

Bay Area Air Quality Management District

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**Final
Permit Evaluation
and
Statement of Basis
for
MAJOR FACILITY REVIEW PERMIT
Reopening – Revision 1**

**for
Chevron Products Company
Facility #A0010**

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December, 2004

TABLE OF CONTENTS

A. Background.....	3
B. Facility Description.....	4
C. Permit Content	7
I. Standard Conditions	7
II. Equipment	7
III. Generally Applicable Requirements	8
IV. Source-Specific Applicable Requirements	<u>98</u>
V. Schedule of Compliance	<u>2629</u>
VI. Permit Conditions	<u>2629</u>
VII. Applicable Limits and Compliance Monitoring Requirements	<u>2730</u>
VIII. Test Methods	<u>2831</u>
IX. Permit Shield:	<u>2831</u>
D. Alternate Operating Scenarios:.....	<u>2932</u>
E. Compliance Status:	<u>2932</u>
Appendix A Glossary	
Appendix B Permit Evaluations	

Title V Statement of Basis

A. Background

This facility is subject to the Operating Permit requirements of Title V of the federal Clean Air Act, Part 70 of Volume 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, of 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.

The District issued the initial Title V permit to this facility on December 1, 2003. The District has reopened the permit to amend flare and Regulation 9-10 requirements, to correct errors, and to incorporate the new conditions contained in recently issued authorities to construct. All changes to the permit will be clearly shown in "strikeout/underline" format. When the permit is finalized, the "strikeout/underline" format will be removed.

The District is soliciting public comment on the proposed revisions. The District is also soliciting comment on changes that were made between the version of the permits that were issued for public comment in July of 2003 and the final permits issued December 1, 2003. Though the District does not believe these changes were of such a magnitude as to render the issuance notice and comment process inadequate, these permits were the subject of considerable scrutiny, and so the District wishes to be as thorough as possible in allowing an opportunity for comment on all aspects of the final permits. The District will respond to comments received on these changes from draft to final. Any changes to the permit that result from comments received will be addressed in a future revision.

Regarding EPA's review of the final permits, EPA has indicated to the District that, because of the extent of changes made between proposal and final, it intends to conduct a new review of the refinery permits in their entirety. The District acknowledges that EPA has this authority and intends to respond appropriately to any issues EPA may raise in its review, whether or not those issues relate to the proposed revisions. EPA has informed the District that it intends to commence a 45-day review period on the entire content of each refinery Title V permit when it receives the version of the permit that is proposed for revision.

This statement of basis concerns only changes to the permit. A comprehensive statement of basis was prepared for the initial issuance of the permit and is considered to be the statement for basis for the entire permit. It is available on request.

The proposed revisions include permit modifications made in three District permit applications. The potential increase of criteria pollutant emissions for each of these applications is summarized as follows and all these emission increases have been offset at a ratio of 1.0 to 1.15 in compliance with BAAQMD Regulation 2, Rule 2:

Permit Application #	Pollutant Increase (tons/yr)				
	NO _x	CO	POC	SO ₂	PM
7919	0.000	0.000	7.660	0.000	0.000
8161	0.000	0.000	1.25	0.000	0.000
8452	0.000	0.000	3.91	0.000	0.000
Total	0.000	0.000	12.82	0.000	0.000

The reporting requirement within I.J.3 has been changed from 48 hours to “48 hours or within the next normal business day.” This change allows additional time for unplanned startups/shutdowns during weekends and holidays.

B. Facility Description

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; the heaviest bottoms continue on to a coker or an asphalt plant.

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, coke, asphalt, 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:

<http://www.epa.gov/ttn/chief/ap42/ch05/>

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, CO boilers, 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.

The Chevron Richmond Refinery:

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 receives about 240,000 barrels of oil every day. All crude 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 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 presence 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 and waxes. In the refinery's lube oil facility, heavy gas oil from the Crude Unit is converted into several grades of lubricating oil.

The Richmond Refinery also produces wax from crude oil. Food-grade wax, for example is used to make waterproof corrugate (cardboard boxes) for produce, poultry and seafood, paper cups, sandwich bags, and waxed paper.

A final step is the blending of products. Gasoline, for example, is blended from treated components made in several processing units. Over 75 percent of the Richmond Refinery's products are primary transportation fuels: gasoline, jet and diesel. About 15 percent is fuel oil for ships and power plants. Four percent are lubricating oils for a wide variety of machinery, including cars. The remaining 5 percent is variety of products like propane, aviation gasoline and wax.

C. Permit Content

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

I. Standard Conditions

Some applicable requirements allow multiple compliance option. In some cases, the operator has chosen one specific option, and only that option is contained in the permit. Some requirements do not require the operator select a specific compliance method, and some operators have chosen to have more than one option incorporated into the permit. Standard permit condition I.J.4 has been added to the permit to ensure that the records necessary to determine compliance are kept, and the method for determining compliance is reported in the annually compliance certification.

EPA has requested that the District make determinations regarding the applicability of certain requirements listed in Attachment 2 of the October 8, 2004 letter. EPA has requested the addition of a permit condition requiring facilities to supply relevant information by January 5, 2005. Standard permit conditions I.J.5 through I.J.9 have been added to address this request.

II. Equipment

Following are explanations of the differences in the equipment list between the time that the facility originally applied for a Title V permit reopening and the permit reopening proposal date:

Devices Removed from Service or Archived since Application was submitted:

S-4257 has been removed from service and removed from the permit.

A-920 and A-921 have been removed from the permit since these abatement devices have been archived.

Devices Permitted Since Application was submitted:

The following sources, NOT listed in the permitted source list in Part 3 of the application because they were not yet permitted, are now permitted and are addressed in the proposed permit.

S-3100, S-3106, S-4424

Devices with Changed Permit Status:

S-3225 will be issued a Permit to Operate under Application #3380. Changes to Condition #18702 were included in the previous Title V permit since the Authority to Construct had

already been issued at the time of the Title V permit issuance. The source is now included in Table II.

District permit applications not included in this proposed permit

This facility submits a large number of permit applications to the District every year. Review of the following permit applications was not completed in time to include the results in this Title V permits. The BAAQMD believes it is better to issue the Title V permit and have it be in effect rather than delay its issuance due to pending District permit applications. The Title V permit will be revised periodically to incorporate these applications, as permit revisions, following the procedures in Regulation 2, Rule 6, Major Facility Review.

Also, the following sources, were not listed in the permitted source list in Part 3 of the application because they were not yet permitted. These sources have been issued Authorities to Construct, but are not yet in operation and have not been included in the proposed permit.

Application Number	Project Description
8451	Change of condition S-1645
8668	Change of Condition #17628
8908	Carbon Abatement for fugitives at S-4413

Corrections to Devices Shown in Application

Several tank capacities have been changed in this first revision. Tank capacities were changed using the original design drawings. The following sources were affected: S-399, 1843, 3076, 3126, 3127, 3128, 3180, 3190, 3191, 3193, 3197, and 3213.

A few sources throughput have also changed based on better information submitted by the applicant. These sources are as follows: S-4250, 4237, and 1966.

Throughput reporting limits are being deleted for grandfathered storage tanks S-1514, 3072 and S-3101. Throughput reporting limits were deleted for grandfathered storage tank S-1687 based on comments from the applicant. The reporting thresholds, if they are based on accurate information, help facilitate implementation of NSR, but are not essential for that purpose. The District has concluded these particular limits are not a reliable indicator of whether the tanks have been modified. Removal of these limits from the Title V permit is not an authorization to increase emissions or take any other action prohibited by 2-1-234 (the definition of "modification"). .

III. Generally Applicable Requirements

No change has been made to this section.

IV. Source-Specific Applicable Requirements

This section of the permit lists the applicable requirements that apply to permitted 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) listed following the corresponding District Rules. SIP rules are District rules that have been approved by EPA into 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 portions of the SIP rule are cited separately after the District rule. The SIP portions will be federally enforceable; the non-SIP versions will not be federally enforceable, unless EPA has approved them 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 of the applicable requirements. The text of the requirements is found in the regulations, which are readily available on the District’s or EPA’s 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.

As part of this Title V permit reopening, the District is proposing changes made to several source-specific applicable requirements, these include: source-specific applicable requirements regarding flares and Regulation 9-10 requirements, and, as appropriate, revised source-specific applicable requirements for clarity and enforceability. The Title V permit is being updated to accurately reflect these applicable requirements. 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; all “underline” language will be retained, subject to consideration of comments received.

MACT hammer part 2 permit application deadlines for combustion turbines, organic liquid distribution, and site remediation have been removed. These rules have been promulgated as defined by the consent decree between EPA and Sierra Club.

Revisions were made to the permit conditions for existing sources as follows:

Changes to this Section IV are primarily routine and include the updating of text to the current standard and updating the applicable requirements tables to reflect the current versions of the cited regulations. However, in some cases applicable requirements have been added or removed

at the request of Chevron where there were errors or omissions in the initial permit. A discussion of these “non-routine” changes follows.

Determination of Applicability of Subpart J for Flares and Thermal Oxidizers

Flares

- S-6010 Subpart J does not apply.
- S-6012 Subpart J does not apply.
- S-6013 Subpart J does not apply.
- S-6015 Subpart J does not apply to the extent conditions of the exemption are met.
- S-6016 Subpart J does not apply.
- S-6017 Subpart J does not apply.
- S-6019 Subpart J does not apply.
- S-6039 Subpart J does not apply to the extent conditions of the exemption are met.

