	1
Roof Drain (3-in. diameter)/90% closed	1
Automatic gauge floatwell/bolted cover, gasketed	1

The proposed installation of the dome will reduce POC emissions by 4,252 #/year (6,563 – 2,311). Therefore, S-3225 is an altered source.

[38] Chevron Modernization Project was reviewed by the District under Application 12842.

CUMULATIVE INCREASE:
Doming the tank would alter S-3225. Therefore, the cumulative increase in POC emissions is zero.

HEALTH RISK ASSESSMENT (HRA):
Parts 1 and 2 of permit condition 18702 limit the annual throughput and the concentration of benzene in materials stored in S-3225 to not exceed 10,832,000 barrels per year and 4% by weight, respectively. Chevron's proposal to dome S-3225 will not result in any changes to parts 1 and 2 of permit condition 18702 and will not result in an increase in daily or annual emission levels of any Toxic Air Contaminants (TACs). Therefore, S-3225 is not a modified source per Regulation 2-5-214 and a HRA is not required.

BACT (BEST AVAILABLE CONTROL TECHNOLOGY):
Per Regulation 2-2-301, BACT is only triggered for new or modified sources. The proposed installation of the dome will alter (vs. modify) S-3225. Therefore, BACT is not triggered.

OFFSETS
Doming S-3225 will not result in a cumulative increase in POC emissions. Therefore, offsets are not required.

Note:
Chevron fully offset the 3.332 TPY POC increase from S-3225 estimated under Application 3380 with banking certificates # 72 (1.241 TPY) and # 302 (2.591 TPY).

STATEMENT OF COMPLIANCE
Doming S-3225 will not result in any changes to the applicability of District, State, or Federal rules that the tank is currently subject to.

S-3225 is subject to and is expected to comply with Regulation 8 "Organic Compounds", Rule 5 "Storage of Organic Liquids". Specifically, the tank is subject to Reg. 8-5-301 (control requirements for storage tanks), 320 (fitting requirements for floating roof tanks), 321 (primary seal requirements), 322 (secondary seal requirements), 328 (tank degassing requirements), 331 (tank cleaning requirements), and 332 (sludge handling requirements). The District's Compliance and Enforcement staff will verify S-3225 compliance with the above sections during their routine inspections.

S-3225 is subject to and is expected to comply with the requirements of 40 CFR 60 Subpart Kb (NSPS 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" per 60.110 b (a) because its storage capacity is ≥ 75 m^3 (15,104 m^3); it was constructed after July 23, 1984[39]; and it will be used to store a volatile organic liquid which can emit volatile organic compounds (as defined in 40 CFR 51.100) into the atmosphere.

S-3225 will not be used to store benzene waste streams. Instead the tank will be used to store finished gasoline product/gasoline components/aviation gasoline product/aviation gasoline components, or recovered oil that could contain up to 4% by wt. benzene as one of their components[40]. Therefore, 40 CFR 61, Subpart FF (BWON) "National Emission Standards for Benzene Waste Operations" does not apply to S-3225.

S-3225 is a Group 1 vessel and will comply with 63.640 (n) in 40 CFR 63, Subpart CC (MACT CC) "National Emission Standards for Hazardous Air Pollutants from Petroleum Refineries" via NSPS Kb.

[39] The District issued Chevron an AC and PO to install S-3225 under Application 3380 on February 7, 2002 and March 1, 2004, respectively.
[40] art 2 of permit condition 18702 limits the benzene concentration in materials stored in S-3225 to not exceed 4% by wt.

S-3225 tank fittings summarized in Table 1 above are exempt from Regulation 8 "Organic Compounds", Rule 18 "Equipment Leaks" per Reg. 8-18-115. Chevron has confirmed doming S-3225 will not require any new hydrocarbon piping components.

Chevron is required to install the dome on S-3225 as a mitigation measure for construction emissions from the Refinery Modernization Project (RMP). The City of Richmond analyzed the RMP in a full Environmental Impact Report that was approved by the City of Richmond in 2014. The City required that the RMP result in a net zero increase in emissions over the Project baseline, and various mitigation measures were imposed to achieve that requirement. The proposed dome on S-3225 is the first of three domes Chevron is required to install to mitigate RMP emissions.

The District has determined that this approval to install the dome on S-3225 is exempt from CEQA because the District's action is "ministerial" and therefore exempt from CEQA under Public Resources Code § 21080(b)(1). The District's approval is also categorically exempt because the permitting of the project involves no or negligible expansion of use beyond that existing at the time of the District's CEQA determination. (CEQA Guidelines § 15301). The action is further exempt under the "common sense" exemption. (CEQA Guidelines § 15061(b)(3)).

As discussed in the "Emissions Summary" section of this report, installing a dome on S-3225 will result in a decrease in POC emissions. Therefore, S-3225 is an altered (versus modified) source. Issuance of the District Permit to Operate to alter S-3225 requires only application of standard permit conditions and standard emission factors in accordance with the District's Permit Handbook, Chapter 4, "Organic Liquid Storage Tank." Consistent with District Regulation 2-1-311, this application of fixed standards does not entail the exercise of discretion by the District. S-3225 is not new or modified source. Therefore, a BACT determination is not required. This permit action is also exempt from CEQA because it involves a minor alteration of an existing use and does not authorize any expansion of that existing use. In addition, Chevron has included in its permit application CEQA-related information (CEQA Appendix H) that demonstrates with certainty that the project has no potential for resulting in any additional or different environmental impacts beyond what is already entailed in the applicant's existing use of the tank. Further, because the project involves only installing a dome to reduce POC emissions on an existing tank, the project is also subject to the "common sense" exemption.

S-3225 is greater than 1,000 feet from the nearest K-12 school and therefore is not subject to the public notification requirements of Regulation 2-1-412.

The proposed PO issuance to dome S-3225 will not trigger a PSD review.

PERMIT CONDITIONS

Chevron Richmond Refinery (Plant # 10)
S-3225 Recovered Oil Storage Tank (T-3225)
Applications 3380, 28337

PC 18702

1. Total throughput at S-3225 shall not exceed 10,832,000 barrels in any consecutive 12-month period.
   (Basis: BACT)

2. Total benzene concentration at S-3225 shall not exceed 4% by weight. A sample shall be taken to determine the benzene concentration whenever the tank stores either gasoline or aviation fuel.
   (Basis: Toxics)

3. The owner/operator of S-3225 shall maintain a district approved monthly log of all material throughput at S-3225 and the benzene concentration of gasoline and aviation fuel. This log shall be kept on site

for at least 5 years from the date of entry and made available to district staff upon request. (Basis: Cumulative Increase and Toxics)

4. The owner/operator shall control organic emissions from S-3225 by installing a dome, and a liquid-mounted primary mechanical seal and a zero-gap secondary wiper seal that meet the design criteria in Regulation 8, Rule 5. There shall be no ungasketed roof penetrations. Each roof fitting shall be of the design, which yields the minimum roof fitting losses. The following list indicates the type of control required for a variety of typical roof fittings. Control techniques for roof fittings not included in this list shall be subject to prior District approval, prior to installing the roof on the tank.
(Basis: Regulation 2-1-233)

Fitting Type	Control Technique
Access hatch	Bolted cover, gasketed
Guide pole/Well	Slotted with a pole sleeve that projects below liquid surface a zero-gap pole wiper and an exterior flexible barrier/cover that covers all of the slots
Gauge float well	Bolted cover, gasketed
Gauge hatch/Sample well	Weighted mechanical actuation, gasketed
Vacuum breaker	Weighted mechanical actuation, gasketed
Roof drain	none
Roof leg	Adjustable, fitted with vapor seal boots
Rim vent	Weighted mechanical actuation, gasketed

(Basis: Regulation 2-1-233)

RECOMMENDATION

Issue Chevron an Authority to Construct to alter (install dome) the following equipment:

S-3225 External Floating Roof Tank (T-3225) (unheated)
Tank location: Blending & Shipping (B&S) Area Business Unit
Pole Yard Tank Field
Material stored: Recovered Oil, Gasoline, Aviation Gasoline
Tank volume: 108,300 barrel (BBL); 17,218 m^3
Tank dimension: Diameter (110 feet) x height (64 feet)
Throughput: 10,832,000 BBL in any consecutive 12-month period.

_____
K. R. Bhagavan

EVALUATION REPORT
Plant 10: Chevron Products Company
Application 28492: Flameless Thermal Oxidizer to abate Oil Water Separator

Background

Chevron Products Company (Chevron) has proposed to install the following new abatement device and associated piping/fugitive components:

A-4413: The Linde Group THERMATRIX® ES Flameless Thermal Oxidizer
Linde Model ES-100, Electrically powered
Location: Environmental Operations Division

A-4413 will abate S-4413 (#2a API Oil Water Separator). S-4413 is currently not subject to 40 CFR Part 60, Subpart QQQ "Standards of Performance for VOC Emissions from Petroleum Refinery Wastewater Systems" (NSPS QQQ). However, Chevron installed several new individual drain systems in preparation of the impending startup of their new hydrogen plant consisting of S-4449 (hydrogen plant train #1), S-4450 (hydrogen plant train #2), S-4451 (hydrogen recovery unit), S-4471 (hydrogen plant train #1 reformer furnace), S-4472 (hydrogen plant train #2 reformer furnace), S-4465 (hydrogen plant cooling tower), and S-6021/A-6021 (hydrogen plant flare) that are part of the Modernization Project[41]. Installing the new process drains constituted a modification of the S-4413 "aggregate facility", which is defined in NSPS QQQ to mean "…an individual drain system together with ancillary downstream sewer lines and oil-water separators, down to and including the secondary oil-water separator, as applicable." Therefore, S-4413 will henceforth be subject to NSPS QQQ and will be required to comply with the requirements of §§60.692-2 "Standards: Individual drain systems" and 60.692-3 "Standards: Oil-water separators".

Table 1 summarizes wastewater components that existed before and after the construction of the new Hydrogen Plant.

Table 1:

Wastewater component	Wastewater components that existed and flowed to #2A Separator prior to new Hydrogen Plant	Wastewater components installed at the new Hydrogen Plant that flow to #2A Separator	Total Wastewater components that flow to #2A Separator
Catch basin	414	14	428
Manholes	161	3	164
Process drains	458	142	600
Cleanouts	241	32	273
Sumps	5	0	5
Vents	114	0	114

For Oil Water Separators (OWS) such as S-4413 that have design capacity more than 16 liters per second (250 GPM) of refinery wastewater, §60.692-3(b) requires the OWS to be equipped and operated with a closed vent system and control device, which meets the requirements of §60.692-5. The installation of A-4413 is intended to meet the requirements of §60.692-5, which among other things requires the enclosed combustion device to be designed and operated to reduce VOC emissions vented to it with an efficiency of ≥95%, or provide a minimum residence time of 0.75 seconds at a minimum temperature of 816°C (1,500°F). Per information provided by Linde - A-4413's manufacturer, the flameless thermal oxidizer (FTO) has demonstrated ≥95% destruction efficiency and thermal oxidation will occur at ~1,600°F to avoid production of thermal NOx. The District will require a startup source test to confirm compliance with the ≥95% destruction efficiency in NSPS QQQ.

[41] Authority to Construct (AC) for sources that are part of the Modernization Project were reviewed under Application 12842. District issued Chevron an AC on September 19, 2008. The AC is valid until February 11, 2019.

Proposed operation of A-4413 at S-4413:

An eductor will use instrument air as the motive gas to route VOC emissions from S-4413 to the FTO. The FTO will consist of a 36" diameter carbon steel, refractory-lined oxidation vessel. The oxidation vessel will contain three silicon-carbide spirally wound electric resistance heater elements in stainless steel protection tubes surrounded by a bed of randomly packed inert ceramic pieces. VOC emissions (fumes) entering the bottom of the FTO will be distributed evenly across the ceramic bed by the fume distributor. As the hot ceramic pieces radiate their stored heat to the flowing fume, oxidation begins and the heat of oxidation is added to the ceramic bed. An array of thermocouples in a single thermowell located within the ceramic bed will monitor the bed temperature and will allow the integrated control system to increase or decrease the electrical power to maintain the oxidation zone at ~1600°F at all times, except when A-4413 is out of service for maintenance. Electrical energy will only be required as a supplement to the heat content of the fume and to preheat the ceramic bed during start-up. The oxidation products will flow upward through the hot ceramic matrix where ample residence time, temperature, and excess oxygen will complete the oxidation process.

Emission Calculations

Chevron operates three (3) oil water separators (OWS) – S-4148 (#13 separator), S-4413 (# 2a separator) and S-4414 (# 1a separator). Table 2 summarizes the "permitted" daily and combined annual throughput limits for the three OWS's per information contained in Chevron's Title V permit. None of the OWS's is a grandfathered source[42]. The estimated flows from new wastewater components summarized in Table 1 during normal and peak (rain) operation are 1,105 gallons/minute (1.59 million gallons/day) and 1,675 gallons/minute (2.41 million gallons/day), respectively. In contrast, the average and peak flows to S-4413 in 2017 from existing wastewater components summarized in Table 1 were 1.7 million gallons/day and 7 million gallons/day, respectively. The 7 million gallons/day was an unusually high value that occurred during a significant, rare, rainfall event in the 2017 rain season, and is not representative of the typical maximum peak rainwater flow. The increased effluent flows to S-4413 from the new process drains installed as part of the Modernization Project will not result in an exceedance of the current daily and/or combined annual permit limits in Table 2.

Source #	Table 2: Daily Throughput Limit (million gallons)	Combined Annual Throughput Limit (million gallons)
S-4148	20	
S-4413	8.35	4,934.8
S-4414	16.7	

Abating S-4413 with A-4413 will not result in a net increase in precursor organic compounds (POCs) and/or toxic air contaminants (TACs). Therefore, S-4413 will be considered an altered (vs. modified) source until such time it is source tested as discussed below.

Though S-4413 is electrically powered, there will be combustion emissions due to burning organic vapors. The proposed permit conditions will require Chevron to conduct three source tests to determine if increased effluent flows to S-4413 from the new process drains installed as part of the Modernization Project will affect criteria air pollutant emissions. The proposed project is not exempt from BACT and offset requirements in Regulation 1-115 because installing wastewater components summarized in Table 1 at the new hydrogen plant "modified" S-4413 per Regulation 2-1-234 by increasing the throughput (effluent flow) to the OWS. Chevron would have gotten reprieve from BACT and offsets if they had proposed to install A-4413 to comply with amendments to NSPS QQQ without modifying S-4413.

Test #1 shall determine the unabated POC emissions and shall be conducted at the closed-vent system before it ties into A-4413 and before process wastewater effluent flows from the new hydrogen plant are routed to S-4413 for further processing. Test #2 shall determine the unabated POC emissions and shall be conducted at the closed-vent system before it ties into A-4413 and after process wastewater effluent

[42] S-4148 reviewed under Applications 27048 (June 1979), 17446 (February 2008), and 22794 (November 2010). S-4413 and S-4414 reviewed under Application 31354 (June 1986).

flows from the new hydrogen plant are routed to S-4413 for further processing. Test #3 shall determine the abated emissions of the NOx, CO, and POC and shall be conducted at an emission point downstream of A-4413 after process wastewater effluent flows from the new hydrogen plant are routed to S-4413 for further processing. Chevron shall conduct Tests #2 and #3 concurrently to confirm compliance with the ≥95% destruction efficiency requirement in NSPS QQQ.

Chevron will be installing fugitive components summarized in Table 3.

Table 3:

Fugitive component type	Type of service	Number of components	Length
2" welded piping (carbon steel)	Vapor	[redacted]	195 feet
Valves		6	[redacted]
Flanges		6	
1" piping welded (carbon steel)	Oil water service	[redacted]	35 feet
Valves		4	[redacted]
Flanges		6	

All fugitive components in Table 3 will be operated under a vacuum. Therefore, they are exempt from the provisions in Regulations 8-18-403 and 8-18-502 per Regulation 8-18-116. Because there will be no emissions from fugitive components in vacuum service, POC emissions are assumed to be zero.

Plant Cumulative Increase

S-4413 will be considered an altered (vs. modified) source. Therefore, there the cumulative increase in non-fugitive emissions is assumed to be zero until such time it can be source tested. Source testing will help evaluate if NOx, CO, POC emissions (from combustion, etc.) need to be added.

Because there will be no emissions from fugitive components in vacuum service, POC emissions are assumed to be zero.

Toxic Health Risk Assessment (HRA)

To determine if increased effluent flows to S-4413 from the new process drains installed as part of the Modernization Project will affect TAC emissions, the proposed permit conditions will require Chevron to conduct three source tests as described in the "Emissions Calculations" section.

Test #1 shall determine the unabated emissions of benzene, 1,3-butadiene, BTEX, cresols, hexane, naphthalene, phenol, styrene, and ammonia and shall be conducted at the closed-vent system before it ties into A-4413 and before process wastewater effluent flows from the new hydrogen plant are routed to S-4413 for further processing. Test #2 shall determine the unabated emissions of the above TACs and shall be conducted at the closed-vent system before it ties into A-4413 and after process wastewater effluent flows from the new hydrogen plant are routed to S-4413 for further processing. Test #3 shall determine the abated emissions of the above TACs and shall be conducted at an emission point downstream of A-4413 after process wastewater effluent flows from the new hydrogen plant are routed to S-4413 for further processing.

S-4413 will be considered an altered (vs. modified) source for TACs and a health risk assessment (HRA) will not be required until such time it is source tested.

Statement of Compliance

All fugitive components installed as part of this project are subject to and are expected to comply with the applicable standards in Regulation 8, Rule 18 (regardless of if they are in vacuum service/not), and Regulation 8, Rule 28 (if applicable). The proposed permit conditions will require Chevron to integrate the fugitive components into their LDAR program.

S-4413 is subject to and is expected to comply with the following applicable standards in Regulation 8, Rule 8 summarized in Table IV.G.1.4 of their Chevron's Title V permit:
Regulation 8-8-302 (Wastewater Separators Larger than or Equal to 18.9 Liters per Second),

Regulation 8-8-303 (Gauging and Sampling Devices),
Regulation 8-8-313 (Uncontrolled Wastewater Collection System Components at Petroleum Refineries), and Regulation 8-8-314 (New Wastewater Collection System Components at Petroleum Refineries).

The District's Compliance and Enforcement staff will verify S-4413's compliance with Regulation 8, Rules 8, 18, and 28 (if applicable) during their routine inspections.

As previously discussed in the "Background" section of this report, Chevron installed 142 new individual drain systems in preparation of the impending startup of their new hydrogen plant that is part of the Modernization Project. Installing the new process drains modified S-4413. Therefore, S-4413 will henceforth be subject to the following requirements in 40 CFR Part 60, Subpart QQQ "Standards of Performance for VOC Emissions from Petroleum Refinery Wastewater Systems" (NSPS QQQ):
§60.692-3 (Standards: Oil-water separators), and
§60.692-5 (Standards: Closed vent systems and control devices).

Chevron complies with 40 CFR Part 61, Subpart FF "National Emission Standards for Hazardous Air Pollutants for Benzene Waste Operations" (NESHAP FF) by managing and treating wastes with a flow weighted annual average water content (FWAAWC) <10% per §61.342(e)(1) in accordance with requirements in §61.342(c)(1), and via the 6BQ compliance option for managing and treating wastes with FWAAWC ≥10%. Chevron's OWS comply with NESHAP FF via 6BQ so long as the sum-total of all uncontrolled benzene waste is < 6 Mg/year. Chevron performs end of line quarterly sampling at all three OWS to demonstrate compliance with 6BQ and submits annual reports to the District and EPA.

For example, the combined uncontrolled benzene emissions from all of Chevron's three OWS in CY 2017 was 1.149 Mg out of the 3.313 Mg total.

Per §63.647(d), Chevron complies with the "wastewater provisions" in 40 CFR Part 63, Subpart CC "National Emission Standards for Hazardous Air Pollutants from Petroleum Refineries" (MACT CC) via the 6BQ compliance option in NESHAP FF.

PSD does not apply to this application.
As previously discussed in the "Emission Calculations" section of this report, S-4413 will be considered an altered (vs. modified) source until such time it can be source tested. Therefore, BACT is not triggered.

This application is considered ministerial for CEQA since this source category is covered in Permit Handbook Chapter 3.3. In addition, the project to install A-4413 is also categorically exempt from CEQA per Regulation 2-1-312.2 because it involves installing an air pollution control or abatement equipment. Chevron has submitted a CEQA Appendix H form in accordance with Regulation 2-1-312.

PERMIT CONDITIONS

Chevron Richmond Refinery (Plant # 10)
Installation of flameless thermal oxidizer (A-4413) to abate S-4413 (#2a API Oil Water Separator)
Application 28492 – April 2018

PC 26721

1. This Authority to Construct permits the owner/operator to install one Linde® ES Flameless Thermal Oxidizer (A-4413) to abate S-4413 (#2a Separator). The owner/operator of S-4413 shall vent the vapor headspace underneath the fixed roof of the oil water separator through a closed-vent system defined in §60.691 of 40 CFR Part 60, Subpart QQQ "Standards of Performance for VOC Emissions from Petroleum Refinery Wastewater Systems" to the properly installed, maintained and operated A-4413 at all times of operation except during thermal oxidizer maintenance and repair. Except as provided in §60.692-6 and if emissions from the closed-vent system are detected, the owner/operator shall repair the leaking component in the closed-vent system in efforts to eliminate the emissions as soon as practicable, but no later than 30 calendar days from the date the emissions were first detected. (Basis: 40 CFR 60, Subpart QQQ)

2. Within 60-days of installing A-4413 and before routing any refinery process wastewater to S-4413 for further processing from the newly installed process drains at the new hydrogen plant consisting of S-4449 (hydrogen plant train #1), S-4450 (hydrogen plant train #2), S-4451 (hydrogen recovery unit), S-4471 (hydrogen plant train #1 reformer furnace), S-4472 (hydrogen plant train #2 reformer furnace), S-4465 (hydrogen plant cooling tower), and S-6021/A-6021 (hydrogen plant flare) that are part of the Modernization Project, the owner/operator shall conduct District-approved source tests at the closed-vent system of the oil water separator before it ties into A-4413 (before collected vapors are abated). (Basis: Regulation 2-2-604.2)

3. The source tests required by part 2 of this permit condition shall quantify unabated concentrations and mass emissions of POC, benzene, 1,3-butadiene, BTEX, cresols, hexane, naphthalene, phenol, styrene, and ammonia.
(Basis: Regulation 2-1-403, 2-2-604.2, 2-5-214.1 and 2-5-214.4)

4. The owner/operator shall conduct two additional District-approved source tests within 180-days of routing refinery wastewater to S-4413 for further processing from the newly installed process drains at the new hydrogen plant when the two new hydrogen plants (S-4449 and S-4450) are collectively producing at least 252 MMSCFD of hydrogen. The first source test shall be conducted at the closed-vent system before it ties into A-4413 (before collected vapors are abated), and the second source test shall be conducted at an emission point downstream of A-4413 (after collected vapors are abated). The above two source tests shall be performed concurrently.
(Basis: Regulation 2-2-604.2)

5. The source tests required by part 4 of this permit condition shall quantify unabated and abated concentrations and mass emissions of NOx (abated only), CO (abated only), POC, benzene, 1,3-butadiene, BTEX, cresols, hexane, naphthalene, phenol, styrene, and ammonia, and shall also determine the volatile organic compounds destruction efficiency of A-4413.
(Basis: Regulation 2-1-403, 2-2-604.2, 2-5-214.1, 2-5-214.4, 40 CFR 60.692-3(b))

6. For source tests required by parts 2 and 4 of this permit condition, the owner/operator shall monitor, record, and report to the District the following process parameters for each source test run at S-4413/A-4413:

    i. Duration of the test run

    ii. Temperature within A-4413

    iii. Refinery wastewater flow into S-4413

    iv. Raw % oxygen

    The owner/operator shall conduct all source tests required by this Permit Condition under normal/ representative operational conditions unless other conditions are required by the applicable test method or in this permit.

    Upon completion of each District-approved source test, the owner/operator shall determine and report the NOx, CO, POC, benzene, 1,3-butadiene, BTEX, cresols, hexane, naphthalene, phenol, styrene, and ammonia emission factors on a lb/MMGAL basis, the corresponding concentrations measured during each source test run for the above pollutants, and the average of three source test runs for the above pollutants to the District's Source Test Section for review and approval. (Basis: Regulation 2-1-403)

7. Prior to conducting the source tests required by parts 2 and 4 of this Permit Condition, the owner/operator shall submit a source test protocol for approval to the District's Source Test Section. The owner/operator shall notify the Manager of the District's Source Test Section and the District's assigned permit engineer at least seven (7) days prior to the test, to provide

the District staff the option of observing the testing. Within 60 days of test completion, a comprehensive report of the test results shall be submitted to the Manager of the District's Source Test Section for review and disposition. The owner/operator shall retain records of source test results and any related correspondence with the District's Source Test Section and the District's assigned permit engineer on-site for at least 5 years from the date of the document, and shall make the records available to District staff for inspection upon request. (Basis: Regulations 2-6-501 and 2-6-503)

8. The owner/operator shall use the emission factors determined via source testing on a lb/MMGAL basis in concert with refinery wastewater throughput into S-4413 recorded for each source test run to determine the corresponding hourly, daily, and annual mass emissions of NOx, CO, POC, benzene, 1,3-butadiene, BTEX, cresols, hexane, naphthalene, phenol, styrene, and ammonia in lb/hour, lb/day (lb/hour x 24 hours/day), and tons/year (lb/day x 365 days/year ÷ 2000), respectively. The owner/operator shall retain the records of the emission factors, refinery wastewater throughputs, and associated emission calculations on site for five years from the date of entry, and shall make the records available to District staff for inspection upon request. (Basis: Regulations 2-1-403 and 2-6-501)

9. The owner/operator shall first notify the District's assigned Compliance and Enforcement inspector at least 5-working days in advance of taking A-4413 out of service for preventative maintenance purposes. A-4413's preventative maintenance downtime shall not last longer than 20 hours per month and records shall be maintained to document and demonstrate compliance. The 20 hours per month for preventative maintenance is separate and shall not apply to the repair provisions in Part 1 of these Permit Conditions.
(Basis: Regulation 2-1-403)

10. Within 30 days after A-4413 is installed and operating, the owner/operator shall provide the District's Engineering Division with a final count of fugitive components installed. The owner/operator has been permitted for an increase in the following fugitive components: Valves: 10; Flanges: 12. (Basis: Regulation 2-1-403)

11. The owner/operator shall install valves that are of District approved BACT compliant technology (bellows valves, diaphragm valves, live loaded valves, or the equivalent) such that fugitive organic emissions shall not exceed 100 ppm.
(Basis: Regulation 8-18)

12. The owner/operator shall install flanges that are of District approved BACT compliant technology (graphitic gaskets or the equivalent) such that fugitive organic emissions shall not exceed 100 ppm. (Basis: Regulation 8-18)

13. In accordance with the provisions of Regulation 8-18, the owner/operator shall integrate all new fugitive equipment installed as part of the project into the facility fugitive equipment monitoring and repair program. (Basis: Regulation 8-18)

Recommendation

Issue Chevron an Authority to Construct to install:

A-4413: The Linde Group THERMATRIX® ES Flameless Thermal Oxidizer
Linde Model ES-100, Electrically powered
Location: Environmental Operations Division
Abating: S-4413 (#2a API Oil Water Separator)

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K. R. Bhagavan

EVALUATION REPORT
Plant 10: Chevron Products Company
Application 28535: Corrosion Inhibitor Tote

Background

Chevron Products Company (Chevron) has proposed to install the following equipment:

S-6022: Refillable tote (active) connected to an injection skid
Make and Model: NALCO PORTA-FEED® Senior
Tote Location: #4 Crude Unit (S-4236) overhead accumulator process line
Area Business Unit: Distillation & Reforming (D&R)
Material stored: Corrosion Inhibitor; TVP[43] < 0.33 psia (100°F)
Nominal volume: 400 gallons; normal fill volume: 385 gallons
Throughput: 1,825 gallons/year

S-6023: Transfer tote (standby) with transfer line to S-6022
Make and Model: NALCO PORTA-FEED® Junior
Tote Location: #4 Crude Unit (S-4236) overhead accumulator process line
Area Business Unit: Distillation & Reforming (D&R)
Material stored: Corrosion Inhibitor; TVP < 0.33 psia (100°F)
Nominal volume: 217 gallons; normal fill volume: 200 gallons
Throughput: 1,825 gallons/year

S-6022 will store a corrosion inhibitor and dispense it via an injection skid into an overhead accumulator process line at the #4 Crude Unit (S-4236). S-6022 will be located upstream of heat exchanger train (E-1101 A-D). The injection skid connected to S-6022 will include piping, a pump, and fugitive components. The material will be pumped via the injection skid to the recycle water stream which feeds to E-1101 A-D. Material stored in S-6023 will be used to replenish S-6022. When empty, S-6023 will be hauled offsite and will be replaced with a new tote that will be filled offsite.

S-6023 is exempt from permitting per Regulations 2-1-123.1 because the capacity of the tote is less than 260 gallons. Chevron had originally proposed to install two identical 400-gallon totes (active and transfer). Chevron revised the project scope after they were invoiced for application fees. Because S-6023 is exempt, fees will be assessed per Regulation 3-337 and Chevron will be refunded the difference.

Emission Calculations

Assuming ~5 tote turnovers (1825 ÷ 385), Chevron estimated the working and breathing POC losses from S-6022 via US EPA's TANKS model to be 7 lbs/year. Installing S-6022 and S-6023 will require adding 39 fugitive components (5 valves, 27 flanges, 1 pump, 6 PRDs). The District estimated POC emissions from the fugitive components to be 1,082 pounds/year. Therefore, the POC emissions associated with this application is 1,089 pounds/year (0.54 TPY). Attachment A contains fugitive emissions calculations.

Plant Cumulative Increase

POC: 0.54 TPY (1.15) – 0.62 TPY (offsets) = 0.0 tpy

[43] Vapour pressure listed in SDS dated October 7th, 2015 for NALCO EC1010A is 22.75 hPa (37.8°C).

Toxic Health Risk Assessment (HRA)

An HRA was required because annual emissions of naphthalene (54.09 lbs/year) exceeded the Regulation 2, Rule 5 chronic TAC trigger level of 2.4 lbs/year. The District's HRA determined the maximum cancer risk for the project to be 0.04 in a million and the chronic hazard index to be 0.0001, and concluded the above risks are acceptable in accordance with Regulations 2-5-301 and 302.

Statement of Compliance

S-6022 is not exempt from permitting per Regulations 2-1-123.1 and 123.3.2 because the capacity of the tote is greater than 260 gallons and the initial boiling point of the corrosion inhibitor is 146°C (295°F). Because the TVP of the corrosion inhibitor stored in S-6022 and S-6023 is less than 0.5 psia, the totes are not subject to the provisions of Regulation 8, Rule 5 except for Regulation 8-5-307.3. Per information in NALCO's product brochure the totes are atmospheric containers and pressure is not to be applied to the units. Therefore, the totes will not be pressurized or blanketed and Reg. 8-5-307.3 does not apply. Appurtenances (ex. fittings, etc.) on storage tanks (~totes) are exempt from Regulation 8, Rule 18 per Regulation 8-18-115. However, fugitive components (ex. sample valves/connections, etc.) that run up to the tank are subject to Regulation 8-18. NALCO's product brochure states each tote is equipped with pressure and vacuum relief valves and a high capacity fusible relief device. Because the totes are exempt from Regulation 8, Rule 5, all fugitive components summarized in Attachment A including PRDs exempt from Regulation 8, Rule 28 per Regulation 8-28-112 are subject to Regulation 8, Rule 18.

The capacity of the totes (~storage vessel) is < 75 m^3 (19,813 gallons). Therefore, 40 CFR 60, Subpart Kb (NSPS Kb) does not apply per 40 CFR 60.110b(a). The totes are not subject to 40 CFR 63, Subpart CC (MACT CC) per 40 CFR 63.641 because the capacity of the totes is < 40 m^3 (10,567 gallons). The fugitive components summarized in Attachment A will be installed at the #4 Crude Unit (S-4236) which is an existing source. Therefore, the fugitive components are required to comply with the provisions of 40 CFR 60, Subpart VV and all applicable provisions in MACT CC per 40 CFR 63.648. Chevron has stated that the PRDs do not have the potential to emit ≥ 72 lbs/day of VOC based on the valve diameter, the set release pressure, and the contents stored in the totes. Therefore, the PRDs are not subject to the pressure release management requirements in 40 CFR 63.648(j)(3) per 40 CFR 63.648(j)(5)(v).

PSD does not apply to this application.

BACT is not triggered since the increase in POC emissions is less than 10 pounds per highest day.

This application will require POC offsets since the facility POC emissions are greater than 35 tons per year. This application requires 0.62 TPY of POC offsets which Chevron will offset via ERC # 1283.

This application is considered ministerial for CEQA since this source category is covered in Permit Handbook Chapter 4.

PERMIT CONDITIONS

Chevron Richmond Refinery (Plant # 10)
S-6022 Corrosion Inhibitor Tote
Application 28535 – August 2017

PC 26558

1. The owner/operator of S-6022 (400 gallon NALCO PORTA-FEED® Senior refillable tote) shall not exceed the following throughput limit during any consecutive twelve-month period:
   NALCO® EC1010A Corrosion Inhibitor (TVP < 0.5 psia): 1,825 gallons.
   (Basis: Cumulative Increase)

2. The owner/operator may store alternate liquid(s) other than the material specified in Part 1 and/or usage in excess of those specified in Part 1, provided that the owner/operator can demonstrate that all of the following are satisfied:

   a. Total POC emissions (including fugitive component emissions) from S-6022 do not exceed 1,089 pounds per year in any consecutive twelve month period; and
   b. The use of these materials does not increase toxic emissions above any risk screening trigger level of Table 2-5-1 in Regulation 2-5.
   (Basis: Cumulative Increase; Toxics)

3. To determine compliance with the above parts, the owner/operator shall maintain the following records and provide all of the data necessary to evaluate compliance with the above parts, including the following information:
   a. Quantities of each type of liquid stored at this source on a monthly basis.
   b. If a material other than those specified in Part 1 is stored, POC/NPOC and toxic component contents of each material used; and mass emission calculations to demonstrate compliance with Part 2, on a monthly basis;
   c. Monthly throughput and/or emission calculations shall be totaled for each consecutive twelve-month period.
   All records shall be retained on-site for five years, from the date of entry, and made available for inspection by District staff upon request. These recordkeeping requirements shall not replace the recordkeeping requirements contained in any applicable District Regulations.
   (Basis: Cumulative Increase; Toxics)

4. Not more than 30 days after the start-up of S-6022, the owner/operator shall provide the District's Engineering Division with a final count of fugitive components installed. The owner/operator has been permitted for an increase in the following fugitive components in liquid service: Valves: 5; Flanges: 27; Connectors: 0; Pump seals: 1; PRD: 6.
   (Basis: Cumulative Increase, offsets, toxics risk screen)

5. If there is an increase in the total fugitive component emissions, the plant's cumulative emissions for the project shall be adjusted to reflect the difference between emissions based on predicted versus actual component counts. The owner/operator shall provide to the District all additional required offsets at an offset ratio of 1.15:1 no later than 14 days after submittal of the final POC fugitive count. If the actual component count is less than the predicted, the total will be adjusted accordingly and all emission offsets applied by the owner/operator in excess of the actual total fugitive emissions will be credited back to the owner/operator.
   (Basis: offsets)

6. The owner/operator shall install valves, in light hydrocarbon service, that are of District approved BACT compliant technology (bellows valves, diaphragm valves, live loaded valves, or the

equivalent) such that fugitive organic emissions shall not exceed 100 ppm.
(Basis: Regulation 8-18, toxics risk screen)

7. The owner/operator shall install flanges, in light hydrocarbon service, that are of District approved BACT compliant technology (graphitic gaskets or the equivalent) such that fugitive organic emissions shall not exceed 100 ppm.
(Basis: Regulation 8-18, toxics risk screen)

8. The owner/operator shall install pump seals, in light hydrocarbon service, that are of District approved BACT compliant technology (double mechanical seals with barrier fluid or the equivalent) such that fugitive organic emissions shall not exceed 500 ppm.
(Basis: Regulation 8-18, toxics risk screen)

9. The owner/operator shall ensure pressure relief valves installed on S-6022 and the exempt 217 gallon NALCO PORTA-FEED® Junior transfer tote S-6023 comply with and meet applicable requirements of Regulation 8, Rule 5, Rule 18, Rule 28.
(Basis: Regulation 8-5, Regulation 2-1-403)

10. In accordance with the provisions of Regulation 8-18, the owner/operator shall integrate all new fugitive equipment in organic service installed as part of S-6022 and S-6023 into the facility fugitive equipment monitoring and repair program.
(Basis: Regulation 8-18)

Recommendation

Issue Chevron an Authority to Construct for the following:

S-6022: Refillable tote (active) connected to an injection skid
Make and Model: NALCO PORTA-FEED® Senior
Tote Location: #4 Crude Unit (S-4236) overhead accumulator process line
Area Business Unit: Distillation & Reforming (D&R)
Material stored: Corrosion Inhibitor; TVP < 0.33 psia (100°F)
Nominal volume: 400 gallons; normal fill volume: 385 gallons
Throughput: 1,825 gallons/year

Issue Chevron a Letter of Exemption for the following:

S-6023: Transfer tote (standby) with transfer line to S-6022
Make and Model: NALCO PORTA-FEED® Junior
Tote Location: #4 Crude Unit (S-4236) overhead accumulator process line
Area Business Unit: Distillation & Reforming (D&R)
Material stored: Corrosion Inhibitor; TVP < 0.33 psia (100°F)
Nominal volume: 217 gallons; normal fill volume: 200 gallons
Throughput: 1,825 gallons/year

_____
K. R. Bhagavan

ENGINEERING EVALUATION

Plant 10: Chevron Products Company
841 Chevron Way, Richmond, CA, 94802

Application 28627: Administrative Changes to Permit Condition #21232

BACKGROUND

Chevron Products Company (Chevron) has applied for an administrative amendment to Permit Condition #21232, applicable to the following sources at its facility in Richmond, CA:

S-4068: Furnace F-1610 DHT (VGO Desulfurizer) Furnace LSFO-E
S-4188: Furnace F-651 Polymer Furnace Poly Plant
S-4154: Furnace F-120 Asphalt Solution Heater SDA Isomax; 50.5 MMBtu/hr

Per the requirements in Regulation 9-10-502.1.1, Chevron has installed NOx and O2 CEMS at the stacks of S-4068 and S-4188 in accordance with the District-approved CEMS monitoring Plan. These CEMS came into service on April 5, 2016 for S-4068 and on April 13, 2016 for S-4188, following the performance specific tests conducted by the District. Via this NSR permit application and the corresponding Major Facility Review (Title V) Administrative Amendment application, Chevron has requested the District to make the following changes:

1. Revise part 1 of to Permit Condition #21232 to indicate S-4068 and S-4188 are equipped with CEMS.
2. Delete NOx Box parameters for S-4068 and S-4188 part 5A of to Permit Condition #21232
3. Update Table IV.A.3.2 Combustion and Table VII.A.3.2 Combustion in Title V permit to reflect CEMS requirements for S-4068 and S-4188.

S-4154 is not equipped with NOx CEMS and is therefore, required by permit condition 21232 to operate within the confines of its "NOx box" operating window to demonstrate compliance with Regulation 9-10-301 - the refinery-wide NOx emission limit of 0.033 lb NOx per MMBTU of heat input, based on an operating day average and its NOx emission factor of 0.035 lb/MMBTU.

Table 1 summarizes the current NOx box operating window for S-4154.

Table 1: NOx Box Operating Parameters for S-4154

MMBTU/hour	%Process O2[44]
18.9	1.5
18.7	4.6
7.9	5.9
7.4	5.2
7.3	3.7
14	1.3

On January 16, 2017, S-4154 operated outside of its NOx box at a firing rate of 16.38 MMBtu/hr and process O2[1] 5.05%. When deviating from the NOx box, part 6 of Permit Condition 21232 requires Chevron to conduct a District-approved source test that reasonably replicates past operation outside the established NOx box operating ranges.

Chevron conducted the District-approved re-test on February 1, 2017. The average firing rate and % process O2 determined during this re-test were 16.37 MMBTU/hour and 5.68%, respectively, and the NOx emission rate was calculated to be 0.027 lb/MMBTU. The process O2 during the re-test was 12.5% higher than the process O2 during the original test that deviated from the NOx Box operating range. Higher the process O2, higher is the excess O2 in the exhaust, resulting in more conservative NOx emission rate on lb/MMBtu basis, calculated per EPA Method 19.

[44] Chevron's NOx box for furnaces are based on process O2 (or firebox O2), measured using parametric O2 meters and not based on excess O2 in the exhaust, measured at sampling point in the stack.

If the NOx emission rate was below the allowable emission factor at the re-test conditions, then the NOx emission rate at lower process O2 (and thus, lower exhaust O2) would be even lower than the allowable emission factor.

During such instances, i.e., when the source tested NOx emission rate (0.027 lb/MMBTU) is less than the allowable NOx emission factor for the source (0.035 lb/MMBTU), part 6 of permit condition 21232 allows Chevron to request the District to administratively amend the NOx box operating ranges based on the source test data. The scope of Chevron's request is summarized in the chart provided in Attachment 1.

