Bay Area Air Quality Management District
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Final
Permit Evaluation
and
Statement of Basis
for
2008 RENEWAL

MAJOR FACILITY REVIEW PERMIT

Valero Refining Co. - California
Facility #B2626
Application # 18288

Facility Address:
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Benicia, CA 94510-1097

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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 Title 40 of the Code of Federal Regulations (CFR), and BAAQMD Regulation 2, Rule 6, Major Facility Review because it is a major facility as defined by BAAQMD Regulation 2-6-212. It is a major facility because it has the "potential to emit," as defined by BAAQMD Regulation 2-6-218, of more than 100 tons per year of a regulated air pollutant, than 10 tons per year of a hazardous air pollutant or more than 25 tons per year of a combination of hazardous air pollutants.

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.

"Pursuant to Regulation 2, Rule 6, section 416, the District has reviewed the terms and conditions of this Major Facility Review permit and determined that they are still valid and correct. This review included an analysis of all applicability determinations for all sources, including those that have been modified or permitted since the issuance of the initial Major Facility Review Permit. The review also included an assessment of the sufficiency of all monitoring for determination of compliance with applicable requirements. The statement of basis documents for permit revisions that have occurred since the initial Major Facility Review permit was issued are hereby incorporated by reference and are available upon request."

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

Each facility in the Bay Area is assigned a facility identifier that consists of a letter and a 4-digit number. This identifier is also considered to be the identifier for the permit. The identifier for this facility is B2626.

This facility received its last Title V permit on December 1, 2003. The permit has been reopened several times, as outlined below.

Revision 1: On December 16, 2004, the District issued Revision 1 of the permit, which amended flare and BAAQMD Regulation 9, Rule 10 requirements, added new permitted sources, and corrected typographical and other inadvertent errors ("Revision 1 Permit"). EPA objected to the Revision 1 permit on one issue: the permit's failure to include monitoring or a design review for certain thermal oxidizers.

Revision 2: In the same October 8, 2004 letter in which it objected to the Revision 1 permit and required that it be reopened, EPA sent comments identifying a number of issues to be resolved for the District's refinery Title V permits. (Note that EPA commented on five refineries in this

letter. Not all comments concern this facility.) On April 15, 2005, the District proposed Revision 2 of the permit. The primary purpose of the Revision 2 proposal was to address various issues identified in EPA's October 8, 2004 letter regarding the Revision 1 proposal. The public comment period for the Revision 2 proposal ended May 24, 2005.

Revision 3: On December 7, 2004, EPA received a petition from Our Children's Earth Foundation (OCE) requesting that the administrator object to the issuance of the Title V permit (the Revision 1 Permit). On March 15, 2005, shortly before the Revision 2 reopening was proposed, EPA issued an Order directing the District to reopen the permit to address possible deficiencies that EPA had identified based on the OCE petition. On August 15, 2005, the District proposed Revision 3 of the permit, primarily to address the issues listed in the EPA March 15, 2005 Order.

The TV permit with combined Revision 2 and Revision 3 was issued on March 2, 2007. The Revision 3 Permit is the current permit for the facility, and the phrases "Revision 3 Permit" and "current permit" are used interchangeably in this document.

Revision 4: On May 7, 2008, the District issued Revision 4 of the permit. This revision updated Regulations and incorporated changes made through New Source Review applications. The changes involved in Revision 4 are documented in the accompanying Statement of Basis.

2008 Renewal:

The Title V permit revision associated with the 2008 renewal application updates regulations and incorporates changes made through New Source Review applications. The changes involved in this revision are reflected in the accompanying draft permits, and they are explained in this statement of basis for the Renewal. For ease of reference for reviewers at this draft permit stage, all changes to the current permit being made through the renewal are shown in "strikeout/underline" format.

This statement of basis does not address factual and legal bases for permit requirements and conditions that are not the subject of the Renewal. These matters were addressed in the previous comprehensive statements of basis that accompanied the initial permit, the Revision 1 Permit, and the combined Revision 2 and 3 Permit. Those statements of basis are available upon request.

The Renewal permit application incorporates the following recent Title V permit applications into the permit:

Application Number(s) (Title V/New Source Review (NSR))	**Description**
13244/13009	Ultra Low Sulfur Diesel (ULSD) Unit (Add S-247, S-248, S-1036, A-1051 and S-1052)
15607/15606	Crude Unit Baseline POC Main Stack
16708/16707	NOx source test frequency (S-173, S-43, S-44, and S-46)
16710/16706	S-237 visible emissions monitoring
16840/NA	Group tanks-combined throughput for NuStar tanks

Application Number(s) (Title V/New Source Review (NSR))	Description
16939/16938	Consolidate WWTP conditions
17032/16866	ULSD Condition 22949 mass emission limits for S-247 and S-248
17877/17681	Hydrogen Deaerator Vent
18165/18164	FCCU CO & PM Standards per Consent Decree, Addition of Subpart A and J SO2 to FCCU, Flares, and Fuel Gas Combustion Devices per Consent Decree, Removal of Subpart J from A-57 thermal oxidizer, and Approved Alternate Monitoring Plans for COMS location and NOx CEMS span
18400/18292	Emergency Diesel Engine
18750/17876	Butamer
18792/18582	CARB Phase III
19793/15934	Additional Abatement to Diversion Tanks (A-65)
19633/5846	VIP Crude Tanks
19633/16937	VIP Amendments
19897/19826	BWON Corrections
19636/19634	Reclassify WW Sources
N/A/20304	Gasoline Dispensing Facility EVR Phase II Upgrade

All of the above applications are minor modifications and administrative changes that correct and reflect Valero operations such as changing tank service, removal of inapplicable requirements, adding requirements per consent decree, and adding new sources. None of the above applications resulted in emissions increases with the exception of Applications NSR 13009/TV 13244 where Valero provided offsets by banking credit for combustion emission of S-247 and S-248 furnaces.

- NSR 5846/TV 19633 is for the VIP Crude Tanks, S-1047 and S-1048, Condition 20820 later amended by NSR 16937/TV 16933.
- NSR 13009/TV 13244 is for a new Ultra Low Sulfur Diesel (ULSD) Unit so that Valero can produce the EPA and CARB new Diesel Standard with less than or equal to 15 ppm sulfur content. PSD was not triggered. BACT, NSPS, NESHAPS and Condition 22949 were added to new sources. The incorporation of this application is considered as a minor modification to the TV permit because the application does not require any establishment of condition that allows the facility to avoid an applicable requirement, and/or relaxation of any applicable monitoring, reporting or recordkeeping, and/or establish a case-by-case determination of emission limit.
- NSR 15606/TV 15607, Crude Unit Baseline is for POC Main Stack emission limits, later amended by NSR 16937/TV 16933
- NSR 15934/TV 19793 is for additional abatement to diversion tanks (A-65)
- NSR 16302/TV 16327 is to increase throughput of PERC tank
- NSR 16706/TV 16710 removed S-237 monthly visible emissions monitoring requirement from 19466, Part 3
- NSR 16707/TV 16708 decreased NOx source test frequency from semiannual to annual for Condition 254, Part 3 (S-173) and Condition 19466, Part 11 (S-43, S-44, and S-46).

- NSR 16866/TV 17032 allows S-247 and S-248 furnaces from ULSD Unit to comply with either mass emissions or concentrations for NOx, CO, PM10, and POC. Condition 22949 was revised. No emission increase results from this minor modification.
- NSR 16937/TV 19633 is for VIP Amendments, including the addition of new sources and permit conditions
- NSR 16938/TV 16939 is for consolidation of wastewater treatment conditions
- NSR 17681/TV 17877 is for source test requirements for atmospheric venting for S-1010 Hydrogen Plant.
- NSR 17876/TV 18750 is for the addition of the Butamer unit, S-1034, S-1049, and S-1050
- NSR 18164/TV 18165 is to add NSPS Subpart J CO and PM requirements for the FCCU, S-5 per the Consent Decree, to add NSPS Subpart J SO2 limits for fuel gas combustion devices, and for updates to NSPS Subpart J based on recent rule revisions and to add SO2 requirements per the Consent Decree and to add new permit condition for Alternate Monitoring Plans (AMPs) for alternate NOx CEMS spans and alternate COMS location on Main Stack
- NSR 18292/TV 18400 is to add a new diesel emergency generator at the Administration Bldg, S-251
- NSR 18582/TV 18792 is for CARB Phase III ethanol throughput limit revisions to meet the modified gasoline reformulation requirements
- NSR 19826/ TV 19897 is for corrections to applicability and monitoring requirements for Benzene Waste NESHAP (40 CFR 61, Subpart FF)
- NSR 19634/TV 19636 is for reclassification of wastewater treatment sources
- NSR 20304/TV is to upgrade the existing Gasoline Dispensing Facility with Enhanced Vapor Recovery System for Phase II due to CARB requirement effective on April 1, 2009. No emission increase results from this minor modification.
- NSR None/TV 16840 is to combine throughput for group of tanks

B. Facility Description

The facility description can be found in the statement of basis that was prepared for the current permit (Revision 1 Permit) that was issued December 16, 2004. It is available upon request.

C. Permit Content

The legal and factual basis for the changes being made in this Revision 4 follows. Changes to each permit section are described in the order presented in the permit.

I. Standard Conditions

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

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

Changes to permit:

- Condition I.A – Added BAAQMD Regulation 2, Rule 5;
- Condition I.B.1 – Conditions to Implement Regulation 2, Rule 6, Major Facility Review. The dates of adoption and subsequent renewal application dates have been adjusted for the issuance of the renewal permit.
- Condition I.B.1 – The following language was added: "If the permit renewal has not been issued by November 30, 2008, but a complete application for renewal has been submitted in accordance with the above deadlines, the existing permit will continue in force until the District takes final action on the renewal application." This is the "application shield" pursuant to BAAQMD Regulation 2-6-407.
- Condition I.F – Monitoring Reports. The dates of adoption and subsequent reporting period dates have been adjusted for the issuance of the renewal permit.
- Condition I.G – Compliance Certification. The date for the first certification and subsequent certification periods have been adjusted for issuance of the renewal permit.
- Condition I.J.2 – Miscellaneous Conditions. Revised language to clarify reporting requirements for throughput limits for grandfathered sources.

II. Equipment

This section of the permit lists all permitted or significant sources. Each source is identified by an S and a number (e.g., S24).

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

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

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

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

Each of the permitted sources has previously been issued a permit to operate pursuant to the requirements of BAAQMD Regulation 2, Permits. These permits are issued in accordance with

state law and the District's regulations. The capacities in the permitted sources table are the maximum allowable capacities for each source, pursuant to Standard Condition I.J and Regulation 2-1-403.

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

Following are explanations of the differences in the equipment list between the Revision 2 & 3 permit being made through this Revision 4:

Changes to Permit:

- Table IIA Permitted Sources:
  - S-1, S-2, S-5, S-8, S-45, S-51, S-52, S-157, S-236, S-1003, S-1004, S-1006, S-1010, S-1012, S-1034, S-1035, S-1036, S-1049, S-1050, S-1051, S-1052, revised or added capacity and/or throughput based on new Condition 20820 for VIP/VIP Amendments per A/N 19633
  - S-3 and S-4, noted that sources will be taken out of service based on new Condition 20820 for VIP/VIP Amendments per A/N 19633
  - S-21, S-22, noted that either source will be taken out of service and associated throughput revisions, based on new Condition 20820 for VIP/VIP Amendments per A/N 19633
  - S63, S73, S75, S76, S-78, S-97, S-163, revised combined throughput description based on A/N TV 16840
  - S-143, removed from service
  - S-150, changed description per A/N NSR 19634/ TV 19636
  - S-158, changed description of TK-2902 service
  - S-173, revised capacity from 22 MMBtu/hr to 20 MMBtu/hr. F-902 PTO (issued in 1984) specified a fired duty of 20 MMBTU/HR, which was also submitted to the BAAQMD in 1998 as part of the NOx compliance plan for Regulation 9-10. The confusion may be due to a maximum fuel gas rate of 20,000 SCF/HR specified in the Annual Data Update package for F-902. For a normal fuel gas heating value of about 1100 BTU/SCF, this equates to 22 MMBTU/HR of fired duty at F-902. The origin of the 20,000 SCF/HR fuel gas rate specified in the Annual Data Update package is not clear, nor is it clear that it is defensible versus the 20 MMBTU/HR limit in F-902 PTO. At one point, there was confusion about whether the 20 MMBTU/HR was a maximum hourly limit or a daily average hourly limit. However, this was clarified by the District during Regulation 9-10 discussions that the District intended that specified duties were maximum hourly limits.
  - S-199, changed description of D-2055 service per A/N NSR 19634/ TV 19636
  - S-200, added size to Capacity column
  - S-188, deleted extraneous text "1 days/wk, 24 hours/day, 52 wks/year" from Description
  - S-208, deleted redundant information from Description
  - S-209, revised annual ethanol truck loading per CARB Phase IIIA/N 18792
  - S-210, revised annual ethanol tank throughput per CARB Phase III A/N 18792
  - S-220, noted superseded permit conditions based on new VIP/VIP Amendments per A/N 19633

- S-232, added the note "to be removed from service Upon Startup of S-1059 and S-1060 PS Furnaces, A-1059, A-1060 PS Furnace SCRs, A-1047 FCCU/CKR Prescrubber/Regenerative Amine Scrubber per Condition 20820, Part 76"
- S-232, added the note "to be removed from service Upon Startup of S-1059 and S-1060 PS Furnaces, A-1059, A-1060 PS Furnace SCRs, A-1047 FCCU/CKR Prescrubber/Regenerative Amine Scrubber per Condition 20820, Part 76"
- S-236 and S-237, deleted "-new" from description
- S-240, S-241 and S-242, changed from 100 hours/yr to 34 hours/yr due to new the ATCM requirement for emergency diesel water pumps
- S-243, changed from 100 hours/yr to 20 hours/yr due to the new ATCM requirement for emergency diesel generator. Added Condition 24375, Part 1 as NSR permit condition.
- S-247, S-248, S-1036, S-1051, S-1052, added new ULSD sources per A/N NSR 13009/TV 13244
- S-251, added new emergency diesel engine for Admin Bldg, A/N NSR 18292/TV18400. Condition 22850 was changed to Condition 24309 to give the source a specific condition without the requirement near school
- S-1010, deleted maximum hourly throughput in the description to be consistent with the description for other sources in Table IIA. Note that the 6.83 million cubit feet/hour throughput is consistent with the 164 MMscf/day capacity (correction of typographical error), but just noted in the wrong location on Table IIA
- S-1034, S-1035, S-1049, and S-1050, added Butamer towers and reactors per A/N NSR 17876/TV18750S-1047, S-1048, added new VIP Crude Tanks per A/N 5846 with combined limits with Facility B5574 tanks per A/N TV 16840
- S-1059, S-1060, S-1061, S-1062, added new VIP Amendment sources per A/N 16937/TV 19633

- Table IIB Exempt Sources:
  - S-64, S-65, S-66, S-69, S-93, S-94, S-95, S-96, S-98, S-99, S-100, S-107, S-123, S-127, S-140, S-142, S-145, S-185, S-192, S-201, S-214, S-215, S-217, S-218, S-219, S-230, S-238, TK-1721, TK-1722, TK-1723, TK-1724, TK-1725, TK-1726, LPG Truck loading rack, TK-2700, TK-2710, Cogen cooling tower, Assorted sources (3 rows), added "Regulation" and added or revised exemption citation in Throughput column
  - S-192, S-217, S-218, S-219, added "Regulation" and added or revised exemption citation in Throughput column per A/N NSR 19634/ TV 19636
  - D-1907, added exempt ethyl mercaptan odorant tank (liquefied organic gas storage)
  - S-230, S-231, S-244, S-245, moved sources so they are in numerical order in table.
  - S-1046, added Desalter per A/N 16937/TV 19633

- Table IIC Abatement Devices:
  - A-1, A-2, A-3, A-4, A-5, A-22, and A-23, deleted S-10 (removed from service in 2005, partially deleted from Title V Permit Rev 4)
  - A-1, A-2, A-3, A-4, A-5, A-52, A-53, noted that the ESPs will be removed from service upon startup of VIP/VIP Amendments per A/N 19633
  - A-11, A-12, A-19, A-46, A-47, A-57, Added "BAAQMD" to 8-5-306 and added SIP 8-5-306
  - A-13 and A-16, added "BAAQMD 8-2-301 and BAAQMD Condition 19466.2d (for S160 only") to reflect abatement requirement for S160

- A-19, A-40, A-41, A-46, A-47 Added vapor recovery compressor ID to description
- A-27, added row for S-159 VOC abatement requirement to vent to A-27/S-36 waste heat boiler
- A-36, updated Condition 11880 based on A/N NSR 15934/TV 19793 that added A-65 Diversion Area Thermal Oxidizer
- A-37, A-57, updated Condition 11879 based on A/N NSR 16938 that consolidated Conditions 11879, 11882, 11888 and 13319 into 11879.
- A-37, A-57, updated Condition 11879 based on A/N NSR 15934/TV 19793 that added A-65 Diversion Area Thermal Oxidizer
- A-45, A-46, A-47, noted superseded permit condition based on VIP/VIP Amendments per A/N 19633
- A-54, added the note "to be removed from service along with S-232 Upon Startup of S-1059 and S-1060 PS Furnaces, A-1059, A-1060 PS Furnace SCRs, A-1047 FCCU/CKR Prescrubber/Regenerative Amine Scrubber per Condition 20820, Part 76"
- A-55, added the note "to be removed from service along with S-233 Upon Startup of S-1059 and S-1060 PS Furnaces, A-1059, A-1060 PS Furnace SCRs, A-1047 FCCU/CKR Prescrubber/Regenerative Amine Scrubber per Condition 20820, Part 76"
- A-56 and A-62, deleted abatement requirement for S-157 for 9-1-307/NSPS J
- A-56 and A-62, added row for abatement of S-157 as required by Condition 23446, Part 1
- A-65, add rows for A-65 thermal oxidizer per A/N NSR 15934/TV 19793 that added A-65 Diversion Area Thermal Oxidizer
- A-67, added abatement requirement for S-1035 Butamer stripper tower per A/N NSR 17876/TV18750
- S-16, corrected A-64 to A-62 to reflect the correct SRU tail gas unit abatement of S-16
- 176 (future abatement device number for S-176), corrected basis of future abatement requirement from Condition # 31411 to Condition # 3253
- A-1047, A-1059, A-1061, A-1061, added new abatement devices for VIP/VIP Amendments per A/N 19633
- S-40, S-41, added rows for S-1010 abatement requirement per A/N NSR 17876/TV 18750

III. Generally Applicable Requirements

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

Changes to permit:

Language has been added to Section III to clarify that this section contains requirements that may apply to temporary sources. This provision allows contractors that have "portable" equipment permits that require them to comply with all applicable requirements to work at the

facility on a temporary basis, even if the permit does not specifically list the temporary source. Examples are temporary sand-blasting or soil-vapor extraction equipment.

The dates of adoption or approval of the rules and their "federal enforceability" status in Table III have also been updated:

- BAAQMD Regulation 6, Rule 1, renumbered, name changed, effective date updated, federal enforceability status changed

Table III has been updated by adding the following rules and standards to conform to current practice:

- SIP Regulation 2, Rule 4, relocated in table for correct alphanumeric order
- SIP Regulation 6, added
- BAAQMD Regulation 10, Incorporation of NSPS by Reference for 10-1

IV. Source-Specific Applicable Requirements

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

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

Section IV of the permit contains citations to all 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.

Complex Applicability Determinations. NESHAP FF, Benzene Waste Operations (BWON)

The source by source applicability analysis of the Valero wastewater sources for NESHAP/MACT Subpart 63-CC, Subpart FF – BWON and NSPS Subpart QQQ is attached in Appendix E.

The provisions of this subpart apply to owners and operators of petroleum refineries that treat, store, or dispose of benzene-containing hazardous wastes. NESHAP FF requires that when the total annual benzene quantity from the facility waste is equal to or greater than 10 Mg/yr (11 ton/yr), the facility must manage and treat both aqueous and non-aqueous waste streams in accordance with the requirements of Section 61.342(c). As an alternative to complying with the requirements of Section 61.342(c), NESHAP FF allows facilities to manage and treat the facility waste pursuant to the requirements in Section 61.342(e) that Valero elected. Under Section 61.342(e), Valero must manage and treat the non-aqueous and aqueous waste per the requirements in Sections 61.342(e)(1) and 61.342(e)(2), respectively.

There are no non-aqueous benzene waste streams at the facility at the present time. However, Section 61.342(e)(1) is included as an applicable requirement in Table IV-Refinery General Applicable Requirements in the event the facility commences to manage and treat non-aqueous benzene waste streams after the permit is renewed.

To comply with the requirements in Section 61.342(e)(2), Valero uses the "6BQ" compliance option to manage aqueous waste streams (or wastes that become aqueous during management). Aqueous streams with higher benzene content are managed in controlled systems, whereas those with lower benzene content are managed in "uncontrolled" systems in such a way that ensures that their total benzene emissions are below 6 Mg/yr. In accordance with Section 61.355(k)(1), aqueous wastes that are not managed in controlled units are counted toward the 6 Mg/yr limit at the point of generation.

To comply, the facility must identify each benzene waste stream subject to the regulation, determine whether the waste stream is to be controlled or uncontrolled, determine the quantity of each waste stream and the benzene concentration in each waste stream at the point of generation, and calculate the total annual amount of benzene in the facility's waste (TAB). The total annual benzene in the uncontrolled waste streams is also tabulated separately and reported as the target benzene quantity or TBQ for compliance with 61.342(e)(2). The TBQ must not exceed 6 Mg/year. The regulation specifies the allowable methods for determining the waste stream quantities and benzene concentrations and for calculating the TAB and TBQ for each waste stream in 61.355 (Test methods, procedures, and compliance provisions). The methodology for determining the total annual benzene (TAB) is found in 61.355 with paragraphs 61.355(a), (b), and (c) applying to the Valero Benicia facilities. The methodology for determining the target benzene quantity (TBQ) for compliance with 61.342(e)(2) is found in 61.355(k). Valero estimates the TAB and TBQ quarterly and projects the TBQ annually each quarter to verify that they remain on track to comply with the 6 Mg/year limit. Each year, Valero reviews and updates the list of benzene waste streams at the facilities and the benzene quantification data for each waste stream to determine the TAB and TBQ for that year. Both the TAB and the TBQ are reported in the annual report.

Each controlled waste stream must be managed in waste management units (individual drain systems, tanks, oil-water separators, treatment systems, and containers), and closed vent systems and control devices that comply with the waste management unit standards in 61.343 through

61.347 and the closed vent system and control device standards in 61.349. To comply with the standards for the waste management units and the closed vent systems and control devices, the facility must perform periodic inspections as required in 61.343 through 61.347 and 61.349. They must monitor the operation of the waste management units and the control devices in 61.354, and must perform recordkeeping and reporting as required in 61.356 and 61.357, respectively.

Detailed records must be kept for each waste stream subject to the regulation as required in 61.356(b). If treatment units are used, then records must be kept, including design information and performance test records. If control devices are used, then records must be kept, including design information and performance test records. Specific records are required for specific types of control devices as specified in 61.356(f). Records must be kept per 61.356(g) for each periodic (quarterly) inspection required by 61.343 through 61.347 and 61.349 that identifies a problem. Records must be kept per 61.356(h) for each annual test of no detectable emissions required by 61.343 through 61.347 and 61.349. Records must be kept per 61.356(j) for each control device operation.

Reporting requirements for facilities with a TAB equal to or greater than 10 Mg/year are specified in 61.357(d). An annual report is required per 61.357(d)(2) and (d)(5). The annual report must contain the TAB and waste stream data specified in 61.357(a)(1) through (a)(3), and, for compliance with 61.342(e), a table of information for each waste stream as specified in 61.357(d)(5). A quarterly report is required per 61.357(d)(6) and (d)(7). The quarterly report must certify that the required inspections have been completed as required per 61.357(d)(6) and must contain the information specified in 61.357(d)(7) for the affected units.

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

The Compliance Assurance Monitoring (CAM) regulation in 40 CFR 64 was developed to provide assurance that facilities comply with applicable emissions limitations by adequately monitoring control devices. The CAM rule was effective on November 21, 1997. However, most facilities are not affected by CAM requirements until they submit applications for Title V permit renewal. As required, Valero Benicia Refinery has conducted an applicability analysis for CAM for the Benicia Facility (Plant 12626) as part of this renewal application and incorporated the applicable requirements in the permit markup for Table IV-General.

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

- The source is located at a major source for which a Title V permit is required; and
- The source is subject to a federally enforceable emission limitation or standard for a criteria pollutant or HAP; and
- The source uses a control device to comply with the federally enforceable emission limitation or standard; and
- The source has potential pre-control emissions of the regulated pollutant that are equal to or greater than the major source threshold for the pollutant (in BAAQMD, the major source thresholds are 100 tons per year for each criteria pollutant, 10 tons per year for a single HAP, and 25 tons per year for two or more HAPs); and

- The source is not otherwise exempt from CAM.

CAM exemptions are specified in 40 CFR 64.2(b)(1) – Exempt Emission Limitations or Standards. Exemptions that could reasonably apply to emission sources at the Valero Benicia Refinery facility are:

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

The following criteria were used to identify emission sources at the Valero Benicia Refinery that were evaluated to determine CAM requirements:

- The source is listed in the existing Title V Permit or will be added to the permit in this renewal application; and
- The source has a abatement device (used for routine operations) as shown in Table IIC of the existing TV Permit; and
- The source is not addressed by the ongoing appeal (Dockets Number 3486 and 3531)

The attached Appendix C includes a table that contains a summary of the evaluation of CAM requirements for the emission sources that met these criteria. Based on the analysis, it was determined that only two emission sources at the Valero Benicia Refinery were subject to CAM: S-5-Fluid Catalytic Cracking Unit (FCCU) Regenerator, R-702 and S-6-Fluid Coker Burner, R-902.

Based on knowledge of process operations and good engineering judgment, it was assumed that the pre-control potential to emit for these sources is greater than the definition for a major source. Both emission sources are subject to federally enforceable emission standards for particulate matter (PM) and both have abatement devices to achieve compliance with the federally enforceable emission standards. S-5 and S-6 are abated by Electrostatic Precipitators (ESPs A-1-A-5 on the Main Stack). In addition, a tertiary cyclone (A-20) abates PM from S-5-FCCU Regenerator vent. However, as shown in Table IV-A4 and IV-A5, both of these sources are exempt from CAM.

S-5-FCCU Regenerator, R-720 is exempt per 64.2(b)(1)(i) because it is subject to the PM emissions standards of 40 CFR, Part 63, Subpart UUU (proposed under the authority of CAA 112(d) on September 11, 1998 [FR 6348890]). It is also exempt per 64.2(b)(1)(vi) because a federally enforceable permit condition (19466, Part 15) requires a continuous opacity monitor as a compliance demonstration method for opacity (monitored as a surrogate for PM emissions).

S-6-Fluid Coker Burner, R-902 is exempt per 64.2(b)(1)(vi) because a a federally enforceable permit condition (19466, Part 15) requires a continuous opacity monitor as a compliance demonstration method for opacity (monitored as a surrogate for PM emissions).

District permit applications not included in this Title V permit renewal.

This facility sends 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 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.

Application # (Title V/New Source Review)	**Project Description**
20383/ 20558	Startup and Shutdown of S-23 Process Oil Furnace
TBD/20690	New A-68 Thermal Oxidizer replaces existing A-57 Thermal Oxidizer at Waste Water Treatment Plan
21655/21350	Replace the existing emergency Diesel Engine Driving Fire Pump (S-240) with the new Diesel Engine Driving Fire Pump (S-252)
TBD/21573	Adding conditions to the existing by-pass stack for the CO gas vent during emergency when the CO Boilers (S-3 and S-4) are not operating properly
TDB/21490	Change the Hydrogen plant de-aerator vents' source test frequency from quarterly to annually since the source has consistently demonsrated compliances

Changes to permit:

- Table IV – Multiple
  - Relocated BAAQMD Regulation 2, Rule 9 so it appears in the correct alphanumeric order
  - Updated BAAQMD Regulation 6, Rule 1 (renumbered and renamed), and added SIP BAAQMD Reg 6, added Regulation 6-1-401/SIP 6-401, where appropriate
  - Updated BAAQMD and SIP Regulation 8, Rule 5 based on federal enforceability review
  - Updated BAAQMD and SIP Regulation 9, Rule 10 to reflect SIP adoption on 4/2/2008 and to delete past due requirements (e.g., 9-10-401/402 control plan submittal)
  - Revised the name format used for 40 CFR Part 60, 61, and 63 citations for consistency with the remainder of the permit
  - Revised all permit conditions to shorten to a description instead of full condition text
  - Relocated BAAQMD Condition 19329 so it appears in the correct alphanumeric order
  - Updated Condition 21233 federally enforceable to "Y" to reflect SIP adoption of BAAQMD Regulation 9, Rule 10
  - Edited dates to MM/DD/YYYY format
- Table IV-Refinery
  - Added BAAQMD Regulation 10; 10-1, Subpart A, General Provisions; and 10-17, Subpart Kb, Standards of Performance for Volatile Organic Liquid Storage Vessels
  - Removed 40 CFR, Part 60 Subpart A 60.18 for General Control Device and Work Practice Requirements because it was inadvertantly listed

- Revised 40 CFR, Part 61 Subpart FF based on A/N NSR 19826/TV 19897
- Deleted the underline formatting on 40 CFR, Part 63, Subpart UUU citations
- Delete blank table template placed at the end of Table IV-Refinery
- Revised Regulation 6, Rule 1 (renumbered to BAAQMD 6-1)
- Added 40 CFR, Part 98 Subpart A, Subpart C, Subpart Y and Subpart NM for mandatory greenhouse gas reporting
- Added CA Code of Regulation, Title 17, Subchapter 10, Article 2 for mandatory green house gas emissions reporting
- Condition 19466 and Condition 24198, added new Condition 24198 and comment that it supersedes Condition 19466 upon activation of Condition 20820 triggers, VIP/VIP Amendments per A/N 19633

- Table IV-A1
  - Added basis to Condition 125, Part 8
  - Added Condition 125, Part 10, consent decree requirement
  - Add BAAQMD Regulation 10-14, Subpart J, NSPS for Petroleum Refineries
  - 40 CFR, Part 60, Subpart J, updated effective date and renumbered 60.107(f) and (g) per A/N 18165
  - Moved 40 CFR, Part 60 Appendix B and F, and 40 CFR, Part 63, Subpart UUU so they appear in the correct alphanumerical order. Deleted the second table for IV-A1
  - Deleted Condition 125, Part 9. Permit condition has been completed
  - Condition 19466 and Condition 24198, added new Condition 24198 and comment that it supersedes Condition 19466 upon activation of Condition 20820 triggers, VIP/VIP Amendments per A/N 19633
  - Condition 20820, added new Condition for VIP/VIP Amendments per A/N 19633
  - Condition 24198 Part 3, removed S-233 since it will be removed from service upon startup of S-1059 and S-1060 PS Furnaces, A-1059, A-1060 PS Furnace SCRs, A-1047 FCCU/CKR Prescrubber/Regenerative Amine Scrubber per Condition 20820, Part 76
- Table IV-A2
  - Added basis to Condition 126, Part 8
  - Added Condition 126, Part 10, consent decree requirement
  - Add BAAQMD Regulation 10-14, Subpart J, NSPS for Petroleum Refineries
  - 40 CFR, Part 60, Subpart J, updated effective date and renumbered 60.107(f) and (g) per A/N 18165
  - Moved 40 CFR, Part 60 Appendix B and F, and 40 CFR, Part 63, Subpart UUU so they appear in the correct alphanumerical order
  - Deleted Condition 126, Part 9. Permit condition has been completed
  - Condition 19466 and Condition 24198, added new Condition 24198 and comment that it supersedes Condition 19466 upon activation of Condition 20820 triggers, VIP/VIP Amendments per A/N 19633
  - Condition 20820, added new Condition for VIP/VIP Amendments per A/N 19633
  - Condition 24198 Part 3, removed S-233 since it will be removed from service upon startup of S-1059 and S-1060 PS Furnaces, A-1059, A-1060 PS Furnace SCRs, A-1047 FCCU/CKR Prescrubber/Regenerative Amine Scrubber per Condition 20820, Part 76
- Table IV-A3
  - Added comment to table header regarding removal of sources from service, VIP/VIP Amendments per A/N 19633

  - Added BAAQMD Regulation 6-1-311 and SIP 6-311 and the footnote explains that the emission limits apply to S-5, FCCU and S-6, Fluid Coker, but are monitored at S-3 and S-4 CO Furnaces
  - BAAQMD Regulation 9-10-401.1, 501, and 501.2, deleted citations (compliance plans and initial compliance demonstration completed)
  - Condition 19466, Parts 5b and 5c, deleted because condition allowed operation of three of five ESPs, however sources failed to meet BAAQMD regulations with three of five ESPs resulting in rescission of these conditions
  - Condition 20820, Part 21, added new condition for Main Stack emission limits, VIP/VIP Amendments per A/N 19633
- Table IV-A3.1
  - Added new table for S-1059, S-1060 PS Furnaces, VIP/VIP Amendments per A/N 19633 and A/N 15606 for FCCU/CKR Stack POC emission limit in Part 63 and 68 based on source test
  - Added BAAQMD Regulation 6-1-311 and SIP 6-311 and the footnote explains that the emission limits apply to S-5, FCCU and S-6, Fluid Coker, but are monitored at S-1059 and S-1060 PS Furnaces
- Table IV-A4
  - Move Condition 19466 to bottom of table so it appears in correct alphanumeric order
  - Added 40 CFR, Part 64 – Compliance Assurance Monitoring applicability
  - 40 CFR 60, Subpart A, 60.13(i), added applicability for alternative monitoring procedures per A/N 18165 (NSPS J Consent Decree)
  - 40 CFR, Part 60, Subpart J, added applicability for CO and PM emission standards per Consent Decree, A/N 18165, updated effective date and renumbered 60.107(f) and (g) per A/N 18165
  - 40 CFR, Part 60, Subpart J, 60.102(a)(1), added Alternate Monitoring Plan (AMP) for use of Site-Specific Test Plan to comply with NSPS J PM standard, approved by EPA January 10, 2007 per A/N 18165 (NSPS J Consent Decree)
  - 40 CFR, Part 60, Subpart J, 60.105(a)(1), added AMP for alternate COMS location on Main Stack, approved by EPA on February 18, 2009 per A/N 18165, Alternate Monitoring Plans
  - 40 CFR, Part 60, Subpart J, 60.105(a)(2), added AMP for CO monitoring per Subpart UUU option, approved by EPA on January 10, 2007 per A/N 18165
  - 40 CFR, Part 60, Appendix B, PS 1 – revised header row and effective date. Deleted redundant title on header row and moved effective date to the performance specification
  - 40 CFR, Part 63, Subpart UUU, 63.1564(a)(1)(i), added AMP for use of Site-Specific Test Plan to comply with NSPS J option, approved by EPA June 22, 2005 and added AMP for alternate COMS location on Main Stack, approved by EPA February 18, 2009 per A/N 18165, Alternate Monitoring Plans
  - 40 CFR, Part 63, Subpart UUU, 63.1564(b)(2), added AMP for use of Site-Specific Test Plan to comply with NSPS J option, approved by EPA June 22, 2005 per A/N 18165, Alternate Monitoring Plans
  - 40 CFR, Part 64 – Compliance Assurance Monitoring, added applicability
  - Condition 19466 and Condition 24198, added new Condition 24198 and comment that it supersedes Condition 19466 upon activation of Condition 20820 triggers, VIP/VIP Amendments per A/N 19633

  - Condition 20820, added new Condition for VIP/VIP Amendments per A/N 19633 and updated Main Stack POC emission limit in Part 21.b.iv based on source test results per A/N 15606
  - Condition 24239, added new condition for NSPS J CO and PM standards per Consent Decree, A/N 18165
  - Condition 24239, Part 7, added new condition for Alternate Monitoring Plans for PM, opacity, and CO per A/N 18165
- Table IV-A5
  - BAAQMD 6-1-302, 6-1-501, BAAQMD 6-1-502, corrected reference to Regulation 1 from 1-520.5 to 1-520.6 to reflect opacity monitoring for fluid coking units
  - Added 40 CFR, Part 64 – Compliance Assurance Monitoring applicability
  - Condition 19466 and Condition 24198, added new Condition 24198 and comment that it supersedes Condition 19466 upon activation of Condition 20820 triggers, VIP/VIP Amendments per A/N 19633
  - Condition 20820, added new Condition for VIP/VIP Amendments per A/N 19633 and updated Main Stack POC emission limit in Part 21.b.iv based on source test results per A/N 15606
- Table IV-A6.1
  - BAAQMD Regulation 1-522 and SIP 1-522, added regulation to meet Consent Decree requirements per A/N 18165
  - BAAQMD Regulation 2-9, added future effective dates based on VIP/VIP Amendments per A/N 19633
  - BAAQMD Regulation 9-10-401.1, 501, and 501.2, deleted citations (compliance plans and initial compliance demonstration completed)
  - 40 CFR, Part 60, Subpart J, added regulation to meet Consent Decree requirements per A/N 18165
  - Condition 19329, added comment that condition will be deleted upon expiration of NOx IERCs, VIP/VIP Amendments per A/N 19633
  - Condition 19466 and Condition 24198, added new Condition 24198 and comment that it supersedes Condition 19466 upon activation of Condition 20820 triggers, VIP/VIP Amendments per A/N 19633
  - Condition 20820, added new Condition for S-7 (F-103) for VIP/VIP Amendments per A/N 19633
  - Condition 24245, added new permit condition with NSPS J SO2 emission standards for Consent Decree requirements per A/N 18165
- Table IV-A6.2
  - Moved S-26 from Table IV-A6.2 to new Table IV-A6.4 because it is not subject to Consent Decree requirements, see A/N 18165
  - BAAQMD Regulation 1-522 and SIP 1-522, added regulation to meet Consent Decree requirements per A/N 18165
  - BAAQMD Regulation 2-9, added future effective dates based on VIP/VIP Amendments per A/N 19633
  - BAAQMD Regulation 9-10-401.1, 501, and 501.2, deleted citations (compliance plans and initial compliance demonstration completed)
  - 40 CFR, Part 60, Subpart J, added regulation to meet Consent Decree requirements per A/N 18165

  - Condition 19329, added comment that condition will be deleted upon expiration of NOx IERCs, VIP/VIP Amendments per A/N 19633
  - Condition 19466 and Condition 24198, added new Condition 24198 and comment that it supersedes Condition 19466 upon activation of Condition 20820 triggers, VIP/VIP Amendments per A/N 19633
  - Condition 20820, added new Condition for VIP/VIP Amendments per A/N 19633
  - Condition 21233, Part 2 and 9, revised to delete S-26
  - Condition 24245, added new permit condition with NSPS J SO2 emission standards for Consent Decree requirements per A/N 18165
- Table IV-A6.3
  - BAAQMD Regulation 9-10-112, delete Regulation 9-10 applicability for these sources. S-13 and S-50 are auxiliary air heaters. They do not meet the definition of process heaters subject to Regulation 9, Rule 10 per 9-10-214. They are used for startup purposes only to heat the FCCU/Coker vessels prior to unit startup.
- Table IV-A6.4 (NEW)
  - Added new table for S-26 (relocated from Table IV-A6.2 because it is not subject to the Consent Decree requirements for NSPS J, see A/N 18165
- Table IV-A8.1
  - Deleted S-18, South Flare from table, relocated to Table IV-A8.2
  - 40 CFR, Part 60, Subpart J, updated effective date
- Table IV-A8.2
  - Added S-18, South Flare to Table IV-A8.2 and moved S-17, Butane Flare to Table IV-18.3 (new)
  - Added 40 CFR, Part 60, NSPS J H2S monitoring requirements as the elected Consent Decree compliance method, A/N 18165
  - Condition 24245, added new condition for NSPS J SO2 standards per Consent Decree, A/N 18165
- Table IV-A8.3 (NEW)
  - Relocated S-18 from Table IV-A8.2 to A8.3 (NEW)
  - 40 CFR, Part 60, Subpart J, updated effective date
- Table IV-A9
  - Deleted BAAQMD Regulation 1-522 CEM requirements should be deleted because the updates to NSPS J exempt the monitoring for flares in 60.105(a)(4)(iv)
  - Relocated BAAQMD 1-602 so it appears in the correct alphanumeric location
  - Revised format for Regulation 10 incorporation of NSPS by reference for consistency throughout the permit
  - Updated 40 CFR, Part 60, NSPS J H2S effective date and monitoring requirements to document exemption for process upset gases, A/N 18165
  - Condition 24245, added new condition for NSPS J SO2 standards per Consent Decree, A/N 18165
- Table IV-A10
  - Added note to table header indicating that either S-21 or S-22 will be deleted based on VIP/VIP Amendments per A/N 19633
  - BAAQMD Regulation 2-9, added future effective dates based on VIP/VIP Amendments per A/N 19633
  - Revised format for Regulation 10 incorporation of NSPS by reference for consistency throughout the permit

- BAAQMD Regulation 9-10-401.1, 501, and 501.2, deleted citations (compliance plans and initial compliance demonstration completed)
- 40 CFR, Part 60, Subpart J, updated effective date and renumbered 60.107(f) and (g) per A/N 18165
- 40 CFR, Part 60, Appendix B, PS 7 – revised header row and effective date. Deleted redundant title on header row and moved effective date to the performance specification.
- 40 CFR, Part 60, Appendix F, Procedure 1 – revised header row and effective date. Deleted redundant title on header row and moved effective date to Procedure 1.
- Condition 19329, added comment that condition will be deleted upon expiration of NOx IERCs, VIP/VIP Amendments per A/N 19633
- Condition 10574 and Condition 24197, added new Condition 24197 and comment that it supersedes Condition 10574 based on VIP/VIP Amendments per A/N 19633
- Condition 19466 and Condition 24198, added new Condition 24198 and comment that it supersedes Condition 19466 upon activation of Condition 20820 triggers, VIP/VIP Amendments per A/N 19633
- Condition 20820, added new Condition for VIP/VIP Amendments per A/N 19633

- Table IV-A11
  - BAAQMD Regulation 2-9, added future effective dates based on VIP/VIP Amendments per A/N 19633
  - Revised format for Regulation 10 incorporation of NSPS by reference for consistency throughout the permit
  - Revised format for Regulation 10 incorporation of NSPS by reference for consistency throughout the permit
  - BAAQMD Regulation 9-10-401.1, 501, and 501.2, deleted citations (compliance plans and initial compliance demonstration completed)
  - 40 CFR, Part 60, Subpart J, updated effective date and renumbered 60.107(f) and (g) per A/N 18165
  - 40 CFR, Part 60, Appendix B, PS 7 – revised header row and effective date. Deleted redundant title on header row and moved effective date to the performance specification.
  - 40 CFR, Part 60, Appendix F, Procedure 1 – revised header row and effective date. Deleted redundant title on header row and moved effective date to Procedure 1.
  - Deleted Condition 14318, Part 6. Condition is redundant with Title V Permit Standard Condition E.1 and BAAQMD 1-441
  - Condition 19329, added comment that condition will be deleted upon expiration of NOx IERCs, VIP/VIP Amendments per A/N 19633
  - Condition 19466 and Condition 24198, added new Condition 24198 and comment that it supersedes Condition 19466 upon activation of Condition 20820 triggers, VIP/VIP Amendments per A/N 19633
- Table IV-A12
  - BAAQMD Regulation 2-9, added future effective dates based on VIP/VIP Amendments per A/N 19633
  - BAAQMD Regulation 9-10-401.1, 501, and 501.2, deleted citations (compliance plans and initial compliance demonstration completed)
  - 40 CFR, Part 60, Subpart J, added regulation to meet Consent Decree requirements per A/N 18165
  - Condition 19329, added comment that condition will be deleted upon expiration of NOx IERCs, VIP/VIP Amendments per A/N 19633

  - Condition 19466 and Condition 24198, added new Condition 24198 and comment that it supersedes Condition 19466 upon activation of Condition 20820 triggers, VIP/VIP Amendments per A/N 19633
  - Condition 24245, added new permit condition with NSPS J for Consent Decree requirements per A/N 18165
- Table IV-A13.1
  - Condition 19466 and Condition 24198 for S-36 only, added new Condition 24198 and comment that it supersedes Condition 19466 upon activation of Condition 20820 triggers, VIP/VIP Amendments per A/N 19633
- Table IV-A13.2
  - Condition 19466 and Condition 24198, added new Condition 24198 and comment that it supersedes Condition 19466 upon activation of Condition 20820 triggers, VIP/VIP Amendments per A/N 19633
  - Condition 19466, Part 11, revised. Decreased source test frequency from semi-annual to annual per A/N NSR 16707/TV 16708
- Table IV-A15
  - BAAQMD Regulation 2-9, added future effective dates based on VIP/VIP Amendments per A/N 19633
  - Revised format for Regulation 10 incorporation of NSPS by reference for consistency throughout the permit
  - BAAQMD Regulation 9-10-401.1, 501, and 501.2, deleted citations (compliance plans and initial compliance demonstration completed)
  - 40 CFR, Part 60, Subpart J, updated effective date and renumbered 60.107(f) and (g) per A/N 18165
  - 40 CFR, Part 60, Appendix B, PS 7 – revised header row and effective date. Deleted redundant title on header row and moved effective date to the performance specification.
  - 40 CFR, Part 60, Appendix F, Procedure 1 – revised header row and effective date. Deleted redundant title on header row and moved effective date to Procedure 1.
  - Condition 19329, added comment that condition will be deleted upon expiration of NOx IERCs, VIP/VIP Amendments per A/N 19633
  - Condition 19466 and Condition 24198, added new Condition 24198 and comment that it supersedes Condition 19466 upon activation of Condition 20820 triggers, VIP/VIP Amendments per A/N 19633
- Table IV-A16
  - BAAQMD Regulation 2-9, added future effective dates based on VIP/VIP Amendments per A/N 19633
  - Revised format for Regulation 10 incorporation of NSPS by reference for consistency throughout the permit
  - BAAQMD Regulation 9-10-401.1, 501, and 501.1, deleted citations (compliance plans and initial compliance demonstration completed)
  - 40 CFR, Part 60, Subpart J, updated effective date and renumbered 60.107(f) and (g) per A/N 18165
  - 40 CFR, Part 60, Appendix B, PS 7 – revised header row and effective date. Deleted redundant title on header row and moved effective date to the performance specification.
  - 40 CFR, Part 60, Appendix F, Procedure 1 – revised header row and effective date. Deleted redundant title on header row and moved effective date to Procedure 1.