Thermal Oxidizers

Finalization of the Subpart J Applicability to Thermal Oxidizers.

EPA commented that NSPS Subpart J, an EPA-promulgated standard, is applicable to thermal oxidizers at petroleum refineries. EPA notes that thermal oxidizers combust gas, and are therefore a “fuel gas combustion device,” which is defined at 40 CFR § 60.102(g) to mean “any equipment, such as process heaters, boilers and flares used to combust fuel gas . . .” Although thermal oxidizers in most instances combust gas for no purpose other than abatement of the gas stream, and although gas combusted in a thermal oxidizer may or may not have heating value sufficient to serve as fuel gas for refinery processes, the NSPS J definition of fuel gas is clear in declaring a “fuel gas” to be “any gas which is generated at a petroleum refinery which is combusted.” See 40 CFR § 60.101(d).

If EPA’s comment is correct, then Subpart J would be incorporated into the Title V permit as an applicable requirement for thermal oxidizers abating fugitive emission sources, and a schedule of compliance would be established addressing instances of non-compliance. Because incorporation of Subpart J for these units was not part of the Revision 1 proposal, and because the issue deserves consideration based after an opportunity to comment by all interested parties, the District will address incorporation of Subpart J for these units in the next revision. In the mean time, no Title V permit shield is provided, and so the Title V permit does not impact the applicability of Subpart J as a federal matter. Accordingly, the District encourages refineries with affected fuel gas combustion devices to be considering compliance options even while the next revision is pending.

Permit Evaluation and Statement of Basis: Site A0010, Chevron Products Company, 841 Chevron Way, Richmond, CA 94801

Flare or Oxidizer	Year Built	Design Capacity Lb/hr	Is Flare the Primary Abatement Device?	Service or Usage	Possible Sources Abated when Flare in Use	NSPS and NESHAPS Applicability			
						40 CFR 60 Subpart A	40 CFR 60 Subpart J	40 CFR 63 Subpart A	40 CFR 63 Subpart CC
A-54 Wax Deoiler #2, Thermal Oxidizer, 10 MM Btu/hr TUH capacity, John Zink	Out of Service				S-4261 S-1726 S-1727 S-1757 S-1758	Out of Service			
A-94 Thermoform Kiln Stack Burner (S-4094), Direct Flame Afterburner, Stack Burner	Out of Service				S-4094 S-4265	Out of Service			
A-414 #2 Dewax and #2 Deoiler Thermatrix Model ES60H, Thermal Oxidizer	Out of Service				S-4261 S-32103	Out of Service			
A-620 Thermatrix, Model ES60H, Thermal Oxidizer, LPG Racks	1993	300 SCFH	Yes		Pumps and compressor seals S-32103	Yes – Per New Source Review (NSR) Consent Decree (CD), effective date pending EPA review of alternate monitoring plan (AMP). AMP application required to be submitted under CD by 12/31/04.	No – MACT has abatement device requirements for misc. process vents but these are defined to exclude equipment leaks so this is not covered.		
A-621 Thermatrix, Model ES60H, Thermal Oxidizer, LPG Racks	Out of Service				Pumps and compressor seals S-32103	Out of Service			
A-622 Thermatrix, Model ES60H, Thermal Oxidizer, Yard DIB	1993	180 SCFH	Yes		Pumps and compressor seals S-32103	Yes – Per NSR CD, effective date pending EPA review of AMP. AMP application required to be submitted under CD by 12/31/04.	No – MACT has abatement device requirements for misc. process vents but these are defined to exclude equipment leaks so this is not covered.		
A-623 Thermatrix, Model ES60H, Thermal Oxidizer, 21 PS	1993	180 SCFH	Yes		Pumps and compressor seals S-32103	Yes – Per NSR CD, effective date pending EPA review of AMP. AMP application required to be submitted under CD by 12/31/04.	No – MACT has abatement device requirements for misc. process vents but these are defined to exclude equipment leaks so this is not covered.		
A-624 Thermatrix, Model ES60H, Thermal Oxidizer, 17 PS	1993	180 SCFH	Yes		Pumps and compressor seals S-32103	Yes – Per NSR CD, effective date pending EPA review of AMP. AMP application required to be submitted under CD by 12/31/04.	No – MACT has abatement device requirements for misc. process vents but these are defined to exclude equipment leaks so this is not covered.		

Permit Evaluation and Statement of Basis: Site A0010, Chevron Products Company, 841 Chevron Way, Richmond, CA 94801

Flare or Oxidizer	Year Built	Design Capacity Lb/hr	Is Flare the Primary Abatement Device?	Service or Usage	Possible Sources Abated when Flare in Use	NSPS and NESHAPS Applicability			
						40 CFR 60 Subpart A	40 CFR 60 Subpart J	40 CFR 63 Subpart A	40 CFR 63 Subpart CC
A-625 Thermatrix, Model ES60H, Thermal Oxidizer, 17 PS	Out of Service				Pumps and compressor seals S-32103	Out of Service			
A-627 Thermatrix, Model ES60H, Thermal Oxidizer, FCC Unit (backup)	1996	180 SCFH	Yes		Pumps and compressor seals S-32103	Yes – Per NSR CD, effective date pending EPA review of AMP. AMP application required to be submitted under CD by 12/31/04.	No – MACT has abatement device requirements for misc. process vents but these are defined to exclude equipment leaks so this is not covered.		
A-628 Thermatrix, Model ES60H, Thermal Oxidizer, Alkylation Plant	1996	180 SCFH	Yes		Pumps and compressor seals S-32103	Yes – Per NSR CD, effective date pending EPA review of AMP. AMP application required to be submitted under CD by 12/31/04.	No – MACT has abatement device requirements for misc. process vents but these are defined to exclude equipment leaks so this is not covered.		
A-900 Emission Reduction Device (Thermal Oxidizer) – Marine Vapor Recovery	1991	Not specified	Yes		S-9321 S-9322 S-9323 S-9324 S-9325	Yes – Per NSR CD, effective date pending EPA review of AMP. AMP application required to be submitted under CD by 12/31/04.	No - 1/2-mile offshore exemption		
A-3200 Abatement 4 Crude Unit Furnace 1100B – DEBRU (See S- 4071 – F1100B 4Crude Furnace). [Note: the abatement device is the firebox of the process heater (F-1100B)]	1990	Not specified	Yes		S-3110, S-3111, S-3192 [A-3200 does not abate S-3200]	Yes – Per NSR CD, effective date pending EPA review of AMP. AMP application required to be submitted under CD by 12/31/04.	No – EPA stated a MACT SSMP is optional for wastewater operations covered by Benzene Waste Operations NESHAP (40 CFR 61 Subpart FF). [Reference: 3/20/98 Federal Register (FR) Page 13534-II, Revisions C.]		
A-6010 High Level Flare, LSFO Refinery Waste Gas Flare, (Same as S- 6010/A6010)	1973	878,900	No		S-4233 S-4234 S-4235 S-4236 S-4237	<u>All sections but 60.18:</u> No due to Subpart J not applic. <u>60.18:</u> No due to flare being part of fuel gas system.	No – Not modified since rule effective date.	Yes - SSMP's in-place 63.640(d)(5) exempts streams to a fuel gas system from MRR requirements	
A-6012 Refinery Waste Gas Flare, V-282, South Isomax Flare -; Same as S-6012	1965	381,040	No		S-4250 S-4251 S-4348 S-4170 S-4171 S-4434 S-4429	<u>All sections but 60.18:</u> No due to Subpart J not applic. <u>60.18:</u> No due to flare being part of fuel gas system.	No – Not modified since rule effective date.	Yes - SSMP's in-place 63.640(d)(5) exempts streams to a fuel gas system from MRR requirements.	

Flare or Oxidizer	Year Built	Design Capacity Lb/hr	Is Flare the Primary Abatement Device?	Service or Usage	Possible Sources Abated when Flare in Use	NSPS and NESHAPS Applicability			
						40 CFR 60 Subpart A	40 CFR 60 Subpart J	40 CFR 63 Subpart A	40 CFR 63 Subpart CC
A-6013 North Isomax Flare V-281, Refinery Waste Gas Flare:, (Same as S-6013/A6013)	1965	817,512	No		S-4252 S-4253	<u>All sections but 60.18:</u> No due to Subpart J not applic. <u>60.18:</u> No due to flare being part of fuel gas system.	No – Not modified since rule effective date.	Yes - SSMP's in-place 63.640(d)(5) exempts streams to a fuel gas system from MRR requirements	
A-6015 Refinery Waste Gas Flare D&R, 3MMBtu/h	1999	878,900	No		S-4233, S-4234, S-4235, S-4237, S-4282, S-4283 S-4435	<u>All sections but 60.18:</u> Yes due to Subpart J applicability <u>60.18:</u> No due to flare being part of fuel gas system.	Yes- Applicable but exempt from sulfur limit for SSM	Yes - SSMP's in-place 63.640(d)(5) exempts streams to a fuel gas system from MRR requirements	
A-6016 FCC Flare V-731, Refinery Waste Gas Flare: , Same as S-6016	1959	1,440,800	No		S-4285	<u>All sections but 60.18:</u> No due to Subpart J not applic. <u>60.18:</u> No due to flare being part of fuel gas system.	No – Not modified since rule effective date.	Yes - SSMP's in-place 63.640(d)(5) exempts streams to a fuel gas system from MRR requirements	
A-6017 Alkane Flare, Refinery Waste Gas Flare, same as S-6017	Out of Service				S-4286 S-4289 S-4290 S-4291	Out of Service			
A-6018 Flare Relief Drum – V780 Poly Flare, FCC (Needs equivalent Source Number)	1981	NA	No		S-4291 S-4292	NA – Relief Drums not covered by this rule		NA – Relief Drums not covered by this rule.	
A-6019 Alky-Poly Flare, Refinery Waste Gas Flare, V-732A: ; Same as S-6019	1959	783,300	No		S-4291 S-4292 S-4277 S-4228 S-4229 S-4286 S-4355	<u>All sections but 60.18:</u> No due to Subpart J not applic. <u>60.18:</u> No due to flare being part of fuel gas system..	No – Not modified since rule effective date.	Yes - SSMP's in-place 63.640(d)(5) exempts streams to a fuel gas system from MRR requirements.	