EMISSIONS SUMMARY, CUMULATIVE INCREASE & NSR

The proposed amendments to part 5A of permit condition 21232 to include the February 2017 re-test data point that will expand the NOx box operating window for S-4154 will not require physical or operational changes at the furnace and will not increase emissions from the furnace beyond the currently allowable emission rate. Therefore, this evaluation report assumes the proposed changes to permit condition 21232 will not result in a "net increase" in NOx emissions from S-4154.

Similarly, no increase in NOx emissions is expected from the installation of CEMS in-lieu of parametric monitoring for S-4068 and S-4188.

Therefore, the cumulative increase in emissions from the proposed administrative amendments is zero and New Source Review requirements are not triggered.

NEW SOURCE PERFORMANCE STANDARDS (NSPS)

The proposed amendments will not trigger any new NSPS other than those that already apply to S-4068, S-4154, and S-4188.

NATIONAL EMISSION STANDARDS FOR HAZARDOUS AIR POLLUTANTS (NESHAP)

The proposed amendments will not trigger any new MACT standards or NESHAPs other than those that already apply to S-4068, S-4154, and S-4188.

STATEMENT OF COMPLIANCE

S-4068, S-4154, and S-4188 are subject to and are expected to comply with Regulation 9, Rule 10 "Inorganic Gaseous Pollutants - Nitrogen Oxides and Carbon Monoxide from Boilers, Steam Generators and Process Heaters in Petroleum Refineries". The District's Compliance & Enforcement staff will verify the compliance of the above sources with Regulation 9-10 during their routine inspections.

CEQA and Regulation 2-1-412, *Public Notice, Schools* are not applicable because the proposed changes to permit condition 21232 will not "modify" S-4068, S-4154, and S-4188.

Chevron is a major facility and the relevant sections of its Title V permit will be revised administratively under AN 28628 to reflect the changes proposed in this NSR application.

PERMIT CONDITIONS

COND# 21232

Regulation 9-10 Refinery-Wide Compliance Affected Sources

*1. The following sources are subject to the refinery-wide NOx emission rate and CO concentration limits in Regulation 9-10: (9-10-301 & 305)

S#	description	CEM (Y/N,EF)
S-4038	F-3550	Y
S-4039	F-3560	Y
S-4040	F-3570	Y
S-4041	F-3580	Y
S-4042	F-550	Y
S-4043	F-560	Y
S-4044	F-570	Y
S-4045	F-580	Y

S-4059	F-247	Y
S-4060	F-210A/B	Y
S-4061	F-410	Y
S-4062	F-447	Y
S-4068	F-1610	~~N~~ Y
S-4069	F-1660	N
S-4070	F-1100A	Y
S-4071	F-1100B	Y
S-4072	F-1160	Y
S-4095	F-210	N
S-4129	Blr #1	Y
S-4131	Blr #3	Y
S-4132	Blr #4	Y
S-4133	Blr #5	Y
S-4135	Blr #7	Y
S-4152	F-100	Y
S-4154	F-120	N
S-4155	F-135	Y
S-4156	F-320	N
S-4158	F-340	N
S-4159	F-410	Y
S-4160	F-420	Y
S-4161	F-510	Y
S-4162	F-520	Y
S-4163	F-530	Y
S-4164	F-630	Y
S-4165	F-620	Y
S-4166	F-610	Y
S-4167	F-710	Y
S-4168	F-730	Y
S-4169	F-731	Y
S-4170	F-305	Y
S-4171	F-355	Y
S-4188	F-651	~~N~~ Y
S-4189	F-661	N
S-4330	F-1610	Y
S-4331	F-1310	Y
S-4332	F-1360	Y
S-4333	F-1750	Y
S-4334	F-1200	Y
S-4335	F-1250	Y
S-4336	F-1410	Y
S-4337	F-1500	Y
S-4338	F-1550	Y
S-4339	F-1110	Y

Monitoring Device Installation

*2. The owner/operator of each source listed in Part 1 shall properly install, properly maintain, and properly operate an O2 monitor and recorder. This part shall be effective September 1, 2004. (Reg.9-10-502)

NOx Box Overview

*3. The owner/operator shall operate each source listed in Part 1, which does not have a NOx CEM within specified ranges of operating conditions (firing rate and oxygen content) as detailed in Part 5. The ranges shall be established by utilizing data from District-approved source tests. The owner/operator may choose to comply with either 3. B. or 3.C. (Reg. 9-10-502)

~~1~~ A. The NOx Box for units with a maximum firing rate of 25 MMBH or more shall be established using the procedures in Part 4.

~~2~~ B. The NOx Box for units with a maximum firing rate less than 25MMBH shall be established as follows: High-fire shall be the maximum rated capacity. Low-fire shall be 20% of the maximum rated capacity. There shall be no maximum or minimum O2~~.~~; ~~OR~~ Or

~~3~~ C. The NOx Box for units with a maximum firing rate less than 25 MMBH shall be established as follows: High-fire shall be the maximum rated capacity. Low-fire shall be 30% of the maximum rated capacity. There shall no maximum or minimum O2.

NOx Box Establishment

*4. The NOx Box may consist of two operating ranges in order to allow for operating flexibility and to encourage emission minimization during standard operation. (9-10-502) The procedure for establishing the NOx box is:

a. Conduct District-approved source tests for NOx and CO, while varying the oxygen concentration and firing rate over the desired operating ranges for the furnace;

b. Determine the minimum and maximum oxygen concentrations and firing rates for the desired operating ranges (Note that the minimum O2 at low-fire may be different than the minimum O2 at high-fire. The same is true for the maximum O2). The owner/operator shall also verify the accuracy of the O2 monitor on an annual basis.

c. Determine the highest NOx emission factor (lb/Mmbtu) over the preferred operating ranges while maintaining CO concentration below 200 ppmvd at 3% O2; the owner/operator may choose to use a higher NOx emission factor than tested.

d. Plot the points representing the desired operating ranges on a graph. The resulting polygon(s) are the NOx Box, which represents the allowable operating range(s) for the furnace under which the NOx emission factor from part 5a is deemed to be valid.

e. The NOx Box can represent/utilize either one or two emission factors.
f. The NOx Box for each emission factor can be represented either as a 4- or 5-sided polygon The NOx box is the area within the 4- or 5-sided polygon formed by connecting the source test parameters that lie about the perimeter of successful approved source tests. The source test parameters forming the corners of the NOx box are listed in Part 5~~e~~A.

Upon establishment of each NOx Box, the owner/operator shall prepare a graphical representation of the box. The representation shall be made available on-site for APCO review upon request. The box shall also be submitted to the BAAQMD with permit amendments.

NOx Box Limits

*5A. Except as provided in part 5B or 5C and 5D, the owner/operator shall operate each source within the Nox Box ranges listed below at all times of operation, except for startup, shutdown, or curtailed operation, when the owner/operator may choose to comply with 5B or 5C. This part shall not apply to any source that has a properly operated and properly installed NOx CEM. (9-10-502)

NOx Box ranges

Source No.: S-4154
Emission Factor: 0.035 lb/MMBtu
Firing rate MMBtu/h, HHV: O2%
18.9, 1.5
18.7, 4.6
16.4, 5.7
7.9, 5.9
7.4, 5.2
7.3, 3.7
14, 1.3

Source No.: S-4158
Emission Factor: 0.035 lb/MMBtu
Firing rate MMBtu/h, HHV: O2%
29, 1.7
43.71, 1.73
45.31, 5.62
15, 4.6
17, 3.4
48.0, 3.28

~~Source No.: S-4188~~
~~Emission Factor: 0.25 lb/MMBtu~~
~~Firing rate MMBtu/h, HHV: O2%~~
~~11.9, 3.2~~
~~4.8, 5.4~~
~~7.9, 10.6~~

~~13.73, 10.31~~
~~27, 4.9~~
~~22.3, 4~~

Source No.: S-4189
Emission Factor: 0.25 lb/MMBtu
Firing rate MMBtu/h, HHV: O2%
3 @ 20% or 4.5 @ 30%, 25 (Note 1)
3 @ 20%, or 4.5 @ 30%, 0 (Note 1)
15, 0
15, 25

~~Source No.: S-4068~~
~~Emission Factor: 0.14 lb/MMBtu~~
~~Firing rate MMBtu/h, HHV: O2%~~
~~56.79, 3.7~~
~~65, 9.5~~
~~27, 9.5~~
~~23.5, 3.59~~

Source No: S-4069
Emission Factor: 0.045 lb/MMBtu
Firing rate MMBtu/h, HHV: O2%
14.10, 2.18
13.86, 8.17
26.16, 1.85
27.98, 6.52

…

End of Conditions

RECOMMENDATION

Modify permit condition 21232 as proposed and issue Chevron a Permit to Operate for the following sources:

S-4068: Furnace F-1610 DHT (VGO Desulfurizer) Furnace LSFO-E
S-4188: Furnace F-651 Polymer Furnace Poly Plant
S-4154: Furnace F-120 Asphalt Solution Heater SDA Isomax; 50.5 MMBtu/hr

_____
Snigdha Mehta
Air Quality Engineer
Engineering Division

Attachment 1: NOx Box Chart

EVALUATION REPORT
Plant 10: Chevron Products Company
Application 28904: Isomax Pump Seal Reroute

Background

Chevron Products Company (Chevron) operates eight pumps summarized in Table 1 in the South Isomax Area that serve in ammonia and hydrogen sulfide recovery from S-4429 (#8 NH_3/ H_2S Plant):

Table 1:
Pumps serving S-4429

Process Fluid	Pump ID	Purpose of pump
Propane	P-853, P-853A	Regenerates propane dryers (V-853/A) by pumping propane from propane dryers (V-853/A) through propane vaporizer (E-853) back through propane dryers.
Propane Caustic Wash	P-851, P-851A, P-852	Circulates a propane, caustic, and water mixture from the propane caustic washer (V-851) or the water wash settler (V-852) to remove H_2S from propane. The propane is sent through the propane dryers (V-853/A) and routed to the LPG spheres for storage and sale.
H2S Relief/Caustic	P-890, P-890A	Pumps sour water from H2S scrubber (C-890) to ammonia surge drum (V-894), where it is mixed with additional ammonia to remove H_2S from relief. The water is cooled through aqueous ammonia cooler (E-890) and circulated back to C-890.
Caustic	P-894	Pumps spent caustic from relief surge drum (V-890) to RLOP to caustic degasser (V-1936). Spent caustic is recirculated until off-gas is removed. Off-gas is sent to flare gas recovery unit and to the gas recovery unit (S-4346).

Captured pump seal emissions from pumps summarized in Table 1 contain POCs and are currently routed to the following two hydrogen plant furnaces:

S-4170: F-305 Hydrogen Reforming Furnace, Hydrogen Plant
Foster Wheeler, 19,680 MMBTU/day (HHV)

S-4171: F-355 Hydrogen Reforming Furnace, Hydrogen Plant
Foster Wheeler, 19,680MMBTU/day (HHV)

When the new hydrogen plant reformer furnaces (S-4471 and S-4472) that are part of the Modernization Project[45] are started up (sometime in 2018), S-4170 and S-4171 will be permanently shut down. Therefore, Chevron has proposed to reroute captured pump seal POC emissions from the eight pumps summarized in Table 1 to the following five furnaces:

S-4152: F-100 Asphalt Solution Heater, SDA Isomax
M.W. Kellog, 50.5 MMBTU/hour (HHV)

S-4155: F-135 Hot Oil Furnace
M.W. Kellog, 209 MMBTU/hour (LHV)

[45] Authority to Construct (AC) for sources that are part of the Modernization Project were reviewed under Application 12842. District issued Chevron an AC on September 19, 2008. The AC is valid until February 11, 2019.

S-4161: F-510 TKN Feed Furnace, Isomax
Alcorn Combustion Company, 61 MMBTU/hour (HHV)

S-4168: F-730 Isocracker Splitter Feed Furnace
Born Engineering Company, 331 MMBTU/hour (HHV)

S-4169: F-731 Isocracker Reboiler, Isomax
Born Engineering Company, 260 MMBTU/hour (HHV)

As proposed, fugitive (~pump seals) POC emissions will be routed to two existing collection headers:

- Header #1 → S-4152 and S-4155[46]
- Header #2 → S-4161, 4168, and 4169

During normal operation, five pumps are active (P-853, P-851, P-852, P-890, and P-894) and three pumps serve as spares (P-853A, P-851A, and P-890A). Fugitive collection connections to each one of the five furnaces (S-4152, 4155, 4161, 4168, 4169) are equipped with eductors. The eductor at the furnace is designed to educt up to 3 cubic feet per minute (cfm) from the collection header while holding ~10" Hg in vacuum and uses instrument air as the motive gas. A normally operating pump seal requires ~2 cubic feet per hour (cfh) flow rate into the collection header to remove all POC from the pump seals. Most of that 2 cfh (0.033 cfm) is air pulled into the POC header at the pumps. So long as the total flow of vapor from all pumps entering the collection header is lower than the rated capacity of the eductor, the eductor can pull more air/POC mixture into the furnace than is coming into the collection header system from the pumps. Chevron has proposed to add ~900 feet of new piping to connect the pump seal vent piping to collection headers #1 and #2. Because the eductors are capable of pulling in more air/POC mixture into the furnace than is coming into the system from the pumps (3 cfm vs. 0.033 cfm), they are capable of conveying the air/POC mixtures over large distances in small diameter piping.

The proposed rerouting of captured pump seal POC emissions from the eight pumps summarized in Table 1 to S-4152, 4155, 4161, 4168, 4169 is an alteration (vs. modification), because the captured pump seal emissions will not modify the rated heat input capacities of the above furnaces.

Emission Calculations

Rerouting the captured pump seal emissions will require ~900 feet of new piping to connect the pump seal vent piping to collection headers #1 and #2 and will require adding 85 fugitive components (5 valves, 80 flanges, 0 PRDs). The District's estimated POC emissions from the fugitive components are 420 pounds/year (0.21 TPY). Attachment A contains fugitive emissions calculations.

Plant Cumulative Increase

POC: 0.21 TPY (1.15) – 0.24 TPY (offsets) = 0.0 tpy

Toxic Health Risk Assessment (HRA)

An HRA is not required because hourly and/or annual emissions of ammonia, hydrogen sulfide, propylene, and sodium hydroxide are below their respective Regulation 2, Rule 5 acute and/or chronic TAC trigger levels.

Statement of Compliance

All fugitive components installed as part of this project are subject to and are expected to comply with the applicable standards in Regulation 8, Rule 18.

[46]Permit condition 8773 requires light-liquid pump shaft seal emissions from the SDA (S-4251) be routed to S-4152 and 4155. Chevron has confirmed the increased vapor load from the proposed pump seal reroute that is part of this application (# 28904) will not affect compliance with permit condition 8773.

Rerouting the captured pump seal emissions will not cause any changes and/or impede Chevron's compliance with applicable requirements in their Title V permit, nor is it considered a "modification" per §60.14 (e)(5), which states:

"(e) The following shall not, by themselves, be considered modifications under this part:

(5) The addition or use of any system or device whose primary function is the reduction of air pollutants, except when an emission control system is removed or is replaced by a system which the Administrator determines to be less environmentally beneficial."

Therefore, fugitive components that will be added as part of the project are not subject to 40 CFR 60, Subpart GGGa "Standards of Performance for Equipment Leaks of VOC in Petroleum Refineries for Which Construction, Reconstruction, or Modification Commenced After November 7, 2006".

The fugitive components will emit ammonia, hydrogen sulfide, propylene, and sodium hydroxide. None of the above TACs appear in the list of hazardous air pollutants (HAPs) in Table 1 of 40 CFR 63, Subpart CC "National Emission Standards for Hazardous Air Pollutants From Petroleum Refineries". Therefore, the fugitive components are not subject to 40 CFR 63, Subpart CC (MACT CC) per § 63.640 (g)(2). Though not required, Chevron will subject the fugitive components to MACT CC in the event they contain HAPs listed in Table 1. Per §63.640 (l) and §63.648(a) in MACT CC, the fugitive components are subject to 40 CFR Part 60, Subpart VV "Standards of Performance for Equipment Leaks of VOC in the Synthetic Organic Chemicals Manufacturing Industry for which Construction, Reconstruction, or Modification Commenced After January 5, 1981, and on or before November 7, 2006" (NSPS VV).

Rerouting captured pump seal emissions to the furnaces (S-4152, 4155, 4161, 4168, 4169) will not modify them and/or result in any changes to applicable requirements they are currently subject to and/or impose any new applicable requirements they are not currently subject to.
The furnaces are subject to Regulation 9, Rule 10 and are equipped with NOx CEMS.

S-4155 is subject to the nitrogen oxide standard of 0.10 lb/MMBTU in §60.44b(e) of 40 CFR Part 60, Subpart Db "Standards of Performance for Industrial-Commercial-Institutional Steam Generating Units". S-4155 will demonstrate ongoing compliance with the NSPS Db standard via NOx CEMS. The proposed combustion of rerouted captured pump seal emissions in S-4155 will not result in an increase in the amount of nitrogen oxide emitted into the atmosphere. Therefore, S-4155 will not be modified per §60.2, which states:

"*Modification* means any physical change in, or change in the method of operation of, an existing facility which increases the amount of any air pollutant (to which a standard applies) emitted into the atmosphere by that facility or which results in the emission of any air pollutant (to which a standard applies) into the atmosphere not previously emitted."

The furnaces meet the definition of "fuel gas combustion device" in §60.101(g) and are subject to the sulfur oxide (SO_2) standard in §60.104(a)(1) of 40 CFR Part 60, Subpart J "Standards of Performance for Petroleum Refineries" (NSPS J). In order to comply with the SO_2 standard, NSPS J requires installing a continuous monitoring system (CMS) to monitor and record the concentration by volume (dry basis, 0% excess air) of SO_2 emissions into the atmosphere from any fuel gas combustion device per 40 CFR §.60.105(a)(3), or installing a CMS to monitor and record the concentration of H_2S in the fuel gas as defined in §60.101(d) prior to combustion in any fuel gas combustion device per 40 CFR §.60.105(a)(4). Chevron complies with the SO_2 standard by continuously monitoring and recording the concentration of H_2S in the fuel gas stored in fuel gas drums (V-475, V-701, and V-870) to ensure it is ≤0.10 gr/dscf (162 ppmv[47]). In lieu of continuously monitoring and recording the concentration of H_2S in the fuel gas formed by fugitive emissions from the South Isomax pump seals (P-853, P-853A, P-851, P-851A, P-852, P-890, P-890A, and P-894) and because the volumetric flow rate of the fuel gas supplied to furnaces S-4152, S-4155, S-4161, S-4168, and S-4169 from the V-475 drum is over 1,500 times greater than the captured

[47] 162 ppmv = (0.10 x 385 ÷ 7000 x 34) x 10E6

pump seal streams, Chevron's Alternative Monitoring Plan (AMP)[48] allows them to monitor the concentration of H_2S in the fuel gas formed by fugitive emissions from the South Isomax pump seals on a less frequent basis.

Because there is adequate monitoring in place to assure the proposed project will not result in an increase in the amount of sulfur oxide emitted into the atmosphere, it is not a modification as defined in §60.2. The proposed project will also not be considered a modification per §60.14(e)(4) because the construction specifications/design of the furnaces (S-4152, 4155, 4161, 4168, 4169) don't need to be changed to accommodate the alternative fuel (i.e., captured pump seal emissions).

PSD does not apply to this application.

BACT is not triggered since the increase in POC emissions are less than 10 pounds per highest day.

This application will require POC offsets since the facility POC emissions are greater than 35 tons per year. This application requires 0.24 TPY of POC offsets which Chevron will offset via ERC # 1283.

This application is considered ministerial for CEQA since this source category is covered in Permit Handbook Chapter 3.4.

PERMIT CONDITIONS

Chevron Richmond Refinery (Plant # 10)
S-4429 #8 NH_3/ H_2S Plant
Application 28904 – December 2017

PC 26681

1. The owner/operator of S-4429 (#8 NH_3/ H_2S Plant) shall ensure shaft seal emissions from pumps (P-853, P-853A, P-851, P-851A, P-852, P-890, P-890A, and P-894) are captured and vented to furnaces S-4152, S-4155, S-4161, S-4168, and S-4169) at all times of operation. Any furnace to which pump seals are vented shall be properly operated and maintained at all times that the pumps are operating. Vent gas shall be exhausted directly into a gas burner flame and shall not exhaust into an unlit burner. The seal vent system shall be equipped with continuous flow monitors in order to demonstrate that all vent gases are flowing to an operating furnace. Sections of the vent system may be temporarily shutdown for repair or maintenance while the pumps are in service as long as the pumps and other fugitive components that are normally abated by the vent system comply with the requirements of Regulation 8, Rule 18. These temporary shutdowns for repair and maintenance shall not exceed 14 days in any consecutive 12 month period. The owner/operator shall monitor the fugitive components for compliance with Regulation 8, Rule 18 within 24 hours of repair or maintenance period commencing. The owner/operator shall operate non-leaking pumps if available during these periods of maintenance and repair of the vent gas system.
   (Basis: Cumulative Increase, Regulation 2-1-403)

2. Not more than 30 days after shaft seal emissions from pumps (P-853, P-853A, P-851, P-851A, P-852, P-890, P-890A, and P-894) are captured and vented to furnaces (S-4152, S-4155, S-4161, S-4168, and S-4169), the owner/operator shall provide the District's Engineering Division with a final count of fugitive components installed. The owner/operator has been permitted for an increase in the following fugitive components: Valves: 5; Flanges: 80.
   (Basis: Cumulative Increase, offsets)

3. If there is an increase in the total fugitive component emissions, the plant's cumulative emissions

[48] EPA approved AMP on December 5th, 2005 for the current setup (i.e., rerouting captured pump seal emissions to S-4170 and S-4171). The proposed permit conditions will require Chevron to notify the District when their AMP for the proposed setup (i.e., rerouting captured pump seal emissions to S-4152, 4155, 4161, 4168, 4169) is approved by the EPA.

for the project shall be adjusted to reflect the difference between emissions based on predicted versus actual component counts. The owner/operator shall provide to the District all additional required offsets at an offset ratio of 1.15:1 no later than 14 days after submittal of the final POC fugitive count. If the actual component count is less than the predicted, the total will be adjusted accordingly and all emission offsets applied by the owner/operator in excess of the actual total fugitive emissions will be credited back to the owner/operator. (Basis: offsets)

4. The owner/operator shall install valves that are of District approved BACT compliant technology (bellows valves, diaphragm valves, live loaded valves, or the equivalent) such that fugitive organic emissions shall not exceed 100 ppm. (Basis: Regulation 8-18, toxics risk screen)

5. The owner/operator shall install flanges that are of District approved BACT compliant technology (graphitic gaskets or the equivalent) such that fugitive organic emissions shall not exceed 100 ppm. (Basis: Regulation 8-18, toxics risk screen)

6. In accordance with the provisions of Regulation 8-18, the owner/operator shall integrate all new fugitive equipment installed as part of the project into the facility fugitive equipment monitoring and repair program. (Basis: Regulation 8-18)

7. The owner/operator shall notify the District's Engineering Division and provide supporting documentation no later than 30 days after receiving the US EPA's approval of their Alternative Monitoring Plan (AMP) that would allow them to monitor the hydrogen sulfide concentration in the refinery fuel gas streams formed by fugitive emissions from the South Isomax pump seals (P-853, P-853A, P-851, P-851A, P-852, P-890, P-890A, and P-894) in accordance with the monitoring frequency and standard specified in the AMP in lieu of continuously monitoring the hydrogen sulfide concentration to demonstrate compliance with the sulfur oxide standard in 40 CFR Part 60, Subpart J for fuel gas combustion devices S-4152, S-4155, S-4161, S-4168, and S-4169. (Basis: Regulation 2-1-403)

Recommendation

Issue Chevron an Authority to Construct to alter the following:

S-4429: #8 NH_3/ H_2S Plant
2.5 MMSCF/day H_2S produced (850.45 MMSCF/year H_2S produced)

The alterations to S-4429 would allow pump shaft seal emissions from (P-853, P-853A, P-851, P-851A, P-852, P-890, P-890A, and P-894) to be captured and vented to furnaces (S-4152, S-4155, S-4161, S-4168, and S-4169)

K. R. Bhagavan

EVALUATION REPORT
Plant 10: Chevron Products Company
Application 29005: Knockout Drum V-705A (TKN/TKC)

Background

Chevron Products Company (Chevron) has proposed to install the following new knockout drum (V-705A) and associated piping:

V-705A: Knockout Drum
Length: 54.2 feet, Diameter: 15 feet
Location: Hydro processing Area Business Unit
About 100 feet west of existing KO drum V-705

The TKN/ISO (S-4252)/GRU (S-4346) and TKC (S-4253) plants[49] in the hydro-processing/cracking area are currently served by one knockout vessel (V-705). V-705 serves the relief system for the above plants and separates sour water/slop oil entrained with hydrocarbons from volatile organic hydrocarbons which are collected through relief headers. Sour water/slop oil entrained with hydrocarbons is sent to relief surge drum (V- 1890). The volatile organic hydrocarbons are either compressed via flare gas recovery compressors K-1060 and/or K-1070 that are part of the North Yard Relief System and sent to the #4 H_2S plant (S-4434), or are sent to the North Isomax Flare (S-6013) if the capacity of the compressors is exceeded. Sweetened gas from S-4434 is sent to the refinery fuel gas (RFG) drum[50] V-475, which supplies RFG that is combusted as fuel in sources at the hydro-processing/cracking area.

Because the TKN/ISO/GRU and TKC plants have different shutdown schedules and an internal API inspection of V-705 would require shutting down all plants at the same time, API inspections to date have been performed "externally" in lieu of "internal" inspections. Effective immediately, the authorized API inspector will no longer allow external vessel inspections of V-705 because the susceptibility of the vessel to wet H_2S cracking cannot be determined without internally inspecting it. Therefore, V-705A will be installed in proximity to V-705 which would allow either vessel to serve the TKN/ISO/GRU and TKC plants when the other vessel is being inspected.

V-705 is not a bottleneck for TKN and TKC service. Therefore, the proposed operation of V-705A and V-705 in parallel will not change upstream throughput, relief gas volume and gas quality from flare headers, or downstream production. Because relief gases to the flare gas recovery system that is part of the NISO flare (S-6013) and #4 H_2S plant (S-4434) will also remain unaffected, installing V-705A will not have any influence on the frequency or quantity of potential flaring at S-6013 and/or the North Yard Flares[51]. The proposed project is an alteration (vs. modification), because installing V-705A will not result in an increase in non-fugitive emissions.

Emission Calculations

Installing V-705A and the associated piping will require adding 319 fugitive components (233 components in vapor service + 86 components in liquid service). Components in gas service will consist of 87 valves and 146 flanges, and components in liquid service will consist of 25 valves, 54 flanges, 2 pump seals, 3

[49] TKN: Taylor Katalytic DeNitrification; ISO: Isocracker; GRU: Gas Recovery Unit; TKC: Taylor Kinetic Cracking

[50] Chevron operates 3 RFG drums (V-475, V-701, and V-870). V-475 supplies RFG to sources in the hydro-processing/cracking area; V-701 supplies RFG to sources in the blending/shipping and utility (cogens/HRSG, boilers) areas, and V-870 supplies RFG to sources in the D&R (distillation and reforming) areas.

[51] The North Yard Flare System is comprised of five flares:
South Isomax Flare (S-6012), North Isomax Flare (S-6013), FCC flare (S-6016), Alky-Poly flare (S-6019), and RLOP flare (S-6039).

check valves and 2 PRDs. The District's estimated POC emissions from the fugitive components are 1,459 pounds/year (0.73 TPY). Attachment A contains fugitive emissions calculations.

Plant Cumulative Increase

POC: 0.778 TPY (1.15) – 0.895 TPY (offsets) = 0.0 tpy

Toxic Health Risk Assessment (HRA)

An HRA is not required because hourly and/or annual emissions of TACs summarized in Table 3 of Attachment A (ammonia, benzene, and others) are below their respective Regulation 2, Rule 5 acute and/or chronic TAC trigger levels.

Statement of Compliance

All fugitive components installed as part of this project are subject to and are expected to comply with the applicable standards in Regulation 8, Rule 18, and Regulation 8, Rule 28. The proposed permit conditions require Chevron to integrate the fugitive components into their LDAR program. Emissions from the two PRDs in liquid service installed on the discharge end of the pump out pump will be rerouted back to the suction side of the pump to prevent any release to the atmosphere.

Installing V-705A will not cause any changes and/or impede Chevron's compliance with applicable requirements in their Title V permit.

Per information provided by Chevron, the fugitive components installed as part of this application will emit organic hazardous air pollutants (HAPs) such as benzene, 1,3-butadiene, cresols, ethylbenzene, naphthalene, phenol, hexane, toluene, and xylene listed in Table 1 of 40 CFR 63, Subpart CC "National Emission Standards for Hazardous Air Pollutants from Petroleum Refineries". The MACT CC equipment leak standards in §63.648 apply to equipment in organic HAP service defined in §63.641, which states:

"In organic hazardous air pollutant service or *in organic HAP service* means that a piece of equipment either contains or contacts a fluid (liquid or gas) that is at least 5 percent by weight of total organic HAP as determined according to the provisions of §63.180(d) of this part and table 1 of this subpart. The provisions of §63.180(d) also specify how to determine that a piece of equipment is not in organic HAP service."

Because there is the likelihood that some of the proposed piping in liquid service will contain 5% by wt. of total organic HAP, §63.648 (a) requires existing sources to comply with the provisions of 40 CFR Part 60, Subpart VV "Standards of Performance for Equipment Leaks of VOC in the Synthetic Organic Chemicals Manufacturing Industry for which Construction, Reconstruction, or Modification Commenced After January 5, 1981, and on or Before November 7, 2006" (NSPS VV), and new sources to comply with the provisions on 40 CFR Part 63, Subpart H "National Emission Standards for Organic Hazardous Air Pollutants for Equipment Leaks" (MACT H).

Chevron has clarified that the proposed project to install V-705A and/or add the fugitive components does not meet the definition of *reconstruction* in §63.2, which states:

"Reconstruction, unless otherwise defined in a relevant standard, means the replacement of components of an affected or a previously nonaffected source to such an extent that:

(1) The fixed capital cost of the new components exceeds 50 percent of the fixed capital cost that would be required to construct a comparable new source; and

(2) It is technologically and economically feasible for the reconstructed source to meet the relevant standard(s) established by the Administrator (or a State) pursuant to section 112 of the Act. Upon reconstruction, an affected source, or a stationary source that becomes an affected source, is subject to

relevant standards for new sources, including compliance dates, irrespective of any change in emissions of hazardous air pollutants from that source."

Therefore, the change is not subject to the requirements for a new source per §63.640(j), which states:

"(j) If any change is made to a petroleum refining process unit subject to this subpart, the change shall be subject to the requirements for a new source if it meets the criteria specified in paragraphs (j)(1) and (j)(2) of this section:

(1) It is a change that meets the definition of reconstruction in §63.2 of subpart A of this part; and

(2) Such reconstruction commenced after July 14, 1994."

Per §63.640(l)(4), "if pumps, compressors, pressure relief devices, sampling connection systems, open-ended valves or lines, valves, or instrumentation systems are added to an existing source, they are subject to the equipment leak standards for existing sources in §63.648." Therefore, the new components must comply with NSPS VV (and not MACT H).

PSD does not apply to this application.

BACT is not triggered since the increase in POC emissions is less than 10 pounds per highest day.

This application will require POC offsets since the facility POC emissions are greater than 35 tons per year. This application requires 0.895 TPY of POC offsets which Chevron will offset via ERC # 1283.

This application is considered ministerial for CEQA since this source category is covered in Permit Handbook Chapter 3.4.

PERMIT CONDITIONS

Chevron Richmond Refinery (Plant # 10)
Installation of knockout drum (V-705A) downstream of S-4252/S-4346 and S-4253
Application 29005 – March 2018

PC 26714

1. The owner/operator shall monitor all fugitive components installed at knockout drum (V-705A) and as part of Application 29005 for compliance with Regulation 8, Rule 18 and Regulation 8, Rule 28. (Basis: Cumulative Increase)

2. Not more than 30 days after V-705A, the owner/operator shall provide the District's Engineering Division with a final count of fugitive components installed. The owner/operator has been permitted for an increase in the following fugitive components: Valves: 112; Flanges: 200; Pump seals: 2; PRD: 2, and check valves: 3. (Basis: Cumulative Increase, offsets)

3. If there is an increase in the total fugitive component emissions, the plant's cumulative emissions for the project shall be adjusted to reflect the difference between emissions based on predicted versus actual component counts. The owner/operator shall provide to the District all additional required offsets at an offset ratio of 1.15:1 no later than 14 days after submittal of the final POC fugitive count. If the actual component count is less than the predicted, the total will be adjusted accordingly and all emission offsets applied by the owner/operator in excess of the actual total fugitive emissions will be credited back to the owner/operator.
(Basis: offsets)

4. The owner/operator shall install valves that are of District approved BACT compliant technology (bellows valves, diaphragm valves, live loaded valves, or the equivalent) such that fugitive organic emissions shall not exceed 100 ppm.
   (Basis: Regulation 8-18, toxics risk screen)

5. The owner/operator shall install flanges that are of District approved BACT compliant technology (graphitic gaskets or the equivalent) such that fugitive organic emissions shall not exceed 100 ppm.
   (Basis: Regulation 8-18, toxics risk screen)

6. The owner/operator shall install pump seals that are of District approved BACT compliant technology (double mechanical seals with barrier fluid or the equivalent) such that fugitive organic emissions shall not exceed 500 ppm.
   (Basis: Regulation 8-18, toxics risk screen)

7. The owner/operator shall ensure pressure relief devices installed on V-705A and as part of Application 29005 are BACT compliant and meet applicable requirements of Regulation 8, Rule 18, and Rule 28.
   (Basis: Regulation 8-28-302, Regulation 2-1-403)

8. In accordance with the provisions of Regulation 8-18, the owner/operator shall integrate all new fugitive equipment installed as part of the project into the facility fugitive equipment monitoring and repair program.
   (Basis: Regulation 8-18)

Recommendation

Issue Chevron an Authority to Construct to alter the following:

S-4252: TKN Isocracker
60,900 BBL/day; 18,709,900 BBL/year

S-4253: TKC Plant
65,000 BBL/day; 23,725,000 BBL/year

S-4346: Gas Recovery Unit

The alterations would allow installing V-705A and associated fugitive components.

_____
K. R. Bhagavan

Engineering Evaluation Report
Chevron Products Company, Plant #10
841 Chevron Way, Richmond, CA
Application #29037

Addendum
The Authority to Construct permit in Application #29037 was issued on August 7, 2018. The applicant has indicated the incorrect supplemental natural gas flowrate was provided in the original application. The applicant is proposing to correct the supplemental natural gas flowrate and have the Authority to Construct permit re-issued with the correct supplemental natural gas flowrate limit.

In this revised application, “sweep gas” is defined as the continuous flow of natural gas used to meet the NHVcz limit of Subpart CC - Section 40 CFR 63.670(e) during normal operation. “Assist gas” is defined as the additional natural gas introduced to meet NHVcz requirements during maintenance activities or upset events. Sweep gas is continuous where assist gas is used on an event basis. “Supplemental gas” is the combination of sweep gas and assist gas.

The original application proposed a natural gas flow rate of 6,600 scf/hr. The applicant stated this was intended as the sweep gas flow rate only. The applicant is proposing a limit of 4.0 MMscf/day and 40 MMscf/year of assist gas in addition to the 57.816 MMscf/year (6,600 scf/hr) of sweep gas.

Background
Chevron Products Company, (“Applicant”) was issued an Authority to Construct permit for a hydrogen plant flare (S-6021/A-6021) in application #12842. The applicant would like to install supplemental natural gas pipelines to flare A-6021. This project is required to meet the flare control efficiency requirement of EPA new MACT CC flare standards, NESHAP 40 CFR 63 Part CC, which will be effective on January 30, 2019. EPA found that the net heating value in the combustion zone (NHVcz) above 270 BTU/scf ensures 98% destruction efficiency for steam assisted flares. The NHVcz limit is based on the concept that excess steam in the combustion zone dilutes the combustible material and decreases the destruction efficiency of the flare. Therefore, the NHVcz limit essentially requires refineries to optimize their steam to vent gas ratios, and if necessary, supplement refinery gas with natural gas if the refinery vent gas/steam combination cannot meet the minimum 270 BTU/scf limit alone.

The proposed natural gas piping will be occasionally used to supply supplemental gas to raise net heating value of the flare gas in the combustion zone, ensuring 98% flare destruction efficiency and reduced flare emissions when BTU content of flare gas would otherwise be too low. The project is to comply with the 40 CFR 63.670(e), 270 Btu/scf net heating value (NHVcz) minimum limit at combustion zone.

The natural gas will be combusted as needed to meet the MACT CC standards. Table 1 and 2 below summarize the proposed maximum natural gas heat input to the flare and number of fugitive components that will be added.

Table 1

Flare Description	Source Number	Gas Type	Maximum Natural Gas Heat Input
Hydrogen Plant	A-6012	Sweep Gas	6.71 MMBtu/hr
		Assist Gas	169.5 MMBtu/hr (4.0 MMscf/day / 24 hr/day x 1017 Btu/scf)
		Supplemental Gas	176.2 MMBtu/hr

Sweep gas is the natural gas flowing through the flare header to prevent backflow. The assist gas value of 4.0 MMscf/day is based on the capacity of the control valve. The maximum design capacity of the hydrogen plant flare is 217,000 lb/hr. This is equivalent to 180 MMscf/day (217,000 lb/hr / 10.99 lb/lbmol (design vent gas molecular weight) x 379.5 scf/lbmol x 24 hr/day).

The total amount of supplemental gas proposed for the hydrogen plant flare is comparable to the amount of supplemental gas proposed by other refineries for MACT CC compliance.

Table 2

Supplemental Gas Flow Rate Limits		
Refinery	Daily	Annual
Chevron (1 flare)	4.16 MMscf/day	97.8 MMscf/year
Tesoro (1 flare)	33.6 MMscf/day	170 MMscf/year
Valero (2 flares)	2.935 MMscf/day	143.5 MMscf/year

Table 3

Fugitive Component Count	
Component Type	Quantity
Valves	45
Flanges	66
Connectors	21
Pressure Relief Valves	1
Total	133

Since this permit is necessary for modifying an existing source in order to comply with emission regulations, this project is exempt from new and modified sources as set forth in Sections 2-2-301 (BACT) or 2-2-302 or 2-2-303 (offsets) per Exemption of Regulation 1-115. In addition, because the purpose of Regulation 1-115 is to exempt sources from New Source Review (NSR) requirements but has not been amended since Section 2-5 (NSR for toxics) was adopted in 2005, this project is also exempt from Regulation 2-5.

1-115 Exemption, Modification to Meet Emission Standards: When permits are necessary for modifying an existing source in order to comply with emission regulations such modifications shall not subject the existing source to emission standards for new or modified plants as set forth in Section 2-2-301 or 2-2-302 or 2-2-303 of Regulation 2, Permits.

This application is considered an alteration to the existing permit pursuant to Regulation 2-1-233.

Project Description

The Hydrogen Plant was originally to be constructed, operated and owned by Praxair Incorporated and included nitrogen flare sweep gas in the flare relief system. Chevron purchased the Hydrogen Plant from Praxair and is now completing construction. Startup of the Hydrogen Plant has begun with the following startup dates for each individual source:

S-4450 Hydrogen Plant Train 2	January 2, 2019
S-4451 Hydrogen Recovery Unit	December 14, 2018
S-4472 H2 Plant Reformer Furnace	December 17, 2018
S-4449 Hydrogen Plant Train 1	November 11, 2018
S-4471 H2 Plant Reformer Furnace	October 27, 2018
S-6021 Hydrogen Plant Flare	October 26, 2018
S-4465 H2 Plant Cooling Tower	October 2, 2018

Chevron has determined that the potential flare system relief flows may produce net heating values below the specified 270 BTU/scf. The addition of nitrogen sweep gas in the original Praxair pre-Refinery Sector Rule design would further reduce the net heating value. To meet the minimum flare vent gas net heating value requirement in MACT CC, it will be necessary to utilize natural gas as supplemental combustion assist gas (flare supplemental gas) in lieu of the originally planned nitrogen sweep gas in the Hydrogen Plant flare system.

Because the Hydrogen Plant flare does not have flare gas recovery or a water seal, the use of flare supplemental gas will additionally serve as the flare sweep gas required for safe flare system operation.

Chevron anticipates that the existing combined annual furnace and flare emission limits specified in Condition #24136 Part 9a may potentially be exceeded because of the additional combustion of flare supplemental gas. To meet the combustion zone net heating value specified by the amendments to Subpart CC – Section 40 CFR 603.670(e), the emission limits in Part 9.a have been amended.

The changes mentioned above will be included in a Flare Minimization Plan (FMP) update.

The project will not alter production or feed rates in any processing units.

Criteria Pollutant Emission Calculations

Because the project is exempt from New Source Review per Regulation 1-115 and the cumulative increase is not affected by this project it is not necessary to calculate emissions for this application.

Furthermore, one of the desired outcomes of improving combustion efficiency through the new MACT CC standards is to reduce emissions and these could likely outweigh the minor increases from additional fugitive components and the supplemental fuel gas.