  - Condition 19329, added comment that condition will be deleted upon expiration of NOx IERCs, VIP/VIP Amendments per A/N 19633
  - Condition 19466 and Condition 24198, added new Condition 24198 and comment that it supersedes Condition 19466 upon activation of Condition 20820 triggers, VIP/VIP Amendments per A/N 19633
- Table IV-A17
  - BAAQMD Regulation 1-522 and SIP 1-522, added regulation to meet Consent Decree requirements per A/N 18165
  - 40 CFR, Part 60, Subpart J, added regulation to meet Consent Decree requirements per A/N 18165
  - Condition 24245, added new permit condition with NSPS J for Consent Decree requirements per A/N 18165
- Table IV-A18
  - BAAQMD Regulation 2-9, added future effective dates based on VIP/VIP Amendments per A/N 19633
  - BAAQMD Regulation 9-10-301.2, deleted "2" in the Effective Date column
  - BAAQMD Regulation 9-10-401.1, 501, and 501.2, deleted citations (compliance plans and initial compliance demonstration completed)
  - Revised format for Regulation 10 incorporation of NSPS by reference for consistency throughout the permit
  - 40 CFR, Part 60, Subpart J, updated effective date and renumbered 60.107(f) and (g) per A/N 18165
  - 40 CFR, Part 60, Appendix B, PS 7 – revised header row and effective date. Deleted redundant title on header row and moved effective date to the performance specification.
  - 40 CFR, Part 60, Appendix F, Procedure 1 – revised header row and effective date. Deleted redundant title on header row and moved effective date to Procedure 1.
  - Condition 19329, added comment that condition will be deleted upon expiration of NOx IERCs, VIP/VIP Amendments per A/N 19633
  - Condition 19466 and Condition 24198, added new Condition 24198 and comment that it supersedes Condition 19466 upon activation of Condition 20820 triggers, VIP/VIP Amendments per A/N 19633
- Table IV-A19
  - BAAQMD Regulation 2-9, added future effective dates based on VIP/VIP Amendments per A/N 19633
  - Revised format for Regulation 10 incorporation of NSPS by reference for consistency throughout the permit
  - BAAQMD Regulation 9-10-401.1, 501, and 501.2, deleted citations (compliance plans and initial compliance demonstration completed)
  - 40 CFR, Part 60, Subpart A, 60.13(i), added applicability for alternative monitoring procedures per A/N 18165 (AMPs)
  - 40 CFR, Part 60, Subpart Db, 60.48b(e)(2), added AMP for NOx CEMS span, approved by EPA on February 5, 2009 per A/N 18165
  - 40 CFR, Part 60, Subpart J, updated effective date and renumbered 60.107(f) and (g) per A/N 18165
  - 40 CFR, Part 60, Appendix B, PS 2 and PS 7 – revised header row and effective date. Deleted redundant title on header row and moved effective date to the performance specifications.

- 40 CFR, Part 60, Appendix F, Procedure 1 – revised header row and effective date. Deleted redundant title on header row and moved effective date to Procedure 1.
- Condition 10574, Part 13, deleted. Redundant with Condition 10574, Part 17 and 40 CFR, Part 60 NSPS Subpart J
- Condition 10574, Part 21, deleted. Ringlemann No. 1 visible emissions limit redundant with BAAQMD 6-1-301.
- Condition 10574 and Condition 24197, added new Condition 24197 and comment that it supersedes Condition 10574 based on VIP/VIP Amendments per A/N 19633
- Condition 19329, added comment that condition will be deleted upon expiration of NOx IERCs, VIP/VIP Amendments per A/N 19633
- Condition 19466 and Condition 24198, added new Condition 24198 and comment that it supersedes Condition 19466 upon activation of Condition 20820 triggers, VIP/VIP Amendments per A/N 19633Condition 24621, Part 1 added new condition for Alternate Monitoring Plans for NOx CEMS span per A/N 18165
- Table IV-A20
  - Revised format for Regulation 10 incorporation of NSPS by reference for consistency throughout the permit
  - 40 CFR, Part 60, Subpart A, 60.13(i), added applicability for alternative monitoring procedures per A/N 18165 (AMPs)
  - 40 CFR, Part 60, Subpart Db, 60.48b(e)(2), added AMP for NOx CEMS span, approved by EPA on February 5, 2009 per A/N 18165
  - 40 CFR, Part 60, Subpart J, updated effective date and renumbered 60.107(f) and (g) per A/N 18165
  - 40 CFR, Part 60, Appendix B, PS 2 and PS 7 – revised header row and effective date. Deleted redundant title on header row and moved effective date to the performance specifications.
  - 40 CFR, Part 60, Appendix F, Procedure 1 – revised header row and effective date. Deleted redundant title on header row and moved effective date to Procedure 1.
  - Deleted Condition 19466, Part 3, monthly visible emissions monitoring per A/N NSR 16706/TV 16710
  - Condition 24621, Part 1 added new condition for Alternate Monitoring Plans for NOx CEMS span per A/N 18165
- Table IV-A21
  - Revised table header to correct source description from "P-2608B' to 'P-2607B'
  - BAAQMD 9-8-330.3, added 1/1/2012 for future effective date
  - CCR, Title 17, Section 93115, added ATCM for Stationary Compression Ignition Engines based on most current version of ATCM
  - Condition 22851 was changed to Condition 24310 to give the source a specific condition without the requirement near school
  - Condition 24310, Parts 1, 2, 3, and 4, revised basis to reflect most current version of ATCM
  - Condition 24310, Part 5, deleted because engine is not located at or near or school, condition does not apply, this revision is consistent with ATCM conditions for other IC engines located at BAAQMD refineries
- Table IV-A22.1
  - Revised format for Regulation 10 incorporation of NSPS by reference for consistency throughout the permit

  - 40 CFR, Part 60, Subpart J, updated effective date and renumbered 60.107(f) and (g) per A/N 18165
  - 40 CFR, Part 60, Subpart J, deleted 60.105(a)(4)(i) thru (iii) because all subsections of (a)(4) are applicable
  - 40 CFR, Part 60, Appendix B, PS 7 – relocated and revised header row and effective date. Deleted redundant title on header row and moved effective date to the performance specification.
  - 40 CFR, Part 60, Appendix F, Procedure 1 – relocated and revised header row and effective date. Deleted redundant title on header row and moved effective date to Procedure 1.
- Deleted Condition 19177, Part 27. Redundant with BAAQMD Regulation 2, Rule 1 as shown in Table IV-Refinery Table IV-A22.2
  - Revised format for Regulation 10 incorporation of NSPS by reference for consistency throughout the permit
  - 40 CFR, Part 60, Subpart A, 60.13(i), added applicability for alternative monitoring procedures per A/N 18165 (AMPs)
  - 40 CFR, Part 60, Subpart Db, 60.48b(e)(2), added AMP for NOx CEMS span, approved by EPA on February 5, 2009 per A/N 18165
  - 40 CFR, Part 60, Subpart J, updated effective date and renumbered 60.107(f) and (g) per A/N 18165
  - 40 CFR, Part 60, Subpart J, deleted 60.105(a)(4)(i) thru (iii) because all subsections of (a)(4) are applicable
  - 40 CFR, Part 60, Appendix B, PS 2 and PS 7 – revised header row and effective date. Deleted redundant title on header row and moved effective date to the performance specifications.
  - 40 CFR, Part 60, Appendix F, Procedure 1 – revised header row and effective date. Deleted redundant title on header row and moved effective date to Procedure 1.
  - Deleted Condition 19177, Part 27. Redundant with BAAQMD Regulation 2, Rule 1 as shown in Table IV-Refinery
  - Condition 24261, added new condition for Alternate Monitoring Plans for NOx CEMS span per A/N 18165
- Table IV-A23
  - BAAQMD 9-8-330.3, added 1/1/2012 for future effective date
  - CCR, Title 17, Section 93115, added ATCM for Stationary Compression Ignition Engines
  - Condition 24375 replaces Condition 22820 with no changes in any part
  - Condition 24375, Updated basis for all parts using most current version of ATCM
  - Condition 24375, Part 5, deleted because engine is not located at or near or school, condition does not apply, this revision is consistent with ATCM conditions for other IC engines located at BAAQMD refineries
- Table IV-A24
  - Created a new table for S-247, S-248 added new ULSD sources per A/N NSR 13009/TV 13244
  - S-247, S-248 added new mass limits per A/N NSR 16866/TV 17032
- Table IV-A25
  - Created a new table for S-251, emergency diesel generator, per A/N NSR 18292/TV 18400

  - Add applicability for federal NSPS 40 CFR, Part 60 Subpart IIII for stationary internal combustion engines
  - Condition 22850 was changed to Condition 24309 to give the source a specific condition without the requirement near school
- Table IV-A26
  - Created a new table for S-1061, Hydrogen Reformer Furnace for VIP/VIP Amendments per A/N 19633
- Table IV-B1
  - Condition 19466 and Condition 24198, added new Condition 24198 and comment that it supersedes Condition 19466 upon activation of Condition 20820 triggers, VIP/VIP Amendments per A/N 19633
  - Condition 20820, added new Condition for VIP/VIP Amendments per A/N 19633
  - 24198 Part 3, removed S-233 since it will be removed from service upon startup of S-1059 and S-1060 PS Furnaces, A-1059, A-1060 PS Furnace SCRs, A-1047 FCCU/CKR Prescrubber/Regenerative Amine Scrubber per Condition 20820, Part 76
- Table IV-B2
  - Condition 19466 and Condition 24198, added new Condition 24198 and comment that it supersedes Condition 19466 upon activation of Condition 20820 triggers, VIP/VIP Amendments per A/N 19633
  - Condition 19466, Part 3, deleted past due future effective date
  - 24198 Part 3, removed S-233 since it will be removed from service upon startup of S-1059 and S-1060 PS Furnaces, A-1059, A-1060 PS Furnace SCRs, A-1047 FCCU/CKR Prescrubber/Regenerative Amine Scrubber per Condition 20820, Part 76
- Table IV-B4
  - Condition 19466 and Condition 24198, added new Condition 24198 and comment that it supersedes Condition 19466 upon activation of Condition 20820 triggers, VIP/VIP Amendments per A/N 19633
  - Condition 19466, Parts 4 and 7, deleted past due future effective dates
  - 24198 Part 3, removed S-233 since it will be removed from service upon startup of S-1059 and S-1060 PS Furnaces, A-1059, A-1060 PS Furnace SCRs, A-1047 FCCU/CKR Prescrubber/Regenerative Amine Scrubber per Condition 20820, Part 76
- Table IV-B5
  - S-209 source description, deleted "Methanol" per CARB Phase III A/N 18792
  - Condition 9296, Parts B1, B2, B4, B5, and B9, deleted "Methanol" from permit condition description per CARB Phase III A/N 18792
  - Condition 9296, Part F, added new fugitive component condition per CARB Phase III A/N 18792
- Table IV-B6
  - S-232, table will be deleted since S-232 will be removed from service upon startup of S-1059 and S-1060 PS Furnaces, A-1059, A-1060 PS Furnace SCRs, A-1047 FCCU/CKR Prescrubber/Regenerative Amine Scrubber per Condition 20820, Part 76
- Table IV-B7
  - S-233, table will be deleted since S-233 will be removed from service upon startup of S-1059 and S-1060 PS Furnaces, A-1059, A-1060 PS Furnace SCRs, A-1047 FCCU/CKR Prescrubber/Regenerative Amine Scrubber per Condition 20820, Part 76

  - Condition 19466 and Condition 24198, added new Condition 24198 and comment that it supersedes Condition 19466 upon activation of Condition 20820 triggers, VIP/VIP Amendments per A/N 19633
- Table IV-B9.1
  - Regulation 8-2-601, added citation as method for 8-2-301
  - 40 CFR, Part 63 Subpart CC, deleted regulation. S-201 loads sludge from S-192, which is not subject to 40 CFR, Part 63 Subpart CC, therefore S-201 is not subject to 40 CFR, Part 63 Subpart CC.
- Table IV-B9.2
  - Regulation 8-2-601, added citation as method for 8-2-301
  - Added BAAQMD Regulation 11, Rule 12 – NESHAPs 61 FF incorporated by reference
  - 40 CFR, Part 61 Subpart FF, added applicability for S-202 as an individual drain system (61.346(a)) used to transfer sludge from S-131 to vacuum truck. Vacuum truck loading operation using S-202 is abated by A-38 vapor balance system. A-38 vents back to S-131, which is abated by Thermal Oxidizer A-57 and/or Carbon Canisters A-37. For 40 CFR, Part 61 Subpart FF, A-38 is the closed vent system and A-57 and/or A-37 that abate S-131 are the control devices for S-202
  - Remove 40 CFR, Part 63 Subpart CC, 64.640(o)(1) because vacuum trucks are not subject to 40 CFR 60 Subpart QQQ because sludge-handling facilities and sludge are not subject to that NSPS [see *Background Information for Promulgated Standards*, EPA-450/3-85-001b (2.1.7 Comment and Response), December 1987]
  - 40 CFR, Part 63 Subpart CC, added 63.640(c)(3); 63.647(a); 63.647(c); 63.654(a) to correct omissions
- Table IV-C1
  - Regulation 8-2-601, added citation as method for 8-2-301
- Table IV-C2
  - Condition 20820, added new permit condition for VIP/VIP Amendments per A/N 19633
- Table IV-C3
  - Revised title to match description in Table IIA and title on Table VII-C3
  - Regulation 8-2-601, added citation as method for 8-2-301
  - Condition 19466 and Condition 24198, added new Condition 24198 and comment that it supersedes Condition 19466 upon activation of Condition 20820 triggers, VIP/VIP Amendments per A/N 19633
- Table IV-C4.1
  - Regulation 8-2-601, added citation as method for 8-2-301
  - Condition 19466 and Condition 24198, added new Condition 24198 and comment that it supersedes Condition 19466 upon activation of Condition 20820 triggers, VIP/VIP Amendments per A/N 19633
- Table IV-C4.2
  - Regulation 8-2-601, added citation as method for 8-2-301
  - Condition 19466 and Condition 24198, added new Condition 24198 and comment that it supersedes Condition 19466 upon activation of Condition 20820 triggers, VIP/VIP Amendments per A/N 19633
- Table IV-C6
  - Moved Table for S-239 from tank section (J26) to miscellaneous source section (C6) because S-239 is not a tank.
  - Regulation 8-2-601, added citation as method for 8-2-301

- Table IV-D1
  - Condition 18794 and Condition 20820, added new Condition 20820 and comment that it supersedes Condition 18794 upon activation of Condition 20820 triggers, VIP/VIP Amendments per A/N 19633
- Table IV-D2
  - Condition 815 and Condition 20820, added new Condition 20820 and comment that it supersedes Condition 815 upon activation of Condition 20820 triggers, VIP/VIP Amendments per A/N 19633
- Table IV-D3
  - Condition 10574 and Condition 24197, added new Condition 24197 and comment that it supersedes Condition 10574 based on VIP/VIP Amendments per A/N 19633
  - Condition 18043, deleted condition because it applies only to sources that were originally permitted as part of the MTBE Phaseout Project. The S-1007 Alkylation Unit was originally permitted with fugitive component counts and POC emissions part of Condition 10574
- Table IV-D4
  - Condition 20820, added new Condition or VIP/VIP Amendments per A/N 19633
- Table IV-D6
  - Condition 9296, Parts F1 and F2, added fugitive component conditions per A/N 18792 (CARB Phase III)
- Table IV-D7
  - Condition 9296, Parts F1 and F2, added fugitive component conditions per A/N 18792 (CARB Phase III)
- Table IV-D8
  - Condition 10574, deleted condition because it applies only to sources that were originally permitted as part of the Alkylation Unit. The S211 Alkylate Debutanizer is now part of the Alkylation Unit, but it was originally permitted as part of the MTBE Unit and fugitive POC emissions from S211 were tracked as part of Condition 18043, not Condition 10574.
- Table IV-D9
  - Condition 10574 and Condition 24197, added new Condition 24197 and comment that it supersedes Condition 10574 based on VIP/VIP Amendments per A/N 19633
- Table IV-D10
  - Created a new table IV-D10 for S-1036, S-1051, S-1052, added new ULSD sources per A/N NSR 13009/TV 13244
  - Condition 20820, added new Condition for VIP/VIP Amendments per A/N 19633
  - Condition 22949, added new mass limits per A/N NSR 16866/TV 17032
- Table IV-D11
  - Created a new table IV-D11 for S-1034, S-1035, Butamer towers and S-1049, S-1050, Butamer reactors per A/N 18750
  - Condition 20820, added new Condition for VIP/VIP Amendments per A/N 19633
- Table IV-D12
  - Created a new table IV-D12 for S-1003 Hydrocracker Unit, including S51/S52 HCU Sandfilters with new Condition 20820 for VIP/VIP Amendments per A/N 19633
  - Condition 9296, Parts F1 and F2, added fugitive component conditions per A/N 18792 (CARB Phase III)
- Table IV-D13

  - Created a new table IV-D13 for S-1062 Hydrogen Unit with PSA Unit with new Condition 20820 for VIP/VIP Amendments per A/N 19633
- Table IV-D14
  - Created a new table IV-D14 for S1011 Heavy Cat Naphtha Hydrofiner with Condition 9296, Parts F1 and F2, added fugitive component conditions per A/N 18792 (CARB Phase III)
- Table IV-E2
  - Added Condition 24298 per NSR A/N 20304 for S-165, Gasoline Dispensing Facility
- Table IV-F1
  - Deleted Condition 1709, Part 16. Redundant with Standard Condition I.D
  - Condition 20820, added new Condition for VIP/VIP Amendments per A/N 19633
- Table IV-H1.1
  - Added BAAQMD Regulation 11, Rule 12 – NESHAPs 61 FF incorporated by reference
  - Moved 40 CFR, Part 61,Subpart FF to correct location in table
  - Revised 40 CFR, Part 61, Subpart FF by adding additional applicable requirements for operation when wastewater is diverted to S-156
  - Added applicable requirement 40 CFR 63 Subpart CC, part 63.640(c)(3) per EPa comment
  - Added note to explain that Condition 24197 will supersede Condition 10574 upon startup of S-1061 and S-1062
  - Added Condition 24197
- Table IV-H1.2
  - Added BAAQMD Regulation 11, Rule 12 – NESHAPs 61 FF incorporated by reference
  - Revised 40 CFR, Part 61, Subpart FF by adding additional applicable requirements for operation when wastewater is diverted to S-156
  - Added applicable requirement 40 CFR 63 Subpart CC, part 63.640(c)(3) per EPa comment
- Table IV-H2.1
  - Deleted 40 CFR, Part 61, Subpart FF based on A/N NSR 19826/TV 19897 (remove incorrect treatment unit requirements)
- Table IV-H2.2
  - Deleted 40 CFR, Part 61, Subpart FF based on A/N NSR 19826/TV 19897 (remove incorrect treatment unit requirements)
- Table IV-H3
  - Added BAAQMD Regulation 11, Rule 12 – NESHAPs 61 FF incorporated by reference
  - Revised 40 CFR, Part 61, Subpart FF based on A/N NSR 19826/TV 19897
- Table IV-H4.1
  - Added BAAQMD Regulation 11, Rule 12 – NESHAPs 61 FF incorporated by reference
  - Revised 40 CFR, Part 61, Subpart FF based on A/N NSR 19826/TV 19897 and added appropriate requirements from 61.349 and 61.354
  - Added NESHAP 63, Subpart CC sections 63.640(c)(3), 63.640(d)(5) per applicability analysis per EPA comment
- Table IV-H4.2
  - Added BAAQMD Regulation 11, Rule 12 – NESHAPs 61 FF incorporated by reference
  - Revised 40 CFR, Part 61, Subpart FF based on A/N NSR 19826/TV 19897
  - Added NESHAP 63, Subpart CC sections 63.640(c)(3), 63.647(1), 63.654(a) per applicability analysis per EPA comment

  - Added leak tightness requirements for OWS and CVS
  - Added Condition 11879 and deleted Condition 13319 based on A/N NSR 16938 that consolidated Conditions 11879, 11882, 11888 and 13319 into 11879
- Table IV-H5.1
  - Added BAAQMD Regulation 11, Rule 12 – NESHAPs 61 FF incorporated by reference
  - Revised 40 CFR, Part 61, Subpart FF based on A/N NSR 19826/TV 19897 and added appropriate requirements from 61.349 and 61.354
  - Added NESHAP 63, Subpart CC sections 63.640(c)(3), 63.640(d)(5) per applicability analysis per EPA comment
- Table IV-H5.2
  - Added BAAQMD Regulation 11, Rule 12 – NESHAPs 61 FF incorporated by reference
  - Revised 40 CFR, Part 61, Subpart FF based on A/N NSR 19826/TV 19897
  - Added NESHAP 63, Subpart CC sections 63.640(c)(3), 63.647(1), 63.654(a) per applicability analysis per EPA comment
  - Added leak tightness requirements for OWS and CVS
  - Added Condition 11879 and deleted Condition 13319 based on A/N NSR 16938 that consolidated Conditions 11879, 11882, 11888 and 13319 into 11879.
- Table IV-H6
  - Moved sources S-217, S-218, and S-219 from Table IV-H7 to Table IV-H6 based on A/N NSR 19634/ Title V 19636
  - Deleted BAAQMD and SIP Regulation 8, Rule 5 and Condition 20762 based on A/N NSR 19634/ Title V 19636
- Table IV-H7 (S-217, S-218, S-219)
  - Deleted table and moved sources S-217, S-218, and S-219 to Table IV-H6 based on A/N NSR 19634/ TV 19636
- Table IV-H7 (S-131, S-150, S-200)
  - Added new Table IV-H7 by moving and modifying former Table IV-J37 for S-150 based on A/N NSR 19634/ Title V 19636
    - Moved S-131 from Table IV-J36 to Table IV-J7
    - Moved S-200 from Table IV-J39 to Table IV-J7
    - Added BAAQMD and SIP Regulation 8, Rule 8
    - Deleted BAAQMD and SIP Regulation 8, Rule 5
    - Revised 40 CFR, Part 61, Subpart FF
  - Added BAAQMD Regulation 11, Rule 12 – NESHAPs 61 FF incorporated by reference
  - Added leak tightness requirements for tanks and CVS
  - Revised Condition 11879 based on A/N NSR 16938 that consolidated Conditions 11879, 11882, 11888 and 13319 into 11879
  - Added not for S-200 only. Remove 40 CFR, Part 63 Subpart CC, 64.640(o)(1) because S-131 and S-150 sludge tanks are not subject to 40 CFR 60 Subpart QQQ because sludge-handling facilities and sludge are not subject to that NSPS [see *Background Information for Promulgated Standards*, EPA-450/3-85-001b (2.1.7 Comment and Response), December 1987]
- Table IV-H8 (S-199)
  - Added new Table IV-H8 by moving and modifying former Table IV-J39 for S-199 and S-200 based on A/N NSR 19634/ Title V 19636
    - Deleted S-200 and moved to Table IV-H7 (see above)
    - Added BAAQMD and SIP Regulation 8, Rule 8

    - Deleted BAAQMD and SIP Regulation 8, Rule 5
    - Revised 40 CFR, Part 61, Subpart FF
  - Added BAAQMD Regulation 11, Rule 12 – NESHAPs 61 FF incorporated by reference
  -
  - Added Condition 11879 and deleted Condition 11882 based on A/N NSR 16938 that consolidated Conditions 11879, 11882, 11888 and 13319 into 11879.
- Table IV-H9
  - Added new Table IV-H9 for individual drain systems subject to 40 CFR, Part 60, Subpart QQQ per A/N NSR 19634/ Title V 19636
- Table IV-I0
  - Renumbered table, was as Table IV-X. It is the first table in Section I, but has no counterpart in Section VII.
  - Deleted notes from individual table cells and put notes in column headers
  - Column 1: Deleted BAAQMD Reg. 8-28. This regulation is no longer a fugitive emissions regulation. See related changes to Tables I1 and I2.
  - Column 2: Deleted "COND" and "Condition" from entries
  - Column 3: Added "40 CFR, Part 60, Subpart VV" because Subpart VV is referenced by Subpart GGG. Added Notes (1) and (6)
  - Column 4: Added Notes (1) and (3) to 40 CFR, Part 60, Subpart QQQ
  - Column 5: Deleted separate column for NSPS Part 60 Subpart VV. Subpart VV is referenced by 40 CFR, Part 60, Subpart GGG and 40 CFR, Part 63, Subpart CC, but is not separately applicable to any source at the facility
  - Column 6: Deleted separate column for NESHAPS Part 61 Subpart J (See Column 8 below). Added new column for 40 CFR, Part 60, Subpart GGGa/40 CFR, Part 60, Subpart VVa with Notes (1) and (6)
  - Column 7: Added Notes (1) and (3) for 40 CFR, Part 61, Subpart FF
  - Column 8: Consolidated all regulations for components in benzene service in a single column by adding 40 CFR, Part 61, Subpart J to column with 40 CFR, Part 61, Subpart V and BAAQMD 11-7
  - Column 9: Added "40 CFR, Part 60, Subpart VV" because Subpart VV is referenced by Subpart CC. Added Note (1)
  - S-9: Revised 40 CFR, Part 63, Subpart CC to "Exempt [63.640(d)(5)]". S-9 is part of the refinery fuel gas system. 40 CFR, Part 63.640(d)(5) exempts sources routed to refinery fuel gas from regulation under Subpart CC
  - S-188, S-189:
    - Revised 40 CFR, Part 61, Subpart FF based on A/N NSR 19826/TV 19897
    - Revised 40 CFR, Part 60, Subpart QQQ to "Exempt [63.640(o)(1)] to show exemption based on overlap in 40 CFR 63 Subpart CC
    - Revised 40 CFR, Part 63, Subpart CC to ""Exempt [63.640(d)(5)]". S-9 is part of the refinery fuel gas system. 40 CFR, Part 63.640(d)(5) exempts sources routed to refinery fuel gas from regulation under Subpart CC
  - S-201, S-202: Revised description to clarify
  - S-208: Added source to correct omission and show fugitive regulation applicability for reclassified wastewater source per A/N NSR 19634/ Title V 19636
  - S-209: Revised by removing "Methanol" from description and added Condition 9296 F1 and F2 fugitive conditions per A/N 18792 (CARB Phase III)
  - S-211: Revised by removing

- S-231: Deleted source (Aqueous ammonia drum). Source not subject to any fugitives rules.
- S-1003, S-1011, S-1014, S-1024, delete 40 CFR, Part 60, Subpart GGG and added 40 CFR, Part 60, Subpart GGGa/40 CFR, Part 60, Subpart VVa per CARB Phase III, A/N 18792
- S-1030, S-1031: Added exemptions for COGEN sources
- S-1034, S-1035, S-1049, S-1050: Added new Butamer sources per A/N NSR 17876/TV18750
- S-1036, S-1051, S-1052: Added new ULSD sources per A/N NSR 13009/TV 13244
- S-1062: Added new VIP Amendment sources per A/N 16937/TV 19633
- Wastewater Diversion Area Tanks and Abatement: Added row to clarify fugitive regulation applicability diversion area tanks and to separate from reclassified wastewater treatment plant sources in next row
- Wastewater Treatment Plant:
  - Added "Sources and Abatement S-131, S-150, S-195, S-197, S-198, S-199, S-200, A37, A57" to separate from diversion area tanks in previous row.
  - Revised 40 CFR, Part 60, Subpart QQQ to "Exempt [63.640(o)(1)] to show exemption based on overlap in 40 CFR, Part 63, Subpart CC
  - Added applicability for 40 CFR, Part 63, Subpart CC to correct omission
- Revised Notes
  - Note 1: Revised to clarify 40 CFR, Part 63, Subpart CC overlap at 63.640(p) for equipment leaks
  - Note 2: Revised to clarify equipment leaks in benzene service and relationship to overlap with 40 CFR, Part 63, Subpart CC at 63.640(p)
  - Note 3: Revised to clarify 40 CFR, Part 63, Subpart CC overlap at 63.640(o)(1) for wastewater sources
  - Note 5: Deleted BAAQMD and SIP Regulation 8, Rule 28. This regulation is no longer a fugitive emissions regulation. See related changes to Tables I1 and I2.
  - Note 6: Added new note to explain applicability of 40 CFR, Part 60, Subparts GGG and GGGa

- Table IV-I1
  - Renumbered Table, was Table IV-I
  - Added explanations of applicability to regulation header rows for clarification
  - Deleted BAAQMD and SIP Regulation 8, Rule 28. This regulation is no longer a fugitive emissions regulation. Moved applicable requirements to new Table IV-I2.
  - Added BAAQMD Regulation 10 – NSPS incorporated by reference and 10-52 (Subpart VV) and 10-59 (Subpart GGG)
  - Added BAAQMD Regulation 11, Rule 12 – NESHAPs 61 FF incorporated by reference
  - 40 CFR, Part 60, Subpart VV
    - Updated to 6/2/2008 version.
    - Added Applicability note to header row
    - Deleted applicability section (60.480) to reflect that applicability is driven by other regulations
    - Added applicable requirements for 60.485 and 60.486 (rolled out)
  - 40 CFR, Part 60, Subpart GGG
    - Updated to 6/2/2008 version.
    - Added applicable requirements (rolled out)

  - Added new regulations 40 CFR, Part 60, Subpart VVa and 40 CFR, Part 60, Subpart GGGa.
  - Added regulations 40 CFR, Part 61, Subpart J and 40 CFR, Part 61, Subpart V for components in benzene service and not subject to 40 CFR, Part 63, Subpart CC (connectors, surge control vessels and bottoms receivers)
  - Added applicable requirements for 40 CFR, Part 63, Subpart CC
- Table IV-I2
  - Added new table for Atmospheric Pressure Relief Devices Subject to Regulation 8, Rule 28 and moved applicable requirements from Table IV-I1
- Table IV-Section J (Tanks)
  - Revised Table headers to clarify
  - Added explanations of applicability to regulation headers as needed for clarification
  - Regulation 8-5 updated federal enforceability. SIP 8-5 added citations where Regulation 8-5 federal enforceability changed to "N".
  - Deleted BAAQMD 8-5-322.3 because all secondary seals have been replaced with zero-gap seals (subject to BAAQMD 8-5-322.5)
  - Added applicability for slotted guidepoles (BAAQMD 8-5-320.5) and metallic shoe primary seals (BAAQMD 8-5-321.3) due to refinery efforts to remove solid guidepole inserts so that all tanks have slotted guidepoles and to eventually replace the resilient toroid seals in all external floating roof tanks with metallic-shoe type primary seals.
- Table IV-J4
  - Table IV-J5 consolidated into Table IV-J3 because these sources now have similar regulatory applicability.
  - Added BAAQMD and SIP 8-5-320.5 (Slotted guidepoles)
  - Deleted BAAQMD 8-5-322.3 (non-zero gap secondary seal)
  - Deleted definition of newly installed zero-gap secondary seal from BAAQMD 8-5-322.5
- Table IV-J6
  - Added BAAQMD and SIP 8-5-321.3 (Metallic shoe primary seal)
- Table IV-J7
  - Added BAAQMD and SIP 8-5-320.5 (Slotted guidepoles)
  - Added BAAQMD and SIP 8-5-321.3 (Metallic shoe primary seal)
  - Deleted BAAQMD 8-5-322.3 (non-zero gap secondary seal)
  - Deleted definition of newly installed zero-gap secondary seal from BAAQMD 8-5-322.5
- Table IV-J9
  - Added new VIP crude tanks, S-1047 and S-1048 with new Condition 20820
  - Added BAAQMD and SIP 8-5-320.5 (Slotted guidepoles)
  - Added BAAQMD Regulation 10 and 10-17 for Subpart Kb
  - Condition 10797, added comment that condition applies only to S-207
- Table IV-J11
  - (Prior to table) Deleted note added in Revision 4 for relocation of table for S-112
  - Added BAAQMD 8-5-320.3.2 (inaccessible fittings)
  - Added BAAQMD and SIP 8-5-320.5 (Slotted guidepoles)
  - Added BAAQMD and SIP 8-5-321.3 (Metallic shoe primary seal)
- Table IV-J12
  - Added BAAQMD 8-5-320.3.2 (inaccessible fittings)
  - Added BAAQMD and SIP 8-5-321.3 (Metallic shoe primary seal)
- Table IV-J13

- Added BAAQMD 8-5-320.3.2 (inaccessible fittings)
- Added BAAQMD and SIP 8-5-320.5 (Slotted guidepoles)
- Added BAAQMD and SIP 8-5-321.3 (Metallic shoe primary seal)
- Added BAAQMD Regulation 10 and 10-17 for Subpart Kb
- Condition 9296, Part C5 and C6, deleted "Methanol" from permit condition description per CARB Phase III A/N 18792

- Table IV-J14
  - Deleted applicability to 8-5-502.1 requirement for source test. In accordance with 8-5-502, this requirement does not apply to sources vented to fuel gas, therefore, it does not apply to S-55, which is vented to fuel gas.
- Table IV-J16
  - Deleted applicability to 8-5-502.1 requirement for source test. In accordance with 8-5-502, this requirement does not apply to sources vented to fuel gas, therefore, it does not apply to S-124, which is vented to fuel gas.
- Table IV-J17
  - Deleted applicability to 8-5-502.1 requirement for source test. In accordance with 8-5-502, this requirement does not apply to sources vented to fuel gas, therefore, it does not apply to S-133, which is vented to fuel gas.
- Table IV-J18
  - Deleted applicability to 8-5-502.1 requirement for source test. In accordance with 8-5-502, this requirement does not apply to sources vented to fuel gas, therefore, it does not apply to S-227, which is vented to fuel gas.
  - Added BAAQMD Regulation 10 and 10-17 for Subpart Kb
  - Added note to explain that Condition 24197 will supersede Condition 10574 upon startup of S-1061 and S-1062
  - Added Condition 24197
- Table IV-J21
  - Table IV-J22 consolidated into Table IV-J21 because these sources have similar regulatory applicability.
- Table IV-J22
  - Deleted because Table IV-J22 consolidated into Table IV-J21. See above "Table IV-J21".
- Table IV-J24
  - Deleted table for S-143 (TK-1043) because source has been taken out of service
- Table IV-J26
  - Moved Table for S-239 from tank section (J26) to miscellaneous source section (C6) because S-239 was reclassified in a previous permit application and is no longer regulated as a tank (see SOB for Revision 4).
- Table IV-J27
  - S-158 (TK-2902) contains perchloroethylene. In a previous Title V permit revision, it was changed to exempt from BAAQMD 8-5 in accordance with 8-5-117 (low vapor pressure exemption) because the vapor pressure of perchloroethylene is less than 0.5 psia at standard conditions (~70F). However, on closer examination, it was determined that the vapor pressure of perchloroethylene exceeds 0.5 psia at approximately 90F. Since ambient temperatures can reach and exceed 90F, the tank should not be exempt from BAAQMD/SIP 8-5. Therefore, BAAQMD Regulation 8-2 applicability has been deleted and BAAQMD 8-5/SIP 8-5 applicability has been added.

  - Deleted Condition 20762 because tank is not exempt from BAAQMD 8-5 per 8-5-117 (see above)
- Table IV-J28
  - Deleted applicability to 8-5-502 and 8-5-502.1 requirements for source test and 8-5-603 requirement for determination of abatement. This source does not have abatement devices for which these citations are applicable.
- Table IV-J29
  - Table IV-J31.1 consolidated into Table IV-J29 because these sources have similar regulatory applicability.
- Table IV-J30
  - Added BAAQMD Regulation 10 and 10-17 for Subpart Kb
  - Added Permit Condition 20762 because it applies to S-230 (TK-4460)
- Table IV-J31.1
  - Deleted because Table IV-J31.1 consolidated into Table IV-J29. See above "Table IV-J29".
- Table IV-J31.2
  - Condition 20820, added new Condition for S-236 for VIP/VIP Amendments per A/N 19633
- Table IV-J32
  - Table IV-J33 consolidated into Table IV-J32 because these sources have similar regulatory applicability. These tanks will have slotted guidepoles.
  - Added BAAQMD and SIP 8-5-320.5 (Slotted guidepoles)
  - Deleted definition of newly installed zero-gap secondary seal from BAAQMD 8-5-322.5
  - Added BAAQMD Regulation 10 and 10-17 for Subpart Kb
  - Added BAAQMD Regulation 11, Rule 12 – NESHAPs 61 FF incorporated by reference
- Table IV-J33
  - Deleted because Table IV-J33 consolidated into Table IV-J32. See above "Table IV-J32".
- Table IV-J34
  - Added BAAQMD 8-5-320.3.2 (inaccessible fittings)
  - Added BAAQMD and SIP 8-5-320.5 (Slotted guidepoles)
  - Added BAAQMD Regulation 10 and 10-17 for Subpart Kb
  - Added BAAQMD Regulation 11, Rule 12 – NESHAPs 61 FF incorporated by reference
- Table IV-J35
  - Added BAAQMD 8-5-320.3.2 (inaccessible fittings)
  - Added BAAQMD and SIP 8-5-320.5 (Slotted guidepoles)
  - Added BAAQMD Regulation 10 and 10-17 for Subpart Kb
  - Added BAAQMD Regulation 11, Rule 12 – NESHAPs 61 FF incorporated by reference
- Table IV-J36
  - Deleted and moved S-131 to Table IV-H7 based on A/N NSR 19634/ Title V 19636
- Table IV-J37
  - Moved table to become new Table IV-H7 based on A/N NSR 19634/ Title V 19636. See above "Table IV-H7"
- Table IV-J38
  - Added A-65 as abatement for S-193 and S-196 based on A/N NSR 15934/TV 19793
  - Added BAAQMD Regulation 10 and 10-17 for Subpart Kb
  - Added BAAQMD Regulation 11, Rule 12 – NESHAPs 61 FF incorporated by reference

- Revised Condition 11880 based on A/N NSR 15934/TV 19793
- Added leak tightness requirements for tanks and CVS

- Table IV-J39
  - Moved table to become new Table IV-H8 based on A/N NSR 19634/ Title V 19636. See above "Table IV-H8"
- Table IV-J40
  - Added A-65 as abatement for S-193 and S-196 based on A/N NSR 15934/TV 19793
  - Added BAAQMD Regulation 10 and 10-17 for Subpart Kb
  - Added BAAQMD Regulation 11, Rule 12 – NESHAPs 61 FF incorporated by reference
  - Added leak tightness requirements for tanks and CVS
  - Revised Condition 11880 based on A/N NSR 15934/TV 19793
- Table IV-J41
  - Added BAAQMD Regulation 8, Rule 2,
  - Deleted BAAQMD Regulation 8, Rule 5 and 40 CFR, Part 60, Subpart Kb based on final evaluation for A/N NSR 19634/ Title V 19636
- Table IV-J42
  - Changed title from LPG Pressurized Sphere to Liquified Organic Gas Storage
  - Added D-1907, methyl mercaptan pressure tank
- Table IV-K1
  - Deleted BAAQMD and SIP Regulation 8, Rule 5 based on A/N A/N NSR 19634/ Title V 19636
  - Added applicability for BAAQMD and SIP Regulations 8-8-304, 8-8-305, and 8-8-305.2 based on A/N A/N NSR 19634/ Title V 19636
  - Added BAAQMD Regulation 11, Rule 12 – NESHAPs 61 FF incorporated by reference
  - Deleted NSPS Subpart A. Revised applicability for NSPS Subpart J to add exemption for wastewater vapors at 60.101(d) and delete remaining applicability. Recent updates to NSPS J clarified that the definition of fuel gas does not include vapors from wastewater treatment units, see A/N 18165
  - Updated applicability for 40 CFR, Part 61, Subpart FF and revised descriptions for clarification
  - Added new version of Condition 11879, and deleted Conditions 11882, 11888, 13319 and old version of Condition 11879. Modification based on A/N NSR 16938 that consolidated Conditions 11879, 11882, 11888 and 13319 into 11879.
- Table IV-K2, IV-K3, IV-K4
  - Added new tables for wastewater abatement devices A-65, A-37, and A-36 based on A/N NSR 15934/TV 19793 that added A-65 thermal oxidizer

V. Schedule of Compliance

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

"409.10 A schedule of compliance containing the following elements:

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

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

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

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

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

VI. Permit Conditions

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

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

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

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

The District has reviewed and, where appropriate, revised or added new annual and daily throughput limits on sources so as to help ensure compliance with District rules addressing preconstruction review. The applicability of preconstruction review depends on whether there is a "modified source" as defined in District Rule 2-1-234. Whether there is a modified source depends in part on whether there has been an "increase" in "emission level." 2-1-234 defines what will be considered an emissions level increase, and takes a somewhat different approach depending on whether a source has previously permitted by the District.

Sources that were modified or constructed since the District began issuing new source review permits will have permits that contain throughput limits, and these limits are reflected in the Title V permit. These limits have previously undergone District review, and are considered to be the

legally binding "emission level" for purposes of 2-234.1 and 2-1-234.2. By contrast, for older sources that have never been through preconstruction review (commonly referred to as "grandfathered" sources), an "increase" in "emission level" is addressed in 2-1-234.3. A grandfathered source is not subject to preconstruction review unless its emission level increases above the highest of either: 1) the design capacity of the source, 3) the capacity listed in a permit to operate, or 3) highest capacity demonstrated prior to March 2000. However, if the throughput capacity of a grandfathered source is limited by upstream or downstream equipment (i.e., is "bottlenecked"), then the relaxing of that limitation ("debottlenecking") is considered a modification.

The District has written throughput limits into the Title V permit for grandfathered sources. As discussed above, these limits are written for the purpose of determining whether an increase in emission levels has occurred. The purpose of these limits is to facilitate implementation of preconstruction review program. If these limits are exceeded, the facility would be expected to report the exceedance, and the District would treat the reported exceedance as presumptively establishing the occurrence of a modification. The facility would then be expected to apply for a preconstruction permit addressing the modification and the District would consider whether an enforcement action was appropriate.

It is important to note the presumptive nature of throughput limits for grandfathered sources that are created in the Title V permit. These limits are generally based upon the District's review of information provided by the facility regarding the design capacity or highest documented capacity of the grandfathered source. To verify whether these limits reflect the true design, documented, or "bottlenecked" capacity (pursuant to 2-10234.1) of each source is beyond the resource abilities of the District in this Title V process. Moreover, the District cannot be completely confident that the facility has had time or resources necessary to provide the most accurate information available in this regard. Creating throughput limits in the Title V permit for grandfathered sources is not required by either Part 70 or the District's Major Facility Review rules. Despite the lack of such a requirement, and despite the resource and information challenges presented in the Title V process, the District believes that writing presumptive limits for grandfathered sources into the Title V permit will provide a measure of predictability regarding the future applicability of the preconstruction review program, and that this increased predictability is universally beneficial.

It follows from the presumptive nature of these throughput limits for grandfathered sources that exceedance of these limits is not per se a violation of the permit. *Failure to report an exceedance would be a permit violation.* In this sense, the throughput limits function as monitoring levels, and are imposed pursuant to the District's authority to required monitoring that provide a reasonable assurance of compliance. If an exceedance occurs, the facility would have an opportunity to demonstrate that the throughput limit in fact did not reflect the appropriate limit for purposes of 2-1-234.3. If the facility can demonstrate this, no enforcement action would follow, and the permit would be revised at the next opportunity. It also follows that compliance with these limits is not a "safe harbor" for the facility. If evidence clearly shows that a grandfathered source has undergone a "modification" as defined in 2-1-234.3, the District would consider that a preconstruction review-triggering event, notwithstanding compliance with the throughput limit in the Title V permit. In other words, the protection afforded the facility by complying with the throughput limit in the Title V permit is only as strong as the information on which it was based. There is no Title V "permit shield" associated with throughput limits for

grandfathered sources, as they are being proposed. A shield may be provided if the District determines with certainty that a particular limit is appropriate for purposes of 2-1-234.3.