Flare or Oxidizer	Year Built	Design Capacity Lb/hr	Is Flare the Primary Abatement Device?	Service or Usage	Possible Sources Abated when Flare in Use	NSPS and NESHAPS Applicability			
						40 CFR 60 Subpart A	40 CFR 60 Subpart J	40 CFR 63 Subpart A	40 CFR 63 Subpart CC
A-6039 V-3501; Lube RLOP Flare – Same as S-6039	1984	710,390	No		S-4340 S-4341 S-4342 S-4343 S-4345 S-4346	<u>All sections but 60.18:</u> Yes due to Subpart J applicability <u>60.18:</u> No due to flare being part of fuel gas system.	Yes- Applicable but exempt from sulfur limit for SSM	Yes - SSMP's in-place 63.640(d)(5) exempts streams to a fuel gas system from MRR requirements.	

Complex Applicability Determinations: NOx Box

The following discussion explains changes to refinery permit conditions prescribing monitoring for compliance with Regulation 9-10 at units for which CEMs are not required, commonly known as the “NOx Box” permit conditions. To facilitate the reader’s understanding of the proposed changes, this discussion provides background on the 9-10 rule and CEM-equivalency monitoring provided for therein.

Regulation 9-10 requires each refinery to reduce NOx emissions from boilers and heaters. All of the boilers and heaters at each refinery above 10 MMBTU that were in existence on January 5, 1994 are included in determination of compliance with a facility-wide average emission rate of 0.033 lb/MMBtu. BAAQMD 9-10-301.

In order to demonstrate compliance, each affected heater must be equipped with a NOx CEM, or equivalent verification system (BAAQMD 9-10-502). Where combustion processes are sufficiently static over time, emissions factors combined with MmBtu data can be used to verify compliance with accuracy equivalent to that of CEMs. An emissions factor approach can be deemed equivalent if the integrity of the emissions factors can be assured. The NOx Box approach does this by: 1) verifying emissions factor accuracy through source-testing, 2) defining the parameters of operation within which emissions factors have been proven, and 3) requiring that any excursions outside of those parameters be the subject of a new source test.

Source tests to establish the NOx Box are conducted at extreme operating conditions (the “corners” of the NOx Box). As long as the facility operates within the perimeter defined by these source tests, emissions are assumed to be equal to the highest emission rate tested. By monitoring firing rate and O2 in the exhaust, the validity of using the emission factor is reasonably assured. Periodic source tests confirm that the emission factor is still valid for the operating range. Operation outside the box results in scrutiny to determine compliance with the emission standard, including conduct of a test at the unproven conditions.

That the NOx Box approach is consistent with the intent of Regulation 9-10 is evidenced in the District Staff Report for that rule, which stated:

“District staff recommends that CEMS be only required on units equipped with SCR and SNCR due to high capital and maintenance costs. NOx can vary significantly for SCR and SNCR units based on temperature and amount of ammonia injected. On the contrary, NOx from non-SCR and SNCR units equipped with FGR and low NOx burners and are relatively stable and CEMS should not be necessary for these units.”

Rule Development Staff Report, Regulation 9, Rule 10, November 19, 1993, p. 7.

Federal Enforceability

9-10-301 and 9-10-502 are not included in the SIP, and are therefore not federally enforceable. Revisions to the NOx Box Condition in the Title V permit may be made by Administrative Amendment.. BAAQMD 2-6-201.

Changes from the current conditions

The current Title V refinery permits contain NOx Box conditions based on an earlier District policy for demonstrating verification system equivalence. Experience with implementation of these conditions has allowed the District to identify certain areas for improvement. One problem with the current set of conditions is that it allows sustained operation at conditions that have never been tested for compliance with the NOx Box emission factor.

The proposed condition addresses this problem, and several others that have been raised by EPA, the facilities, and the public.

The changes can be summarized as follows:

- The old policy allowed for operation at conditions outside the perimeter of test conditions. The reason for this was to account for the fact that requiring the facility to test the furnace at specific conditions could have an expensive impact on production. While this is still true, there was also considerable opportunity for circumvention, where a facility could have sustained operation outside the box, and then test at conditions that happened to be well within the box. The new policy requires that a test be conducted that would capture the new conditions. The impact on process operation is mitigated by allowing the facility to delay testing until the next periodic source test.
- The old policy used one emission factor for all allowable operating conditions. The new policy allows two boxes, with two factors. One lower factor applies to routine operating conditions, while another higher factor may be used for normal operation at higher levels. This provides more flexibility without sacrificing the assurance of compliance.
- The NOx box can be a 5-sided polygon, rather than a simple box.
- Because the policy is, in some ways, more stringent, time to conduct the source tests to establish the new boxes has been allowed. Existing NOx Box conditions will remain in effect until June 1, 2004, when they will be replaced by the new conditions.
- Under the old policy, two Notices of Violations (NOVs) issued because of a single source would automatically trigger a requirement to install a NOx CEM. Under the new policy, two NOVs will trigger a review by District staff to determine if the NOx Box for that source is still deemed equivalent to a NOx CEM. If it is not, a NOx CEM will be required.
- The new policy allows a facility to operate at low firing rates (idling) for a limited period of time, without having to expand the box to include those conditions. There are two reasons for this. First, emissions at low fire are much lower than normal, even if the emission factor is higher. Second, it is an extreme hardship to require the facility to turn down its production in order to test at very low fire conditions.

The following summarizes the various parts of the proposed NOx Box conditions:

Part 1 of the condition lists all of the combustion devices subject to 9-10-301.

Part 2 requires installation of oxygen monitors. This is necessary because some of the smaller heaters are not required by Regulation 9-10 to have oxygen monitors. Oxygen content must be monitored continuously to demonstrate compliance with the condition. Operators will be allowed six months to install any newly-required oxygen monitors.

Part 3 requires operation of each combustion device within the box. Failure to operate within the box is a violation of this condition, unless excused by one of the deviation procedures in Part 7.

Part 3B covers small units (<25MMBH). The NO_x Box for small units is essentially the entire potential operating range for the unit. Rather than establishing the “corners” of the box, the box is defined to be the full range of firing rates, and all possible oxygen contents. Existing data may be used to establish the emission factor that will be applied. Unless the unit is fired above its rated capacity, it is not possible to operate outside the box. An annual source test will confirm that the factor used is still valid.

Part 4 requires the operators to conduct the source tests necessary to establish the initial NO_x boxes. Each combustion device may have two NO_x boxes, one larger than the other. The smaller NO_x box, with the lower emission factor, represents the typical operating range of the unit. As long as the unit operates within this range, the listed emission factor and the measured firing rate will be used to determine the unit’s contribution to the refinery-wide average. The operator may choose to have a second, larger box, to cover unusual operating conditions. This larger box will have a higher emission factor associated with it. The allowance for two boxes means that a higher emission factor can be used for occasional operation at harsher, higher-emitting conditions, while still allowing use of a lower emission factor during normal operation. The District believes this is an appropriate degree of flexibility that does not unduly complicate implementation.

The NO_x box may be expanded by replacing corner points with new ones that have been tested. The operator may also decide to increase the emission factor associated with a NO_x box. This may allow operation at a wider range of conditions; it may be necessary because a source test has shown that the old factor is no longer valid; it may be desirable to provide a margin of compliance.

Part 5 describes the actual NO_x box.

Part 5A contains the table that defines the perimeter of the NO_x box, the perimeter of the second NO_x box (if the operator chooses to use one), and the emission factors used

Part 5B allows established emission factors to be used for operation outside the box at low firing rate conditions. Although NO_x or CO emission factors (expressed as lb/MMBtu) may be higher under these conditions, overall emissions are lower because of the greatly reduced firing rate. Testing under these conditions would have a significant cost because the operator would need to reduce firing (and production) to conduct a test. Instead, reduced firing will be treated in the same manner as a shutdown: for purposes of calculating the refinery average, the furnace will be treated as if it were operating at its normal firing rate and emission rate. In other words, though

emission factors may be inaccurate in this low-firing range, there is not a possibility that emissions will be underestimated.

Part 5C allows a facility to conduct source tests outside the NOx box in order to increase the range of allowable operation.

Part 6 describes the steps to be taken if operation outside the box occurs.

Operation outside the range for which the emission factor has been demonstrated raises certain questions. Is the emission factor valid for these conditions? If not, and if emissions were higher, did the higher emissions result in a violation of the refinery-wide average? The procedures of this part answer these questions.