Cumulative Increase
The District tracks increases in emissions from each facility. These cumulative emissions were reset on April 5, 1991 for all facilities. This is an existing facility with pre-existing cumulative emissions.

Since the project does not involve a new or modified source the cumulative increase for this application is zero for all pollutants.

Statement of Compliance

Regulation 1: General Provisions and Definitions
The flare is subject to and expected to be in compliance with Regulation 1-523 Parametric Monitor. The applicant will install a flow meter on the new natural gas line.

Regulation 2, Rule 1: California Environmental Quality Act (CEQA) Requirements
District Regulation 2, Rule 1, Section 310 specifies that all proposed new and modified sources subject to District permit requirements must be reviewed in accordance with CEQA requirements, except for ministerial projects or projects exempt from CEQA under Section 2-1-312.

The applicant has submitted the Environmental Information Form in Appendix H

The Air District's permit action is categorically exempt from CEQA because it permits a minor modification of an existing use and does not authorize any expansion of that existing use (CEQA § 21084; Guidelines § 15301). The Air District has determined that this action is also exempt from CEQA review as an action by a regulatory agency for protection of natural resources (CEQA § 21083; Guidelines § 15307). In addition, Air District Regulation 2-1-312.3 exempts "Permit applications for projects undertaken for the sole purpose of bringing an existing facility into compliance with newly adopted regulatory requirements of the District or of any other local, state or federal agency".

Reasons for Exemption: The Air District's permit action is exempt because it permits only a minor alteration of an existing use. The project does not entail any expansion of the existing sources or their existing use. It also implements requirements in the new U.S. EPA MACT CC flare standards that are intended to protect air quality. In addition, the project is being undertaken for the sole purpose of bringing an existing facility into compliance with newly adopted regulatory requirements.

Regulation 2, Rule 1: School Public Notice Requirements
The public notification requirements of Regulation 2-1-412 apply to modifications which result in an increase in toxic air contaminant or hazardous air contaminant emission at facilities within 1,000 feet of the boundary of a K-12 school. The Applicant has reported no K-12 school within that radius of this facility, and the District's database confirms that there is no K-12 school within one mile from the facility. Therefore, the public notice requirements do not apply to this operation.

Regulation 2, Rule 2: Best Available Control Technology (BACT) Requirements
BACT does not apply to the hydrogen plant flare per Regulation 1-115, Exemption. However, the flare meets the BACT guideline with control efficiency greater than or equal to 98%, which EPA ensured by its NHVcz standard of minimum 270 Btu/scf.

Regulation 2, Rule 2: Offsets
Offsets does not apply to the hydrogen plant flare per Regulation 1-115, Exemption.

Regulation 2, Rule 2: Prevention of Significant Deterioration (PSD)
Regulations 2-2-304 through 309 and 2-2-315 apply to PSD facilities. Sites belonging to one of the 28 PSD source categories listed in section 169(l) of the federal Clean Air Act have a PSD threshold of 100 tons/year for each regulated air pollutant and must include fugitive emissions when making a PSD major facility determination. However, sites that fall within unlisted categories (such as landfill facilities) have a PSD major facility threshold of 250 tons/year for each regulated air pollutant and may exclude fugitive emissions when making this major facility determination.

Petroleum refineries are one of the 28 PSD source categories listed in section 169(l) of the federal Clean Air Act. Therefore, fugitive components must be included when making a PSD major facility determination.

The emissions from the hydrogen plant flare were estimated using the emission factors listed in part 27 of permit condition #24136.

Table 4

Hydrogen Plant Flare (S-6012)			
Natural Gas Combustion	Total Emission Rate (Supplemental Gas = Sweep Gas + Assist Gas)		
Pollutant	lb/day	lb/yr	tons/yr
NOx	287.6	6,765	3.38
CO	1,564.8	36,807	18.40
POC	592.1	13,927	6.96
PM10	31.7	746	0.37
SO2	11.9	279	0.139
Benzene	8.84E-03	2.08E-01	1.04E-04
Formaldehyde	3.12E-01	7.33E+00	3.67E-03
Toluene	1.41E-02	3.32E-01	1.66E-04

Major Modification Thresholds
POC: 40 tons per year
NOx: 40 tons per year
SO2: 40 tons per year
PM10: 15 tons per year
CO: 100 tons per year

As shown in Table 4, the emissions from the hydrogen plant flare do not exceed the major modification thresholds. Therefore, this project is not subject to PSD requirements.

Regulation 2, Rule 2: Maximum Available Control Technology (MACT)
The hydrogen plant flare is not subject to 40 CFR 60, Subpart GGGa standard of Performance for Equipment Leaks of VOC in Petroleum Refineries because the new natural gas lines are not a process unit as defined.

The hydrogen plant flare is subject to and expected to comply with the following Section 112 of the Clean Air Act, New Source Performance Standards and National Emission Standards for Hazardous Air Pollutants (NESHAP).

- 40 CFR Part 60, Subpart A – General Provisions
- 40 CFR Part 60, Subpart J – Petroleum Refineries
- 40 CFR Part 60, Subpart Ja – Petroleum Refineries
- 40 CFR Part 63, Subpart A – General Provisions
- 40 CFR Part 63, Subpart CC – Petroleum Refineries: Requirements for Flare Control Devices and Flare Monitoring Systems 40 CFR 63.670(e) – requires the minimum net heating value at combustion zone (NHV)cz to be at least 270 Btu/scf.
  - 40 CFR 63.670(i) – requires the supplemental gas flow rate to be monitored
  - 40 CFR 63.670 (o) – requires the Flare Minimization Plan (FMP)
  - 40 CFR 63.670 (p) and (q) - requires flare reporting and recordkeeping requirements of 40 CFR 63.655 (g)(11) and 655 (i)(9)
  - 40 CFR 63.671 – requires Continuous Parametric Monitor (CPMs)

Regulation 2, Rule 2: Major Modification of a Major Facility
Section 2-2-221 defines Major Modification as any modification, as defined in Regulation 2-1-234, at an existing major facility that the APCO determines will cause an increase of the facility's emissions by the following amounts or more:

POC: 40 tons per year
NOx: 40 tons per year
SO2: 40 tons per year
PM10: 15 tons per year
CO: 100 tons per year

This application is not a major modification since the increase in emissions in this application is not greater than thresholds listed above. Therefore, this application is not a Major Modification of a Major Facility.
Regulation 2, Rule 5: Permits – New Source Review of Toxic Air Contaminants - Health Risk Assessment Requirements

New Source Review requirements do not apply to this project per Regulation 1-115, Exemption. Therefore, a toxic risk analysis was not performed.

Major Facility Review, Regulation 2, Rule 6
40 CFR Part 70, State Operating Permit Programs (Title V)
This facility is subject to MFR Permit requirements pursuant to Regulation 2-6-301, because it has the potential to emit more than 100 tons per year of any regulated air pollutant. This facility was required to obtain a Title V Federal Operating Permit. The requirements of this program have been codified in District Regulation 2, Rule 6.

The facility was issued the initial Title V permit. This project will trigger a minor revision per Regulation 2-6-215 of the Title V permit and will be addressed as part of the 2018 Title V permit renewal.

Regulation 8, Rule 18: Organic Compounds Equipment Leaks
The equipment should comply with the Standards of Regulation 8, Rule 18 for Valves, Compressors and Flanges. The VOC leak standards for valves, pumps and flanges are the same and are set at 100 ppmvd. Chevron will include the new fugitive components summarized in Table 3 in its LDAR program.

40 CFR Part 60, Standards of Performance for New Stationary Sources (NSPS): Subpart GGGa, Standards of Performance for Equipment Leaks of VOC in Petroleum Refineries
The hydrogen plant flare is not subject to 40 CFR 60, Subpart GGGa standard of Performance for Equipment Leaks of VOC in Petroleum Refineries because the new natural gas lines are not a process unit as defined in Section 60.591a.

Permit Conditions

Permit Condition # 24136

CONDITION NO. 24136----------

CHEVRON PRODUCTS COMPANY Plant A0010
Modernization Project Application No. 12842
841 Chevron Way
Richmond, CA 94802

FUGITIVE EQUIPMENT

1) Fugitive Equipment

Parts 1 through 4 apply to the Modernization Project Hydrogen Purity Improvements. The Hydrogen Plant fugitive equipment conditions appear in Parts 2, 3, 35, and 36.

a) The Owner/Operator shall as part of the Modernization Project install only the following types of valves in hydrocarbon service as defined in part 2: (1) bellows sealed,

(2) live loaded, (3) graphitic packed, (4) quarter-turn (e.g., ball valves or plug valves), or equivalent as determined by the APCO. [Basis: Cumulative Increase, BACT, Offsets, Regulation 8-18]

b) The Owner/Operator shall comply with a leak standard of 100 ppm of TOC (measured as C1) at any valve installed as part of the Modernization Project in hydrocarbon service as defined in part 2 unless the owner/operator complies with the applicable minimization and repair provisions contained in Regulation 8-18. Valves that are not of a type listed in part 1(a) and for which a leak greater than 100 ppm (measured as C1) has been determined, shall become subject to the inspection provisions contained in Regulation 8-18 unless the component is already subject to the Part 4 inspection frequency. If the leak remains greater than 100 ppm (measured as C1) after repair, or if the valve is determined to have a leak greater than 100 ppm (measured as C1) a second time within a 5-year period, the Owner/Operator shall replace the valve with a type listed in part 1(a) within 5 years or at the next scheduled turnaround, whichever is sooner. [Basis: BACT, Regulation 8 Rule 18]

c) The Owner/Operator shall install graphitic-based gaskets on all flanges or connectors (gasketed) installed as part of the Modernization Project in hydrocarbon service as defined in part 2 unless the Owner/Operator demonstrates to the satisfaction of the APCO that the service requirements prevent this gasket material from being used. [Basis: BACT]

d) The Owner/Operator shall comply with a leak standard of 100 ppm of TOC (measured as C1) at any flanges/connectors installed as part of the Modernization Project in hydrocarbon service as defined in part 2 unless the owner/operator complies with the applicable minimization and repair provisions contained in Regulation 8-18. [Basis: BACT, Regulation 8 Rule 18]

e) The Owner/Operator shall install dual mechanical seals w/ non-VOC barrier fluid (gas or liquid); or seal system with leakage vented to a thermal oxidizer; or oil ring seals with non-VOC/barrier fluid; or other District approved equivalent control device or technology as determined by the APCO on all compressors installed as part of the Modernization Project. [Basis: BACT]

f) The Owner/Operator shall comply with a leak standard of 100 ppm of TOC (measured as C1) at any pumps and/or compressors installed as part of the Modernization Project in hydrocarbon service as defined in part 2 unless the owner/operator complies with the applicable minimization and repair provisions contained in Regulation 8-18. [Basis: BACT]

g) The Owner/Operator shall install double mechanical seals w/ barrier fluid; magnetically coupled pumps; canned pumps; magnetic fluid sealing technology; seal system with leakage vented to thermal oxidizer, or other BAAQMD approved equivalent control device; or District approved control technology as determined by the APCO on all pumps installed as part of the Modernization Project in hydrocarbon service as defined in

part 2. The Owner/Operator shall install mechanical seals or District approved equivalent technology on all pumps in hydrocarbon service.

All pumps installed as part of the Modernization Project in hydrocarbon service where either the hydrocarbon has an initial boiling point greater than 302 degrees Fahrenheit or a flash point greater than 250 degrees Fahrenheit, shall be subject to quarterly inspection provisions contained in Part 4.c). If any of these pumps is determined to have a leak greater than 100 ppm (measured as C1) and if the leak remains greater than 100 ppm (measured as C1) after repair, or if the pump is determined to have a leak greater than 100 ppm (measured as C1) a second time within a 5-year period, then the owner/operator shall install double mechanical seals w/ barrier fluid; magnetically coupled pumps; canned pumps; magnetic fluid sealing technology; or gas seal system vented to thermal oxidizer or other BAAQMD approved equivalent control device or technology as determined by the APCO within 5 years or at the next scheduled turnaround, whichever is sooner. [Basis: BACT]

h) The Owner/Operator shall vent all pressure relief valves installed as part of the Modernization Project in hydrocarbon service as defined in part 2 subject to Rule 8-28 to a flare gas recovery system with a recovery and/or destruction efficiency of at least 98% by weight. [Basis: BACT]

i) Unless the equipment exclusively handles material(s) with a flash point greater than 250F, the Owner/Operator shall identify all new and replacement valves, pressure relief devices, flanges, connectors, process drains, pumps, and compressors installed as part of the Modernization Project in hydrocarbon service as defined in part 2 with a unique permanent identification code and shall include all new and replaced fugitive equipment in the fugitive equipment monitoring and repair program as specified in Parts 1 through 4. The owner/operator shall monitor all repaired equipment within 24 hours of the repair. The unique permanent identification code does not apply to quarter-inch or less tubing and connectors associated with analytical sampling systems. [Basis: Cumulative Increase, Offsets, BACT]

2) The Owner/Operator shall submit a count of pumps, compressors, valves, pressure relief devices, flanges/connectors, and process drains installed in hydrocarbon service. For the purpose of this condition, hydrocarbon service is defined as all organic compound materials with a flash point less than or equal to 250F or an Initial Boiling Point less than or equal to 302F. The intent of this condition is to extend the monitoring beyond that contained in Rule 8-18 up to the flash point of 250F. The owner/operator shall submit the component count within 30 days of the close of each calendar quarter until completion of project construction. The Owner/Operator has been permitted to install the following number of these hydrocarbon service fugitive components for the Modernization Project, including the Hydrogen Plant Replacement.

Pumps: 43 [As identified in part 1(i)]
Compressors: 46
Valves: 8,932
Pressure Relief Devices: 240

Connectors (No Flanges): 4,718
Flanges: 12,465
Process Drains: 207

The Owner/Operator shall not exceed 15.92 tons per year of POC emissions measured as C1 from all fugitive components included in the above counts, including Hydrogen Plant Replacement fugitive components. Compliance with this provision shall be verified quarterly using methods described in part 3. The results shall be submitted to the District within 30 days of the close of each calendar quarter after commencing with start-up of the first Modernization Project source. The owner/operator shall keep documentation of fugitive component counts and corresponding POC emissions for at least five years from date of entry.

Within 30 days of the completion of the installation of all fugitive components, the owner/operator shall submit a final component count and POC emissions estimate to the District. If any of the fugitive component counts exceed a count stated above, the plant's cumulative increase emissions for the Modernization Project shall be adjusted as needed, subject to APCO approval, to reflect only the difference between emissions based on predicted component counts versus actual component counts. The Owner/Operator shall provide to the District all additional required offsets at an offset ratio of 1.15:1 no later than 21 days after the submittal of the final POC fugitive equipment count and corresponding final fugitive component POC emissions estimate. If any of the fugitive component counts are less than a count stated above, the total cumulative increase emissions may be adjusted accordingly and emission offsets applied by the owner/operator in excess of the permitted levels may be requested by the owner/operator through the submittal of a banking application. [Basis: Cumulative Increase, Offsets, Rule 2-5]

3) The Owner/Operator shall calculate fugitive emissions from all Modernization Project fugitive components in hydrocarbon service (including the Hydrogen Plant Replacement) utilizing District approved methods. For leaking components the owner/operator shall use the modified trapezoidal method and LeakDAS as documented within the application 12842 or other method pre-approved by the District. The owner/operator shall include emissions estimates from all Modernization Project fugitive components regardless of the component Rule 8-18 repair status. [Basis: Cumulative Increase, BACT, Offsets]

4) a) The Owner/Operator shall conduct inspections of Modernization Project fugitive components in hydrocarbon service as defined in Part 2 of these conditions in accordance with the frequency below:

Pumps: Quarterly
Compressors: Quarterly
Valves: Quarterly
Pressure Relief Devices: Quarterly
Process drains: Quarterly
Connectors (Not Flanges): Biannual
Flanges: Biannual
[Basis: BACT, Regulations 8-18, 8-8]

b) The Owner/Operator shall conduct quarterly inspections of all Modernization Project pumps in hydrocarbon service with a flash point less than or equal to 250F. [Basis: BACT]

c) The Owner/Operator shall conduct quarterly inspections of all Modernization Project pumps in hydrocarbon service where either the hydrocarbon has an initial boiling point greater than 302 degrees Fahrenheit or a flash point greater than 250 degrees Fahrenheit. [Basis: BACT]

HYDROGEN PLANT REPLACEMENT

5) The Owner/Operator of Hydrogen Plant Trains (S-4449, S-4450) shall not exceed the following maximum capacity limit: [Basis: Cumulative Increase, Condition B.7 in City of Richmond Conditional Use Permit Resolution Number 67-14 dated July 29, 2014]

140 MMSCF of hydrogen for each train, calendar day maximum

244 MMSCF of hydrogen per calendar day for both trains combined on an annual average basis

6) The Owner/Operator of the Hydrogen Recovery Unit (S-4451) shall not exceed the following maximum capacity limitations: [Basis: Cumulative Increase]

50 MMSCF of hydrogen, calendar day maximum

7) The Owner/Operator shall fire only natural gas (including medium BTU natural gas), or Hydrogen Plant offgas (“PSA tail gas”), in the Hydrogen Plant Reformer Furnaces (S-4471, S-4472). The owner/operator of S-4471 and S-4472 shall not exceed a maximum of 30% natural gas of the total annual fuel usage (Btu basis) with the balance being PSA tail gas. [Basis: BACT]

8) The Owner/Operator shall abate the S-4471 furnace at all times of operation except startup, shutdown, dryout/warmup, and commissioning periods by the properly operated and properly maintained SCR unit A-0302. The Owner/Operator shall abate the

S-4472 furnace at all times of operation except startup, shutdown, dryout/warmup, and commissioning periods by the properly operated and properly maintained SCR unit A-0303. [Basis: BACT]

9) a) The Owner/Operator shall not exceed the following combined annual limits from the hydrogen plant reformer furnaces (S-4471, S-4472) and hydrogen plant flare (S-6021) in any consecutive 12 month period: [Basis: Cumulative Increase, 2-2-302, 2-2-303]

Pollutant	Annual (tons)
NOx	64.43
CO	92.28
SO2	5.25
PM10	20.98
POC	28.6

The Owner/Operator shall not exceed the following combined annual limits from the hydrogen plant reformer furnaces (S-4471, S-4472) and hydrogen plant flare (S-6021) in any consecutive 12 month period when utilizing supplemental natural gas for the hydrogen plant flare: [Basis: Cumulative Increase]

Pollutant	Annual (tons)
NOx	67.81
CO	110.69
SO2	5.39
PM10	21.35
POC	35.57

b) The Owner/Operator shall not exceed the following combined annual emissions limits from the hydrogen plant reformer furnaces (S-4471, S-4472) in any consecutive 12 month period: [Basis: Cumulative Increase, 2-2-302, 2-2-303]

Pollutant	Annual (tons)
NOx	53.28
CO	64.88
SO2	4.94
PM10	20.68
POC	23.22

c) The Owner/Operator shall determine the daily and monthly emissions used to establish rolling annual emissions totals from S-4471 and S-4472 using continuous emission monitor (CEM) data for NOx and CO, and using District approved emission factors shown in part 14 and District-approved fuel consumption data from each S-4471 and S-4472 for PM10 and POC. The owner/operator shall determine daily (with monthly totals) SO2 emissions from the sum of the total sulfur in the natural gas (including medium BTU natural gas) fuel stream and the total sulfur in the feed gas stream (“PSA tail gas”), assuming 100% conversion of total sulfur to SO2. SO2 emissions shall be calculated using a method approved by the APCO. The sulfur in the natural gas fuel stream shall be

calculated as the concentration of sulfur in the incoming natural gas supply, as measured daily by an on-stream analyzer, multiplied by the measured flow of natural gas used as fuel. The sulfur in the feed gas stream shall be calculated as the measured total feed gas processed in the desulphurization unit multiplied by the actual total sulfur content either as measured downstream of the desulphurization unit by the continuous on-stream analyzer or that analyzer's lower detection limit, whichever is greater.

The owner/operator of the hydrogen plant flare (S-6021) shall use the emissions factors presented in part 27 in order to demonstrate compliance with the part 9a annual limits.

[Basis: Monitoring, cumulative increase, offsets]

10) For each furnace (S-4471, S-4472), the Owner/Operator shall install, calibrate, maintain, and operate a District-approved CEM and recorder for NOx, CO and O2. [Basis: Regulation 1-523]

11) The Owner/Operator of S-4471 and S-4472 shall properly install and operate District-approved equipment for continuous fuel flow monitoring and recording in order to determine fuel consumption, at each S-4471 and/or S-4472 using District approved methods. The Btu content of the fuels used at S-4471 and S-4472 shall be calculated or measured hourly at a minimum using a District-approved method. The gas composition analysis and sulfur content of the fuels used at S-4471 and/or S-4472 shall be measured and recorded hourly at a minimum using a District-approved method. Combustion stack flow shall be calculated using a District-approved method from either the fuel flow, gas composition, and combustion stack CEM excess oxygen monitor information, or a flow meter. [Basis: Monitoring, Cumulative Increase]

12) The Owner/Operator shall not exceed the following maximum heat input limits for each furnace (S-4471, S-4472): (1) 8,059,200 MMBTUs (HHV) in any consecutive 12 month period, and (2) 950 MMBTUs (HHV)/hr averaged over any calendar day. [Basis: Cumulative Increase, Offsets]

13)
a) The "Commissioning Period" is a one-time occurrence for each furnace, that shall commence when all mechanical, electrical, and control systems are installed and individual system start-up has been completed for that furnace. The Commissioning Period for each furnace shall terminate when the furnace has completed performance testing and is available for operation. In no event shall the Commissioning Period for either furnace exceed 90 days unless the applicant has made a written request for an extension and the District has granted such an extension. The commencement of the Commissioning Period shall be considered the date of initial operation for the Authority to Construct. The final startup conducted at the end of the Commissioning Period shall be considered the initial startup.

b) "Commissioning Activities" shall be defined as all testing, adjustment, tuning, and calibration activities during the Commissioning Period, recommended by the equipment manufacturers and the construction contractor, to insure safe and reliable steady state

operation of the hydrogen plant reformer furnace and associated systems. [Basis: cumulative increase, offsets]

i) The Owner/Operator of S-4471 and S-4472 shall submit a District-approved commissioning plan that includes all commissioning activities and corresponding commissioning emissions estimates and monitoring within 60 days prior to any commissioning activities. [Basis: Cumulative Increase]

c) The following conditions shall apply during the Commissioning Period and Commissioning Activities:

i. During the Commissioning Period, the Owner/Operator shall demonstrate compliance with parts ii through iii below through the use of properly operated and properly maintained continuous emission monitors and data recorders for the following parameters:

- firing hours;
- fuel flow rates (calculated exhaust flow rate or measured exhaust flow rate);
- stack gas nitrogen oxide emission concentrations;
- stack gas carbon monoxide emission concentrations; and
- stack gas oxygen concentrations.

ii. The Owner/Operator shall not exceed 600 hours for both furnaces during the Commissioning Period of S-4471 and S-4472 hydrogen plant reformer furnaces without abatement by A-302 and A-303 SCR Systems, respectively. Such operation of the S-4471 and S-4472 hydrogen plant reformer furnaces without abatement shall be limited to discrete Commissioning Activities that can only be properly executed without the SCR system in operation. Upon completion of these activities for each furnace, the owner/operator shall provide written notice to the District and the unused balance of the 600 firing hours without abatement shall expire. The Owner/Operator shall maintain records of all furnace firing hours without the SCR systems in place and operational. (Basis: offsets, Cumulative Increase)

iii. The total mass emissions of NOx, CO, POC, PM10, and SO2 that are emitted by the S-4471 and S-4472 hydrogen plant reformer furnaces during the commissioning period shall be included towards the consecutive twelve-month emission limitations specified in part 9. (Basis: offsets)

d) “Startup” shall mean that period of time including Furnace Startup as defined in part 13e and the introduction of hydrocarbon feedstock to the Hydrogen Plant S-4449 and S-4450, ending with the full routing of the PSA tail gas to either of the respective furnaces. The period of time from the introduction of hydrocarbon feedstock to S-4449 and S-4450 to the end of startup shall not exceed 8 hours. Each individual " Startup", which includes Furnace Startup, shall not exceed 24 hours except during the “Commissioning Period”. For S-4449, " Startup" is completed once PV-17004 PSA1 Tail Gas to Flare Control Valve, has been closed for 30 minutes. For S-4450, " Startup" is completed once PV-27004 PSA2 Tail Gas to Flare Control Valve, has been closed for 30 minutes. If “Startup” shall

be interrupted before completion, the resumed startup activities shall constitute a second "Startup" with its own time limitations.

e) "Furnace Startup" shall mean that period of time during which the furnace is put into service immediately following "Commissioning Period" as defined in part 13a, or any subsequent shutdown, by following a prescribed series of separate steps or operations. "Furnace Startup" shall be initiated when the furnace begins to receive fuel flow from its inactive, pre-startup temperature up to the point where the respective SCR unit is placed in operation in accordance with part 16. If "Furnace Startup" shall be interrupted before completion, the resumed furnace startup activities shall constitute a second "Furnace Startup" with its own time limitations.
i) The Owner/Operator of Furnaces S-4471 and S-4472 shall not exceed a combined total of 132 consecutive hours during any consecutive 12-month period for "Furnace Startup". The owner/operator of each individual "Furnace Startup" shall not exceed 20 hours for each hydrogen plant reformer furnace (S-4471 and S-4472) except during the "Commissioning Period".

f) "Shutdown" shall mean that period of time during which the furnace is taken out of service following a prescribed series of separate steps or operations including clearing the reformer system piping of combustibles. "Shutdown" for each furnace S-4471 and S-4472 is initiated once ammonia injection into the respective SCR units (A-0302, A-0303) has been stopped in accordance with part 16. The end of shutdown is reached when the fuel supply to the reformer has been shut off and reformer system piping has been cleared of combustibles.

g) Except during the commissioning period, the Owner/Operator of S-4471 and S-4472 shall not exceed the following operation limitations for either furnace:

(1) Each "Shutdown" shall not exceed 9 consecutive hours.

h) The owner/operator shall not exceed 600 hours of total combined hours of Startup and Shutdown in any consecutive 12-month period. To demonstrate compliance with this part, the owner/operator shall maintain a District-approved log of the total time in hours and minutes of each Startup and Shutdown as defined in parts (d), (e), (f), and (g) above. The log shall be retained for five years of date of entry and shall be made available to District staff upon request.

i) "Dryout/warmup" shall mean an event that occurs during the Commissioning Period and whenever new hydrogen plant reformer furnace refractory has been installed. When this new refractory is heated for the first time, the hydrogen plant reformer furnace is brought gradually to operating temperature through a series of prescribed steps designed to ensure safe operation of the furnace.

j) Except during the commissioning period, the Owner/Operator of S-4471 and S-4472 shall not exceed the following operation limitation for either furnace:

(1) Each "Dryout/Warmup" of new furnace refractory heating shall not exceed 120 hours.

14) The Owner/Operator of S-4471 and S-4472 shall not exceed the following emission limits at each furnace except during startup, shutdown, dryout/warmup, and commissioning periods, unless specifically noted below:

a) NOx emissions – 5.0 ppmv, dry, corrected to 3% oxygen, averaged over any 1 hour period. Note: This NOx emissions limit applies at times of operation of A-302 and A-303 as required in Part 16 of these conditions, when the catalyst bed is equal to or greater than 562 degrees F.;
[Basis: BACT]

b) CO emissions – 10.0 ppmv, dry, corrected to 3% oxygen averaged over any 1 hour period; [Basis: BACT]

c) PM10 emissions – 0.0026 lb/MMBtu (HHV), averaged over 3 hours; [Basis: BACT] and

d) POC emissions – 0.00288 lb/MMBtu (HHV), averaged over 3 hours.

e) SO2 emissions – See part 9c.

[Basis: BACT, cumulative increase]

15) The Owner/Operator of S-4471 and S-4472 shall demonstrate compliance with part 14 using a District-approved CEM for NOx and CO, and using District-approved fuel consumption and emission factors verified through District-approved source tests as specified in parts 17 and 18 for PM10 and POC. The owner/operator of S-4471 and S-4472 shall determine the SO2 emissions as specified in condition part 9c. [Basis: BACT]

16) The Owner/Operator of A-0302 and A-0303 shall operate A-302 and/or A-303 at all times of operation of S-4471 and/or S-4472, respectively, when the catalyst bed is equal to or greater than 500 degrees Fahrenheit except for during dryout/warmup. The Owner/Operator of A-0302 and A-0303 shall not exceed the following ammonia emission limits except during periods of startup, shutdown, dryout/warmup, and Commissioning unless otherwise specified: 10 ppmv of ammonia, dry, corrected to 3% oxygen, as verified by District approved source test method, not to exceed three hours averaging time. The owner/operator shall maintain the catalyst bed above 500 degrees at all times of operation of S-4471 and S-4472, except during startup, shutdown, or dryout/warmup of S-4471 or S-4472 as specified in part 13. [Basis: Toxics, BACT]

a) The Owner/Operator shall not inject ammonia into the SCR units (A0302, A-0303) until the catalyst bed reaches 500 degrees Fahrenheit. During startup, the owner/operator shall start injecting ammonia as soon as practicable, but under no circumstances later than the lesser of either: 30 minutes from when the catalyst bed reaches 500 degrees Fahrenheit or the catalyst bed reaching a temperature of 562 degrees F. During shutdown, the owner/operator shall stop injecting ammonia when the catalyst bed reaches 500 degrees Fahrenheit. The Owner/Operator shall properly install

and operate a control valve that automatically shuts off the ammonia injection when the catalyst bed reaches 500 degrees Fahrenheit during shutdown. The Owner/Operator shall maintain records that demonstrate the temperature during all times of operation of S-4471 and/or S-4472 and the times that the ammonia injection to the SCR unit(s) (A-302/303) begins and ends.

17) The Owner/Operator of S-4471 and S-4472 shall conduct a District-approved source test within 120 days of the initial startup date of each plant to demonstrate compliance with the limits in parts 9, 14 and 16 for POC, PM10, SO2, and ammonia slip. The Owner/Operator shall conduct the District-approved source tests in accordance with parts 18, and with the applicable parts of 109 through 117. The Owner/Operator shall submit the District approved source test results to the District no later than 60 days from the date of the source test. [Basis: BACT, Cumulative Increase, Offsets]

18) The Owner/Operator of S-4471 and S-4472 shall follow either (a) or (b) below to demonstrate subsequent compliance with the POC, PM10, and SO2 mass emission rates specified in parts 9 and 14 and the ammonia slip limit in part 16:

a) The Owner/Operator shall install, calibrate, and maintain a District approved continuous emission monitor and recorder for ammonia slip to demonstrate subsequent compliance with the ammonia slip limit in part 16. The Owner/Operator shall conduct one reference test or use the test from part 17 to demonstrate accuracy of the continuous emission monitor. After the initial source test, the Owner/Operator shall conduct three quarterly District approved source tests, followed by two semi-annual District approved source tests to demonstrate subsequent compliance with the POC, and PM10 mass emission rates specified in parts 9 and 14 and the ammonia slip limit in part 16. After the additional source tests specified in this part 18.a. have been completed, the Owner/Operator shall conduct a district approved source test in each subsequent calendar year to demonstrate compliance with the POC and PM10 mass emission rates specified in parts 9 and 14. Each subsequent calendar year source test shall be at least nine months apart, but not more than 15 months apart. The Owner/Operator may conduct less frequent source tests upon approval by the District. The owner/operator may be required by the APCO to conduct more frequent source tests if source test results indicate POC, SO2, and/or PM10 emissions are either within 90% of a limit or exceeding a limit specified in parts 9 and/or 14. The Owner/Operator shall conduct the District approved source tests in accordance with the applicable parts of 109 through 117. The Owner/Operator shall submit the source test results to the District staff no later than 60 days from the date of the source test; or

b) After the initial source test specified in part 17 has been completed, the Owner/Operator of S-4471 and S-4472 shall conduct three quarterly District approved source tests, followed by two semi-annual District approved source tests to demonstrate subsequent compliance with the POC, and PM10 mass emission rates specified in part 14 and the ammonia slip limit in part 16. After the additional source tests specified in this part 18.b. have been completed, the Owner/Operator shall conduct a source test in each subsequent calendar year. Each subsequent calendar year source test shall be at least nine months apart. The Owner/Operator may conduct less frequent source tests upon

approval by the District. The owner/operator may be required by the APCO to conduct more frequent source tests if source test results indicate POC, PM10, SO2, and/or ammonia slip emissions are within 90% of an emissions limit or exceeding an emissions limit specified in parts 9, 14 and/or 16. The Owner/Operator shall conduct the District approved source tests in accordance with the applicable parts of 109 through 117. The Owner/Operator shall submit the source test results to the District staff no later than 60 days from the date of the source test. [Basis: Periodic Monitoring, cumulative increase]

19) The Owner/Operator of S-4471 and S-4472 shall not exceed the following emission limits: [Basis: Rule 2-5]

S-4471 Train 1 Hydrogen Furnace

Arsenic	6.90 lb/yr
Cadmium	4.91 lb/yr
Nickel	40.74 lb/yr

S-4472 Train 2 Hydrogen Furnace

Arsenic	6.90 lb/yr
Cadmium	4.91 lb/yr
Nickel	40.74 lb/yr

If source test results indicate that other toxic air contaminants not identified above are emitted at rates greater than evaluated prior to the issuance of the Authority to Construct, then the owner/operator shall re-run the HRSA to determine compliance with Regulation 2, Rule 5 and potentially add these compounds to the lists above.

20) The Owner/Operator of S-4471 and S-4472 shall conduct District approved source tests in accordance with part 109 through 117 to demonstrate compliance with the limits in part 19. The Owner/Operator may conduct less frequent source tests upon approval by the District. The owner/operator may be required by the APCO to conduct more frequent source tests if source test results indicate emissions are either within 90% of any part 19 emissions limit or exceeds any part 19 emissions limit. The Owner/Operator shall conduct the District approved source tests in accordance with the applicable parts of 109 through 117. [Basis: Rule 2-5, Source Tests]

Hydrogen Plant Cooling Water Tower (S-4465)

21) The Owner/Operator of S-4465 shall not exceed 51,840,000 gallons per calendar day of cooling water tower recirculation rate through the process equipment system. The owner/operator shall maintain a District-approved daily log of the total throughput (including cooling water tower recirculation rate) at S-4465. This log shall be kept on site for at least 5 years from the date of entry and be made available to District staff upon request.
[Basis: Cumulative Increase, Offsets]

22) The Owner/Operator of S-4465 shall conduct a District approved flow determination within 60 days of initial startup to demonstrate compliance with part 21 using the cooling tower water pump curves or other method approved by the APCO.
[Basis: Cumulative Increase, Offsets]

23) The Owner/Operator of S-4465 shall not exceed 5000 milligrams per liter total dissolved solids in the cooling tower. The Owner/Operator shall sample the cooling tower water on a monthly basis to determine total dissolved solids (TDS) content. The owner/operator shall calculate TDS from the result of a conductivity measurement in units of micromhos per centimeter (µmhos/cm) multiplied by 0.62 or other District-approved method. The PM10 emissions from the cooling tower drift shall not exceed 10.8 pounds per day or 1.97 tons per year, based on a 51,840,000 gallons per day recirculation rate, 5000 milligrams per liter of TDS, and a drift factor of 0.0005 percent. [Basis: Cumulative Increase, Offsets]

24) The Owner/Operator shall not emit VOC from S-4465, except as allowed in part 25.
[Basis: Cumulative Increase, Offsets]

25) The Owner/Operator of S-4465 shall inspect the riser chamber in the cooling water return line to the cooling tower on a daily basis for a hydrocarbon leak using a District-approved method. If a leak is detected, the owner/operator shall both identify and repair the leak within 15 days. As part of the Modernization Project, POC emission reduction credits (ERCs) were provided to the District to cover 15 days (360 hours) of hydrocarbon leakage over any consecutive 12-month period. The Owner/Operator of S-4465 shall not exceed a POC emissions limit of either 36.0 lb/day or 0.27 tons/year. Should any leak occur for more than 360 hours in any consecutive 12-month period, the owner/operator shall submit to the District a permit application for a change of condition containing both an emissions estimate to be approved by the APCO and POC emission reduction credits (ERCs) to offset emissions from the leak of any hydrocarbon leakage in excess of 360 hours over any consecutive 12-month period at a ratio specified in Regulation 2, Rule 2. ERCs will be calculated as part of the permit application process. [Basis: Cumulative Increase, BACT, Offsets]

Hydrogen Plant Flare (S-6021/A-6021)

26) The Owner/Operator of the hydrogen plant flare S-6021 shall design S-6021 to maintain a hydrocarbon and carbon monoxide destruction efficiency of at least 98%, on a mass basis when the gases vented to the flare have a minimum lower heating value (LHV) greater than or equal to 300 BTU/scf, or at least 93%, on a mass basis when the gases vented to the flare have a minimum LHV below 300 BTU/scf. [Basis: Rule 12-11-401.9]

27) The Owner/Operator shall calculate S-6021 flare emissions for compliance with part 9a annual limits by using the following emission factors (including flare pilot and vented gas emissions):

a) NOx emissions - 0.068 lb/MMBtu for each combustible to be flared

b) CO emissions - 0.37 lb/MMBtu for flaring of natural gas, RPG, and methane. CO emissions for flaring will be calculated as 2.0% of CO concentration multiplied by the flow rate when fuel has lower heating value (LHV) greater than or equal to 300 BTU/scf and 7.0% of CO concentration multiplied by the flow rate when fuel has lower heating value less than 300 BTU/scf, unless both of the following parameters are satisfied:

i) The owner/operator may assume 98% destruction efficiency during flaring events when the LHV is less than 300 BTU/scf provided that the flare tip velocity does not exceed 122 feet/second. The owner/operator shall continuously monitor and record the flare tip velocity during all events, and
ii) The hydrogen content of the vent gas to the flare shall be maintained at a minimum of 15.5% by volume on a wet basis. The hydrogen content of the vent gas to the flared shall be continuously monitored and recorded during all events.

If both of the above parameters are satisfied, then 2.0% of CO shall be used in the flare emissions estimate for purposes of BACT, not for Rule 12-11 purposes. If either of the above parameters is not satisfied or if information is not available, then 7.0% of the CO shall be used in the flare emissions estimate. [Basis: BACT]

c) POC emissions – 0.14 lb/MMBtu for flaring of natural gas, RPG and methane. POC emissions for flaring will be calculated as 2.0% of POC concentration multiplied by the flow rate when fuel has lower heating value (LHV) greater than or equal to 300 BTU/scf and 7.0% of POC concentration multiplied by the flow rate when fuel has lower heating value less than 300 BTU/scf, unless both of the following parameters are satisfied:

i) The owner/operator may assume 98% destruction efficiency during flaring events when the LHV is less than 300 BTU/scf provided that the flare tip velocity does not exceed 122 feet/second. The owner/operator shall continuously monitor and record the flare tip velocity during all events, and
ii) The hydrogen content of the vent gas to the flare shall be maintained at a minimum of 15.5% by volume on a wet basis. The hydrogen content of the vent gas to the flared shall be continuously monitored and recorded during all events.

If both of the above parameters are satisfied, then 2.0% of POC shall be used in the flare emissions estimate for purposes of BACT, not for Rule 12-11 purposes. If either of the above parameters is not satisfied or if information is not available, then 7.0% of the POC shall be used in the flare emissions estimate. [Basis: BACT]

d) PM10 emissions - 0.00745 lb/MMBtu for flaring of natural gas, RPG, CO and methane.

e) SO2 emissions - Calculated from both the fuel usage and total sulfur in the fuel to the flare pilot (burner) and the flow rate and total sulfur content of the vent gas to be flared assuming 100% conversion of total sulfur to SO2.