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

Conditions have also been deleted due to the following:
- Redundancy in record-keeping requirements.
- Redundancy in other conditions, regulations and rules.
- The condition has been superseded by other regulations and rules.
- The equipment has been taken out of service or is exempt.
- The event has already occurred (i.e. initial or start-up source tests).

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

Changes to Permit Condition Index:
- Index updated based on changes to permit conditions identified below
- Conditions 19177, 19466, and 21233, formatting cleanup, to deleted inserted text boxes and replace with additional rows in table
- Conditions 815, 10574, 11030, 18794, 19466, 22156, 24197, and 24198, added comment for VIP/VIP Amendments per A/N 19633
- Conditions 24239, 24245, and 24261 added conditions per A/N 18165

<u>Changes to permit:</u>
- Formatting change to start each condition on a new page
- Condition – Multiple, revised the number of days that the company shall submit source test results to BAAQMD from 15 days or 30 days or 45 days to 60 days because of the increased number of sources requiring testing to demonstrate compliance and the limited availability of qualified source testing firms
- Condition – Multiple, Revised basis for BAAQMD Regulation 6, Rule 1 to include BAAQMD and SIP citations
- Condition 125, Intro – Deleted A/N 14443 because it is repeated at the end of the introduction

- Condition 125, Part 1, typographical correction (deleted extra space)
- Condition 125, Part 8, added basis
- Condition 125, Part 10, added the consent decree to clarify that all emission points to the atmosphere for tail gas emissions from S-1, sulfur plant, will be monitored and reported upon in accordance with 40 CFR 60.7(c), 60.13 and 60.105
- Condition 126, Intro – Deleted A/N 14443 because it is repeated at the end of the introduction
- Condition 126, Part 1, typographical correction (deleted extra space)
- Condition 126, Part 8, added basis
- Condition 125, Part 10, added the consent decree to clarify that all emission points to the atmosphere for tail gas emissions from S-2, sulfur plant, will be monitored and reported upon in accordance with 40 CFR 60.7(c), 60.13 and 60.105
- Condition 254, Part 3, revised. Decreased source test frequency from once every six months to annual per A/N NSR 16707/TV 16708
- Condition 815, all Parts, added comment that condition will be superseded by Condition 20820 when triggers activated, VIP/VIP Amendments per A/N 19633
- Condition 1709, Part 16, deleted. Redundant with Standard Condition I.D
- Condition 22850, which is the District template condition, was changed to Condition 24309 to give S-251, Emergency Diesel Engine, a specific condition without the requirement of a school
- Condition 22851, which is the District template condition, was changed to Condition 24310 to give S-240, S-241 and S-242, Diesel Firewater Pump Engines, a specific condition without the school requirement
- Condition 3253, Part 1, corrected typographical error
- Condition 4882, Part 1, revised per A/N NSR 19826/TV 19897
- Condition 9296, Added Amendments per CARB Phase III A/N 18792
- Condition 9296, Part A4, deleted, MTBE Phaseout completed
- Condition 9296, Parts B and C, deleted "Methanol" from S-209 and S-210 descriptions per CARB Phase III A/N 18792
- Condition 9296, Parts B2, B4, B5, C5, and C6, deleted "methanol" from permit condition per CARB Phase III A/N 18792
- Condition 9296, Part B4, revised number of ethanol truck deliveries per CARB Phase III A/N 18792
- Condition 9296, Part B9, changed weekly recordkeeping to monthly per CARB Phase III A/N 18792
- Condition 9296, Part C1, revised ethanol tank throughput limit per CARB Phase III A/N 18792
- Condition 9296, Part D3, added averaging period for consistency with BAAQMD 9-10-305 which is the basis of the condition
- Condition 9296, Part D7, typographical correction to delete duplicate "the"
- Condition 9296, added Parts F1 and F2 per CARB Phase III A/N 18792
- Condition 9584, Intro, corrected application number
- Condition 10574, all Parts, added comment that condition will be superseded by Condition 24197 when activated by VIP/VIP Amendment triggers per A/N 19633
- Condition 10574, Intro, updated list of permit applications
- Condition 10574, Part 16, revised. Corrected reference to Part No. 17

- Condition 10574, Part 18, Correct the parenthesis of the basis
- Condition 10574, Part 22, deleted extra language that does not make sense
- Condition 10574, Part 42, deleted redundant NSPS standard
- Condition 10574, Part 52, revised component counts per A/N NSR 3782
- Condition 11030, all Parts, added comment that condition will be deleted upon startup of S-1059 and S-1060 for VIP/VIP Amendment per A/N 19633
- Condition 11879 deleted and completely revised per A/N NSR 16938 that consolidated Conditions 11879, 11882, 11888 and 13319 into 11879.
- Condition 11879, Part 10, revised per A/N NSR 15934/TV 19793 that added A65 Diversion Area Thermal Oxidizer
- Condition 11880, revised entire condition per A/N NSR 15934/TV 19793 that added A65 Diversion Area Thermal Oxidizer
- Condition 11882 deleted per A/N NSR 16938 that consolidated Conditions 11879, 11882, 11888 and 13319 into 11879
- Condition 11888 deleted per A/N NSR 16938 that consolidated Conditions 11879, 11882, 11888 and 13319 into 11879
- Condition 12727, deleted upon startup of S-1059 and S-1060 PS Furnaces per APPLICATION 16937 (Jan 2009), VIP Amendments
- Condition 13045 deleted. Delete source S-143 (TK-1034).
- Condition 13319 deleted per A/N NSR 16938 that consolidated Conditions 11879, 11882, 11888 and 13319 into 11879
- Condition 14318, Deleted redundant with Title V Permit Standard Condition E.1 and BAAQMD 1-441
- Condition 15512, revised Part 1 to include new dearator vent requirements per A/N NSR 17681/TV 17877
- Condition 16027, Part 22, revised from "no less than 45 days after the test" to "no later than 60 days after the test" to allow more time for test result submittal and correct the typo
- Condition 17835, Intro, added A/N 2390
- Condition 18744, deleted, superceded by Condition 24375 for S-243 emergency generator
- Condition 18748, deleted, superceded by Condition 24310 for S-240, S-241 and S-242 emergnecy generators
- Condition 18794, all Parts, added comment that condition will be superseded by Condition 20820 when activated by VIP/VIP Amendment triggers per A/N 19633
- Condition 19177, deleted redundant definitions
- Condition 19177, Intro, added A/N 13201
- Condition 19177, Part 6, added basis
- Condition 19177, Part 20, revised. Deleted "combined" which occurs after "P60". This correction should have been made as part of the removal of Phase II.
- Condition 19177, Part 22, revised. Deleted Phase I – no longer necessary to make the distinction since Phase II has been removed from the Title V permit
- Condition 19177, Part 27, deleted. Redundant with BAAQMD Regulation 2, Rule 6 as shown in Table IV-Refinery
- Condition 19329, added comment that condition will be deleted upon expiration of NOx IERCs per VIP/VIP Amendment triggers per A/N 19633
- Condition 19466, Intro, add application history

- Condition 19466, added comment that condition will be superseded by Condition 24198 upon activation of VIP/VIP Amendments per A/N 19633
- Condition 19466, Part 3, deleted. Deleted S-237 from monthly visible emissions monitoring requirement per A/N NSR 16706/TV 16710
- Condition 19466, Parts 5b and 5c, deleted. Condition allowed operation of three of five ESPs, however sources failed to meet BAAQMD regulations with three of five ESPs resulting in rescission of this condition
- Condition 19466, Part 7, revised. Revise the compliance demonstration statement for S-8 to reference Reg 6-1-310 instead of 6-1-301.
- Condition 19466, Part 9, revised. Revise the compliance demonstration statement for S-8 to reference Reg 6-1-311 instead of 6-1-301.
- Condition 19466, Part 11, revised. Decreased source test frequency from semi-annual to annual per A/N NSR 16707/TV 16708
- Condition 19466, Part 14, revised. Added basis
- Condition 19466, Part 16, deleted. Due date was April 1, 2004. Requirements have been completed.
- Condition 20806, Part 8, deleted. Due date was January 1, 2005. Requirements have been completed.
- Condition 20820, Added for VIP/VIP Amendments per A/N 19633, including revisions to the POC Main Stack/FCCU-CKR Scrubber Stack emission limits per A/N 15606
- Condition 21233, deleted asterisks, condition is now federally enforceable since adoption into SIP, including the addition of 9-10-303 to the basis for Part 1
- Condition 22156, added comment that condition will be deleted upon startup of S-1059 and S-1060 PS Furnaces for VIP/VIP Amendments per A/N 19633
- Condition 24375 replaces Condition 22820 without any changes
- Condition 24375, Intro, added applicable source for clarification
- Condition 24375, Part 1, add ATCM citation as basis using current version of ATCM
- Condition 24375, Parts 2, 3, 4, corrected basis to include BAAQMD 9-8-330 and correct ATCM basis using most current version of ATCM
- Condition 24375, Part 5, deleted condition because it does not apply – the engine is not subject to any of the at school or near school operations because it is not located within 500 feet of any school grounds
- Condition 24309, added condition for new diesel generator, S-251, per A/N NSR 18292/TV 18400
- Condition 24309, Part 5, deleted condition because it does not apply – the engine is not subject to any of the at school or near school operations because it is not located within 500 feet of any school grounds
- Condition 24309, Parts 1, 2, 3, and 4, updated basis to reflect most current version of ATCM
- Condition 24309, Part 5, deleted condition because it does not apply – the engine is not subject to any of the at school or near school operations because it is not located within 500 feet of any school grounds
- Condition 24310, Intro, added applicable sources for clarification
- Condition 24310, Parts 1, 2, 3, and 4, updated basis to reflect most current version of ATCM
- Condition 24310, Part 5, deleted condition because it does not apply – the engine is not subject to any of the at school or near school operations because it is not located within 500 feet of any school grounds

- Condition 22949, added. new conditions for ULSD sources S-247, S-248, S-1036, S-1051, S-1052 per A/N NSR 13009/TV13244
- Condition 22949, revised. Added new mass limits for ULSD sources S-247, S-248, S-1036, S-1051, S-1052 per A/N NSR 16866/TV 17032
- Condition 23446, revised. Added A/N 16656 to intro statement and deleted underline formatting in Parts 1 and 2
- Condition 24080, added condition for new Butamer sources S-1034, S-1035, S-1049, S-1050 per A/N NSR 17876/TV 18750
- Condition 24197, added condition for VIP/VIP Amendments per A/N 19633
- Condition 24197, Part 18, added Note 2 stating that annual emissions will be adjusted upon shutdown of S-21 or S-22, VIP/VIP Amendments per A/N 19633
- Condition 24197, Part 37, added Note stating that combined heat input limit will be adjusted upon shutdown of S-21 or S-22, VIP/VIP Amendments per A/N 19633
- Condition 24198, added condition for VIP/VIP Amendments per A/N 19633
- Condition 24198, removed S-233 since it will be removed from service upon startup of S-1059 and S-1060 PS Furnaces, A-1059, A-1060 PS Furnace SCRs, A-1047 FCCU/CKR Prescrubber/Regenerative Amine Scrubber per Condition 20820, Part 76
- Condition 24198, Parts 6 and 9, deleted conditions because they are redundant with the quarterly PM10 source test requirements in Condition 20820, Part 72 per VIP/VIP Amendments per A/N 19633
- Condition 24198, Part 14, deleted PS Furnaces S-1059 and S-1060 because the NOx CEM requirement basis is not Regulation 9-10
- Condition 24239, added new condition for FCCU NSPS J CO and PM standards per Consent Decree, A/N 18165
- Condition 24239, Part 7, added new condition for Alternate Monitoring Plans for PM, opacity, and CO per A/N 18165
- Condition 24245, added new condition for NSPS J SO2 emission standards for Flares S-18 and S-19 and Fuel Gas Combustion Devices per Consent Decree, A/N 18165 Condition 24261, added new condition for Alternate Monitoring Plan for NOx CEMS span per A/N 18165
- Condition 24298, added the Permit to Operate condition for S-165 per EVR upgrade NSR A/N 20304

VII. Applicable Limits and Compliance Monitoring Requirements

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

Monitoring decisions are typically the result of a balancing of several different factors including: 1) the likelihood of a violation given the characteristics of normal operation, 2) degree of variability in the operation and in the control device, if there is one, 3) the potential severity of impact of an undetected violation, 4) the technical feasibility and probative value of indicator monitoring, 5) the economic feasibility of indicator monitoring, and 6) whether there is some

other factor, such as a different regulatory restriction applicable to the same operation, that also provides some assurance of compliance with the limit in question.

These factors are the same as those historically applied by the District in developing monitoring for applicable requirements**.** It follows that, although Title V calls for a re-examination of all monitoring**,** there is a presumption that these factors have been appropriately balanced and incorporated in the District's prior rule development and/or permit issuance. It is possible that, where a rule or permit requirement has historically had no monitoring associated with it, no monitoring may still be appropriate in the Title V permit if, for instance, there is little likelihood of a violation**.** Compliance behavior and associated costs of compliance are determined in part by the frequency and nature of associated monitoring requirements. As a result, the District will generally revise the nature or frequency of monitoring only when it can support a conclusion that existing monitoring is inadequate**.**

Changes to permit:

A note has been added at the beginning of the section to clarify that this section is a summary of the limits and monitoring, and that in the case of a conflict between Sections I-VI and Section VII, the preceding sections take precedence.

- Table VII-Multiple
  - Revised BAAQMD Regulation 6, Rule 1 to include BAAQMD and SIP citations
  - Various formatting corrections and changes for consistency throughout the section
- Table VII-A1
  - Deleted Condition 125, Part 2. Initial source test completed.
- Table VII-A2
- Deleted Condition 126, Part 2. Initial source test completed. Table VII-A3
  - Added to be removed from service upon startup of S-1059 and S-1060 PS Furnaces per VIP Amendments A/N 19633
  - For Fuel Flow, revised monitoring requirement to indicate Fuel Flow Continuous Parametric Monitoring Ssystem (CPMS)
  - For CO, added Condition 20820, Part 21.b.v per VIP Amendments A/N 19633
  - For NOx, added Condition 20820, Part 21.b.i per VIP Amendments A/N 19633
  - For SO2, added Condition 20820, Part 21.b.ii per VIP Amendments A/N 19633
  - For FP, correct monitoring requirement citation from "none" to Condition 22156, Part 3 where exceeding the 30% opacity means exceeding the grain loading limit of 6-310
  - For FP, deleted Condition 19466, Part 5c. Condition required source testing for operation of three of five ESPs. However sources failed to meet BAAQMD regulations with three of five ESPs resulting in rescission of this condition
  - For FP, added BAAQMD Regulation 6-1-311 and SIP 6-311 limits and the footnote explains that the emission limits apply to S-5, FCCU and S-6, Fluid Coker, but are monitored at S-3 and S-4 CO Furnaces
  - For PM10, added Condition 20820, Part 21.b.iii per VIP Amendments A/N 19633
  - For POC, added Condition 20820, Part 21.b.iv per VIP Amendments A/N 19633
- Table VII-A3.1

  - Added new table for S-1059, S-1060 CO Furnaces, VIP/VIP Amendments per A/N 19633 and A/N 15606 for FCCU/CKR Stack POC emission limit in Part 63 and 68 based on source test
  - For FP, added BAAQMD Regulation 6-1-311 and SIP 6-311 and the footnote explains that the emission limits apply to S-5, FCCU and S-6, Fluid Coker, but are monitored at S-1059 and S-1060 PS Furnaces
- Table VII-A4
  - For CO, 40 CFR, Part 60.103(a) and BAAQMD Condition 24239, Part 2, add AMP for CO monitoring, approved by EPA January 10, 2007 per A/N 18165
  - For opacity, 40 CFR, Part 60.102(a)(2) and BAAQMD Condition 24239, Part 1, add AMP for alternate COMS location, approved by EPA February 18, 2009 per A/N 18165
  - For opacity, 40 CFR, Part 63.1564(a)(1)(i), add AMP for alternate COMS location, approved by EPA February 18, 2009 per A/N 18165
  - For PM, 40 CFR, Part 60.102(a)(1) and BAAQMD Condition 24239, Part 3, add AMP for Site-Specific Test Plan use for NSPS J, approved by EPA January 10, 2007 per A/N 18165
  - For PM, 40 CFR, Part 63.1564(a)(1)(i), add AMP for Site-Specific Test Plan use for Subpart UUU, approved by EPA June 22, 2005 per A/N 18165
- Table VII-A6.1
  - 40 CFR, Part 60, NSPS J, added H2S monitoring requirement for Consent Decree per A/N 18165
  - For Fuel Flow, revised monitoring requirement to indicate Fuel Flow CPMS
  - For NOx, for BAAQMD 9-10-301, added NOx CEM for S-7 effective upon startup of VIP Amendments
  - For O2, revised row for Condition 21233, Part 5 to clarify limit description as NOx Box operating ranges for O2 and to add O2 CPMS for monitoring requirement
  - For O2, added new row for Condition 21233, Part 5 with NOx Box operating ranges and O2 CPMS for S-20 and S-34 effective upon startup of VIP Amendments (with addition of NOx CEMS for S-7)
  - Condition 20820, Part 21 Main Stack emission limits, added new Condition for S-7 (F-103) for VIP/VIP Amendments per A/N 19633
- Table VII-A6.2
  - Deleted S-26 (moved to Table VII-A6.4 – NEW)
  - For Fuel Flow, revised monitoring requirement to indicate Fuel Flow CPMS
  - For O2, revised row for Condition 21233, Part 5 to clarify limit description as NOx Box operating ranges for O2 per 9-10-502.2 and to add O2 CPMS for monitoring requirement
  - 40 CFR, Part 60, NSPS J, added H2S monitoring requirement for Consent Decree per A/N 18165
- Table VII-A6.3
  - BAAQMD Regulation 6-1-301/SIP 6-301, deleted BAAQMD 2-6-503 monitoring requirement citation because there are no opacity monitoring requirements for this source
  - BAAQMD Regulation 9-10-112 and 9-10-502.2, delete citations. S-13 and S-50 are auxiliary air heaters. They do not meet the definition of process heaters subject to Regulation 9, Rule 10 per 9-10-214. They are used for startup purposes only to heat the FCCU/Coker vessels prior to unit startup.
- Table VII-A6.4

  - Added new Table VII-A6.4 for S-26 (moved from Table VII-A6.2 because it is not subject to NSPS J requirements per the Consent Decree, see A/N 18165)
- Table VII-A8.1
  - Deleted S-18, South Flare from table, relocated to Table VII-A8.2
  - For FP 12-12-501, revised water pressure and level monitoring requirements to include "CPMS"
- Table VII-A8.2
  - Added S-18, South Flare to Table VII-A8.2 and moved S-17, Butane Flare to Table VII-18.3 (new)
  - For FP 12-12-501, revised water pressure and level monitoring requirements to include "CPMS"
- Table VII-A8.3 (NEW)
  - Relocated S-18 from Table IV-A8.2 to A8.3 (NEW)
- Table VII-A9
  - For FP 12-12-501, revised water pressure and level monitoring requirements to include "CPMS"
- Table VII-A10
  - For Fuel Flow, revised monitoring requirement to indicate Fuel Flow CPMS
- Table VII-A11
  - For Fuel Flow, revised monitoring requirement to indicate Fuel Flow CPMS
- Table VII-A12
  - 40 CFR, Part 60, NSPS J, added H2S monitoring requirement for Consent Decree per A/N 18165
  - For Fuel Flow, revised monitoring requirement to indicate Fuel Flow CPMS
- Table VII-A15
  - For Fuel Flow, revised monitoring requirement to indicate Fuel Flow CPMS
- Table VII-A16
  - For Fuel Flow, revised monitoring requirement to indicate Fuel Flow CPMS
- Table VII-A17
  - 40 CFR, Part 60, NSPS J, added H2S monitoring requirement for Consent Decree per A/N 18165
  - For Fuel Flow, revised monitoring requirement to indicate Fuel Flow CPMS
- Table VII-A18
  - For Fuel Flow, revised monitoring requirement to indicate Fuel Flow CPMS
- Table VII-A19
  - Replaced Condition 10574, Part 13 with Condition 10574, Part 17 on H2S row
  - For Fuel Flow, revised monitoring requirement to indicate Fuel Flow CPMS
  - Deleted NSPS H2S limit of 162 ppmv averaged over any 3-hr period on H2S row. Redundant with NSPS Subpart J, 40 CFR, Part 60.104(a)(1) (shown in the line above)
  - Condition 10574, Part 21, deleted Ringlemann No. 1 visible emissions limit because it is redundant with BAAQMD 6-1-301.
- Table VII-A20
  - In Opacity row for BAAQMD 6-1-301, deleted Condition 19466, Part 3, monthly visible emissions monitoring requirement per A/N NSR 16706/TV 16710
  - Added rows for BAAQMD 6-1-310 and 6-1-310.3 for consistency with Table IV-A20
  - For Fuel Flow, revised monitoring requirement to indicate Fuel Flow CPMS

  - Condition 19466, Part 3, deleted monthly visible emissions monitoring requirement per A/N NSR 16706/TV 16710
- Table VII-A21
  - Revised table header to correct source description from "P-2608B' to 'P-2607B'
  - Condition 22850 was changed to Condition 24309 to give the source a specific condition without the requirement near school
  - Moved Condition 24310 so it appears in the correct alphanumeric order (BAAQMD Regs, CARB Regulations, BAAQMD Conditions, etc)
  - Add recordkeeping requirements for BAAQMD Regulation 9-8-330
  - Add monitoring requirements for ATCM (CCR, Title 17, Section 93115)
- Table VII-A22.1
  - For Fuel Flow, revised monitoring requirement to indicate Fuel Flow CPMS
- Table VII-A22.2
  - Added "Y" to BAAQMD 9-3-303
  - For Fuel Flow, revised monitoring requirement to indicate Fuel Flow CPMS
- Table VII-A23
  - Moved Condition 24375 so it appears in the correct alphanumeric order (BAAQMD Regs, CARB Regulations, BAAQMD Conditions, etc)
  - Add recordkeeping requirements for BAAQMD Regulation 9-8-330
  - Add monitoring requirements for ATCM (CCR, Title 17, Section 93115)
- Table VII-A24
  - Added monitoring requirements for new ULSD sources S-247 and S-248
  - Added new mass limits for ULSD sources S-247, S-248 per A/N NSR 16866/TV 17032
- Table VI-A25
  - Created a new table for S-251, emergency diesel generator, per A/N NSR 18292/TV 18400
  - Add emission limits and monitoring for federal NSPS 40 CFR, Part 60, Subpart IIII for stationary internal combustion engines
  - Condition 22850 was changed to Condition 24309 to give the source a specific condition without the requirement near school
- Table VII-B5
  - S-209 source description, deleted "Methanol" per CARB Phase III A/N 18792
  - Condition 9296, Part B4, revised Type of Limit to exclude methanol and revised allowable number of ethanol truck deliveries per CARB Phase III A/N 18792
- Table VII-B6
  - S-232, added a note " To Be Removed From Service Upon Startup of S-1059 and S-1060 PS Furnaces per Condition 20820, Part 76
  - Added row for BAAQMD 6-1-310 for consistency with Table IV-B6
- Table VII-B7
  - S-233, added a note " To Be Removed From Service Upon Startup of S-1059 and S-1060 PS Furnaces per Condition 20820, Part 76
- Table VII-B9.2
  - 40 CFR, Part 61, Subpart FF, added monitoring requirements for S-202 as an individual drain system (61.346(a)) used to transfer sludge from S-131 to vacuum truck. Vacuum truck loading operation using S-202 is abated by A-38 vapor balance system. A-38 vents back to S-131, which is abated by Thermal Oxidizer A-57 and/or Carbon Canisters A-37.

For 40 CFR, Part 61, Subpart FF, A-38 is the closed vent system and A-57 and/or A-37 that abate S-131 are the control devices for S-202.

- Table VII-C3
  - Added "Vented to S-36 Boiler – BAAQMD Condition 19466, Part 12" as explanation for monitoring requirement
- Table VII-C4.1
  - Added "Vented to flare gas stream – BAAQMD Condition 19466, Part 2d" as explanation for monitoring requirement
- Table VII-C6
  - Moved Table for S-239 from tank section (J26) to miscellaneous source section (C6) because S-239 is not a tank.
- Table VII-D8
  - Condition 10574, deleted condition because it applies only to sources that were originally permitted as part of the Alkylation Unit. The S211 Alkylate Debutanizer is now part of the Alkylation Unit, but it was originally permitted as part of the MTBE Unit and fugitive POC emissions from S211 were tracked as part of Condition 18043, not Condition 10574.
- Table VII-D10
  - Added new table with monitoring requirements for new ULSD sources S-1036 per A/N NSR 13009/TV 13244
- Table VII-D11
  - Added new table with monitoring requirements for new ULSD sources S-1051 and S-1052 per A/N NSR 13009/TV 13244
- Table VII-E2
  - Added POC requirements from Conditions 24208 and 20666 for source S-165 Gasoline Dispensing Facility per A/N NSR 20304
- Table VII-F
  - Added CPMS for BAAQMD 8-44 and Condition 1709 VOC and pressure continuous monitoring requirements
- Table VII-H1.1
  - Added applicable requirement 40 CFR, Part 61.342(c)(2)(ii) and 61.356(b)(4) for Benzene
- Table VII-H1.2
  - Added applicable requirement 40 CFR, Part 61.342(c)(2)(ii) and 61.356(b)(4) for Benzene
- Table VII-H2.1
  - Deleted 40 CFR, Part 61, Subpart FF based on A/N NSR 19826/TV 19897 (remove incorrect treatment unit requirements)
- Table VII-H2.2
  - Removed 40 CFR, Part 61, Subpart FF based on A/N NSR 19826/TV 19897 (remove incorrect treatment unit requirements)
- Table VII-H3
  - Added 40 CFR, Part 61.355(k)(1) and "Sampling" to Benzene in Waste
  - Deleted past due future effective dates
- Table VII-H4.1
  - Revised 40 CFR, Part 61, Subpart FF based on A/N NSR 19826/TV 19897
- Table VII-H4.2

  - Added Condition 11879 and deleted Condition 13319 based on A/N NSR 16938 that consolidated Conditions 11879, 11882, 11888 and 13319 into 11879.
  - Reorganized table to group by Regulation and Permit Condition. Added header rows and other formatting changes for clarification
  - Add Temperature CPMS and Flow CPMS as appropriate for continuous parametric monitoring requirements
  - Added leak tightness monitoring requirements for OWS and CVS
- Table VII-H5.1
  - Revised 40 CFR, Part 61, Subpart FF based on A/N NSR 19826/TV 19897
- Table VII-H5.2
  - Added Condition 11879 and deleted Condition 13319 based on A/N NSR 16938 that consolidated Conditions 11879, 11882, 11888 and 13319 into 11879.
  - Reorganized table to group by Regulation and Permit Condition. Added header rows and other formatting changes for clarification
  - Add Temperature CPMS and Flow CPMS as appropriate for continuous parametric monitoring requirements
  - Added leak tightness monitoring requirements for OWS and CVS
- Table VII-H6
  - Moved sources S-217, S-218, and S-219 from Table IV-H7 to Table IV-H6 based on A/N NSR 19634/ Title V 19636
  - Deleted BAAQMD and SIP Regulation 8, Rule 5 and Condition 20762 based on A/N NSR 19634/ Title V 19636
- Table VII-H7 (S-217, S-218, S-219)
  - Deleted table and moved sources S-217, S-218, and S-219 to Table IV-H6 based on A/N NSR 19634/ Title V 19636
- Table VII-H7 (S-150, S-131, S-200)
  - Added new Table VII-H7 by moving and modifying former Table VII-J37 for S-150 based on A/N NSR 19634/ Title V 19636
    - Moved S-131 from Table VII-J36 to Table VII-J7
    - Moved S-200 from Table VII-J39 to Table VII-J7
    - Added BAAQMD and SIP Regulation 8, Rule 8
    - Deleted BAAQMD and SIP Regulation 8, Rule 5
    - Revised 40 CFR, Part 61, Subpart FF
  - Add Temperature CPMS and Flow CPMS as appropriate for continuous parametric monitoring requirements
  - Revised Condition 11879 based on A/N NSR 16938 that consolidated Conditions 11879, 11882, 11888 and 13319 into 11879.
  - Added initial source test as monitoring requirement for Condition 11879, Part 10
  - Added A-65 to NMHC mass emission limit based on A/N NSR 15934/TV 19793
- Table VII-H8 (S-199)
  - Added new Table VII-H8 by moving and modifying former Table IV-J39 for S-199 and S-200 based on A/N NSR 19634/ Title V 19636
    - Deleted S-200 and moved to Table IV-H7 (see above)
    - Added BAAQMD and SIP Regulation 8, Rule 8
    - Deleted BAAQMD and SIP Regulation 8, Rule 5
    - Revised 40 CFR, Part 61, Subpart FF

  - Add Temperature CPMS and Flow CPMS as appropriate for continuous parametric monitoring requirements
  - Added Condition 11879 and deleted Condition 11882 based on A/N NSR 16938 that consolidated Conditions 11879, 11882, 11888 and 13319 into 11879.
  - Added initial source test as monitoring requirement for Condition 11879, Part 10
  - Added A-65 to NMHC mass emission limit based on A/N NSR 15934/TV 19793
- Table VII-H9
  - Added new Table VII-H9 for individual drain systems subject to 40 CFR, Part 60 Subpart QQQ per A/N NSR 19634/ Title V 19636
- Table VII-I1
  - Renumbered Table, was Table VII-I
  - Added header rows for each regulation with explanations of applicability for clarification
  - Corrected type of limit from POC to VOC or Benzene as applicable
  - Deleted BAAQMD and SIP Regulation 8, Rule 28. This regulation is no longer a fugitive emissions regulation. Moved applicable requirements to new Table IV-I2.
  - Added new regulations 40 CFR, Part 60, Subpart VVa and 40 CFR, Part 60, Subpart GGGa.
  - Added regulations 40 CFR, Part 61, Subpart J and 40 CFR, Part 61, Subpart V
- Table VII-I2
  - Added new table for Atmospheric Pressure Relief Devices Subject to Regulation 8, Rule 28 and moved applicable requirements from Table VII-I1
- Table VII-Section J (Tanks)
  - Regulation 8-5, updated federal enforceability
  - Added monitoring requirements for applicable SIP citations
- Table VII-J4
  - Tables VII-J5, VII-J6, VII-J7 consolidated into Table VII-J3 because these sources now have similar regulatory applicability.
- Table VII-J5
  - Deleted because Table VII-J5 consolidated into Table VII-J4. See above "Table VII-J4".
- Table VII-J9
  - Added new VIP crude tanks, S-1047 and S-1048 with new Condition 20820
  - Condition 10797, added comment that condition applies only to S-207
- Table VII-J11
  - (Prior to table) Deleted note added in Revision 4 for relocation of table for S-112
- Table VII- J13
  - Condition 9296, Part C1, revised ethanol tank throughput limit per CARB Phase III A/N 18792
  - Condition 9296, Part C5, corrected part number to include "C" and deleted methanol from product storage requirement
- Table VII-J21
  - Table VII -J22 consolidated into Table VII -J21 because these sources have similar regulatory applicability.
- Table VII-J22
  - Deleted because Table VII -J22 consolidated into Table VII -J21. See above "Table VII – J21".
- Table VII-J24
  - Deleted table for S-143 (TK-1043) because source has been taken out of service

- Table VII-J26
  - Moved Table for S-239 from tank section (J26) to miscellaneous source section (C6) because S-239 was reclassified in a previous permit application and is no longer regulated as a tank (see SOB for Revision 4).
- Table VII-J27
  - S-158 (TK-2902) contains perchloroethylene. In a previous Title V permit revision, it was changed to exempt from BAAQMD 8-5 in accordance with 8-5-117 (low vapor pressure exemption) because the vapor pressure of perchloroethylene is less than 0.5 psia at standard conditions (~70F). However, on closer examination, it was determined that the vapor pressure of perchloroethylene exceeds 0.5 psia at approximately 90F. Since ambient temperatures can reach and exceed 90F, the tank should not be exempt from BAAQMD/SIP 8-5. Therefore, BAAQMD Regulation 8-2 applicability has been deleted and BAAQMD 8-5/SIP 8-5 applicability has been added.
  - Deleted Condition 20762 because tank is not exempt from BAAQMD 8-5 per 8-5-117 (see above)
- Table VII-J29
  - Table VII -J31.1 consolidated into Table VII -J29 because these sources have similar regulatory applicability.
- Table IV-J30
  - Permit Condition 20762 added because it applies to S-158 (TK 2902).
- Table VII -J31.1
  - Deleted because Table VII -J31.1 consolidated into Table VII -J29. See above "Table VII -J29".
- Table VII-J32
  - Table VII-J33 consolidated into Table VII -J32 because these sources have similar regulatory applicability. These tanks will have slotted guidepoles.
- Table VII -J33
  - Deleted because Table VII -J33 consolidated into Table VII -J32. See above "Table VII -J32".
- Table VII-J36
  - Deleted table and move S-131 to Table VII-H7 based on A/N NSR 19634/ Title V 19636
- Table VII-J37
  - Moved table and S-150 to Table VII-H7 based on A/N NSR 19634/ Title V 19636
- Table VII-J38
  - Revised Title Block based on A/N NSR 15934/TV 19793 that added A-65 thermal oxidizer
  - Revised to incorporate A65 monitoring requirements and changes to Condition 11880 based on A/N NSR 15934/TV 19793 that added A-65 thermal oxidizer
  - Add Temperature CPMS and Flow CPMS as appropriate for continuous parametric monitoring requirements
- Table VII-J39
  - Moved table and move S-199 to Table VII-H8 based on A/N NSR 19634/ Title V 19636
  - Moved S-200 to Table VII-H7 based on A/N NSR 19634/ Title V 19636
- Table VII-J40
  - Revised Title Block based on A/N NSR 15934/TV 19793 that added A-65 thermal oxidizer

  - Revised to incorporate A65 monitoring requirements and changes to Condition 11880 based on A/N NSR 15934/TV 19793 that added A-65 thermal oxidizer
  - Add Temperature CPMS and Flow CPMS as appropriate for continuous parametric monitoring requirements
- Table VII-J41
  - Added BAAQMD Regulation 8, Rule 2, deleted BAAQMD Regulation 8, Rule 5 and 40 CFR, Part 60, Subpart Kb based on final evaluation for A/N NSR 19634/ Title V 19636
- Table VII-J42
  - Changed title from LPG Pressurized Spheres to Liquefied Organic Gas Storage
  - Added D-1907, methyl mercaptan pressure tank
- Table VII-K1
  - Added new version of Condition 11879, and deleted Conditions 11882, 11888 and 13319 and old version of 11879. Modification based on A/N NSR 16938 that consolidated Conditions 11879, 11882, 11888 and 13319 into 11879.
  - Added monitoring requirements for BAAQMD and SIP Regulations 8-8-304, 8-8-305, and 8-8-305.2 based on A/N NSR 19634/ Title V 19636
  - Deleted NSPS Subpart J H2S fuel gas monitoring. Recent updates to NSPS J clarified that the definition of fuel gas does not include vapors from wastewater treatment units, see A/N 18165
  - Added A-65 to NMHC mass emissions limit based on A/N NSR 15934/TV 19793 that added A-65 thermal oxidizer
  - Add Temperature CPMS and Flow CPMS as appropriate for continuous parametric monitoring requirements
- Tables VII-K2, VII-K3, VII-K4
  - Added new tables for wastewater abatement devices A65, A37, and A36 based on A/N NSR 15934/TV 19793 that added A-65 thermal oxidizer

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 IV of the permit.

Changes to permit:

- Incorporate rule update (renumbering) and SIP for BAAQMD Regulation 6, Rule 1
- Incorporate rule update for BAAQMD 8-5 and SIP 8-5
- Incorporate test method for 60.10(c), A/N 18165.
- Removed row for 60.482-3 because had no associated method
- Added test methods for new regulation 40 CFR, Part 60, Subpart VVa
- Added additional test method allowed by 40 CFR, Part 60, Subpart GGG 60.593(d) for the 40 CFR, Part 60, Subpart VV light liquid service determination for Subpart GGG equipment

IX. Permit Shield:

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

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

This facility has the first and second types of permit shield.

Changes to permit:

- Table IX-A-4 for S-5/FCCU
  - Delete permit shield because source is now subject to NSPS Subpart J per Consent Decree, A/N 18165
- Table IX B-1
  - Delete entire permit shield for 40 CFR, Part 60 ,Subpart QQQ because it is not correct. Individual drain systems installed after the effective date of Subpart QQQ are subject to QQQ as documented in new Tables IV-H9 and Tables VII-H9. Each oil-water separator at the facility that is subject to Subpart QQQ is also subject to 40 CFR, Part 63, Subpart CC and complies with 40 CFR, Part 61, Subpart FF as required for Group 1 wastewater streams. Each OWS is therefore exempt from Subpart QQQ in accordance with the overlap in Subpart CC at 63.640(o)(1) as documented in the source-specific tables for the affected sources.
- Tables IX-B-2, IX-B3, and IX-B4
  - Condition 10574, Part 19, redundancy between Condition 10574, Part 19 and BAAQMD Reg 9-10-502.2 determined to be acceptable, therefore the permit shield is no longer necessary
- Table IX B-9
  - Deleted permit shields for 40 CFR, Part 61, Subpart J and 40 CFR, Part 61, Subpart V because they are incorrect. The overlap in 40 CFR, Part 63, Subpart CC for equipment leaks (at 63.640(p)) applies only to the equipment listed in both 63 Subpart CC and 61 Subpart J. Equipment listed in 61 Subpart J and not in 63 Subpart CC (connectors, surge control vessels, and bottoms receivers) is subject to 61 Subparts J and V as documented in the revised fugitive matrix table (Table IV-I0) and the fugitive components tables (Tables IV-I1 and VII-I1).

X. Revision History

The revision history was updated.

XI. Glossary

Changes to permit

Definitions from Condition 19177 that applied to sources other than the Cogen unit were moved to the Glossary.

XII. Appendix A - State Implementation Plan

Changes to permit:

This section has been deleted. The address for EPA's website is now found in Sections III and IV.

D. Alternate Operating Scenarios:

No alternate operating scenario has been requested for this facility.

E. Compliance Status:

An inter-office memorandum from the Director of Compliance and Enforcement, to the Director of Permit Services, presents a review of the compliance record of Site #: B2626. The Compliance and Enforcement Division staff has reviewed the records for Valero Refining Company for the period between December 1, 2003 through September 30, 2009. This review was initiated as part of the District evaluation of an application by Valero Refining Company for a Title V permit. The BAAQMD compliance report is provided in Appendix A below.

The Compliance status report was again updated to include the enforcement review records for the period between September 30, 2009 through October 31, 2010.

APPENDIX A

BAAQMD COMPLIANCE REPORT

December 15, 2010

TO: BRIAN BATEMAN – DIRECTOR OF ENGINEERING

FROM: KELLY WEE – DIRECTOR OF ENFORCEMENT RAW for K. Wee

SUBJECT: REVIEW OF COMPLIANCE RECORD OF:

VALERO REFINING COMPANY – SITE #B2626

Background

This review was initiated as part of the District evaluation of an application by Valero Refining Company for a Title V Permit Renewal. It is standard practice of the Compliance and Enforcement Division to undertake a compliance record review in advance of a renewal of a Title V Permit to Operate. The purpose of this review is to assure that any non-compliance problems identified during the prior five-year permit term have been adequately addressed by returning the facility to compliance, or, if non-compliance persists, that a schedule of compliance is properly incorporated into the Title V permit compliance schedule. In addition, the review checks for patterns of recurring violation that may be addressed by additional permit terms. Finally, the review is intended to recommend, if necessary, any additional permit conditions and limitations to improve compliance.

Compliance Review

Staff reviewed Valero Refining Company Annual Compliance Certifications for December 1, 2003 to October 31, 2010 and found no ongoing non-compliance and no recurring pattern of violations.

The District has conducted a compliance review of 158 Notices of Violation (NOVs) issued to Valero Refining Company from December 1, 2003 to October 31, 2010. While the petroleum refining facility received a number of violations over this 6.8-year period, for facilities as large, complex and heavily regulated as a petroleum refining facility within the Bay Area Air Quality Management District's jurisdiction, violations are likely to occur. It is important to note that all of the violations associated with the NOVs were in compliance at the time of this review. Furthermore, the District's analysis of the NOVs for the 6.8-year period indicated that there no ongoing violation or pattern of recurring violations that would currently require a compliance schedule.

Understanding how the District handles the violations associated with the NOVs is important to understanding how the District evaluated the facility's compliance status. Whenever the District discovers a violation, it begins a two-step process. The first step is to end the violation and bring the alleged violator back into compliance. Once compliance is achieved, the second step is to proceed with penalty assessment. It is District policy to not proceed with penalty assessment until compliance has been achieved. If a facility has not achieved compliance in a timely fashion, the District proceeds with additional enforcement action. The vast majority of Notice of Violation penalties are resolved through settlement negotiations.

The results of the District's compliance review are shown in Table I. As stated above, the 187 violations associated with the 158 NOVs were in compliance at the time of this review. In 71% of the violations, compliance was achieved within 1 day of occurrence. In the remaining 29% of the violations, the violations achieved compliance shortly after discovery but did not represent ongoing violation that would require a compliance schedule in a Title V permit. In some cases, permit condition modifications have been made to address permit violations during the review period. There were several sources that had multiple violations. The violations did not indicate recurrent patterns of violation because investigations into the cause of the violations revealed unrelated causes.

Of the 158 NOVs issued, about 70% of the violations resulted from the facility self-reporting, pursuant to District Regulations and Title-V requirements. Based on this review and analysis of all the violations for the 6.8-year period, the District has concluded that no schedule of compliance or change in permit terms is necessary beyond what is already contained in the petroleum refining facilities Title V permit, as the record showed that the violations returned to compliance, were intermittent or did not evidence on-going non-compliance, there are no pattern of recurring violation, and the facility was in compliance at the time of this review.

The violation details associated with the 158 Notices of Violation (187 violations) are summarized below and detailed in Table 1.

Violation Category	TOTAL
Emissions Related	142
Administrative	45
Permit to Operate	0
TOTAL	187

District Staff has conducted a compliance review of 15 Notice to Comply (NTC's) issued to Valero from December 1, 2003 through October 31, 2010. The District may use the

NTC to achieve compliance by using enforcement action appropriate to the severity of the violation. In most cases, these violations involve procedural, administrative, or recordkeeping omissions that did not conceal a violation or were de minimis emissions. During this reporting period none of the NTC's resulted in the issuance of a Notice of Violation for failing to correct a minor NTC violation.

Staff also reviewed additional District compliance records for Valero Refining Company for December 1, 2003 to October 31, 2010. During this period Valero Refining Company activities known to the District include:

The District received two hundred two (202) air pollution complaints alleging Valero Refining Company as the source. One hundred one (101) of these complaints were confirmed.

The District received three hundred nineteen (319) notifications for Reportable Compliance Activities (RCA)[1]: twenty-four (24) breakdown requests, one hundred seventy-eight (178) indicated monitor excesses, one (1) Pressure Relief Valve venting and one hundred thirteen (113) in-operative monitor reports. Sixty-one (61) of the RCAs resulted in NOVs.

The District processed six (6) dockets for variances and permit appeals, before the District's Hearing Board. There are currently four variances related to revisions of Title-V Permit pending final resolution.

- Docket # 3444, # 3454, # 3486 and # 3531 were all filed as appeals to the various revisions of the Title-V Permit. These matters were continued and handled through resolution of issues with permit.
- Docket # 3547 was filed for variance of 8-5-304.4, 328. This variance was withdrawn by Valero Refining Co and NOV 49957A was issued for regulation 8-5-304.4.
- Docket # 3550 was filed for variance of permit conditions. This variance was granted.

The District did not enter into any enforcement agreements or any abatement orders with Valero Refining Co.

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[1] Reportable Compliance Activity (RCA), also known as "Episode" reporting, is the reporting of compliance activities involving a facility as outlined in District Regulations and State Law. Reporting covers breakdown requests, indicated monitor excesses, pressure relief device releases, inoperative monitor reports and flare monitoring.

Conclusion

The Compliance and Enforcement Division has made a determination that for the review period Valero Refining Company was in intermittent compliance. There is no evidence of on-going non-compliance and no recurring pattern of violations that would warrant consideration of a Title V permit compliance schedule or additional permit terms. The Division does not have any recommendations for any additional permit conditions and limitations and to improve compliance beyond what is already contained in the Title V Permit under consideration.