Operation outside the NOx box triggers a requirement for the operator to test the unit under conditions that capture the new operating conditions. The test may be conducted in lieu of the next scheduled periodic source test (small furnaces, which may not normally be tested so soon, will have to be tested within 8 months). It is possible that the operator may not be able to reproduce the operating conditions during a source test. Failure to conduct the test will result in a violation of the Part 5 of the permit condition, and would be considered a violation of 9-10-502. If more than one such violation occurs during a 5-year period at a given unit, the District will review the NOx Box for that unit to determine whether it is, in fact, equivalent to a CEM. The District considered whether to establish in permit conditions a threshold for concluding that the NOx Box approach was inadequate for a particular unit and that CEMs must be installed. However, a simple algorithm for making this determination was not apparent. Instead, the District will evaluate each situation case by case, and will use its authorities to require installation of a CEM where appropriate.

If the test shows that emissions are below the factor used for the box, then no violation has occurred. The operator may choose to expand the box to utilize the new test results. This emission factor will then be used in the future.

If, however, the test shows that the emission factor for the new operating conditions exceeds the NOx box factor, the operator must reassess past emissions utilizing the higher emission factor. This may result in violations of the refinery-wide average (Regulation 9-10-301).

Part 7 requires periodic source tests to demonstrate that the NOx Box factor is still valid. Usually, tests will be conducted at whatever conditions the unit is operating at on the day of the test. If, however, it has been some time since the extreme corners of the box have been tested, or if there is reason to believe that difficult operating conditions are being avoided during tests, the APCO may require that the test be conducted under specific conditions.

Small furnaces are tested once per year. Large furnaces are tested every six months.

Part 8 requires periodic CO source tests for units equipped with NOx CEMs.

Part 9 requires installation of a CO CEM if two sources tests show CO levels greater than 200 ppm. Normal CO concentrations are an order of magnitude lower. One high CO reading is an anomaly. Two high readings are an indication that CO may be a problem, and continuous monitoring of firing rate and O₂ is not equivalent to continuous monitoring for CO.

Part 10 requires maintenance of records for the monitoring required by the permit condition.

*After the public comment period for Revision 1, comments were received from the Western States Petroleum Association (WSPA). As a result of those comments, the conditions to the NO_x box were modified slightly to fix typographical and grammatical errors and to allow an extension of source test report submittals if the requested by the refineries. **Source testing is also required within 30 days of startup if the source has been shutdown for a period of time that is longer than the required source test frequency.***

Flares

All of the refinery Title V permits contain permit conditions implementing requirements for flares. As explained in the response to comments on the initial Title V permit issuance, development of Title V permit conditions related to flaring occurred in parallel with the District's rulemaking on flare monitoring. The flare monitoring rule (BAAQMD 12-11) addressed many of the issues that the District was attempting to address in parallel through Title V, and so the Title V effort was to a significant extent subsumed by incorporation of 12-11 into the final permits. The District's flare monitoring rule in some ways went beyond similar existing regulations promulgated by other agencies and in that sense was unprecedented in scope and effect. As far as the District is aware, its efforts to craft Title V permit conditions is similarly innovative, and similarly has undergone re-evaluation and evolution. Even prior to issuance of the refinery Title V permits, District staff had begun a re-evaluation of some of the approaches and determinations slated for inclusion in the final permits. The current proposal to revise certain Title V permit conditions for flares is the outcome of that re-evaluation. The future effective dates attached to some of the Title V flare conditions was, in part, a reflection of the expectation that a re-evaluation was underway and that some additional time should be allowed before effort and expense were invested in a particular approach.

All of the flare conditions that were added during the initial Title V permit issuance process proposed for deletion and replacement with new conditions. The new conditions address proper operation, monitoring for visible emissions, and enforcement of determinations that NSPS Subpart J sulfur monitoring is not applicable.

The new conditions apply only to flares that are subject to Regulation 12-11. All of the flares that are fully exempt from 12-11 (vapor recovery flares, wastewater flares) operate under conditions, and burn materials, that are unlikely to result in visible emissions. Additionally, because they are not emergency flares, they are not likely to encounter flow rates above capacity. The reasons that led to exemption of these flares from 12-11 are also the reasons why additional Title V conditions addressing these three areas are not appropriate.

Proper operation

Proper flare operation is being addressed to support the conclusion that flare emissions are not subject to the miscellaneous VOC regulation, BAAQMD 8-2. A source is exempt from District Regulation 8 (and therefore from 8-2) if, pursuant to 8-1-110.3, organic compounds are reduced by at least 90% due to abatement by incineration. Flare emissions qualify for this exemption if there is a reasonable assurance that 90% reduction is occurring. The District surveyed available information on flare efficiency and concluded there is a strong assurance that a 90% reduction is achieved during proper flare operation. The Title V permit conditions being proposed are intended to provide assurance that flares will be operated properly.

The District's Advisory Council has reviewed flare available information about refinery flares, and has rendered an opinion that hydrocarbon destruction efficiency of a properly designed and operated flare is greater than 98%. District staff have been working with the facilities, activists, citizen groups, and various experts to develop flare monitoring and control regulations. In the course of that work, the current body of knowledge about refinery flare operation has been reviewed. A consensus seems to be that the modern steam-assisted flares commonly found at refineries are "properly designed" relative to the purposes for which they are used. District staff have determined that a properly designed flare may be said to be "properly operated" if the flow rate is below the design capacity, if the gas being flared has sufficient fuel value (i.e., 300 Bth/cubic foot), and if flame is present at all times.

The District is in the process of gathering additional information about refinery flare design with the goal of further informing its conclusions regarding the proper design and operation of flares at the bay area refineries. The information being collected includes information relevant to the flare design elements contained in 40 CFR 60.18. At the time of issuance of this permit revision, that information gathering effort has not been completed. The flare design information and any conclusions drawn from it by the District will be included in the statement of basis for the next revision of the refinery permits, currently scheduled for Spring of 2005.

Applicability of Regulation 8-2 to emissions from flares: The District has determined that properly designed and operated flares achieve a VOC destruction efficiency exceeding 90%. Emissions from such a device are exempted from Regulation 8-2 by Regulation 8-1-110.3.

Proper design of refinery flares is presumed by the District based on its review of the history of installation and industry standards that are in place to assure proper operation.

Proper operation is presumed if the flare is operated within its design capacity, if the BTU content of gases flared exceed 300 Bth/scf, and if a flame is present during flaring. District regulation 12-11 requires flow monitoring, gas composition analysis, and verification of the presence of flame during flaring events.

Refinery flares are exempt from Regulation 8-2 during any flaring event where conditions ensure proper operation. The required monitoring provides assurance that the flares are operated properly.

In addition to the exemption contained in Regulation 8-1-110.3, flaring of gases from sources subject to other District rules are not subject to 8-2, because such sources are not "miscellaneous

sources” (8-2-201). Thus emissions due to flaring of gases from sources subject to regulation 10 (NSPS) or other Regulation 8 rules are not subject to 8-2.

Design Capacity

Part 1 of the flare condition requires the facility to operate the flare below its rated capacity. This raises the question: what happens if more gas needs to be flared than the flare is rated for? In that situation, all of the gas will be routed to the flare; the alternative is to vent the gas to the atmosphere without abatement, which in turn would precipitate the extreme safety hazard that flares are designed to prevent. The District therefore anticipates that the safe operation of the flare will cause the flare to exceed its capacity, with a possible reduction in destruction efficiency. This will result in a violation, but the event will be handled safely. The proposed permit condition is not expected to prohibit the use of the flare as necessary to avoid safety hazards. There is a functional overlap between the goal of preventing release of uncombusted gases for safety reasons, and the 90% reduction threshold contained in 8-1-110.3. A failure to achieve at least 90% reduction would be at odds with preventing the safety hazard posed from release of uncombusted gases. In this sense, flares are categorically distinguishable from the typical “end of pipe” air pollution control device that is installed to meet a regulatory requirement but does not otherwise promote the self-interest of the facility. Refineries have a strong interest in proper flare operation that prevents the potentially severe consequence of releasing explosive gases over or near the facility. The fact that proper operation for safety purposes is also proper operation for District regulatory purposes provides a substantial assurance that 90% will be achieved. The permit condition prohibiting operation above rated capacity provides an additional regulatory enforcement tool to deter such events from occurring.

Part 2 requires recordkeeping to demonstrate compliance with Part 1.

Fuel value

Flares that are designed to receive low-btu gas are equipped with supplemental fuel gas lines to ensure that the gas vented to the flares has sufficient heating value. The new flare monitoring rule, 12-11, requires vent gas composition monitoring. District staff have presumed that the systems designed to ensure that flared gases are combustible are working properly. The monitoring required by 12-11 will provide a means of verifying this.

Flame

12-11-503 requires monitoring to ensure that flame is present. A permit condition would be redundant.

Visible emissions

The flare monitoring rule is designed to gather information to ensure that flares are properly operated, and to be used for possible a future control measure. It is not designed to assure compliance with other applicable rules, specifically those regarding particulate and visible emissions. Therefore, the District is proposing conditions to provide a reasonable assurance of compliance with visible emissions and particulate emissions standards.

The new Title V permit condition requires frequent monitoring of a flare during a flaring event. The operator must check the flare for visible emissions every half hour until the flaring event is over, or until a violation is detected.

If the flare is under video surveillance, and if the video image is of sufficient clarity for the operator to say with certainty that no visible emissions are present, the video may be used. Otherwise, the operator must directly view the flare. Regulation 6-301 is the Ringelmann standard, and requires a trained observer to read the smoke plume. When a trained observer is not available, the facilities have agreed to operate under a more stringent “no visible emissions” standard.