[Basis: Cumulative Increase]

28) The owner/operator shall fire S-6021 flare pilots continuously with only natural gas. When flaring gas containing refinery process gas (RPG) and/or refinery fuel gas (RFG), the owner/operator of S-6021 flare shall only operate the flare during periods of planned startup, planned shutdown, emergency upset and breakdown. When flaring gas containing no RPG or RFG, the owner/operator of S-6021 flare shall only operate the flare in accordance with the District-approved Flare Minimization Plan (FMP) for the Chevron Richmond Refinery. The owner/operator of S-6021 shall not exceed the maximum design capacity of 217,000 lb/hour of vent gas to the flare as defined in Regulation 12-11-210. The owner/operator of S-6021 shall use steam assist at S-6021 during all times that vent gas is being sent to S-6021. [Basis: BACT]

29) For the purposes of these conditions, a flaring event is defined as a flow rate of vent gas flared in any consecutive 15-minute period that continuously exceeds 330 standard cubic feet per minute (scfm). If during a flaring event, the vent gas flow rate drops below 330 scfm and then increases above 330 scfm within 30 minutes, that shall still be considered a single flaring event, rather than two separate events. For each flaring event during daylight hours (between sunrise and sunset), the Owner/Operator shall inspect the flare within 15 minutes of determining the flaring event, and within 30 minutes of the last inspection thereafter, using District-approved video monitoring or District-approved visible inspection following the procedure described in part 30b.
[Basis: Regulation 12-12]

30) The Owner/Operator shall use the following procedure for the initial inspection and each subsequent 30-minute inspection of a flaring event.

a) If the Owner/Operator can determine that there are no visible emissions using District-approved video monitoring, then no further monitoring is necessary for that particular inspection.

b) If the Owner/Operator cannot determine that there are no visible emissions using video monitoring, the Owner/Operator shall conduct a visual inspection outdoors using either:

i) EPA Reference Method 9, or
ii) Survey the flare by selecting a position that enables a clear view of the flare at least 15 feet, but not more than 0.25 miles, from the emission source, where the sun is not directly in the observer's eyes.

c) If a visible emission is observed, the Owner/Operator shall continue to monitor the flare for at least 3 minutes, or until there are no visible emissions, whichever is shorter.

d) The Owner/Operator shall repeat the inspection procedure for the duration of the flaring event, or until a violation is documented in accordance with part 31. After a violation is documented, no further inspections are required until the beginning of a new calendar day.
[Basis: Regulation 6-1-301, 2-1-403]

31) The Owner/Operator of S-6021 shall comply with one of the following requirements if visual inspection is used:
a) If EPA Method 9 is used, the Owner/Operator shall comply with Regulation 6-1-301 when operating the flare.
b) If the procedure of part 30.b.ii is used, the Owner/Operator shall not operate a flare that has visible emissions for three consecutive minutes.
[Basis: Regulation 2-6-403]

32) The Owner/Operator of S-6021 shall maintain records of all flaring events, as defined in part 29 for a period of five years from the date of entry. These records shall be kept onsite and made available to District staff upon request. The Owner/Operator shall include in the records the name of the person performing the visible emissions check, whether video inspection or visual monitoring (EPA Method 9 or visual inspection procedure of part 30) was used, the results of each inspection, and whether any violation of this condition (using visual inspection procedure in part 30) or Regulation 6-1-301 (using EPA method 9) occurred. [Basis: Regulation 2-6-501; 2-6-409.2]

33) The owner/operator of S-6021 shall comply with the monitoring, recordkeeping and reporting requirements for the flare as outlined in Regulation 12-11. The owner/operator of S-6021 shall properly install, maintain, and operate a District-approved total sulfur monitor in the flare gas. In order to demonstrate compliance with Parts 9a, 27, 28, the owner/operator shall maintain records of the lower heating value (BTU/scf) of the vented gas for each flaring event and if the flare vent gas contained any RPG or RFG. The owner/operator of S-6021 shall properly install and operate the pilot and purge monitoring as required in Sections 12-11-503 and 12-11-504. [Basis: Regulation 12-11]

34) The Owner/Operator of S-6021 shall operate the flare in accordance with the District-approved Flare Minimization Plan (FMP) for the Chevron Richmond Refinery. [Basis: Regulation 12-12]

Hydrogen Plant Fugitives

35)
Fugitive Equipment
a) The Owner/Operator of all Hydrogen Plant sources (S-4449, S-4450, S-4451, S-4471, S-4472, and S-6021) shall install only the following types of valves in RPG, RFG and/or natural gas service (1) bellows sealed, (2) live loaded, (3) graphitic packed, (4) Teflon packed, (5) quarter-turn (e.g., ball valves or plug valves), or equivalent as determined by the APCO. [Basis: Cumulative Increase, BACT, Offsets, 8-18]

b)
The Owner/Operator of all Hydrogen Plant sources (S-4449, S-4450, S-4451, S-4471, S-4472, and S-6021) shall comply with a leak standard of 100 ppm of TOC (measured as C1) at any valve installed as part of the Hydrogen Plant in RPG, RFG, natural gas, methane, and/or process gas service unless the owner/operator complies with the applicable minimization and repair provisions contained in Regulation 8-18. Valves that are not of a type listed in part 35(a) and for which a leak greater than 100 ppm (measured as C1) has been determined, shall become subject to the inspection provisions contained in Regulation 8-18-401 unless the component is already subject to the Part 36 inspection frequency. If the leak remains greater than 100 ppm (measured as C1) after repair, or if the valve is determined to have a leak greater than 100 ppm (measured as C1) a second time within a 5-year period, the Owner/Operator shall replace the valve with a type listed in part 35(a) within 5 years or at the next scheduled turnaround, whichever is sooner. Methane service shall be any stream that contains any methane. For the purposes of these permit conditions, RPG is refinery process gas and RFG is refinery fuel gas. [Basis: BACT, Regulation 8 Rule 18]

c) The Owner/Operator of all Hydrogen Plant sources (S-4449, S-4450, S-4451, S-4471, S-4472, and S-6021) shall install as part of this project graphitic-based gaskets on all flanges or connectors (gasketed) installed in natural gas, process gas, RPG and/or RFG service unless the Owner/Operator demonstrates to the satisfaction of the APCO that the service requirements prevent this material from being used. [Basis: BACT]

d) The Owner/Operator of all Hydrogen Plant sources (S-4449, S-4450, S-4451, S-4471, S-4472, and S-6021) shall comply with a leak standard of 100 ppm of TOC (measured as C1) at any flanges/connectors installed as part of the Hydrogen Plant in RPG, RFG, methane, and/or natural gas service unless the owner/operator complies with the applicable minimization and repair provisions contained in Regulation 8-18. [Basis: BACT, Regulation 8 Rule 18]

e) The owner/operator shall install liquid seals with non-VOC purge fluid (gas or liquid) or dual dry gas mechanical seals with inert/non-VOC purge gas or dual dry gas mechanical seals with venting to an approved recovery/abatement device or other BAAQMD Approved control device or technology on all compressors installed in TOC service as part of the Modernization Project or other BAAQMD Approved control device or technology. [Waiting for Praxair information on proposed seals.] [Basis: BACT]

f) The Owner/Operator shall comply with a leak standard of 100 ppm of TOC (measured as C1) at any pumps and/or compressors installed in RPG, RFG, and/or

natural gas service as part of the Hydrogen Plant sources (S-4449, S-4450, S-4451, S-4471, S-4472, and S-6021) unless the owner/operator complies with the applicable minimization and repair provisions contained in Regulation 8-18. [Basis: BACT]

g) The Owner/Operator shall install dual mechanical seals, vented to a District approved abatement device that achieves a minimum of 95% VOC destruction efficiency or District approved equivalent technology as determined by the APCO on all pumps in RPG, RFG, and/or natural gas service installed as part of the Hydrogen Plant sources (S-4449, S-4450, S-4451, S-4471, S-4472, and S-6021). [Basis: BACT]

h) The Owner/Operator shall vent all pressure relief valves in hydrocarbon service subject to Rule 8-28 to a furnace or flare with a destruction efficiency of at least 98% by weight. Hydrocarbon service as defined in Part 2 of these conditions.

i) The Owner/Operator shall identify all new valves, pressure relief devices, flanges, connectors, process drains, pumps, and compressors installed in RPG, natural gas, methane, and/or RFG service as part of the Hydrogen Plant sources (S-4449, S-4450, S-4451, S-4471, S-4472, and S-6021) with a unique permanent identification code. This identification code does not apply to quarter-inch or less tubing and connectors associated with analytical sampling systems. The owner/operator shall clearly identify the fugitive components listed above that are in methane service only. The Owner/Operator shall include all new fugitive equipment in the fugitive equipment monitoring and repair program. [Basis: Rule 8-18 (includes methane), cumulative increase, offsets, BACT]

j) The owner/operator of all fugitive components at the Hydrogen Plant sources (S-4449, S-4450, S-4451, S-4471, S-4472, and S-6021) shall handle only RPG, RFG, natural gas, and methane. [basis: BACT, 8-18, 2-5}

36) The Owner/Operator of all Hydrogen Plant sources (S-4449, S-4450, S-4451, S-4471, S-4472, and S-6021) shall conduct inspections of all Hydrogen Plant sources fugitive components in RPG, RFG, and/or natural gas service based on the frequency below:

Pumps:	Quarterly
Compressors:	Quarterly
Valves:	Quarterly
Pressure Relief Devices:	Quarterly
Connectors (No Flanges):	Biannual
Flanges:	Biannual
Process Drains:	Quarterly

The Owner/Operator of all Hydrogen Plant sources (S-4449, S-4450, S-4451, S-4471, S-4472, and S-6021) shall conduct inspections of all Hydrogen Plant sources' fugitive components exclusively in methane service in accordance with the frequencies specified in Rule 8-18.

[Basis: BACT, Regulation 8-18]

Hydrogen Plant General Recordkeeping

37) The Owner/Operator of S-4449, S-4450, S-4451, S-4471, S-4465, S-4472, S-6021, A-302, A-303, A-6021 shall maintain all CEM and all source testing records and the following associated records (i.e. fuel usage rates, HHV heat content of fuel, hours of operation, flow rates used for emissions calculations, daily, monthly, and annual mass emissions estimates, etc.) for the last 5 years of operation to verify compliance with Modernization Project permit conditions. [Basis: Recordkeeping]

a) For part 11, continuous fuel flow and gas component analysis records and calculations of combustion stack flow.
b) For part 12, daily, monthly, and consecutive 12 month heat input (HHV) to each furnace (S-4471, S-4472).
c) For part 13)c)i, firing hours, fuel flow rates, and stack gas concentrations.
d) For part 13)c)i, 14, and part 15, the CEMS records for each furnace (S-4471, S-4472).
e) For part 13)c)ii, all furnace firing hours without the SCR in place and operational.
f) Throughput for parts 5,6, 21
g) Emissions data for parts 9, 14,15, 16, 18, 19, 23, 25, 27, all source test results required within parts 5- 36 [BAAQMD recordkeeping]

38) The Owner/Operator shall maintain the following in a District-approved daily log and shall keep these records on site for a period of at least 5 years from date of entry and make the records available to District staff upon request. [Basis: Regulation 2-1-301, Recordkeeping]

In order to demonstrate compliance with part 5, the Owner/Operator shall maintain the daily, monthly, and consecutive 365-day total record of hydrogen production (MMSCF of H2 per day) for each new Hydrogen Plant Train (S-4449, S-4450);

In order to demonstrate compliance with part 6, the owner/operator shall maintain daily, monthly, and consecutive 365-day total record of hydrogen production at S-4451; and

In order to demonstrate compliance with part 7, the owner/operator shall maintain daily, monthly, and consecutive 365-day total record of all fuel usage at S-4471 and S-4472.

39) DELETED

40) DELETED

41) DELETED

42) DELETED

43) DELETED

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76) DELETED

HYDROGEN PURITY IMPROVEMENTS

77) The Owner/Operator of S-4454 No. 6 H2S Plant (Recycle Amine Regenerator) shall not exceed the following limits:
[Basis: Cumulative Increase]

3358 MMSCF H2S produced, any consecutive 12-month period
11 MMSCF H2S produced, maximum per calendar day

78) DELETED (Superseded by permit condition 25814)
(Sulfur Loading Rack S-4490 was issued a separate ATC under Application 25793 in June 2014 and its operation is governed by permit condition 25814)

79) DELETED (Superseded by permit condition 25814)
(Sulfur Loading Rack S-4490 was issued a separate ATC under Application 25793 in June 2014 and its operation is governed by permit condition 25814)

80) The Owner/Operator of S-4253 TKC/FCC Feed Hydrotreater shall not exceed the following throughput limitations:

29,200 kbbl feed material, over any consecutive 12-month period
80,000 bbl feed material per day on an annual average basis
96,000 bbl feed material, calendar day

[Basis: Cumulative Increase, Condition B.9 in City of Richmond Conditional Use Permit Resolution Number 67-14 dated July 29, 2014]

Sulfur Recovery Units S-4227 through S-4229:

81) The Owner/Operator of A-0020, A-0021 and A-0022 Tail Gas Units abating the S-4227, S-4228, and S-4229 Claus Plants (SRUs), respectively, shall each maintain a minimum oxidization temperature of 1400 degrees Fahrenheit. [Basis: BACT]

The owner/operator shall comply with the temperature limit of 1400F in Part 81 at all times, except during an "Allowable Temperature Excursion" as specified below, provided that the temperature controller setpoint remains at a minimum of 1400 degrees Fahrenheit. An Allowable Temperature Excursion is one of the following:

a. A temperature excursion not exceeding 20 degrees F; or
b. A temperature excursion for a period or periods which when combined are less than or equal to 15 minutes in any hour; or
c. A temperature excursion for a period or periods which when combined is more than 15 minutes in any hour, provided that all three of the following criteria are met.

i. the excursion does not exceed 50 degrees F;
ii. the duration of the excursion does not exceed 24 hours; and
iii. the total number of such excursions does not exceed 12 per calendar year (or any consecutive 12 month period).

Two or more excursions greater than 15 minutes in duration occurring during the same 24-hour period shall be counted as one excursion toward the 12-excursion limit. (basis: Regulation 2-1-403)

For each Temperature Excursion below 1400 degrees Fahrenheit, the owner/operator shall keep all records to the satisfaction of the APCO in order to demonstrate compliance with the qualifying criteria described above. Records shall be retained for a minimum of five years from the date of entry, and shall be made available to the District upon request. Records shall include at least the following information:

a. Temperature controller setpoint;
b. Starting date and time, and duration of each Allowable Temperature Excursion;
c. Measured temperature during each Allowable Temperature Excursion;
d. Number of both Temperature Excursions and Allowable Temperature Excursions per month, and total number for the current consecutive 12-month period; and
e. All strip charts or other temperature records.
(Basis: Regulation 2-1-403)

82) The owner/operator of S-4227, 4228 and 4229 shall abate each at all times of operation of S-4227, S-4228, and S-4229 by the properly maintained and properly operated A-20, A-21, and A–22 tail gas units, respectively. The owner/operator shall also install and maintain an acid gas scrubber (A-4450) to prevent the release of acid gas during an unscheduled loss of SRU capacity. The owner/operator of S-4227, 4228, and 4229 shall not exceed a combined acid gas feed rate to the three SRUs of 24.5 MMscf/day averaged over any consecutive 3-hour period plus an additional 3 MMscf/day from sour

water sources, which can be shut down immediately. Prior to exceeding the emergency scrubber capacity of A-4450 and/or A-4451, the owner/operator shall shut down refinery acid gas generating sources including the 3 MMscf/day from sour water sources, and cease acid gas generation at the refinery to reduce the acid gas feed rate below the capacity of the two remaining SRUs ("Load Shed Procedures"). (Basis: BACT)

83) The owner/operator of S-4227, S-4228, and S-4229 shall abate each by the properly installed, properly maintained, and properly operated A-120, A-121, and A-122 Wet Electrostatic Precipitators (Wet ESPs), respectively, at all times of operation of S-4227, S-4228, and/or S-4229. [Basis: BACT, Rule 2-5]

84) The Owner/Operator of S-4227, S-4228, and S-4229 shall not exceed the following limits at the emission point of each A-0020, A-0021, and A-0022 except during periods of startup, shutdown, and refractory dryout as defined below, as demonstrated by a District-approved source test method, CEM, or other District-approved method:

a) NOx emissions of 50.0 ppm, dry, corrected to 0% O2, 3-hour average
b) SO2 emissions of 50.0 ppm, dry, corrected to 0% oxygen, averaged over any calendar day
c) H2S emissions of 4.0 ppm, dry, corrected to 0% O2, averaging time based on district approved source test method
d) PM10 emissions: short-term limit as specified in part 88.
e) Sulfuric Acid Mist emissions: See part 95
f) 15,000 dscfm, corrected to 0% O2, exhaust flow rate averaged over any 1 hour period at each S-4227 and S-4228.
g) 30,000 dscfm, corrected to 0% O2, exhaust flow rate averaged over any 1 hour period at S-4229.

For the purposes of complying with this part, the following definitions and limits apply for the startup, shutdown, and refractory dryout periods of S-4227, S-4228, and/or S-4229:

"Startup" begins with startup of the main air blower and ends when operation is stable and the Air-to-H2S ratio controller is placed in the automatic control mode.

"Refractory dryout" shall mean an event that occurs whenever new refractory has been installed. When this new refractory is heated for the first time, the unit is brought gradually to operating temperature through a prescribed series of steps designed to ensure safe operation.

The owner/operator of S-4227, S-4228, or S-4229 shall not exceed 12 consecutive hours for startup or 24 hours for startups involving refractory dryout.

"Shutdown" begins after acid gas feed has been replaced with natural gas purge and, following the sequence to remove residual sulfur compounds from the unit, the Main Reaction Furnace firing rate is reduced while increasing excess O2 to check for residual reactions. The shutdown period ends when the main air blower is shut down.

The owner/operator of S-4227, S-4228, or S-4229 shall not exceed 9 consecutive hours for any shutdown.

[Basis: BACT, cumulative increase, Rule 2-5]

85) The Owner/Operator of S-4227, S-4228, and S-4229 shall comply with parts 84, 86, 87, 90, and 92. These conditions supersede Condition 19063, after modification of each SRU S-4227, S-4228, and S-4229, respectively. [Basis: BACT, Rule 2-5, Cumulative Increase]

86) The Owner/Operator of S-4227, S-4228, and S-4229 Sulfur Recovery Units (SRUs) shall perform all of the following:

a. In order to reduce H2S bypassing at the thermal oxidizers, the owner/operator shall modify each SRU's thermal oxidizer internals for better mixing, improve the control of excess oxygen, and relocate the sulfur pit vent line to the tail gas inlet line unless studies required below demonstrates that there is no beneficial effect. Within 60 days of the issuance of the Authority to Construct for this project, the owner/operator shall both conduct and submit studies in order to indicate whether the relocation of the sulfur pit vent line to the tail gas inlet line would have any beneficial effect, subject to District approval. If the study demonstrates to the satisfaction of the District that there is a beneficial effect, then the owner/operator shall relocate the sulfur pit vent line to the tail gas inlet line. Within 60 days of the issuance of the Authority to Construct for this project, the owner/operator shall submit the thermal oxidizer engineering design drawings or other equivalent drawings, and a written explanation of all design features that demonstrate that the thermal oxidizer internals will improve mixing and detailed description of measures taken to improve the control of excess oxygen.

b. The owner/operator shall install ultra low-NOx burners equipped with fuel induced recirculation (FIR) on each thermal oxidizer of each SRU. Within 30 days of an ultra low-NOx burner vendor or design selection, the owner/operator shall submit for District approval the design drawings and explain the design features that will result in the NOx reductions.

c. The owner/operator shall install ultra low-NOx burners equipped with FIR on each stack gas heater of each SRU. Stack gas source numbers are S-4436, S-4437, and S-4438. Within 30 days of an ultra low-NOx burner vendor or design selection, the owner/operator shall submit for District approval the design drawings and explain the design features that will result in the NOx reductions.

d. The owner/operator shall not exceed the following maximum firing rates: (Basis: Cumulative Increase)

No. 1 SRU Stack Gas Heater	S-4436	765.60 MMBTU/day HHV
No. 2 SRU Stack Gas Heater	S-4437	765.60 MMBTU/day HHV
No. 3 SRU Stack Gas Heater	S-4438	1,346.0 MMBTU/day HHV

No. 1 SRU	Thermal Oxidizer burner S-4227/A-20	739.0 MMBTU/day HHV
No. 2 SRU	Thermal Oxidizer burner S-4228/A-21	739.0 MMBTU/day HHV
No. 3 SRU	Thermal Oxidizer burner S-4229/A-22	1,080.0 MMBTU/day HHV

e. The owner/operator shall perform District-approved computational fluid dynamic analysis (flow modeling) of the thermal oxidizers to assist in optimizing the performance. The results shall be submitted to the District for review and approval.

f. The owner/operator shall improve the scrubbing of SO2 by the SRU SO2 Absorbers by increasing the makeup sodium sulfite rate, and upgrading the piping and controls to meet the SO2 concentration limit in Part 84c. The controls for caustic makeup will also be upgraded for more stable operation. Within 60 days of the issuance of the Authority to Construct for this project, the owner/operator shall submit for District review and approval the pre-project and post-project engineering design drawings or other equivalent drawings that demonstrate, which may include the following to meet the SO2 concentration limit in Part 84c:

1. the makeup sodium sulfite rate for each SRU to improve the scrubbing of SO2 by the SO2 Absorbers,
2. the piping and control upgrades, and
3. the caustic makeup control upgrades.

g. On S-4454 #6 H2S Recovery Unit, the owner/operator shall install carbon filtration of the amine, optimize sizing and internal design of the amine flash drum, and follow Best Practice design guidelines for hydrocarbon removal including District-approved monitoring and carbon change-out procedures.

h. Within 60 days of the issuance of the Authority to Construct for this project, the owner/operator shall complete design development and submit the design for District review in order to identify whether an alternative design will achieve or accomplish the same objective to the satisfaction of the District, which is to reduce C3 and C4 carryover into the vent gas and acid gas by adding/upgrading coolers in at least three locations.

i. The owner/operator shall reroute the PSA tail gas, which currently goes to the RLOP Gas Recovery Unit to the Hydrogen Plant (S-4449 through S-4450) feed or to the refinery fuel gas system in order to reduce the GRU feedrate and improve cooling and separation at the RLOP GRU.

j. The owner/operator of S-4227, S-4228, and S-4229 shall properly install and properly operate a Medium Oxygen Enrichment System (up to 50%) in order to comply with parts 84, 87, 90, and 92.

(Basis for parts a through j, not including d: Cumulative Increase, BACT)

87) The Owner/Operator of S-4227, S-4228, and S-4229 shall abate the S-4227, S-4228, and S-4229 SRUs at all times of operation by the properly installed, properly maintained, and properly operated A-20, A-21, and A-22 Tail Gas Units, respectively, and

the properly installed, properly maintained, and properly operated A-120, A-121, A-122 Wet Electrostatic Precipitators (Wet ESPs), respectively. The owner/operator of each SRU S-4227 through S-4229 shall not exceed the following total sulfur production levels [Basis: cumulative increase, offsets, Rule 2-5, Condition B.8 in City of Richmond Conditional Use Permit Resolution Number 67-14 dated July 29, 2014]:

a) S-4227 abated by A-20 and A-120:
i) The lesser of either: 345 Long Tons in any calendar day, or the throughput level determined through District-approved source testing to be maximum calendar day throughput achievable while complying with all emissions limitations. Annual throughput values will be determined either through District-approved source testing and/or the use of the District-approved CEMs and District-approved flowmeters in order to determine the maximum annual throughput that corresponds to compliance with all annual emissions limits.

b) S-4228 abated by A-21 and A-121:
i) The lesser of either: 345 Long Tons in any calendar day or the throughput level determined through District-approved source testing to be maximum calendar day throughput achievable while complying with all emissions limitations. Annual throughput values will be determined either through District-approved source testing and/or the use of the District-approved CEMs and District-approved flowmeters in order to determine the maximum annual throughput that corresponds to compliance with all annual emissions limits.

c) S-4229 abated by A-22 and A-122:
i) The lesser of either: 570 Long Tons in any calendar day, or the throughput level determined through District-approved source testing to be maximum calendar day throughput achievable while complying with all emissions limitations. Annual throughput values will be determined either through District-approved source testing and/or the use of the District-approved CEMs and District-approved flowmeters in order to determine the maximum annual throughput that corresponds to compliance with all annual emissions limits.

d) The total combined calendar day throughput from S-4227, S-4228, and S-4229 combined shall not exceed either of the following:
900 Long Tons in any calendar day
750 Long Tons per day on an annual average basis

e) The owner/operator of S-4227, S-4228, and S-4229 may exceed the throughput levels established through District-approved source testing per Parts 87a, b, and/or c and the next paragraph, upon receipt of written approval by the APCO of a source test plan for demonstrating compliance with all concentration and mass limits at a higher throughput level. During the source test, the throughput level may not exceed the maximum level stated in Parts 87a, b, and/or c and all emissions measured by CEMs shall remain in compliance with the permitted concentration and/or permitted mass levels to be averaged over the source test. Exceedance of emission levels determined by source testing that occur during the source test shall not be considered a violation as long

as Chevron follows the source test plan pre-approved by the APCO. Until24-months after startup of each SRU, the owner/operator may conduct source tests, pursuant to this part, to establish the throughput levels not to exceed the maximum throughput levels specified in Part 87 for each SRU. During this time period, consistent with both Regulation 2-1-234 and Regulation 2-5-214, an increase in throughput up to the maximum throughput levels as specified in Part 87 shall not be considered a modification for purposes of Regulation 2 provided that there is no increase in any permitted emission levels from these SRUs. For the purposes of Regulation 2, Rule 6, changes made as a result of this part shall be considered either Minor or Administrative as determined by the APCO.

The owner/operator of S-4227, S-4228, and S-4229 shall conduct a district pre-approved source test within 120 days of modification of each unit, on each unit operating at maximum throughput levels listed above in order to demonstrate compliance with all emissions limits (NOx, CO, SO2, PM10, POC, H2S, and H2SO4) at maximum throughput levels. The 120-day deadline for this testing may be extended upon written approval of the APCO. The source test shall also note all operating parameters determined by the District as part of the source test pre-approval, which may become enforceable permit conditions if the district determines that the parameters are required in order to comply with all emissions limits. The throughput levels above may be adjusted based on the District-approved results of the District-approved source test. The throughput levels may be subsequently adjusted up to the maximum levels listed in Parts 87a, b, and/or c based on the results of the subsequent source testing through the submittal of a District permit application. The results of these source tests shall be submitted to the district for approval no later than 60 days from the test date.

The owner/operator of each S-4227, S-4228, and S-4229 shall use oxygen enrichment (up to a maximum of 50% oxygen enrichment) at all times of operation above the following throughput levels of each SRU: S-4227 and S-4228 at 150 long tons per day, and S-4229 at 300 long tons per day. The owner/operator of each SRU may use oxygen enrichment at lower throughput levels.

88) The Owner/Operator of A-120, A-121, and A-122 shall achieve a minimum abatement efficiency of 90% by weight of both PM10 and Sulfuric Acid Mist. The owner/operator shall demonstrate continuous compliance with this abatement efficiency through the use of the following parametric monitoring parameters (Basis: Offsets, cumulative increase):

The owner/operator of A-120, A-121, and A-122 shall not exceed any of the following PM10 and Sulfuric Acid Mist limits as specified in parts 84, 90, 92, and 95 from each Wet ESP (A-120, A-121, and A-122):

The owner/operator of A-120 shall not exceed:
a. PM10 Limit 0.504 lb averaged over one hour as demonstrated using District approved source test method.

The owner/operator of A-121 shall not exceed:

b. PM10 Limit 0.450 lb averaged over one hour as demonstrated using District approved source test method.

The owner/operator of A-122 shall not exceed:
c. PM10 Limit 0.884 lb averaged over one hour as demonstrated using District approved source test method.

The owner/operator of Wet Electrostatic Precipitators (A-120, A-121, and A-122) shall abate at all times of operation of the SRUs (S-4227, S-4228, and S-4229) respectively with the properly maintained, properly operated, fully charged Wet Electrostatic Precipitators (A-120, A-121, and A-122). This shall include the following:

1). Continuously monitor and record the inlet water flow rate (in gallons per minute) to each scrubber and maintain a minimum inlet water flow rate of [TBD] in (gallons per minute).

2). Monitor and record Transformer Rectifier (TR) set secondary current readings on a daily basis.

3). Install a temperature monitor and recorder at the inlet of the Wet ESP. The inlet temperature of each Wet ESP shall be maintained at a maximum of [TBD] degrees F. An alarm shall be set in such a manner to indicate temperature excursions above [90% of TBD] degrees F.

4). The secondary current of any TR set shall not be less than [TBD] milliamps averaged over any three hour period, or the secondary current of up to two TR sets may be less than [TBD] milliamps, averaged over any three hour period, as long as the remaining TR sets maintain an average secondary current above [TBD] milliamps, averaged over any three hour period. An alarm shall be set in such a manner to indicate secondary current excursions below [TBD] milliamps.

The parametric conditions in this part may be re-evaluated or adjusted, if District-approved source test data demonstrate to the satisfaction of the APCO that alternate parametric conditions are necessary for or capable of maintaining compliance with an emission limit of PM10 and/or Sulfuric Acid Mist as determined by District-approved source test methods.

The annual PM10 and Sulfuric Acid Mist emissions rate shall be determined by District approved source test methods. The owner/operator shall hire a third-party source test firm to perform at least four source tests per calendar year to determine the hourly PM10 and Sulfuric Acid Mist emission rates. The results of each quarterly source test shall be used to estimate the emissions for that calendar quarter. The four quarterly mass emissions estimates shall be added together to determine compliance with the annual emissions limits of these permit conditions. Each source test shall be performed in accordance with the District's Manual of Procedures. The owner/operator shall notify the District Source Test Manager and the Engineering Division at least seven (7) days prior to the test, to provide the District staff the option of observing the test. Within 60 days of

the test date, the owner/operator shall submit a comprehensive report of the test results to the District's Source Test Manager for review and approval.

The owner/operator of S-4227, S-4228, and S-4229 shall conduct at least one source test every quarter in order to demonstrate compliance with all emissions limits not covered by CEMs. If this source test window partially or completely overlaps a plant shutdown and its 7-day startup period, the owner/operator shall conduct a source test within 14 days of the date of the plant or source startup.

The Owner/Operator Of S-4227, S-4228, and S-4229 shall continue to conduct quarterly source tests for at least two years after the date of issuance of the Permit to Operate for the last Modernization Project source. After the quarterly source tests specified above in this part, the Owner/Operator may submit an application for District approval to request to change the frequency to semi-annual or bi-annual provided that all District-approved source test results demonstrate that the emissions are less than 90% of any PM10 or sulfuric acid mist emissions limit.

The Owner/Operator shall conduct the District approved source tests in accordance with the applicable parts of 109 to 117. The Owner/Operator shall submit the source test results to the District staff no later than 60 days from the source test date. [Basis: Periodic Monitoring, cumulative increase, Regulation 1-523]

In order to demonstrate compliance with this part and part 84, 90, 92, and 95, the owner/operator shall maintain in a District-approved log, updated monthly, all of the following:

1). PM10 and Sulfuric Acid Mist emissions source test results, lb/hour.
2). Daily inlet water flowrate inspection records indicating working condition and repairs.
3). pH of water system
4). Daily ESP Transformer Rectifier (TR) set secondary current readings; and
5). Wet ESP inlet temperature records.

These records shall be retained for at least five years from date of entry and be made available to the BAAQMD upon request.

a) (Placeholder) Install a temperature monitor and recorder at the inlets of each Wet ESP (A-120, A-121, and A-122). The inlet temperature of each Wet ESP shall be maintained at a maximum of 170 degrees F/TBD degrees Fahrenheit averaged over any one hour period. An alarm shall be set in such a manner as to indicate temperature excursions above 153 F.)
b) (Placeholder) Monitoring and recordkeeping provisions to insure appropriate electric field strength.
c) (Placeholder) Condition(s) to insure proper water flow.
d) (Placeholder) pH of water system.

For each above “placeholder” or “TBD”, the owner/operator shall provide the above vendor-supplied information within 60 days of the selection of the vendor.

89) The Owner/Operator of S-4227, S-4228, and S-4229 shall maintain a District-approved daily log with monthly summaries of all sulfur production, acid gas feedrate (in MMSCF/day), maximum hourly flow rate (in scfm), all CEM data, daily H2S data and source test data at each S-4227, S-4228, and S-4229 to demonstrate compliance with parts 82, 84, 90, 92, and 95 and all Wet ESP parametric measurements to demonstrate compliance with parts 84, 90, 92, and 95. This log shall be kept on site for 5 years from the date of entry and be made available to District staff upon request.

90) The Owner/Operator of the S-4227, S-4228, and S-4229 Claus Plants (SRUs), S-4436, S-4437 and S-4438 (stack heaters), A-20, A-21, and A-22 (Tail Gas Units), and A-120, A-121, A-122 (Wet ESP's) shall not exceed the following combined emission limits in any consecutive 12-month period:
[Basis: Cumulative Increase, Offsets]

Pollutant	Annual (tons/yr)
NOx	62.33
CO	113.80
SO2	86.70
PM10	5.34
POC	2.84

H2S 4.0 ppm, dry, corrected to 0% O2, averaging time based on District-approved source test Method
Sulfuric Acid Mist 1.856 lb/hour

The Owner/Operator of the S-4227, S-4228, and S-4229 shall each demonstrate compliance with parts 84, 90, 92, and 95 using District-approved CEMs Systems for NOx, CO, SO2, O2, and either exhaust gas flow meters (S-4229) or duct flow meters combined with a District approved flow calculation method and using District approved source testing and/or District-approved flow measurement and/or calculation method in order to demonstrate compliance with parts 84, 90, 92, and 95 for PM10, POC, H2S, and Sulfuric Acid Mist.
[Basis: Monitoring]

91) The Owner/Operator of the S-4227, S-4228, and S-4229 Claus Plants (SRUs) and S-4436, S-4437 and S-4438 (stack heaters) shall install, calibrate, maintain, and operate a District-approved continuous emission monitor and recorder at each emission point (P-0151, P-0152, and P-0153) for NOx, CO, SO2, O2, and District-approved exhaust gas flow rate (in scfm). [Basis: BACT, offsets, Rule 2-5]

a. The Owner/Operator of the S-4227, S-4228, and S-4229 Claus Plants (SRUs) and S-4436, S-4437 and S-4438 (stack heaters) shall conduct District-approved monitoring and recording on a monthly basis at each emission point (P-0151, P-0152, and P-0153) for hydrogen sulfide (H2S) (in ppmv and lb/day) in order to demonstrate compliance with the concentration and mass emission limits specified in parts 84, 90, 92, and 95. If the monthly monitoring window partially or completely overlaps a plant shutdown and its 7-

day startup period, the owner/operator shall conduct monitoring within 14 days of the date of the plant or source startup. [Basis: BACT, Rule 2-5]

92) The Owner/Operator of the S-4227, S-4228, and S-4229 Claus Plants (SRUs) and S-4436, S-4437 and S-4438 (stack heaters) shall not exceed the following emission limits at each emission point (P-0151, P-0152, and P-0153) except during startup and shutdown:

The Owner/Operator of the S-4227 Claus Plant (SRU) and S-4436, (stack heater) shall not exceed the following emission limits in any consecutive 12 month period for the tons/year limits, any calendar day for the daily limits and the averaging time as specified for the remaining limits:

Pollutant	(tons/yr)	(lb/day)
NOx	15.38	
CO	28.08	222.72
SO2	21.39	
PM10	1.44	9.8
POC	0.76	9.8

H2S 4.0 ppm averaging time based on District-approved source test method
Sulfuric Acid Mist 0.673 lb/hour

The Owner/Operator of S-4227 shall not exceed a maximum exhaust gas flowrate of 15,000 dry scfm, corrected to 0% O2, averaged over any one hour period. [Basis: Rule 2-5, BACT]

The Owner/Operator of the S-4228 Claus Plant (SRU) and S-4437, (stack heater) shall not exceed the following emission limits in any consecutive 12 month period for the tons/year limits, any calendar day for the daily limits and the averaging time as specified for the remaining limits:

Pollutant	Annual (tons/yr)	(lb/day)
NOx	15.38	
CO	28.08	173.52
SO2	21.39	
PM10	1.30	9.8
POC	0.76	9.8

H2S 4.0 ppm averaging time based on District-approved source test Method
Sulfuric Acid Mist 0.425 lb/hour

The Owner/Operator of S-4228 shall not exceed a maximum exhaust gas flowrate of 15,000 dry scfm, corrected to 0% O2, averaged over any one hour period. [Basis: Rule 2-5, BACT]

The Owner/Operator of the S-4229 Claus Plant (SRU) and S-4438, (stack heater) shall not exceed the following emission limits in any consecutive 12 month period for the tons/year limits, any calendar day for the daily limits and the averaging time as specified for the remaining limits:

Pollutant	Annual (tons/yr)	(lb/day)
NOx	31.57	
CO	57.64	325.44
SO2	43.92	
PM10	2.60	9.8
POC	1.32	9.8

H2S 4.0 ppm averaging time based on District-approved source test Method
Sulfuric Acid Mist 0.758 lb/hour

The Owner/Operator of S-4229 shall not exceed a maximum exhaust gas flowrate of 30,000 dry scfm, corrected to 0% O2, averaged over any one hour period. [Basis: Rule 2-5, BACT]

[Basis: BACT, Cumulative Increase, Offsets]

93) The Owner/Operator of S-4227, S-4228, and S-4229 shall conduct a District-approved source test within 120 days of the date of initial startup of each unit to determine initial compliance with the limits in parts 84, 90, 92, and 95 for POC, H2S, PM10, Sulfuric Acid Mist, and ammonia and including the District-approved exhaust gas flowrates (measurement or combined measurement and calculation). The Owner/Operator shall conduct the District approved source tests in accordance with the applicable parts of 109 to 117. The Owner/Operator shall submit the source test results to the District staff no later than 60 days from the date of the source test. [Basis: Cumulative Increase, Offsets, BACT, Regulation 7]

94) After the initial source test specified in part 93 has been completed, the Owner/Operator of S-4227, S-4228, and S-4229 shall conduct quarterly District approved source tests to demonstrate compliance with the limits in parts 84, 90, 92, and 95 for POC, H2S, PM10, and Sulfuric Acid Mist, and District-approved exhaust gas flowrates (measurement or combined measurement and calculation). The Owner/Operator of S-4227, S-4228, and S-4229 shall continue to conduct quarterly source tests for at least two years after the date of issuance of the Permit to Operate for the last Modernization Project source (excluding the Power Plant Replacement Project). After the quarterly source tests specified above in this part, the Owner/Operator may submit an application for District approval to request to change the frequency to semi-annual source testing. The owner/operator of S-4227, 4228, and 4229 shall conduct the quarterly emissions source tests at least 2 months apart and not more than 4 months apart. The owner/operator may be required by the APCO to conduct more frequent source tests if source test results indicate emissions are within 90% of any emissions limit associated with any of these sources or exceeding any emissions limits associated with any of these sources. The Owner/Operator shall conduct the District approved source tests in accordance with the

applicable parts of 109-to 117. The Owner/Operator shall submit the source test results to the District staff no later than 60 days from the date of the source test. [Basis: Periodic Monitoring, cumulative increase]

95) The Owner/Operator of S-4227, S-4228, and S-4229 shall not exceed the following emission limits:
[Basis: Toxics]

S-4227 SRU 1
Sulfuric Acid Mist (stack) 0.673 lb/hr
H2S (stack) 0.323 lb/hr

S-4228 SRU 2
Sulfuric Acid Mist (stack) 0.425 lb/hr
H2S (stack) 0.323 lb/hr

S-4229 SRU 3
Sulfuric Acid Mist (stack) 0.758 lb/hr
H2S (stack) 0.646 lb/hr

H2S (fugitive) from Modernization Project components at S-4227, S-4228, and S-4229

H2S (fugitive) 0.0994 lb/hr

96) Deleted.

FUEL GAS SYSTEM

97) The Owner/Operator of the three Fuel Gas Mix Drums V-475, V-870, and V-701 shall install and operate a District-approved continuous gaseous fuel monitors and recorder(s) in order to demonstrate compliance with both the H2S limit and total sulfur limit of the refinery fuel gas at the outlets of each of the three fuel gas mix drums. The Owner/Operator shall calculate and record the following for each fuel gas mix drum of the refinery fuel gas system in order to demonstrate compliance with parts 98:

a) Each calendar day, the Owner/Operator of the three Refinery Fuel Gas Mix Drums shall record the following for each refinery fuel gas mix drum: daily fuel gas flow as measured by a District-approved fuel gas flowmeter at each drum, daily averaged calendar day H2S content (in ppmv) of the refinery fuel gas, any consecutive 365 day average of H2S concentration (ppmv), hourly maximum total sulfur content (in ppmv), daily averaged calendar day total sulfur content (in ppmv), any consecutive 365 day average of total sulfur content (in ppmv), and daily averaged HHV heat capacity as Btu/scf;

b) The owner/operator of the three refinery fuel gas mix drums shall calculate using District-approved methodology the total sulfur dioxide emissions in tons per year from the refinery fuel gas system for each calendar day with monthly totals. The owner/operator

shall record the sulfur dioxide emissions in a District-approved log for at least five years from the date of entry and shall be made available to District staff upon request.
[Basis: BACT, cumulative increase, offsets, Regulations 1-522, 1-523]

98) The Owner/Operator of the three Refinery Fuel Gas Mix Drums shall not exceed the following limits at the outlet of each of the refinery fuel gas mix drums [Basis: BACT, cumulative increase, offsets, Regulations 1-522, 1-523]:
a) 50 ppmv H2S (at each drum), averaged over a calendar day;
b) 18.83 ppmv H2S (flow-weighted average of all three drums), averaged over any consecutive 12 month period;
c) 100 ppmv total sulfur concentration (at each drum), averaged over a calendar day;
d) 200 ppmv total sulfur (at each drum), averaged over any hour;
e) 30.85 ppmv total sulfur concentration (flow-weighted average of all three drums) any consecutive 12-month period.
f) The owner/operator of the three Refinery Fuel Gas Mix Drums shall not exceed a combined total of 49.09 tons per year SO2 from all refinery sources fired on refinery fuel gas (as measured at the outlet of each of the three drums using total sulfur in ppmv and District-approved measured fuel flow of each drum assuming 100% conversion of total sulfur to SO2) using a District-approved calculation method.