KJW, RL, RP, EJG

V#	S#	Occur	Issued	Reg.	Violation comments	Compliance Achieved	Basis for no compliance schedule
A46271A	163	1/1/04	9/17/04	8-5-403	TK-1732 had PV valve that wasn't in fugitive emissions monitoring database.	1/1/2004	This administrative violation was corrected on the same day, by adding P/V to the monitoring list.
A45569A	2	1/4/04	3/4/04	9-1-307	E-05B41 SO2 > 250 ppm 1 hr avg. Sulfur Recovery Unit tripped on high pressure resulting in an SO2 concentration of 1,200 ppm	1/4/2004	This violation was corrected on the same day, after a process upset was corrected. There was significant oil carried over into the sour water stripper on start-up while going to the main refinery stack.
A46845A	129	1/20/04	2/17/05	1-523.5	Failure to Maintain HC Parametric Monitor during marine loading events	3/31/2004	This administrative violation occurred on each of the 4 dates in 2004; 1/20, 2/23, 3/9 & 3/21/2004.
A45575A	26	1/21/04	4/22/04	1-523.3	Late reporting of E-04B69 and E-04B70	1/21/2004	This was an administrative violation, related to the late reporting of two parametric monitor excesses. Though they were late, the indicated excesses were reported to the District
A45567A	60	2/3/04	2/5/04	8-5-320.3	Two vacuum breakers with gap> 1/8"	2/3/2004	This violation was corrected on the same day by replacing the gaskets on the two vacuum breakers.
A46254A	18	2/17/04	5/26/04	12-11-502.2	Sample not taken within 30 minutes of flaring.	2/17/2004	This violation occurred on one day, and was for failing to follow administrative procedures for taking flare gas samples.
A45571A	87	3/17/04	3/23/04	8-5-320.3	Slide plate on center column well was stuck above the floating roof.	3/17/2004	This violation was corrected on the same day by re-installing the gasketed cover around the center column opening of the tank.
A45572A	89	3/17/04	3/23/04	8-5-320.3	Guide pole float was found to be too short to cover the gap between the slide plate and the slot in the guide pole.	3/17/2004	This violation was corrected on the same day by installing a longer float inside the gauge well on the tank.
A45573A	91	3/17/04	3/23/04	8-5-320.3	Visible gap was found on 25% of the gauge well, and gasket was missing.	3/17/2004	This violation was corrected on the same day by installing a new gasket around the gauge well of the tank.

V#	S#	Occur	Issued	Reg.	Violation comments	Compliance Achieved	Basis for no compliance schedule
A45574A	80	3/22/04	3/23/04	8-5-320.4	2" thermo well was discovered to have 1/2" holes spaced vertically along the well.	3/22/2004	This violation was corrected on the same day by sealing tank gaps on the solid gauge well and thermo well.
A46255A	18	3/26/04	5/26/04	12-11-502.3	Flare sample not caught every 3 hours during flaring event.	3/26/2004	This violation occurred on one day, and was for failing to follow administrative procedures for taking flare gas samples. This was corrected by completing the installation of an auto-sampling system.
A46847A	131, 150, 193, 196, 205, 206	3/31/04	3/4/05	2-6-307	Missed quarterly P/V valve inspections (1Q04; 3Q04)	9/30/2004	This administrative violation was corrected on the same day by adding the P/V to the monitoring list. Valero was inspecting per 8-5 and failed to follow permit conditions 11879 & 11888. PV valves included in quarterly program.
A46259A	105	4/1/04	7/1/04	8-5-305.5	Liquid product was removed from the roof the same day it was discovered; Tk1796	4/1/2004	This violation was corrected on the same day by cleaning up the product on top of a floating-roof tank.
A46259B	105	4/1/04	7/1/04	2-6-307	Title V deviation not reported within 10-days of discovery	4/1/2004	This was an administrative violation, related to the late reporting of a Title-V deviation. Though the deviation was late, it was still reported to the District.
A46257A	81	5/7/04	6/29/04	8-5-321.4	3 gaps >1/2 inch on primary seal	5/7/2004	This violation was corrected on the same day by patching the three gaps on the primary seal of the tank.
A46838A	193,196	5/7/04	1/20/05	8-5-306	Tks-2027 & 2077 Abatement efficiency <95%	6/30/2004	This violation was corrected on each day of occurrence, (41 occurrences), when pressure no longer caused vents to open. On 6-30-04, water was drained from condensate line.
A46267A	220	5/27/04	9/3/04	2-6-307	E-04E20 NOx > 10 ppm / 3 hr avg.	5/27/2004	This violation was corrected on the same day by placing the furnace parameters back to automatic computer control. The repeat violations occurred more than 6 months apart from each other.

V#	S#	Occur	Issued	Reg.	Violation comments	Compliance Achieved	Basis for no compliance schedule
A46264A	Tanks	6/1/04	8/6/04	8-5-404	Late Certification (38 tanks in 2003/19 tanks in2004)	6/1/2004	This was an administrative violation which came into compliance on the same day of notification, for the late submittal of 57 tank certification reports, that were due in 2003 and 2004.
A46839A	173	6/30/04	1/21/05	2-6-307	Missed the semi-annual source test for Coker Furnace F-901	11/19/2004	This was an administrative violation related to failure to conduct sources test. Compliance achieved when 2nd source test completed.
A46261A	124	7/14/04	7/23/04	8-5-306	24-inch flange not gas-tight; leaking at 5000 ppm tk-1735	7/14/2004	This violation was corrected on the same day by tightening and sealing the leak.
A46270A	150	7/21/04	9/17/04	8-5-306	Tk.-2051 had leaking hatch with a missing gasket.	7/22/2004	This violation was corrected within two days by replacing a missing hatch gasket on the tank. Permit Application (#20690) submitted 6/3/09 to change Permit to Operate.
A46272A	77	7/27/04	9/20/04	8-5-322.5	TK-1738 had gap of > 0.06" ~ 50% of tank circumference.	7/27/2004	This violation was corrected on the same day by temporarily sealing the gaps in the secondary seals of the tank. Additionally, this entire seal was later replaced.
A46273A	30	8/3/04	9/20/04	1-522.4	Late notification of inoperative monitor (04F48)	8/3/2004	This was an administrative violation, related to the late reporting of an in-operative monitor. Though it was late, the inoperative monitor episode was reported to the District
A46841A	55	8/8/04	2/9/05	8-5-403	Missed first semi-annual P/V valve inspection in 2004.	12/9/2004	This administrative violation was corrected on the same day by adding a P/V to the P/V valve tank monitoring list.
A46268A	None	8/18/04	8/31/04	8-18-301	8 open ended lines leaking >100 ppm	8/18/2004	This emissions violation was corrected on the same day, by re-installing plugs on the open-ended line.
A46274A	1030, 1031	9/8/04	11/24/04	2-6-307	E-04G24 - NOx > 2.5 ppm 3 hr avg. Gas Turbine/Steam Generator (GT/SG)	9/8/2004	This violation was corrected on the same day by restarting the ammonia vaporizer to lower the NOx emissions.
A46827A	GLM #2	9/9/04	12/6/04	1-510	Failure to maintain GLM - operated outside temp.	9/9/2004	This was an administrative violation for failing to repair a GLM air conditioner, in a

V#	S#	Occur	Issued	Reg.	Violation comments	Compliance Achieved	Basis for no compliance schedule
					range.		timely manner.
A46828A	18	9/12/04	12/9/04	12-11-502.3	Failed to obtain 8 flare samples on 4 days	10/5/2004	This violation was corrected within a four day period and was for failing to follow administrative procedures for taking flare gas samples. This violation was corrected by reviewing the proper operating procedures, with operations staff, for the new auto-sampling system.
A46269A	1004	9/15/04	9/15/04	8-18-301	Open ended line leaking > 100 ppm.	9/15/2004	This violation was corrected on the same day by installing a plug on an open ended line.
A46275A	5	10/7/04	11/24/04	1-522.7	Reg. 1-522.7 for late reporting RCA	10/7/2004	This was an administrative violation, related to the late reporting of a monitor excess. Though it was late, the indicated monitor excess was reported to the District
A46275B	5	10/7/04	11/24/04	6-302	E-04G89 opacity >30%/3 minutes	10/7/2004	This violation was corrected on the same day by completing the shutdown of two furnaces for maintenance.
A46837A	2	10/30/04	1/20/05	6-1-302	E--04H40 & 04H43 Opacity > 30% 3 minutes	11/1/2004	These violations were corrected on the same day when Valero extinguished the sulfur fires at the unit.
A46842A	6	11/7/04	2/17/05	6-1-302	E-04H63 opacity >30% / 3 minutes.	11/8/2004	This violation was corrected within two days when coke loading activity ended.
A46834A	220	11/10/04	1/11/05	2-6-307	E-04H67 CO >28 ppm / 8 hr. avg.	11/10/2004	This violation was corrected on the same day when the furnace was adjusted. The CEM alarmed had been disabled during maintenance and not reactivated. Operators not aware alarm was disabled. Not recurrent.
A46849A	21	11/10/04	3/28/05	2-6-307	E-04J85 NOx > 60 ppm /24Hrs.	11/11/2004	This violation was corrected within two days, after furnace start up, and after it was reported.
A46849B	21	11/10/04	3/28/05	1-522.7	Late reporting E-04J85	11/11/2004	This was an administrative violation, related to the late reporting of a monitor excess. Though it was late, the indicated monitor excess was reported to the District

V#	S#	Occur	Issued	Reg.	Violation comments	Compliance Achieved	Basis for no compliance schedule
A46835A	23	11/11/04	1/14/05	2-6-307	E-04H78 NOx > 40 ppm/8 hr. average	11/12/2004	This violation was corrected within two days when the pre-sulfiding operation was completed on furnace at startup.
A46840A	1030, 1031	11/12/04	2/9/05	2-6-307	E-04J40 NOx > 2.5 ppm 3 hr avg. GT/SG	11/13/2004	This violation was corrected within two days when the Co-Gen unit was restarted.
A46840B	1030, 1031	11/12/04	2/9/05	1-522.7	Late reporting E-04J40	11/13/2004	This was an administrative violation, related to the late reporting of a monitor excess. Though it was late, the indicated monitor excess was reported to the District
A46836A	237	11/13/04	1/14/05	2-6-307	E-04H79 NOx > 9 ppm / 3 hr avg.	11/13/2004	This violation was corrected on the same day when the ammonia flow on the SCR was restarted.
A47553A	1030, 1031	11/28/04	5/19/05	2-6-307	E-04L72 TRS > 100 ppm 24 hr avg. GT/SG	11/28/2004	This violation was corrected on the same day when Fuel gas excursion was corrected.
A47553B	1030, 1031	11/28/04	5/19/05	1-522.7	Late reporting E-04L72	11/28/2004	This was an administrative violation, related to the late reporting of a monitor excess. Though it was late, the indicated monitor excess was reported to the District
A46830A	207	12/7/04	12/9/04	8-5-320.3	Tk-1740 Vacuum Breaker open = 14",	12/7/2004	This violation was corrected on the same day after repairs made.
A46830B	207	12/7/04	12/9/04	8-5-322.5	Tk-1740 secondary seal gaps > 0.06"	12/7/2004	This violation was corrected on the same day after repairs made.
A46831A	150	12/15/04	12/16/04	8-5-303	4 hatches not gas-tight on 12/15/04.	12/15/2004	This violation was corrected on the same day when repairs were made on the dates of the occurrences. Permit Application (#20690) submitted 6/3/09 to change Permit to Operate
A46831B	150	12/15/04	12/16/04	8-5-306	Tk-2051 P/V valve leaking > 500 ppm.	12/15/2004	This violation was corrected on the same day when repairs were made on the dates of the occurrences. Permit Application (#20690) submitted 6/3/09 to change Permit to Operate
A46832A	131	12/15/04	12/16/04	8-5-306	Tk-2069 Hatch not gas tight.	12/15/2004	This violation was corrected on the same day when repairs made. Permit Application (#20690) submitted 6/3/09 to change Permit to Operate.

V#	S#	Occur	Issued	Reg.	Violation comments	Compliance Achieved	Basis for no compliance schedule
A46832B	131	12/15/04	12/16/04	8-18-301	Tk-2069 open-end line on flame arrestor leaking > 100 ppm	12/15/2009	This violation was corrected on the same day when repairs made, bringing sources into compliance.
A46843A	1030, 1031	12/20/04	2/17/05	2-6-307	E-04J53 NOx > 2.5 ppm 3 hr avg. GT/SG	12/20/2004	This violation was corrected on the same day when frayed wires repaired.
A46844A	1030, 1031	12/29/04	2/17/05	2-6-307	E-04J83 NOx > 2.5 ppm 3 hr avg. GT/SG	12/29/2004	This violation was corrected on the same day when ammonia vaporizer was restarted.
A46833A	129	1/5/05	1/6/05	8-18-301	3 explosion detector vents leaking > 10,000 ppm	1/5/2005	This violation was corrected on the same day by repairing leaks.
A46846A	1030, 1031	1/7/05	3/4/05	1-522.7	Late reporting E-04K01	1/7/2005	This was an administrative violation, related to the late reporting of a monitor excess. Though it was late, the indicated monitor excess was reported to the District.
A46848A	89	3/3/05	3/4/05	8-5-320.3	Guide pole float was found to be too short to cover the gap between the slide plate and the slot in the guide pole.	3/3/2005	This violation was corrected on the same day by installing a longer float inside the gauge well on the tank.
A47552A	160	3/29/05	5/19/05	8-2-301	Total hydrocarbon > 300 ppm and > 15 lbs/day {Dev. 211}	3/31/2005	This violation was corrected on 04/07/05, when the seal oil sparger was shutdown. However, since the violations are based on source test results, only the days documented by a source test are cited as days of violation. (One day violations for each test day, per District policy)
A47606A	1030, 1031	3/31/05	2/15/06	Reg. 10	10-40 CFR 60.105(a)(4) - Failure to perform RATA.	3/31/2005	This administrative violation was in compliance when notification was made.
A45790A	83	4/13/05	4/13/05	8-5-322.5	3 Gaps> .06" for 3", 2" - Total 8"	4/13/2005	This violation was corrected on the same day when the seal was repaired.
A45799A	25	6/1/05	6/2/05	1-522.4	Late notification of inoperative monitor (04N00)	6/1/2005	This was an administrative violation, related to the late reporting of an in-operative monitor. Though it was late, the inoperative monitor episode was reported to the District

V#	S#	Occur	Issued	Reg.	Violation comments	Compliance Achieved	Basis for no compliance schedule
A47603A	18	7/19/05	2/15/06	12-11-502.3	Two flare gas samples not taken on 7/19 & 7/25.	7/27/2005	This violation occurred on two days, and was for failing to follow administrative procedures for taking flare gas samples. These violations occurred on 7/19 and 7/25 due to operator error of the sampling system. The violation was corrected by reinforcing operator training of the sampling procedures.
A47801A	23	8/30/05	9/1/05	8-18-301	Equipment leak at pilot aspirator near tag#1062 and #1450	8/30/2005	This violation was corrected on the same day by blocking in the pilot aspirator stopping the leak. The aspirator was repaired the next day and returned to service.
A47803A	35	9/12/05	11/18/05	2-6-307	Source Test F-2906 CO > 400 ppm, OS-1204	10/12/2005	This violation was corrected on the same day after operations adjusted the furnace efficiency.
A47815A	193, 196, 205, 206-A36,131, 150, 194, 195, 197, 198, 199, 200-A37	10/31/05	5/17/06	2-6-307	>15 lb/day avg. NMHC emissions over the month of October 2005	10/31/2005	This violation was corrected and in compliance at the conclusion of the reporting period. This excess occurred when the A36, A37 carbon canisters experienced a high dose of NMHC resulting in both units experiencing break through above the permitted limits.
A47821A	1030, 1031	11/26/05	11/7/06	2-6-307	E-04R27 NOx > 2.5 ppm 3 hr avg. GT/SG	11/25/2005	This violation was corrected on the same day when the furnace was temperature problem was corrected.
A47819A	1030, 1031	12/8/05	8/29/06	2-6-307	E-04R61 NOx > 2.5 ppm 3 hr avg. GT/SG	12/8/2005	This violation was corrected on the same day when Valero re-started the ammonia injection system.
A49061A	239	12/31/05	5/22/07	2-6-307	Exceeded 2005 throughput limit at the dock sump (marine wharf)	1/18/2007	This violation was for one day and was corrected on 01/18/07 when a throughput increase was approved by the District

V#	S#	Occur	Issued	Reg.	Violation comments	Compliance Achieved	Basis for no compliance schedule
							Engineering Services Division.
A49065A	1030, 1031	12/31/05	5/22/07	2-6-307	>.7 ton /yr. Sulfuric Acid Mist for 2005 P/C 19177-20	1/1/2006	This violation was corrected and in compliance at the conclusion of the reporting period. The violation was documented for the previous four quarters in 2005.
A49065B	1030, 1031	12/31/05	5/22/07	2-6-307	Title V deviation not reported within 10-days of discovery	1/1/2006	This was an administrative violation, related to the late reporting of a Title-V deviation. Though the deviation was late, it was still reported to the District.
A49058A	220	1/4/06	5/2/07	2-6-307	E-04S22 CO > 728 ppm	1/4/2006	This violation was corrected on the same day when the CO emissions at S #220 fell below the limit. This was the result of a process upset.
A47604A	103	1/31/06	2/15/06	8-5-305	2-5 gallons. Product found on top of Tk. 1793	1/31/2006	This violation was corrected on the same day when the tank product was cleaned off the roof.
A47822A	18,19	2/17/06	11/7/06	12-11-502.3	Failure to capture 3 flare samples during process unit shutdowns for maintenance	2/17/2006	This violation occurred on three days and was for failing to follow administrative procedures for taking flare gas samples. A sample was missed on 2/17, 2/18 and 2/19/06. Samples were not taken due to operator error of the sampling system.
A47820A	18	3/1/06	11/3/06	12-11-502.3	Two flare gas sample not taken on 3/1 & 3/13.	3/13/2006	This violation occurred on two occasions for failing to follow administrative procedures for taking flare gas samples. These violations occurred on 3/1 and 3/16 due to operator error of the sampling system. The violation was corrected by reinforcing operator training of the sampling procedures.

V#	S#	Occur	Issued	Reg.	Violation comments	Compliance Achieved	Basis for no compliance schedule
A47820A	18,19	3/1/06	11/3/06	12-11-502.3	Flare gas samples not caught w/in 30 min.	3/13/2006	This violation occurred on two separate days and was for failing to follow administrative procedures for taking flare gas samples. A sample was missed on 3/1 and 3/13/06. Samples were not taken due to operator error of the sampling system.
A49056A	23	3/2/06	5/2/07	2-6-307	E-04T16 NOx > 40 ppm 8hr. Avg	5/2/2007	This violation was corrected on the same day when NOx emissions fell below 40 ppm @ 3% O2/8hr. avg. limit.
A49056B	23	3/2/06	5/2/07	1-522.7	Late reporting E-04T16	5/2/2007	This was an administrative violation, related to the late reporting of a monitor excess. Though it was late, the indicated monitor excess was reported to the District
A49057A	21, 22, 23, 220	3/4/06	5/2/07	2-6-307 Reg 10 40CFR60.104 (a)(1)	E04T08 & 04T10 H2S > 160 ppm 3 hr avg. > 100 ppm 24 hr avg.	3/4/2006	This violation was corrected on the same day when the emissions fell below 160 ppm 3 hr avg and 100 ppm 24 hr avg. The MEA regenerator (T-1203) suddenly became plugged causing high H2S.
A47817A	81	6/6/06	6/6/06	8-5-321.4	Tk-1753 missing 20' of primary seal; >5% of circ.	6/7/2006	This violation was corrected within two days by installation of new sections of the primary seal
A49053A	193, 196,205, 206 abated byA36	6/9/06	5/22/07	2-6-307	WWTP Carbon A36 not replaced when breakthrough documented/operator error	7/7/2006	This violation was corrected after the carbon canister change outs on four days from 6-9-09 to 7-7-09.
A47818A	173	6/23/06	8/29/06	2-6-307	Source Test NOx > 40 ppm; OS#05-1531	6/23/2006	This violation was corrected on the same day. This source test is a one-day snapshot of emissions, and only documents a violation for one day.
A47823A	18,19	10/11/06	11/21/06	12-11-502.3	Flare Sample not taken within 30 min. of event.	10/11/2006	This violation occurred on one day and was for failing to follow administrative procedures for taking flare gas sample. Sample not taken due to operator error of the sampling system.
A46124A		11/21/06	6/21/07				

V#	S#	Occur	Issued	Reg.	Violation comments	Compliance Achieved	Basis for no compliance schedule
A49059A	193, 196, 205, 206-A36,131, 150, 194, 195, 197, 198, 199, 200-A37	11/30/06	5/22/07	2-6-307	>15 lb/day avg. NMHC emissions for the month of November 2006	12/1/2006	This violation was corrected and in compliance at the conclusion of the reporting period. Operator error caused the excess emission.
A49059B	193, 196, 205, 206-A36,131, 150, 194, 195, 197, 198, 199, 200-A37	11/30/06	5/22/07	1-523.3	Late reporting E-04Y11	12/1/2006	This was an administrative violation, related to the late reporting of a parametric monitor excesses. Though they were late, the indicated excess were reported to the District
A49064A	55	12/20/06	5/22/07	8-5-303.2	PV valve tk-2081 fugitive leak >500 ppm	12/21/2006	This violation was corrected within 2 days after the PV valve was repaired.
A49277A	5	1/19/07	7/11/07	2-6-307	E-04Y80 H2S >160 ppm in LPFG. T-1203 severe upset MEA and absorption reduction	1/19/2007	This violation was corrected on the same day by unplugging trays in T-1203. Although this did occur more than once, it was corrected during turnaround in 2008.
A46122A	193, 196, 205, 206-A36,131, 150, 194,	2/1/07	6/1/07	2/6/307	>15 lbs/day NMHC emissions over one month. Occurred over Jan Feb. Mar. 2007	4/4/2007	This violation was corrected after three months of ongoing excessive emissions. There was no identified source.

V#	S#	Occur	Issued	Reg.	Violation comments	Compliance Achieved	Basis for no compliance schedule
	195, 197, 198, 199, 200-A37						
A46125A	18,19	2/13/07	6/21/07	12-11-502.3	Flare sample not taken within 30 min. of event. Miscommunication between controller & Tech	2/13/2007	This violation occurred on one day, and was for failing to follow administrative procedures for taking flare gas samples. Sample not taken due to operator error of the sampling system. Proper procedures were reviewed.
A46120A	193, 196	2/20/07	2/22/07	8-18-301	Open end line on vapor line off diversion tanks leaking > 100 ppm.	2/20/2007	This violation was corrected on the same day by resealing the open-ended line to stop the fugitive emissions leak.
A46120B	193, 196	2/20/07	2/22/07	8-18-502	No inspection records of valve	2/20/2007	This administrative violation was corrected and the valve was added to the inspection program.
A49283A	1030, 1031	3/21/07	9/1107	2-6-307	E-04Z60 NOx > 2.5 ppm 3 hr. avg. GT/SG	3/21/2007	This violation was corrected on the same day by re-starting the ammonia vaporizer to lower the NOx emissions. The repeat violations occurred during the last two years, and for different problems.
A49284A	1030, 1031	4/24/07	9/19/07	2-6-307	E-05A07 TRS >100 ppm 24 hr rolling limit of Fuel gas.	4/25/2007	This violation was corrected within two days by adding sweetened natural gas to the fuel gas system.
A49278A	206	4/27/07	7/18/07	2-6-307	Title V deviation not reported within 10-days of discovery	5/8/2007	This was an administrative violation, related to the late reporting of a Title-V deviation. Though the deviation was late, it was reported to the District on 7/04/07.
A49278B	206	4/27/07	7/18/07	8-5-303.2	Tk-2076 PV valve leaking >500 ppm	5/8/2007	This violation was corrected within 12 days after the PV valve was repaired.
A46121A	1022	5/24/07	5/30/07	8-18-307	Liquid leak at MR-23 >3 drops /minute & > 100 ppm.	5/24/2007	This violation was corrected on the same day by removing the 1/2 inch open line and installing a plug in the sample port.

V#	S#	Occur	Issued	Reg.	Violation comments	Compliance Achieved	Basis for no compliance schedule
A49686A	129	6/1/07	6/26/08	8-28-406	2 PRVs on dockside vapor recovery not included in monitoring report	na	This violation involved unclear requirments in rule. Resolved through agreement that there was no violation but alternative monitoring would be performed
A49686B	129	6/1/07	6/26/08	8-28-503	2 dockside PRVs not monitored	na	This violation involved unclear requirments in rule. Resolved through agreement that there was no violation but alternative monitoring would be performed
A50281A	199	6/30/07	5/28/09	8-5-403	PV valve on Tk-2055 not inspected in 1st half 2007	6/30/2007	This administrative violation was corrected on the same day by adding a P/V to the monitoring list.
A49282A	2	8/1/07	8/9/07	8-18-401.2	Failed to inspect components quarterly	8/1/2007	This violation was administrative for fugitive emission monitoring related to not inspecting components. The violation was corrected the same day by tagging the valves and putting them into the inspection program.
A49282B	2	8/1/07	8/9/07	8-18-402.1	Components were not tagged	8/1/2007	This violation was administrative for fugitive emission components not tagged. The violation was corrected the same day by tagging the valves and putting them into the inspection program.
A49286A	18	8/9/07	11/20/07	12-11-502.3	Flare sample not taken within 30 mins. of episode	8/9/2007	This violation occurred on one day, and was for failing to follow administrative procedures for taking flare gas samples. This violation occurred due to operator error of the sampling system. The violation was corrected by reinforcing operator training of the sampling procedures.
A49288A	81	8/13/07	11/20/07	8-5-304.4	Liquid on roof; Tk1753	8/13/2007	This violation was corrected on the same day by cleaning the oil off the roof.
A49294A	1030, 1031	8/17/07	2/22/08	Reg 10 40CFR60.104 (a)(1)	E-05B63 H2S > 160 ppm 3 hrs avg. in LPFG system	8/17/2007	This violation was corrected on the same day by unplugging the nozzle of the stream control valve.

V#	S#	Occur	Issued	Reg.	Violation comments	Compliance Achieved	Basis for no compliance schedule
A49285A	18	9/14/07	10/19/07	12-11-506.1	Inop flare video recorder. Late report >24 hrs	9/15/2007	This was an administrative violation, related to the late reporting of an inop video recorder. Valero achieved compliance when they notified the District.
A49952A	21, 22, 23, 220	9/27/07	6/3/08	2-6-307	E-05C15 H2S > 160 ppm. P/C 10574 part 13	9/28/2007	This violation was corrected within two days when the plugged positioner nozzle on the steam control valve was repaired and MEA stripper reboiler returned to service.
A49295A	21	10/1/07	4/9/08	Reg. 10 40CFR60.104 (a)(1)	E-05C23 H2SS > 160 ppm 3 hr. avg.	10/1/2007	This violation was corrected on the same day, when excess ended. The MEA regenerator (T-1203) had some plugging issues and was later taken out of service to make repairs. No recurrent plugging has occurred after performing turnaround maintenance.
A49289A	16	10/17/07	11/20/07	12-11-506.1	Late notification of inop AGF flow meter	10/17/2007	This was an administrative violation, related to the late reporting of the inop flow meter. Valero achieved compliance when they notified District about inop monitor.
A49961B	1010	10/29/07	8/7/08	8-18-302.1	H2Unit valve leak not minimized within 24 hrs	8/7/2008	This violation was corrected within two days when valve was repaired.
A49961A	1010	11/8/07	8/7/08	2-6-307	Title V deviation not reported within 10-days of discovery.	1/25/2008	This was an administrative violation, related to the late reporting of a Title-V deviation. Though the deviation was late, it was still reported to the District on 1/25/08
A49300A	1030, 1031	11/26/07	6/3/08	2-6-307	E-05C86 CO > 6 ppm 3 hr avg. GT/SG	11/27/2007	This violation was corrected within two days when SG brought up to temperature.
A49951A	1030, 1031	11/26/07	6/3/08	2-6-307	E-05C87 NOx > 2.5 ppm 3 hr avg. GT/SG	11/26/2007	This violation was corrected on the same day when the Steam Generator was shutdown.
A49291A	74	11/28/07	11/29/07	8-18-307	Valve #79947 @ Tk. 1734. Liquid leak; HVN product	11/28/2007	This violation was corrected on the same day, when liquid leak was stopped.
A49956A	18	12/14/07	7/15/08	12-11-502.3	Flare Sample not taken within 30 minutes	12/14/2007	This violation occurred on one day, and was for failing to follow administrative procedures for taking flare gas samples. This violation was corrected when the second sample was analyzed.

V#	S#	Occur	Issued	Reg.	Violation comments	Compliance Achieved	Basis for no compliance schedule
A49963A	131	12/31/07	8/19/08	8-5-307.3	Tk-2069 PV valve leaking >500 ppm	1/3/2008	This violation was corrected within four days when the P/V vent was repaired bringing Valero into Compliance. Permit Application (#20690) submitted 6/3/09 to change Permit to Operate
A49296A	220	1/4/08	4/9/08	2-6-307	E-0547 CO > 28 ppm / 8hr avg.	1/4/2008	This violation was corrected on the same day when the dampers set to manual to control CO; ending excess; compliance achieved.
A49293A	104	1/8/08	1/17/08	1-301	Public odor complaints from Tk 1795; slop tank	1/8/2008	This violation was corrected when contents of the tank were drained.
A49957A	104	1/8/08	7/22/08	8-5-304.4	Slop oil on roof/roof sinking; Tk 1795	1/12/2008	This violation was corrected within five days when contents drained.
A49957B	104	1/8/08	7/22/08	8-5-328	Failed to degas tank	1/12/2008	tank filled with diesel fuel instead of degassing tank vapors. Valero informed of degassing requirements.
A49962A	21	1/26/08	8/7/08	1-522.4	Late notification of inoperative monitor	2/8/2008	This was an administrative violation, related to the late reporting of an in-operative monitor. Though it was late, the inoperative monitor episode was reported to the District
A49960A	Utilities C2101A 3rd stage	2/24/08	8/7/08	8-18-306.4	Leaking valve not monitored for mass emissions within 45-days of discovery (1/10/08)	4/16/2008	The valve was monitored on 4/16/08 and found below the major leaker standard. The mass emission was measured on 5/21/08 and was 8.3 lbs/day.
A49298A	3	2/28/08	5/14/08	2-6-307	P/C #19466.5 failure to run at least 4 of 5 ESP's cells	3/1/2008	This violation was corrected within two days when they brought up D and E cells.
A49953A	3	2/28/08	7/15/08	6-1-302	E-05E47opacity > 30% / 3 minutes, Coke carryover	2/28/2008	This violation was corrected the same day when the Coker operations were stabilized at lower rates and maintenance on the Coke Silos was completed and coke flow to the silos was normalized.
A49953B	3	2/28/08	7/15/08	6-1-304	E-05E47 opacity > 50% 3 minutes during soot blowing. Coke carryover	2/28/2008	This violation was corrected the same day when the Coker operations were stabilized at lower rates and maintenance on the Coke Silos was completed and coke flow to the silos was normalized.

V#	S#	Occur	Issued	Reg.	Violation comments	Compliance Achieved	Basis for no compliance schedule
A49954A	3	3/2/08	7/15/08	6-1-302	E-05E54 opacity > 30% / 3 minutes	3/3/2008	This violation was corrected on the same day when catalyst loading level reached the cyclone diplegs to seal the system.
A49954B	3	3/2/08	7/15/08	6-1-304	E-05E54 opacity > 50% / 3 minutes	3/2/2008	This violation was corrected on the same day when catalyst loading level reached the cyclone diplegs to seal the system.
A49955A	3	3/4/08	7/15/08	6-1-302	E-05E59 opacity > 30% / 3 minutes	3/4/2008	This violation was corrected on the same day when Valero repaired wiring on the precipitators.
A49960B	Utilities C2101A 3rd stage	3/5/08	8/7/08	2-6-307	Title V deviation not reported within 10-days of discovery	4/17/2008	This was an administrative violation, related to the late reporting of a Title-V deviation. Though the deviation was late, it was still reported to the District on 4/17/08.
A49964A	150, 196, 206	3/18/08	8/21/08	8-5-303.2	Tks. 2051, 2077, 2076 PV valves > 500 ppm.	3/25/2008	These violations ranged from two day to eight days and were corrected upon repair of the PV valves.
A49967A	60	3/25/08	8/21/08	8-5-303.2	Pontoon cover exceeded 100 ppm VOC limit	3/25/2008	This violation was corrected on the same day when the Pontoon cover was repaired.
A49299A	5	3/28/08	5/14/08	6-1-311	Source Test OS-2354 TSP >40 lb/hr. (67.1 lbs/hr)	3/28/2008	This violation was for one day of high particulate loading emissions as documented by a stack source test. Subsequent testing showed the stack to be in compliance.
A49965A	193, 196, 150, 205, 206	3/31/08	8/19/08	2-6-307	Tks 2027, 2077, 2051, 2026, 2076 PV Vents not inspected 1st Q08.	3/31/2008	This administrative violation was corrected on the same day when P/V valves were added to inspection program.
A49971A	1	4/21/08	11/4/08	9-2-301	E-05F32 H2S Excess GLM#2, 60 ppb	4/21/2008	This violation was corrected on the same day when the H2S excess ended after SRU A train was restarted.
A49975A	45	5/19/08	2/3/09	2-6-307	E-05G67 NOx > 9ppm 3hr. Avg; P/C #16386	7/8/2008	This violation was corrected within 51days after a vent cap was manufactured and installed abating emissions. On startup of S-37/SG-702 the swing door was partially stuck open allowing emissions.

V#	S#	Occur	Issued	Reg.	Violation comments	Compliance Achieved	Basis for no compliance schedule
A49958A	5	5/29/08	7/29/08	6-1-311	Source Test OS-2431 TSP > 40 lb/hr. (78 lbs/hr)	5/29/2008	This violation was for one day of high particulate loading emissions as documented by a stack source test. Subsequent testing showed the stack to be in compliance.
A49959A	Various	7/28/08	7/29/08	1-301	Odor from WWTP diversion tank and lift stations areas caused public nuisance.	7/28/2008	This violation was corrected on the same day when sump closed and odor abated.
A49690A	101	8/7/08	9/23/08	8-3-305.5	Oil leak on Internal Floating Roof (IFR) roof; tk 1791	8/12/2008	This violation was corrected within 6 days. There has been no resolution to the source of the problem.
A49691A	199	8/27/08	10/14/08	8-5-303.2	Tk-2055 P/V valves leaking > 500 ppm	9/5/2008	This violation was corrected within 10 days when the leaking PV vent was taken out of service, repaired and put back into service 9/5/08
A49692A	150	8/27/08	10/14/08	8-5-303.2	Tk-2051 PV valves leaking > 500 ppm	9/5/2008	This violation was corrected within 10 days when the leaking PV vent was taken out of service, repaired and put back into service 9/5/08. Permit Application (#20690) submitted 6/3/09 to change Permit to Operate
A49698A	247	9/30/08	2/10/09	2-6-307	Failure to meet P/C #22949 Pt.12 (CO).	10/1/2008	
A49693A	124	10/21/08	10/27/08	8-5-306.2	Tk-1735 PV valve leaking > 500ppm	10/21/2008	This violation was corrected on the same day when the leaking PV vent was taken out of service, repaired and put back into service 10/22/08.
A49974A	101	11/4/08	1/21/09	8-3-305.5	Oil leak on IFR roof; tk 1791	11/10/2008	This violation was corrected within seven days. There was been no resolution to the source of the problem.
A49973A	5,6	11/14/08	12/8/08	6-1-302	E-05J81 Opacity > 30% 3 minutes, electrical trip of ESP-A cell	11/14/2008	This violation was corrected on the same day when Technician reset A2 field in substation 31/32.
A50705A	247, 248	11/14/2008	10/20/2009	2-6-307	Source Test PM10 > 0.29 lbs/hr; OS#OS-2971	4/8/2009	This violation was corrected on the same day. This source test is a one-day snapshot of emissions, and only documents a violation for one day.

V#	S#	Occur	Issued	Reg.	Violation comments	Compliance Achieved	Basis for no compliance schedule
A50280A	131	12/2/08	5/28/09	8-5-303.2	Tk-2069 PV valve leaking > 500 ppm	12/2/2008	This violation was corrected on the same day when PV vents repaired. Permit Application (#20690) submitted 6/3/09 to change Permit to Operate
A49972A	1014	12/11/08	12/18/08	8-18-307	Open ended sample line leaking > 3 drops/minute and 100000 ppm	12/11/2008	This violation was corrected on the same day, by tightening the valve and installing a plug on the open-ended line.
A50713A	1031	1/9/2009	2/24/2010	2-6-307	CO concentrations from S-1031 exceeded the P/C limit.District P/C 19177 part 19d requires the carbon monoxide (CO) emissions at SG-4901 (S-1031) shall not exceed 6 ppmv CO at 15% oxygen in a consecutive 3 hour averaging period.	1/9/2009	This violation was corrected on the same day following the manual switch of the fuel to natural gas by Valero operations, sprint water was introduced to reduce NOx concentrations. The sprint water was removed and operations reduced the total electrical generation at Cogen to bring the CO concentrations into compliance.
A50288A	1030, 1031	1/15/09	10/6/09	2-6-307	E-05K66 CO > 6 ppm/3 hr. avg. GT/SG	1/15/2009	This violation was corrected on the same day when Valero started process gas to C-4901 and serviced the compressors.
A50276A	163	1/23/09	3/19/09	8-5-304.3	Tank roof above wall	1/23/2009	This violation was corrected on the same day when the roof was lowered to come into compliance with 8-5-304.3.
A50279A	5,6	1/24/09	5/28/09	1-522.4	Late notification of inoperative monitor (05K93)	1/24/2009	This was an administrative violation, related to the late reporting of an in-operative monitor. Though it was late, the inoperative monitor episode was reported to the District
A50290A	23	1/25/09	10/14/09	2-6-307	E-05K96 NOx > 40 ppm 8hr. Avg	1/25/2009	This violation was corrected on the same day after HCU start up completed.
A50289A	6	3/6/09	10/14/09	6-1-302	E-05L28 Opacity >30% / 3 minutes.	3/6/2009	This violation was corrected on the same day after repairs to Coker were completed
A50277A	1003	3/16/09	3/19/09	8-18-301	Open ended line at Sample stations HC-24 leaking > 100 ppm.	3/16/2009	This violation was corrected on the same day, when the partially open valve was closed, achieving compliance.
A50291A	1030, 1031	3/22/09	10/29/09	2-6-307	E-05L45 NOx > 2.5 ppm 3 hr. avg. GT/SG	3/22/2009	This violation was corrected on the same day after the ammonia flow was restored.

V#	S#	Occur	Issued	Reg.	Violation comments	Compliance Achieved	Basis for no compliance schedule
A50278A	1	4/6/09	4/28/09	1-301	H2S odorous release from refinery.	4/6/2009	This violation was corrected on the same day, when Sulfur unit was brought back on line after hydrocarbon contamination in MEA.
A50287A	2	4/6/09	9/24/09	9-2-301	H2S > 60 ppb/ 3min. at Crockett, East Refinery, Tormey	4/6/2009	This violation was corrected on the same day, when Sulfur train was brought back on line after hydrocarbon contamination in MEA.
A50292A	220	4/9/2009	11/17/2009	2-6-307	E-05L74 CO excess>28ppm@3% O2/8 hr avg P/C 10574	4/9/2009	This violation was corrected on the same day.
A50605A	1004	4/29/09	8/28/09	8-18-304.2	Open ended sample line leaking > 100 ppm.	4/29/2009	This violation was corrected on the same day when the open ended line was capped.
A50282A	101	5/16/09	5/28/09	8-5-305.5	Oil leak on IFR roof; tk 1791	5/16/2009	This violation was corrected on the same day when the roof was cleaned. There has been no resolution to the source of the problem. Valero is currently bypassing Tk. 1791.
A50283A	Various	5/16/09	5/28/09	1-301	Odor from WWTP off property	5/16/2009	This violation was corrected on the same day when the light ends went through the WWTP.
A50284A	131, 150, 191, 195, 197, 198, 199, 200-A37	5/20/09	6/2/09	8-18-301	Carbon Canisters A-37 at WWTP > 100 ppm.	6/20/2009	This violation was corrected when a portable Thermal Oxidizer was installed to abate emission. There were multiple days of violation during this 4 week period.
A50706A	247, 248	6/9/2009	11/3/2009	1-522.6	Failure to maintain accuracy of NOx mass. OS#OS-2971	11/3/2009	This violation was corrected on the same day. This source test is a one-day snapshot of emissions, and only documents a violation for one day.
A50708A	1010	6/30/2009	11/18/2009	2-6-307	Failure to perform quarterly tests on the deaerator vents at the hydrogen production facilities (S-1010) per	11/18/2009	This violation occurred on one day, and was for failing to follow administrative procedures.

V#	S#	Occur	Issued	Reg.	Violation comments	Compliance Achieved	Basis for no compliance schedule
					District P/C 15512.		
A49325A	18	7/6/09	8/11/09	12-11-502.3	Flare sample not collected with 3 hours of event.	7/6/2009	This violation occurred on one day, and was for failing to follow administrative procedures for taking flare gas samples. The flare sample had not been collected, technician collected manual sample.
A50704A	37	8/11/09	10/14/09	2-6-307	E-05N69 NOx >9 ppm 3hr. Avg. Clogged NH3 injector	8/11/2009	This violation was corrected on the same day when, the injection point was repaired and bypass removed.
A50707A	6	8/28/2009	11/3/2009	6-1-301	E-05N91 Opacity >30% / 3 minutes.	8/31/2009	This violation was corrected when the repairs were made to the side of the Coker and operation was resumed.
A50707B	6	8/28/2009	11/3/2009	1-522.7	Late reporting E-05N91	8/31/2009	This was an administrative violation, related to the late reporting of an CEM excess. Though it was late, the CEM excess was reported to the District
A50709A	81	10/13/2009	12/16/2009	1-301	A pipe used for sludge circulation at S-81 ruptured resulting in a total of 9 offsite odor complaints.	10/13/2009	This violation was corrected on the same day when the ruptured line was discovered and the pumping operation was ceased.
A50709B	81	10/13/2009	12/16/2009	2-6-307	Valero failed to submit a 10-day deviation after the District issued the Public Nuisance violation on December 16, 2009.	10/13/2009	This was an administrative violation, related to the late reporting of a Title-V deviation.
A50710A	188, 189, 192-199, 205, 206	10/15/2009	11/18/2009	1-523.1	Failure to report an inoperative (greater than 24 hours) flow monitor	10/15/2009	This was an administrative violation, related to the late reporting of an in-operative monitor. Though it was late, the inoperative monitor episode was reported to the District
A50710B	188, 189, 192-199, 205, 206	10/15/2009	11/18/2009	1-523.2	Valero failed to notify the District when the period of in-operation of the above mentioned flow monitor exceeded 15 days as stated by District regulation	10/15/2009	This was an administrative violation, related to the late reporting of an in-operative monitor. Though it was late, the inoperative monitor episode was reported to the District

V#	S#	Occur	Issued	Reg.	Violation comments	Compliance Achieved	Basis for no compliance schedule
					1 rule 523.2		
A50715A	Various	10/30/2009	2/24/2010	8-18-402.1	Self-reporting of fugitive emission components found to be misclassified by Valero Refining Company's Leak Detection and Repair (LDAR) contractor, Environmental Analytics (EA).	10/30/2009	This violation was administrative for fugitive emission monitoring related to not inspecting components. The violation was corrected the same day by tagging the valves and putting them into the inspection program.
A50715B	Various	10/30/2009	2/24/2010	8-18-401.2	Self-reporting of fugitive emission components found to be misclassified by Valero Refining Company's Leak Detection and Repair (LDAR) contractor, Environmental Analytics (EA).	10/30/2009	This violation was administrative for fugitive emission monitoring related to not inspecting components. The violation was corrected the same day by tagging the valves and putting them into the inspection program.
A50717A	131	12/10/2009	2/24/2010	1-523.1	Failure to report an inoperative (greater than 24 hours) flow monitor (WWF205)	12/10/2009	This was an administrative violation, related to the late reporting of an in-operative monitor. Though it was late, the inoperative monitor episode was reported to the District
A50717B	131	12/10/2009	2/24/2010	2-6-307	Valero failed to submit the 10-day deviation within 10 days of discovering the violation on December 12, 2009. This is a violation of Regulation 2 Rule 6 Section 307 (Regulation 2-6-307) Standard Condition F of the Title V permit.	12/10/2009	This was an administrative violation, related to the late reporting of a Title-V deviation. Though the deviation was late, it was still reported to the District
A50711A	92	12/19/2009	1/20/2010	8-5-304.4	Discovery of a oily sheen on the roof of tank 1771 (S-92)	12/19/2009	This violation was corrected on the same day by cleaning the oil off the roof.