Part 5 states that, if the surveillance is by a trained observer, compliance will be demonstrated using EPA Method 9 (the method specified in Regulation 6-301). Otherwise, an untrained observer observes the stack, and if visible emissions are detected for three consecutive minutes, the flare violates the surrogate standard contained in the permit condition.

NSPS Subpart J

Any flare built or modified after June 11, 1973 is subject to NSPS Subpart J. Modification of a flare, as defined in Subpart J, would likely only occur if the burner tip is replaced by one with a larger capacity – which is likely to be a rare event. As a result, NSPS Subpart J typically applies to flares that are built after the effective date.

There is only one requirement for flares subject to subpart J: a limitation on the sulfur content of gas combusted, and the monitoring to demonstrate compliance. Subpart J exempts from this requirement the flaring of upset gases, and fuel gas that is the result of an emergency breakdown.

Some of the facilities have identified NSPS flares (flares built after 1973) that are not designed to burn anything other than upset gases or fuel gases that result from emergency breakdowns. These flares are therefore exempt from the NSPS monitoring requirement, provided they are used only in that manner. However, at least some of these flares have a potential for broader use because the physical construction that enables flaring of gases from upsets or emergencies also enables flaring of gases from routine processes. This is typical of situations at oil refineries where the refinery has stated that a flare is used only for upsets and emergencies, and where there is not information to the contrary. The District then proceeds on the assumption that the flare is exempt from the H₂S limit of Subpart J. The District's continuing efforts to monitor the applicability of Subpart J to flares should be significantly aided in the future by information generated pursuant to BAAQMD Regulation 12, Rule 11.

Part 7 imposes a condition on these flares to assure compliance with the exemption criteria. The same prohibition found in Part 7 could be enforced by directly enforcing applicability of Subpart J, that is, by a determination that the facility has been in violation of Subpart J if, for instance, routine disposal of gases through flaring has occurred. However, enforcement of Subpart J in federal court (through the CAA citizen enforcement provisions) is an unwieldy tool for use by a permitting agency such as the District that can much more readily enforce in state court. By

incorporating the prohibition against routine flaring into Title V permits, enforcement of this prohibition becomes substantially more feasible for the District.

Based on comments received from EPA, Table IV.A.2.1 has been modified to clarify the applicability of NSPS Subpart J to the flares [4/14/03 Comment #29].

Issues raised by comments

The District received a number of comments related to flares during the initial permit issuance. In anticipation that similar comments may be received regarding this proposal, the District here offers anticipatory responses. The formerly-received comments are presented below, together with a response that tells how the comment is addressed by the revised permit condition. The District will of course respond to any new comments received or to refinements of comments noted here.

Comment: The Air District should require the performance of independent testing using available methods for monitoring flare efficiency under worst case conditions.

Response: There is no way to directly monitor flare efficiency. However, it is possible to monitor flare parameters (flow rate, etc) in a way to ensure that flares operate as designed. This is the approach taken in Part 1 of this proposal. The District disagrees with the suggestion that, because performance measurement techniques are limited, it follows that specification of minimum flare destruction efficiency is contrary to Title V requirements. Flare destruction efficiency is a provision of 12-11, and therefore should be incorporated in the permit. Despite the technical limits of direct compliance verification, the requirement has relevance and import as a design requirement.

This comment, proposing as it does “independent testing” and “worst case conditions,” is not a monitoring proposal, but a recommendation for data development. While perhaps appropriate for rule development, such a proposal is not within the scope of Title V.

Comment: A flaring event that lasts between 3 and 15 minutes could exceed opacity limits, and this type of violation would go unmonitored under existing permit monitoring requirements. The District implies that opacity limitations need only be monitored if the emission is “significant” or is “a real problem.” The District’s opacity regulation does not allow for these exemptions from its requirements.

Response: The comment is based upon the faulty premise that the purpose of Title V monitoring is to detect every violation. Continuous monitoring for violations can be cost-prohibitive, impractical, and even, in a case such as this, at odds with good air pollution practices. The purpose of Title V monitoring is to provide reasonable assurance of compliance. This requires a balance between cost and difficulty of the testing, and the likelihood and severity of non-compliance. See, for example, EPA’s guidance on the required monitoring for other sources subject to visible emission standards.

Because the visual observation and sample collection that comprise flare monitoring are going to be performed by the process unit operator, both Rule 12-11 and the permit condition require the

initial monitoring to occur 30 minutes into the episode. This is to allow the operator to place his or her attention, at the beginning of the event, where it belongs: trying to address the conditions that are resulting in flaring. A flaring event that can be ended within 15 minutes should be, and should not be prolonged while the operator goes out to look at the stack. A flaring event that goes on for thirty minutes, though, is probably not going to be resolved so quickly. Three minutes to check on the flare's appearance is not going to seriously affect the duration of the incident.

The frequency and duration of monitoring for visible emissions is a matter of judgment, balancing the value of information gained against the costs of collection. Taking into consideration all of the factors, District staff have determined that a periodic check every half hour provides the necessary assurance that significant non-compliance will be detected.

Comment: Regulation 8-2 should apply to refinery flares. Either monitoring to assure compliance with 8-2 should be imposed, or monitoring to assure compliance with the 85% destruction efficiency requirement in 8-1-110.3.

Response: Part 1 and Part 2 of the revised permit condition are intended to address this. By ensuring that the flare is properly operated, the condition assures that combustion efficiency is maintained at a high level, thereby assuring that application of the exemption contained in 8-1-110.3 is appropriate. As noted above, flare destruction efficiency cannot be measured directly, and so a reasonable substitute must be used. The District believes there is a reasonable basis for concluding that 90% destruction efficiency will be met because efficient destruction is the very reason for the existence of a flare. However, the permit conditions in this proposal will provide an added measure of assurance and a regulatory enforcement tool to supplement this inherent design goal.

Comment: The permit should contain monitoring to determine compliance with subpart J, including fuel H₂S monitoring for those flares subject to the fuel H₂S limit.

Response: The fuel H₂S monitoring is, in fact, the only monitoring needed to determine compliance with subpart J. This has been included in Table IV and VII for each flare subject to the limit. Flares subject to Subpart J, but not the limit, because they only burn upset gas, are subject to Part 7 of the flare condition.

Comment: Please also include record-keeping and reporting requirements for those flares subject to NSPS J but exempt from the fuel H₂S limit.

Response: It is unclear what monitoring is being requested. If the proposal is to include monitoring to ensure that non-exempt gases are not vented to exempt flares, the requirements of Regulation 12-11-401 should suffice. We do not consider, however, this monitoring to be federally enforceable. The only federally enforceable monitoring for assuring compliance with Subpart J is spelled out in Subpart J.

EPA Comment: We also understand that the District will include opacity monitoring on process flares for compliance with Ringlemann/opacity Regulations 6-301 & 302 and each of the requirements that apply on a unit specific basis, and mark all flame monitoring as "continuous" monitoring.

Response: The new condition includes visible emission monitoring to assure compliance with Regulations 6-301 and 6-302.

EPA Comment: Where the necessary Title V monitoring coincides with the District's Regulation 12-11 flare monitoring rule, the District may list Reg 12-11 as the monitoring that will satisfy Title V if it is listed as federally enforceable.

Response: Only monitoring to assure compliance with a federally enforceable limit is supposed to be labeled as "federally enforceable."

EPA comment: For sources that must meet a given control efficiency, the District must include a compliance determination and monitoring method for those requirements.

Response: The District has determined that properly designed, properly operated flare meet 98% destruction efficiency. All refinery flares are properly designed and some assurance of proper operation derives from the fact that an improperly operated flare is not an effective safety device. Monitoring to provide an additional assurance that each flare is properly operated has been added to the permit. See discussion above.

EPA Comment: For thermal oxidizers, the permit evaluations [*sic*] must also contain the applicable requirements.

Response: The District permit contains all requirements identified by the District as applicable.

EPA Comment 8: The permits must also require monitoring the flow rate if necessary to determine compliance with residence time requirements. This monitoring is in addition to the temperature monitoring that the District already includes.

Response: (Chevron) Chevron has no oxidizers subject to 40 CFR 61, Subpart FF.

EPA Comment 166: Please verify whether the facility has slop oil vessels. If so, rules 8-8-305, 8-8-305.1 and 8-8-305.2 apply. Also note that 40 CFR Part 60, Subpart QQQ 60.692(d)-(e) applies to slop oil vessels.

Response: No change has been made to the permit. Chevron claims these sources are exempt from 8-8 under sections 112 and 114. QQQ affects oil/H₂O separators including storage tanks/vessels installed/modified/reconstructed after 5/4/87. The oil/H₂O separators have not been modified or reconstructed since 5/4/87. The wastewater storage tanks are subject to subpart k and exempt from QQQ per 40CFR60.692-3(d).

Facility (Flares):

EPA commented that NSPS Subpart A (40 CFR 60.1-60.19) should be incorporated into the permit when any NSPS is included as an applicable requirement. Because Subpart A is incorporated into every NSPS standard (unless otherwise specified), Subpart A applies to each facility that is subject to an NSPS. The District has assumed that incorporation of Subpart A is automatic with incorporation of any NSPS. Some District permits reflect this assumption by not specifically listing Subpart A as applicable. However, the District agrees with EPA that this should be clarified in the permit rather than assumed, and accordingly is adding specific reference to Subpart A. Not every section of Subpart A is relevant to every NSPS affected facility. Provisions of Subpart A that are not relevant at a facility may be disregarded.