99) DELETED

MODERNIZATION PROJECT COMMISSIONING PERIOD

100) The owner/operator of all sources of the Modernization Project shall comply with Parts 100, 103, 104 through 108 during the Modernization Project Commissioning Period. The Modernization Project Commissioning Period is defined as the period that begins when the first new or modified Modernization Project source commences operations, and terminates 180 calendar days after the last Modernization Project new or modified source commences operations.
[Basis: Cumulative Increase, PSD]

101) DELETED

102) DELETED

103) During the Modernization Project Commissioning Period, the Owner/Operator shall operate the first existing Hydrogen Train to be shut down (either S-4250 Train A or S-4250 Train B), its associated reaction furnace (either S-4170 or S-4171), the first new Hydrogen Plant (Either S-4449 or S-4450), and its associated reaction furnace (S-4471 or S-4472) simultaneously for up to a maximum of 90 days as long as the combined production rate of all operating hydrogen manufacturing plants remains below 181.1 million standard cubic feet per day.

The Owner/Operator shall operate the other existing Hydrogen Train, its associated reaction furnace, the other new Hydrogen Plant, and its reaction furnace simultaneously

for up to a maximum of 90 days as long as the combined production rate of all operating hydrogen manufacturing plants remains below 181.1 million standard cubic feet per day. [Basis: Cumulative Increase, Rule 2-2-410, PSD]

104) The Owner/Operator of S-4227, S-4228, and S-4229 Claus Plants (SRUs) shall not exceed any of the following total sulfur production levels until both of the following are met:
a) At least one of the new hydrogen plant trains (S-4471 or S-4472) has started to use refinery fuel gas or process gas as a feedstock, and
b) At least one of the SRUs has been modified or has completed its modification to satisfy BACT per this Authority to Construct.
- S-4227: 189.6 long tons in any calendar day and 150 long tons per day averaged over any consecutive 12-month period.
- S-4228: 179.0 long tons in any calendar day and 150 long tons per day averaged over any consecutive 12-month period.
- S-4229: 336.0 long tons in any calendar day and 292.7 long tons per day averaged over any consecutive 12-month period.

After each of the SRUs (S-4227, S-4228, and S-4229) is modified, the Owner/Operator shall operate only the modified SRU up to the maximum new total sulfur production limit specified in Part 87.
[Basis: Cumulative Increase, PSD]

105) DELETED

106) The owner/operator of all sources covered by this permit application (A/N 12842) shall determine the Modernization Project net emissions increase for PSD purposes using the District-approved calculation method specified in the federal PSD regulations at 40 CFR 52.21. The owner/operator shall ensure that the Modernization Project net emissions increase does not exceed any of the following PSD net emissions increase thresholds:

• NOx	40 tons/year
• CO	100 tons/year
• SOx	40 tons/year
• PM10	15 tons/year
• Hydrogen Sulfide	10 tons/year
• Total Reduced Sulfur	10 tons/year
• Reduced Sulfur Compounds	10 tons/year
• Sulfuric Acid Mist	7 tons/year

[Basis: Cumulative Increase, Rule 2-2-306, federal PSD regulations at 40 CFR 52.21]

107) The Owner/Operator of the sources listed in this part shall use the following District-approved data in order to demonstrate that the total Modernization Project net emissions increases do not exceed the PSD thresholds listed in part 106:

a) NOx and O2: District-approved continuous emissions monitors (CEMs) data and District-approved flow rate data for S-4471, S-4472, S-4436/S-4227, S-4437/S-4228, and S-4438/S-4229, or the permitted emissions rate, whichever is greater. Part 27 emission factor for S-6021 multiplied by flare gas flow.
b) CO and O2: District-approved continuous emissions monitors (CEMs) data and District-approved flow rate data for S-4471, S-4472, S-4436/S-4227, S-4437/S-4228, and S-4438/S-4229, or the permitted emissions rate, whichever is greater. Part 27 emission factor for S-6021 multiplied by flare gas flow.
c) SO2 (as SO2) and O2: District-approved continuous emissions monitors (CEMs) data and District-approved flow rate data for S-4436/S-4227, S-4437/S-4228, and S-4438/S-4229, or the permitted emissions rate, whichever is greater. Calculated per part 9c for S-4471 and S-4472. Part 27 emission calculation method (total sulfur in the vent gas multiplied by the flare gas flow assuming 100% conversion of TS to SO2 plus the flare pilot TS to SO2).
d) PM10: The owner/operator shall perform District-approved source tests for S-4471, S-4472, S-4436/S-4227, S-4437/S-4228, and S-4438/S-4229 under variable load conditions in order to demonstrate compliance with the permitted emissions rates and levels. The source test procedures including loads run per source shall be pre-approved by the District in accordance with the applicable parts of 109 through 117. In addition, for S-6021, PM10 emissions shall be calculated using the Part 27 emissions factors multiplied by District-approved flare gas flow
e) For Sulfuric Acid Mist, Hydrogen Sulfide, Total Sulfur, the Modernization Project will result in a net emission reductions from pre-project baseline. [Basis: Cumulative Increase, PSD]

108) The Owner/Operator of all of the Modernization Project sources shall submit a report to the District no later than 30 days from the end of each calendar month that demonstrates that the higher of either the permitted or actual total Modernization Project source net emissions increases do not exceed the PSD thresholds specified in part 106. [Basis: Reporting Requirements, PSD]

GENERAL RECORDKEEPING CONDITIONS

109) The Owner/Operator of all sources covered by this permit application (A/N 12842) shall maintain a District-approved log that contains all CEM and source test records and all records of fuel usage rates, fuel types, quantity of each type of fuel used at each source, heat content HHV of fuel (in Btu/scf), TS levels in fuels used, hours of operation (including each mode (dryout/warmup, commissioning, startup, shutdown), District-approved flow rate used in emissions estimates (scf/hour), hourly, daily and annual emissions estimates, and other records as specified by the APCO for the last 5 years of operation to verify compliance with Modernization Project permit conditions. [Basis: Recordkeeping]

110) The Owner/Operator of all sources covered by this permit application (A/N 12842) shall maintain the following in a District-approved log and shall keep these records on site for a period of at least 5 years from date of entry and make the records available to District

staff upon request (note the Hydrogen Plant Replacement Project is covered by similar conditions in parts 37 and 38). [Basis: Regulation 2-1-301, Recordkeeping]

In order to demonstrate compliance with part 77, the Owner/Operator of S-4454 #6H2S Plant Recycle Amine Regenerator shall maintain calendar day, monthly, and consecutive 12-month total H2S produced, in MMSCF, for the S-4454 Plant/Recycle Amine Regenerator;

In order to demonstrate compliance with part 80, the Owner/Operator of S-4253 shall maintain calendar day, monthly, and consecutive 12-month total material feed throughputs for the S-4253 TKC/FCC Feed Hydrotreater; and

In order to demonstrate compliance with part 79, the Owner/Operator of S-4490 shall maintain calendar day, monthly, and consecutive 12-month total sulfur loaded, in long tons, at the S-4490 Sulfur Loading Rack, Abated by A-310 Scrubber.

In order to demonstrate compliance with parts 81 through 95, the Owner/Operator of each Sulfur Recovery Units S-4227 through S-4229 shall maintain calendar day, monthly, and consecutive 12-month total material throughputs (in long tons) for each SRU, acid gas feed rates (MMscf), CEM data, H2S emissions, PM10 Sulfuric Acid Mist, records for work performed in part 86, source test results, combined annual emissions for part 90, the individual emissions limits for part 92, sulfuric acid mist from each stack for part 95, and fugitive H2S for part 95 for the S-4227 through S-4229

111) The Owner/Operator of all sources covered by this permit application (A/N 12842) shall submit a quarterly report to both the Compliance and Enforcement Division and Engineering Division no later than 60 days following the end of each calendar quarter addressing compliance with parts 9, 90, 92, and 95. Each quarterly report shall include for each source the source test dates in which limits of these conditions were exceeded. The District shall use this information to determine any periods of non-compliance with the emission limits.[Basis: Reporting Requirements]

112) In the absence of any specific permit condition, the owner/operator of all sources covered by this permit application (A/N 12842) shall maintain adequate records in order to demonstrate compliance with all parts of these conditions.

GENERAL SOURCE TESTING CONDITIONS

113) The Owner/Operator of all sources covered by this permit application (A/N 12842) shall provide District pre-approved stack sampling ports and platforms, the locations of which shall be subject to the pre-approval of the District. The owner/operator shall conduct only District pre-approved source tests using District pre-approved methods for all source tests to be approved by the District.
[Basis: Regulation 1-501]

114) Upon successful completion of the requirements of parts 109 through 111, the owner/operator of sources subject to parts 19, 90, 91, and 92 shall satisfy the TAC source test requirements by compliance with part 112. [Basis: Rule 2-5]

TAC/HAP SOURCE TESTING CONDITIONS

115) The Owner/Operator of all sources covered by this permit application (A/N 12842) shall conduct initial District-approved source tests to demonstrate compliance with the TAC mass emissions rates (including a full metals test) specified in parts 19, (not including benzene fugitives), and 95 (not including H2S fugitives). Each initial test shall be taken no later than 120 days from the date of initial startup of each source. The Owner/Operator shall conduct the District approved source tests in accordance with the applicable parts of 109 to 117. The Owner/Operator shall submit the source test results to the District staff no later than 60 days from the date of the source test. [Basis: Rule 2-5, Source Tests]

116) The Owner/Operator of all sources covered by this permit application (A/N 12842) shall conduct a District-approved source test annually following completion of each initial source test in part 115 to demonstrate compliance with the emission limits (including a full metals test) specified in parts 19, (not including benzene fugitives), and 95 (not including H2S fugitives). The owner/operator may be required by the APCO to conduct more frequent source tests if source test results indicate emissions are within 90% or exceeds any emissions or concentrations limits or any emissions limit associated with any of these sources. The Owner/Operator shall conduct the District approved source tests in accordance with the applicable parts of 109 to 117. The owner/operator shall conduct the annual emissions source tests at least 9 months apart. The owner/operator shall use maximum permitted annual throughput rates and the source test results in order to demonstrate compliance with annual limits, and maximum hourly throughput rates and the source test results in order to demonstrate compliance with hourly limits subject to District approval. The Owner/Operator shall submit the source test results to the District staff no later than 60 days from the date of the source test. Should any of these values exceed a part 19 (not including benzene fugitives), or 95 (not including H2S fugitives) emission limit, the current health risk screening assessment (HRSA) on file with the District for the Modernization Project demonstrating compliance that each source remains less than or equal to 0.20 chronic non-cancer hazard index and that each source's cancer risk remains less than or equal to 1.0 in a million, the owner/operator shall re-run the HRSA subject to District approval in order to determine compliance that each source remains less than or equal to 0.20 chronic non-cancer hazard index and that each source's cancer risk remains less than or equal to 1.0 in a million.

Within 60 calendar days from the date of the source test results, the owner/operator shall submit the results of the re-run HRSA to the District for approval. If the results of the re-run HRSA demonstrate non-compliance with the originally approved Rule 2-5 HRSA (which did not require TBACT and that each source remains less than or equal to 0.20 chronic non-cancer hazard index and that each source's cancer risk remains less than or equal to 1.0 in a million) on file at the District for the Modernization Project, then the owner/operator shall be considered to be in violation of both Rule 2-5 and 2-1-307 back to the date of the test.

If the results of the re-run HRSA demonstrate compliance that each source remains less than or equal to 0.20 chronic non-cancer hazard index and that each source's cancer risk remains less than or equal to 1.0 in a million, then the owner/operator shall submit a permit application to the District in order to change the TAC emission limit permit conditions, within 30 calendar days from the date of the re-run submittal.

[Basis: Rule 2-5, Source Tests]

117) The Owner/Operator of all sources covered by this permit application (A/N 12842) shall submit source test procedures to the District's Source Test Section at least 14 calendar days prior to conducting any source test required by these conditions. The Owner/Operator shall comply with all applicable testing requirements for continuous emissions monitors. The Owner/Operator shall notify the District's Source Test Section, in writing, of the source test protocols and projected test dates at least 7 days prior to testing. [Basis: cumulative increase, Rule 2-5]

118) Within 60-days after the issuance of the first building permit for the Hydrogen Plant Replacement following approval of the Conditional Use Permit for the Chevron Modernization Project (PLN11-089), the Owner/Operator of all sources covered by this permit application (# 12842) shall file a complete application with the BAAQMD to cause the Facility's Title V permit to be amended to reduce the maximum annual permitted throughout limit for the Solvent Deasphalting (SDA) plant (S-4251) from 56,000 barrels per day to 50,000 barrels per day on an annual average basis. [Basis: Condition B.2 in City of Richmond Conditional Use Permit Resolution Number 67-14 dated July 29, 2014]

S-6021/A-6021 FLARE SUPPLEMENTAL NATURAL GAS CONDITIONS

119. The owner/operator shall use only natural gas as a supplemental gas at flare S-6021/A-6021 in order to comply with the minimum Net Heating Value at combustion zone (NHVcz) of 270 Btu/scf, or a value approved by US-EPA. (Basis: NESHAP 40 CFR 63.670(e) - effective January 30, 2019 or the date of the APCO's approval of the facility's time extension request per 40 CFR 63.6(i)(6))

120. The owner/operator of the S-6021/A-6021 flare shall comply with all applicable requirements in 40 CFR 63.670 to ensure the S-6021/A-6021 flare operates in a manner that ensures that the S-6021/A-6021 flare achieves a hydrocarbon destruction efficiency of at least 98 wt.% POC on a mass basis. (Basis: NESHAP 40 CFR 63.670, Regulation 2-1-403)

121. The owner/operator shall limit the use of natural gas as supplemental gas to 97.8 MMscf in any consecutive 12-month period. Supplemental gas is the combined total of sweep and assist gas. (Basis: Regulation 2-1-320, 2-1-403)

122. To demonstrate compliance with part 121 of this permit condition, the owner/operator shall install a dedicated gas flow rate monitor for flare S-6021/A-6021 to measure the supplemental gas usage. (Basis: Regulation 2-1-403)

123. Where applicable, the owner/operator shall update and maintain the Flare Minimization Plan (FMP) as required by Regulation 12-12-404. (Basis: Regulation 12, Rule 12)

124. The owner/operator shall install and operate a continuous parametric monitoring system (CPMS) along with a CPMS monitoring plan as required by and consistent with 40 CFR 63.671(b). (Basis: NESHAP 40 CFR 63.671, Regulation 1-523)

125. The owner/operator of S-6021/A-6021 shall maintain all records and reports required by this permit condition in a District-approved log. The following records shall be kept on site and shall be made available for District inspection for a period of at least 5 years from the date on which a record is made. (Basis: Cumulative Increase, NESHAP 40 CFR 63.670(e), Regulation 2-1-403)
a. Total daily flow of supplemental gas and vent gas to the flare, summarized on a consecutive 12-month period basis.
b. Daily net heating value of the flare vent gas (NHVvg) and calculation of net heating value in the combustion zone (NHVcz).
c. Daily flare steam to vent gas ratio for S-6021/A-6021.

Recommendations

The proposed project is expected to comply with all applicable requirements of District, State, and Federal air quality related regulations. I recommend issuing an Authority to Construct permit for the alteration of the following source:

S-6021/A-6021 Hydrogen Plant Flare

_____ _____
Stanley Tom, P.E. Date
Air Quality Engineer

EVALUATION REPORT
Plant 10: Chevron Products Company
Application 29049: Vacuum Stripper Feed Furnace (S-4349)

Chevron Products Company (Chevron) has requested a Letter of Exemption for the following equipment:

S-4349: F-1650 Vacuum Stripper Feed Furnace
Equipped with 3 ultra low NOx burners with modified burner tips; Fuel: Natural gas
Burner make: John Zink Hamworthy; Burner model: COOLstar-13-ARIA
Firing orientation: Up-fired; Burner location: Floor
Design heat release: 3.33 MMBTU/hour/burner (HHV);
Total heat release: 9.99 MMBTU/hour
Location: Heavy Neutral Hydrofinisher (HNF)

S-4349 provides heat input into the Vacuum Stripper Column (C-1650), which separates and produces finished lube oil base stocks at the Heavy Neutral Hydrofinisher (S-4343). The District issued Chevron an AC on December 21st, 2017 to perform the following alterations:

1. Permanently make a fuel switch to natural gas from refinery fuel gas
2. Modify burner tips at 3 existing ultra low NOx burners
3. Reduce the total heat release rate of the furnace to 9.99 MMBTU/hour from 16.5 MMBTU/hour

The District issued Chevron a temporary PO on January 17th, 2018 to conduct source testing to demonstrate if S-4349 qualified for the exemption in Regulation 2-1-114.1.2. Table 1 summarizes source test results gathered from source tests performed at S-4349 between February 12th through 15th, 2018.

Table 1:
NOx and CO emissions gathered from February 2018 source tests

Condition	Number of burners	MMBTU/hour	CO				NOx			
			#/MMBTU	#/hour	#/day	TPY	#/MMBTU	#/hour	#/day	TPY
1	1	3.16	0.0795	0.251	6.03	1.10	0.0419	0.132	3.18	0.58
2	2	3.98	0.0614	0.244	5.86	1.07	0.0379	0.151	3.62	0.66
3	2	5.02	0.0539	0.271	6.49	1.19	0.0400	0.201	4.82	0.88
4	2	6	0.0562	0.337	8.09	1.48	0.0370	0.222	5.33	0.97
5	3	7.04	0.0478	0.337	8.08	1.47	0.0359	0.253	6.07	1.11
6	3	7.98	0.0463	0.369	8.87	1.62	0.0365	0.291	6.99	1.28
7	3	9.03	0.0510	0.461	11.05	2.02	0.0381	0.344	8.26	1.51
8	3	9.49	0.0501	0.475	11.41	2.08	0.0370	0.351	8.43	1.54

Table 2 summarizes TAC emissions from S-4349

Table 2:
TAC emissions associated with natural gas combustion

TAC	Emission factor		Emissions					
	#/MSCF	#/MMBTU	#/hour	Acute trigger (#/hour)	Exceeds Acute trigger?	#/year	Chronic trigger (#/year)	Exceeds Chronic trigger?
Benzene	2.10E-06	2.06E-06	2.06E-05	6.00E-02	No	1.80E-01	2.9	No
Formaldehyde	7.50E-05	7.35E-05	7.35E-04	1.20E-01	No	6.43E+00	1.40E+01	No
Toluene	3.40E-06	3.33E-06	3.33E-05	8.20E+01	No	2.92E-01	1.20E+04	No

Note:
1. TAC emission factors provided in Division Policy titled "Emission Factors for Toxic Air Contaminants from Miscellaneous Natural Gas Combustion Sources" dated September 7, 2005.
2. Heat release rate = 9.99 MMBTU/hour

It can be seen from Tables 1 and 2 that S-4349 can be exempted per Regulation 2-1-114.1.2 because:

1. Meets Regulation 2-1-319.1 because NOx and CO emissions are < 5 TPY/pollutant.
2. Meets Regulation 2-1-316 because it is not a new/modified source of TACs and doesn't trigger a HRA.
3. Meets Regulation 2-1-317 because it will not cause a public nuisance.
4. Meets Regulation 2-1-318 because it will not emit pollutants above quantities listed in regulation.

Recommendation

Issue Chevron a Letter of Exemption per Regulation 2-1-114.1.2 for the following equipment:

S-4349: F-1650 Vacuum Stripper Feed Furnace
Equipped with 3 ultra low NOx burners with modified burner tips; Fuel: Natural gas
Burner make: John Zink Hamworthy; Burner model: COOLstar-13-ARIA
Firing orientation: Up-fired; Burner location: Floor
Design heat release: 3.33 MMBTU/hour/burner (HHV);
Total heat release: 9.99 MMBTU/hour
Location: Heavy Neutral Hydrofinisher (HNF)

Changes to Title V permit that will be addressed in 2018 Title V Renewal A# 27756:

11. Delete from Table II.A.1
12. Because S-4349 is a "significant source" per Regulation 2-6-239 i.e., emits CO > 2 TPY, add to Table II.C "Exempt Equipment List".
13. Delete Tables IV.A.3.5 and VII.A.3.5
14. Delete references and pertinent parts in RLOP permit condition 469
15. Delete reference in permit condition 22923

_____
K. R. Bhagavan

Background

Chevron Products Company (Chevron) has proposed to alter the following equipment:

S-4349: F-1650 Vacuum Stripper Feed Furnace
Equipped with 3 burners; 5.5 MMBTU/hour/burner (HHV);
16.5 MMBTU/hour (HHV); 396 MMBTU/day (HHV); 144,540 MMBTU/year (HHV)
Location: Heavy Neutral Hydrofinisher (HNF)

S-4349 provides heat input into the Vacuum Stripper Column (C-1650), which separates and produces finished lube oil base stocks at the Heavy Neutral Hydrofinisher (S-4343). S-4349 is subject to the NOx and CO limits of 20 ppmv, dry, corrected to 3% O_2 and 50 ppmv, dry, corrected to 3% O_2, respectively in parts 6.E2 and 6.E3 of RLOP permit condition 469. Though Chevron is allowed by part 6.E1 of the above permit condition to burn natural gas or refinery fuel gas in S-4349, the furnace has always burned refinery fuel gas since starting up in October 1998.

Recent efficiency improvements to C-1650 found that the "typical" total heat release rate of S-4349 is < 5 MMBTU/hour for over 90% of the time on an annual basis. Annual source tests required by part 6.E4 of permit condition 469 show that Chevron was out of compliance with the NOx[52] and CO[53] emission limits in permit condition 469 when operating at lower total heat release rates. To continue operating S-4349, Chevron applied for a variance with the District's Hearing Board which is pending a January 2018[54] hearing.

To get back into compliance, Chevron has proposed to alter S-4349 by switching solely to natural gas (vs. refinery fuel gas), replacing the existing burner tips (not the burners themselves), and lowering the total heat release rate of the furnace to < 9.99 MMBTU/hour (vs. 16.5). These changes would potentially allow Chevron to avail themselves of the exemption in Regulation 2-1-114.1.2, which states:

"2-1-114 Exemption, Combustion Equipment:
The following equipment is exempt from the requirements of Sections 2-1-301 and 302, only if the source does not emit pollutants other than combustion products, and those combustion products are not caused by the combustion of a pollutant generated from another source, and the source does not require permitting pursuant to Section 2-1-319.

114.1 Boilers, Heaters, Steam Generators, Duct Burners, and Similar Combustion Equipment:

1.1 Any of the above equipment with less than 1 million BTU per hour rated heat input.

1.2 Any of the above equipment with less than 10 million BTU per hour rated heat input if fired exclusively with natural gas (including compressed natural gas), liquefied petroleum gas (e.g. propane, butane, isobutane, propylene, butylenes, and their mixtures), or any combination thereof."

After the changes described above are implemented, the furnace will be described as shown below:

S-4349: F-1650 Vacuum Stripper Feed Furnace
Equipped with 3 ultra low NOx burners with modified burner tips; Fuel: Natural gas
Burner make: John Zink Hamworthy; Burner model: COOLstar-13-ARIA
Firing orientation: Up-fired; Burner location: Floor
Design heat release: 3.33 MMBTU/hour/burner (HHV);
Total heat release: 9.99 MMBTU/hour
Location: Heavy Neutral Hydrofinisher (HNF)

Emission Calculations

[52] OS-6760 → source test date April 7, 2017 → NOx = 39.5 ppmvd @ 3% O2 (permit limit 20 ppmvd @ 3% O2)
[53] OS-6822 → source test date May 3, 2017 → CO = 144 ppmvd @ 3% O2 (permit limit 50 ppmvd @ 3% O2)
[54] Docket # 3702 → interim variance hearing (Jan. 16, 2018) and regular variance hearing (Jan. 23, 2018)

S-4349 was evaluated as a "new" source under Application 16876 and was issued an Authority to Construct (AC) and Permit to Operate (PO) on July 3rd, 1997 and December 12th, 1998, respectively. Emissions were estimated assuming a firing rate of 9.982 MMBTU/hour (LHV) with NOx and CO emission rates of 0.036 #/MMBTU and 0.037 #/MMBTU, respectively. Chevron submitted Application 7025 in February 2003 and requested that the firing rate be expressed in higher heating value (HHV). Because the above change did not result in an increase in emissions, the District revised S-4349's firing rate to 11 MMBTU/hour (HHV) and issued Chevron a PO on March 4th, 2003.

In speaking to Chevron's process engineers assigned to the HNF area after Chevron submitted their 2017 variance request, staff determined that the efficacy of C-1650 was compromised following a turnaround in 2004. In September 2004, Chevron submitted Application 10798 to increase S-4349's firing rate as part of the Three Stage Upgrade to Richmond Base Oil Project (TURBO). The District increased the permitted firing rate of S-4349 to 16.5 MMBTU/hour (HHV) from 11 MMBTU/hour (HHV) and issued Chevron a PO on October 24th, 2005. Because the above change could potentially result in increased NOx and CO emissions and "modify" S-4349, the District required Chevron to install low NOx burners and reduced the NOx limit from 30 ppmv, dry, corrected to 3% O_2 to 20 ppmv, dry, corrected to 3% O_2 in part 6.E2 of RLOP permit condition 469 to ensure there was "no net increase" in NOx emissions. Though CO emissions increased, no changes were made to the permitted CO limit since it met BACT. The permitted NOx and CO emissions memorialized in parts 6.E2 and 6.E3 of RLOP permit condition 469 translated to 9.62 lb/day (1.76 TPY) and 14.64 lb/day (2.67 TPY), respectively.

Per information submitted by Chevron, the "typical" total heat release rate of S-4349 is <5 MMBTU/hour over 90% of the time on an annual basis. However, John Zink Hamworthy (JZH) – the burner manufacturer who will be modifying the burner tips to the 3 existing ultra low NOx "COOLstar-13-ARIA" burners has "predicted" (vs. guaranteed) NOx and CO emissions. Because JZH can only guarantee NOx and CO emissions after gathering field data, Chevron will have to conduct District approved source tests required by the proposed permit conditions at different total heat release rates after modifying the burner tips to the 3 existing ultra low NOx burners. In the absence of "guaranteed" emission rates and source testing required by the proposed permit conditions when burning natural gas, this evaluation report assumes S-4349 is an altered source until such time Chevron implements the proposed alterations and source tests the furnace. The District will use the source test results to determine if S-4349 is an exempt (per Regulation 2-1-114.1.2), altered (per Regulation 2-1-233), or modified (per Regulation 2-1-234) source.

The source is considered altered because the firing rate is decreasing from 16.5 MMBtu/hr to 9.99 MMBtu/hr and the unit will be fired solely on natural gas versus refinery fuel gas, therefore emissions should decrease.

Cumulative Increase, BACT, and Offsets

Because the source is altered, there will be no cumulative increase, BACT is not triggered and no offsets are owed.

Toxic Health Risk Assessment (HRA)

Table 2 summarizes post-project toxic air contaminant (TAC) emissions from S-4349.

Table 2:
TAC emissions associated with natural gas combustion

TAC	Emission factor		Emissions					
	#/MSCF	#/MMBTU	#/hour	Acute trigger (#/hour)	Exceeds Acute trigger?	#/year	Chronic trigger (#/year)	Exceeds Chronic trigger?
Benzene	2.10E-06	2.06E-06	2.06E-05	6.00E-02	No	1.80E-01	2.9	No
Formaldehyde	7.50E-05	7.35E-05	7.35E-04	1.20E-01	No	6.43E+00	1.40E+01	No
Toluene	3.40E-06	3.33E-06	3.33E-05	8.20E+01	No	2.92E-01	1.20E+04	No

Note:
TAC emission factors provided in Division Policy titled "Emission Factors for Toxic Air Contaminants from Miscellaneous Natural Gas Combustion Sources" dated September 7, 2005.

It can be seen from Table 2 that a HRA is not required because TAC emissions are below their acute and/or chronic TAC trigger levels.

Statement of Compliance

Per SIP Regulation 9-10-220, S-4349 is exempt from Regulation 9, Rule 10 because it was reviewed as a new source after January 5, 1994 (Application 16876 was received by the District on October 15, 1996). Because S-4349 did not trigger BACT under Application 16876 it did not qualify for the exemption in Regulation 9-10-110.6. Therefore, the only emission limits that S-4349 is subject to are the NOx and CO limits of 20 ppmv, dry, corrected to 3% O_2 and 50 ppmv, dry, corrected to 3% O_2, respectively in parts 6.E2 and 6.E3 of RLOP permit condition 469. S-4349 is not equipped with NOx and/or CO CEMS, and is subject to Regulation 6-1-301, 305, 310 and the fuel gas H_2S concentration limit of 0.10 gr/dscf in NSPS Subpart J (NSPS J).

If the proposed fuel switch to natural gas (from refinery fuel gas) and the proposed replacement of the burner tips at the 3 existing ultra low NOx burners at S-4349 demonstrates via District approved source testing that the furnace is exempt per Regulation 2-1-114.1.2, S-4349 will become subject to Regulation 9-10 and will have to comply with the "small unit" requirements in Regulation 9-10-306. This is so because the above exemption exempts a source from permit requirements but does not absolve it from complying with applicable District rules. Chevron will comply with Regulation 9-10 via Regulation 9-10-306.2. Per §60.101(d) in NSPS J, if natural gas combusted in S-4349 will not be combined and combusted in any proportion with a gas generated at the refinery it appears the fuel gas H_2S concentration limit of 0.10 gr/dscf will not apply.

PSD does not apply to this application.

S-4349 is a process heater as defined in Regulation 9-10-214. Therefore, this application is considered ministerial for CEQA since this source category is covered in Permit Handbook Chapter 2.1. Chevron has also submitted CEQA Appendix H "Environmental Information Form".

PERMIT CONDITIONS

Chevron Richmond Refinery (Plant # 10)
S-4349 (F-1650)
Application 24994 – December 2017

12. This Authority to Construct permits the owner/operator of S-4349 (F-1650: Vacuum Stripper Feed Furnace) to exclusively burn natural gas and replace the burner tips at three existing ultra low NOx burners such that the total heat release rate of the furnace does not exceed 9.99 MMBTU/hour (HHV). (Basis: Cumulative Increase).

13. Within 24-hours of implementing the changes described in Part 1 of this Permit Condition, the owner/operator of S-4349 shall notify the District's assigned permit engineer by submitting a written startup notification (that is part of the Authority to Construct) and the Director of the Compliance and Enforcement Division. The District's assigned permit engineer shall issue the owner/operator a Temporary Permit to Operate, which will expire within 90-days from the date of issuance. (Basis: Regulations 2-1-302.3.4.1, 2-1-403)

14. During the 90-day term of the Temporary Permit to Operate, the owner/operator of S-4349 shall conduct District-approved source tests at S-4349 for NOx and CO at total heat release rates ranging from 3 MMBTU/hour to 9.99 MMBTU/hour. Specifically, the owner/operator shall conduct seven individual source tests in 1 MMBTU/hour increments when operating S-4349 at total heat release rates between 3 MMBTU/hour through 9 MMBTU/hour and shall conduct the eighth source test when S-4349's total heat release rate is 9.99 MMBTU/hour. All eight source tests shall be conducted for the block switch scenario (such as 100 R, 220R, 600 R) that will yield the highest NOx and CO emissions.

    The owner/operator shall monitor, record, and report to the District the following process parameters for each source test run at S-4349:

    v. Duration of the test run

    vi. Total heat release rate

    vii. Block switch

    viii. Raw % oxygen

    The owner/operator shall ensure that all source tests required by this Permit Condition are conducted while S-4349 is processing a saleable product. The owner/operator shall conduct all source tests required by this Permit Condition under normal/ representative operational conditions unless other conditions are required by the applicable test method or in this permit.

    Upon completion of each District-approved source test, the owner/operator shall determine and report the NOx and CO emission factors on a lb/MMBTU basis, the corresponding NOx and CO concentrations measured during each source test run and the average of three source test runs to the District's Source Test Section for review and approval.
    (Basis: Regulations 2-1-302.3.4.1, 2-1-403)

15. Prior to conducting the source tests required by Parts 3 and 7 of this Permit Condition, the owner/operator shall submit a source test protocol for approval to the District's Source Test Section. The owner/operator shall notify the Manager of the District's Source Test Section and the District's assigned permit engineer at least seven (7) days prior to the test, to provide the District staff the option of observing the testing. Within 30 days of test completion, a comprehensive report of the test results shall be submitted to the Manager of the District's Source Test Section for review and disposition. The owner/operator shall retain records of source test results and any related correspondence with the District's Source Test Section and the District's assigned permit engineer on-site for at least 5 years from the date of the document, and shall make the records available to District staff for inspection upon request. (Basis: Regulations 2-6-501 and 2-6-503)

16. The owner/operator shall use the NOx and CO emission factors determined via source testing on a lb/MMBTU basis in concert with the each one of the eight total heat release rates

(3 MMBTU/hour through 9 MMBTU/hour and 9.99 MMBTU/hour) on a MMBTU/hour basis required by Part 3 of this Permit Condition to determine the corresponding hourly, daily, and annual mass emissions in lb/hour, lb/day (lb/hour x 24 hours/day), and tons/year (lb/day x 365 days/year ÷ 2000), respectively. The owner/operator shall retain the records of the emission factors, heat release rates, and associated emission calculations on site for five years from the date of entry, and shall make the records available to District staff for inspection upon request.
(Basis: Regulations 2-1-403 and 2-6-501)

17. If daily emissions of NOx and CO for any one and/or all of the eight total heat release rates (3 MMBTU/hour through 9 MMBTU/hour and 9.99 MMBTU/hour) calculated in accordance with Part 5 of this Permit Condition exceeds 9.62 lb/day and 14.64 lb/day, respectively but are less than or equal to 5 tons/year per pollutant, S-4349 shall be considered an exempt source provided the owner/operator demonstrates all exemption criteria set forth in Regulation 2-1-114.1.2 are satisfied. The owner/operator shall notify and request the District's assigned permit engineer to grant S-4349 a Letter of Exemption.
(Basis: Regulations 2-1-114.1.2, 2-1-403, and 2-6-501)

18. If daily emissions of NOx and CO for any one and/or all of the eight total heat release rates (3 MMBTU/hour through 9 MMBTU/hour and 9.99 MMBTU/hour) calculated in accordance with Part 5 of this Permit Condition exceeds 9.62 lb/day and 14.64 lb/day, respectively and are greater than 5 tons/year per pollutant, S-4349 shall be considered a modified source and shall be subject to Best Available Control Technology (BACT) requirements for the pollutant that exceeded the daily and annual emission limits. The owner/operator shall notify and contact the District's assigned permit engineer within 24-hours of triggering the BACT requirements and shall reduce the total heat release rate at S-4349 in a manner that ensures daily emissions for the pollutant that triggered BACT remains below 10 lb/day. S-4349 shall be operated in this curtailed mode until such time the owner/operator submits a permit application to the District to evaluate BACT. The owner/operator shall install BACT compliant controls after receiving the District's written authorization. The owner/operator shall follow the source test procedures outlined in Part 4 of this Permit Condition and shall be allowed to resume normal operations only after the efficacy of the installed control technology is demonstrated to the APCO's satisfaction via District approved source testing.
(Basis: Regulations 2-1-234.1.1, 2-1-403, 2-2-301, and 2-6-501)

19. S-4349 shall be considered an altered source only if daily and annual NOx emissions for all eight total heat release rates (3 MMBTU/hour through 9 MMBTU/hour and 9.99 MMBTU/hour) calculated in accordance with Part 5 of this Permit Condition are below 9.62 lb/day and 1.76 tons/year, respectively, and if daily and annual CO emissions for all eight total heat release rates (3 MMBTU/hour through 9 MMBTU/hour and 9.99 MMBTU/hour) calculated in accordance with Part 5 of this Permit Condition are below 14.64 lb/day and 2.67 tons/year, respectively.
(Basis: Regulations 2-1-233, 2-1-403)

End of Condition

Recommendation

Issue Chevron an Authority to Construct to alter the following:

S-4349: F-1650 Vacuum Stripper Feed Furnace
Equipped with 3 ultra low NOx burners with modified burner tips; Fuel: Natural gas
Burner make: John Zink Hamworthy; Burner model: COOLstar-13-ARIA
Firing orientation: Up-fired; Burner location: Floor
Design heat release: 3.33 MMBTU/hour/burner (HHV);
Total heat release: 9.99 MMBTU/hour
Location: Heavy Neutral Hydrofinisher (HNF)

The alterations to S-4349 would allow Chevron to do the following:

Permanently make a fuel switch to natural gas
Modify burner tips at 3 existing ultra low NOx burners
Reduce the total heat release rate of the furnace to 9.99 MMBTU/hour

_____
K. R. Bhagavan

Engineering Evaluation Report
Chevron Products Company, Plant #10
841 Chevron Way, Richmond, CA
Application #29160

Background
Chevron Products Company, ("Applicant") would like to install supplemental natural gas pipelines to existing sources S-6010, S-6012, S-6013, S-6015, S-6016, S-6019, S-6039 flares. This project is required to meet the flare control efficiency requirement of EPA new MACT CC flare standards, NESHAP 40 CFR 63 Part CC, which will be effective on January 30, 2019. EPA found that the net heating value in the combustion zone (NHVcz) above 270 BTU/scf ensures 98% destruction efficiency for steam assisted flares. The NHVcz limit is based on the concept that excess steam in the combustion zone dilutes the combustible material and decreases the destruction efficiency of the flare. Therefore, the NHVcz limit essentially requires refineries to optimize their steam to vent gas ratios, and if necessary, supplement refinery gas with natural gas if the refinery vent gas/steam combination cannot meet the minimum 270 BTU/scf limit alone.

The proposed natural gas piping will be occasionally used to supply supplemental gas to raise net heating value of the flare gas in the combustion zone, ensuring 98% flare destruction efficiency and reduced flare emissions when BTU content of flare gas would otherwise be too low. The project is to comply with the 40 CFR 63.670(e), 270 Btu/scf net heating value (NHVcz) minimum limit at combustion zone.

The applicant proposes to connect a supplemental natural gas line, from the Refinery's natural gas supply line, to each flare's relief header. The diameter of the natural gas line is to be determined pending engineering evaluation. The natural gas will be combusted as needed to meet the MACT CC standards. The table below summarizes the proposed maximum natural gas flow to each flare and the proposed length of piping and number of fugitive components to be added.

Flare Description	Source Number	Maximum Natural Gas Flow to Flare Header (lb/hr)	Proposed Additional Natural Gas Pipe Length (ft)	Proposed Additional Natural Gas Fugitive Components - Valves	Proposed Additional Natural Gas Fugitive Components - Flanges
LSFO	S-6010	7,774	800	6	21
D&R	S-6015	9,993	240	7	23
NISO	S-6013	14,689	80	8	19
SISO	S-6012	14,690	25	9	18
FCC	S-6016	14,688	112	10	17
ALKY	S-6019	14,688	116	11	16
RLOP	S-6039	17,233	153	12	15

Since this permit is necessary for modifying an existing source in order to comply with emission regulations, this project is exempt from new and modified sources as set forth in Sections 2-2-301 (BACT) or 2-2-302 or 2-2-303 (offsets) per Exemption of Regulation 1-115.

1-115 Exemption, Modification to Meet Emission Standards: When permits are necessary for modifying an existing source in order to comply with emission regulations such modifications shall not subject the existing source to emission standards for new or modified plants as set forth in Section 2-2-301 or 2-2-302 or 2-2-303 of Regulation 2, Permits.

This application is considered an alteration to the existing permit pursuant to Regulation 2-1-233.

Project Description
Chevron has provided P&ID to show the new fugitive components that will be added to configure the new natural gas lines to the flares.

The project will involve relocating all existing vent gas flow meters upstream of their current location to meet vent gas flow measurement accuracy requirements as recommended by the vent gas flow meter manufacturer. Consequently, the connection points of any existing lines to the main relief lines, between the current vent gas flow meter location and the proposed upstream location, will also need to be relocated upstream to ensure the proposed locations of the vent gas flow meters capture all vent gas sent to the flares. Only the main relief headers of the RLOP, ALKY, and FCC flares have existing line connection points that need to be relocated. The work includes the following activities:

- Relocating the existing 30” line that connects the Alky flare main relief line to the FCC main relief line upstream. The diameter of this line will remain unchanged. There is no other equipment between the existing and future locations.
- Relocating the V-1890 (Sour Water/Oil Skimmer) relief line connection to the RLOP main relief line upstream. The diameter of this line will remain unchanged. There is no other equipment between the existing and the future locations.
- Disconnecting the V-1890 relief line from the FCC main relief line and reconnecting the V-1890 relief line to the Alky main relief line. The diameter of this line will remain unchanged. There is no other equipment between the existing and the future locations.
- Relocating the flare gas recovery line connections to the FCC, Alky, and RLOP flare main relief lines upstream. The diameters of these lines will remain unchanged. There is no other equipment between the existing and the future locations.

In addition, the project is planning to have the following activities in the steam system:

- Adjusting some steam piping length to allow flow meter installation and accuracy
- Adding new control valves or adjusting current control valves to control steam injection rates for different flaring situations.

The project is also planning to replace the purge gas meters on the flares with new rotameters in order the meet accuracy requirements.

The changes mentioned above will be included in a Flare Minimization Plan (FMP) update.

The project will not alter production or feed rates in any processing units.

Criteria Pollutant Emission Calculations
Since the project is exempt from offsets per Regulation 1-115, the emission calculation shown below is for information only. It will not be added to the cumulative increase to avoid confusion. In addition, the calculation only addresses fugitive emissions from the new piping and combustion emissions from combusting the supplemental natural gas supplied by the piping. It does not account for the emission reductions that would result from increases in flare combustion efficiency when the supplied natural gas is combusted along with flare gases having a heating value below 270 Btu/scf.