V#	S#	Occur	Issued	Reg.	Violation comments	Compliance Achieved	Basis for no compliance schedule
A50714A	3	1/7/2010	2/24/2010	6-1-302	Failure to maintain operation of crude preheat furnace, F-101 (S-3) at the Fluid Catalytic Cracking Unit (FCCU), S-5, which resulted in venting of FCCU flue gases (H2S, CO, and particulate) from S-5 out of the emergency dump stack.	1/7/2010	This violation was corrected on the same day cleaning the plugged pitot tube in the furnace. As a result, the furnace was reset and flue gas was resumed at the furnace once the water seal level was restored at the dump stack.
A50718A	18, 19	1/7/2010	4/14/2010	12-11-502.3.1	Failure to collect an initial flare sample during a continuous flaring event within the required 15 minutes at Valero Refining Company (Valero), B2626, on January 7, 2010.	1/7/2010	This violation occurred on one day, and was for failing to follow administrative procedures for taking flare gas samples. The flare sample had not been collected, technician collected manual sample.
A50718B	18, 19	1/7/2010	4/14/2010	2-6-307	Failure to submit the Title V 10-day deviation notification within 10 days of discovering the violation on January 07, 2010. This is a violation of Regulation 2 Rule 6 Section 307 (Regulation 2-6-307) Standard Condition F of the Title V permit.	1/7/2010	This was an administrative violation, related to the late reporting of a Title-V deviation. Though the deviation was late, it was still reported to the District
A50716A	1,2,8,11, 233, 237	2/1/2010	2/24/2010	2-6-307	Failure to perform visible emission evaluation (VEE) on a monthly basis per P/C 19466 part 2 at the two Acid Gas Burners (S-1 & S-2), Coke Silos Primary Scrubber (S-8), Tank 2061 Activated Carbon Bin (S-11), Tank 2325 Brine Saturator (S-176), Electrostatic Precipitator	2/1/2010	This violation occurred on one day, and was for failing to follow administrative security procedures. As a result, a temporary variance was issued by Valero to allow contractor security access to the facility so visible emission testing could be performed.

V#	S#	Occur	Issued	Reg.	Violation comments	Compliance Achieved	Basis for no compliance schedule
					Fines Storage Bin (S-233), and Boiler, SG-1032 (S-237).		
A50720A	18, 19	2/22/2010	4/14/2010	12-11-502.3.1	Failure to collect an initial flare sample during a continuous flaring event within the required 15 minutes at Valero Refining Company (Valero), B2626, on January 7, 2010.	2/22/2010	This violation occurred on one day, and was for failing to follow administrative procedures for taking flare gas samples. The flare sample had not been collected, technician collected manual sample.
A50720B	18, 19	2/22/2010	4/14/2010	2-6-307	Failure to submit the Title V 10-day deviation notification within 10 days of discovering the violation on January 07, 2010. This is a violation of Regulation 2 Rule 6 Section 307 (Regulation 2-6-307) Standard Condition F of the Title V permit.	2/22/2010	This was an administrative violation, related to the late reporting of a Title-V deviation. Though the deviation was late, it was still reported to the District
A50719A	Various	3/5/2010	4/14/2010	8-18-401.2	Self-reporting of failure to inspect a pressure relief valve (PRV) and fugitive emission components found to be misclassified or undocumented by Valero Refining Company's Leak Detection and Repair (LDAR) contractors, Environmental Analytics (EA) and Summit Environmental (Summit).	3/5/2010	This violation was administrative for fugitive emission monitoring related to not inspecting components. The violation was corrected the same day by tagging the valves and putting them into the inspection program.

V#	S#	Occur	Issued	Reg.	Violation comments	Compliance Achieved	Basis for no compliance schedule
					These components were discovered during a 4th Quarter 2009 voluntary audit of Valero's LDAR program.		
A50719B	Various	3/5/2010	4/14/2010	8-18-403	Self-reporting of failure to inspect a pressure relief valve (PRV) and fugitive emission components found to be misclassified or undocumented by Valero Refining Company's Leak Detection and Repair (LDAR) contractors, Environmental Analytics (EA) and Summit Environmental (Summit). These components were discovered during a 4th Quarter 2009 voluntary audit of Valero's LDAR program.	3/5/2010	This violation was administrative for fugitive emission monitoring related to not inspecting components. The violation was corrected the same day by tagging the valves and putting them into the inspection program.
A50719C	Various	3/5/2010	4/14/2010	8-18-402.1	Self-reporting of failure to inspect a pressure relief valve (PRV) and fugitive emission components found to be misclassified or undocumented by Valero Refining Company's Leak Detection and Repair (LDAR) contractors, Environmental Analytics (EA) and Summit	3/5/2010	This violation was administrative for fugitive emission monitoring related to not inspecting components. The violation was corrected the same day by tagging the valves and putting them into the inspection program.

V#	S#	Occur	Issued	Reg.	Violation comments	Compliance Achieved	Basis for no compliance schedule
					Environmental (Summit). These components were discovered during a 4th Quarter 2009 voluntary audit of Valero's LDAR program.		
A50722A	16	5/19/2010	6/7/2010	1-301	Public nuisance by improper combustion of sour gas traveling to the Acid Gas Flare (S-16). Benicia Fire Department (BFD) and the District received a total of 8 complaints alleging either a "natural gas" or "sulfur" type odor from Valero which both BFD and the District inspector was able to trace back to Valero.	5/19/2010	This violation was corrected on the same day when Valero began base loading the acid gas flare (S-16) to increase the combustion of sour gas entering the flare and the odors ceased.
A50724A	5,6	6/17/2010	6/23/2010	6-1-302	Valero operations manually bypassing the crude preheat furnaces, F-101 and F-102 (S-3 & S-4) to prevent high temperatures in furnaces and elevated flue gas pressures. The bypass resulted in venting of Coker and FCCU flue gases (H2S, CO, and particulate) from S-5 and S-6 out of the emergency dump stack.	6/17/2010	This violation was corrected on the same day once Valero operations returned feed to the furnaces and the water seal level was restored at the dump stack.

V#	S#	Occur	Issued	Reg.	Violation comments	Compliance Achieved	Basis for no compliance schedule
A50723A	5,6	6/19/2010	6/23/2010	1-301	A public nuisance violation, Regulation 1 Section 301 (1-301), caused by an ongoing hydrocarbon release at the on the Coker Burner R-902 (S-6)	6/19/2010	This violation was corrected on the same day when Valero pulled feed from the Coker unit and sealed the open valve which was the source of the hydrocarbon release.
A50725A	5,6	6/19/2010	8/19/2010	1-301	A public nuisance violation, Regulation 1 Section 301 (1-301), caused by Valero operations manually bypassing the crude preheat furnaces, F-101 and F-102 (S-3 & S-4), to prevent high temperatures in furnaces and elevated flue gas pressures. The bypass resulted in venting of Coker and FCCU flue gases (H2S, CO, and particulate) from S-5 and S-6 out of the emergency dump stack.	6/19/2010	This violation was corrected when Valero decided to shutdown the Coker unit to cease the emissions.
A51426A	67 (NuStar B5574)	7/25/2010	9/9/2010	8-5-304.4	Oil on the roof of tank 1715 (S-67). The tank is permitted by NuStar but operated by Valero. Following the investigation performed by I-806, both Valero and I-806 made the determination that Valero was at fault since they operate the tank and it was their product being transferred to the tank. As a result,the NOV was issued to Valero.	7/25/2010	This violation was corrected on the same day applying foam over the oil to reduce offsite odors and cleaning the oil off the roof.

V#	S#	Occur	Issued	Reg.	Violation comments	Compliance Achieved	Basis for no compliance schedule
A51427A	67 (NuStar B5574)	7/25/2010	10/6/2010	1-301	A public nuisance violation, Regulation 1 Section 301 (1-301), caused by Valero operations manually opening a valve to tank 1715 which allowed light cracked slop oil to flow onto the roof of the tank resulting in odor complaints downwind.	7/25/2010	This violation was corrected on the same day applying foam over the oil to reduce offsite odors and cleaning the oil off the roof.

APPENDIX B

Permit Evaluations

For

5846 – Valero Improvement Project - Crude Tank
13009 – Ultra Low Sulfur Diesel Unit
15606 – Crude Unit Baseline POC Main Stack
15934 – A65 Thermal Oxidizer
16706 – S-237 Visible Emissions Monitoring
16707 – NOx Source Test Frequency (S-173, S-43, S-44, and S-46)
16866 – Ultra Low Sulfur Diesel Unit, Condition 22949 Mass Emissions Limits
16937 – Valero Improvement Project Admendments
17681 – Hydrogen Deaerator Vent
17876 – Butamer
18164 – Consent Decree, Subpart J, Approved Alternate Monitoring Plans
18292 – Emergency Diesel Engine
18582 – CARB Phase III
19634 – Reclassification of Waste Water Sources
19826 – BWON Modifications
20304 – Enhanced Vapor Recovery Phase II Upgrade
TV 16840 – Group Tanks Combined Throughput for NuStar Tanks

ENGINEERING EVALUATION
VALERO BENICIA REFINERY
PLANT NUMBER 12626

VALERO IMPROVEMENT PROJECT

PERMIT APPLICATION
NUMBER 5846

Bay Area Air Quality Management District
939 Ellis Street
San Francisco, California 94109

February 2003

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- Rolling Consecutive 365-day Average
- (1/1/00 to 6/30/02)

Appendix E – Light Ends Rail Rack Baseline (7/1/99 to 6/30/02)

VIP PROJECT DESCRIPTION

Introduction

The Valero Improvement Project (VIP) will implement a series of modifications and additions that are focused on four objectives:

1. Provide ability to process lower grades of raw materials
2. Provide flexibility to substitute raw materials
3. Optimize operations for efficient production of clean-burning fuels
4. Mitigate any impacts to avoid detrimental effects to the community

The plant modifications will include installation of new facilities and minor changes to existing facilities. These changes will be implemented over time. A significant portion of the work will be performed during the turn around periods scheduled for 2004 and 2009. The VIP will allow the refinery to continue to meet State mandates to produce clean-burning fuels in the California market while remaining economically competitive into the future.

The project, as proposed, also includes a scrubber that would reduce SO2 emissions from the main stack. The reductions due to this scrubber are not necessary for the approval of the rest of the project.

Project Description Overview

The VIP will modify and install typical refining equipment to modernize, optimize, and expand the operation of the Valero Benicia Refinery. The VIP will include the installation and modification of piping, heat exchangers, instrumentation, catalytic reactors, fractionation equipment, pumps, compressors, furnaces, storage tanks, and their associated facilities. Specific components of the VIP include the following:

- Fluid Catalytic Cracking Unit (FCCU) feed flexibility to process different feeds
- Coker Unit modification to process additional feed
- Increased sulfur removal and recovery capacity
- Additional crude oil processing capacity
- Additional crude tankage
- New and modified downstream/support facilities
- Flue gas scrubber in the Main Stack to reduce sulfur dioxide (SO_2) emissions

The new sources and existing sources impacted by the VIP are shown as follows:

New Sources

S-1034 through S-1045
Fractionation/Stripping Vessels
S-1046 Process Furnace: Vacuum Tower Preheat, F-102A, 240 MMBTU/hr; abated by A-1046 Selective Catalytic Reduction System
S-1047 Crude Oil Storage Tank: External Floating Roof, 650,000-barrel capacity
S-1048 Crude Oil Storage Tank: External Floating Roof, 650,000-barrel capacity
S-1049 through S-1056
Hydrofiner Reactors (includes Cat Feed Hydrotreater Guard Reactor)
S-1057 Pressure Swing Adsorption Unit

New Abatement Equipment

A-1046 Selective Catalytic Reduction System; abating NOx emissions from the S-1046 Process Furnace
A-1047 Amine Scrubber; abating SO2 emissions from S-4 CO Furnace F-102, S-6 Coker Unit and a portion of the S-5 FCCU unit.

Modified Sources

S-1 Claus Sulfur Plant 'A': F-1301A
S-2 Claus Sulfur Plant 'B': F-1301B
S-5 Fluid Catalytic Cracking Unit
S-8 Coke Silos
S-1003 Hydrocracking Unit
S-1004 Powerformer Unit
S-1006 Pipestill
S-1010 Hydrogen Plant
S-1012 Dimersol Unit

Altered Sources

S-3 CO Furnace F-101: 349.5 MMBTU/hr
S-4 CO Furnace F-102: 169.8 MMBTU/hr
S-6 Fluid Coker
S-67 Storage Tank: to be fitted with steam heating coils
S-68 Storage Tank: to be fitted with steam heating coils
S-72 Storage Tank: to be fitted with steam heating coils
S-1002 Diesel Hydrofiner
S-1005 Cat Feed Hydrofiner
S-1007 Alkylation Unit
S-1008 Virgin Naphtha Hydrofiner
S-1009 Jet Fuel Hydrofiner
S-1011 Heavy Cat Naphtha Hydrofiner

Refinery Fugitives

S-32102 Refinery Valves/Flanges
S-32103 Refinery Pumps/Compressors

Facilities Description

Table 1-3 provides a summary of the proposed new and modified facilities, followed by a brief narrative in Section 1.4 on the effect of the Valero Improvement Project (VIP) on facilities at the Benicia Valero Refinery (Plant # 12626).

Table 0-3. Summary of Valero Improvement Project

Process	VIP Change	New/Modified/Altered Emission Sources
Main Stack Complex (P-1)	• Modifications to carbon monoxide (CO) furnaces F-101 (S-3) and F-102 (S-4) • New scrubber (A-1047) including piping, scrubber and regenerator towers, blowers, small exempt on-site storage tanks for amine solution, heat exchangers, pumps, structural steel, and instrumentation • New furnace F-102A (S-1046) in vacuum tower preheat service (240 million British thermal units per hour [MMBtu/hr]) with A-1046 Selective Catalytic Reduction System.	CO Furnaces F-101 (S-3) and F-102 (S-4) modified but no increase in emissions Flue gas scrubber (A-1047) downstream of coker flue gas combusted in CO Furnace F-102 (S-4) Combustion emissions from new furnace (S-1046) routed to Main Stack (P-1)
Fluid Catalytic Cracking Unit (FCCU) (S-5)	• Total feed rate increase from 72 thousand barrels per day (kbbl/day) to 77 kbbl/day, annually (80 kbbl/day daily maximum) • Feed flexibility • Modifications to piping and vessel internals including regenerator (R-702), transfer lines, slide valves, main fractionation column, piping, pumps, heat exchangers, and instrumentation • Oxygen additions for regenerator combustion (either operation of existing air blower C-901A shared with Coker or oxygen [O_2] generation) • May use DeSOx catalyst, additional feed hydrofining, or slip stream scrubbing with new flue gas scrubber (A-1047)	Combustion of FCCU flue gas emissions released at Main Stack and controlled by $DeSO_x$ catalyst Part of flue gas routed through new scrubber (A-1047), if installed FCCU Regenerator (R-702), modified but no increase in emissions Fugitives
Coker (S-6)	• Increase capacity to process heavy feed, not exceeding current Title V permit limits of 39.6 kbbl/day • Feed flexibility • Modifications to piping and vessel internals including fractionator/scrubber, piping, internal modifications to coker burner and reactor (R-902), and coker gas compression facilities • Oxygen additions for burner combustion (either with operation of existing spare air blower C-901B, which will be modified to provide the air, or with O_2 generation) • The steam turbine driver for the air blower may be replaced with an electric driver	Combustion of coker flue gas routed through new scrubber (A-1047), if installed, and released via the Main Stack Fugitives

Sulfur Recovery Unit (S-1 and S-2)	• Increase sulfur removal and recovery capacity from 320 to 480 short tons per day • Equipment modifications including amine system expansion, modifications to existing sulfur thermal reactors and sulfur handling pumps and piping, internal modifications to at least 3 other absorber towers • New equipment: Addition of new amine regenerator, heat exchangers, piping, and pumps, several additional scrubber towers and a new regenerator tower, replacement absorber tower, new oxygen generator	Fugitives
Crude Oil Processing – Pipestill Unit (S-1006)	• Heavier crude feedstocks • Piping and heat exchanger modifications • Crude rates increase from 135 kbbl/day (current permit limit) to a nominal maximum of 165 kbbl/day (180 kbbl daily, 165 kbbl annual)	Fugitives
Cargo Carriers (ship, barges, train, assist tugs)	• Additional ships to import more crude at main dock due to higher crude processing rate from 135 kbbl/day to 180 kbbl/day maximum. • Increased tug boat service due to more ship traffic at main dock. • Additional barges and ships to export increased quantities of coke • Increased train service in the refinery for transporting coke to the main dock for exportation via ship and barge	Combustion ship emissions while manuevering in Bay Area District waters, hoteling, and unloading crude. Combustion emissions from tug boats used to assist ships in entering and departing the dock. Combustion emissions from the ships and barges used to export coke while manuevering in Bay Area District waters and hoteling. Combustion emissions from the dedicated refinery train used to transport coke to the main dock for exportation.
Crude Oil Storage (S-1047 and S-1048)	• Addition of two new external floating roof tanks (650,000-barrel capacity of each) and associated pumps and piping to segregate multiple crude types	Two new crude tanks Fugitives
Downstream and Support Facilities	• Hydrofiners ➢ Alterations to piping, pumps, reactors, drums, heat exchangers (S-1002, S-1005, S-1007, S-1008, S-1009, S-1011) ➢ Installation of additional or larger catalyst vessels (S-1049 through S-1056) • Hydrogen Plant Maximization (S-1010) ➢ Facilities required include replacement of Catacarb with MDEA and heat exchanger/piping/vessel internal modifications (increase existing hydrogen production from 160,000 standard cubic feet per day (scfd) to 190,000 scfd)	Fugitives

Downstream and Support Facilities, continued	➢ New Pressure Swing Adsorption (PSA) unit (S-1057) to recover hydrogen from internal gas streams • Hydrocracking (S-1003) ➢ Increase in daily maximum feed rate from 40 kbbl/day to 44 kbbl/day, annual average unchanged at 40 kbbl/day ➢ Auxiliary equipment change ➢ New pumps, piping and vessel hardware • Alkylation (S-1007) ➢ Feedstock flexibility ➢ Auxiliary equipment change ➢ New pumps and piping • Powerformer (S-1004) ➢ Minor modifications to piping and heat exchangers ➢ Addition of small vessels, heat exchangers, pumps, and piping ➢ No change in daily maximum permitted throughput of 39.8 kbbl/day; annualized daily maximum limit increased to current daily maximum limit (34.9 kbbl/day to 39.8 kbbl/day) • Dimersol (S-1012) ➢ Increase in feed rate from 5 kbbl/day to 7 kbbl/day for feed flexibility • Fractionation Processes (S-1034 through S-1045) ➢ Replacement of tower internal hardware and addition of towers, piping, pumps, drums, instruments, and heat exchangers • Feed tank heaters using steam, installed with condensate return • Coke Silos (S-8) ➢ On-site coke silos will be modified to provide reliablilty improvements ➢ No change in daily maximum permitted throughput (2400 tons/day); annual maximum increased to current daily maximum limit	Fugitives

1.4 VIP IMPACT ON FACILITIES

1.4.1 Fluid Catalytic Cracking Unit Feed Flexibility (FCCU)

The refinery's existing FCCU (S-5) will be modified to allow for the processing of imported low-priced feed or heavy components of low-priced crude oil, which contain higher sulfur levels. The S-5 FCCU will undergo piping and vessel internal changes to allow an annual feed rate increase from 72 thousand barrels per day (kbbl/day) to 77 kbbl/day (80 kbbl/day maximum daily limit). Only minor changes would be made to product yield relative to historic yield rates. Thus, the VIP will not require significant modifications to the downstream Cat Light Ends fractionation facilities.

The S-5 FCCU operates by mixing a catalyst with heavy oil streams to react and form a gasoline blending stock. The catalyst is continuously circulated from the reaction vessel to a regeneration vessel where air is injected to clean the catalyst. Carbon deposits are burned off the surface of the catalyst to clean it. The catalyst is separated from the oil by using centrifugal separators, or cyclones, mounted inside of the vessels.

Additional regeneration air will be required due to the new feed compositions. The additional regeneration air will be provided by operating the existing S-6 Coker air blower, C-901A, and diverting a portion of the air for use in the FCCU regenerator. Operation of the unit using the additional air will allow for more complete burning of carbon off the catalyst and will provide the option of using a catalyst additive ($DeSO_x$ catalyst) that reduces the SO_2 in the regenerator flue gas prior to use at the S-4 CO Boiler, F-101. These steps, along with additional feed hydrofining, will be used as needed to ensure that no increase in SO_2 emissions takes place. Part of the FCCU CO gas will be intermingled with CO gas from the Coker Unit and routed through the new scrubber (A-1047), if installed.

The FCCU equipment being modified includes the regenerator, transfer lines, slide valves, and main fractionation towers. Many of these changes are focused on the hardware inside of the vessels. Specifically, a new regenerator riser, feed nozzles, internal air grid, and standpipe are planned. Miscellaneous piping, pumps, instrumentation, and heat exchangers will be used to make the changes and optimize the unit's operation. This will include a revised feed distribution system, expansion points, and slide valve configuration.

1.4.2 Coker Unit Expansion (S-6)

The S-6 Coker Unit thermally cracks the heavy portions of crude oil in a process similar to that of the FCCU. However, rather than circulating catalyst, the Coker Unit circulates granular coke. The Coker will undergo modifications to piping and vessel internals to allow an increase over historical heavy feed rates. The new feed rate of approximately 35 kbbl/day is expected to be below the currently permitted rate of 39.6 kbbl/day. This increased ability to process the heaviest feed will allow the use of low-priced crudes.

It must be noted that the current limit of 39.6 kbbl/day will remain unchanged. The existing Coker Unit, without modification, is capable of processing 39.6 kbbl/day of relatively light feed

because less combustion heat and burner air are needed. The VIP modifications will allow processing of up to the same amount of heavier feed by supplying more air to the burner to produce the heat required to thermally crack the heavy feed.

As with the S-5 FCCU, additional regeneration air will be required to process the new heavier feed compositions. Since part of the air from the Coker air blower, C-901A, will be used for the FCCU regenerator, the Coker Unit's existing spare air blower, C-901B, will be modified to provide the required additional air.

Coker equipment that would be modified includes the fractionator/scrubber as well as piping, instrumentation, drums, and heat exchangers. This will involve modifications to the feed piping system to accommodate the higher feed rates. Internal modifications to the Coker burner and reactor (R-902) as well as modifications to the Coker gas compression facilities will also be required for the higher operating rates. Specifically, installation of additional cyclones in the burner are planned along with a new air grid.

Fractionation modifications are needed in the Coker Unit to accommodate the higher rates and provide better fractionation separation of the constituents. Modifications will include tray replacement with shed rows, additional pump-around capacity, relocated mid pump-around draws, and redesigned distributors.

1.4.3 Increased Sulfur Removal and Recovery Capacity (S-1 and S-2)

The sulfur removal systems, which use amine to remove sulfur from various gaseous and liquid streams at the refinery, will be upgraded to process lower-priced feedstock with anticipated higher levels of sulfur. The upgrade will involve internal modifications to existing towers and installation of several additional scrubber towers, a new amine regenerator tower, and additional amine heat exchangers and circulation capability.

To accommodate the processing of higher-sulfur feedstocks, amine will need to circulate more quickly through the sulfur removal system to carry the increased sulfur quantities away from the vaporized oil streams. This will require larger pumps and piping as well as changes inside the scrubber towers to help the amine solution to flow more quickly across the tower trays and down the tower. Inside the scrubber towers, the dimensions of the trays and the designs of the holes in the trays may be changed to allow faster amine flow. Also, several additional scrubbing towers will be installed to operate in parallel with the existing scrubbing towers and allow more amine contact time. The amine that has absorbed the sulfur must be regenerated and cooled. Since there will be additional amine flow, a new regenerator tower will be installed to operate in parallel with the existing tower, and additional heat exchangers and piping will be installed for cooling.

Sulfur that is removed by the upgraded amine system will be transferred to the existing Sulfur Recovery Unit (SRU) (S-1 and S-2) at the refinery. This unit uses the Claus process typical for most refineries to convert the removed sulfur into elemental sulfur for export from the refinery. The Valero SRU consists of two Claus sulfur plant trains (S-1 and S-2). To accommodate the processing of higher-sulfur feedstocks, the SRU will be modified to expand its capacity from a capacity of 320 short tons per day to 480 short tons per day. Since the Claus process uses air for

combustion to produce elemental sulfur, the process is limited by the amount of air that can be injected into the equipment. The VIP would include the installation of a new oxygen generator adjacent to the existing nitrogen generator to inject oxygen into the Claus process. Oxygen generation and injection is a common approach to increasing the capacity of sulfur plants because it requires minimum equipment modification costs and minimum downtime for the installation. Additional project requirements include modifications to the existing sulfur thermal reactors and sulfur handling pumps, heat exchangers, and piping.

The Tail Gas Unit (TGU) is a polishing unit used to remove sulfur downstream of the SRU prior to venting. This unit is adequately sized for the processing of higher-sulfur feedstocks but will require piping, heat exchanger, and instrument modifications following the initial SRU expansion.

1.4.4 Increased Crude Oil Processing Capacity

The refinery's existing Pipestill Unit (S-1006) will be modified to increase crude processing rates from the current permit limit of 135 kbbl/day to 165 kbbl/day averaged annually (180 kbbl/day daily maximum). Normal operation will likely be 145 to 155 kbbl/day. The new scrubber (A-1047), if installed, and the reconfiguration of the S-3 and S-4 CO furnaces will allow for higher crude rates. Additional equipment changes at the Pipestill Unit (S-1006) that are needed to process crude oil at maximum rates will include piping, heat exchanger, and instrument additions and replacement of existing pumps with larger pumps.

1.4.5 Additional Crude Tankage (S-1047 and S-1048)

Two new external floating roof crude oil tanks (S-1047 and S-1048) with a capacity of 650 thousand barrels [kbbl] and associated piping and pumps will be installed in the Crude Field tankage area. These tanks will allow additional segregation of different qualities of crude oil for controllable feed to the S-1006 Pipestill Unit and accommodate less ratable delivery schedules that are common when purchasing crude oil from different sources. The tank design will include a second containment bottom with an indicator to identify leaks before they reach the soil under the tank, and the firewall area will be constructed to contain 100 percent of the contents of the single largest tank. The new tanks will have an external floating roof design with foam primary seals and "zero-gap" secondary seals, in accordance with Regulation 8, Rule 5, design criteria.

The increased crude processing capacity will likely result in throughput increases for some of the storage tanks at the refinery. However, none of the tanks will require physical modifications, and all of the tanks will remain below their Title V permit throughput limits.

1.4.6 Main Stack Flue Gas Scrubber

A flue gas scrubber (A-1047) may be installed to remove sulfur dioxide ($SO_{2)}$ from the carbon monoxide (CO) Furnace F-102 (S-4) flue gas stream, which is exhausted through the refinery's Main Stack (P-1). This stream has exhaust which is commingled with the S-6 Fluid Coker and a portion of the S-5 Fluid Catalytic Cracker Unit (FCCU). The scrubber, if installed, will use a regenerative amine process consisting of a large cylindrical steel scrubber vessel that uses liquid sprays of amine solution to react with the flue gas to remove sulfur. The sulfur-rich amine solution is then pumped to a regenerator tower where it is boiled using heat from steam. The

boiling of the amine stream releases the sulfur compounds including SO_2, which is then routed to the existing sulfur plants for conversion to elemental sulfur.

To optimize the scrubber system design, the flue gas temperature must be minimized before scrubbing. Modification of the two existing furnaces, S-3 and S-4, as well as the installation of a new furnace (S-1046) upstream of the scrubber, will be required to better recover heat and to cool the flue gas. Structural modifications to S-3 and S-4 will be required due to the change in heat duty and operating pressure. Firing of refinery fuel gas at the CO furnaces will be reduced to the minimum amount required to ensure good combustion of the CO gas. The reduced duty on the CO furnaces will cause an increase in residence time, which may help reduce volatile organic compounds (VOC's) and CO in the flue gas. Current permit limits on fuel gas firing will not be exceeded.

The equipment proposed for the scrubber process will consist of typical refinery equipment and will include piping; scrubber and regenerator towers; blowers; small on-site storage tanks for the amine solution; air fin heat exchangers; furnace, shell and tube heat exchangers; pumps; structural steel; and instrumentation.

1.4.7 Downstream and Support Facilities: Hydrofining Optimization (S-1049 through S-1056 Hydrofiner Reactors)

The refinery currently has numerous hydrofining operations throughout the processing area. Hydrofining processes use hydrogen in the presence of a catalyst to remove sulfur from the oil components. With increases in sulfur level in refinery feedstocks, some modifications to the existing hydrofining equipment will be required. The optimization will maximize the efficiency of sulfur removal, minimize the amount of hydrogen required for the process, and minimize the loss of octane rating of the gasoline streams during hydrofining. Modifications will involve installation of pumps and piping to provide alternate routing for some streams. Changes in piping and compressors may be made to redistribute higher-purity hydrogen treat gas between different hydrofiners. Installation of additional or larger catalyst vessels for catalyst beds are expected to be necessary in some units to ensure adequate catalyst run length prior to replacement in a turnaround. Associated instrumentation and heat exchangers will also be needed.

Additional Hydrogen Production (S-1010)

Additional hydrogen will be required to support the optimized hydrofining and hydrocracking operations at the refinery. The refinery currently has two hydrogen trains and a reforming unit that will be modified and optimized to maximize hydrogen production. The refinery's two existing hydrogen trains will be modified and optimized to increase their production from approximately 160,000 standard cubic feet per day (scfd) up to 190,000 scfd. In addition to the existing hydrogen production systems, a small pressure swing adsorption (PSA) unit, S-1057, is planned to recover hydrogen from internal gas streams.

For the two hydrogen trains, the carbon dioxide (CO_2) absorber fluid, Catacarb, will be replaced with activated MDEA or a similar, more efficient fluid. This CO_2 absorption fluid separates CO_2 from the hydrogen to create a high-purity gas (approximately 98 percent hydrogen). The fluid change will be accompanied by changes to the tower internals (specifically tray and packing

replacements to provide improved separation efficiency) and modifications and additions to existing pumps, heat exchangers, piping, vessel internals, and instrumentation.

Additional hydrogen will also be made available by the installation of a small PSA unit (S-1057) to recover hydrogen from existing internal gas streams. The PSA unit will include a compressor and a series of pressure vessels containing a molecular sieve adsorbent that will allow the hydrogen to be separated from the fuel gas by adsorbing hydrocarbon vapors. The adsorbent is regenerated by vacuum, sweeping the collected hydrocarbon vapors to a fuel gas stream. This process allows a higher concentration of hydrogen gas to pass through the adsorbent for use in hydrofining. This process will involve new enclosed vessels, pump upgrades, piping, and instrumentation.

Hydrocracking (S-1003), Alkylation (S-1007), Dimersol (S-1012), and Reforming Capacity Maximization

The VIP will include minor modifications to optimize and maximize performance of the Hydrocracking, Alkylation, Dimersol, and Reforming Units, secondary gasoline component production units at the refinery.

The S-1003 Hydrocracking Unit, which is currently designed to operate at approximately 40 kbbl/day, will be increased in capacity to 44 kbbl/day. (The annual limit will stay at 40 kbbl/day, however.) The VIP will include addition and modification of heat exchangers, vessel internals, and upgrades to piping and pumps to allow the operation to be more thermally efficient, to be sustained with different feed qualities, and to continue as the operation approaches end-of-run conditions for the catalyst.

Minor piping and pump modifications at the S-1007 Alkylation Unit will be considered to improve reliability, minimize the use of chemicals, and improve fractionation. The S-1012 Dimersol Unit will undergo minor modifications to increase throughout capacity from approximately 5 kbbl/day to as high as 7 kbbl/day, providing flexibility to process more Alkylation Unit feed.

The S-1004 Naphtha Reforming Unit (Powerformer) is designed to reform low-octane naphthas into aromatics with improved octane ratings. During this process, hydrogen is liberated from the naphtha and used in the refinery treat gas system. The VIP includes piping and pump upgrades and heat exchanger modifications to allow the unit to process additional low-octane naphtha and produce additional higher-octane premium grade gasoline.

Fractionation Processes Optimization

Valero uses fractionation processes in numerous units throughout the refinery. Adjustments will be made to the fractionation steps to accommodate the changes in feedstock composition. Most adjustments will be made without changing the facilities, but some adjustments will require replacement or addition of equipment. Additional pumping capacity and heat exchangers will be needed in some towers to improve separation processes. Internal trays, distributor piping, and baffles and external piping connections may be modified in some towers. In some cases, additional fractionation towers may be installed or an existing tower expanded to improve separation ability. New towers (S-1034 through S-1045) and their associated piping, heat

exchangers, instruments, and pumps will be comparable in design to the ones currently operating at the refinery.

Downstream Combustion

The refinery has numerous existing combustion sources that provide heat for the refining processes. The Main Stack combustion sources involve modifications to the existing combustion equipment. These modifications have been discussed in detail in earlier sections.

The downstream facilities in the refinery may, in the future, require additional heat and energy relative to typical current operations. This heat and energy can be supplied from the refinery's existing combustion equipment (gas turbines, steam boilers, and process furnaces) without modifications. This would not be a new level of operation in that the existing combustion equipment has, at various times in the past, operated at higher firing rates near permitted capacity. The operating conditions forecast to occur following implementation of the VIP may require operation at these higher rates more frequently than has been typical in the past.

Support Facilities

Most of the refinery's numerous support processes will not require modification with this project. However, the following areas are expected to require modification.

- **Tank heaters.** Several tanks (Sources S-67, S-68 and S-72) that store heavy feed will be fitted with steam heating coils. Heating the tanks will reduce the viscosity of the heavy oil and allow more efficient pumping. No additional air emissions would be associated with the new steam heating coils.

- **Coke silos (S-8).** The on-site coke silos, located at the west edge of the process block, will be upgraded to reliably handle the increased coke production rate. The current daily throughput limit of 2,400 tons per day will not be exceeded, but the annual limit (1680 tons per day) will be revised to allow for continuous operations up to this level. No emission increases are associated with this reliability upgrade of the coke silos with the proposed upgrades to the current abatement devices.

Table 1-4 and Table 1-4.1 compares the existing operation to the proposed VIP operation.

Table 1-4. Summary of VIP Effects—Primary Project Components

Unit/Source	Current Limit	Post-VIP Limit	Physical Mod.	Offsets	Comments
Pipestill (S-1006)	135 kbbl/d	165/180 kbbl/d	Yes	No	
CO furnaces (S-3 and S-4)	519.3 MMBtu/hr	same	Yes	No	No increase in Main Stack emissions
New furnace (S-1046)	NA	240 MMBtu/hr	New	No	No increase in Main Stack emissions
Crude Tankage (S-1047 and 1048)	141.5 kbbl/d (annual)	171.5 kbbl/d (annual)	New	Yes	Two new tanks

FCCU (S-5)	77.2 kbbl/d (daily) 74.1 kbbl/d (annual)	80 kbbl/d (daily) 77 kbbl/d (annual)	Yes	No	
Reactor combustion	1 blower only	additional air/O_2	Yes	No	No increase in Main Stack emissions
Coker (S-6)	39.6 kbbl/d	same	Yes	No	
Burner combustion	1 blower only	Additional air/O_2	Yes	No	No increase in Main Stack emissions
Sulfur Plant (S-1 and S-2)	320 short ton/d	480 short ton/d	Yes	See Note	
All Units—Fugitives	NA	NA	New	See Note	Fugitive emissions from all units

NOTE: Fugitive components will be added throughout the refinery. Total fugitive emission increases will be offset for the combined fugitive increase from all refinery unit changes due to the VIP.

kbbl/d = thousand barrels per day
MMBtu/hr = million British thermal units per hour

Table 1-4.1. Summary of VIP Effects—Downstream Components

Unit/Source	Current Limit	Post-VIP Limit	Physical Mod.	Offsets
Coke Silos	1680 tons/day(annual) 2400 tons/day (daily)	2400 tons/day(annual) 2400 tons/day (daily)	Upgrade Abatement Devices	No
Powerformer (S-1004)	34.9 kbbl/d (annual) 39.8 kbbl/d (daily)	39.8 kbbl/d (annual) 39.8 kbbl/d (daily)	Fugitive only	See Note
F2901-2904	463 MMBtu/hr	Same	None	No
F-2905	74 MMBtu/hr	Same	None	No
F-2906	14 MMBtu/hr	Same	None	No
Virgin Naphtha Hydrofiner	35 kbbl/d	Same	Fugitive only	See Note
F-104 (S- 1008)	62 MMBtu/hr	Same	None	No
Jet Fuel Hydrofiner	17.9 kbbl/d	Same	Fugitive only	See Note
F-103 (S-1009)	53 MMBtu/hr	Same	None	No
Diesel Hydrofiner (S-1002)	14 kbbl/d	Same	Fugitive only	See Note
Hydrocracking Unit (S-1003)	40 kbbl/d	40 kbbl/d (annual) 44 kbbl/d (daily)	Fugitive only	See Note
GT-401	132.4 MMBtu/hr	Same	None	No
F-401	185 MMBtu/hr	Same	None	No
Heavy Cat Naphtha Hydrofiner (S-1011)	25 kbbl/d	Same	Fugitive only	See Note
F-801 (S-26)	33 MMBtu/hr	Same	None	No
Alkylation (S-1007)	22.8 kbbl/d	Same	Fugitive only	See Note
GT-1031	132.4 MMBtu/hr	Same	None	No
Dimersol (S-1012)	5 kbbl/d	7 kbbl/d	Fugitive only	See Note
MOGAS Reformulation	Varies	Same	Fugitive only	See Note
F-4460 (S-220)	330 MMBtu/hr	Same	None	No
Hydrogen Plant (S-1010)	164 MMscfd	190 MMscfd	Fugitive only	See Note
F-301/351	1210 MMBtu/hr	Same	None	No
Cat Feed Hydrofiner	41.4 kbbl/d	Same	Fugitive only	See Note
F-601 (S-1005)	33 MMBtu/hr	Same	None	No
MOGAS Tanks	135 kbbl/d	Same	Fugitive only	See Note
MOGAS Day Tanks	35.7 kbbl/d	Same	Fugitive only	See Note
Gasoline Component Tanks	172.1 kbbl/d	Same	Fugitive only	See Note
Gas Oil Tanks	39 kbbl/d	Same	Fugitive only	See Note
New Hydrofiner Reactors S-1049 thru S-1056	NA	NA	New (fugitive only)	See Note
New Fractionation/Stripping Vessels (S-1034 to S-1045)	NA	NA	New (fugitive only)	See Note

NOTE: Fugitive components will be added throughout the entire refinery. Total fugitive emission increases will be offset for the combined fugitive increase from all refinery unit changes due to the VIP.
kbbl/d = thousand barrels per day

MMBtu/hr = million British thermal units per hour
MMscfd = million standard cubic feet per day

1.4.8 Shipping Contingency

Valero currently obtains a significant portion of its crude by pipeline. The rest is imported by ship over the wharf. No permit currently limits the amount of crude that can be brought in by ships.

In order to ensure proper accounting for increased ship emissions from increased crude deliveries due to the VIP, the permit authorizing the VIP imposes a limit on crude shipments.

Valero anticipates the possibility that crude may no longer be brought in by pipeline. This could result from a problem with the pipeline, or a change in the cost of crude that makes pipeline supply no longer economical.

Although such a shift in crude supply from pipeline to cargo carriers would not be the result of the VIP, the new permit conditions by the VIP on crude imports from cargo carriers at the dock would prevent such a change without proper permit review.

Valero has, therefore, requested that the permit authorize increased crude shipping if use of the pipeline is curtailed. Because this would be a change in the method of operation that increases emissions, it would require offsets. A condition (part 24) has been added to the VIP permit that would allow an increase in shipping emissions to a "contingency" level, provided emissions were lowered at the Main Stack (P-1) to compensate. As a result, the contingency for additional ship traffic will be fully offset by a contemporaneous reduction in Main Stack emissions (except for 3.1 TPY of POC, Valero has provided these offsets in advance as part of the VIP application).

Part 24 allows Valero to increase ship emissions by the amounts listed below:

Pollutant	*Base Line plus*	*VIP Increase*	*Contingency*	*Total Annual (tons)*
NOx	***136.12***	***32.95***	***169.07***	
SOx	***49.06***	***15.76***	***64.82***	
POC	***10.56***	***3.10***	***13.66***	
PM10	***7.82***	***2.06***	***9.88***	
CO	***19.71***	***5.21***	***24.92***	

EMISSIONS SUMMARY

Emissions Increases

Table 2-1 shows a summary of the VIP project emissions. Details of the emission calculation are provided in Appendix A for each listed source type. All of the NOx, CO and PM10 emission increases are generated solely from the cargo carriers (ships, tugs, barges, and trucks) due to increased marine and refinery traffic. The VOC emission increases emanate from the new crude tanks (S-1047 and S-1048), fugitive components as well as cargo carriers. SO2 emissions are from the cargo carriers and the new furnace (S-1046). All pollutant increases will be offset through contemporaneous emission reduction credits.

It must be mentioned that Table 2-1 is an emissions summary table. As such, it does not show any emissions from the new furnace (S-1046) at the main stack since no increase in main stack emissions will occur from the baseline. The established baseline covers the three-year period from July 1999 to June 2002 in accordance with the requirements set forth in Regulation 2-2-605.1 for determining an emissions reduction credit (ERC). The baseline methodology and the baseline data for the main stack covering July 1, 1999 to June 30, 2002 are presented in Appendix B. Table 2-2 shows the emissions contribution from the new S-1046 furnace at the main stack. More details on the main stack and new furnace emissions are shown in Appendix C.

Potential Emissions Decreases

Valero has requested to bank the SO2 emission reductions from the New Amine Scrubber (A-1047). If the new scrubber is installed pursuant to this Authority to Construct, and operates as described in Valero's application, the emissions reduction shall be eligible for banking after being demonstrated by source test or other means acceptable to the APCO, including emission factors [Regulation 2-2-301]. The baseline emissions shall be calculated in accordance with Regulation 2-2-605.

Table 2-1
VIP Project Emissions (without scrubber[1])
(Tons per Year)

Source Type	NO_x	SO_2	PM_{10}	VOC	CO
Main Stack (P-1)	0.0	0.0	0.0	0.0	0.0
Crude Tanks (2)	--	--	--	3.3	--
Fugitives	--	--	--	3.0	--
Shipping	**39.9**	**16.2**	**2.4**	**3.2**	**5.9**
Railcar	2.5	0.1	0.1	0.1	0.4
Sulfur Trucks	--	--	0.1	--	--
TOTAL	**42.4**	**16.3**	**2.6**	**9.6**	**6.3**

[1]Reduction in SO2 emissions from the scrubber are not necessary for the approval of the VIP.

Table 2-2 shows a further breakdown of the tabulation of the VIP emissions shown in Table 2-1. Appendix A provides more details on how these numbers were generated.

Table 2-2
VIP Emissions From Main Stack Including S-1046 New Furnace (without scrubber[1])
Tons per Year

Source Type	NO_x ton/year	SO_2 ton/year	PM_{10} ton/year	VOC ton/year	CO ton/year
Main Stack (P-1) [7/99 - 6/02 Baseline]	1365.0	6835.0	106.5	6.7	288.0
Post VIP					
Main Stack – No Scrubber, excluding new furnace (S-1046)	1352.6	6828.6	103.8	4.2	266.9
New Furnace (S-1046)	12.4	6.4	2.7	2.5	21.1
Total Main Stack	1365	6835.0	106.5	6.7	288.0
Net Change	0.0	0.0	0.0	0.0	0.0

[1]Reduction in SO2 emissions from the scrubber are not necessary for the approval of the VIP.

VIP Emissions From Two New Crude Tanks (S-1047 and S-1048)
Tons per Year

Crude Tanks (S-1047 & S-1048)	NO_x ton/year	SO_2 ton/year	PM_{10} ton/year	VOC ton/year	CO ton/year
Rim Seal Losses				0.4	
Withdrawal Losses				0.8	
Deck Fitting Losses				2.1	
Deck Seam Losses				0.0	
TOTAL				3.3	

VIP Emissions From Fugitive Components
Tons per Year

Component	NO_x ton/year	SO_2 ton/year	PM_{10} ton/year	VOC ton/year	CO ton/year
Valves				0.7	
Flanges and Connectors				1.8	
Pumps				0.5	
TOTAL				**3.0**	

VIP Emissions Increase From Shipping At Main Dock
Tons per Year

Cargo Vessels (Ships and Barges with assist tugboats)	NO_x ton/year	SO_2 ton/year	PM_{10} ton/year	VOC ton/year	CO ton/year
Crude Import	34.2	11.9	1.9	2.8	5.1
Coke Export	5.7	4.3	0.5	0.4	0.8
TOTAL	**39.9**	**16.2**	**2.4**	**3.2**	**5.9**

VIP Emissions Increase From Refinery Rail Transport of Coke
Tons per Year

Cargo Vessels	NO_x ton/year	SO_2 ton/year	PM_{10} ton/year	VOC ton/year	CO ton/year
Train	2.5	0.1	0.1	0.1	0.4
TOTAL	**2.5**	**0.1**	**0.1**	**0.1**	**0.4**

VIP Emissions Increase From additional Sulfur Trucks
Tons per Year

Trucks	NO_x ton/year	SO_2 ton/year	PM_{10} ton/year	VOC ton/year	CO ton/year
Sulfur Export (Refinery Paved Roads)			0.1		
TOTAL			**0.1**		

3.0 PLANT CUMULATIVE INCREASE

NOx: 0 (existing) + 54.8 (proposed) = 54.8 TPY
S02: 0 (existing) + 22.7 (proposed) = 22.7 TPY

PM10:	**0 (existing)**	**+**	**5.3 (proposed)**	**= 5.3 TPY**
VOC:	**0 (existing)**	**+**	**12.1 (proposed)**	**= 12.1 TPY**
CO:	**0 (existing)**	**+**	**27.4 (proposed)**	**= 27.4 TPY**

4.0 TOXIC RISK SCREEN

Per BAAQMD Rule 2-1-316, if toxic air contaminants (TACs) associated with the new or modified sources in an Authority to Construct Application exceed specified emission thresholds, then a demonstration must be made that potential health risks do not exceed acceptable levels. The BAAQMD Risk Management Policy (BAAQMD 2000) defines these levels as a lifetime cancer risk of less than 10 in one million and a non-cancer hazard index of less than 1.0.