To address Item 3 of attachment 3 to EPA's letter dated October 8, 2004, the requirements contained in 40 CFR 60, Subpart A, Section 60.11 (a) and (d), concerning good engineering practice have been added for the following abatement devices: _S-6015 and S-6039. The

remaining subsections, 60.11(b), (c), and (e), concern compliance with opacity standards in the New Source Performance Standards. Since these abatement devices are not subject to the opacity standards, they are not subject to these subsections.

The permit did not specify whether the requirement of Regulation 8, Rule 10 referred to the SIP approved version adopted on 7/20/83 or the new BAAQMD version adopted on 1/21/2004, which has not yet been SIP approved. Both versions must be included in the permit. All requirements of the SIP approved version are federally enforceable. The District has determined that additional monitoring is required to assure compliance with SIP Regulation 8-10-301.4. The monitoring required by BAAQMD Regulation 8-10-501 and 8-10-502 is adequate to determine compliance with SIP Regulation 8-10-301.4. These non-SIP regulations have therefore been flagged as federally enforceable.

BAAQMD Regulation 9-1-302, General Emission Limitation, was deleted because it does not apply to facilities that have ground level monitoring pursuant to BAAQMD Regulation 1, General Requirements.

V. Schedule of Compliance

No change has been made to this section.

VI. Permit Conditions

As part of the Title V permit reopening, the District is proposing changes made to several permit conditions, these include: conditions regarding flares and Regulation 9-10 requirements, and, as appropriate, revised conditions for clarity and enforceability. The Title V permit is being updated to accurately reflect these applicable requirements. All changes to existing permit conditions are clearly shown in “strike-out/underline” format in the proposed permit. When the permit is issued, all “strikeout” language will be deleted; all “underline” language will be retained, subject to consideration of comments received.

The following permit conditions are being incorporated into the Title V permit. These conditions were not included in the Title V permit as initially issued because they were either established or changed during or subsequent to the issuance process. Because the current action is merely to incorporate these conditions into the Title V permit, the District is not soliciting comment on the substance of these conditions.

Revisions were made to the permit conditions for existing sources as follows:

Condition #16698 was modified to remove an obsolete requirement.

Based on comments received from EPA, Condition #18137, Part 1 was modified to make it consistent with Section I, Condition J [4/14/03 Comment #149]

Condition # 18656

The existing condition was deleted and replaced with new flare monitoring language. To ensure the flare is operating correctly, flaring limits were imposed on all flares that may be used to flare vent gas in the amended Part 12. These conditions are federally enforceable because they are used to monitor compliance with Regulations 6 and 8-1 requirements, which are SIP-approved. Condition 21232, part 1 was changed to reflect the presence of CEMs at S-4129, S-4131, S-4132, S-4133, S-4135, and S-4155.

Condition #21237 was added to a few grandfathered sources mentioned above. This condition was added in lieu of throughput limits on a few grandfathered storage tanks since throughput limits may not be best method to determine whether a modification has occurred. The district new source review compliance will be enhanced by requiring Chevron to notify the district of any piping and pumping changes since these changes can result in a modification of the storage tanks. An example of such a change that has occurred in the past at Chevron is the replacement of the fuel gas compressor. The installation of a larger capacity compressor in combination with the existing fuel gas compressor allowed for more fuel to be burned at each combustion source connected to the fuel gas system at the facility.

Permit condition #8869 has been edited to be consistent with the district's databank. The version of condition #8869 in the permit appears to be dated and duplicative of condition #13369.

Permit condition #13364 has been changed to reflect the minor revisions proposed within application #'s 7299 and 9782. The new condition increases throughput and vapor pressure.

Permit condition #21232 was changed to reflect the proposed installation of NO_x CEM's per application 10324. Also condition #21815 was added to allow time for the installation of the NO_x CEM's.

VII. Applicable Limits and Compliance Monitoring Requirements

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

The tables below contain only the limits for which there is no monitoring or inadequate monitoring in the applicable requirements. The District has examined the monitoring for other limits and has determined that monitoring is adequate to provide a reasonable assurance of compliance. Calculations for potential to emit will be provided when no monitoring is proposed due to the size of a source. In all other cases, the column will have "N/A", meaning "Not applicable".

As part of this Title V permit reopening, the District is proposing changes made to several of the compliance monitoring requirements, these include: monitoring regarding flares and Regulation 9-10 requirements, and, as appropriate, revised monitoring for clarity and enforceability. The Title V permit is being updated to accurately reflect these applicable requirements. All changes to existing monitoring are clearly shown in "strike-out/underline" format in the proposed permit.

When the permit is issued, all ‘strike-out’ language will be deleted; all “underline” language will be retained, subject to consideration of comments received.

Revisions were made to the monitoring for existing sources as follows:

Table IV D.1.1 has been changed to remove future effective dates that no longer apply.

A summary of all monitoring is contained in Section VII, Applicable Limits and Compliance Monitoring Requirements, of the permit. The summary includes a citation for each monitoring requirement, frequency, and type. The applicable requirements for monitoring are completely contained in Sections IV, Source-Specific Applicable Requirements, and VI, Permit Conditions, of the permit.

Based on comments received from EPA, the following typographical corrections were made to Table VII.A.3.2: (1) Condition #8773, Part 5 has been identified as federally enforceable because the limit was established pursuant to BACT and (2) Condition #8773, Part 1a has been identified as federally enforceable because the limit was established pursuant to BACT and Offsets. The table has also been corrected to indicate that the fuel flow meter requirements are federally enforceable, except for those required only by Condition #16686 per Regulation 2-1-234 (the definition of modification) [4/14/03 Comment #'s 3, 4, and 5]

Based on comments received from EPA, federally enforceable NOx emission limits have been added to Table VII.A.5.1. [4/14/03 Comment #6]

Based on comments received from EPA, S-6015 has been added to Condition #18656, Part 7. [4/14/03 Comment #31]

Based on comments received from EPA, flowrate and flame composition have been added to Table VII.A.2.1 Monitoring Type to determine compliance with 8-1-110.3.

Based on comments received from EPA, Chevron’s Flares are not subject to Part 63 per 640 (d) 5 since the flares are used for emergency purposes only and emissions are first routed to a fuel gas recovery system.

Tables VII.G.1.4, G.1.3, and G.1.2 have been modified to list 8-8-112 as an alternative compliance option, and 8-8-502 as the federally enforceable monitoring to assure compliance.

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.

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

IX. Permit Shield:

Permit Evaluation and Statement of Basis: Site A0010, Chevron Products Company, 841 Chevron Way, Richmond, CA 94801

No changes to permit shields are proposed in this revision. Based on comments from the applicant, Section 60.49b Reporting and Recordkeeping Requirements are not applicable if Section 60.45 is subsumed.

D. Alternate Operating Scenarios:

No alternate operating scenario has been requested for this facility.

E. Compliance Status:

Changes to the permit in this revision:

The facility is not currently in violation of any requirement. Moreover, the District has updated its review of recent violations and has not found a pattern of violations that would warrant imposition of a compliance schedule.

APPENDIX A
GLOSSARY

ACT

Federal Clean Air Act

APCO

Air Pollution Control Officer: Head of Bay Area Air Quality Management District

ARB

Air Resources Board

BAAQMD

Bay Area Air Quality Management District

BACT

Best Available Control Technology

Basis

The underlying authority which allows the District to impose requirements.

CAA

The federal Clean Air Act

CAAQS

California Ambient Air Quality Standards

CAPCOA

California Air Pollution Control Officers Association

CEQA

California Environmental Quality Act

CFR

The Code of Federal Regulations. 40 CFR contains the implementing regulations for federal environmental statutes such as the Clean Air Act. Parts 50-99 of 40 CFR contain the requirements for air pollution programs.

CO

Carbon Monoxide

CCR-2

Canadian Chemical Reclaimer heater.

Cumulative Increase

The sum of permitted emissions from each new or modified source since a specified date pursuant to BAAQMD Rule 2-1-403, Permit Conditions (as amended by the District Board on 7/17/91) and SIP Rule 2-1-403, Permit Conditions (as approved by EPA on 6/23/95). Used to determine whether threshold-based requirements are triggered.

District

The Bay Area Air Quality Management District

dscf

Dry Standard Cubic Feet

DNF

Dissolved Nitrogen Flotation.

EPA

The federal Environmental Protection Agency.

ETP

Effluent Treatment Plant.

Excluded

Not subject to any District regulations.

Federally Enforceable, FE

All limitations and conditions which are enforceable by the Administrator of the EPA including those requirements developed pursuant to 40 CFR Part 51, subpart I (NSR), Part 52.21 (PSD), Part 60 (NSPS), Part 61 (NESHAPs), Part 63 (MACT), and Part 72 (Permits Regulation, Acid Rain), including limitations and conditions contained in operating permits issued under an EPA-approved program that has been incorporated into the SIP.

FCC

Fluid Catalytic Cracker

FP

Filterable Particulate as measured by BAAQMD Method ST-15, Particulate.

Furfural Raff/Furfural Extr

These sources are heaters that contain furnaces within them. The heater is the overall unit and the combustion box is the furnace.

GDF

Gasoline Dispensing Facility

HAP

Hazardous Air Pollutant. Any pollutant listed pursuant to Section 112(b) of the Act. Also refers to the program mandated by Title I, Section 112, of the Act and implemented by 40 CFR Part 63.