Fugitive Emissions from New Piping containing Natural Gas
According to Section V page 23 of the California Implementation Guidelines for Estimating Mass Emissions of Fugitive Hydrocarbon Leaks at Petroleum Facilities document (California Air Pollution Control Officer Association (CAPCOA) February 1999), components handling commercial natural gas are not included in component counts used for the quantification of fugitive emissions. The refinery receives natural gas from Pacific Gas & Electric. The supplemental natural gas to the flares comes from the main PG&E line.

Natural Gas Supplemental Combustion Emissions
Criteria pollutant emissions for VOC, PM10 were based on EPA AP-42 factors (Table 1.4-2) for natural gas combustion, dated 7/98.

- Heat capacity = 920 MMBtu/10^6 ft^3 natural gas as specified in 40 CFR 63.670(j)(5)
- Assume annual amount of supplemental natural gas to each flare will be equivalent to 12 hours per year at the maximum rate (applicant proposal)

LSFO Flare (S-6010)						
Natural Gas Combustion	Supplemental Natural Gas Flow Rate	Emission Factor	Emission Rate			
Pollutant	MMscf/hr	lb/MMscf	lb/MMBtu	lb/day	lb/yr	tons/yr
NOx	0.178	50.0	5.43E-02	106.8	106.8	0.053
CO		84.0	9.13E-02	179.4	179.4	0.090
VOC		5.5	5.98E-03	11.7	11.7	0.0059
PM10		7.6	8.26E-03	16.2	16.2	0.0081
SO2		0.6	6.52E-04	1.3	1.3	0.00064
Benzene		2.1E-03	2.28E-06	4.49E-03	4.49E-03	2.24E-06
Formaldehyde		7.5E-02	8.15E-05	1.60E-01	1.60E-01	8.01E-05
Toluene		3.4E-03	3.70E-06	7.26E-03	7.26E-03	3.63E-06

D&R Flare (S-6015)						
Natural Gas Combustion	Supplemental Natural Gas Flow Rate	Emission Factor	Emission Rate			
Pollutant	MMscf/hr	lb/MMscf	lb/MMBtu	lb/day	lb/yr	tons/yr
NOx	0.228	50.0	5.43E-02	136.8	136.8	0.068
CO		84.0	9.13E-02	229.8	229.8	0.115
VOC		5.5	5.98E-03	15.0	15.0	0.0075
PM10		7.6	8.26E-03	20.8	20.8	0.0104
SO2		0.6	6.52E-04	1.6	1.6	0.00082
Benzene		2.1E-03	2.28E-06	5.75E-03	5.75E-03	2.87E-06
Formaldehyde		7.5E-02	8.15E-05	2.05E-01	2.05E-01	1.03E-04
Toluene		3.4E-03	3.70E-06	9.30E-03	9.30E-03	4.65E-06

NISO Flare (S-6013)						
Natural Gas Combustion	Supplemental Natural Gas Flow Rate	Emission Factor	Emission Rate			
Pollutant	MMscf/hr	lb/MMscf	lb/MMBtu	lb/day	lb/yr	tons/yr
NOx	0.336	50.0	5.43E-02	201.6	201.6	0.10
CO		84.0	9.13E-02	338.7	338.7	0.17
VOC		5.5	5.98E-03	22.2	22.2	0.011
PM10		7.6	8.26E-03	30.6	30.6	0.015
SO2		0.6	6.52E-04	2.4	2.4	0.0012
Benzene		2.1E-03	2.28E-06	8.47E-03	8.47E-03	4.23E-06
Formaldehyde		7.5E-02	8.15E-05	3.02E-01	3.02E-01	1.51E-04
Toluene		3.4E-03	3.70E-06	1.37E-02	1.37E-02	6.85E-06

SISO Flare (S-6012)

Natural Gas Combustion	Supplemental Natural Gas Flow Rate	Emission Factor	Emission Rate			
Pollutant	MMscf/hr	lb/MMscf	lb/MMBtu	lb/day	lb/yr	tons/yr
NOx	0.336	50.0	5.43E-02	201.6	201.6	0.10
CO		84.0	9.13E-02	338.7	338.7	0.17
VOC		5.5	5.98E-03	22.2	22.2	0.011
PM10		7.6	8.26E-03	30.6	30.6	0.015
SO2		0.6	6.52E-04	2.4	2.4	0.0012
Benzene		2.1E-03	2.28E-06	8.47E-03	8.47E-03	4.23E-06
Formaldehyde		7.5E-02	8.15E-05	3.02E-01	3.02E-01	1.51E-04
Toluene		3.4E-03	3.70E-06	1.37E-02	1.37E-02	6.85E-06

FCC Flare (S-6016)						
Natural Gas Combustion	Supplemental Natural Gas Flow Rate	Emission Factor	Emission Rate			
Pollutant	MMscf/hr	lb/MMscf	lb/MMBtu	lb/day	lb/yr	tons/yr
NOx	0.336	50.0	5.43E-02	201.6	201.6	0.10
CO		84.0	9.13E-02	338.7	338.7	0.17
VOC		5.5	5.98E-03	22.2	22.2	0.011
PM10		7.6	8.26E-03	30.6	30.6	0.015
SO2		0.6	6.52E-04	2.4	2.4	0.0012
Benzene		2.1E-03	2.28E-06	8.47E-03	8.47E-03	4.23E-06
Formaldehyde		7.5E-02	8.15E-05	3.02E-01	3.02E-01	1.51E-04
Toluene		3.4E-03	3.70E-06	1.37E-02	1.37E-02	6.85E-06

Alky Flare (S-6019)						
Natural Gas Combustion	Supplemental Natural Gas Flow Rate	Emission Factor	Emission Rate			
Pollutant	MMscf/hr	lb/MMscf	lb/MMBtu	lb/day	lb/yr	tons/yr
NOx	0.336	50.0	5.43E-02	201.6	201.6	0.10
CO		84.0	9.13E-02	338.7	338.7	0.17
VOC		5.5	5.98E-03	22.2	22.2	0.011
PM10		7.6	8.26E-03	30.6	30.6	0.015
SO2		0.6	6.52E-04	2.4	2.4	0.0012
Benzene		2.1E-03	2.28E-06	8.47E-03	8.47E-03	4.23E-06
Formaldehyde		7.5E-02	8.15E-05	3.02E-01	3.02E-01	1.51E-04
Toluene		3.4E-03	3.70E-06	1.37E-02	1.37E-02	6.85E-06

RLOP Flare (S-6039)						
Natural Gas Combustion	Supplemental Natural Gas Flow Rate	Emission Factor	Emission Rate			
Pollutant	MMscf/hr	lb/MMscf	lb/MMBtu	lb/day	lb/yr	tons/yr
NOx	0.394	50.0	5.43E-02	236.4	236.4	0.12
CO		84.0	9.13E-02	397.2	397.2	0.20
VOC		5.5	5.98E-03	26.0	26.0	0.013
PM10		7.6	8.26E-03	35.9	35.9	0.018
SO2		0.6	6.52E-04	2.8	2.8	0.0014
Benzene		2.1E-03	2.28E-06	9.93E-03	9.93E-03	4.96E-06
Formaldehyde		7.5E-02	8.15E-05	3.55E-01	3.55E-01	1.77E-04
Toluene		3.4E-03	3.70E-06	1.61E-02	1.61E-02	8.04E-06

LSFO Flare (S-6010)							
GHG Emissions	Supplemental Natural Gas Flow Rate	Emission factor	Emissions				
Pollutant	MMscf/hr	lb/MMscf	lb/MMBtu	lb/yr	tons/yr	GWP	Metric ton/yr
Methane	0.178	2.3	2.50E-03	4.91E+00	0.0025	21	0.1
N2O		2.2	2.39E-03	4.70E+00	0.0023	310	0.7
CO2		120000	1.30E+02	2.56E+05	128.2	1	128.2
Total eCO2							128.9

D&R Flare (S-6015)							
GHG Emissions	Supplemental Natural Gas Flow Rate	Emission factor	Emissions				
Pollutant	MMscf/hr	lb/MMscf	lb/MMBtu	lb/yr	tons/yr	GWP	Metric ton/yr
Methane	0.228	2.3	2.50E-03	6.29E+00	0.0031	21	0.1
N2O		2.2	2.39E-03	6.02E+00	0.0030	310	0.9
CO2		120000	1.30E+02	3.28E+05	164.2	1	164.2
Total eCO2							165.2

NISO Flare (S-6013)							
GHG Emissions	Supplemental Natural Gas Flow Rate	Emission factor	Emissions				
Pollutant	MMscf/hr	lb/MMscf	lb/MMBtu	lb/yr	tons/yr	GWP	Metric ton/yr
Methane	0.336	2.3	2.50E-03	9.27E+00	0.0046	21	0.1
N2O		2.2	2.39E-03	8.87E+00	0.0044	310	1.4
CO2		120000	1.30E+02	4.84E+05	241.92	1	241.9
Total eCO2							243.4

SISO Flare (S-6012)							
GHG Emissions	Supplemental Natural Gas Flow Rate	Emission factor	Emissions				
Pollutant	MMscf/hr	lb/MMscf	lb/MMBtu	lb/yr	tons/yr	GWP	Metric ton/yr
Methane	0.336	2.3	2.50E-03	9.27E+00	0.0046	21	0.1
N2O		2.2	2.39E-03	8.87E+00	0.0044	310	1.4
CO2		120000	1.30E+02	4.84E+05	241.92	1	241.9
Total eCO2							243.4

FCC Flare (S-6016)							
GHG Emissions	Supplemental Natural Gas Flow Rate	Emission factor	Emissions				
Pollutant	MMscf/hr	lb/MMscf	lb/MMBtu	lb/yr	tons/yr	GWP	Metric ton/yr
Methane	0.336	2.3	2.50E-03	9.27E+00	0.0046	21	0.1
N2O		2.2	2.39E-03	8.87E+00	0.0044	310	1.4
CO2		120000	1.30E+02	4.84E+05	241.92	1	241.9
Total eCO2							243.4

Alky Flare (S-6019)							
GHG Emissions	Supplemental Natural Gas Flow Rate	Emission factor	Emissions				
Pollutant	MMscf/hr	lb/MMscf	lb/MMBtu	lb/yr	tons/yr	GWP	Metric ton/yr
Methane	0.336	2.3	2.50E-03	9.27E+00	0.0046	21	0.1
N2O		2.2	2.39E-03	8.87E+00	0.0044	310	1.4
CO2		120000	1.30E+02	4.84E+05	241.92	1	241.9
Total eCO2							243.4

RLOP Flare (S-6039)

GHG Emissions	Supplemental Natural Gas Flow Rate	Emission factor	Emissions				
Pollutant	MMscf/hr	lb/MMscf	lb/MMBtu	lb/yr	tons/yr	GWP	Metric ton/yr
Methane	0.394	2.3	2.50E-03	1.09E+01	0.0054	21	0.1
N2O		2.2	2.39E-03	1.04E+01	0.0052	310	1.6
CO2		120000	1.30E+02	5.67E+05	283.68	1	283.7
Total eCO2							285.4

Reductions from Increased Combustion Efficiency

As noted above, these calculations do not account for the emission reductions that would come from improved combustion efficiency, which would likely outweigh the minor increases shown in the tables above.

Cumulative Increase
The District tracks increases in emissions from each facility. These cumulative emissions were reset on April 5, 1991 for all facilities. This is an existing facility with pre-existing cumulative emissions.

The cumulative increase for this application is zero for all pollutants.

Statement of Compliance

Regulation 1: General Provisions and Definitions
The flares are subject to and expected to be in compliance with Regulation 1-523 Parametric Monitor. The applicant will install a flow meter on each of the new natural gas line.

Regulation 2, Rule 1: California Environmental Quality Act (CEQA) Requirements
District Regulation 2, Rule 1, Section 310 specifies that all proposed new and modified sources subject to District permit requirements must be reviewed in accordance with CEQA requirements, except for ministerial projects or projects exempt from CEQA under Section 2-1-312.

The applicant has submitted the Environmental Information Form in Appendix H

The Air District's permit action is categorically exempt from CEQA because it permits a minor modification of an existing use and does not authorize any expansion of that existing use (CEQA § 21084; Guidelines § 15301). The Air District has determined that this action is also exempt from CEQA review as an action by a regulatory agency for protection of natural resources (CEQA § 21083; Guidelines § 15307). In addition, Air District Regulation 2-1-312.3 exempts "Permit applications for projects undertaken for the sole purpose of bringing an existing facility into compliance with newly adopted regulatory requirements of the District or of any other local, state or federal agency".

Reasons for Exemption: The Air District's permit action is exempt because it permits only a minor alteration of an existing use. The project does not entail any expansion of the existing sources or their existing use. It also implements requirements in the new U.S. EPA MACT CC flare standards that are intended to protect air quality. In addition, the project is being undertaken for the sole purpose of bringing an existing facility into compliance with newly adopted regulatory requirements.

Regulation 2, Rule 1: School Public Notice Requirements
The public notification requirements of Regulation 2-1-412 apply to modifications which result in an increase in toxic air contaminant or hazardous air contaminant emission at facilities within 1,000 feet of the boundary of a K-12 school. The Applicant has reported no K-12 school within that radius of this facility, and the District's database confirms that there is no K-12 school within one mile from the facility. Therefore, the public notice requirements do not apply to this operation.

Regulation 2, Rule 2: Best Available Control Technology (BACT) Requirements
BACT does not apply to all sources mentioned above per Regulation 1-115, Exemption. However, the flares meet the BACT guideline with control efficiency greater than or equal to 98%, which EPA ensured by its NHVcz standard of minimum 270 Btu/scf.

Regulation 2, Rule 2: Offsets
Offsets does not apply to all sources mentioned above per Regulation 1-115, Exemption.

Regulation 2, Rule 2: Prevention of Significant Deterioration (PSD)
Regulations 2-2-304 through 309 and 2-2-315 apply to PSD facilities. Sites belonging to one of the 28 PSD source categories listed in section 169(l) of the federal Clean Air Act have a PSD threshold of 100 tons/year for each regulated air pollutant and must include fugitive emissions when making a PSD major facility determination. However, sites that fall within unlisted categories (such as landfill facilities) have a PSD major facility threshold of 250 tons/year for each regulated air pollutant and may exclude fugitive emissions when making this major facility determination. The increase in emissions in this project do not exceed the major modification thresholds. Therefore, this project is not subject to PSD requirements.

Regulation 2, Rule 2: Maximum Available Control Technology (MACT)
The flares are not subject to 40 CFR 60, Subpart GGGa standard of Performance for Equipment Leaks of VOC in Petroleum Refineries because the new natural gas lines are not a process unit as defined.

The flares are subject to and expected to comply with the following Section 112 of the Clean Air Act, New Source Performance Standards and National Emission Standards for Hazardous Air Pollutants (NESHAP).

- 40 CFR Part 60, Subpart A – General Provisions
- 40 CFR Part 60, Subpart J – Petroleum Refineries
- 40 CFR Part 60, Subpart Ja – Petroleum Refineries

- 40 CFR Part 63, Subpart A – General Provisions
- 40 CFR Part 63, Subpart CC – Petroleum Refineries: Requirements for Flare Control Devices and Flare Monitoring Systems40 CFR 63.670(e) – requires the minimum net heating value at combustion zone (NHV)cz to be at least 270 Btu/scf.
  - 40 CFR 63.670(i) – requires the supplemental gas flow rate to be monitored
  - 40 CFR 63.670 (o) – requires the Flare Minimization Plan (FMP)
  - 40 CFR 63.670 (p) and (q) - requires flare reporting and recordkeeping requirements of 40 CFR 63.655 (g)(11) and 655 (i)(9)
  - 40 CFR 63.671 – requires Continuous Parametric Monitor (CPMs)

Regulation 2, Rule 2: Major Modification of a Major Facility
Section 2-2-221 defines Major Modification as any modification, as defined in Regulation 2-1-234, at an existing major facility that the APCO determines will cause an increase of the facility's emissions by the following amounts or more:

POC: 40 tons per year
NOx: 40 tons per year
SO2: 40 tons per year
PM10: 15 tons per year
CO: 100 tons per year

This application is not a major modification since the increase in emissions in this application is not greater than thresholds listed above. Therefore, this application is not a Major Modification of a Major Facility.

Regulation 2, Rule 5: Permits – New Source Review of Toxic Air Contaminants - Health Risk Assessment Requirements

The District's regulation concerning toxic air contaminant emissions is codified in Regulation 2, Rule 5, New Source Review of Toxic Air Contaminants (TAC). All TAC emissions from new and modified sources are subject to risk assessment, if the emissions of any individual TAC exceed either the acute or chronic emission thresholds defined in Table 2-5-1. If a health risk screening analysis is triggered, related projects permitted within the previous two years must also be considered in the analysis.

This project does not exceed any toxic risk screening trigger level. Therefore, the toxic risk analysis is not required per Regulation 2-5.

TAC	Emission rate lb/yr	Threshold lb/yr	Triggered?	Emission rate lb/hr	Threshold lb/hr	Triggered?
Benzene	3.14E-02	2.9E+00	No	2.62E-03	6.0E-02	No
Formaldehyde	1.12E+00	1.4E+01	No	9.35E-02	1.2E-01	No
Toluene	5.08E-02	1.2E+04	No	4.24E-03	8.2E+01	No

Major Facility Review, Regulation 2, Rule 6
40 CFR Part 70, State Operating Permit Programs (Title V)
This facility is subject to MFR Permit requirements pursuant to Regulation 2-6-301, because it has the potential to emit more than 100 tons per year of any regulated air pollutant. This facility was required to obtain a Title V Federal Operating Permit. The requirements of this program have been codified in District Regulation 2, Rule 6.

The facility was issued the initial Title V permit. This project will trigger a minor revision of the Title V permit. It will be processed in a separate application.

Regulation 8, Rule 18: Organic Compounds Equipment Leaks
The equipment should comply with the Standards of Regulation 8, Rule 18 for Valves, Compressors and Flanges. The VOC leak standards for valves, pumps and flanges are the same and are set at 100 ppmvd. The applicant will include the new fugitive components in its LDAR program.

40 CFR Part 60, Standards of Performance for New Stationary Sources (NSPS): Subpart GGGa, Standards of Performance for Equipment Leaks of VOC in Petroleum Refineries
The flares are not subject to 40 CFR 60, Subpart GGGa standard of Performance for Equipment Leaks of VOC in Petroleum Refineries because the new natural gas lines are not a process unit as defined in Section 60.591a.

Permit Conditions

Permit Condition # 18656

For Sources S-6010, S-6012, S-6013, S-6015, S-6016, ~~S-6017,~~ S-6019, S-6039:

Conditions for monitoring for correctly designed and operating flares:

1. The owner/operator shall not flare more than the following limits of vent gas combined with supplemental natural gas, as defined in Regulation 12-11-210, at the following sources:
S-6012 ~~381,040~~ 395,730 #//hr
S-6013 ~~817,512~~ 832,201 #/hr
S-6015 ~~878,900~~ 888,893 #/hr
~~S-6017 3497 #/hr~~
S-6039 ~~710,390~~ 727,623 #/hr
S-6016 ~~1,440,800~~ 1,455,488 #/hr
S-6019 ~~783,300~~ 797,988 #/hr
S-6010 ~~878,900~~ 886,674 #/hr.
(basis: Regulation 8-1-110.3; 2-1-403)

2. In order to demonstrate compliance with Part 1 of this condition, the owner/operator shall record on an hourly basis the pounds of vent gas flared at each S-6010, 6012, 6013, 6015, 6016, ~~6017,~~ 6019, and 6039 Flares. The owner/operator shall maintain these records for a period of five years from the date of entry and make sure records are available for the APCO upon request. (basis: Regulation 8-1-110.3; 2-6-409.2; 2-6-501)

3. The owner/operator shall use only natural gas as a supplemental gas necessary to comply with the minimum Net Heating Value at combustion zone (NHVcz) of 270 Btu/scf. (Basis: NESHAP 40 CFR 63.670(e) - effective January 30, 2019 or the date of the APCO's approval of the facility's time extension request per 40 CFR 63.6(i)(6) if granted)

4. The owner/operator shall comply with all applicable requirements in 40 CFR 63.670 to ensure all of the above flares operate in a manner that ensures each flare achieves a hydrocarbon destruction efficiency of at least 98 wt.% POC on a mass basis. (Basis: NESHAP 40 CFR 63.670, Regulation 2-1-403)

5. The owner/operator shall limit the use of natural gas as supplement gas to the following limits.

S-6012 0.336 MMscf/hr and 4.032 MMscf/year
S-6013 0.336 MMscf/hr and 4.032 MMscf/year
S-6015 0.228 MMscf/hr and 2.736 MMscf/year
S-6039 0.394 MMscf/hr and 4.728 MMscf/year
S-6016 0.336 MMscf/hr and 4.032 MMscf/year
S-6019 0.336 MMscf/hr and 4.032 MMscf/year
S-6010 0.178 MMscf/hr and 2.136 MMscf/year

(Basis: Regulation 2-1-320, 2-1-403)

6. To demonstrate compliance with part 5 of this permit condition, the owner/operator shall install a dedicated gas flow rate monitor for each flare to measure the natural gas usage. (Basis: Regulation 2-1-403)

7. Where applicable, the owner/operator shall update and maintain the Flare Minimization Plan (FMP) as required by Regulation 12-12-404. (Basis: Regulation 12, Rule 12)

8. The owner/operator shall install and operate a continuous parametric monitoring system (CPMS) along with a CPMS monitoring plan as required by and consistent with 40 CFR 63.671(b). (Basis: NESHAP 40 CFR 63.671, Regulation 1-523)

9. The owner/operator shall maintain all records and reports required by this permit condition in a District-approved log. The following records shall be kept on site and shall be made available for District inspection for a period of at least 5 years from the date on which a record is made. (Basis: Cumulative Increase, NESHAP 40 CFR 63.670(e), Regulation 2-1-403)
a. Total daily flow of natural gas as supplemental gas and vent gas to the flare, summarized on a consecutive 12-month period basis.
b. Daily net heating value of the flare vent gas (NHVvg) and calculation of net heating value in the combustion zone (NHVcz).
c. Daily flare steam to vent gas ratio.

Conditions for monitoring smoking flares:

10. For the purposes of these conditions, a flaring event is defined as a flow rate of vent gas flared in any consecutive 15 minutes period that continuously exceeds 330 standard cubic feet per minute (scfm). If during a flaring event, the vent gas flow rate drops below 330 scfm and then increases above 330 scfm within 30 minutes, that shall still be considered a single flaring event, rather than two separate events. For each flaring event during daylight hours (between sunrise and sunset), the owner/operator shall inspect the flare within 15 minutes of determining the flaring event, and within 30 minutes of the last inspection thereafter, using video monitoring or visible inspection following the procedure described in Part 11 of this condition. (basis: Regulation 2-6-409.2)

11. The owner/operator shall use the following procedure for the initial inspection and each 30-minute inspection of a flaring event.
a. If the owner/operator can determine that there are no visible emissions using video monitoring, then no further monitoring is necessary for that particular inspection.
b. If the owner/operator cannot determine that there are no visible emissions using video monitoring, the owner/operator shall conduct a visual inspection outdoors using either:
i. EPA Reference Method 9; or
ii. Survey the flare by selecting a position that enables a clear view of the flare at least 15 feet, but not more than 0.25 miles, from the emission source, where the sun is not directly in the observer's eyes.
c. If a visible emission is observed, the owner/operator shall continue to monitor the flare for at least 3 minutes, or until there are no visible emissions, whichever is shorter.

d. The owner/operator shall repeat the inspection procedure for the duration of the flaring event, or until a violation is documented in accordance with Part 12. After a violation is documented, no further inspections are required until the beginning of a new calendar day.
(basis: Regulation 6-1-301, 2-1-403)

12. The owner/operator shall comply with one of the following requirements if visual inspection is used:
a. If EPA Method 9 is used, the owner/operator shall comply with Regulation 6-1-301 when operating the flare.
b. If the procedure of 11.b.ii is used, the owner/operator shall ~~not operate a flare~~ notify the District for each flaring event that has visible emissions for three consecutive minutes.
(basis: Regulation 2-1-403)

13. The owner/operator shall keep records of all flaring events, as defined in Part 10. The owner/operator shall include in the records the name of the person performing the visible emissions check, whether video monitoring or visual inspection (EPA Method 9 or visual inspection procedure of Part 11 of this condition) was used, the results of each inspection, and whether any violation of this condition (using visual inspection procedure in Part 11 of this condition) or Regulation 6-1-301 occurred (using EPA Method 9). (basis: Regulation 2-6-501; 2-6-409.2)

Conditions for ensuring flare is only used for upset gases (to be exempt from NSPS SO2 limitation and monitoring)

14. The owner/operator shall operate S-6039 and S-6015 Flares to burn only process upset gases as defined by 60.101(e) or fuel gas as defined by 60.101(d) that is released to it as a result of relief valve leakage or ~~other emergency~~ malfunctions as defined in 60.2.
(basis: 60.104(a)(1); Regulation 2-1-403)

Recommendations

The proposed project is expected to comply with all applicable requirements of District, State, and Federal air quality related regulations. I recommend issuing an Authority to Construct permit for the alteration of the following sources:

S-6010	**HIGH LEVEL FLARE, LSFO**
S-6012	**V-282 SOUTH ISOMAX FLARE**
S-6013	**North Isomax Flare V-281**
S-6015	**Refinery Waste Gas Flare**
S-6016	**FCC Flare V-731**
S-6019	**V-732, Alky-Poly Flare**
S-6039	**Lube Flare, V-3501**

_____ _____

Stanley Tom, P.E. Date
Air Quality Engineer

Engineering Evaluation Report
Chevron Products Company, Plant #10
841 Chevron Way, Richmond, CA
Application #29220

Background
Chevron Products Company, ("Applicant") is proposing to install three chemical storage tanks with associated injection pumps and piping components. The high density crosslinked polyethylene tanks will store NALCO Tri-ACT 1805, a corrosion inhibitor, for injection into boiler feedwater and condensate systems in Hydrogen Plant Trains (S-4449, S-4450). Each tank has a nominal capacity of 540 gallons.

S-4481 Corrosion Inhibitor Storage Tank T-1501
Refillable permanent tanks (will be refilled onsite)
Location: Chemical Dosing Station I, II, and III
Area Business Unit: Hydrogen Plant
Material stored: Corrosion Inhibitor NALCO Tri-ACT 1805, TVP = 0.081 psia at 68 F
Nominal volume: 540 gallons each
Nominal fill volume: 400 gallons each
Throughput: 95 bbl/year

S-4482 Corrosion Inhibitor Storage Tank T-2501
Refillable permanent tanks (will be refilled onsite)
Location: Chemical Dosing Station I, II, and III
Area Business Unit: Hydrogen Plant
Material stored: Corrosion Inhibitor NALCO Tri-ACT 1805, TVP = 0.081 psia at 68 F
Nominal volume: 540 gallons each
Nominal fill volume: 400 gallons each
Throughput: 30.5 bbl/year

S-4483 Corrosion Inhibitor Storage Tank T-3504
Refillable permanent tanks (will be refilled onsite)
Location: Chemical Dosing Station I, II, and III
Area Business Unit: Hydrogen Plant
Material stored: Corrosion Inhibitor NALCO Tri-ACT 1805, TVP = 0.081 psia at 68 F
Nominal volume: 540 gallons each
Nominal fill volume: 400 gallons each
Throughput: 30.5 bbl/year

Project Description

The Richmond Refinery began operations in 1902 and has since expanded to its current processing capacity of 240,000 barrels per day. The main processing areas as the Refinery are Distillation and Reforming, Cracking, and Hydroprocessing. More than 75% of the Richmond Refinery's products are transportation fuels such as gasoline, jet fuel, and diesel. Other products include fuel oil, lubricating oil, propane, and aviation gasoline.

The initial boiling point of the NALCO Tri-ACT 1805 is less than 302 degrees F. The material is not permit exempt. Liquid is stored in a 540 gallon chemical storage vessel. This vessel is a fixed roof tank with a nominal fill volume of 400 gallons.

NALCO Tri-ACT 1805 has the following composition based on the provided MSDS.

Table 1

Component	Composition	Molecular Weight	Average Molecular Weight (MV)
Monoethanolamine	40%	61.08	24.43
Methoxypropylamine	40%	89.14	35.66
Cyclohexylamine	20%	99.17	19.83
Total			79.92

The manufacturer estimates the vapor pressure to be 0.081 psia with an initial boiling point of 212 degrees F.

Criteria Pollutant Emission Calculations

Fugitive Emissions from New Piping

Fugitive POC emissions are based on emission factors developed using the Correlation Equation Method (California Air Pollution Control Officer Association (CAPCOA) February 1999), with the Regulation 8-18 component emission definitions as the screening values.

Chevron has estimated fugitive component leaks using the pegged emission factors. Section 8-18-306.2 allows non-repairable leaks for a certain percentage of each type of fugitive component. Chevron has estimated the non-repairable leak fugitive emissions using the pegged emission factors.

Table 2

Component Type	Component Count	Daily Emissions (lb/day)	Annual Emissions (lb/year)	Annual Emissions (ton/year)
Valves	72	0.64	213.99	0.107
Flanges	42	0.58	199.79	0.100
Connectors	12	0.06	20.96	0.010
Pumps	4	0.60	297.26	0.149
PRV/Other	4	0.19	70.03	0.035
Total	134	2.06	802.03	0.401

Tank Emissions

Tank emissions are based on emission factors from EPA AP-42 Chapter 7 Organic Liquid Storage Tanks.

LT = LS + LW

Where: LT = total losses
LS = standing storage losses
LW = working losses

S-4481
LT = 0.615 + 0.003 = 0.62 lb/year

S-4482
LT = 0.197 + 0.003 = 0.20 lb/year

S-4483
LT = 0.197 + 0.003 = 0.20 lb/year

LS = 365 VV WV KE KS

Where: VV = vapor space volume, ft3 = 72
WV = stock vapor density, lb/ft3
KE = vapor space expansion factor = 0.04
KS = vented vapor saturation factor

LS = 365 (72) (0.0011) (0.04) (0.99) = 0.003 lb/year

KS = 1/(1 + 0.053 PVA HVO)

Where: PVA = vapor pressure at daily average liquid surface temperature, psia
HVO = vapor space outage, ft = 1.84

KS = 1/[1 + 0.053 (0.081) (1.84)] = 0.99

WV = (MV PVA) / (R TLA)

Where: MV = vapor molecular weight, lb/lbmol
PVA = vapor pressure at daily average liquid surface temperature, psi
R = ideal gas constant, psi ft3/lbmol R = 10.73
TLA = daily average surface temperature, R

WV = [(79.92) (0.081)] / [(10.73) (528)] = 0.0011

LW = 0.0010 MV PVA Q KN KP

Where: MV = vapor molecular weight, lb/lbmol
PVA = vapor pressure at daily average liquid surface temperature, psi

Q = annual net throughput, bbl/yr
KN = working loss turnover factor = 1 (for turnovers ≤ 36)
KP = working loss product factor = 1 (for all other organic liquids)

S-4481
LW = 0.0010 (79.92) (0.081) (95) (1) (1) = 0.615 lb/year

S-4482
LW = 0.0010 (79.92) (0.081) (30.5) (1) (1) = 0.197 lb/year

S-4483
LW = 0.0010 (79.92) (0.081) (30.5) (1) (1) = 0.197 lb/year

Cumulative Increase
The District tracks increases in emissions from each facility. These cumulative emissions were reset on April 5, 1991 for all facilities. This is an existing facility with pre-existing cumulative emissions.

Table 3

Pollutant	Existing Plant	Proposed Equipment	Post-Project
POC	287.516	(0.615 + 0.197 + 0.197 + 802.03)/2000 = 0.402	287.918

Cumulative Emission Increase Inventory (tons/year)

Statement of Compliance

Regulation 2, Rule 1: California Environmental Quality Act (CEQA) Requirements
District Regulation 2, Rule 1, Section 310 specifies that all proposed new and modified sources subject to District permit requirements must be reviewed in accordance with the California Environmental Quality Act (CEQA) requirements, except for ministerial projects or projects exempt from CEQA under Section 2-1-312. The engineering review for this project requires only the application of standard permit conditions and standard emission factors in accordance with Permit Handbook Chapters 3.4 “Petroleum Refinery Fugitive Emissions” and 4.0 “Organic Liquid Storage Tank”. Therefore, this application is considered to be ministerial and is exempt from CEQA review.

Regulation 2, Rule 1: School Public Notice Requirements
The public notification requirements of Regulation 2-1-412 apply to modifications which result in an increase in toxic air contaminant or hazardous air contaminant emission at facilities within 1,000 feet of the boundary of a K-12 school. The Applicant has reported no K-12 school within that radius of this facility, and the District’s database confirms that there is no K-12 school within one mile from the facility. Therefore, the public notice requirements do not apply to this operation.

Regulation 2, Rule 2: Best Available Control Technology (BACT) Requirements
Per Regulation 2, Rule 2, Section 301, an AC and/or PO for a new source shall require BACT to control emissions of a District BACT pollutant as defined in Regulation 2-2-210

if the source will have the potential to emit that pollutant in an amount of 10.0 or more pounds on any day as defined in Regulation 2-2-301.1. As shown in the Criteria Pollutant Emission Calculations section, the emissions do not exceed 10 pounds/day for POC per tank and their associated fugitive components. BACT is not triggered.

Regulation 2, Rule 2: Offsets
The cumulative emission increases for this site and this application are summarized below.

Table 4
Offsets Calculation (tons per year)

Pollutant	Current Balance tons/year	Application Increases tons/year	New Balance tons/year	Offset Ratio	Offsets Required tons/year
POC	287.516	0.402	287.918	1.15	0.462

NOx and POC
The offset requirements for precursor organic compounds (POC) and nitrogen oxides (NOx) are found in Regulation 2, Rule 2, Section 302. Under Section 2-2-302, POC and NOx emission offsets are required for new or modified sources at a facility which emits or will be permitted to emit 10 tons per year or more on a pollutant specific basis. If the facility emits or will be permitted to emit less than 35 tons of POC or NOx per year, the emission offsets may be provided by the District's Small Facility Banking Account. If the facility will be permitted to emit more than 35 tons/year of POC or NOx, the site is responsible for providing the required offsets at a ratio of 1.15 to 1.0.

Since POC emissions from this site are greater than 35 tons/year, offsets are required for the proposed application.

Chevron will provide offsets using ERC certificate #1425.

There are no increases in NOx emissions in this application. Therefore, NOx offsets are not required.

Regulation 2, Rule 2: Prevention of Significant Deterioration (PSD)
Regulations 2-2-304 through 309 and 2-2-315 apply to PSD facilities. Sites belonging to one of the 28 PSD source categories listed in section 169(l) of the federal Clean Air Act have a PSD threshold of 100 tons/year for each regulated air pollutant and must include fugitive emissions when making a PSD major facility determination. However, sites that fall within unlisted categories (such as landfill facilities) have a PSD major facility threshold of 250 tons/year for each regulated air pollutant and may exclude fugitive emissions when making this major facility determination. The increase in emissions in this project do not exceed the major modification thresholds. Therefore, this project is not subject to PSD requirements.

Regulation 2, Rule 2: Maximum Available Control Technology (MACT)

Subpart CC—National Emission Standards For Hazardous Air Pollutants From Petroleum Refineries

The requirements of this subpart are applicable to equipment that are in organic HAP service, which means a piece of equipment that either contains or contacts a fluid that is at least 5 percent by weight of total organic HAP. None of the materials that make up NALCO Tri-ACT 1805 (monoethanolamine, methoxypropylamine, cyclohexylamine) are listed as hazardous air pollutants.

Storage vessel as defined in this subpart does not include storage tanks with capacity less than 40 m3 (10,566 gallons). The storage tanks in this application each have a capacity of 540 gallons.

Pressure Relief Devices (PRDs) are subject to 40 CFR 63.648(j) standards. These standards require PRDs in gas/liquid service operate with no leaks > 500 ppm and monitor within 5 days when back in service after any pressure relief event. PRDs are exempt from additional monitoring system, prevention measure implementation, and root cause and corrective actions if they are the following types:

(i) Pressure relief devices in heavy liquid service.
(ii) Pressure relief devices that only release material that is liquid at standard conditions and that are hard-piped to a controlled drain system or piped back to the process or pipeline.
(iii) Thermal expansion relief valves.
(iv) Pressure relief devices designed with a set relief pressure of less than 2.5 psig.
(v) Pressure relief devices that do not have the potential to emit 72 lb/day or more of VOC based on the valve diameter, the set release pressure, and the equipment contents.
(vi) Pressure relief devices on mobile equipment.

Each storage tank can receive NALCO Tri-ACT 1805 from a PRD located on the discharge of its respective injection pump. The set pressure for the PRDs will be 100 psig. However, the PRDs only release material that is liquid at standard conditions and that are piped back to the process. Therefore, the PRDs on the tanks will only need to be monitored routinely for leaks, and after release events.

The standards for equipment leaks from both new and existing sources are listed under 40 CFR 63.648. Equipment leaks from existing sources are subject to the equipment leak standards of 40 CFR 60 Subpart VV. Equipment leaks from new sources are subject to the equipment leak standards of Subpart H. Per the Safety Data Sheet included in the application, the constituents of the corrosion inhibitor include monoethanolamine, methoxypropylamine, cyclohexylamine, and water. None of these constituents are listed as hazardous air pollutants under the MACT standards. Therefore, Subpart H does not apply to these components.

Subpart H—National Emission Standards for Organic Hazardous Air Pollutants for Equipment Leaks

As described above, per the MSDS of the material stored in the storage tanks, none of the material components are hazardous air pollutants. The units in this application are not subject to this subpart.

Regulation 2, Rule 2: Major Modification of a Major Facility
Section 2-2-221 defines Major Modification as any modification, as defined in Regulation 2-1-234, at an existing major facility that the APCO determines will cause an increase of the facility's emissions by the following amounts or more:

POC: 40 tons per year
NOx: 40 tons per year
SO2: 40 tons per year
PM10: 15 tons per year
CO: 100 tons per year

This application is not a major modification since the increase in emissions in this application is not greater than thresholds listed above. Therefore, this application is not a Major Modification of a Major Facility.

Regulation 2, Rule 5: Permits – New Source Review of Toxic Air Contaminants - Health Risk Assessment Requirements
The District's regulation concerning toxic air contaminant emissions is codified in Regulation 2, Rule 5, New Source Review of Toxic Air Contaminants (TAC). All TAC emissions from new and modified sources are subject to risk assessment, if the emissions of any individual TAC exceed either the acute or chronic emission thresholds defined in Table 2-5-1. If a health risk screening analysis is triggered, related projects permitted within the previous three years must also be considered in the analysis.

As listed in the manufacturer MSDS, NALCO Tri-ACT 1805 contains monoethanolamine, methoxypropylamine, cyclohexylamine. None of the listed constituents are toxic air contaminants. This project does not exceed any toxic risk screening trigger level. Therefore, the toxic risk analysis is not required per Regulation 2-5.

Major Facility Review, Regulation 2, Rule 6
40 CFR Part 70, State Operating Permit Programs (Title V)
This facility is subject to MFR Permit requirements pursuant to Regulation 2-6-301, because it has the potential to emit more than 100 tons per year of any regulated air pollutant. This facility was required to obtain a Title V Federal Operating Permit. The requirements of this program have been codified in District Regulation 2, Rule 6.

The facility was issued the initial Title V permit. This project will trigger a minor revision of the Title V permit. It will be processed in a separate application.

Regulation 8, Rule 5: Storage of Organic Liquids
The storage tanks are not subject to the provisions of Regulation 8, Rule 5 because the TVP of the NALCO Tri-ACT is less than 0.5 psia.

Regulation 8-5-307.3 does not apply as the storage tanks will not be pressurized or blanketed.

Regulation 8, Rule 18: Organic Compounds Equipment Leaks
The equipment should comply with the Standards of Regulation 8, Rule 18 for Valves, Connectors, Pumps, Flanges, and Pressure Relief Devices. The VOC leak standards for valves, flanges and connectors are set at 100 ppmvd. The VOC leak standards for pumps and pressure relief devices are set at 500 ppmvd. The fugitive components in this application are line fugitive components and not tank fugitive components. Chevron will include the new fugitive components in its LDAR program.

Regulation 8, Rule 28: Organic Compounds Episodic Releases From Pressure Relief Devices At Petroleum Refineries and Chemical Plants
The requirements of this rule do not apply to any pressure relief devices on storage tanks per Section 8-28-112.

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

Subpart Kb—Standards of Performance for Volatile Organic Liquid Storage Vessels (Including Petroleum Liquid Storage Vessels) for Which Construction, Reconstruction, or Modification Commenced After July 23, 1984
Subpart Kb does not apply to the proposed tanks because the volume of these 540 gallon tanks is less than the applicability threshold of 75 m3 (19,813 gallons).

Subpart GGGa, Standards of Performance for Equipment Leaks of VOC in Petroleum Refineries
The components are not subject to 40 CFR 60, Subpart GGGa Standard of Performance for Equipment Leaks of VOC in Petroleum Refineries because the facility is subject to Subpart VV.

Title V Statement of Basis (SOB):

The proposed change is a minor permit revision per Regulation 2-6-215.

II. EQUIPMENT

Table II A 1 - Permitted Sources (New Source Review)

Table II A 1 - Permitted Sources (New Source Review and other enforceable limits)

Each of the following sources has been issued a permit to operate pursuant to the requirements of BAAQMD Regulation 2, Permits. The capacities and the throughput limits in this table are the maximum allowable capacities and throughput limits for each source, pursuant to Standard Condition J.1 and Regulation 2-1-301. All combustion sources are fired on natural gas or refinery fuel gas, except where noted in permit conditions.