Table 4-1 shows that a risk screen is triggered for Benzene, 1,3 – Butadiene and Hexavalent Chromium.

Table 4-1
TOXIC AIR CONTAMINANT TRIGGER LEVEL EXCEEDANCES

Source and Toxic Air Contaminant	Annual Emission Rate (lb/yr)	Toxic Risk Screen Trigger Level (lb/yr)	Toxic Risk Screen Triggered (Yes/No)
New Crude Tanks (Each)			
Hexane (-n)	34.82	83,000	No
Benzene	33.93	6.7	Yes
Toluene	21.96	39,000	No
Xylene (-m)	16.76	58,000	No
Fugitives (Total Refinery)			
1,3 – Butadiene	3.01	1.1	Yes
Benzene	83.59	6.7	Yes
Naphthalene	0.49	270	No
Toluene	123.89	39,000	No
Xylene	68.87	58,000	No
New Furnace (S-1046)			
Benzene	4.4	6.7	No
Toluene	18	39,000	No
Xylene	6	58,000	No
Hexavalent Chromium	0.5	0.0013	Yes
Formaldehyde	32	33	No

A health risk assessment (HRA) (URS 2002b) was prepared to support the development of an Environmental Impact Report (EIR) by the City of Benicia for the VIP. This HRA was prepared to characterize the VIP relative to increases above current operating baselines of all refinery equipment, whereas BAAQMD permitting rules require potential health risks be evaluated for increases in permitted emission levels associated with only the new or modified sources. Therefore, the above-referenced HRA addresses a greater amount of emission increases than the increases in permitted emissions associated with the VIP. The results of that HRA for the operation of VIP stationary sources are summarized below:

Maximum Residential	70-Year Cancer Risk: 0.665 in one million	
	Chronic Hazard Index:	0.0060
	Acute Hazard Index:	0.1517
Maximum Non-Residential	70-Year Cancer Risk: 0.671 in one million	
	Chronic Hazard Index:	0.0099
	Acute Hazard Index:	0.2443

Further details on these health risk calculations can be found in the HRA submitted to support the EIR currently under development (URS 2002b). The proposed actions contained in this Authority to Construct Application comply with the BAAQMD Risk Management Policy.

The District's Toxic Evaluation Section conducted a risk screen analysis for the VIP. The risk analysis included emissions from the two crude tanks (S-1047 and S-1048), fugitive components, tug tanker and railcars. The health risk results are shown in Table 4-2. The operation of these sources result in a maximum increased cancer risk of less than ten in a million and a chronic hazard index of less than one. These levels of risk are considered acceptable under the District's Risk Management Policy since TBACT has been applied.

TABLE 4-2
HEALTH RISK RESULTS – VALERO IMPROVEMENT PROJECT

Receptor	Cancer Risk	Chronic Hazard Index	Acute Hazard Index
Off-site Worker	1.5 in a million	0.007	0.0002
Residential	0.8 in a million	0.0005	0.0002

5.0 BEST AVAILABLE CONTROL TECHNOLOGY (BACT)

The proposed facility includes sources that triggers the Best Available Control Technology (BACT) requirement of New Source Review (District Regulation 2, Rule 2, NSR) for emissions of nitrogen oxides (NOx), carbon monoxide (CO), precursor organic compounds (POC), sulfur dioxide (SO2), and particulate matter of less than 10 microns in diameter (PM10) because its emissions of these pollutants are above 10 pounds per highest day [Regulation 2-2-301].

5.1 S-1046 PROCESS FURNACE

The NOx, CO, and oxygen concentrations for S-1046 Furnace will be monitored continuously using a continuous emissions monitor (CEM), which has a read out inparts per million by volume (ppmv)..

Nitrogen Oxides (NOx)

District BACT Guideline 94.3.1, last updated on December 19, 2000, specifies BACT (achieved in practice) for a process heater (furnace) with a heat input > 50 MMBtu/hour. BACT is a NOx emissions concentration not to exceed 10 ppmvd @ 3% O2, (0.0118 lb/MMBtu), averaged over any consecutive 3-hour period. This emissions level will be met by the S-1046 Process Furnace through the use of a combination of low NOx burners and the A-1046 Selective Catalytic Reduction (SCR) System using ammonia injection. No higher "technologically feasible" level is listed. The emission factors used in the Alternative Compliance Plan by the refineries to comply with Regulation 9, Rule 10 requirements are not below 0.0118 lb/MMBtu (10 ppmvd @3% O2). Therefore, BACT is a concentration not to exceed 10 ppmv at 3 percent O_2, dry.

Carbon Monoxide (CO)

District BACT Guideline 94.3.1, last updated on December 19, 2000, specifies BACT (achieved in practice) for CO, for a process heater (furnace) with a heat input > 50 MMBtu/hour. BACT is a CO concentration not to exceed 50 ppmvd @ 3% O2, (0.02 lb/MMBtu), averaged over any consecutive 3-hour period. No higher "technologically feasible" level is listed. Valero has demonstrated in practice with another process furnace (S-220 Hot Oil Furnace) in the Clean Fuels Project, Application #10392, that a CO concentration limit of 28 ppm can be achieved. For this VIP project, BACT (achieved in practice) for CO for the S-1046 furnace will be 28 ppm consistent with other CO determinations at Valero for like-kind sources.

Precursor Organic Compounds (POCs)

District BACT Guideline 94.3.1, last updated on December 19, 2000, does not specify BACT (achieved in practice) for POC, for a process heater (furnace) with a heat input > 50 MMBtu/hour. For the VIP project, BACT will be a mass emissions rate not to exceed 0.0023 lb/MMBtu. This emissions factor was used in the Clean Fuels Project and was derived using EPA AP-42 emission factors.

Because CEMs for organic compounds only measure carbon (as C1), it is not possible to determine non-methane/ethane hydrocarbon concentrations on a real-time basis. As a result, a continuous emission concentration limitation as BACT for POC is not feasible. Therefore, BACT for POC is deemed to be a mass emission rate limitation to be verified by annual source testing. POC emissions will be minimized through the use of best combustion practices.

Sulfur Dioxide (SO2)

District BACT Guideline 94.3.1, last updated on December 19, 2000, for a process heater (furnace) with a heat input > 50 MMBtu/hour specifies:

- BACT1 (technologically feasible and cost effective) is natural gas or treated refinery gas with the following sulfur limit:

Hydrogen sulfide (H2S) ≤ 50 ppmv
Totaled reduced sulfur (TRS) ≤ 100 ppmv

- BACT 2 (achieved in practice) is natural gas or treated refinery gas with a TRS level ≤ 100 ppmv.

The use of only natural gas as a BACT measure at the Valero Refinery is inapplicable . Fuel gas is a waste gas that, if not combusted in the refinery furnaces and heaters, would be flared. There are periods during the operating year when the entire refinery operates only on refinery fuel gas. When the fuel demand of the whole refinery is not met by the refinery fuel gas supply, Valero automatically imports natural gas having minute quantities of sulfur (≤ 1 grain per 100 scf).

Valero uses a methyldiethanolamine (MDEA) scrubber to treat the refinery fuel gas. This existing MDEA scrubbing system is very efficient in reducing the totaled reduced sulfur gas below the current refinery-wide gas limitation of 51 ppmv TRS (rolling consecutive 4 quarters). During the last few years, due to on-going improvements to their fuel gas scrubbing system, Valero's fuel gas has approached but not exceeded 45 ppmv TRS (rolling consecutive 365-day average). See Appendix D. It shows the rolling consecutive 365-day average for TRS from January 1, 2000 to June 30, 2002. Therefore, BACT for SO2 for this VIP project will be a TRS level not to exceed the achieved in practice level of 45 ppmv (rolling consecutive 365-day average). For purposes of estimating SO2 emissions through the use of a surrogate, a hydrogen sulfide (H2S) limit is not needed since its sulfur compounds are one of many making up TRS. Carbonyl sulfide and carbon disulfide are two of the other compounds present in TRS. The District assumes that all of the sulfur compounds present in the refinery fuel gas, measured as TRS, is converted to SO2.

There are extreme TRS fluctuations in the refinery fuel. The highest daily average measured TRS level in the refinery for the past few years is approximately 155 ppmv TRS. To place a cap on the daily TRS fluctuations, a limit of 155 ppmv TRS, averaged over a calendar day, will be imposed.

To comply with New Source Performance Standards (NSPS), 40 CFR, Part 60 Subpart J, the H2S level in the refinery fuel gas will be limited to no more than 160 ppm H2S (3 hour average).

Particulate Matter (PM10)

District BACT Guideline 94.3.1, last updated on December 19, 2000, does not specify BACT (achieved in practice) for PM10, for a process heater (furnace) with a heat input > 50 MMBtu/hour. For a refinery, BACT for PM10 is considered to be treated refinery gas. For the VIP project, BACT will be a mass emissions rate not to exceed 0.0026 lb/MMBtu. This emission factor was derived using EPA AP-42 emission factors.

5.2 S-1047 AND 1048 EXTERNAL FLOATING STORAGE TANKS

The two new crude oil tanks (S-1047 and S-1048) will have an external floating roof pontoon design, with a liquid-mounted seal and zero-gap secondary seal to meet the design criteria of Regulation 8, Rule 5. This design will meet the BAAQMD "achieved in practice" BACT standard for precursor organic compounds (POCs).

District BACT Guideline 167.1.1, last updated on May 13 1998, also presents a "technologically feasible" BACT standard of a vapor recovery system with an overall system efficiency of greater than or equal to 98 percent. In accordance with BAAQMD BACT policy, a technologically feasible alternative shall be considered BACT unless proven to not be cost effective. The estimated VOC emissions from the two new crude oil tanks, as proposed with external floating roofs and dual seals, are 3.3 tons per year. A conservative cost-effectiveness estimate for a vapor recovery system on these tanks would include the assumption that all of these emissions [3.3 tons per year] would be captured. Equipment costs associated with the installation of a vapor recovery system on the two new crude oil tanks were provided by Valero (Giordano 2002).

A vapor recovery system would require two compressors of approximately 25,000 barrels per hour (or 140,400 standard cubic feet per hour) in capacity (one on each tank). The estimated installed cost for two compressors of this size is $9,000,000. Additional costs would be associated with piping ($1,000,000) and electrical power ($3,000,000, which includes a new substation and new 12-kilovolt feeder). There would be other associated installation costs, as well as the cost of the abatement system itself (estimated at $2,000,000).

Considering only the cost of the two compressors, annualized equipment costs assuming a 10-year equipment life and 10 percent interest rate (cost recovery factor of 0.163) calculate to $1,467,000 per year. For the control of 3.3 tons of VOCs per year, this would result in a cost of $451,385 per ton of VOCs controlled per year. This assessment does not consider all costs but demonstrates that a vapor recovery system for the two new crude oil tanks is not cost effective. Therefore, BACT is proposed to be the external floating roof design with dual seals.

5.3 FUGITIVE EQUIPMENT
VALVES, FLANGES & CONNECTORS, PUMPS

The fugitive equipment should comply with the Standards of Regulation 8, Rule 18 for Valves, Pumps and Flanges. The leak standards for valves, pumps and flanges/connectors will be 100 ppmv, 500 ppmv and 100 ppmv, respectively.

VALVES -- Most valves will use graphite packing, which is the best material available to achieve low emissions in a wide variety of applications. These new components will be included in the Valero Benicia Refinery's quarterly inspection and maintenance program in compliance with BAAQMD Regulation 8, Rule 18, with a leak criteria of 100 ppmv expressed as methane measured at 1 centimeter (cm). This meets BAAQMD BACT guidelines for POCs.

PUMPS -- The pumps will be equipped with double mechanical seals with barrier fluid. The pumps will be included in the Valero Benicia Refinery's quarterly inspection and maintenance program in compliance with BAAQMD Regulation 8, Rule 18, with a leak criteria of 500 ppmv expressed as methane measured at 1 centimeter (cm). This meets BAAQMD BACT guidelines for POCs.

FLANGES/CONNECTORS -- The flanges/connectors will use graphite or equivalent designed flange gaskets to reduce POC fugitive emissions. These new flanges/connectors will be included in the Valero Benicia Refinery's quarterly inspection and maintenance program in compliance with BAAQMD Regulation 8, Rule 18, with a leak criteria of 100 ppmv expressed as methane measured at 1 centimeter (cm). This meets BAAQMD BACT guidelines for POCs.

6.0 OFFSETS

The 2002 annual emissions inventory in the District's database for Valero for NOx, VOC, PM10 and SO2 is 2249 tons, 232 tons, 298 tons and 6909 tons, respectively. The emissions inventory was determined using actual throughput data from the refinery and source-specific emission factors. Based on the 2002 District's emissions inventory for Valero, offsets are required for NOx and VOC emissions pursuant to Regulation 2-2-302 [Facilities > 15 tons/year]. Also, offsets are required for PM10 and SO2 emissions in accordance with Regulation 2-2-303 since Valero is a major facility (> 100 tons/year) for both pollutants. The District regulations do not require offsets for CO emissions. However, the planned shut down of three boilers (S-38, S-39 and S-40) in the Cogeneration project, Applications number 2488 and 2695, will reduce CO emissions by 150 tons.

To satisfy the offset obligation for this proposed project, contemporaneous emission reduction credits will be provided to offset, in full, the NOx, VOC, PM10 and SO2 emission increases. Offsets will be provided by:

a. ***Completing Light Ends Rail Rack Arm Drains (15.8 tpy POC).***
b. ***Halting MTBE ship imports (36.7 tpy NOx, 3.48 tpy POC, 1.61 tpy PM10)***
c. ***Shutting down S-38 and S-39 Boilers, per Cogeneration Project Condition 19177, part 47 (0.99 tpy PM10)***
d. ***Reducing Main Stack SO2 emissions per part 21.2.b by 16.3 tpy.***

Table 6-1 shows the VIP emission increases (previously noted in Table 2-1 and Table 2-2), and the manner for which offsets will be provided. Following the table is a more in depth discussion on the nature of the offsets.

Table 6-1
Summary of Provided Offsets (Tons per Year)

	NO_x	VOC	PM_{10}	SO2
Offsets Required				
VIP Increase from cargo carriers and fugitives (excluding the pipeline shipping contingency in part 24)	42.4	9.6	2.6	16.3
VIP Increase from S-1046 Furnace (Main Stack)	12.4	2.5	2.7	6.4
Total	54.8	12.1	5.3	22.7
Offsets Provided				
Main Stack Baseline (7/99 to 6/02)	1365	6.7	106.5	6835
Main Stack (S-1046 Furnace at Main Stack)	-12.4	-2.5	-2.7	-6.4
Main Stack (Decrease in Baseline for cargo carriers)				-16.3
New Baseline	**1352.6**	**4.2**	**103.8**	**6812.3**
Light Ends Rail Rack Arm Drains (S-1027) Application 2390	--	-15.8	--	--
MTBE Phase-Out Shipping	-36.7	-3.48	-1.61	
Remaining Cogeneration Contemporaneous Offsets	0.0	0.0	-0.99	0.0
Net Emissions less Offsets Provided Like-kind Exchange	**5.7**	**-9.68**	**0.0**	**0.0**
POC to offset NOx (1:1 ratio)	-5.7 POC	5.7 POC to NOx	--	--
Net Emissions less All Offsets Provided	**0.0**	**-3.98**	**0.0**	**0.0**
Contemporaneous emission reductions for shipping contingency (shift in pipeline crude to ships)	**Note 1**	**3.10**	**Note 1**	**Note 1**
Total Credits to be Issued to Valero	**0.0**	**0.88**	**0.0**	

Note 1: Additional emission reductions at the main stack may be applied.

NOx Offsets

The NOx emissions from the new S-1046 furnace at the main stack are 12.4 tons/year. These NOx emissions will be commingled with the emissions from the main stack, which will remain unchanged from its three-year baseline (7/99 to 6/02). Part 21.2.a has been imposed to limit NOx emissions at the main stack to no more than the adjusted baseline level of 1352.6 tons per calendar year. The baseline was reduced from 1365 tons/year to account for the 12.4 tons/year of NOx emissions from the S-1046 new furnace.

Valero has generated NOx IERC credits from the main stack and would like to continue this practice in the future. Emissions reductions will only be considered surplus, and thus creditable as an IERC, for reductions below the limit set by this permit (1352.7 TPY per part 21, when in effect) that otherwise comply with the requirements of Regulation 2, Rule 9. If a further reduction is utilized subsequently as a contemporaneous offset for shipping emissions, as allowed by parts 21, 23 and 24, that further reduction is not available to be credited as an IERC.

The VIP project will increase NOx emissions from the cargo carriers (ships, barges and tug boats and trains) by 42.4 tons/year. Valero will provide 36.7 tons/year from the phase out of the ships and tugs used to import Methyl Tertiary Butyl Ether (MTBE) to the site. In application #6968, Valero surrendered Banking Certificate # 86 containing 122 tons/year of POC credits to offset the 36.7 tons/year of NOx emissions. The MTBE ship operation should cease by the end of 2003 (Governor mandate for complete phase out of MTBE in motor gasoline). The MTBE Phaseout application (#2035) covers the shutdown of the MTBE shipping operation. Valero will offset the remaining 5.7 tons/year of NOx emissions with POC credits coming from the abatement of emissions at the S-1027 Light Ends Rail Rack (LERR). Interpollutant offsets (POC reductions offsetting NOx increases) are permitted by Regulation 2-2-302.2. The S-1027 Light Ends Rail Rack emission's reduction is discussed in the POC offset section.

POC Offsets

The POC emissions from the new S-1046 furnace at the main stack are 2.5 tons/year. These POC emissions will be commingled with the emissions from the main stack, which will remain unchanged from its three-year baseline (7/99 to 6/02). Part 21.2.d has been imposed to limit POC emissions at the main stack to no more than the baseline level of 4.2 tons per calendar year. The baseline was reduced from 6.7 tons/year to account for the 2.5 tons/year of POC emissions from the S-1046 new furnace.

The VIP project will increase POC emissions from fugitives and the cargo carriers (ships, barges and tug boats and trains) by 9.6 tons/year. Valero will provide 9.6 tons/year of POC contemporaneous emission reduction credits from the control of emissions at the Light Ends Rail Rack (S-1027). POC emissions will be reduced by 15.8 tons/year after abatement.

Valero loads and unload up to 30 rail cars per day at the Light Ends Loading Rack (S-1027). The emissions result from filling these rail cars. At the end of the filling

operation, the arms are liquid filled. The material between the arms isolation valve and the rail car is released to atmosphere as part of the disconnection process creating the emissions. As shown in Appendix E, the 3-year baseline at the LERR for the period 7/99 to 6/02 is 16 tons/year. Valero is proposing to install facilities to eliminate these emissions by routing them to an existing sphere or fuel gas recovery system. The District authorized the installation of loading arm drain piping to capture the fugitive POC emissions in Application #2390. Because of the new piping, annual fugitive POC emissions at S-1027, after abatement, will be 0.2 ton. Valero had planned to submit a banking application for these reductions but has chosen instead to apply these potential reductions to this VIP project.

RACT Adjustment

In accordance with 2-2-605.5, the baseline of 16 tons/year shall be adjusted downward, if necessary, to comply with the most stringent RACT level. The loading and unloading of liquefied petroleum gases are not subject to the requirements of Regulation 8, Rule 6 "Organic Liquid and Bulk Plants" pursuant to the exemption in Section 2-6-117. Valero has voluntarily chosen to control the emissions from the S-1027 Light Ends Rail Rack. The capital cost to collect and route the fugitive POC emissions to the vapor recovery system or existing sphere is nearly a million dollars ($961,437). The cost effectiveness for this emissions control project is $11,744/ton. This is more than the cost effectiveness for most RACT rules which varies from around $4000/ton to $8000/ton. Because there is no District rule that applies to the control of emissions from this source and because the action taken by Valero is not cost effective for RACT, there will be no RACT adjustment.

Enforceable Conditions for
Contemporaneous Emission Reduction Credits

Condition # 17835, parts 4, 5 and 6 will be added to the existing S-1027 conditions (Condition ID 17835) to ensure compliance with the offset requirement. Condition# 17835, parts 4, 5 and 6 are shown with the S-1027 existing conditions as follows:

S-1027 Light Ends Rail Rack
Condition ID 17835

1. This Light Ends Rail Rack (S-1027) shall handle no more than 22,500 barrels per day, as averaged over the quarterly period. <Basis: Cumulative Increase>

2. This light ends rail rack (S-1027) shall handle no more than 8.2125 million barrels of liquefied gases (propanes, butanes, pentanes) in any consecutive four-quarter period. <Basis: Cumulative Increase, toxics, BACT>

3. The Permit Holder shall maintain quarterly records in a District approved log. These records shall be retained for a period of at least five years. The logs shall be kept on site and made available to District staff upon request. <Basis: Recordkeeping>

4. The owner/operator shall operate the gas collection and emission control system continuously during all loading and unloading of liquefied gases (propanes, butanes, pentanes) at the S-1027 Light Ends Rail Rack facility. <Basis: Contemporaneous Emission Reduction Credits>

5. The owner/operator shall maintain the gas collection system in a leak free condition (completely enclosed). <Basis: Contemporaneous Emission Reduction Credits>

6. Prior to implementation of the VIP, the owner/operator shall route the POC emissions from the S-1027 Light Ends Rail Rack to an existing sphere or vapor recovery system. <Basis: Contemporaneous Emission Reduction Credits>

Valero has requested to receive a banking certificate for any unused POC credits.

PM10

The PM10 emissions from the new S-1046 furnace at the main stack are 2.7 tons/year. These PM10 emissions will be commingled with the emissions from the main stack, which will remain unchanged from its three-year baseline (7/99 to 6/02). Part 21.2.c has been imposed to limit PM10 emissions at the main stack to no more than the baseline level of 103.8 tons per calendar year. The baseline was reduced from 106.5 tons/year to account for the 2.7 tons/year of PM10 emissions from the S-1046 new furnace.

The VIP project will increase PM10 emissions from fugitives and the cargo carriers (ships, barges and tug boats and trains) by 2.6 tons/year. Valero will provide the needed credits from two areas:

1) In Application #6968 (May 20, 1991), Valero was charged 1.61 tons/year of PM10 emissions from the ships used to import MTBE. At that time, District regulations allowed the facility to delay providing offsets until such time that a new project was submitted for permits. Later, Valero submitted Application #9425 (July 15, 1992) to obtain permits for a new MTBE Manufacturing Facility. As part of that project, Valero provided offsets for the pre-existing cumulative increase of 1.61 tons/year of PM10 emissions from the MTBE ships along with offsets for the increase in PM10 emissions from the new project. Valero paved 9600 sq. ft. of an unpaved truck road to generate the necessary PM10 credits. The MTBE Phaseout application (#2035) covers the shutdown of the MTBE shipping operation. Under Regulation 2-2-605, the shutdown of a fully offset source or activity releases those offsets for future use. The shutdown of the MTBE shipping operation releases the 1.61 TPY PM10 used to offset it.

2) As part of the Cogeneration Project (Applications # 2488 and 2695), Valero will shut down S-38 and S-39 steam boilers. After satisfying all of the PM10 offset obligation in the Cogeneration Project for Phase I, a PM10 credit is due back to Valero in the amount of 3.786 tons per year. Valero has requested to apply 0.99 tons/year of these credits to the VIP. The derivation of this credit is documented throughout the engineering evaluation for the Cogeneration Project. The engineering evaluation can be found in Applications # 2488 and 2695. The District is in agreement that Valero can use a portion of these credits generated in the Cogeneration Project to offset PM10 emissions in the VIP. However, the PM10 credits can only be applied after S-38 and S-39 boilers have been shut down. The conditions in the Cogeneration Project govern the shut down of the two boilers. Condition 19177, part 47 of the Cogeneration Project requires shutdown of the S-38 and S-39 steam boilers no later than 90 days after startup of the first power train

(Phase I). Valero started the first power train (phase I) in December 2002. As required due to the implementation of Phase I, the S-38 and S-39 Boilers have now been permanently shut down.

SO2 Offsets

SO2 emissions from the VIP will result in an increase of 22.7 tons/year. The SO2 emissions from the new S-1046 furnace at the main stack are 6.4 tons/year. These SO2 emissions will be commingled with the emissions from the main stack, which will remain unchanged from its three-year baseline (7/99 to 6/02) as long as there has not been an increase in cargo carrier emissions due to the VIP. When part 23 becomes effective, the baseline will be adjusted downward by 16.3 tons to offset emissions from cargo carriers. Part 21.2.b has been imposed to limit SO2 emissions at the main stack due to the inclusion of cargo carriers to no more than 6818.7 tons per calendar year [the adjusted baseline level: 6835 tons – 16.3 tons].

The shutdown of the MTBE ship operation will also generate 9.5 tons/year of SO2 credits since those emissions were fully offset in the Clean Fuels Project (Application #10392). However, those potential credits were consumed in the Valero Cogeneration Project (Applications # 2488 and 2695) under Part 2 and are unavailable for use in the VIP.

Valero may install the A-1047 Amine Scrubber in the main stack to remove SO2 from the CO Furnace F-102 (S-4). This is a voluntary measure beyond the regulatory requirements. It must be mentioned that the A-1047 scrubber will not abate SO2 emissions from the S-1046 furnace.

7.0 NOx Interchangeable Emissions Reduction Credits (IERC's)

Valero has generated NOx IERC credits from S-3 and S-4 CO Boilers at the main stack and would like to continue this practice in the future. Emissions from the main stack have been impacted by the VIP, especially with the inclusion of the S-1046 furnace. In addition, a three-year baseline at the main stack has been established to account for VIP emission increases. This section has been provided to document the District's plan for calculating NOx IERC's in the future, including credit generation periods, following implementation of the proposed Valero Improvement Project.

Normalization

The District intends in the future to continue utilizing, unchanged, the adjustment based on the crude rate during the credit generation period, compared to the crude during the baseline period. This will continue to insure that credits are not approved that result from a curtailment of the crude processing rate. The District will not consider an additional normalization calculation based on the flue gas rate per barrel of crude. This calculation has been made in the past, but has not been found to lead to adjustments in IERC credit evaluations.

Baseline

Following implementation of the VIP, Valero can still continue to apply for NOx IERC's based on the existing baseline that has been utilized for prior IERC applications from the two CO furnaces (S-3 and S-4). The NOx reduction activity has been, and will continue to be, the use of the Thermal deNOx facilities (A-52 and A-53) to reduce emissions below required levels. Because of the VIP activity at the main stack, the calculation procedure will need to be changed to ensure that the emissions are only those from the existing CO furnaces, and that the emissions from the new furnace (S-1046), when operational, must be excluded. Valero will determine the quantity of NOx IERC's in the future using this new calculation procedure.

8.0 REGULATORY COMPLIANCE

As required by Regulation 2, offsets for permitted increases of VOCs, NO_x, SO_x, and PM_{10} will be provided. Regulation 2, Rule 9, Interchangeable Emission Reduction Credits (IERCs), regulates use and trading of Interchangeable Emission Reduction Credits from stationary NO_x sources. This regulation applies to S-3 and S-4 in this permit application. Valero intends to continue generating IERCs at S-3 and S-4.

Regulation 6, Particulate Matter and Visible Emissions, limits the quantity of particulate matter in the atmosphere by controlling emission rates, concentration, visible emissions, and opacity. Ringelmann No. 1 limitation can be exceeded for no more than 3 minutes in an hour. A water vapor plume from the new scrubber is exempt per Regulation 1, Rule 114. These Regulation 6 requirements apply to source numbers S-1, S-2, S-3, S-4, S-5, S-6, S-8, and S-1010 in this permit application. In addition, Regulation 6, Rule 311 limits Main Stack PM_{10} emissions to less than

40 lb/hr. All of these sources are expected to continue to comply with the requirements of Regulation 6.

Regulation 8, Rule 5 applies to the new crude oil tanks, S-1047 and S-1048. Each tank will have a primary seal and zero-gap secondary seal.

Regulation 8, Rule 18 (Organic Compounds, Equipment Leaks) applies to all fugitive emission sources at the refinery including valves, pumps, and flanges/connectors in VOC service. To comply with the regulation, equipment in light-VOC service will be integrated into the existing fugitive emissions program at the refinery. The leak criteria for valves and flanges/connectors is 100 parts per million (ppm). The leak criterion for pumps and compressors is 500 ppm. No new atmospheric pressure relief valves in VOC service will be installed as a result of the VIP. The project will affect fugitive emissions from most VIP facilities, including but not limited to the Hydrocracking Unit (S-1003), the Powerformer (S-1004), the Catalytic Feed Hydrotreater (S-1005), the Pipestill Unit (S-1006), the Alkylation Unit (S-1007), the Hydrogen Plant (S-1010), the Dimersol Unit (S-1012), the FCCU (S-5), the Coker Unit (S-6), the SRU (S-1 and S-2), various Hydrofiner Reactors (S-1002, S-1008, S-1009, S-1011, S-1049 through S-1056) and Fractionation/Stripping Vessels (S-1034 through S-1045), and the Tankage Area (S-1047 and S-1048). These facilities are subject to and expected to comply with Regulation 8, Rule 28 (Episodic Releases From Pressure Relief Devices at Petroleum Refineries and Chemical Plants) and Regulation 11, Rule 7 (Hazardous Pollutants, Benzene).

The emission limitations, monitoring, and sampling requirements from Regulation 9-1 apply to the FCCU (S-5) and the Coker Unit (S-6). Regulation 9, Rule 1, Section 310, Emission Limitations for Fluid Catalytic Cracking Units, Fluid Cokers, and Coke Calcining Kilns, limits SO_2 emissions sources S-5 and S-6 to 1,000 ppmv. Regulation 9, Rule 1, Section 313 (Sulfur Removal Operations at Petroleum Refineries) requires that the refinery remove and recover 95 percent of the hydrogen sulfide (H_2S). This applies to sources S-1 and S-2. The Valero refinery will continue to comply with the requirements of Regulation 9, Rule 1 (Inorganic Gaseous Pollutants, Sulfur Dioxide).

Regulation 9, Rule 1, Section 301 and Regulation 9, Rule 2, Section 301 limit ground-level concentrations of H2S for the whole refinery. Section 9-2-301 states that "a person shall not emit during any 24 hour period, hydrogen sulfide in such quantities as to result in ground level concentrations in excess of 0.06 ppm averaged over three consecutive minutes or 0.03 ppm averaged over any 60 consecutive minutes. The Valero refinery will continue to comply with the requirements of Regulation 9, Rule 2 (Inorganic Gaseous Pollutants, Hydrogen Sulfide).

Regulation 9, Rule 10 (NO_x and CO from Boilers, Steam Generators, and Process Heaters in Petroleum Refineries) limits emissions of NO_x and CO from these refinery sources. Emission limits, monitoring, and reporting requirements in this regulation apply to sources S-3 and S-4. Regulation 9, Rule 10, Section 304.1 limits NO_x emissions to 150 ppmv at 3 percent O_2, dry, and Section 305 limits CO emissions to 400 ppmv at 3 percent O_2, dry. The Valero refinery will continue to comply with the requirements of Regulation 9, Rule 10.

9.0 California Environmental Quality Act Applicability

The California Environmental Quality Act (CEQA) calls for a review of potential significant

environmental impacts from proposed projects. To document potential environmental impacts from the project, the City of Benicia prepared a draft Environmental Impact Report (SCH# 2002042122) for the VIP, which will include the proposed actions covered in this Authority to Construct application. The District is a responsible agency under CEQA and provided comments to the City of Benicia on the draft EIR. The City Planning Commission approved the Final EIR on April 28, 2003.

10.0 PUBLIC NOTICE

Public noticing is required for any major modification at an existing major facility (> 100 tons/year of any single pollutant) per Regulation 2-2-406. A major modification per Regulation 2-2-221 is any modification at an existing major facility that the APCO determines will cause an increase of the facility's emissions by the following amount:

	Tons/year
POC	40
NOx	40
SO2	40
PM10	15
CO	100

Because the facility will provide contemporaneous emission reduction credits for all increases in VIP emissions, there will be no increase in the facility's emissions. Therefore, the public noticing requirements of Regulation 2-2-221 are not triggered.

Valero has requested to receive banking credits for SO2 emission reductions in the event the A-1047 Amine Scrubber is installed in the main stack. If Valero installs the scrubber pursuant to this application, the exact amount of any real and permanent emissions reduction actually achieved will be determined at that time, using the baseline established in this application and the new permit limits accepted by Valero based upon the actual effectiveness of the scrubber. The baseline emissions shall be calculated in accordance with Regulation 2-2-605. If the bankable SO2 credits are determined to be in excess of 40 tons/year, the preliminary decision of the APCO to approve the emission reduction credits will be public noticed at that time in accordance with Regulation 2-4-405.

11.0 Prevention of Significant Deterioration Applicability

The Valero Benicia Refinery is defined as a major source for the purposes of the Operating Permit program under Title V and the federal Prevention of Significant Deterioration (PSD) program, as implemented by BAAQMD Regulation 2, Rule 2. PSD requirements apply if proposed modifications to a major source exceed PSD threshold levels. Table 11-1 summarizes the pollutant emission increases as they relate to the PSD thresholds for a major modification to a major source. Federal PSD for sulfuric acid mist (SAM) from the S-1046 Furnace is also included. The emissions calculation for SAM is included with the emissions calculation for the other pollutants in Appendix A. None of the emission increases proposed for the VIP exceed the PSD major modification threshold levels.

Table 11-1: PSD Applicability (without scrubber)

Pollutant	NO_x	SO_2	PM_{10}	CO	SAM
Project net emissions increase (TPY)	0.0	0.0	0.0	0.0	0.53
PSD Threshold (TPY)	40	40	15	100	7.0
PSD Applicable?	No	No	No	No	No

[1] In accordance with BAAQMD Rule 2-2-215.2, cargo carriers (i.e., emissions from ships and trains) are not counted when addressing PSD applicability.

TPY = tons per year

PM_{10} = particulate matter less than 10 micrometers in aerodynamic diameter

12.0 New Source Performance Standards

The standards of performance for new stationary sources, as described in Title 40 of the Code of Federal Regulations (CFR), Part 60, apply to any pollutant for which a standard exists and for which a facility modification will cause an increase in the emission rate.

Subpart J contains Standards of Performance for Petroleum Refineries and covers FCCU catalyst regenerators, fuel gas combustion devices, and Claus sulfur recovery plants, when applicable. For the Valero Benicia Refinery, Subpart J does not apply to the FCCU (S-5) or the Claus sulfur recovery plants (S-1, S-2), but does apply to fuel gas combustion devices. The new S-1046 F-102A furnace, as proposed, will comply with Subpart J.

Subparts GGG and VV apply to new fugitive emission sources in the main process block only. The only impacts will be on equipment in "light-liquid service" (i.e., services with VOC>10 wt% and initial boiling point of less than 302 degrees Fahrenheit). Routine sample points, if installed, will be closed loop for light VOCs. There will be no open-end pipes for VOC service; all pipes will be blinded, plugged, or double blocked. Observed VOC valve leaks will be sniffed and, if measured as leaking, repaired.

Subpart Kb applies to the new tanks. BAAQMD Regulation 8, Rule 5 (discussed in Section 4.1) includes more limiting seal requirements and will satisfy the Subpart Kb requirements. Reporting and recordkeeping requirements associated with Subpart Kb will be followed.

13.0 National Emission Standards for Hazardous Air Pollutants – Maximum Available Control Technology

National Emission Standards for Hazardous Air Pollutants (NESHAPs) for petroleum refineries, included in 40 CFR Part 63, Subpart CC, apply to equipment leaks in the Hydrocracking Unit (S-1003), the Powerformer (S-1004), the Catalytic Feed Hydrotreater (S-1005), the Pipestill Unit (S-1006), the Alkylation Unit (S-1007), the FCCU (S-5), the Coker Unit (S-6), and the Crude Field. The Maximum Available Control Technology (MACT) requirements under Subpart CC are implemented at the Valero Benicia Refinery by the New Source Performance Standards Subpart GGG fugitive requirements. Although some streams in the new process block facilities may not be subject to MACT (hazardous air pollutants [HAPs] less than 5 percent), the refinery will apply MACT to all VOC equipment that is located within a process unit if any part of that process unit is subject to MACT.

The U.S. Environmental Protection Agency (USEPA) is in the process of adopting additional MACT standards from certain petroleum refinery process units. Proposed rules were published on September 11, 1998, in 40 CFR Part 63, Subpart UUU: National Emission Standards for Hazardous Air Pollutants From Petroleum Refineries – Catalytic Cracking Units, Catalytic Reforming Units and Sulfur Plant Units; Proposed Rule. The final rule is expected to be signed by the US EPA Administrator this year.

The proposed MACT rule specifies the same requirements for new, existing, and modified catalytic cracking units and sulfur recovery units. The existing FCCU and SRU at the Valero Benicia Refinery will comply with this rule 3 years after publication of the final rule, which should coincide with the planned implementation of the VIP.

14.0 PERMIT CONDITIONS

FUGITIVE EQUIPMENT

1. a. The Owner/Operator shall equip all light hydrocarbon control valves installed as part of the VIP with live loaded packing systems and polished stems, or equivalent. [Basis: BACT, Cumulative Increase, offsets]

b. The Owner/Operator shall equip all flanges/connectors installed in the light hydrocarbon piping systems as a result of the VIP with graphitic-based gaskets unless the service requirements prevent this material. [Basis: BACT, Offsets, Cumulative Increase]

c. The Owner/Operator shall equip all new hydrocarbon centrifugal compressors installed as part of the VIP with "wet" dual mechanical seals with a heavy liquid barrier fluid, or dual dry gas mechanical seals buffered with inert gas. [Basis: BACT, Offsets, Cumulative Increase]

d. The Owner/Operator shall equip all new light hydrocarbon centrifugal pumps installed as part of the VIP with a seal-less design or with dual mechanical seals with a heavy liquid barrier fluid, or equivalent. [Basis: BACT, Offsets, Cumulative Increase]

e. The Owner/Operator shall integrate all new fugitive equipment installed as part of the VIP, in organic service, into the owner's fugitive equipment monitoring and repair program. [Basis: Compliance monitoring]

2. The Owner/Operator shall submit a count of installed pumps, compressors, valves, and flanges/connectors every 180 days until completion of the project. For flanges/connectors, the owner/operator shall also provide a count of the number of graphitic-based and non-graphitic gaskets used. The Owner/Operator has been permitted to install fugitive components (2,000 valves, 6,000 flanges/connectors, 20 pumps) with a total POC emission rate of 3.0 TPY. If there is an increase in the total fugitive component emissions, the plant's cumulative emissions for the project shall be adjusted to reflect the difference between emissions based on predicted versus actual component counts. The Owner/operator may have enough remaining contemporaneous emissions reduction credits (ERC's) to cover any increase in POC fugitive emissions beyond the original projection. If not, the Owner/Operator shall provide to the District all additional required offsets at an offset ratio of 1.15:1 no later than 14 days after the submittal of the final POC fugitive equipment count. If the actual component count is less than the predicted, at the completion of the project, the total will be adjusted accordingly. Any ERC's applied by the facility in excess of the actual total fugitive emissions will be credited back to Owner/Operator prior to issuance of the permits. [Basis: Cumulative Increase, Toxics]

FUEL GAS SYSTEM

3. The Owner/Operator shall fire refinery low-pressure fuel gas in S-1046 at a concentration at or below the following: (a) 155 ppmv totaled reduced sulfur (TRS), averaged over a calendar day and (b) 160 ppmv H2S, averaged over any 3-hour period. [Basis: NSPS, BACT]

4. The Owner/Operator shall fire refinery low-pressure fuel gas in S-1046 at a concentration at or below 45 ppmv of total reduced sulfur, averaged over any rolling consecutive 365-day period. [Basis: BACT, Cumulative Increase]

5. The Owner/Operator shall install and operate a District approved continuous gaseous fuel monitor/recorder to determine the H2S content and total reduced sulfur content of the refinery low pressure fuel gas prior to combustion in S-1046 Furnace. [Basis: Refinery fuel gas monitoring for SO2, BACT]

6. To demonstrate compliance with parts 3 and 4, the Owner/Operator shall measure and record the 24-hour average TRS content, 3-hour H2S content and 365-day average TRS content of the refinery fuel gas fired in S-1046. On a quarterly basis, the Owner/Operator shall report: (a) the daily fuel consumption at S-1046, (b) daily averaged H2S content of the fired refinery fuel gas, (c) daily averaged TRS content, (d) quarterly daily averaged H2S content, (e) quarterly daily averaged TRS content, and (f) annual averaged TRS content using the last four quarters. The report shall be sent to the District's Director of Compliance and Enforcement, and the Manager of the Permit Evaluation Section no later than 60 days after the end of the quarter. [Basis: BACT, Offsets, Cumulative Increase, NSPS]

COMBUSTION SOURCE (S-1046)

7. The Owner/Operator shall fire only refinery fuel gas in the S-1046 Furnace. [Basis: BACT]

8. Total combustion emissions from this combustion source (S-1046), excluding secondary pollutants from abatement devices, shall not exceed the following annual limits in any calendar year: [Basis: Cumulative Increase, Offsets]

Pollutant	*Annual (tons)*
NOx	*12.4*
CO	*21.1*
SO2	*6.4*
PM10	*2.7*
POC	*2.5*

a. The Owner/Operator shall determine the annual emissions using continuous emission monitor (CEM) data for NOx, CO and SO2, and using source test data and fuel consumption for PM10 and POC. [Basis: Monitoring]

b. The Owner/Operator shall submit an annual report to the Compliance and Enforcement Division and Permit Services Division no later than 45 days following the end of each calendar year. The report shall include the actual daily emissions based on CEM data for NOx, CO and SO2, and the daily emissions of PM10 and POC based on the most recent source test data. Also, the report shall include the annual totals of each pollutant to demonstrate compliance with the above limits. The report shall also include the total daily heat input for S-1046 Process Furnace. [Basis: Reporting Requirements]

c. If S-1046 Furnace emissions for a calendar year are less than the above limits, the Owner/Operator may apply the difference as a credit toward the annual Main Stack emissions limit under Part 21.

9. The Owner/Operator shall equip the S-1046 Furnace with a District approved continuous fuel flow monitor and recorder in order to determine fuel consumption. (This is not a parametric monitor as defined in Regulation 1-238.) [Basis: Monitoring]

10. Startups and shutdowns of the S-1046 Furnace shall not exceed 24 consecutive hours. The 24-consecutive-hour startup period is in addition to furnace dryout/warmup periods,which shall not exceed 72 consecutive hours. [Basis: Time allowances for startup and shutdown periods]

10.1 This part does not apply until after the conclusion of the initial startup of S-1046.

11. Except during startup and shutdown, the Owner/Operator shall maintain emissions of nitrogen oxides from the S-1046 Furnace at or below 10 ppmv, dry, corrected to 3% oxygen (0.0118 lb/MM Btu), averaged over any 3 consecutive hours. [Basis: BACT]

12. Except during periods of startup and shutdown, the Owner/Operator shall maintain emissions from the S-1046 Furnace at or below the following levels: (a) CO emissions - 28 ppmv, dry, corrected to 3% oxygen (0.0201 lb/MM Btu), averaged over 8 hours, and (b) PM10 emissions - 0.0026 lb/MMBtu, and (c) POC emissions - 0.0024 lb/MMBtu.

13. The Owner/Operator shall monitor compliance with part 12 by using a District-approved CEM for CO, and annual source test and fuel consumption data for PM10 and POC. [Basis: BACT]

14. Except during periods of startup and shutdown, the Owner/Operator shall maintain ammonia emissions (ammonia slip) from the SCR unit (A-1046) at or below 10 ppmv of ammonia, dry, corrected to 3% oxygen, averaged over any rolling consecutive 3-hour period.