H2SO4

Sulfuric Acid

ISOM

Isomerization plant.

Long ton

2200 pounds

Major Facility

A facility with potential emissions of: (1) at least 100 tons per year of regulated air pollutants, (2) at least 10 tons per year of any single hazardous air pollutant, and/or (3) at least 25 tons per year of any combination of hazardous air pollutants, or such lesser quantity of hazardous

air pollutants as determined by the EPA administrator.

MDEA

Methyl Diethanolamine

MFR

Major Facility Review. The District's term for the federal operating permit program mandated by Title V of the Federal Clean Air Act and implemented by District Regulation 2, Rule 6.

MOP

The District's Manual of Procedures.

MSDS

Material Safety Data Sheet

NAAQS

National Ambient Air Quality Standards

NESHAPS

National Emission Standards for Hazardous Air Pollutants. See in 40 CFR Parts 61 and 63.

NMHC

Non-methane Hydrocarbons (Same as NMOC)

NMOC

Non-methane Organic Compounds (Same as NMHC)

NO_x

Oxides of nitrogen.

NSPS

Standards of Performance for New Stationary Sources. Federal standards for emissions from new stationary sources. Mandated by Title I, Section 111 of the Federal Clean Air Act, and implemented by 40 CFR Part 60 and District Regulation 10.

NSR

New Source Review. A federal program for pre-construction review and permitting of new and modified sources of pollutants for which criteria have been established in accordance with Section 108 of the Federal Clean Air Act. Mandated by Title I of the Federal Clean Air Act and implemented by 40 CFR Parts 51 and 52 and District Regulation 2, Rule 2. (Note: There are additional NSR requirements mandated by the California Clean Air Act.)

Offset Requirement

A New Source Review requirement to provide federally enforceable emission offsets for the emissions from a new or modified source. Applies to emissions of POC, NO_x, PM₁₀, and SO₂.

Phase II Acid Rain Facility

A facility that generates electricity for sale through fossil-fuel combustion and is not exempted by 40 CFR 72 from Titles IV and V of the Clean Air Act.

POC

Precursor Organic Compounds

PM

Particulate Matter

PM10

Particulate matter with aerodynamic equivalent diameter of less than or equal to 10 microns

PSD

Prevention of Significant Deterioration. A federal program for permitting new and modified sources of those air pollutants for which the District is classified "attainment" of the National Air Ambient Quality Standards. Mandated by Title I of the Act and implemented by both 40 CFR Part 52 and District Regulation 2, Rule 2.

Process Unit

For the purpose of start-up and shutdown reporting, a unit is defined as found in 40 CFR Part 60 Subpart GGG, which states: Process Unit means components assembled to produce intermediate or final products from petroleum, unfinished petroleum derivatives, or other intermediates; a process unit can operate independently if supplied with sufficient feed or raw materials and sufficient storage facilities for the product.

SIP

State Implementation Plan. State and District programs and regulations approved by EPA and developed in order to attain the National Air Ambient Quality Standards. Mandated by Title I of the Act.

SO2

Sulfur dioxide

Shutdown Reporting

For reporting purposes only, a shutdown shall be defined as any of the following; there is no process feed to a unit, no furnace fires, or the boundary blinds are installed.

Start-Up Reporting

For reporting purposes only, a start-up shall be defined as any of the following; the removal of boundary blinds, first fire to a furnace, or the introduction of process feed to a unit. A start-up only occurs following a shutdown unless it involves a newly constructed process unit.

THC

Total Hydrocarbons (NMHC + Methane)

Title V

Title V of the federal Clean Air Act. Requires a federally enforceable operating permit program for major and certain other facilities.

TOC

Total Organic Compounds (NMOC + Methane, Same as THC)

TPH

Total Petroleum Hydrocarbons

TRMP

Toxic Risk Management Plan

TSP

Total Suspended Particulate

VOC

Volatile Organic Compounds

Units of Measure:

bbl	=	barrel
bhp	=	brake-horsepower
btu	=	British Thermal Unit
cfm	=	cubic feet per minute
g	=	grams
gal	=	gallon
gpm	=	gallons per minute
hp	=	horsepower
hr	=	hour
lb	=	pound
in	=	inches
max	=	maximum
m ²	=	square meter
m	=	thousand
min	=	minute
mm	=	million
MMbtu	=	million btu
MMcf	=	million cubic feet
ppmv	=	parts per million, by volume
ppmw	=	parts per million, by weight
psia	=	pounds per square inch, absolute
psig	=	pounds per square inch, gauge
scfm	=	standard cubic feet per minute
yr	=	year

APPENDIX B
PERMIT EVALUATIONS
(Application Nos. 7919, 8161, and 8452)

EVALUATION REPORT
Chevron Products Co., Plant #10
Application Number 7919

Background

Chevron Products Co. (Chevron) is proposing a change in conditions for S-3106 External Floating Roof Storage Tank, 31.4 MMgal capacity at its refinery located in Richmond. The tank vapor pressure is increasing from 3.4 psia to 11.0 psia. The change in conditions triggers BACT but at this time add-on controls are not cost effective. In the future, it may be cost effective to purge with nitrogen and vent to carbon adsorption. The tank will comply with BACT level 2 which will require seals that comply with Regulation 8-5 and that an un-slotted guide pole or equivalent be used. To comply with BACT level 2, Chevron will use an exterior flexible fabric barrier that will cover all of the slots. Chevron will be required to inspect this flexible barrier at least twice per year.

BACT Analysis

This application triggered BACT but the POC emissions were not great enough to justify the use of add on control. Chevron provided cost information for add-on control. This source will satisfy BACT level 2 through the use of primary and secondary seals that comply with Regulation 8-5 and making the guide pole un-slotted.

This application also requires 8.8 tons per year of POC offsets. Former application #11729 only resulted in a 1.89 tpy increase. The total emissions from the tank within that application were estimated to be 5566 pounds per year. The new increase from this application is from 5566 pounds per year to 15,314.3 pounds per year.

Emission Calculations

Storage Tank

POC emission estimate for the tank was performed using Tanks 4.0 assuming a vapor pressure of 11.0 psia.

POC: 15,314.30 #/y, 7.66 tpy

Emissions from this tank were originally estimated to be 5566 pounds per year or 2.78 tpy.

Increase in POC Emissions

POC: 7.66 tpy – 2.78 tpy = 4.88 tpy

Toxic Emission Increases

Chevron will accept a permit condition limiting the benzene to a maximum of 2% by weight. Other HAPs include phenol and naphthalene at 0.01% and 0.1% by weight, respectively.

Benzene: 195.2 #/y
Phenol: 97.48 #/y
Naphthalene: 974.83 #/y

A toxic risk analysis was required for this application since the toxic emissions exceeded the respective trigger levels. The cancer risk was determined to be 2.4 in a million therefore in accordance with the district's toxic risk management policy the screen passes since this source will satisfy TBACT. The hazard index was determined to be 0.048, which is less than 1.0 and in compliance with the district's toxic risk management policy.

NSPS subpart Kb requires that the external roof be equipped with both primary and secondary seals.

NESHAPS and PSD do not apply to this application.

Recommendation

Recommend that the following equipment be granted a Change of Conditions:

S-3106 External Floating Roof Storage Tank, 31.4 MMgal capacity

Conditions

Plant 10, Application #7919
For S-3106 at Plant 10:

1. The owner/operator of S-3106 shall not exceed 30,000,000 barrels of crude oil throughput during any consecutive twelve-month period. The owner/operator may store materials other than crude oil provided that the owner/operator demonstrates that there is no increase in emissions and the toxic emissions will not exceed the respective toxic trigger levels. (BACT)
2. The owner/operator shall maintain a zero gap seal between the tank shell and the tank's dual seals. (Basis: Regulation 8, Rule 5/BACT)
3. The owner/operator of S-3106 shall only store materials with a vapor pressure that shall not exceed 11.0 psia. The concentration of benzene of materials stored shall not exceed 2.0 wt.%. (BACT/Toxics)
4. The owner/operator of S-3106 shall maintain records of

storage tank throughput, type, benzene weight percentage, storage vapor pressure, and all inspection records. These records shall be summarized on a monthly basis, and may be in the form of computer generated data, which is available to District personnel on short notice (rather than actual paper copies of throughput data). These records shall be kept on file for a minimum of 5 years. (BACT)

5. The owner/operator shall control S-3106 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 (per EPA Compilation of Air Pollution Emission Factors, AP-42, Supplement E, Section 12.3.2, Table 12.3-11). 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, prior to installing the roof on the tank. (BACT/TBACT)

Fitting Type	Control Technique
Access hatch	Bolted cover, gasketed
Guide pole/Well (amended per AN 7919)	Slotted with a pole sleeve that projects below liquid surface, a zero-gap pole wiper, and a 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	Roof drain does not drain water into product
Roof leg	Adjustable, with vapor seal boot
Rim vent	Weighted mechanical actuation, Gasketed

6. The owner/operator of S-3106 shall inspect the exterior flexible barrier/cover to determine that it is functioning properly and has no holes or leaks at least twice per calendar year at 4 to 8 month intervals. (BACT)

by _____ date _____
Gregory Solomon
Air Quality Engineer II

**EVALUATION REPORT
Chevron Products Co., Plant #10
Application Number 8161**

Background

Chevron Products Co. (Chevron) is proposing to install S-4424 Equipment Painting Area at its refinery located in Richmond. This source will not be used to coat wood or plastic parts. The source will be subject to rules 8-3, 8-4, and 8-19. Chevron will accept a permit condition limiting HAP emissions to less than the respective trigger levels and will maintain records to demonstrate compliance with this condition.