Source Number	Description	Make or Type	Model	Capacity	Annual Throughput Limits	Daily Throughput Limits	Units	Basis
S-4481	Tank	Fixed Roof	N/A	540 gal	95	N/A	bbl	Condition #26815
S-4482	Tank	Fixed Roof	N/A	540 gal	30.5	N/A	bbl	Condition #26815
S-4483	Tank	Fixed Roof	N/A	540 gal	30.5	N/A	bbl	Condition #26815

Permit Conditions

Permit Condition # 26815

1. The owner/operator shall not exceed the following throughput limit of NALCO Tri-ACT 1805 during any consecutive twelve-month period:

S-4481 = 95 bbl/year
S-4482 = 30.5 bbl/year
S-4483 = 30.5 bbl/year

(Basis: Cumulative Increase)

2. The owner/operator may store alternate liquid(s) other than the material specified in Part 1 and/or usage in excess of those specified in Part 1, provided that the owner/operator can demonstrate that all of the following are satisfied:
a. Total POC emissions (including fugitive component emissions) from S-4481, S-4482, S-4483 do not exceed 0.402 tons per year in any consecutive twelve month period; and
b. The use of these materials does not increase toxic emissions above any risk screening trigger level of Table 2-5-1 in Regulation 2-5.
(Basis: Cumulative Increase; Toxics)

3. To determine compliance with the above parts, the owner/operator shall maintain the following records and provide all of the data necessary to evaluate compliance with the above parts, including the following information:
a. Quantities of each type of liquid stored at this source on a monthly basis.

b. If a material other than those specified in Part 1 is stored, POC/NPOC and toxic component contents of each material used; and mass emission calculations to demonstrate compliance with Part 2, on a lb/hour and lb/year basis.
c. Monthly throughput and/or emission calculations shall be totaled for each consecutive twelve-month period.
All records shall be retained on-site for five years, from the date of entry, and made available for inspection by District staff upon request. These recordkeeping requirements shall not replace the recordkeeping requirements contained in any applicable District Regulations.
(Basis: Cumulative Increase; Toxics)

4. Not more than 30 days after the start-up of S-4481, S-4482, S-4483, the owner/operator shall provide the District's Engineering Division with a final count of fugitive components installed. The owner/operator has been permitted for an increase in the following fugitive components in liquid service: Valves: 72; Flanges: 42; Connectors: 12; Pump seals: 4; PRD: 4.
(Basis: Cumulative Increase, offsets, toxics risk screen)

5. If there is an increase in the total fugitive component emissions, the plant's cumulative emissions for the project shall be adjusted to reflect the difference between emissions based on predicted versus actual component counts. The owner/operator shall provide to the District all additional required offsets at an offset ratio of 1.15:1 no later than 14 days after submittal of the final POC fugitive count. If the actual component count is less than the predicted, the total will be adjusted accordingly and all emission offsets applied by the owner/operator in excess of the actual total fugitive emissions will be credited back to the owner/operator.
(Basis: offsets)

6. The owner/operator shall install valves, in light hydrocarbon service, that are of District approved BACT compliant technology (bellows valves, diaphragm valves, live loaded valves, or the equivalent) such that fugitive organic emissions shall not exceed 100 ppm.
(Basis: Regulation 8-18, toxics risk screen)

7. The owner/operator shall install flanges, in light hydrocarbon service, that are of District approved BACT compliant technology (graphitic gaskets or the equivalent) such that fugitive organic emissions shall not exceed 100 ppm.
(Basis: Regulation 8-18, toxics risk screen)

8. The owner/operator shall install pump seals, in light hydrocarbon service, that are of District approved BACT compliant technology (double mechanical seals with barrier fluid or the equivalent) such that fugitive organic emissions shall not exceed 500 ppm.
(Basis: Regulation 8-18, toxics risk screen)

9. The owner/operator shall ensure pressure relief valves installed comply with and meet applicable requirements of Regulation 8, Rule 5, Rule 18, Rule 28.
(Basis: Regulation 8-5, Regulation 2-1-403)

10. In accordance with the provisions of Regulation 8-18, the owner/operator shall integrate all new fugitive equipment in organic service installed as part of S-4481, S-4482, S-4483 into the facility fugitive equipment monitoring and repair program.
(Basis: Regulation 8-18)

Recommendations

The proposed project is expected to comply with all applicable requirements of District, State, and Federal air quality related regulations. I recommend issuing Authority to Construct permits for the installation of the following sources:

S-4481 Corrosion Inhibitor Storage Tank T-1501
Refillable permanent tanks (will be refilled onsite)
Location: Chemical Dosing Station I, II, and III
Area Business Unit: Hydrogen Plant
Material stored: Corrosion Inhibitor NALCO Tri-ACT 1805, TVP = 0.081 psia at 68 F
Nominal volume: 540 gallons each
Nominal fill volume: 400 gallons each
Throughput: 95 bbl/year

S-4482 Corrosion Inhibitor Storage Tank T-2501
Refillable permanent tanks (will be refilled onsite)
Location: Chemical Dosing Station I, II, and III
Area Business Unit: Hydrogen Plant
Material stored: Corrosion Inhibitor NALCO Tri-ACT 1805, TVP = 0.081 psia at 68 F
Nominal volume: 540 gallons each
Nominal fill volume: 400 gallons each
Throughput: 30.5 bbl/year

S-4483 Corrosion Inhibitor Storage Tank T-3504
Refillable permanent tanks (will be refilled onsite)
Location: Chemical Dosing Station I, II, and III
Area Business Unit: Hydrogen Plant
Material stored: Corrosion Inhibitor NALCO Tri-ACT 1805, TVP = 0.081 psia at 68 F
Nominal volume: 540 gallons each
Nominal fill volume: 400 gallons each
Throughput: 30.5 bbl/year

_____ _____
Stanley Tom, P.E. Date
Air Quality Engineer

Engineering Evaluation Report
Chevron Products Company, Plant #10
841 Chevron Way, Richmond, CA
Application #29271

Background
Chevron Products Company has applied for approval to change the compliance option with Regulation 9, Rule 10 from Refinery-wide NOx Emission Rate Limit per Regulation 9-10-301 to Alternate NOx Compliance Plan per Section 9-10-308.

Source	Description	Emissions Monitoring
S-4038	#4 RHENIFORMER, F-3550	CEMS
S-4039	#4 RHENIFORMER, F-3560	CEMS
S-4040	#4 RHENIFORMER, F-3570	CEMS
S-4041	F3580, #4 RHENIFORMER	CEMS
S-4042	#5 RHENIFORMER F550	CEMS
S-4043	F560, #5 RHENIFORMER	CEMS
S-4044	#5 RHENIF F570	CEMS
S-4045	#5 RHENIF F580	CEMS
S-4059	#1 JHT Furnace #247	CEMS
S-4060	#1 JHT Furnace #210A&B	CEMS
S-4061	#5 NAPH HYDROTREATER F410	CEMS
S-4062	#5 NAPH HYDROTREATER F447	CEMS
S-4068	VGO DESULFURIZER F-1610	CEMS
S-4069	VGO F1660	NOx Polygon
S-4070	#4 CRUDE UNIT F 1100A	CEMS
S-4071	#4 CRUDE UNIT F1100B	CEMS
S-4072	#4 CRUDE UNIT F1160	CEMS
S-4129	800# STM BLR #1 #IPP	CEMS
S-4131	800# STM BLR #3 #1PP	CEMS
S-4132	800# STM BLR #4 #1 PP	CEMS
S-4133	800# STEAM BLR #5 #1PP	CEMS
S-4135	800# STM BLR #7 #1 PP	CEMS
S-4152	F-100 ASPHALT SOLUTION HEATER	CEMS
S-4154	F-120 ASPHALT SOLUTION HEATER	NOx Polygon
S-4155	F-135 Hot Oil Furnace	CEMS
S-4158	Hydrogen Plant Preheat Furnace F-340	NOx Polygon
S-4159	F410 TKC FEED FURNACE TKC ISOMAX	CEMS
S-4160	F420 TKC FEED FURNACE TKC ISOMAX	CEMS
S-4161	F-510 TKN Feed Furnace/Low NOx Burners	CEMS
S-4162	F-520 TKN Furnace/Low-NOx Burners	CEMS
S-4163	F-530 TKN Feed Furnace/Low NOx Burners	CEMS
S-4164	F-630 ISOCRACKER FEED FURNACE	CEMS
S-4165	F620 ISOCRACKER FEED FURNACE	CEMS

S-4166	F-610 ISOCRACKER FEED FURNACE	CEMS
S-4167	F-710 TKC FRACTIONATOR ISOMAX	CEMS
S-4168	F-730 ISOCRACKER SPLITTER FEED FURNACE	CEMS
S-4169	F-731 ISOCRACKER REBOILER	CEMS
S-4170	F355 REFORMING FURNACE, H2 PLANT	CEMS
S-4171	F355 REFORMING FURNACE, H2 PLANT	CEMS
S-4188	F-651 Polymer Furnace/Low NOx Burners	CEMS
S-4189	F-661 Polymer Furnace/Low NOx Burners	NOx Polygon
S-4330	HNHF Reactor Furnace, F-1610	CEMS
S-4331	LNHF Reactor Furnace, F-1310	CEMS
S-4332	Hot Oil Furnace, F-1360	CEMS
S-4333	TKC Vacuum Furnace, F-1750	CEMS
S-4334	LNC Atmos Furnace, F-1200	CEMS
S-4335	LNC Vacuum Furnace, F-1250	CEMS
S-4336	HNC Reactor Furnace, F-1410	CEMS
S-4337	HNC Atmos Furnace, F-1500	CEMS
S-4338	HNC Vacuum Furnace, F-1550	CEMS
S-4339	LNC Reactor Furnace, F-1110	CEMS

The proposed Alternate NOx Compliance Plan will enable Chevron to comply with a Refinery-wide daily NOx mass emission limit which is developed according to requirements in Section 9-10-308. Once implemented, Chevron will stop its current compliance option with the Refinery-wide NOx Emission Limit as stated in Section 9-10-301 and will start complying with Refinery-wide NOx mass emission limit.

This change in compliance option is associated with the future shut down of the furnaces in the existing Hydrogen Plant when operations commence for the new Hydrogen Plant furnaces under the Chevron Refinery Modernization Project. Due to the operational sequence between the existing and new furnaces, the Chevron Refinery Modernization Project proposes an initial limit, an interim limit, and a final limit. The initial limit will apply to all currently applicable sources including the existing Hydrogen Plant furnaces. The interim limits will apply to all currently applicable sources minus one of the two existing Hydrogen Plant furnaces (either S-4170 or S-4171) depending on their shutdown sequence. The final limit will apply to all currently applicable sources minus the existing Hydrogen Plant furnaces (S-4170 and S-4171) and a preheater (S-4158) in the existing Hydrogen Plant when the existing Hydrogen Plant is shutdown. The two new Hydrogen Plant furnaces (S-4471 and S-4472) are not applicable because they received an Authority to Construct subject to BACT requirements for NOx on or after January 5, 1994 (Section 9-10-110.6).

The application will be treated as a Change of Condition.

Criteria Pollutant Emission Calculations

Section 9-10-308-1 requires a daily NOx (mass) limit to be established based on the average of the daily emissions on any ten (10) different days during the 3-year period immediately preceding the date of the application for an Alternate Compliance Plan, on

which the refinery was in compliance with Section 9-10-301. The section also indicates that APCO may consider using 10 days outside of this time period, if the APCO finds that a different period allows the selection or operating days that better represent maximum daily emission levels for these devices.

Based on review of historical operating data, Chevron has selected the following 10 days summarized in Table 1 between February 2016 and March 2018 as the baseline for establishing the mass limits.

The proposed initial limit is 3,699 pounds of NOx per day. The interim limit is either 3,437 pounds of NOx per day (with S-4170 shutdown) or 3,414 pounds of NOx per day (with S-4171 shutdown). The final limit is 3,116 pounds of NOx per day. The individual furnace daily firing rates and NOx mass emissions, and Refinery-wide daily NOx emission rates for these selected days are included in Appendix A.

TABLE 1
Baseline for Daily NOx Mass Emission Limits

		Initial Limit	Interim Limit		Final Limit
Date	Daily Total Firing Rate (MMBtu/day)	All Reg 9-10 Sources (lb-NOx/day)	S-4170 Shutdown, S-4171 in Operation (lb-NOx/day)	S-4171 Shutdown, S-4170 in Operation (lb-NOx/day)	S-4170, S-4171, and S-4158 Shutdown (lb-NOx/day)
3/7/2018	122,032	3,669.3	3,411.4	3,352.9	3,057.0
3/6/2018	122,498	3,785.2	3,534.7	3,470.9	3,182.4
3/5/2018	120,511	3,679.1	3,441.0	3,399.5	3,124.7
4/14/2017	118,737	3,763.1	3,475.1	3,446.4	3,121.4
4/9/2017	114,447	3,617.3	3,337.8	3,324.3	3,009.3
9/22/2016	119,061	3,811.9	3,547.0	3,559.8	3,262.2
9/21/2016	118,274	3,771.3	3,532.2	3,504.2	3,232.4
8/16/2016	121,833	3,669.5	3,385.9	3,399.1	3,078.2
7/2/2016	119,249	3,585.6	3,332.2	3,335.2	3,045.6
2/1/2016	114,921	3,638.5	3,373.5	3,346.6	3,046.7
Average		3,699	3,437	3,414	3,116

Chevron has elected to utilize the option of surrendering NOx emission reduction credits (ERCs) per Section 9-10-308.1.2 to meet the Alternate NOx Compliance Plan requirements.

Regulation 9-10 includes a compliance option which allows refineries to take a mass emission based Refinery-wide NOx limit provided an Alternate NOx Compliance Plan is approved (Sections 9-10-308 and 9-10-405). Section 9-10-308.1.2 states “at any refinery with an Authority to Construct application submitted before the date of approval of an Alternate Compliance Plan described in Section 9-10-405, if the actions permitted in the Authority to Construct would reduce the number of devices subject to Section 9-10-301, the daily NOx emissions limit (mass) shall be reduced by the amount of

reductions required. NOx ERC generated in accordance with Regulation 2, Rule 2 may be surrendered on a one-time basis at a 1.15 to 1 ratio to offset all or part of the NOx emissions reductions required, and the daily NOx emissions limit will be adjusted accordingly."

With the impending startup of the Hydrogen Plant Modernization Project, Chevron has elected to comply with Regulation 9-10 by meeting requirements of Section 9-10-308.1.2 and Section 9-10-405.3 in lieu of Section 9-10-301. The required NOx emission reduction credits, calculated pursuant to Section 9-10-405.3 is 70.65 tons per year. This calculation is included in Appendix A.

Cumulative Increase
This application is an alteration to the way Chevron demonstrates overall emissions compliance with Regulation 9-10 though mass emissions (lb/day) instead of emission factor (lb/MMBtu). Therefore, the cumulative increase for this application is zero for all pollutants. This application does not involve any physical change, change in method of operation, or increase in throughput or production that will result in an increase in either the daily or annual emission of any regulated air pollutant.

Statement of Compliance

Regulation 2, Rule 1: California Environmental Quality Act (CEQA) Requirements
District Regulation 2, Rule 1, Section 310 specifies that all proposed new and modified sources subject to District permit requirements must be reviewed in accordance with the California Environmental Quality Act (CEQA) requirements, except for ministerial projects or projects exempt from CEQA under Section 2-1-312. This project is ministerial under CEQA because the District's review of the project is limited to determining whether all sources currently subject to Section 9-10-301 are to be subject to the alternative mass-based standard; whether submitted CEM and source test data complies with objective District Manual of Procedures requirements; whether baseline calculations were performed correctly and in accordance with the fixed procedures established by Regulation 9, Rule 10; and whether the amount of ERC required for compliance has been calculated correctly in accordance with the methodology in the rule. Therefore, this application is considered to be ministerial and is exempt from CEQA review.

Regulation 2, Rule 1: School Public Notice Requirements
The public notification requirements of Regulation 2-1-412 apply to modifications which result in any increase in toxic air contaminant or hazardous air contaminant emissions at facilities within 1,000 feet of the boundary of a K-12 school. The applicant has reported that there are no K-12 schools within a 1,000 foot radius of this facility. The District's database found that the nearest K-12 school is greater than 1.000 feet from the facility. Therefore, the public notice requirements in Regulation 2-1-412 do not apply.

Regulation 2, Rule 2: Best Available Control Technology (BACT) Requirements
Under Regulation 2, Rule 2, any new source which results in an increase of 10 lbs/day or more of any criteria pollutant must be evaluated for adherence to BACT and TBACT control technologies. This application has no emission increase, and BACT does not apply to the sources mentioned above.

Regulation 2, Rule 2: Offsets
As required by Regulation 9-10-308.1.2, Chevron will surrender NOx Emission Reduction Credits (ERCs) on a one-time basis at a 1.15:1 ratio to make up the difference between the actual operating emissions in pounds NOx/day, which are unchanged by this application, and the emissions that would meet the 0.033 pounds NOx/million BTU NOx limit in 9-10-301.

Total Average Baseline NOx Emissions per 9-10-308 (lb/day) = 3,116.0
Total Allowed NOx Emissions per 9-10-301 (lb/day) = 2,779.3
ERCs Required [(3,116.0 – 2,779.3) x 1.15 x 365 / 2000] (tons/year) = 70.65

Chevron will provide offsets in the amount of 70.65 tons-NOx/year using the following ERC certificates.

Certificate #1564 = 30.492 tons per year
Certificate #1624 = 20.225 tons per year
Certificate #1668 = 20.000 tons per year
Total = 70.717 tons per year

Regulation 2, Rule 2: Prevention of Significant Deterioration (PSD)
Regulations 2-2-304 through 309 and 2-2-315 apply to PSD facilities. Sites belonging to one of the 28 PSD source categories listed in section 169(l) of the federal Clean Air Act have a PSD threshold of 100 tons/year for each regulated air pollutant and must include fugitive emissions when making a PSD major facility determination. However, sites that fall within unlisted categories (such as landfill facilities) have a PSD major facility threshold of 250 tons/year for each regulated air pollutant and may exclude fugitive emissions when making this major facility determination.

The permit may or may not trigger PSD requirements. Chevron is responsible to submit a PSD permit application to EPA if PSD is triggered. In accordance with the March 8, 2011 Partial PSD Delegation Agreement, Section III.1, the District does not have the authority to make PSD applicability determinations using NSR Reform methods. Per the delegation agreement, EPA shall make the PSD applicability determination and issue any necessary PSD permits if a source seeks a PSD applicability determination using NSR Reform methods.

Regulation 2, Rule 5: Health Risk Assessment Requirements
The proposed changes in the compliance option to Regulation 9-10-308 (from Regulation 9-10-301) will not result in an increase in toxic air contaminant emissions. Therefore, a health risk assessment is not required.

Major Facility Review, Regulation 2, Rule 6
40 CFR Part 70, State Operating Permit Programs (Title V)
This facility is subject to MFR Permit requirements pursuant to Regulation 2-6-301, because it has the potential to emit more than 100 tons per year of any regulated air pollutant. This facility was required to obtain a Title V Federal Operating Permit. The requirements of this program have been codified in District Regulation 2, Rule 6.

The facility was issued the initial Title V permit. This project will trigger a minor revision of the Title V permit. It will be processed in a separate application #29272.

Permit Condition #21232

COND# 21232 ----------

Regulation 9-10 Refinery-Wide Compliance Affected Sources

*1. The following sources are subject to the refinery-wide NOx emissions rate and CO concentration limits in Regulation 9-10: (9-10-308301 & 305)

S#	description	CEM (Y/N,EF)
S-4038	F-3550	Y
S-4039	F-3560	Y
S-4040	F-3570	Y
S-4041	F-3580	Y
S-4042	F-550	Y
S-4043	F-560	Y
S-4044	F-570	Y
S-4045	F-580	Y
S-4059	F-247	Y
S-4060	F-210A/B	Y
S-4061	F-410	Y
S-4062	F-447	Y
S-4068	F-1610	YN
S-4069	F-1660	N
S-4070	F-1100A	Y
S-4071	F-1100B	Y
S-4072	F-1160	Y
~~S-4095~~	~~F-210~~	~~N~~
S-4129	Blr #1	Y
S-4131	Blr #3	Y
S-4132	Blr #4	Y
S-4133	Blr #5	Y
S-4135	Blr #7	Y
S-4152	F-100	Y
S-4154	F-120	N
S-4155	F-135	Y
S-4156	F-320	N
S-4158	F-340	N

S-4159	F-410	Y
S-4160	F-420	Y
S-4161	F-510	Y
S-4162	F-520	Y
S-4163	F-530	Y
S-4164	F-630	Y
S-4165	F-620	Y
S-4166	F-610	Y
S-4167	F-710	Y
S-4168	F-730	Y
S-4169	F-731	Y
S-4170	F-305	Y
S-4171	F-355	Y
S-4188	F-651	Y~~N~~
S-4189	F-661	N
S-4330	F-1610	Y
S-4331	F-1310	Y
S-4332	F-1360	Y
S-4333	F-1750	Y
S-4334	F-1200	Y
S-4335	F-1250	Y
S-4336	F-1410	Y
S-4337	F-1500	Y
S-4338	F-1550	Y
S-4339	F-1110	Y

Monitoring Device Installation

*2. The owner/operator of each source listed in Part 1 shall properly install, properly maintain, and properly operate an O2 monitor and recorder. This part shall be effective September 1, 2004. (Reg.9-10-502)

NOx Box Overview

*3. The owner/operator shall operate each source listed in Part 1, which does not have a NOx CEM within specified ranges of operating conditions (firing rate and oxygen content) as detailed in Part 5. The ranges shall be established by utilizing data from district-approved source tests. The owner/operator may choose to comply with either 3.B. or 3.C. (Reg. 9-10-502)

A. The NOx Box for units with a maximum firing rate of 25 MMBH or more shall be established using the procedures in Part 4.

B. The NOx Box for units with a maximum firing rate less than 25MMBH shall be established as follows: High-fire shall be the maximum rated capacity. Low-fire shall be 20% of the maximum rated capacity. There shall be no maximum or minimum O2. OR

C. The NOx Box for units with a maximum firing rate less than 25 MMBH shall be established as follows: High-fire shall be the maximum rated capacity. Low-fire shall be 30% of the maximum rated capacity. There shall no maximum or minimum O2.

NOx Box Establishment

*4. The NOx Box may consist of two operating ranges in order to allow for operating flexibility and to encourage emission minimization during standard operation. (9-10-502) The procedure for establishing the NOx box is:

a. Conduct district approved source tests for NOx and CO, while varying the oxygen concentration and firing rate over the desired operating ranges for the furnace;

b. Determine the minimum and maximum oxygen concentrations and firing rates for the desired operating ranges (Note that the minimum O2 at low-fire may be different than the minimum O2 at high-fire. The same is true for the maximum O2). The owner/operator shall also verify the accuracy of the O2 monitor on an annual basis.

c. Determine the highest NOx emission factor (lb/Mmbtu) over the preferred operating ranges while maintaining CO concentration below 200 ppm; the owner/operator may choose to use a higher NOx emission factor than tested.

d. Plot the points representing the desired operating ranges on a graph. The resulting polygon(s) are the NOx Box, which represents the allowable operating range(s) for the furnace under which the NOx emission factor from part 5a is deemed to be valid.

e. The NOx Box can represent/utilize either one or two emission factors.

f. The NOx Box for each emission factor can be represented either as a 4- or 5-sided polygon The NOx box is the area within the 4- or 5-sided polygon formed by connecting the source test parameters that lie about the perimeter of successful approved source tests. The source test parameters forming the corners of the NOx box are listed in Part 5. Upon establishment of each NOx Box, the owner/operator shall prepare a graphical representation of the box. The representation shall be made available on-site for APCO review upon request. The box shall also be submitted to the BAAQMD with permit amendments.

NOx Box Limits

*5A. Except as provided in part 5B OR 5C & 5D, the owner/operator shall operate each source within the Nox Box ranges listed below at all times of operation, except for startup, shutdown, or curtailed operation, when the owner/operator may choose to comply with 5B OR 5C. This part shall not apply to any source that has a properly operated and properly installed NOx CEM. (9-10-502)

NOx Box ranges

Source No.: S-4154
Emission Factor: 0.035 lb/MMBtu
Firing rate MMBtu/h, HHV: O2%
18.9, 1.5
18.7, 4.6
7.9, 5.9
7.4, 5.2
7.3, 3.7
14, 1.3

Source No.: S-4158
Emission Factor: 0.035 lb/MMBtu
Firing rate MMBtu/h, HHV: O2%
29, 1.7
43.71, 1.73
45.31, 5.62
15, 4.6
17, 3.4
48.0, 3.28

~~Source No.: S-4188~~
~~Emission Factor: 0.25 lb/MMBtu~~
~~Firing rate MMBtu/h, HHV: O2%~~
~~11.9, 3.2~~
~~4.8, 5.4~~
~~7.9, 10.6~~

~~13.73, 10.31~~
~~27, 4.9~~
~~22.3, 4~~

Source No.: S-4189
Emission Factor: 0.25 lb/MMBtu
Firing rate MMBtu/h, HHV: O2%
3 @ 20% or 4.5 @ 30%, 25 (Note 1)
3 @ 20%, or 4.5 @ 30%, 0 (Note 1)
15, 0
15, 25

~~Source No.: S-4068~~
~~Emission Factor: 0.14 lb/MMBtu~~
~~Firing rate MMBtu/h, HHV: O2%~~
~~56.79, 3.7~~
~~65, 9.5~~
~~27, 9.5~~
~~23.5, 3.59~~

Source No: S-4069
Emission Factor: 0.045 lb/MMBtu
Firing rate MMBtu/h, HHV: O2%
14.10, 2.18
13.86, 8.17
26.16, 1.85
27.98, 6.52

S-4156 is not in service. The Limits listed above are based on a calendar day averaging period for both firing rate and O2%.

Note 1: In accordance with Parts 3.B. or 3.C. of this permit condition, the oxygen limits do not apply to sources with maximum firing rate less than 25 MMBTU/hour. For the purposes of this permit condition, high fire is defined as 100% of the rated heat input, and low fire is defined as 20% (Part 3.B.) or 30% (Part 3.C.) of rated heat input.

5B) Part 5A does not apply to low firing rate conditions (i.e., firing rate less than or equal to 20% of the unit's rated capacity) during startup or shutdown periods or periods of curtailed operation (ex. during heater idling, refractory dryout, etc.) lasting 5 days or less. During these conditions the means for determining compliance with the refinery wide limit shall be accomplished using the method described in 9-10-301.4.2 (i.e. previous 30-day average firing rate). OR

5C) Part 5A does not apply to units in Curtailed Operation (i.e. operation at 30% or less of rated heat input) or to units undergoing startup or shutdown, or to units that are temporarily out of service. For units in curtailed operation or undergoing startup or shutdown, the means for determining compliance with the refinery wide limit shall be

accomplished using only one method described in 9-10-301.4 consistently for all sources (previous 30-day average or actual firing rate). For units temporarily out of service, the means for determining compliance with the refinery wide limit shall be accomplished using the method described in 9-10-301.5 (previous 30-day average firing rate).

5D) Part 5A does not apply during any source test required or permitted by this condition. (Reg. 9-10-502). See Part 7 for the consequences of source test results that exceed the emission factors in Part 5.

NOx Box Deviations

*6. NOx Box Deviations (9-10-502)

The owner/operator may deviate from the NOx Box (either the firing rate or oxygen limit) provided that the owner/operator conducts a district approved source test which reasonably replicates the past operation outside of the established ranges. The source test representing the new conditions shall be conducted no later than the next regularly scheduled source test period, or within eight months, whichever is sooner. The source test results will establish whether the source was operating outside of the emission factor utilized for the source. The source test results shall be submitted to the district source test manager within 45 days of the test. The owner/operator may request, and the APCO may grant, an extension of 15 days for submittal of results. As necessary, a permit amendment shall be submitted.

a. Source Test <= Emission Factor If the results of this source test do not exceed the higher NOx emission factor in Part 5, or the CO limit in Part 9, the unit will not be considered to be in violation during this period for operating out of the “box.”

1) The facility may submit an accelerated permit program permit application to request an administrative change of the permit condition to adjust the NOx Box operating range(s), based on the new test data.

b. Source Test > Emission Factor If the results of this source test exceed the permitted emission concentrations or emission rates then the actions described below must be followed: i. Utilizing measured emission concentration or rate, the owner/operator shall perform an assessment, retroactive to the date of the previous source test, of compliance with Section 9-10-301. The unit will be considered to have been in violation of 9-10-301 for each day the facility was operated in excess of the refinery wide limit. ii. The facility may submit a permit application to request an alteration of the permit condition to change the NOx emission factor and/or limit and/or adjust the operating range, based on the new test data.

c. Reporting - The owner/operator must report conditions outside of box within 96 hours of occurrence.

Periodic Source Testing for Sources w/o NOx CEM.

*7. For each source subject to Part 3, the owner/operator shall conduct source tests at the schedule listed below. The source tests are performed in order to measure NOx, CO, and O2 at the as-found firing rate, or at conditions reasonably specified by the APCO. The source test results shall be submitted to the district source test manager within 45 days of the test. The owner/operator may request, and the APCO may grant, an extension of 15 days for submittal of results. (Reg.9-10-502)

Source Testing Schedule

a. Heater < 25 MMBtu/hr
One source test per consecutive 12 month period. The time interval between source tests shall not exceed 16 months.

b. Heaters =/> 25 MMBtu/hr
Two source tests per consecutive 12 month period. The time interval between source tests shall not exceed 8 months and not be less than 5 months apart. The source test results shall be submitted to the district source test manager within 45 days of the test. (Reg.9-10-502)

Source Test Results

NOx Box Emission Factor If the results of any source test under this part exceed the permitted concentrations or emission rates the owner/operator shall follow the requirements of Part 6.b. If the owner/operator chooses not to submit an application to revise the emission factor and/or limit, the owner/operator shall conduct another Part 7 source test, at the same conditions, within 90 days of the initial test.

Periodic Source Testing for Sources w/ NOx CEM

*8. For each source listed in Part 1 with a NOx CEM installed, the owner/operator shall conduct semi-annual district approved CO source tests at as-found conditions. The time interval between source tests shall not exceed 8 months. District conducted CO emission tests associated with District-conducted NOx CEM field accuracy tests may be substituted for the CO semi-annual source tests. CO Exceedance & CEM Installation.

*9. For any source listed in Part 1 with a maximum firing limit greater than 25 MMBtu/h for which any two source test results over any consecutive five year period are greater than or equal to 200 ppmv CO at 3% O2, the owner/operator shall properly install, properly maintain, and properly operate a CEM to continuously measure CO and O2. The owner/operator shall install the CEM within the time period allowed in the District's Manual of Procedures. (Reg.9-10-502, 1-522)
Recordkeeping

*10. In addition to records required by 9-10-504, the facility must maintain records of all source tests conducted to demonstrate compliance with Parts number 1 and 5. These records shall be kept on site for at least five years from the date of entry in a District

approved log and be made available to District staff upon request. (record keeping & 9-10-504)
NOx Box Policy
Rev. 2, Updated 9/30/03

Regulation 9-10 Alternate NOx Compliance Plan

*11. The Owner/Operator shall calculate and totalize NOx emissions from all sources listed in part 1 which are subject to the refinery-wide NOx emission rate limit in Regulation 9-10 on a calendar day basis. The procedure to be used for this purpose shall be the summation of daily emissions in Alternative NOx Compliance Plan for Regulation 9-10-308 compliance. The initial limit shall be 3,699 pounds of NOx per day and shall include all sources. The interim limit shall be either 3,437 pounds of NOx per day (with S-4170 shutdown) or 3,414 pounds of NOx per day (with S-4171 shutdown). The final limit shall be 3,116 pounds of NOx per day (with S-4170, S-4171, and S-4158 shutdown). The Owner/Operator shall retain all emission calculations for a period of at least five years from the last date of entry and make them available to District staff upon request. (Basis: Offsets, Reg.9-10-308)

*12. The owner/operator of each source listed in Part 1 shall determine compliance with Part 11 as follows: (Basis: Regulation 9-10-308)

a. Calculate NOx emissions using measured fuel gas rates, and either:
i. NOx CEM data, or
ii. NOx emission factor from Part 5A for S-4069, S-4154, S-4158, and S-4189.

b. The daily mass NOx emission rate shall be determined by summing total emissions from sources listed in Part 1 above. Any units removed from service do not need to be included in the total emissions.

*13. The applicant shall submit quarterly reports of their ANCP activity no later than 30 days after the close of each calendar quarter. (Basis: Regulation 9-10-505.2)

Recommendations

The proposed project is expected to comply with all applicable requirements of District, State, and Federal air quality related regulations. I recommend issuing a Permit to Operate for the following sources:

S-4038	**#4 RHENIFORMER, F-3550**
S-4039	**#4 RHENIFORMER, F-3560**
S-4040	**#4 RHENIFORMER, F-3570**
S-4041	**F3580, #4 RHENIFORMER**
S-4042	**#5 RHENIFORMER F550 w/36 Ultra Low NOx Burners**
S-4043	**F560, #5 RHENIFORMER**
S-4044	**#5 RHENIF F570**
S-4045	**#5 RHENIF F580**
S-4059	**#1 JHT Furnace #247**
S-4060	**#1 JHT Furnace #210A&B**
S-4061	**#5 NAPH HYDROTREATER F410**
S-4062	**#5 NAPH HYDROTREATER F447**
S-4068	**VGO DESULFURIZER F-1610**
S-4069	**VGO F1660**
S-4070	**#4 CRUDE UNIT F 1100A**
S-4071	**#4 CRUDE UNIT F1100B**
S-4072	**#4 CRUDE UNIT F1160**
S-4129	**800# STM BLR #1 #IPP**
S-4131	**800# STM BLR #3 #1PP**
S-4132	**800# STM BLR #4 #1 PP**
S-4133	**800# STEAM BLR #5 #1PP**
S-4135	**800# STM BLR #7 #1 PP**
S-4152	**F-100 ASPHALT SOLUTION HEATER SDA ISOMAX**
S-4154	**F-120 ASPHALT SOLUTION HEATER SDA ISOMAX**
S-4155	**F-135 Hot Oil Furnace**
S-4158	**Hydrogen Plant Preheat Furnace F-340**
S-4159	**F410 TKC FEED FURNACE TKC ISOMAX**
S-4160	**F420 TKC FEED FURNACE TKC ISOMAX**
S-4161	**F-510 TKN Feed Furnace/Low NOx Burners**
S-4162	**F-520 TKN Furnace/Low-NOx Burners**
S-4163	**F-530 TKN Feed Furnace/Low NOx Burners**
S-4164	**F-630 ISOCRACKER FEED FURNACE ISOMAX w/Ultra Low NOX Bur**
S-4165	**F620 ISOCRACKER FEED FURNACE ISOMAX w/Ultra Low NOX Bur**
S-4166	**F-610 ISOCRACKER FEED FURNACE ISOMAX w/Ultra Low NOX Burn**
S-4167	**F-710 TKC FRACTIONATOR ISOMAX**
S-4168	**F-730 ISOCRACKER SPLITTER FEED FURNACE ISOMAX w/Ultra Low**
S-4169	**F-731 ISOCRACKER REBOILER ISOMAX w/Ultra Low NOX Burners**

S-4170 F355 REFORMING FURNACE, H2 PLANT
S-4171 F355 REFORMING FURNACE, H2 PLANT
S-4188 F-651 Polymer Furnace/Low NOx Burners
S-4189 F-661 Polymer Furnace/Low NOx Burners
S-4330 HNHF Reactor Furnace, F-1610
S-4331 LNHF Reactor Furnace, F-1310
S-4332 Hot Oil Furnace, F-1360
S-4333 TKC Vacuum Furnace, F-1750
S-4334 LNC Atmos Furnace, F-1200
S-4335 LNC Vacuum Furnace, F-1250
S-4336 HNC Reactor Furnace, F-1410
S-4337 HNC Atmos Furnace, F-1500
S-4338 HNC Vacuum Furnace, F-1550
S-4339 LNC Reactor Furnace, F-1110

_____ _____
Stanley Tom Date
Air Quality Engineer

Engineering Evaluation Report

Chevron Products Company, Plant #10

841 Chevron Way, Richmond, CA
Application #29494

Background

Chevron Products Company has applied to obtain an Authority to Construct permit to alter the following equipment:

S-3202 External Floating Roof Tank (T-3202) (unheated)
Tank location: Blending & Shipping (B&S) Area Business Unit
Pole Yard Tank Field
Material stored: Gasoline
Tank volume: 4,267 thousand gallons; 101,600 bbls
Tank dimension: Diameter (110 ft) x height (60 ft)
Throughput: 4,000,000 bbl in any consecutive 12 month period

Chevron has proposed to install a dome at S-3202 to comply with the "ROG Mitigation" measure 4.3-5f. of the City of Richmond Conditional Use Permit for the Chevron Modernization Project reviewed under Application number 12842. The tank must be in operation with the dome installed within three years following commencement of the Chevron Modernization Project operations. The Chevron Modernization Project commenced operation in the third quarter of 2018.

Criteria Pollutant Emission Calculations

AP-42 Chapter 7.1 was used to estimate S-3202's maximum daily and annual POC emissions using information summarized in Table 1 below.

Table 1: Tank details and fittings information	
Roof	Pontoon
Construction	Welded
Primary seal	Mechanical shoe
Secondary seal	Rim-mounted
Access Hatch (24-in. Diam.)/Bolted Cover, Gasketed	1
Slotted Guide-Pole/Sample Well/Gask. Sliding Cover, w. Float, Wiper	1
Automatic Gauge Float Well/Bolted Cover, Gasketed	1
Roof Drain (3-in. diameter)/90% closed	1
Gauge Hatch/Sample Well (8-in. Diam.)/Weighted Mech. Actuation, Gask.	1
Vacuum Breaker (10 in Diam.)/Weighted Mech. Actuation, Gask.	1
Rim Vent (6-in. Diameter)/Weighted Mech. Actuation, Gask.	1
Roof Leg (3-in. Diameter)/Adjustable, Pontoon Area, Gasketed	18
Roof Leg (3-in. Diameter)/Adjustable, Center Area, Gasketed	20

The proposed installation of the dome will reduce POC emissions by 11,652 lb/year (14,079 – 2,427). Therefore, S-3202 is an altered source.

Cumulative Increase

The District tracks increases in emissions from each facility. These cumulative emissions were reset on April 5, 1991 for all facilities. This is an existing facility with pre-existing cumulative emissions.

Doming the tank would alter S-3202. Therefore, the cumulative increase in POC emissions is zero.

Statement of Compliance

Regulation 2, Rule 1: California Environmental Quality Act (CEQA) Requirements
District Regulation 2, Rule 1, Section 310 specifies that all proposed new and modified sources subject to District permit requirements must be reviewed in accordance with the California Environmental Quality Act (CEQA) requirements, except for ministerial projects or projects exempt from CEQA under Section 2-1-312. The engineering review for this project requires only the application of standard permit conditions and standard emission factors in accordance with Permit Handbook Chapter 4, Organic Liquid Storage Tank. Therefore, this application is considered to be ministerial and is exempt from CEQA review. The Air District has determined that this approval is exempt from CEQA because the Air District's permit action is "ministerial" and therefore exempt from CEQA under Public Resources Code § 21080(b)(1). The Air District's permit action is categorically exempt from CEQA because it authorizes a minor modification of an existing use and does not authorize any expansion of that existing use (CEQA § 21084; Guidelines § 15301). Further, the Air District has also determined that this permit action is exempt from CEQA because the permit application is for installing air pollution control or abatement equipment (i.e., the dome) and this category is exempted by the express terms of CEQA. The Air District has determined that this action is also exempt from CEQA review as an action by a regulatory agency for protection of natural resources (CEQA § 21083; Guidelines § 15307). The action is further exempt under the "common sense" exemption. (CEQA Guidelines § 15061(b)(3)).

Reasons for Exemption: Installing a dome on S-3202 will result in a decrease in precursor organic compound (POC) emissions. Therefore, S-3202 is an altered (versus modified) source. The Air District's action is ministerial because regulatory requirements that govern the approval of this project involved objective numerical standards outlined in the Permit Handbook Chapter 4, which did not allow for or require any subjective judgment or discretion to interpret or apply. In addition, the project did not trigger Best Available Control Technology (BACT) or BACT for toxics. Because the approval is ministerial, the project is exempt from CEQA. Also, the air pollution abatement equipment of this project (i.e., the dome) is also subject to the "Addition of safety or health protection devices for use during construction of or in conjunction with existing structures, facilities, or mechanical equipment…" CEQA exemption (Guidelines 15301(f)). This approval is also exempt because it involves a minor alteration of an existing use and does not authorize any change to, or expansion of, that existing use of the source. In addition, the project is

being undertaken for the sole purpose of bringing an existing facility into compliance with newly adopted regulatory requirements (i.e., the City of Richmond's Conditional Use Permit. Finally, the applicant has included in its permit application CEQA-related information (CEQA Appendix H) that demonstrates that the project has no potential for resulting in any additional or different environmental impacts beyond what is already entailed in the applicant's existing use of the tank. Further, because the project involves only installing a dome to reduce POC emissions on an existing tank, the project would also be subject to the source and therefore, the project would also be exempt under the "Common Sense" exemption (Guidelines § 15061(b)(3)).