15. The Owner/Operator shall perform an initial source test in accordance with the requirements set forth in Part 17 to demonstrate compliance with the ammonia limitation in part 14. [Basis: Toxics, Source Tests]

16. For source S-1046, the Owner/Operator shall install, calibrate, maintain, and operate a District-approved continuous emission monitor and recorder for NOx, CO and O2. [Basis: CEM Monitoring]

17. No later than 60 days from the startup of the S-1046 Furnace, the Owner/Operator shall conduct a District-approved source test to determine initial compliance with the limits in parts 11, 12, and 14 for NOx, CO, VOC and PM10. The Owner/Operator shall conduct the source tests in accordance with part 20. The Owner/Operator shall submit the source test results to the District staff no later than 60 days after the source test. [Basis: Compliance determination via source tests]

18. The Owner/Operator shall maintain the total combined heat input for S-1046 at or below the following limits: (1) 2,102,400 million BTUs (HHV) in any 365 consecutive day period and (2) 240 million BTUs (HHV)/hr averaged over any one hour period. [Basis: Cumulative Increase]

19. The Owner/Operator shall conduct an annual source test to demonstrate subsequent compliance with the POC and PM10 mass rates specified in part 12. The Owner/Operator shall submit the source test results to the District staff no later than 60 days after the source test. [Basis: Periodic Monitoring]

20. The owner/operator shall obtain approval for all source test procedures from the District's Source Test Section prior to conducting any tests. The owner/operator shall comply with all applicable testing requirements for continuous emissions monitors as specified in Volume V of the District's Manual of Procedures. The owner/operator shall notify the District's Source Test Section, in writing, of the source test protocols and projected test

dates at least 7 days prior to testing. [Basis: Source test compliance verification and accuracy]

MAIN STACK

21. The emission limitations in part 21 shall go into effect upon the implementation of any changes permitted in the Valero Improvement Project that have the potential to increase main stack emissions. These changes are reflected by any one of the following events: [Project Implementation]

1. VIP Triggers for Main Stack

a. Processing more than 135,000 barrels (BBL) of crude in any calendar day at S-1006 Pipestill.
b. Operation of a third air blower, or oxygen injection, to the FCCU Regenerator (S-5) or the Coker Burner (S-6), indicating a change to the combustion process in these units.
c. Operation of any physical changes to the combustion processes at the existing CO furnaces, F101 or F102 (S-3 or S-4).
d. Operation of the proposed new furnace, F102A (S-1046).

2. VIP Implemented – Main Stack Emissions Limitation

Upon implementation of the VIP as triggered in part 21, the Owner/Operator shall limit the Main Stack emissions, excluding emissions from S-1046 Furnace, to no more than the following based on the 3-year baseline (7/99 to 6/02), as adjusted by annual credits carried forward from Part 8c:

a. NOx – 150 ppm @ 3% O2, operating day average, determined by CEM. 1352.6 tons per calendar year.

b. SO2 – 784 ppm @ 3% O2, operating day average, determined by CEM. 6,812.3 tons per calendar year, determined by CEM.. These values may be modified administratively after installation of the main stack scrubber. The modified values will reflect any ERCs granted due to installation of the scrubber.

c. PM10 – 40 lb/hr, as determined by source test
103.8 tons/calendar year, determined by summing each of the daily emissions, per the most recent source test.

d. POC – 4.2 tons/calendar year, determined by summing each of the daily emissions, per the most recent source test.

e. CO – 400 ppm @ 3%O2, operating day average, determined by CEM. 266.9 tons/calendar year.

3. PM10 and POC Periodic Monitoring: Initial & Annual Source Tests

The Owner/operator shall conduct a District approved source test for PM10 and POC emissions within 90 days following the effective date of the above limitations and annually thereafter. The owner/operator shall submit the Source test results to the Director of Compliance and Enforcement Division and the Manager of the Permit Evaluation Section within 60 days following completion of the source test. [Basis: Main stack baseline monitoring, reporting]

4. *Annual Emissions Reporting on Main Stack*
The owner/operator shall submit an annual report to the District no later than 45 days following the end of each applicable calendar year. The owner/operator shall list for each pollutant, the daily emissions and the annual emissions total, to document compliance with the above limitations. [Basis: Reporting Requirements]

5. *Main Stack: Surplus Reduction Used for Shipping Contingency*
If Main Stack emissions for a calendar year are less than the above limits, the owner/operator may apply the surplus reduction, if required, as an offset for the shipping contingency under part 24. [Basis: Offsets]

22. In accordance with Regulation 2-4-301.1, sulfur dioxide (SO2) emission reductions greater than those required by any District regulation, resulting from the installation of A-1047 Flue Gas Scrubber, shall be eligible for banking after being demonstrated by source testing or other means acceptable to the APCO. The baseline emissions shall be calculated in accordance with Regulation 2-2-605. [Basis: Banking]

CARGO CARRIER and DOCK

23. The emission limits in part 23 will begin on January 1 of the year when the owner/operator processes more than 135,000 BBL of crude oil at S-1006 on any one day or the moment that the storage tanks in part 32 (Sources S-57 through S-62, S-1047 and S-1048) exceed a combined total of 141.5 kbbl/day (annual daily average), whichever event occurs first.

Ship and barge emissions associated with the import of crude and gas oil across the plant's main Benicia crude dock, combined with the ship emissions associated with the export of product coke across the Plant's Benicia coke dock, will not exceed the following annual calendar year limits: [Basis Cumulative Increase, Offsets]

Pollutant	*Base Line*	*VIP Increase*	*Total Annual (tons)*
NOx	*96.14*	*39.98*	*136.12*
SOx	*32.87*	*16.19*	*49.06*
POC	*7.34*	*3.22*	*10.56*
PM10	*5.43*	*2.39*	*7.82*
CO	*13.83*	*5.88*	*19.71*

24. To accommodate any unforeseen changes in shipping requirements, the above total annual limits for each pollutant may be further increased to accommodate a shift in crude imports from pipeline to ships. All increases in combustion emissions from ships will need to be offset through contemporaneous emissions reductions. The VOC contingency has been provided as part of Application #5846. The emission reduction credits (ERC's) for the other pollutants will be provided by a corresponding reduction in the main stack annual emission limit (Part 21). However, in no event shall the Owner/Operator allow the total additional increase for the contingency to exceed the contingency allowance presented below. [Basis: Cumulative Increase, Offsets]

Pollutant	*Base Line plus*	*VIP Increase*	*Contingency*	*Total Annual (tons)*
NOx	*136.12*	*32.95*	*169.07*	
SOx	*49.06*	*15.76*	*64.82*	
POC	*10.56*	*3.10*	*13.66*	
PM10	*7.82*	*2.06*	*9.88*	
CO	*19.71*	*5.21*	*24.92*	

25. The Owner/Operator shall use the following emission factors for determining compliance with parts 23 and 24. [Basis: Compliance Verification]

Crude and Gas Oil Ship Receipts at Main Benicia Crude Dock in pounds per 1000 BBL (lb/kBBL):
5.1 NOx, 1.8 SOx, 0.29 PM10, 0.42 POC, 0.76 CO.

Crude and Gas Oil Barge Receipts at Main Benicia Crude Dock in lb/kbbl:
12.78 NOx, 0.16 SOx, 0.56 PM10, 0.29 POC, 1.27 CO.

Coke Exports via Ship at Valero Coke Dock in lb/1000 tons:
44.2 NOx, 33.1 SOx, 3.6 PM10, 3.4 POC, 6.2 CO.

26. The Owner/Operator shall submit calendar year reports to the District, due the 45th day following the end of the year, detailing the annual emissions to document compliance with parts 23 and 24. [Basis: Annual Report]

27. The owner/operator shall maintain daily records (calendar day), in a District approved log, for: (1) the total number of deliveries of crude oil by ship and barge, (2) the total number of deliveries of PGO by ship and barge, and (3) the total number of shipments of coke by ship. The daily throughput of crude oil transferred at the plant's dock from the cargo ship or barge to the crude storage tanks (S-57 through S-62, S-1047 and S-1048) shall be recorded in a District approved log. All records shall be retained for a period of at least five years from the date of entry. This log shall be kept on site and made available to District staff upon request. [Basis: Recordkeeping]

OFFSETS

28. Prior to the implementation of the VIP shipping, the Owner/Operator shall do the following to provide contemporaneous offsets for the ship, rail and barge emissions: [Basis: Contemporaneous Emissions Reduction Credits]

- ***a. Complete Light Ends Rail Rack Arm Drains (15.8 tpy POC).***
- ***b. Halt MTBE ship imports no later than 90 days following VIP implementation (36.7 TPY NOx, 3.48 TPY POC, 1.61 TPY PM10)***
- ***c. Shut down S-38 and S-39 Boilers, per Cogeneration Project Condition 19177, part 47 (0.99 tpy PM10)***
- ***d. Reduce Main Stack SO2 emissions per part 22 by 16.4 TPY.***

Note: VIP shipping is triggered as described in Part 23.

29. Prior to implementation of the VIP phase pertaining to POC fugitives or crude tankage, the Owner/Operator shall do the following to offset the POC emissions increase in part 2 from fugitives (3.0 tpy), and the S-1047 and S-1048 crude storage tanks (3.3 tpy):
[Basis: Offsets]

a. Complete Light Ends Rail Rack Drains (15.8 tons POC/year)

Note: The VIP phase in part 29 is triggered upon commissioning the first VIP fugitive components, or the commissioning of the first crude tank (S-1047 or S-1048).

STORAGE TANKS

30. For the S-1047 and S-1048 Storage Tanks (external floating roof), the Owner/Operator shall comply with all applicable NSPS requirements of 40 CFR, Part 60 Subpart Kb and the requirements of District Regulation 8-5. [Basis: BACT, NSPS]

31. Owner/Operator shall not store any material in S-1047 or S-1048 storage tanks other than crude oil if the new material will result in an emission increase of POC or an increase in toxicity. This prohibition includes (but is not limited to) the storage of a new material with a: a) Higher vapor pressure at actual storage temperature; (b) lower initial boiling point: (c) larger percentage of a toxic component; (d) new toxic compounds. Owner/Operator shall notify the District, in writing, of any proposed product storage changes, as prohibited herein, and received written authorization from the APCO in advance of any such use. [Basis: Cumulative Increase, Toxics]

32. The Owner/Operator shall limit the combined material throughput at storage tanks, S-57 through S-62, S-1047 and S-1048, to no more than 171.5 kbbl/day (annual daily average)or 62.6 Million Barrels per year.
[Basis: Cumulative Increase]

33. The Owner/Operator shall maintain the daily combined material throughput at storage tanks, S-57 through S-62, S-1047 and S-1048, in a District approved log to demonstrate

whether or not the VIP has been triggered per part 23 and compliance with part 32. The Owner/Operator shall keep these records on site and make them available for District inspection for a period of at least 5 years from the date on which a record is made. [Basis: Recordkeeping]

MISCELLANEOUS UNITS, VESSELS AND REACTORS

34. For the new S-1057 Pressure Swing Absorption Unit, the Owner/Operator shall not operate the source beyond the following throughput limitations: [Basis: Cumulative Increase]

50 MMSCFD Feed Rate, Annual Average
50 MMSCFD Feed Rate, Daily Average

35. The Owner/Operator shall maintain the daily material throughput at the new Pressure Swing Absorption Unit, S-1057, in a District approved log. The Owner/Operator shall keep these records on site and make them available for District inspection for a period of at least 5 years from the date on which a record is made. [Basis: Recordkeeping]

36. For each new fractionation/stripping process vessel (S-1034 through S-1045), the Owner/Operator shall not operate the sources beyond the following throughput limitation: [Basis: Cumulative Increase]

100 kbbl/day, Daily Average, each vessel.

37. Upon startup of each source in part 36, the Owner/Operator shall submit documentation of the final design throughput for the source. The Owner/Operator may adjust the throughput limit for each source in part #36 as long as it does not exceed the 100 kbbl/day, daily average.

38. The Owner/Operator shall maintain the daily material throughputs for each new fractionation/stripping source, S-1034 through S-1045, in a District approved log. The Owner/Operator shall keep these records on site and make them available for District inspection for a period of at least 5 years from the date on which a record is made. [Basis: Recordkeeping]

39. For each new hydrofining reactor process vessel (S-1049 through S-1056), the Owner/Operator shall not operate the sources beyond the following throughput limitation: [Basis: Cumulative Increase]

100 kbbl/day, Daily Average, each vessel.

40. Upon startup of each source, the Owner/Operator shall submit documentation of the final design throughput for the source. The Owner/Operator may adjust the throughput limit for each source in part 39 as long as it does not exceed 100 kbbl/day, daily average.

41. The Owner/Operator shall maintain the daily material throughputs for each new hydrofining source, S-1049 through S-1056, in a District approved log. The Owner/Operator shall keep these records on site and make them available for District inspection for a period of at least 5 years from the date on which a record is made. [Basis: Recordkeeping]

42. For each individual sulfur plant train, S-1 and S-2, the Owner/Operator shall not operate the sources beyond the following sulfur production limits: [Basis: Cumulative Increase, odors]

240 short tons per day, daily maximum
87,600 short tons per year

Note: Registration #76227 limits the daily throughput of S-1 and S-2. This limit will be deleted when the VIP project is started up.

43. The Owner/Operator shall maintain the daily sulfur production at each individual sulfur plant train, S-1 and S-2, in a District approved log. The Owner/Operator shall keep these records on site and make them available for District inspection for a period of at least 5 years from the date on which a record is made. [Basis: Recordkeeping]

44. For the sulfur storage pit and product tank, S-157 and S-236, the Owner/Operator shall not operate the sources beyond the following throughput limits: [Basis: Cumulative Increase, Odors]

480 short tons per day, daily maximum
175,200 short tons per year

45. The Owner/Operator shall maintain the daily material throughput at the sulfur storage pit and product tank, S-157 and S-236, in a District approved log. The Owner/Operator shall maintain these records on site and make them available for District inspection for a period of at least 5 years from the date on which a record is made. [Basis: Recordkeeping]

46. For the FCCU, S-5, the Owner/Operator shall not operate the source beyond the following throughput limits:
[Basis: Cumulative Increase]
80 kbbl per day, daily maximum
77 kbbl per day, annual average

47. The Owner/Operator shall maintain the daily material throughput at the FCCU, S-5, in a District approved log. The Owner/Operator shall keep these records on site and make them available for District inspection for a period of at least 5 years from the date on which a record is made. [Basis: Recordkeeping]

48. For the coke silos, S-8, the Owner/Operator shall not operate the source beyond the following limits:

[Basis: Cumulative Increase]
2,400 tons per day, daily maximum
686.2 ktons per year

49. The Owner/Operator shall maintain the daily material throughput at the coke silos, S-8, in a District approved log. The Owner/Operator shall keep these records and make them available for District inspection for a period of at least 5 years from the date on which a record is made.
[Basis: Recordkeeping]

50. The Owner/Operator shall not operate the S-9 Blow down system or the S-1006 Pipestill Unit beyond the following throughput limits: [Basis: Cumulative Increase]

180 kbbl per day, daily maximum
165 kbbl per day, annual average

Note: Condition #815, part 1 covers the daily throughput limit for S-1006. Condition #815, part 1 will be deleted when the VIP project is implemented.

51. The Owner/Operator shall maintain the daily crude throughput at the S-9 Crude blow down system and the S-1006 pipestill unit in a District approved log. The Owner/Operator shall keep these records on site and make them available for District inspection for a period of at least 5 years from the date on which a record is made.

Note: Condition #815, part 2 covers the recordkeeping and reporting requirement for S-1006. This condition will be deleted when the VIP project is started up.

52. To demonstrate compliance with the throughput limit specified in part 50, the Owner/Operator shall submit a report to the District's Compliance and Enforcement Division and Permit Services Division on a monthly basis. The Owner/Operator shall forward the report to the District no later than 30 days after the close of each month. [Basis: Recordkeeping]

53. For the activated carbon drums and the hydrocracker unit, S-51, S-52 and S-1003, the Owner/Operator shall not operate the source beyond the following throughput limits: [Basis: Cumulative Increase]

44 kbbl per day, daily maximum
40 kbbl per day, annual average

54. The Owner/Operator shall maintain the daily material throughput at the activated carbon drums and the hydrocracker unit, S-51, S-52 and S-1003, in a District approved log. The Owner/Operator shall keep these records on site and make them available for District inspection for a period of at least 5 years from the date on which a record is made. [Basis: Recordkeeping]

55. For the powerformer unit, S-1004, the Owner/Operator shall not operate the source beyond the following throughput limits: [Basis: Cumulative Increase]

39.8 kbbl per day, daily maximum
14.5 MMBBL per year

Note: Condition #18794, part 1 covers the daily and annual throughput limits for S-1004.
Part 1 of Condition #18794 will be deleted when the VIP project is implemented.

56. The Owner/Operator shall maintain the daily feed throughput at the powerformer unit, S-1004, in a District approved log. The Owner/Operator shall keep these records on site and make them available for District inspection for a period of at least 5 years from the date on which a record is made.
[Basis: Recordkeeping]

Note: Condition #18794, part 2 covers the recordkeeping requirements for S-1004.
Part 2 of Condition #18794 will be deleted when the VIP project is implemented.

57. For the hydrogen plant, S-1010, the Owner/Operator shall not operate the source beyond the following throughput limits , A and B trains combined: [Basis: Cumulative Increase]

190 MMSCF per day, daily maximum
69,350 MMSCF per year

58. The Owner/Operator shall maintain the daily throughput of product hydrogen at the hydrogen plant, S-1010, from both A and B trains combined, in a District approved log. The Owner/Operator shall keep these records on site and make them available for District inspection for a period of at least 5 years from the date on which a record is made. [Basis: Recordkeeping]

59. For the dimersol unit, S-1012, the Owner/Operator shall not operate the source beyond following throughput limits:
[Basis: Cumulative Increase]
7 kbbl per day, daily maximum
2.555 MMBBL per year

60. The Owner/Operator shall maintain the daily feed throughput at the Dimersol Unit, S-1012, in a District approved log. The Owner/Operator shall keep these records on site and make them available for District inspection for a period of at least five years. [Basis: Recordkeeping]

<u>S-1027 Light Ends Rail Rack</u>
Existing Condition #17835
Note: Parts number 1, 2 and 3 are shown here only for completeness purposes. These parts are in effect and are enforceable only under Condition ID #17835.

1. This Light Ends Rail Rack (S-1027) shall handle no more than 22,500 barrels per day, as averaged over the quarterly period. <Basis: Cumulative Increase>

2. This light ends rail rack (S-1027) shall handle no more than 8.2125 million barrels of liquefied gases (propanes, butanes, pentanes) in any consecutive four-quarter period. <Basis: Cumulative Increase, toxics, BACT>

3. The Permit Holder shall maintain quarterly records in a District approved log. These records shall be retained for a period of at least five years. The logs shall be kept on site and made available to District staff upon request. <Basis: Recordkeeping>

4. The owner/operator shall operate the gas collection and emission control system continuously during all loading and unloading of liquefied gases (propanes, butanes, pentanes) at the S-1027 Light Ends Rail Rack facility. <Basis: Contemporaneous Emission Reduction Credits>

5. The owner/operator shall maintain the gas collection system in a leak free condition (completely enclosed). <Basis: Contemporaneous Emission Reduction Credits>

6. Prior to implementation of the VIP, the owner/operator shall route the POC emissions from the S-1027 Light Ends Rail Rack to an existing sphere or vapor recovery system. <Basis: Contemporaneous Emission Reduction Credits>

15.0 RECOMMENDATION

Douglas W. Hall, Supervising Air Quality Engineer
I recommend that Valero Refining Company in Benicia be granted Authorities to Construct for the Valero Improvement Project (VIP) as stated herein. All new equipment will utilize the Best Available Control Technology (BACT). Valero has or should comply with all applicable federal, state and district rules and regulations. The proposed project should not have any adverse health effect on the general public. The requirements under California Environmental Quality Act (CEQA) have been met through the preparation of an Environmental Impact Report (EIR). The proposed project is not within a 1000 feet of a school. The proposed project in its entirety will result in a net air quality benefit.

Sources To Be Added (New)
S-1034 through S-1045
Fractionation/Stripping Vessels

S-1046 Process Furnace: Vacuum Tower Preheat, F-102A, 240 MMBTU/hr; abated by A-1046 Selective Catalytic Reduction System
S-1047 Crude Oil Storage Tank: External Floating Roof, 650,000-barrel capacity
S-1048 Crude Oil Storage Tank: External Floating Roof, 650,000-barrel capacity

S-1049 through S-1056
Hydrofiner Reactors (includes Cat Feed Hydrotreater Guard Reactor)
S-1057 Pressure Swing Adsorption Unit

New Abatement Equipment
A-1046 Selective Catalytic Reduction System; abating NOx emissions from the S-1046 Process Furnace

A-1047 Amine Scrubber; abating SO2 emissions from S-4 CO Furnace F-102, S-6 Coker Unit and a portion of the S-5 FCCU unit.

Sources To Be Modified
S-1 Claus Sulfur Plant 'A': F-1301A
S-2 Claus Sulfur Plant 'B': F-1301B
S-5 Fluid Catalytic Cracking Unit
S-8 Coke Silos

S-1003 Hydrocracking Unit
S-1004 Powerformer Unit
S-1006 Pipestill
S-1010 Hydrogen Plant
S-1012 Dimersol Unit

Sources To Be Altered
S-3 CO Furnace F-101: 349.5 MMBTU/hr
S-4 CO Furnace F-102: 169.8 MMBTU/hr
S-6 Fluid Coker
S-67 Storage Tank: to be fitted with steam heating coils
S-68 Storage Tank: to be fitted with steam heating coils
S-72 Storage Tank: to be fitted with steam heating coils
S-1002 Diesel Hydrofiner
S-1005 Cat Feed Hydrofiner

S-1007 Alkylation Unit
S-1008 Virgin Naphtha Hydrofiner
S-1009 Jet Fuel Hydrofiner
S-1011 Heavy Cat Naphtha Hydrofiner

16.0 BANKING CREDITS

POC: 0.88 ton[1] (Excess Contemporaneous Emission Credit)

[1] As shown in Table 6-1, it is anticipated that the VIP project will generate a POC credit of 0.88 ton. This credit stems from the control of POC emissions at the Light Ends Rail Rack (S-1027) and from the shut down of the MTBE ships. This credit may be increased or decreased to zero in accordance with part 2 based on the actual final fugitive component count consisting of valves, pumps and flanges/connectors.

SO2 Emissions Reduction Credits from A-1047 Scrubber:

Valero has requested to bank SO2 emission reductions from the installation of the new scrubber in the main stack. If the new scrubber is installed pursuant to this Authority to Construct, and operates as described in Valero's application, the emissions reduction shall be eligible for banking after being demonstrated by source test or other means acceptable to the APCO, including emission factors [Regulation 2-2-301]. The baseline emissions shall be calculated in accordance with Regulation 2-2-605.

Valero will provide contemporaneous emission reductions for the Valero Improvement Project by installing loading arm drain piping at the Light Ends Rail Rack (S-1027). Valero has a Permit to Operate (No. 2390) the Light Ends Rail Rack with 10 loading spots.

Loading arm drain piping will be installed to route emissions associated with disconnection of the arms at the end of a filling operation to a closed disposition (existing storage sphere or fuel gas recovery system). Based on calculations in the BAAQMD Evaluation Report (Application No. 2390), the increase in emissions from the component additions for the new equipment is 0.2 ton per year.

Total volatile organic compound (VOC) emissions from the loading arm drains were calculated by estimating the amount of material present in the arms before disconnection. The emissions per rail car loaded are calculated in Table E-1.

Table E-1
Loading Arm Venting Emissions

Pipe Size	Material (Pounds of Butane per Foot)	Total Emissions Recovered (Pounds per Rail Car)
20 feet of 2 inch	0.85	17.0
6 feet of 3 inch	1.87	11.2
TOTAL		28.2

The 3-year baseline (July 1999 through June 2002) for rail cars loaded is 1,135.7 rail cars per year. The elimination of the loading arm venting emissions will result in a VOC emissions reduction of 16.0 tons per year (1,135.7 rail cars multiplied by 28.2 pounds per rail car). The net VOC contemporaneous reduction of 15.8 tons per year is calculated as the reduction of 16.0 tons per year from the loading arms less the fugitive component emissions of 0.2 tons per year. A summary of the rail cars loaded during the baseline period is attached.

APPENDIX A

EMISSIONS CALCULATION

Cargo Carrier
Attachment A. Crude and PGO Import Baseline
Attachment B. Coke Sales in 1000 Short Tons per Month

Storage Tanks (S-1047 and S-1048)

Fugitive VOC Emissions (Valves, Pumps and Flanges/Connectors)

Locomotive Emissions from Coke Exports

Transit Haul Trucks from Sulfur Exports

Sulfuric Acid Mist (SAM) Emissions From S-1046 New Furnace

APPENDIX B

EMISSIONS CALCULATION

Baseline Methodology

Summary of Main Stack
Three-Year Baseline
(7/1/99 to 6/30/02)

APPENDIX C

EMISSIONS CALCULATION

Main Stack and New Furnace Emissions

APPENDIX D

TOTAL REDUCED SULFUR (PPMV)

Rolling Consecutive 365-Day Average

(1/1/00 to 6/30/02)

Highest TRS Average: 44.892 PPMV

APPENDIX E

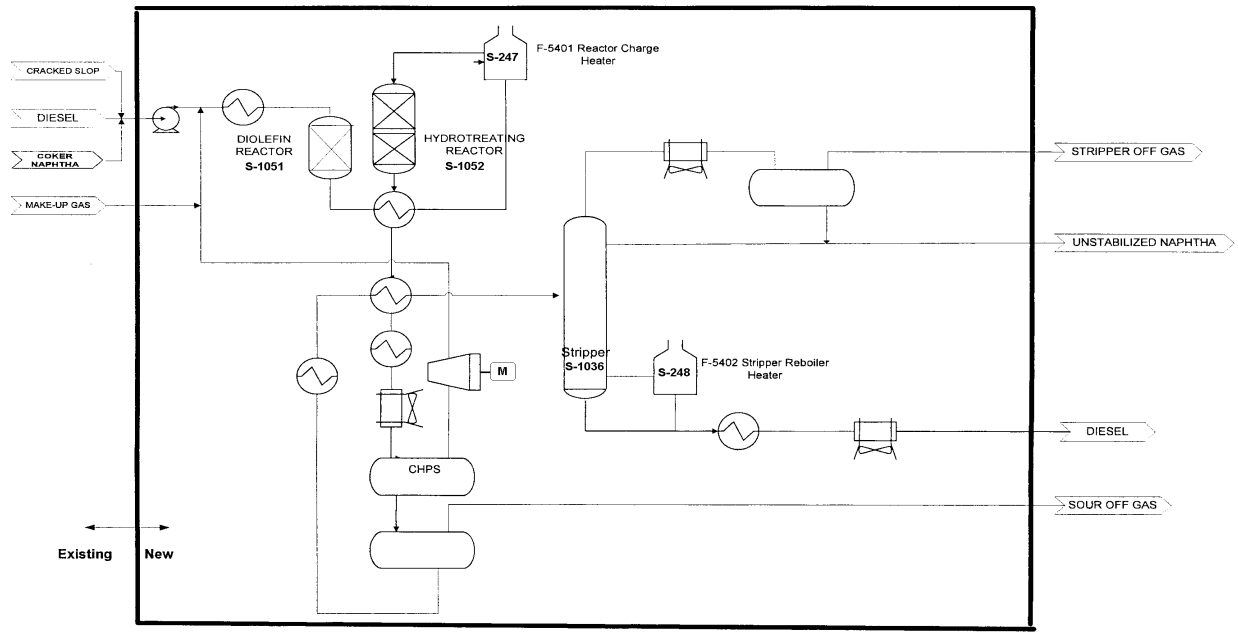
Light Ends Rail Rack Arm Drains

Determination of Emissions Reduction Credit

Baseline Data
(July 1999 to June 2002)

EVALUATION REPORT
VALERO BENICIA REFINERY
VIP PROJECT ULTRA LOW SULFUR DIESEL UNIT
APPLICATION 13009, PLANT 12626

FLOW DIAGRAM



BACKGROUND

The Valero Benicia Refinery (Valero) operates several process units that treat and blend crude oil distillation products for market. These products are often called "cuts" because the product represents a portion (or cut) of the overall crude oil distillation curve. One of the mid-level cuts from the S-1006 Atmospheric Crude Distillation Unit (aka Atmospheric Pipestill) is Diesel, which Valero currently produces via S-1002, the Diesel Hydrofining Unit. This S-1002 unit treats the Diesel cut with medium pressure hydrogen (~400 psi) producing the Low Sulfur Diesel (500 ppm sulfur) currently required by CARB. Beginning in June 2006, EPA and CARB implement a new Diesel Standard requiring no more than 15 ppm sulfur content. This "Ultra Low Sulfur Diesel" material can not be produced with the existing S-1002 Diesel Hydrofining Unit. A new unit that treats the Diesel with high pressure hydrogen is required.

This application is for a new Ultra Low Sulfur Diesel (ULSD) Unit, consisting of the following sources:

S-247 F-5401 Reactor Charge Heater, ULSD Unit, 21.95MMBtu/hr
S-248 F-5402 Stripper Reboiler Heater, ULSD Unit, 35.10 MMBtu/hr
S-1036 ULSD Unit Stripper
S-1051 ULSD Unit Diolefin Reactor
S-1052 ULSD Unit Hydrotreating Reactor

The ULSD Unit is considered part of the Valero Improvement Project (VIP), which is a comprehensive facility-wide upgrade project associated with an increase in Crude Oil throughput. The VIP was granted an Authority to Construct July 31, 2003 via Application 5846. (This Authority to Construct was renewed in 2005 and currently expires July 31, 2007.) The comprehensive scope and long duration of the VIP required some parts of Application 5846 to be

only generally defined. This was the case for the ULSD Unit, which had sources reserved but not completely defined for the unit. The sources now defined by this ULSD Unit Application 13009, but were initially granted an Authority to Construct in 2003 are:

S-1036 ULSD Unit Stripper
S-1051 ULSD Unit Diolefin Reactor
S-1052 ULSD Unit Hydrotreating Reactor

The Valero Improvement Project recognized that the increased refinery throughput and the associated processing would require additional heater/boiler duty. However, at the time VIP was defined for Application 5846, it was assumed that the majority of this additional duty would be achieved by firing existing equipment harder. Therefore, there were no new process heaters specifically included in the VIP scope for the ULSD Unit. This is the primary reason for this Application 13009 – the request for an Authority to Construct for two new process heaters:

S-247 F-5401 Reactor Charge Heater, ULSD Unit, 21.95MMBtu/hr
S-248 F-5402 Stripper Reboiler Heater, ULSD Unit, 35.10 MMBtu/hr

In addition to the Diesel cut from the Atmospheric Crude Distillation, there are two other process streams that are included in the design of this new ULSD Unit. These two streams are Cracked Slop and Coker Naphtha. These streams contain valuable material in them, but the typical dispositions to the FCCU (S-5) and HCU (S-1003), respectively, are not optimum. Valero has elected to use the new high pressure hydrotreater in the ULSD Unit to better process these high sulfur and/or high olefin content feed streams. Therefore, in additional to the current Diesel Hydrofining Unit S-1002 14,000 BPD capacity, the ULSD Unit will be designed to process an additional 11,000 BPD of cracked slop and coker naphtha for a total design throughput of 25,000 BPD.

The ULSD Unit is anticipated to start up in June, 2007.

EMISSIONS SUMMARY

Both S-247 and S-248 are Optimized Process Furnaces natural draft furnaces, equipped with Callidus low NOx burners fired on refinery fuel gas. The burner manufacturer has guaranteed the heater emissions as follows:

ULSD Heater Burner Manufacturer's Emissions Guarantee				
	S-247 F-5401 Reactor Charge Heater		**S-248 F-5402 Stripper Reboiler**	
Design Duty	21.95 MMBtu/hr		35.10 MMBtu/hr	
	ppmv @ 3% O2	lb/MMBtu	ppmv @ 3% O2	lb/MMBtu
NOx	17	0.0200	17	0.0200
CO	50	0.0357	50	0.0357
POC	10	0.0026	10	0.0026
PM10	10	0.0050	10	0.0050

A. S-247 Emission Calculations:

NOx emissions = 21.95 MMBtu/hr * 0.020 lb/MMBtu
= 0.439 lb/hr
= 10.54 lb/day
= 3846 lb/yr
= 1.923 ton/yr

CO emissions = 21.95 MMBtu/hr * 0.0357 lb/MMBtu
= 0.784 lb/hr
= 18.81 lb/day
= 6864 lb/yr
= 3.432 ton/yr

POC emissions =21.95 MMBtu/hr * 0.0026 lb/MMBtu
= 0.057 lb/hr
= 1.37 lb/day
= 500 lb/yr
= 0.250 ton/yr

PM10 emissions =21.95 MMBtu/hr * 0.0050 lb/MMBtu
= 0.110 lb/hr
= 2.63 lb/day
= 961 lb/yr
= 0.481 ton/yr

SO2 emissions are based on the VIP Authority to Construct condition that limits the annual average TRS concentration of the refinery fuel gas (FG) to 45 ppmv (Condition 20820, Part 4).

45 ppmv = 45 moles TRS per 1000000 moles FG

Using the annual average Refinery fuel gas heating value of 1225 BTU/SCF,

SO2 emission factor = (45 moles TRS/1000000 moles FG)*(1 mole FG/385.3 DSCF FG)*
(1 DSCF FG / 1225 BTU)*(32lb TRS/lb-mole TRS)*
(2lb SO2 in flue / lb TRS in FG)*(1000000Btu/MMBtu)
= 0.00610 lb SO2/MMBtu

SO2 concentration = (0.00610 lb SO2/MMBtu)*
(385.3 DSCF Flue Gas / 1 mole Flue Gas) /
(8710 DSCF Flue Gas/MMBtu Fuel Gas) /
(64 lb SO2/lb-mole SO2)
= 4.22 E-06 lb-mole SO2 / lb-mole Flue Gas
= 4.22 ppmv

SO2 emission = 21.95 MMBtu/hr * 0.00610 lb/MMBtu
= 0.134 lb/hr
= 3.21 lb/day
= 1173 lb/yr

= 0.586 ton/yr

B. S-248 Emission Calculations:

NOx emissions = 35.10 MMBtu/hr * 0.020 lb/MMBtu
= 0.702 lb/hr
= 16.85 lb/day
= 6150 lb/yr
= 3.075 ton/yr

CO emissions = 35.10 MMBtu/hr * 0.0357 lb/MMBtu
= 1.253 lb/hr
= 30.07 lb/day
= 10977 lb/yr
= 5.488 ton/yr

POC emissions =35.10 MMBtu/hr * 0.0026 lb/MMBtu
= 0.091 lb/hr
= 2.19 lb/day
= 799 lb/yr
= 0.400 ton/yr

PM10 emissions =35.10 MMBtu/hr * 0.0050 lb/MMBtu
= 0.176 lb/hr
= 4.21 lb/day
= 1537 lb/yr
= 0.769 ton/yr

SO2 emission = 35.10 MMBtu/hr * 0.00610 lb/MMBtu
= 0.214 lb/hr
= 5.14 lb/day
= 1876 lb/yr
= 0.938 ton/yr

C. Fugitives:

Valero has estimated that the fugitive emissions from the ULSD unit will be 0.64 tons POC/yr. This estimate is based on a preliminary component count and the emission factors are based on the 2003 average experienced at the refinery. Valero uses Method 3 of the CAPCOA February, 1999 guidelines. A summary of the fugitive emissions is shown in the following table:

Component	Count	Emission Factor lb/day/component	VOC Emissions lb/day	VOC Emissions ton/yr
Pumps	16	0.0117	0.1872	0.0342
Valves	1,372	0.00119	1.6327	0.2980
Flanges/Connects	920	0.00166	1.5272	0.2787
PSD	50	0.00275	0.1375	0.0251

Compressor	1	0.0015	0.0015	0.00027
Total:			3.4861	0.63627

The total fugitive emissions estimated in VIP Application 5846 were 3.0 ton/year. Besides the ULSD Unit project, the only VIP project element that has been defined past the preliminary engineering stage is the new Butamer Unit project (aka Alkylation Optimization) S-1034, S-1035, S-1049 and S-1050. The Butamer Unit Project estimated fugitive emissions totaling 0.38 tons/year. Thus, the VIP project Fugitive Emission Reconciliation is as follows:

VIP Application 5846 Fugitives:	3.0 tons/yr
Butamer Unit Fugitives	0.38 tons/yr
ULSD Unit Fugitives	0.64 tons/yr
VIP Fugitives "Balance"	1.98 tons/yr

PLANT CUMULATIVE INCREASE

Pollutant	Current Ton/yr	S-247 Ton/yr	S-248 Ton/yr	Fugitives Ton/yr	Total Emissions Ton/yr
NOx	0.0	1.923	3.075		4.998
CO	0.0	3.432	5.488		8.920
POC	0.0	0.250	0.400	0.64	1.290
PM10	0.0	0.481	0.769		1.250
SO2	0.0	0.586	0.938		1.524

TOXIC RISK SCREEN

A toxic risk screen was required for this application because S-247 and S-248 heaters will be fired on Refinery fuel gas. Based on a source test on S-220 (F-4460), Valero proposed the following emissions factors for Refinery fuel gas combustion:

Pollutant	*Emission Factors (lb/MMBtu)*
Benzene	2.07E-06
Formaldehyde	1.54E-05
Toluene	8.57E-06
Xylene	2.82E-06
Hydrogen Sulfide	1.73E-04
Hex Chromium	2.31E-07
Arsenic	1.87E-07
Cadmium	1.28E-07
Copper	9.13E-07
Lead	2.87E-07
Manganese	3.74E-07
Mercury	2.25E-07
Nickel	1.49E-07
Zinc	4.21E-06
Acetaldehyde	3.60E-05
Phenol	5.34E-06
PAH	3.48E-09

Based on these emission factors, toxic triggers were exceeded for Hex Chromium, Arsenic and Cadmium. A Toxic Risk Screen was performed. The results indicated that the maximum risk is 0.2 in a million, the chronic hazard index is 0.0004 and the acute hazard index is 0.001. In accordance with Regulation 2-5, this risk level is considered acceptable and therefore, the risk screen passes.

BEST AVAILABLE CONTROL TECHNOLOGY

BACT is triggered for new or modified sources that emit criteria pollutants in excess of 10 lbs/day. NOx and CO emissions exceed 10 lb/day for both S-247 and S-248, therefore a BACT evaluation was performed.

District BACT policy approaches the BACT determination in a two-tiered approach. BACT 1 is the control technology that is technically feasible and cost-effective, and BACT 2 is the control technology that is achieved in practice. The first step in a BACT determination is to establish whether the technically achievable control technology (BACT 1) is economic. If the BACT 1 level of control is economic, then it must be installed. If the BACT 1 level of control is not economic, then the level of control must meet the BACT 2 level of control. The District maintains a BACT/TBACT Handbook that summarizes BACT determinations for use as a

guideline for future projects. Even though this handbook is a useful tool, BACT is still evaluated on a case-by-case basis for each permit application.

The current BACT guideline 94.1.1 for natural draft Refinery Process Heaters indicates the following:

Pollutant	BACT 1	BACT 2
NOx	10 ppmv @ 3% O2	25 ppmv @ 3% O2
CO	N/d	50 ppmv @ 3% O2

However, this guideline is dated August 12, 1994, and since it may be out-of-date, the case-by-case requirement of the BACT evaluation required that a survey of BACT 2 achieved in practice be completed.

A. NOx BACT 1 Technically Feasible Control Technology.

The BACT 1 analysis examines the economic benefit for applying a technically feasible control technology to the uncontrolled emissions of the S-247 and S-248 natural draft fired heaters. However, the first step for this analysis was to determine the starting point for uncontrolled emissions. Appendix C1 in the BACT Handbook uses 118 ppmvd NOx as the baseline uncontrolled emissions. However, with the prevalence of low-NOx burners in the industry, it is highly unlikely to purchase a piece of fired equipment that will emit NOx in the 118 ppmvd range. To determine what is, in fact, a typical uncontrolled NOx emission level would require a burner industry survey. However, the burner industry is reluctant to provide sufficient definitive information because of all the variables associated with fuel combustion and NOx formation, not to mention a perception of risking any competitive advantage for its products. Therefore, it was agreed that a suitable starting point for an uncontrolled NOx emission is the requirement of Regulation 9-10-301: 0.033 lb NOx per million Btu's of fired duty (28 ppmvd NOx @ 3% O2). The remaining assumptions for the

BACT evaluation are that the Selective Catalyst Reduction technology would be applied to both S-247 and S-248 in a combined unit and that the Selective Catalyst Reduction technology would reduce NOx emissions to 10 ppmvd @ 3%O2 (0.012 lb NOx/MMBtu).

Uncontrolled NOx emissions:

S-247: 21.95 MMBtu/hr
S-248: 35.10 MMBtu/hr

57.05 total MMBtu/hr X 0.033 lb NOx/MMBu = 1.883 lb/hr total NOx uncontrolled.

Controlled NOx emissions:

57.05 total MMBtu/hr X 0.012 lb NOx/MMBu = 0.685 lb/hr total NOx controlled.

NOx Emission Reduction = 1.883-0.685

= 1.198 lb/hr
= 28.76 lb/day
= 10,498 lb/yr
= 5.25 ton/yr

The applicant has provided the following cost information for installing a SCR system on the S-247 and S-248 fired heaters:

SCR Unit Capital Cost	$ 269,078	Note 1
Taxes and Shipping	8072	Note 2
Ammonia Storage	26,908	Note 3
Forced Draft Heater Conversion	55,673	Note 4
Total Capital Cost	$ 359,731	

1. Capital costs for the SCR systems are based on data provided in BACT and LAER for Emissions of Nitrogen Oxides and Volatile Organic Compounds at Tier 2/Gasoline Sulfur Refinery Projects, US EPA, 2001. Costs include an ammonia injection grid, blower, control valves, controls, catalyst, and installation. Capital costs were adjusted for inflation using the Chemical Engineering Plant Cost Indices for 1999 (390.6) and January 2005 (541.1).
2. Taxes and Shipping assumed to be 3% of SCR Capital Cost.
3. Ammonia Storage and Handling assumed to be 10% of SCR Capital Cost.
4. Capital cost difference between mechanical draft heaters and natural draft heaters calculated based on data provided in BACT and LAER for Emissions of Nitrogen Oxides and Volatile Organic Compounds at Tier 2/Gasoline Sulfur Refinery Projects, US EPA, 2001.

This evaluation uses the recommended BACT evaluation guideline published January 19, 2001 by John S. Seitz, Director, EPA Office of Air Quality Planning Standards, which transmitted the Petroleum Refinery Tier 2 BACT Analysis Report dated January 16, 2001 (see Appendix A.2.1). Using capital recovery factors based on 6% interest and a life expectancy of 20 years (5 years for catalyst), the annualized cost of the SCR unit is added to other annual costs as follows:

Capital Recovery (Note 5)		**Annual Costs**			
Equipment	**Catalyst**	**Ammonia Cost (Note 6)**	**1.5% Fuel Penalty (Note 7)**	**Miscellaneous (Note 8)**	**Total**
$ 22,581	$ 23,911	$ 3,250	$ 53,298	$ 14,389	**$ 117,429**

5. Capital recovery calculations assume equipment costs are equal to 72% of total capital costs and catalyst costs are equal to 28% based on data provided in BACT and LAER for Emissions of Nitrogen Oxides and Volatile Organic Compounds at Tier 2/Gasoline Sulfur Refinery Projects, US EPA, 2001.
6. Calculated assuming 1:1 ratio of NOx to ammonia, ammonia molecular weight (MW) of 17, and NOx MW of 46. This calculation assumes that additional ammonia will be injected beyond the amount that would react with NOx to achieve the estimated emission reduction. This was done to account for ammonia slip and incomplete mixing of ammonia and flue gas. Ammonia cost was calculated assuming anhydrous ammonia was used. Vendors were contacted to determine the current cost of anhydrous ammonia. The average cost quoted by vendors was $0.545 per pound ($1,090 per ton).
7. The cost of natural gas was calculated using the projected 2007 cost of $7.11 per MMBtu.
8. Miscellaneous costs include taxes, insurance, and administration and are assumed to be equal to 4% of total capital costs.

Cost effectiveness of the SCR unit = $117,429 / 5.25 ton/yr NOx
= $22,367 / ton

Since this cost for a SCR unit exceeds the threshold of $17,500 / ton NOx, the SCR unit is not economically feasible per District policy.

B. NOx BACT 2 Achieved in Practice

As stated before, the 25 ppm BACT 2 NOx limit in BACT Handbook Page 94.1.1 is dated in 1994. Recent permitting experience as well as a SCAQMD BACT determination indicates that achieved in practice NOx emissions could be 12 ppmv @ 3% O2 or lower. Therefore, a survey was made for the current BACT 2 achieved in practice low-NOx burner technology. This survey was conducted by Valero as part of their bid process for the ULSD Unit design project. The specified burners are for a natural draft process heater firing refinery fuel gas with high turndown ratios (i.e. 15:1). A summary of the survey is shown below:

Manufacturer	**Burner Model**	**NOx Guarantee**	**Features / Comments**
Callidus	CUB-L-6W	17 ppmv @ 3% O2	Commercially proven Internal Flue Gas Recirculation 15% excess air – high energy efficiency
John Zink	COOLstar	17 ppmv @ 3% O2	Commercially proven Internal Flue Gas Recirculation 15% excess air – high energy efficiency
Zeeco	GLSF Free-Jet	15 ppmv @ 3% O2	Commercially proven Internal Flue Gas Recirculation 15% excess air – high energy efficiency NOx guarantee only at design rate Turndown not covered by guarantee

The conclusion of this survey is that BACT 2 for natural draft process heaters fired on refinery fuel gas is 17 ppmv @ 3% O2.