Emission Calculations

S-4424 Equipment Painting Area

Chevron will accept a permit condition limiting POC emissions to 2500 pounds per year and 9.8 pounds per highest day.

Plant Cumulative Increase

increase offsets (BC#887)
POC: 1.25 tpy(1.15) – 1.44 tpy = 0.0 tpy

Toxic Risk Screening Analysis

A toxic risk analysis is not required for this application since the applicant will accept a permit condition limiting HAP emissions to less than the toxic trigger levels and maintaining records to demonstrate compliance with these limits.

Statement of Compliance

This application will comply with each Regulation 8-3, 8-4, and 8-19, which contains VOC limits on coatings, solvent evaporative loss minimization, and spray application requirements.

The source is not subject to BACT since POC emissions will not exceed 10 pounds per highest day nor will the cumulative increase be greater than 10 pounds per highest day.

The source will require POC offsets in the amount of 1.44 tons per year in order to fully offset this application increase. Chevron submitted banking certificate #887 to fully offset the POC increase.

This application is not subject to CEQA since the evaluation is a ministerial action that can be completed using Permit Handbook Chapter 5.6.

A toxic risk analysis is not required for this application as stated above.

NSPS, NESHAPS, and PSD do not apply.

Recommendation

Recommend that the following equipment be granted a Permit to Operate:

S-4424 Equipment Painting Area equipped with a HVLP Spray Gun

Conditions

1. The owner/operator of S-4424 shall not exceed 2500 pounds of POC emissions in any consecutive 12 month period. (cum inc)
2. The owner/operator of S-4424 shall not exceed 9.8 pounds POC in any calendar day. (cum inc)
3. The owner/operator of S-4424 shall not exceed any toxic trigger level listed in Table 2-1-316. (2-1-316)
4. The owner/operator of S-4424 shall maintain a district approved daily log of all POC emissions with monthly summaries, monthly toxic compound emissions, and MSDS's of all materials used. This log shall be kept on site for at least five years from the date of entry and be made available to district staff upon request. (2-1-403)

by _____ date _____
Gregory Solomon
Air Quality Engineer II

EVALUATION REPORT Chevron Products Co., Plant #10 Application Number 8452

Background

Chevron Products Co. (Chevron) is proposing a change in conditions for S-3100 External Floating Roof Storage Tank, 19.91 MMgal capacity at its refinery located in Richmond. The tank vapor pressure is increasing from approximately 3.9 psia to 11.0 psia and the tank throughput will be increasing from 8.3 MMbbl/y to 14.0 MMbbl/y. The change in conditions triggers BACT but at this time add-on controls are not cost effective. In the future, it may be cost effective to purge with nitrogen and vent to carbon adsorption. The tank will comply with BACT level 2 which will require seals that comply with Regulation 8-5 and that an un-slotted guide pole or equivalent be used. To

comply with BACT level 2, Chevron will use an exterior flexible fabric barrier that will cover all of the slots. Chevron will be required to inspect this flexible barrier at least twice per year.

BACT Analysis

This application triggered BACT but the POC emissions were not great enough to justify the use of add on control. Chevron provided cost information for add-on control. This source will satisfy BACT level 2 through the use of primary and secondary seals that comply with Regulation 8-5 and making the guide pole essentially un-slotted.

This application also requires 4.50 tons per year of POC offsets.

Emission Calculations

Storage Tank

The increase in POC emissions was estimated using the new total tank emissions minus the baseline emission calculation. The new total emission estimate was performed using Tanks 4.0 at the desired throughput limit of 14 MMgal/yr and adjusting the deck fitting and rim seal losses corresponding to a vapor pressure of 11.0 psia.

The baseline emission calculation used the implied permit condition throughput and an adjustment of the deck fitting and rim seal losses corresponding to a weighted average vapor pressure of 3.9 psia. The implied permit condition throughput was used for the baseline calculation since it had been exceeded.

Baseline Emissions

POC: 3546 #/y, 1.77 tpy

New Total Tank Emissions

POC: 11,351 #/y, 5.68 tpy

Increase in POC Emissions

POC: $5.68 \text{ tpy} - 1.77 \text{ tpy} = 3.91 \text{ tpy}$

Toxic Emission Increases

Chevron will accept a permit condition limiting the benzene to a maximum of 2% by weight. Other HAPs include phenol and naphthalene each at less than 5% by weight. It should be noted that Chevron submitted and requested that the district use Raoult's law in order to estimate emissions. The total weight percentage was used instead since Raoult's law is not valid for gasoline vapor.

Benzene: 156.4 #/y
Phenol: 391.0 #/y
Naphthalene: 391.0 #/y

Plant Cumulative Increase

Increase(ratio) bank # 887
offsets
POC: $3.91 \text{ tpy}(1.15) - 4.50 \text{ tpy} (\text{B}\#887) = 0.0 \text{ tpy}$

Toxic Risk Screening Analysis

Chevron will accept a permit condition limiting benzene concentration to less than 2% benzene by weight.

<u>TOXIC</u>	<u>EMISSION RATE</u>	<u>TRIGGER LEVEL</u>
Benzene	156.4 #/y	6.7 #/y
Phenol	391.0 #/y	8.7E3 #/y
Naphthalene	391.0 #/y	2.7E2 #/y

A toxic risk analysis was required for this application since the benzene emissions exceeded the respective trigger level. The cancer risk was determined to be 1.4 in a million therefore in accordance with the district's toxic risk management policy the screen passes since this source will satisfy TBACT. The hazard index was determined to be 0.014, which is less than 1.0 and in compliance with the district's toxic risk management policy.

Statement of Compliance

This application will comply with Regulation 8-5, sections 304.2, 311.1, 321 and 322, which require that external floating roof storage tanks larger than 19,813 gallons be equipped with double seals that are maintained.

This application will trigger BACT since the increase in POC emissions will be greater than 10 pounds per day. According to the BACT/TBACT Workbook, Document # 167.1.1, dated 3/3/95, BACT level 1 for external floating roof tanks is venting to a control device with greater than 98% efficiency. To this date the district has not subjected any external floating roof tank to BACT level 1. Chevron submitted data

showing that it is not cost effective to use a control device and that at this time it is not technologically feasible. BACT level 2 will be satisfied through the use of primary and secondary seals that comply with Regulation 8-5 and the use of a sleeve to create the equivalent of an un-slotted guide pole. A permit condition will be added to assure that the tank will satisfy BACT.

This application will require POC offsets since the facility emissions are greater than 50 tons per year. This application requires 4.5 tons per year of POC offsets. Chevron submitted Banking Certificate #887, which has over 30 tons per year of POC offsets.

This application is considered ministerial since this source category is covered in Permit Handbook Chapter 4.1.

A toxic risk analysis was required for this application since the toxic emissions exceeded the respective trigger levels. The cancer risk was determined to be 1.4 in a million therefore in accordance with the district's toxic risk management policy the screen passes since this source will satisfy TBACT. The hazard index was determined to be 0.014, which is less than 1.0 and in compliance with the district's toxic risk management policy.

NSPS subpart Kb requires that the external roof be equipped with both primary and secondary seals.

NESHAPS and PSD do not apply to this application.

Recommendation

Recommend that the following equipment be granted a Change of Conditions:

S-3100 External Floating Roof Storage Tank, 19.91 MMgal capacity

Conditions

Plant 10, Application #8452
For S-3100 at Plant 10:

1. The owner/operator of S-3100 shall not exceed 14,000,000 barrels of crude oil throughput during any consecutive twelve-month period. The owner/operator may store materials other than crude oil provided that the owner/operator demonstrates that there is no increase in emissions and the toxic emissions will not exceed the respective toxic trigger

levels. (BACT)

2. The owner/operator shall maintain a zero gap seal between

the tank shell and the tank's dual seals.
(Basis: Regulation 8, Rule 5/BACT)

4. The owner/operator of S-3100 shall only store materials with a vapor pressure that shall not exceed 11.0 psia. The concentration of benzene of materials stored shall not exceed 2.0 wt.%. (BACT/Toxics)

4. The owner/operator of S-3100 shall maintain records of storage tank throughput, type, benzene weight percentage,

storage vapor pressure, and all inspection records.

These

records shall be summarized on a monthly basis, and may be

in the form of computer generated data, which is available to

District personnel on short notice (rather than actual paper

copies of throughput data). These records shall be kept on

file for a minimum of 5 years. (BACT)

5. The owner/operator shall control S-3100 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 District approval, prior to installing the roof on the tank. (BACT/TBACT)

Fitting Type

Control Technique

Access hatch

Bolted cover, gasketed

Guide pole/Well

Slotted with a pole sleeve that

(amended per AN 7919)

projects below liquid surface, a

zero-gap pole wiper, and a

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	Roof drain does not drain water into product
Roof leg	Adjustable, with vapor seal boot
Rim vent	Weighted mechanical actuation, Gasketed

Note: The owner/operator of S-3100 shall have the exterior flexible barrier/cover installed by 2/4/04. (BACT)

6. The owner/operator of S-3100 shall inspect the exterior flexible barrier/cover to determine that it is functioning properly and has no holes or leaks at least twice per calendar year at 4 to 8 month intervals. (BACT)

by _____ date _____
Gregory Solomon
Air Quality Engineer II