Regulation 2, Rule 1: School Public Notice Requirements

The public notification requirements of Regulation 2-1-412 apply to modifications (and not alterations) which will result in an increase in toxic air contaminant or hazardous air contaminant emissions at facilities within 1,000 feet of the boundary of a K-12 school. Because doming S-3202 will alter (vs. modify) the tank, the public notice requirements do not apply.

Regulation 2, Rule 2: Best Available Control Technology (BACT) Requirements

Per Regulation 2-2-301, BACT is only triggered for new or modified sources. The proposed installation of the dome will alter (vs. modify) S-3202. Therefore, BACT is not triggered.

Regulation 2, Rule 2: Offsets

Doming S-3202 will not result in a cumulative increase in POC emissions. Therefore, offsets are not required.

Regulation 2, Rule 2: Prevention of Significant Deterioration (PSD)

The proposed project to dome S-3202 will not result in an emissions increase. Therefore, the project is not subject to PSD requirements.

Regulation 2, Rule 2: Maximum Available Control Technology (MACT)

S-3202 will not be used to store benzene waste streams. Instead the tank will be used to store gasoline that could contain up to 8.1% by weight benzene as one of its components, since Part 3 of permit condition #13364 limits the benzene concentration in materials stored in S-3202 to not exceed 8.1% by weight. Therefore, 40 CFR 61, Subpart FF (BWON) "National Emission Standards for Benzene Waste Operations" does not apply to S-3202.

S-3202 is a Group 1 vessel and will comply with 63.640(n) in 40 CFR 63, Subpart CC (MACT CC) "National Emission Standards for Hazardous Air Pollutants from Petroleum Refineries" via NSPS Kb.

Regulation 2, Rule 2: Major Modification of a Major Facility

Section 2-2-221 defines Major Modification as any modification, as defined in Regulation 2-1-234, at an existing major facility that the APCO determines will cause an increase of the facility's emissions by the following amounts or more:

POC: 40 tons per year
NOx: 40 tons per year
SO2: 40 tons per year
PM10: 15 tons per year
CO: 100 tons per year

The proposed project to dome S-3202 will not result in an emissions increase. Therefore, this application is not a Major Modification of a Major Facility.

Regulation 2, Rule 5: Permits – New Source Review of Toxic Air Contaminants - Health Risk Assessment Requirements
Parts 1 and 3 of permit condition #13364 limit the annual throughput and the concentration of benzene in materials stored in S-3202 to not exceed 4,000,000 barrels per year and 8.1% by weight, respectively. Chevron's proposal to dome S-3202 will not result in any changes to parts 1 and 3 of permit condition #13364 and will not result in an increase in daily or annual emission levels of any
Toxic Air Contaminants (TACs). Therefore, S-3202 is not a modified source per Regulation 2-5-214 and a HRA is not required.

Major Facility Review, Regulation 2, Rule 6
40 CFR Part 70, State Operating Permit Programs (Title V)
The facility has a Title V permit. This project will trigger a minor revision of the Title V permit. It will be addressed in a separate application under A#29495 after Chevron's Title V permit is renewed under A#27756.

Regulation 8, Rule 5: Storage of Organic Liquids
S-3202 is subject to Section 8-5-301 (control requirements for storage tanks), Section 8-5-320 (fitting requirements for floating roof tanks), Section 8-5-321 (primary seal requirements), Section 8-5-322 (secondary seal requirements), Section 8-5-328 (degassing requirements), Section 8-5-331 (tank cleaning requirements), Section 8-5-332 (sludge handling requirements). The District's Compliance and Enforcement staff will verify S-3202's compliance with the above sections during their routine inspections.

Regulation 8, Rule 18: Equipment Leaks
S-3202 tank fittings summarized in Table 1 above are exempt from Regulation 8, Rule 18 "Equipment Leaks" per Section 8-18-115. Chevron has confirmed doming S-3202 will not require any new hydrocarbon piping components.

40 CFR Part 60, Standards of Performance for New Stationary Sources (NSPS): Subpart Kb, Standards of Performance for Volatile Organic Liquid Storage Vessels (Including Petroleum Liquid Storage Vessels) For Which Construction, Reconstruction, or Modification Commenced after July 23, 1984
S-3202's storage capacity is >= 75 m3; it was constructed after July 23, 1984; and it will be used to store a volatile organic liquid which can emit volatile organic compounds (as

defined in 40 CFR 51.100) into the atmosphere. S-3202 is subject to and is expected to comply with the requirements of 40 CFR 60 Subpart Kb.

Permit Conditions

Permit Condition # 13364

COND# 13364

~~AN 12693~~
Operation of S-3202 Methanol Storage Tank, 101,600 BBL, is subject to the following conditions:

1. The owner/operator of S-3202 shall not exceed 4,000,000 barrels throughput of non-exempt stock in any consecutive 12 month period. (Basis: BACT)

2. The owner/operator may store petroleum hydrocarbon stocks other than methanol as long as the true vapor pressure is 8.33 psia or less and emissions of toxic compounds do not exceed any risk screening trigger level. (Basis: BACT)

3. The owner/operator of S-3202 shall not store any materials with a benzene concentration that exceeds 8.1% by weight. In order to demonstrate compliance with this condition the owner/operator shall conduct quarterly tests to determine the benzene concentration. The owner/operator of S-3202 may use specification sheets when available instead of quarterly testing. (Basis: toxics)

4. The owner/operator of S-3202 shall control organic emissions from the external floating roof tank ~~shall be equipped with a mechanical shoe~~ by installing a dome, a mechanical shoe primary seal that extends below the liquid surface, and a zero-gap secondary seal. There shall be no ungasketed roof fittings. Except for roof legs, each roof fitting shall be of the design, which yields the minimum roof fitting losses. The following list indicates the type of control required for a variety of typical roof fittings. Control techniques for roof fittings not included in this list shall be subject to District approval. (BACT)

Fitting Type	Control Technique
Access hatch	Bolted cover, gasketed
Guide pole/Well	unslotted guide pole, gasketed sliding cover with wiper; or slotted with a liner from the top of the well to below the roof when landed on its legs
Gauge float well	bolted cover, gasketed
Gauge hatch/Sample well	Weighted mechanical actuation, gasketed

Vacuum breaker	Weighted mechanical actuation, gasketed
Roof drain	Roof drain does not drain water into product
Roof leg	Fixed; or Adjustable, with vapor seal boot, or gasket between roof leg and leg sleeve
Rim vent	Weighted mechanical actuation, gasketed

5. The owner/operator of S-3202 shall maintain a district approved log of all throughput, vapor pressure, and either specification sheets or quarterly tests for benzene concentrations for all materials stored in S-3202. This log shall be kept on site for at least 5 years from the date of entry and be made available to district staff upon request. (record keeping)

Recommendations

The proposed project is expected to comply with all applicable requirements of District, State, and Federal air quality related regulations. I recommend issuing an Authority to Construct permit for the alteration of the following source:

S-3202 External Floating Roof Tank (T-3202) (unheated)
Tank location: Blending & Shipping (B&S) Area Business Unit
Pole Yard Tank Field
Material stored: Gasoline
Tank volume: 4,267 thousand gallons; 101,600 bbls
Tank dimension: Diameter (110 ft) x height (60 ft)
Throughput: 4,000,000 bbl in any consecutive 12 month period

_____ _____
Stanley Tom, P.E. Date
Air Quality Engineer

Engineering Evaluation Report

Chevron Products Company, Plant #10

841 Chevron Way, Richmond, CA Zip code
Application #29866

Background

Chevron Products Company has applied to obtain changes of conditions to the Authority to Construct for the following equipment:

S-4449 Hydrogen Plant Train #1
S-4450 Hydrogen Plant Train #2
S-4471 Hydrogen Plant Train #1 Reformer Furnace
S-4472 Hydrogen Plant Train #2 Reformer Furnace

In 2008, Chevron was issued an Authority to Construct permit for modernization of the hydrogen plant under Application # 12842. When the hydrogen plant conditions were written in application #12842, JJ Lurgi was the engineering firm manufacturing the hydrogen plant for Praxair. Chevron purchased the Hydrogen Plant from Praxair and has completed construction. The Hydrogen Plant started up as shown below:

S-4449 & S-4471 H2 Plant & Reformer Furnace #1 on October 27, 2018
S-4450 & S-4472 H2 Plant & Reformer Furnace #2 on December 17, 2018

Upon the sale, Chevron employed Technip Stone to complete the engineering and design of the hydrogen plant. Technip Stone developed the startup, shutdown, and dryout/warmup procedures which Chevron is currently following. The proposed startup, shutdown, and dryout/warmup time periods are based upon final engineering design and recommendations provided by Technip Stone. They are acceptable as long as the startup and shutdown emissions will be included in the total hydrogen plant emission limits. Chevron will determine and monitor emissions during all startup, shutdown, and dryout/warmup periods to ensure compliance with all hydrogen plant original emission limits in part 9 of permit condition #24136.

Chevon proposes the following changes to permit condition #24136:

Condition # 24136, Part 13)
d) "Startup" shall mean that period of time including Furnace Startup as defined in part 13e and the introduction of hydrocarbon feedstock to the Hydrogen Plant S-4449 and S-4450, ending with the full routing of the PSA tail gas to either of the respective furnaces or when compliance with the part 14 emission limits have been achieved. The period of time from the introduction of hydrocarbon feedstock to S-4449 and S-4450 to the end of startup shall not exceed ~~8~~ 17 hours. Each individual "Startup", which includes Furnace Startup, shall not exceed ~~24~~ 50 hours except during the "Commissioning Period". For S-4449, "Startup" is completed once PV-17004 PSA1 Tail Gas to Flare Control Valve, has been closed for 30 minutes or when compliance with the part 14 emission limits have been achieved. For S-4450, " Startup" is completed once PV-27004 PSA2 Tail

Gas to Flare Control Valve, has been closed for 30 minutes or when compliance with the part 14 emission limits have been achieved. If "Startup" shall be interrupted before completion, the resumed startup activities shall constitute a second "Startup" with its own time limitations.

Condition # 24136, Part 13)
e) "Furnace Startup" shall mean that period of time during which the furnace is put into service immediately following "Commissioning Period" as defined in part 13a, or any subsequent shutdown, by following a prescribed series of separate steps or operations. "Furnace Startup" shall be initiated when the furnace begins to receive fuel flow from its inactive, pre-startup temperature up to the point where the respective SCR unit is placed in operation in accordance with part 16 or when compliance with the part 14 emission limits have been achieved. If "Furnace Startup" shall be interrupted before completion, the resumed furnace startup activities shall constitute a second "Furnace Startup" with its own time limitations.
i) The Owner/Operator of Furnaces S-4471 and S-4472 shall not exceed a combined total of ~~132~~ 230 consecutive hours during any consecutive 12-month period for "Furnace Startup". The owner/operator of each individual "Furnace Startup" shall not exceed ~~20~~ 36 hours for each hydrogen plant reformer furnace (S-4471 and S-4472) except during the "Commissioning Period".

Condition # 24136, Part 13)
f) "Shutdown" for S-4449 is initiated when ~~shall mean that period of time during which the furnace is taken out of service following a prescribed series of separate steps or operations~~ the PSA 1 Tail Gas to Flare Control Valve PV-17004 is opened and ends when fuel supply to the reformer has been shut off or when compliance with the part 14 emission limits have been achieved ~~including clearing the reformer system piping of combustibles~~. "Shutdown" for S-4450 is initiated when the PSA 2 Tail Gas to Flare Control Valve PV-27004 is opened and ends when fuel supply to the reformer has been shut off or when compliance with the part 14 emission limits have been achieved. "Shutdown" for each furnace S-4471 and S-4472 is initiated once ammonia injection into the respective SCR units (A-0302, A-0303) has been stopped in accordance with part 16. The end of shutdown is reached when the fuel supply to the reformer has been shut off or when compliance with the part 14 emission limits have been achieved ~~and reformer system piping has been cleared of combustibles~~.

Condition # 24136, Part 13)
g) Except during the commissioning period, the Owner/Operator of S-4471 and S-4472 shall not exceed the following operation limitations for either furnace:

(1) Each "Shutdown" shall not exceed ~~9~~ 12 consecutive hours.

The definition of startup and shutdown for S-4449, S-4450, S-4471 and S-4472 have been clarified to be more specific to when the shutdown process starts and ends. The phrase "or when compliance with the part 14 emission limits have been achieved" has been added to clarify that the startup and shutdown period will end prior to the time limit

if the part 14 emission limits have been achieved. Nitrogen circulation aides in removing any hydrocarbons from the system prior to opening equipment for maintenance turnarounds. Following unplanned shutdown, the introduction of nitrogen to the system is contingent upon how quickly the system can be restarted. If the system is above required temperature there is no need to clear the system with nitrogen. Therefore, it may not be necessary to clear the reformer system piping of combustibles during every shutdown.

Condition # 24136, Part 13)
i) "Dryout/warmup" shall mean an event that occurs during the Commissioning Period and whenever ~~new~~ hydrogen plant reformer furnace refractory ~~has been installed. When this new refractory~~ is heated for the first time or for the purpose of dryout. During this dryout/warmup period, the hydrogen plant reformer furnace is brought gradually to operating temperature through a series of prescribed steps designed to ensure safe operation of the furnace.

j) Except during the commissioning period, the Owner/Operator of S-4471 and S-4472 shall not exceed the following operation limitation for either furnace:

(1) Each "Dryout/Warmup" of ~~new~~ furnace refractory heating shall not exceed 120 hours per each dryout/warmup.

A review of application #12842 indicates this definition is intended for instances of new refractory material being installed or significant changes to the refractory. During these periods, excess moisture present is required to be gently removed from the castable monolithic refractory linings. This is accomplished by heating the Hydrogen Plant Reformer Furnace at a rate no greater than 35 F/hour. In addition, several temperature hold steps are required. When the furnace temperature reaches one of the hold steps, it is held at that temperature by maintaining a constant firing rate. The hold steps occur at approximately 200 F, 400 F, 750 F, and 1,000 F. The duration of the hold steps can be as long as 24 hours each. The length of the hold step is dependent on the thickness of the castable monolithic refractory linings. After the 1,000 F hold step, the furnace is cooled at a rate of 90 F/hour until it is brought back to ambient temperature. In total, this process can take upwards of 120 hours to ensure the proper dryout of the castable monolithic refractory linings.

The SCR units are not operated during the dryout/warmup period. Dryout/warmup periods are necessary when there are significant refractory changes or refractory replacement. There are two reasons for SCR not being used during dryout/warmup. First, during this period the temperature at the SCR does not reach the minimum required temperature of 500 F in order to inject ammonia for oxides of nitrogen (NOx) reduction. Second, should there be any dust remaining on the castable monolithic refractory linings from construction, or generated during the dryout/warmup process, it would get trapped in, and blind (or masks), the SCR.

Condition # 24136, Part 9)

9) a) The Owner/Operator shall not exceed the following combined annual limits from the hydrogen plant reformer furnaces (S-4471, S-4472) and hydrogen plant flare (S-6021) in any consecutive 12 month period. The emissions shall also include startup, shutdown, and dryout/warmup periods. [Basis: Cumulative Increase, 2-2-302, 2-2-303]

Pollutant	Annual (tons)
NOx	64.43
CO	92.28
SO2	5.25
PM10	20.98
POC	28.6

The Owner/Operator shall not exceed the following combined annual limits from the hydrogen plant reformer furnaces (S-4471, S-4472) and hydrogen plant flare (S-6021) in any consecutive 12 month period when utilizing supplemental natural gas for the hydrogen plant flare. The emissions shall also include startup, shutdown, and dryout/warmup periods. [Basis: Cumulative Increase]

Pollutant	Annual (tons)
NOx	67.81
CO	110.69
SO2	5.39
PM10	21.35
POC	35.57

b) The Owner/Operator shall not exceed the following combined annual emissions limits from the hydrogen plant reformer furnaces (S-4471, S-4472) in any consecutive 12 month period. The emissions shall also include startup, shutdown, and dryout/warmup periods. [Basis: Cumulative Increase, 2-2-302, 2-2-303]

Pollutant	Annual (tons)
NOx	53.28
CO	64.88
SO2	4.94
PM10	20.68
POC	23.22

c) The Owner/Operator shall determine the daily and monthly emissions used to establish rolling annual emissions totals from S-4471 and S-4472 using continuous emission monitor (CEM) data for NOx and CO, and using District approved emission factors shown in part 14 and District-approved fuel consumption data from each S-4471 and S-4472 for PM10 and POC. The owner/operator shall determine daily (with monthly totals) SO2 emissions from the sum of the total sulfur in the natural gas (including medium BTU natural gas) fuel stream and the total sulfur in the feed gas stream (“PSA tail gas”), assuming 100% conversion of total sulfur to SO2. SO2 emissions shall be calculated using a method approved by the APCO. The sulfur in the

natural gas fuel stream shall be calculated as the concentration of sulfur in the incoming natural gas supply, as measured daily by an on-stream analyzer, multiplied by the measured flow of natural gas used as fuel. The sulfur in the feed gas stream shall be calculated as the measured total feed gas processed in the desulphurization unit multiplied by the actual total sulfur content either as measured downstream of the desulphurization unit by the continuous on-stream analyzer or that analyzer's lower detection limit, whichever is greater.

The owner/operator of the hydrogen plant flare (S-6021) shall use the emissions factors presented in part 27 in order to demonstrate compliance with the part 9a annual limits.

[Basis: Monitoring, cumulative increase, offsets]

Criteria Pollutant Emission Calculations
This condition change application will not result in any emission increases. Chevron will include all emissions during startup and shutdown in the annual hydrogen plant emissions, which remain the same as specified in Part 9 of Condition # 24136.

Cumulative Increase
The District tracks increases in emissions from each facility. These cumulative emissions were reset on April 5, 1991 for all facilities. This is an existing facility with pre-existing cumulative emissions.

Since the project does not involve a new or modified source the cumulative increase for this application is zero for all pollutants.

Statement of Compliance

Regulation 2, Rule 1: California Environmental Quality Act (CEQA) Requirements
District Regulation 2, Rule 1, Section 310 specifies that all proposed new and modified sources subject to District permit requirements must be reviewed in accordance with CEQA requirements, except for ministerial projects or projects exempt from CEQA under Section 2-1-312.

The District has determined that the issuance of the change of permit conditions in Permit Application No. 29866 is exempt from CEQA because the permitting of the project involved no expansion of use beyond that existing at the time of the District's CEQA determination. (CEQA § 21084; Guidelines § 15301).

Reasons for Exemption: Issuance of permit condition changes for the existing hydrogen plant that involve no emissions increases or physical modifications does not expand an existing use. In addition, even if the project did constitute an expansion of an existing use, the applicant has included in its permit application CEQA-related information (CEQA Appendix H) that demonstrates with certainty that the project has no potential for resulting in any additional or different environmental impacts beyond what is already entailed in the

applicant's existing use of the hydrogen plant; the project would therefore also be subject to the "Common Sense" exemption (Guidelines § 15061(b)(3)).

Regulation 2, Rule 1: School Public Notice Requirements
The public notification requirements of Regulation 2-1-412 apply to modifications which result in an increase in toxic air contaminant or hazardous air contaminant emission at facilities within 1,000 feet of the boundary of a K-12 school. The Applicant has reported no K-12 school within that radius of this facility, and the District's database confirms that there is no K-12 school within one mile from the facility. Therefore, the public notice requirements do not apply to this operation.

Regulation 2, Rule 2: New Source Review
The proposed application does not make any physical change to, or change in the method of operation of, a source which may affect emissions. The revision to the startup and shutdown definitions in this application will not affect potential emissions. Therefore, this application is not a NSR modification and is not subject to New Source Review.

Regulation 2, Rule 2: Prevention of Significant Deterioration (PSD)
Regulations 2-2-304 through 309 and 2-2-315 apply to PSD facilities. Sites belonging to one of the 28 PSD source categories listed in section 169(l) of the federal Clean Air Act have a PSD threshold of 100 tons/year for each regulated air pollutant and must include fugitive emissions when making a PSD major facility determination. However, sites that fall within unlisted categories (such as landfill facilities) have a PSD major facility threshold of 250 tons/year for each regulated air pollutant and may exclude fugitive emissions when making this major facility determination.

There are no increases in emissions from this application. Therefore, this project is not subject to PSD requirements.

Regulation 2, Rule 2: Maximum Available Control Technology (MACT)
The hydrogen plant is subject to and expected to comply with the following Section 112 of the Clean Air Act, New Source Performance Standards and National Emission Standards for Hazardous Air Pollutants (NESHAP).

- 40 CFR Part 60, Subpart A – General Provisions
- 40 CFR Part 60, Subpart J – Petroleum Refineries
- 40 CFR Part 60, Subpart Ja – Petroleum Refineries
- 40 CFR Part 60, Subpart GGG – Equipment Leaks of VOC in Petroleum Refineries
- 40 CFR Part 61, Subpart J – Equipment Leaks (Fugitive Emission Sources) of Benzene
- 40 CFR Part 61, Subpart V – Equipment Leaks (Fugitive Emission Sources)
- 40 CFR Part 63, Subpart A – General Provisions
- 40 CFR Part 63, Subpart H – Equipment Leaks
- 40 CFR Part 63, Subpart CC – Petroleum Refineries
- 40 CFR Part 63, Subpart DDDDD – Industrial, Commercial, and Institutional Boilers and Process Heaters

The hydrogen plant is subject to the above subparts. Revisions to the definition and duration of the startup and shutdown requirements of the hydrogen plant will not affect the applicability of any subpart. The hydrogen plant will continue to be subject to and comply with the provisions of the above listed subparts.

Regulation 2, Rule 5: Permits – New Source Review of Toxic Air Contaminants - Health Risk Assessment Requirements

The proposed application does not make any physical change to, or change in the method of operation of, a source which may affect emissions. The revision to the startup and shutdown definitions in this application will not affect potential emissions. Therefore, this application is not a NSR modification and is not subject to New Source Review and a health risk assessment is not required.

Major Facility Review, Regulation 2, Rule 6
40 CFR Part 70, State Operating Permit Programs (Title V)

This facility is subject to MFR Permit requirements pursuant to Regulation 2-6-301, because it has the potential to emit more than 100 tons per year of any regulated air pollutant. This facility was required to obtain a Title V Federal Operating Permit. The requirements of this program have been codified in District Regulation 2, Rule 6.

The facility was issued the initial Title V permit. This project will trigger a minor revision per Regulation 2-6-215 of the Title V permit and will be addressed in a separate application.

Regulation 6, Rule 1: Particulate Matter – General Requirements

The hydrogen plant sources are expected to comply with District Regulation 6-1, including Sections 301: Ringelmann No. 1 Limitation, 302: Opacity Limitation, with visible emissions not to exceed 20% opacity, and Section 310: Particulate Weight Limitation, with particulate matter emissions of less than 0.15 grains per dry standard cubic foot (dscf) of exhaust gas volume. Hydrogen plant combustion sources are fueled with gaseous fuels and are expected to comply with the grain loading limit indicated in District Regulation 6-1-310.

Regulation 7: Odorous Substances

The purpose of Regulation 7 is the general control of odorous compounds. The hydrogen plant sources are expected to comply with Regulation 7. Ammonia is mentioned specifically in Regulation 7.

Regulation 7-302 prohibits the discharge of odorous substances, which remain odorous beyond the facility property line after dilution with four parts odor-free air. Regulation 7-302 limits ammonia emissions to 5,000 ppmvd. Because the ammonia slip emissions from the hydrogen plant combustion sources equipped with SCR will be limited by permit condition to 10 ppmvd, the facility is expected to comply with the requirements of Regulation 7.

Regulation 8, Rule 2: Miscellaneous Operations
The hydrogen plant combustion sources are fired on gaseous fuels and are expected to comply with the requirements of Regulation 8, Rule 2.

Regulation 8, Rule 10: Process Vessel Depressurization
Process vessels contained in components of the hydrogen plant are subject to Regulation 8, Rule 10. Section 301 of the rule requires that the emissions during depressurizing be controlled by an abatement device or the fuel gas system until the vessel is as close to atmospheric pressure as possible, but at least until the partial pressure of organic compounds in the vessel is less than 4.6 psig. Section 302 requires that no process vessel may be opened to the atmosphere unless the internal concentration of total organic compounds has been reduced prior to release to the atmosphere to less than 10,000 ppmvd, with the following exception – vessels may be opened when the concentration of total organic compounds is 10,000 ppmvd or greater provided that the total number of such vessels opened with such concentration during any consecutive five year period does not exceed 10% of the total process vessel population, the organic compound emissions from the opening of these vessels does not exceed 15 pounds per day and the vessels are not opened on any day on which the APCO predicts an exceedance of a National Ambient Air Quality Standard for ozone or declares a Spare the Air Day. The hydrogen plant sources that are subject to Regulation 8, Rule 10 are expected to comply with these requirements.

Regulation 8, Rule 18: Equipment Leaks
The hydrogen plant fugitive components - valves, flanges, pumps, compressors, pressure relief devices - are subject to District Regulation 8, Rule 18. The rule has total organic leak limits of 100 ppmvd for valves and flanges, and 500 ppmvd for pumps, compressors, and pressure relief devices. These are "work-practice" standards. The facility is obligated to test the components for leaks on a periodic basis and to repair the leaks. A small percentage of non-repairable leaks are allowed until the next turnaround or five years, whichever is sooner. The facility has an inspection program for this regulation and is expected to comply with these standards.

Regulation 9, Rule 1: Sulfur Dioxide
Regulation 9, Rule 1 establishes emission limits for sulfur dioxide from all sources and applies to the combustion sources at this facility. Section 301 (Limitations on Ground Level Concentrations) prohibits emissions which would result in ground level SO2 concentrations in excess of 0.5 ppmvd continuously for 3 consecutive minutes, 0.25 ppmvd averaged over 60 consecutive minutes, or 0.05 ppmvd averaged over 24 hours. Section 302 (General Emission Limitation) prohibits SO2 emissions in excess of 300 ppmvd (dry). The hydrogen plant sources are not expected to cause ground level SO2 concentrations in excess of the limits specified in Regulation 9-1-301 and should comply with Section 302.

Regulation 9, Rule 3: Nitrogen Oxides from Heat Transfer Operations
The hydrogen plant sources will comply with the Regulation 9-3-303 NOx, limits by complying with more stringent permit limits. This rule only applies to heaters greater than 250 MMBtu/hour.

Permit Conditions

Permit Condition # 24136

CONDITION NO. 24136----------

9) a) The Owner/Operator shall not exceed the following combined annual limits from the hydrogen plant reformer furnaces (S-4471, S-4472) and hydrogen plant flare (S-6021) in any consecutive 12 month period. The emissions shall also include startup, shutdown, and dryout/warmup periods. [Basis: Cumulative Increase, 2-2-302, 2-2-303]

Pollutant	Annual (tons)
NOx	64.43
CO	92.28
SO2	5.25
PM10	20.98
POC	28.6

The Owner/Operator shall not exceed the following combined annual limits from the hydrogen plant reformer furnaces (S-4471, S-4472) and hydrogen plant flare (S-6021) in any consecutive 12 month period when utilizing supplemental natural gas for the hydrogen plant flare. The emissions shall also include startup, shutdown, and dryout/warmup periods. [Basis: Cumulative Increase]

Pollutant	Annual (tons)
NOx	67.81
CO	110.69
SO2	5.39
PM10	21.35
POC	35.57

b) The Owner/Operator shall not exceed the following combined annual emissions limits from the hydrogen plant reformer furnaces (S-4471, S-4472) in any consecutive 12 month period. The emissions shall also include startup, shutdown, and dryout/warmup periods. [Basis: Cumulative Increase, 2-2-302, 2-2-303]

Pollutant	Annual (tons)
NOx	53.28
CO	64.88
SO2	4.94
PM10	20.68
POC	23.22

c) The Owner/Operator shall determine the daily and monthly emissions used to establish rolling annual emissions totals from S-4471 and S-4472 using continuous emission monitor (CEM) data for NOx and CO, and using District approved emission factors shown in part 14 and District-approved fuel consumption data from each S-4471 and S-4472 for PM10 and POC. The owner/operator shall determine daily (with monthly totals) SO2 emissions from the sum of the total sulfur in the natural gas (including medium BTU natural gas) fuel stream and the total sulfur in the feed gas stream ("PSA tail gas"), assuming 100% conversion of total sulfur to SO2. SO2 emissions shall be calculated using a method approved by the APCO. The sulfur in the natural gas fuel stream shall be calculated as the concentration of sulfur in the incoming natural gas supply, as measured daily by an on-stream analyzer, multiplied by the measured flow of natural gas used as fuel. The sulfur in the feed gas stream shall be calculated as the measured total feed gas processed in the desulphurization unit multiplied by the actual total sulfur content either as measured downstream of the desulphurization unit by the continuous on-stream analyzer or that analyzer's lower detection limit, whichever is greater.

The owner/operator of the hydrogen plant flare (S-6021) shall use the emissions factors presented in part 27 in order to demonstrate compliance with the part 9a annual limits.

[Basis: Monitoring, cumulative increase, offsets]

13)
a) The "Commissioning Period" is a one-time occurrence for each furnace, that shall commence when all mechanical, electrical, and control systems are installed and individual system start-up has been completed for that furnace. The Commissioning Period for each furnace shall terminate when the furnace has completed performance testing and is available for operation. In no event shall the Commissioning Period for either furnace exceed 90 days unless the applicant has made a written request for an extension and the District has granted such an extension. The commencement of the Commissioning Period shall be considered the date of initial operation for the Authority to Construct. The final startup conducted at the end of the Commissioning Period shall be considered the initial startup.

b) "Commissioning Activities" shall be defined as all testing, adjustment, tuning, and calibration activities during the Commissioning Period, recommended by the equipment manufacturers and the construction contractor, to insure safe and reliable steady state operation of the hydrogen plant reformer furnace and associated systems. [Basis: cumulative increase, offsets]

i) The Owner/Operator of S-4471 and S-4472 shall submit a District-approved commissioning plan that includes all commissioning activities and corresponding commissioning emissions estimates and monitoring within 60 days prior to any commissioning activities. [Basis: Cumulative Increase]

c) The following conditions shall apply during the Commissioning Period and Commissioning Activities:

i. During the Commissioning Period, the Owner/Operator shall demonstrate compliance with parts ii through iii below through the use of properly operated and properly maintained continuous emission monitors and data recorders for the following parameters:

- firing hours;
- fuel flow rates (calculated exhaust flow rate or measured exhaust flow rate);
- stack gas nitrogen oxide emission concentrations;
- stack gas carbon monoxide emission concentrations; and
- stack gas oxygen concentrations.

ii. The Owner/Operator shall not exceed 600 hours for both furnaces during the Commissioning Period of S-4471 and S-4472 hydrogen plant reformer furnaces without abatement by A-302 and A-303 SCR Systems, respectively. Such operation of the S-4471 and S-4472 hydrogen plant reformer furnaces without abatement shall be limited to discrete Commissioning Activities that can only be properly executed without the SCR system in operation. Upon completion of these activities for each furnace, the owner/operator shall provide written notice to the District and the unused balance of the 600 firing hours without abatement shall expire. The Owner/Operator shall maintain records of all furnace firing hours without the SCR systems in place and operational. (Basis: offsets, Cumulative Increase)

iii. The total mass emissions of NOx, CO, POC, PM10, and SO2 that are emitted by the S-4471 and S-4472 hydrogen plant reformer furnaces during the commissioning period shall be included towards the consecutive twelve-month emission limitations specified in part 9. (Basis: offsets)

d) “Startup” shall mean that period of time including Furnace Startup as defined in part 13e and the introduction of hydrocarbon feedstock to the Hydrogen Plant S-4449 and S-4450, ending with the full routing of the PSA tail gas to either of the respective furnaces or when compliance with the part 14 emission limits have been achieved. The period of time from the introduction of hydrocarbon feedstock to S-4449 and S-4450 to the end of startup shall not exceed 17 hours. Each individual " Startup", which includes Furnace Startup, shall not exceed 50 hours except during the “Commissioning Period”. For S-4449, " Startup" is completed once PV-17004 PSA1 Tail Gas to Flare Control Valve, has been closed for 30 minutes or when compliance with the part 14 emission limits have been achieved. For S-4450, " Startup" is completed once PV-27004 PSA2 Tail Gas to Flare Control Valve, has been closed for 30 minutes or when compliance with the part 14 emission limits have been achieved. If “Startup” shall be interrupted before completion, the resumed startup activities shall constitute a second “Startup” with its own time limitations.

e) “Furnace Startup” shall mean that period of time during which the furnace is put into service immediately following “Commissioning Period” as defined in part 13a, or any subsequent shutdown, by following a prescribed series of separate steps or operations. “Furnace Startup” shall be initiated when the furnace begins to receive fuel flow from its

inactive, pre-startup temperature up to the point where the respective SCR unit is placed in operation in accordance with part 16 or when compliance with the part 14 emission limits have been achieved. If “Furnace Startup” shall be interrupted before completion, the resumed furnace startup activities shall constitute a second “Furnace Startup” with its own time limitations.

i) The Owner/Operator of Furnaces S-4471 and S-4472 shall not exceed a combined total of 230 consecutive hours during any consecutive 12-month period for “Furnace Startup”. The owner/operator of each individual “Furnace Startup” shall not exceed 36 hours for each hydrogen plant reformer furnace (S-4471 and S-4472) except during the “Commissioning Period”.

f) “Shutdown” for S-4449 is initiated when the PSA 1 Tail Gas to Flare Control Valve PV-17004 is opened and ends when fuel supply to the reformer has been shut off or when compliance with the part 14 emission limits have been achieved. “Shutdown” for S-4450 is initiated when the PSA 2 Tail Gas to Flare Control Valve PV-27004 is opened and ends when fuel supply to the reformer has been shut off or when compliance with the part 14 emission limits have been achieved. "Shutdown" for each furnace S-4471 and S-4472 is initiated once ammonia injection into the respective SCR units (A-0302, A-0303) has been stopped in accordance with part 16. The end of shutdown is reached when the fuel supply to the reformer has been shut off or when compliance with the part 14 emission limits have been achieved.

g) Except during the commissioning period, the Owner/Operator of S-4471 and S-4472 shall not exceed the following operation limitations for either furnace:

(1) Each “Shutdown” shall not exceed 12 consecutive hours.

h) The owner/operator shall not exceed 600 hours of total combined hours of Startup and Shutdown in any consecutive 12-month period. To demonstrate compliance with this part, the owner/operator shall maintain a District-approved log of the total time in hours and minutes of each Startup and Shutdown as defined in parts (d), (e), (f), and (g) above. The log shall be retained for five years of date of entry and shall be made available to District staff upon request.

i) “Dryout/warmup” shall mean an event that occurs during the Commissioning Period and whenever hydrogen plant reformer furnace refractory is heated for the first time or for the purpose of dryout. During this dryout/warmup period, the hydrogen plant reformer furnace is brought gradually to operating temperature through a series of prescribed steps designed to ensure safe operation of the furnace.

j) Except during the commissioning period, the Owner/Operator of S-4471 and S-4472 shall not exceed the following operation limitation for either furnace:

(1) Each “Dryout/Warmup” of furnace refractory heating shall not exceed 120 hours per each dryout/warmup.

Recommendations

The proposed project is expected to comply with all applicable requirements of District, State, and Federal air quality related regulations. I recommend issuing changes of condition to the Authority to Construct for the following sources:

S-4449 Hydrogen Plant Train #1
S-4450 Hydrogen Plant Train #2
S-4471 Hydrogen Plant Train #1 Reformer Furnace
S-4472 Hydrogen Plant Train #2 Reformer Furnace

_____ _____

Stanley Tom, P.E. Date
Air Quality Engineer

APPENDIX E

- 40 CFR §60.7(a)(3) Hydrogen Plant Furnace F1100 (S-4471).

- NSPS J Hydrogen Sulfide Monitoring Alternative.

- 40 CFR §60.7(a)(3) Hydrogen Plant Furnace F2100 (S-4472)

40 CFR §60.7(a)(3) Hydrogen Plant Furnace F1100 (S-4471)

Shawn Lee
HES Manager, Richmond Refinery

November 26, 2018

Elizabeth Adams
Director, Air Division
U.S. Environmental Protection Agency
75 Hawthorne Street
San Francisco, CA 94105

Chevron Richmond Refinery – Facility #A0010
40 CFR §60.7(a)(3) Hydrogen Plant Furnace F1100 (S-4471)

Dear Ms. Adams:

This letter provides notification of the date of initial startup of the Hydrogen Plant Furnace F1100 (S-4471) as required by New Source Performance Standards (NSPS) 40 CFR Part 60 Subpart A ("General Provisions") §60.7(a)(3). This notification is required to be postmarked within 15 days after the actual date of initial startup of the affected facility.

The actual startup of the Hydrogen Plant Furnace F1100 (S-4471) occurred on November 16, 2018.

The Hydrogen Plant Furnace F1100 (S-4471) is a fuel gas combustion device subject to §60.102a(g). As required by §60.108a(b), Chevron is including notification of the monitoring provisions with which we intend to comply in the notification of initial start-up. Per §60.107a(a)(3), the fuel gas streams are considered inherently low in sulfur content and therefore exempt from the monitoring requirements in §60.107a(a)(1) and (2) for sulfur dioxide (SO_2) and hydrogen sulfide (H_2S). The furnace is a forced draft process heater with a rated capacity of greater than 40 million British thermal units per hour (MMBTU/hr) on a higher heating value basis and Chevron intends to comply with the monitoring requirements in §60.107a(c).

If you have any questions regarding this notification, please contact Laura Kurt at (510) 242-5219.

Sincerely,

Shawn Lee

Richmond Refinery
Chevron Products Company
A Division of Chevron U.S.A. Inc.
841 Chevron Way, Richmond, CA 94801
Tel (510) 242-1400 Fax (510) 242-3762
ShawnLee@chevron.com

NSPS J Hydrogen Sulfide Monitoring Alternative

Shawn Lee
HES Manager, Richmond Refinery

January 7, 2019

Bhagavan R Krishnaswamy
Supervising Air Quality Engineer
Bay Area Air Quality Management District
375 Beale Street, Suite 600
San Francisco, CA 94105

Plant #A0010 – NSPS J Hydrogen Sulfide Monitoring; PC 26681 Part 7

Dear Mr. Krishnaswamy:

Part 7 of Permit Condition No. 26681 requires updating the District's Engineer Division of US EPA approval of alternatives to continuously monitoring the hydrogen sulfide (H_2S) concentration of refinery fuel gas streams formed by fugitive emissions from the South Isomax pump seals (P-853, P-853A, P-851, P-851A, P-852, P-890, P-890A, and P-894) to demonstrate compliance with the sulfur oxide standard in 40 CFR Part 60, Subpart J for fuel gas combustion devices, S-4152, S-4155, S-4161, S-4168, and S-4169.

Fuel gas streams formed by fugitive emissions routed to these furnaces were previously monitored under Alternative Monitoring Plans (AMP) approved by the EPA in December 2005. Updates to NSPS J in 2008, allowed for classification of fuel gas streams as inherently low sulfur.

Chevron submitted a notification to US EPA on November 6, 2018 titled, New Source Performance Standard (NSPS) J Inherently Low Sulfur Application, to classify these fuel gas streams as inherently low in sulfur. This classification is effective immediately and exempts these streams from the H_2S monitoring requirements of 40 CFR §60.105(a)(4).

If you have any questions, please contact Mr. Kevin Olson at (510) 242-5331 or Kevin.Olson@chevron.com.

Sincerely,

Shawn Lee for

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Chevron Products Company
A Division of Chevron U.S.A. Inc.
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40 CFR §60.7(a)(3) Hydrogen Plant Furnace F2100 (S-4472)

Shawn Lee
HES Manager, Richmond Refinery

January 9, 2019

Elizabeth Adams
Director, Air Division
U.S. Environmental Protection Agency
75 Hawthorne Street
San Francisco, CA 94105

Chevron Richmond Refinery – Facility #A0010
40 CFR §60.7(a)(3) Hydrogen Plant Furnace F2100 (S-4472)

Dear Ms. Adams:

This letter provides notification of the date of initial startup of the Hydrogen Plant Furnace F2100 (S-4472) as required by New Source Performance Standards (NSPS) 40 CFR Part 60 Subpart A ("General Provisions") §60.7(a)(3). This notification is required to be postmarked within 15 days after the actual date of initial startup of the affected facility.

The actual startup of the Hydrogen Plant Furnace F2100 (S-4472) occurred on January 2, 2019.

The Hydrogen Plant Furnace F2100 (S-4472) is a fuel gas combustion device subject to §60.102a(g). As required by §60.108a(b), Chevron is including notification of the monitoring provisions with which we intend to comply in the notification of initial start-up. Per §60.107a(a)(3), the fuel gas streams are considered inherently low in sulfur content and therefore exempt from the monitoring requirements in §60.107a(a)(1) and (2) for sulfur dioxide (SO_2) and hydrogen sulfide (H_2S). The furnace is a forced draft process heater with a rated capacity of greater than 40 million British thermal units per hour (MMBTU/hr) on a higher heating value basis and Chevron intends to comply with the monitoring requirements in §60.107a(c).

If you have any questions regarding this notification, please contact Laura Kurt at (510) 242-5219.

Sincerely,

Shawn Lee

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