S-247 and S-248 will comply with BACT 2 for NOx.

C. CO BACT 2 Achieved in Practice

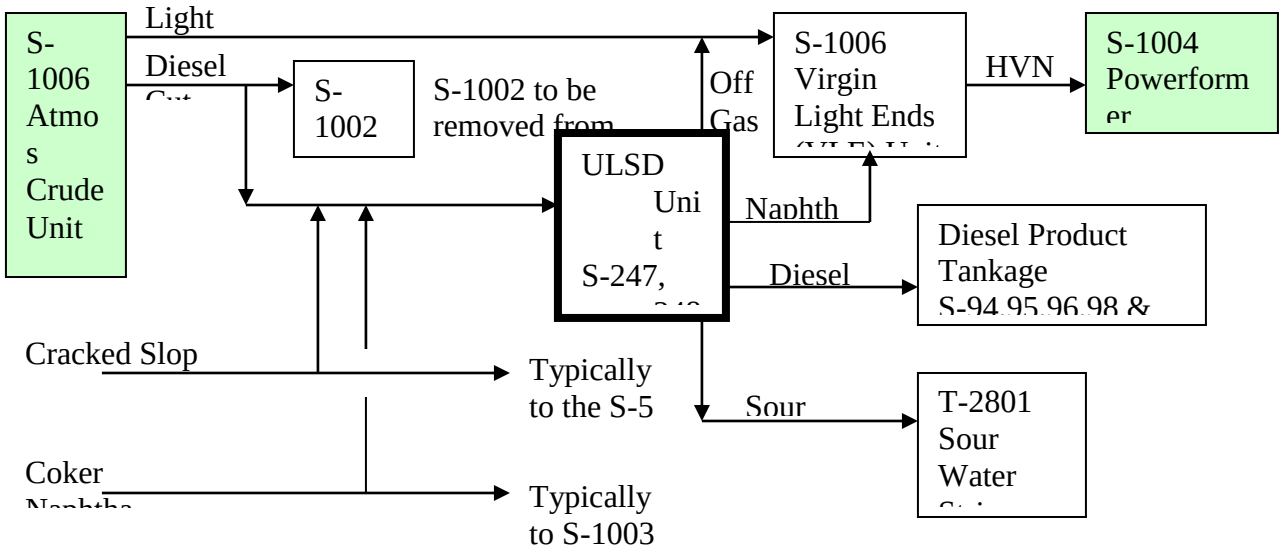
BACT 1 for CO has not been determined for a natural draft process heater. BACT 2 is shown as 50 ppmv @ 3% O2 in 94.1.1. The burner vendor has guaranteed the CO emissions to be less than 50 ppmv @ 3% O2. Unlike the NOx effort, an industry survey for burner CO emissions was not performed because the CO emissions for S-247 and S-248 were in line with recent permitting experience. S-247 and S-248 comply with BACT 2 for CO emissions.

PLANT LOCATION

According to the SCHOOL program, the closest school is Semple Elementary, which is just over one mile from the facility.

FACILITY DEBOTTLENECKING

Regulation 2-1-234.3.2 states that any grandfathered source that incurs an increase in emissions due to a debottlenecking of another source is considered to be modified, and is thus subject to a New Source Review. VIP Application 5846 completed a debottlenecking evaluation but this new ULSD Unit was not included in the evaluation. Therefore, a debottlenecking evaluation is required. The new ULSD Unit will be integrated into the Valero petroleum refinery as shown below:



All of the existing units above are grandfathered except (shaded) S-1006 which has a crude throughput limit of 135,000 BPD and S-1004 which has a throughput limit of 39,800 BPD.

The impacts of the new ULSD Unit are as follows:

1. Cracked Slop and Coker Naphtha will be treated in the ULSD unit. The net impact will be insignificant in terms of Diesel product. Routing Cracked Slop to the ULSD Unit will result in increased flows to the VLE unit, which leads to higher Heavy Virgin Naphtha quantities to be treated in the S-1004 Powerformer. However, the existing S-1004 39,800 BPD NSR limit will not be exceeded. Rerouting these streams from the current processing units in the refinery will reduce throughputs in the S-5 FCCU and in S-1003 Hydrocracking unit. Valero has the ability to "fill" this processing capacity by importing materials to replace these rerouted streams. This option is currently available to Valero but it is not specifically part of this application and in any case, imports would not increase throughputs to a level that exceeds the S-5 and S-1003 grandfathered limits.

2. Offgas flows to the VLE unit. The ULSD offgas that is related to the S-1006 Diesel cut is not significantly impacted compared to the offgas generated in the existing S-1002 Diesel Hydrofining Unit. VLE throughput will increase as addressed in item #1 above. However, the VLE unit is a fractionation unit and the only emissions are fugitive. Since the VLE fugitive component count will remain unchanged, the ULSD Unit will not impact emissions of the VLE unit.

3. Product Diesel flows to Tank Storage. Diesel throughput is expected to remain the same so there will be no change in storage tank throughput.

4. Sour water flows to T-2801 Sour Water Stripper, which is an integral part of S-1 and S-2 Sulfur Recovery Units. Valero has minimized the sour water production in the ULSD unit by using S-248 stripper reboiler (rather than the more widespread steam stripping method). However, some sour water is generated when wash water is injected downstream of the S-1052 reactor to dissolve ammonium sulfate and ammonium chloride salts into the aqueous phase and prevent salt buildup on the downstream equipment. Sour water collects in the recycle gas compressor suction drum (shown as "CHPS" on the flow diagram on page 1). While the sour water flow from the USLD is expected to be about 15% of the current flow to T-2801, the increase in S-1 and S-2 sulfur throughput is about 1 ton/day and well within the grandfathered limit of 320 ST/day total sulfur production.

5. The 25,000 BPD design rate for the ULSD unit is higher than the 14,000 BPD grandfathered rate for the existing S-1002 Diesel Hydrofining Unit. This could potentially allow Valero to increase the Diesel cut from S-1006 Atmospheric Crude Distillation Tower by over 75% and could potentially have debottlenecking implications on S-1006. However, this would be unlikely under normal operating circumstances. While crude oils of different origins do have different ASTM distillation curves (which the owner can use to define the specified products), Diesel cuts do not vary significantly compared to light or heavy ends. Moreover, S-1006 has the current NSR limit of 135,000 BPD. VIP Application 5846 increases this 135,000 BPD NSR limit, but this increase is still a future VIP element and is not part of the ULSD unit application. The 25,000 BPD ULSD unit design rate does allow Valero additional flexibility to reprocess off-spec product (e.g. sending off-spec Diesel back to S-1006 for reprocessing), but this operating flexibility is not considered an emissions impact because the material is being reprocessed and the associated process heat required to accomplish this will not exceed current permit limits.

In conclusion, the new ULSD Unit does not result in the debottlenecking of another grandfathered process unit.

FLARE MINIMIZATION PLAN

There was considerable discussion, both within the District and with Valero, regarding Regulation 12, Rule 12, the Flare Minimization Plan (FMP), and what, if any, impact this rule should have on this application. There is concern that the design of this ULSD Unit Project is not adequately addressing the minimization of flaring. Valero has assured the District that appropriate steps have been taken in the design of the unit to minimize flaring. Valero has committed to sending to the District a letter documenting these steps. Furthermore, this ULSD Unit Project timing is unique in that the Authority to Construct will be issued prior to the FMP due date of August 1, 2006, and the startup date of June 2007 is after the likely date when an approved FMP is in place. Considering this unique timing, along with the Valero commitment to document the steps considered to minimize ULSD Unit flaring, the District has decided not to impose a permit condition regarding Regulation 12, Rule 12. Valero will comply with Regulation 12, Rule 12 by included the ULSD Unit in the FMP proposed August 1, 2006.

OFFSETS

Valero is required to provide emission offsets for NOx, SOx, PM10 and POC emissions from the ULSD Unit Project per Regulation 2-2-302 and 2-2-303. Valero has proposed that the offset requirements be satisfied in the following manner:

Ultra Low Sulfur Diesel Project
Project Emissions and Emission Offset Requirements

BAAQMD Source	Heater Number	MMBTU/HR	Emissions, Tons/Year NOx	SOx	CO	PM10	POC
S-247	F-5401	21.95	1.92	0.59	3.43	0.48	0.25
S-248	F-5402	35.10	3.07	0.94	5.49	0.77	0.40
Fugitive Emissions							0.64
Total Project Emissions			5.00	1.52	8.92	1.25	1.29
Fugitive Offsets in VIP Permit							(0.64)
Net Emissions Requiring Offsets			5.00	1.52	8.92	1.25	0.65
Offset Ratio			1.15	1.00	N/A	1.00	1.15
Total Emissions Offsets Required			5.75	1.52	N/A	1.25	0.75
Offsets Provided via Certificates			Notes 1, 4	Notes 2, 4	Note 5	Notes 3, 4	Notes 1, 4

Note 1: Valero will first surrender Certificate # 931 with POC credits of 0.62 tons/year and then Certificate # 882 with POC credits of 5.99 tons/year to satisfy total NOx and POC offset requirements of 6.50 tons/year.
Note 2: Valero will surrender Certificate # 883 with SOx credits of 2.69 tons/year to satisfy SOx offset requirements of 1.52 tons/year.
Note 3: Valero will first surrender Certificate # 914 with PM10 credits of 0.04 tons/year and then Certificate #837 with credits of 3.46 tons/year to satisfy PM10 offset requirements of 1.25 tons/year.
Note 4: BAAQMD shall reissue new Certificates for the remaining emission reduction credits.
Note 5: The shutdown of two package boilers (S-38 and S-39) required for completion of Cogen Phase I has net reduced Refinery CO emissions by about 70 tons/year.

Since Valero's proposed offset plan includes emissions that were proposed to be offset in VIP Application 5846, a review of the VIP offset proposal is needed. The Application 5846 offset plan is summarized the following table:

Summary of Provided Offsets (Tons per Year)
Valero Improvement Project Application 5846

	NO_x	VOC	PM_{10}	SO2
Offsets Required				
VIP Increase from cargo carriers and fugitives (excluding the pipeline shipping contingency in part 24)	42.4	9.6	2.6	16.3
VIP Increase from S-1046 Furnace (Main Stack)	12.4	2.5	2.7	6.4
Total	54.8	12.1	5.3	22.7
Offsets Provided				
Main Stack Baseline (7/99 to 6/02)	1365	6.7	106.5	6835
Main Stack (S-1046 Furnace at Main Stack Folded into Baseline)	-12.4	-2.5	-2.7	-6.4
Main Stack (Decrease in Baseline for cargo carriers and fugitives)				-16.3
New Baseline	**1352.6**	**4.2**	**103.8**	**6812.3**
Light Ends Rail Rack Arm Drains (S-1027) Application 2390	--	-15.8	--	--
MTBE Phase-Out Shipping	-36.7	-3.48	-1.61	
Remaining Cogeneration Contemporaneous Offsets	0.0	0.0	-0.99	0.0
Net Emissions less Offsets Provided Like-kind Exchange	**5.7**	**-9.68**	**0.0**	**0.0**
POC to offset NOx (1:1 ratio)	-5.7 POC	5.7 POC to NOx	--	--
Net Emissions less All Offsets Provided	**0.0**	**-3.98**	**0.0**	**0.0**
Contemporaneous emission reductions for shipping contingency (shift in pipeline crude to ships)	**Note 1**	**3.10**	**Note 1**	**Note 1**
Total Credits to be Issued to Valero	**0.0**	**0.88**	**0.0**	

Note 1: Additional emission reductions at the main stack may be applied.

This offset plan is for the entire VIP application without regard to project schedule. Since the VIP will not be implemented at one time, some equipment or modifications pertinent to the Offset plan could not be installed. Therefore, an update of the offset plan is required to confirm

that the plan is still valid. The current status of the VIP Application 5846 and the other applications pertinent to the offset plan is as follows:

1. S-1046 furnace has not been installed and there are no current Main Stack mass emission limits. Therefore, contemporaneous emission reductions associated with S-1046 is presently invalid.
2. S-1027 Abatement Application 2390 was completed in March 2004.
3. MTBE is no longer used in the Facility (mandated by the Governor of California by December 31, 2002). Valero sent the District notification that Application 2035, which included the shutdown of the S-211 MTBE unit, was complete in February 2004.
4. Cogen Phase I was granted a Permit to Operate July 31, 2002 via Application 2488. According to the October 4, 2001 FDOC, the total PM10 emissions from the S-1030 and S-1031 of Cogen Phase I is 6.803 ton/yr. Furthermore, Cogen Phase I Condition 19177, Part 47 required that S-38 and S-39 be shutdown no later than 90 days after the startup of Cogen Phase I S-1030 and S-1031. This permit condition has been satisfied. According to the FDOC, the shutdown of S-38 and S-39 generated 10.919 tons/yr PM10 Contemporaneous Emissions Reduction. The 4.116 ton/year difference between 10.919 ton/yr PM10 Contemporaneous Emissions Reduction and the 6.803 ton/yr Cogen Phase I PM10 emissions was intended to be reserved for Cogen Phase II. However, it was agreed to use 0.99 ton/yr of this PM10 credit for the VIP project. This agreement is still valid.

Incorporating this current status into the original Application 5846 VIP Offset Plan results in the following updated offset plan:

Summary of Provided Offsets (Tons per Year)
Valero Improvement Project Application 5846
Updated March 2006

	NO_x	VOC	PM_{10}	SO2
Offsets Required				
VIP Increase from cargo carriers and fugitives (excluding the pipeline shipping contingency in part 24)	42.4	9.6	2.6	16.3
VIP Increase from S-1046 Furnace (Main Stack)	12.4	2.5	2.7	6.4
Total	54.8	12.1	5.3	22.7
Light Ends Rail Rack Arm Drains (S-1027) Application 2390	--	-15.8	--	--
MTBE Phase-Out Shipping	-36.7	-3.48	-1.61	
Remaining Cogeneration Contemporaneous Offsets	0.0	0.0	-0.99	0.0
Net Emissions less Offsets Provided	**18.1**	**-7.18**	**2.7**	**22.7**

This updated VIP offset plan demonstrates that there are indeed, POC credits available to offset the ULSD Unit fugitive emissions. Therefore, the proposed Valero offset plan for the ULSD unit is acceptable. The ULSD Unit Offset Plan is summarized below:

Valero Application 13009 ULSD Unit Emission Offset Summary

	NOx	SOx	CO	PM10	POC
Total Emissions ton/yr	5.00	1.52	8.92	1.25	1.29
Fugitives already offset (App 5846)					-0.64
Emissions requiring offsets	5.00	1.52	8.92	1.25	0.65
Offset Ratio	1.15	1.00	N/A	1.00	1.15
Total Offsets Required	5.75	1.52	N/A	1.25	0.75
Surrender Certificate # 931					-0.62
Surrender Certificate # 882					-5.99
Surrender Certificate # 883		-2.69			
Surrender Certificate # 914				-0.04	
Surrender Certificate # 837				-3.46	
Offset NOx with POC credits	-5.75				5.75
Total Emissions less Offsets	0.0	-1.17	N/A	-2.25	-0.11
Balance for new Certificates	0.0	1.17		2.25	0.11

CEQA

The Valero ULSD Unit is part or the Valero Improvement Project, which was subjected to an Environmental Impact Statement (EIR). The lead agency for the VIP EIR was the City of Benicia. The City of Benicia Planning Commission approved the final EIR and granted Valero a Use Permit on April 28, 2003. The City of Benicia has reviewed the ULSD Unit Project and in a letter to Valero dated July 26, 2005, Mr. David Golick, Interim Community Development Director, confirmed that the ULSD Unit Project is consistent with the April 28, 2003 Use Permit granted by the Benicia Planning Commission.

COMPLIANCE

This ULSD Unit will comply with the following District Rules and Regulations:

Regulation 1, General Provisions
- 1-301: Public Nuisance
- 1-520 Continuous Emission Monitoring
- 1-522 Continuous Emission Monitoring and Recordkeeping Procedures
- 1-523 Parametric Monitoring and Recordkeeping Procedures

Regulation 2, Rule 2 NEW SOURCE REVIEW
- 2-2-301 Best Available Control Technology Requirement
- 2-2-302 Offset Requirements, Precursor Organic Compounds and Nitrogen Oxides, NSR
- 2-2-303 Offset Requirement, PM10 and Sulfur Dioxide, NSR

Regulation 6, PARTICULATE MATTER AND VISIBLE EMISSIONS
- 6-301 Ringelmann No. 1 Limitation
- 6-310 Particulate Weight Limitation

Regulation 8, Rule 18 EQUIPMENT LEAKS

Regulation 12, Rule 12 FLARES AT PETROLEUM REFINERIES

The ULSD Unit is subject to and will be in compliance with the following federal regulations:

NSPS 40 CFR, Part 60 Subpart J PETROLEUM REFINERIES

NSPS 40 CFR, Part 60 Subpart GGG EQUIPMENT LEAKS OF VOC IN PETROLEUM REFINERIES

NSPS 40 CFR, Part 60 Subpart VV EQUIPMENT LEAKS OF VOC IN SYNTHETIC ORGANIC CHEMICALS MANUFACTURING INDUSTRY

NESHAPS 40 CFR, Part 63 Subpart CC PETROLEUM REFINERIES

NESHAPS 40 CFR, Part 63 Subpart DDDDD National Emission Standards for Hazardous Air Pollutants for Industrial, Commercial, and Institutional Boilers and Process Heaters

Pursuant to Regulation 9-10 220, S-247 and S-248 are not subject to Regulation 9, Rule 10 because the process heaters did not have an Authority to Construct prior to January 5, 1994. Parenthetically, the BACT requirements (0.0220 lb NOx/MMBtu and 50 ppmv CO @ 3%O2) are more stringent that the requirements of Regulation 9, Rule 10 (0.033 lb NOx/MMBtu and 400 ppmv CO @ 3% O2).

The closest school is over a mile from the facility, so the Public Notice requirements of Regulation 2-1-214 do not apply.

Since all the ULSD Unit emissions are offset, the net effect of this project is zero emissions. Therefore, this application does not qualify as a major modification per Regulation 2-2-221 and the Public Comment requirements of Regulation 2-2-405 do not apply.

A toxic risk screen was performed because of the Toxic Air Contaminants associated with the combustion of refinery fuel gas. The maximum cancer risk, the chronic hazard index and the acute hazard index from the ULSD Unit emissions are acceptable according to the District Risk Management Policy in Regulation 2, Rule 5.

The ULSD Unit compiles with CEQA as demonstrated in the City of Benicia's EIR and Use Permit granted April 28, 2003.

CONDITIONS

Valero has proposed the following permit conditions. Changes to Valero's proposal are shown in underline-strikeout and justification provided.

FUGITIVE EQUIPMENT

1. ***a. The Owner/Operator shall equip all light hydrocarbon control valves installed as part of the VIP with live loaded packing systems and polished stems, or equivalent. [Basis: BACT, Cumulative Increase, offsets]***
   b. The Owner/Operator shall equip all flanges/connectors installed in the light hydrocarbon piping systems as a result of the VIP with graphitic-based gaskets unless the service requirements prevent this material. [Basis: BACT, Offsets, Cumulative Increase]
   c. The Owner/Operator shall equip all new hydrocarbon centrifugal compressors installed as part of the VIP with "wet" dual mechanical seals with a heavy liquid barrier fluid, or dual dry gas mechanical seals buffered with inert gas. [Basis: BACT, Offsets, Cumulative Increase]
   d. The Owner/Operator shall equip all new light hydrocarbon centrifugal pumps installed as part of the VIP with a seal-less design or with dual mechanical seals with a heavy liquid barrier fluid, or equivalent. [Basis: BACT, Offsets, Cumulative Increase]
   e. The Owner/Operator shall integrate all new fugitive equipment installed as part of the VIP, in organic service, into the owner's fugitive equipment monitoring and repair program. [Basis: Compliance monitoring]

21. The Owner/Operator shall submit a count of installed pumps, compressors, valves, and flanges/connectors every 180 days until completion of the project. For flanges/connectors, the owner/operator shall also provide a count of the number of graphitic-based and non-graphitic gaskets used. The Owner/Operator has been permitted to install fugitive components (1,372 valves, 920 flanges/connectors, 16 pumps, 50 PSD, 1 compressor) with a total POC emission rate of 0.64 TPY for the entire ULSD Project. If there is an increase in the total fugitive component emissions from the ULSD Project, the plant's cumulative emissions for the ULSD Project shall be adjusted to reflect the difference between emissions based on predicted versus actual component counts. The Owner/operator may have enough remaining contemporaneous emissions reduction credits (ERC's) to cover any increase in POC fugitive emissions beyond the original projection. If not, the Owner/Operator shall provide to the District all additional required offsets at an offset ratio of 1.15:1 no later than 14 days after the submittal of the final POC fugitive equipment count for the ULSD Project. If the actual component count is less than the predicted, at the completion of the ULSD Project, the total will be adjusted accordingly. Any ERC's applied by the facility in excess of the actual total fugitive emissions will be credited back to Owner/Operator prior to issuance of the permits. [Basis: Cumulative Increase, Toxics]

FUEL GAS SYSTEM

22. The Owner/Operator shall fire refinery low-pressure fuel gas in S-247 and S-248 heaters at a concentration at or below the following: (a) 155 ppmv total reduced sulfur (TRS), averaged over a calendar day and (b) the H2S concentration limitation specified in NSPS 40 CFR, Part 60 Subpart J. [Basis: NSPS, BACT]

23. The Owner/Operator shall fire refinery low-pressure fuel gas in S-247 and S-248 heaters at a concentration at or below 45 ppmv of total reduced sulfur (TRS), averaged over any rolling consecutive 365 day period. (equivalent to 0.00610 lb SO2/MMBtu fuel gas). [Basis: BACT, Cumulative Increase]

24. The Owner/Operator shall install and operate a District approved continuous gaseous fuel monitor/recorder to determine the H2S content and total reduced sulfur content of the refinery low pressure fuel gas prior to combustion in S-247 and S-248 heaters. [Basis: Refinery fuel gas monitoring for SO2, BACT]

25. To demonstrate compliance with parts 3 and 4, the Owner/Operator shall measure and record the daily average TRS content, 3-hour average H2S content, and 365-day average TRS content of the refinery fuel gas fired in S-247 and S-248 heaters. On a quarterly basis, the Owner/Operator shall report: (a) the daily fuel consumption at S-247 and S-248, (b) daily average H2S content of the fired refinery fuel gas, (c) daily average TRS content, (d) quarterly daily average H2S content, (e) quarterly daily average TRS content, and (f) annual average TRS content using the last four quarters. The report shall be sent to the District's Director of Compliance and Enforcement, and the Manager of the Permit Evaluation Section no later than 60 days after the end of the quarter. [Basis: BACT, Offsets, Cumulative Increase, NSPS]

COMBUSTION SOURCES (S-247 and S-248)

26. The Owner/Operator shall fire only refinery fuel gas in the S-247 and S-248 heaters. [Basis: BACT]

27. Total combined combustion emissions from S-247 and S-248 shall not exceed the following annual limits in any calendar year: [Basis: Cumulative Increase, Offsets]

Pollutant	*Annual (tons)*
NOx	*5.00*
CO	*8.92*
SO2	*1.52*
PM10	*1.25*
POC	*0.65*

a. The Owner/Operator shall determine annual emissions using fuel consumption, fuel heating value, continuous emission monitor (CEM) data for TRS, NOx and CO, and the following emission factors for PM10, and POC. [Basis: Monitoring]
PM10: 0.0050 lbs/MMBTU
POC: 0.0026 lbs/MMBTU

b. The Owner/Operator shall submit an annual report to the Compliance and Enforcement Division and Permit Services Division no later than 45 days following the end of each calendar year. The report shall include the actual daily emissions based on CEM data for NOx and CO, the actual daily emissions of SOx based on the CEM for TRS, and the estimated daily emissions of PM10 and POC based on the above emission factors. Also, the report shall include the annual totals of each pollutant to demonstrate compliance with the above limits. The report shall also include the total daily heat input for S-247 and S-248 heaters and the total daily fuel gas consumption at S-247 and S-248. [Basis: Reporting Requirements]

28. The Owner/Operator shall equip the S-247 and S-248 heaters each with District approved continuous fuel flow monitors and recorders in order to determine fuel consumption. (This is not a parametric monitor as defined in Regulation 1-238.) [Basis: Monitoring]

29. Startups and shutdowns of the S-247 and S-248 heaters each shall not exceed 24 consecutive hours. The 24-consecutive-hour startup period is in addition to furnace dryout/warmup periods,which each shall not exceed 72 consecutive hours. [Basis: Time allowances for startup and shutdown periods]

10.1 This part does not apply until after the conclusion of the initial startups of S-247 and S-248.

30. Except during periods of startup and shutdown, the Owner/Operator shall maintain combined emissions of nitrogen oxides in the common stack from S-247 and S-248 Furnaces at or below 17 ppmv, dry, corrected to 3% oxygen (0.0200 lb/MM Btu), averaged over any 3 consecutive hours. [Basis: BACT]

31. Except during startup and shutdown, the Owner/Operator shall maintain combined emissions of CO in the common stack from S-247 and S-248 heaters at or below 50 ppmv, dry, corrected to 3% oxygen (0.0357 lb/MM Btu), averaged over 3 hours. [Basis: BACT]

32. For S-247 and S-248, the Owner/Operator shall install, calibrate, maintain, and operate District-approved continuous emission monitors and recorders for NOx, CO and O2 on the common stack. [Basis: CEM Monitoring]

33. No later than 60 days from the startup of the S-247 and S-248, the Owner/Operator shall conduct a District-approved source test on the common stack to determine initial compliance with the limits in parts 11 and 12 for NOx and CO, the limits in part 8 for PM10 and POC, and the limit in part 4 for SO2. The Owner/Operator shall conduct the source test in accordance with part 16. The Owner/Operator shall submit the source test results to the District staff no later than 60 days after the source test. [Basis: Compliance determination via source tests]

34. The Owner/Operator shall maintain the heat input for S-247 at or below the following limits: (1) 192,282 million BTUs (HHV) in any 365 consecutive day period and (2) 21.95

million BTUs (HHV) in any one hour period. The Owner/Operator shall maintain the heat input for S-248 at or below the following limits: (1) 307,476 million BTUs (HHV) in any 365 consecutive day period and (2) 35.10 million BTUs (HHV) in any one hour period. [Basis: Cumulative Increase]

35. The owner/operator shall obtain approval for all source test procedures from the District's Source Test Section prior to conducting any tests. The owner/operator shall comply with all applicable testing requirements for continuous emissions monitors as specified in Volume V of the District's Manual of Procedures. The owner/operator shall notify the District's Source Test Section, in writing, of the source test protocols and projected test dates at least 7 days prior to testing. [Basis: Source test compliance verification and accuracy]

36. The Owner/Operator shall conduct a source test every five years to demonstrate subsequent compliance with the POC and PM10 mass rates specified in part 8a. The Owner/Operator shall conduct the source test in accordance with part 16. The Owner/Operator shall submit the source test results to the District staff no later than 60 days after the source test. [Basis: Periodic Monitoring, Title V Compliance Verification]

MISCELLANEOUS VESSELS AND REACTORS

37. The owner/operator shall operate the ULSD Unit only when the Diesel product delivered to the Diesel storage tanks does not exceed 9,125,000 Barrels in a calendar year. [Basis: Cumulative Increase]

38. For each new fractionation/stripping process vessel (S-1036), the Owner/Operator shall not operate the sources beyond the following throughput limitation:

25 kbbl/day, Daily Average.

Upon startup of S-1036, the Owner/Operator shall submit documentation of the final design throughput for the source. The Owner/Operator may adjust the throughput limit for S-1036 as long as it does not exceed the 25 kbbl/day, daily average. [Basis: Cumulative Increase]

39. For each new hydrofining reactor process vessel (S-1051 and S-1052), the Owner/Operator shall not operate the sources beyond the following throughput limitation:

25 kbbl/day, Daily Average.

Upon startup of each source, the Owner/Operator shall submit documentation of the final design throughput for the source. The Owner/Operator may adjust the throughput limit for each source in part 39 as long as it does not exceed 25 kbbl/day, daily average. [Basis: Cumulative Increase]

40. ***The Owner/Operator shall maintain the daily unit throughputs for S-1036 (Stripper), S-1051 (Diolefin Reactor), and S-1052 (Hydrotreating Reactor), in a District approved log. The Owner/Operator shall keep these records on site and make them available for District inspection for a period of at least 5 years from the date on which a record is made. [Basis: Recordkeeping]***

The Owner/Operator shall send any process vessel depressurization gas to a control device with an overall capture and destruction efficiency of 95% on a mass basis. [Basis: Cumulative Increase]

RECOMMENDATION

It is recommended that an Authority to Construct be granted to Valero for:

S-247 F-5401 Reactor Charge Heater, ULSD Unit, 21.95MMBtu/hr
S-248 F-5402 Stripper Reboiler Heater, ULSD Unit, 35.10 MMBtu/hr

Valero has already been granted Authority to Construct 5846 for:

S-1036 ULSD Unit Stripper
S-1051 ULSD Unit Diolefin Reactor
S-1052 ULSD Unit Hydrotreating Reactor

_____ _____

Arthur P. Valla 15Mar06
Air Quality Engineer

EVALUATION REPORT
VALERO REFINING CO.
Application #15606/TV # 15607 - Plant #12626

3400 E. Second St.
Benicia, CA 94510

I. BACKGROUND

Valero has applied for a condition change to the Authority to Construct/Permit to Operate for the following equipment:

S-3 CO Furnace F-101 or will be replaced with S-1059 PS Furnace (F-105)

S-4 CO Furnace F-102 or will be replaced with S-1060 PS Furnace (F-106)

S-5 FCCU

S-6 Fluid Coker

S-7 Pipestill Hydrofiner Furnace F-103

In this application, Valero requested to re-establish the non-methane organic compound (NMOC) emissions baseline at the Main Stack (revise the Authority to Construct Condition 20820 Part 21.d and 21.c), identify an acceptable source test method and to monitor compliance and increase the frequency of periodic monitoring for NMOC from annual to quarterly source testing.

On July 31, 2003, the District issued the Authority to Construct for the Valero Improvement Project (VIP), Application # 5846, which allow Valero to raise the crude throughput from 135,000 barrels/day to 180,000 barrels/day (165,000 barrels/day annual average). Condition 20820, Part 21.b.iv established the baseline NMOC emissions to 6.47 tons/yr (1.61 ppm) on the main stack. This limit was based on one set of source tests conducted in January 7, 2002. Part 21.c required annual source testing for demonstration. Prior to implement the VIP Authority to Construct conditions, Valero conducted over 20 tests, to verify the VIP main stack NMOC emission limit. The results of a source test program conducted in 2005 and 2006 by Best Environmental and GE Energy Management Service are as follows:

Table I

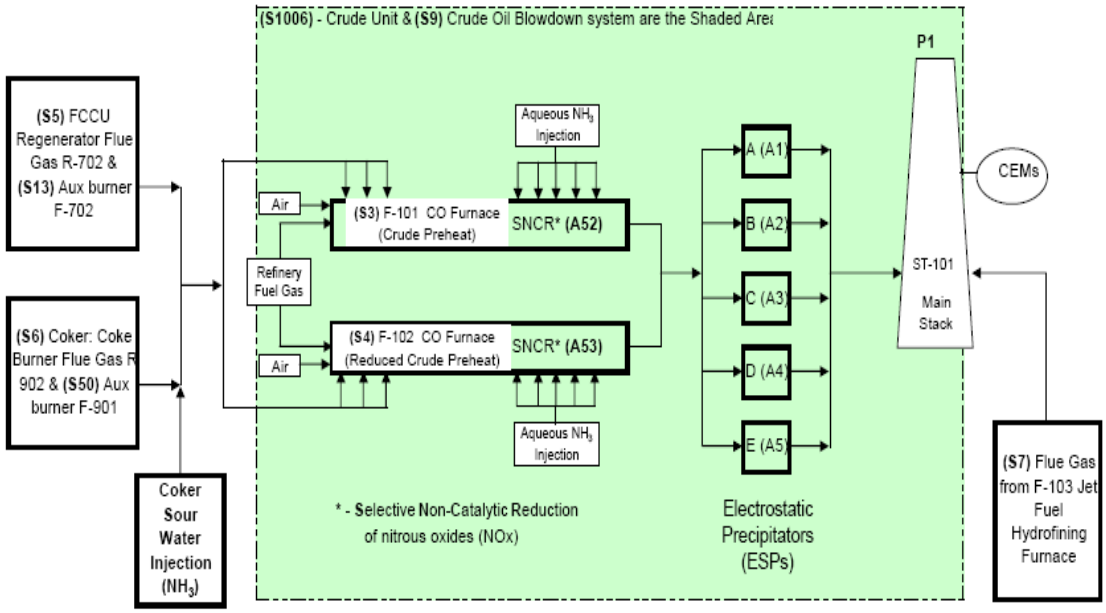
Date	Method	NMOC Emissions				Stack Flow (wet)	Emission Factor	Non ST-7 Results	Non ST-7 Results
		ppm	g/hr	lb/hr	tons/yr	kacfm	lb/hr / kacfm	ppm	tons/yr
01/07/02	TO-12	1.61	671	1.48	6.47	712	0.0021	1.61	6.47
03/09/05	ST-7	15	4,691	10.33	45.26	762	0.0136	-	-
08/15/05	25A	4.17	1,742	3.84	16.81	771	0.0050	4.17	16.81
08/15/05	25C	3.60	1,505	3.32	14.52	771	0.0043	3.60	14.52
09/20/05	25C	3.68	1,537	3.38	14.82	781	0.0043	3.68	14.82
10/04/05	25C	1.68	700	1.54	6.76	784	0.0020	1.68	6.76
10/18/05	25C	1.00	418	0.92	4.03	798	0.0012	1.00	4.03

11/01/05	25C	4.15	1,735	3.82	16.74	759	0.0050	4.15	16.74
11/14/05	25C	3.15	1,317	2.90	12.71	824	0.0035	3.15	12.71
11/30/05	25C	4.73	1,976	4.35	19.06	767	0.0057	4.73	19.06
12/13/05	25C	3.55	1,484	3.27	14.32	877	0.0037	3.55	14.32
09/07/06	25C	3.70	1,297	2.86	12.52	672	0.0043	3.70	12.52
09/07/06	TO-3	4.60	1,613	3.55	15.56	672	0.0053	4.60	15.56
10/02/06	25C	4.82	1,875	4.13	18.09	750	0.0055	4.82	18.09
10/02/06	TO-12	2.45	953	2.10	9.20	750	0.0028	2.45	9.20
10/02/06	ST-7	2.07	805	1.77	7.77	750	0.0024	-	-
11/09/06	25C	3.37	1,234	2.72	11.91	686	0.0040	3.37	11.91
11/09/06	TO-12	2.34	857	1.89	8.27	686	0.0028	2.34	8.27
11/14/2006	25A	5.69	1,952	4.30	18.83	630	0.0068	5.69	18.83
11/14/2006	ST-7	4.56	1,564	3.45	15.09	630	0.0055	-	-
11/14/2006	25C	4.40	1,509	3.32	14.56	630	0.0053	4.40	14.56
Average		4.01	1,497	3.30	14.44	736	0.0045	3.48	13.06

Based on the results above, Valero anticipates higher NMOC emissions from the main stack, since more than 90% of the tests showed that the NMOC emissions are above initial NMOC baseline of 1.61 ppm. The main stack flue gasses are generated mainly from the S-1006 Crude Unit, S-5 FCCU Unit, S-6 Coker Unit and S-3/S-4 CO Boilers. See Figure 1 below.

Figure 1

Valero Benicia FCC / Coker / Crude Unit Flue Gas Handling System



Because the main stack emissions are a combination of many of the complex refinery operations, the District allowed Valero to perform more source tests to understand the system better before

agreeing on the permanent, representative NMOC emission level. Under the Compliance and Enforcement Agreement executed on September 13, 2007 by Valero and the District, the engineering study testing was developed to increase the crude feed up to maximum 180,000 barrels/day and 165,000 barrels/average day. On March 25-27, 2008, the District Source Test performed the three, three-hour tests at the Main Stack using virgin teflon tubing at two 126,000 barrels/day runs and one 136,000 barrels/day run. Valero was not able to increase the crude feed as anticipated due to physical limitation of the charge pumps.

On March 4, 2009, Valero met with the District along with Kevin Crosby from Avogadro Group as Valero's consultants to agree on the source test method and results. Tim Underwood from the District Source Test section specified a modified EPA Method 25A using FID for total hydrocarbon and EPA Method 18 for methane analysis. Valero and the District agreed to use 13.41 tons/yr, based on the 90% confidence interval of 23 source tests, as the non-methane organic compound baseline for the Main Stack. This baseline includes three source tests performed by the District on March 26-27, 2008 and May 7, 2007. The source test performed by the District on March 9, 2005 was eliminated from the average because it was done using contaminated tubing. The source test performed by the District on March 25, 2008 was also eliminated because it was done under the compliance and enforcement agreement at a crude rate above 135,000 barrels/day.

The NMOC baseline from the Main Stack is finally re-established using the results from Table II as follows:

Table II

		NMOC Emissions				Stack Flow (wet)	Emission Factor
Date	Method	ppm	g/hr	lb/hr	tons/yr	kacfm	lb/hr / kacfm
01/07/02	TO-12	1.61	671	1.48	6.47	712	0.0021
08/15/05	25A	4.17	1742	3.84	16.81	771	0.0050
	25C	3.60	1505	3.32	14.52	771	0.0043
09/20/05	25C	3.68	1537	3.38	14.82	781	0.0043
10/04/05	25C	1.68	700	1.54	6.76	784	0.0020
10/18/05	25C	1.00	418	0.92	4.03	798	0.0012
11/01/05	25C	4.15	1735	3.82	16.74	759	0.0050
11/14/05	25C	3.15	1317	2.90	12.71	824	0.0035
11/30/05	25C	4.73	1976	4.35	19.06	767	0.0057
12/13/05	25C	3.55	1484	3.27	14.32	877	0.0037
09/07/06	25C	3.70	1297	2.86	12.52	672	0.0043
	TO3	4.60	1613	3.55	15.56	672	0.0053
10/02/06	25C	4.82	1875	4.13	18.09	750	0.0055
	TO12	2.45	953	2.10	9.20	750	0.0028
	ST7	2.07	805	1.77	7.77	750	0.0024
11/09/06	25C	3.37	1234	2.72	11.91	686	0.0040
	TO12	2.34	857	1.89	8.27	686	0.0028
11/14/2006	25A	5.69	1952	4.30	18.83	630	0.0068
	25C	4.56	1564	3.45	15.09	630	0.0055

	ST7	4.40	1509	3.32	14.56	630	0.0053
5/7/2007	ST7	0.8		0.7	3.07	926	0.0033
03/26/08	ST7	0.40		0.50	2.19	994	0.0022
03/27/08	ST7	0.40		0.40	1.75	927	0.0019
Average		3.08		2.63	11.52	762.95	0.0039
Standard Deviation		1.54			5.50		
90% confidence interval		3.61			13.41		

The District has reset the NMOC emission limit (baseline) from 6.7 ton/yr to 13.41 ton/yr in Condition 20820. Valero will perform source test quarterly to demonstrate compliance with the annual mass and BACT limit as specified in Condition 20820. The emissions in lb/MMdscf from the quarterly source tests will be averaged for the calendar year and applied to the actual average A-1047 flow rate as an approved compliance method. The quarterly source test could be reduced to semi-annual or annual in the subsequent years if the variability of the data is low.

The District will notify City of Benicia of the new revised NMOC baseline to complete the CEQA (EIR Report), which was approved pending on further source tests. The VIP Amendment Condition 20820, Parts 21, 63 and 68 were modified accordingly. For clarification, the NMOC emissions will be specifies as Non Methane Organic Compound (NMOC) for combustion sources in Condition 20820. The condition changes from this application will be incorporated into Valero TV Renewal Permit under TV Application # 15607.

II. EMISSION CALCULATIONS

N/A

III. PLANT CUMULATIVE INCREASE SINCE 4/5/1991

N/A

IV. TOXIC SCREENING ANALYSIS

Re-establishing the NMOC baseline level of the Main Stack should not result in an increase of toxic air contaminant emissions from existing levels. However, in participation of possible NMOC emission increase from modified equipment from VIP Amendments, Valero has accepted 15 tons/yr at the new FCCU/CKR Stack; therefore, a Toxic Health Risk Screening Analysis is required for a NMOC emission increase of 1.59 tons/yr. Since the toxic composition of the Main Stack is not available, the District used the GC/FID analyzed composition from three source tests performed by the District on March 26-27, 2008 and May 7, 2007. The District assumed that 50% of the unknown organic compound is benzene. The assumed benzene calculation is shown below in Table III.

This application required the health risk analysis because the toxic emission increase from the project and the associated VIP and VIP Amendments exceed the toxic trigger level listed in Table 2.5.1. The maximum cancer risk to the maximally exposed residential receptor is 2.2 in a million, the chronic hazard index is 0.08 and the acute Hazard Index is 0.4. For the project that meets BACT, the cancer risk is below 10.0, the chronic hazard index is less then 1.0 and the acute hazard index that is less than 1.0, the risk levels are considered acceptable. Thus, in accordance with Regulation 2-5, the screen passes. (See attached toxic reported dated May 5, 2009)

TABLE III

Assume NMOC Increase =	1.59	tons/yr			
Assume NMOC Increase =	3180	lbs/yr			
	5/17/2007 ppb (C1)	3/26/2008 ppb (C1)	3/27/2008 ppb (C1)	Average ppb (C1)	NMOC lbs/yr
Ethene		35	36	35.50	1.13E-04
Propane		26	67	46.50	1.48E-04
2,2 Dimethylbutane	144	73	113	110.00	3.50E-04
Methylcyclopentane		45	30	37.50	1.19E-04
2 Dimethylcyclopentane			20	20.00	6.36E-05
Cyclohexane			38	38.00	1.21E-04
2 Methylhexane	248	28	165	147.00	4.67E-04
3 Methylhexane	108	84	26	72.67	2.31E-04
n Heptane	111	29	25	55.00	1.75E-04
2,2,4 Trimethylpentane	78			78.00	2.48E-04
n Octane	57			57.00	1.81E-04
2 Methylheptane	99	165	196	153.33	4.88E-04
3 Methylheptane	47			47.00	1.49E-04
2,3,4 trimethylpentane	46			46.00	1.46E-04
n Octane		34		34.00	1.08E-04
n Decane	157			157.00	4.99E-04
C8+	181	32	36	83.00	2.64E-04
C9+	344	38	46	142.67	4.54E-04
C10+	138	523	562	407.67	1.30E-03

Total NMOC	1758	1112	1360	1767.833	5.62E-03

V. BEST AVAILABLE CONTROL TECHNOLOGY

At this time, the District determined that BACT for NMOC in the VIP Amendments is 10 ppmv as tested by BAAQMD modified ST-17 test method, based on a similar operation at Valero's FCCU in Texas. The reference is full burn combustion FCCU in TX (Reference RBLC ID #TX-0429, Permit Number PSD-TX-822M2). Even though Valero Benicia's FCCU is a partial burn unit, Valero accepts 10 ppmv concentration limit with a demonstration by source test. There is one other BACT determination for the FCCU at Valero in New Jersey, but the limit for VOC is 9.8 lb/hr, which is not as stringent as the one in Texas. Other BACT is the use of CO Boiler or good combustion practice. There is no BACT data for NMOC from fluid Cokers available in the BACT survey. Valero Benicia is planning to use the CO boilers to abate the FCCU and Fluid Coker along with SCRs control, followed by the prescrubber and scrubber as discussed in details in the VIP Amendments application # 16937.

Per conversation with Randy Hamilton of Texas Commission of Environmental Quality (TCEQ) on April 29, 2009, BACT limit of 10 ppmv is at 0% O2 based on the hourly rate. However, the District will only impose BACT for the FCCU and Fluid Coker units as 10 ppmv of NMOC as source tested by BAAQMD modified ST-17 test method because the feed to the CO boiler and SCR comes from the FCCU in Valero Texas versus the feed to the CO boiler and SCR comes from both unit, the FCCU and Fluid Coker, in Valero Benicia.

VI. OFFSETS

Since Valero only anticipates that the NMOC could potentially be increased up to 15 tons/yr at the new FCCU/Coker Stack after the VIP Amendment, Valero is willing accept 15 tons/yr NMOC emissions and will provide contemporaneous emission offsets for the difference between 15 tons/yr and 13.41 tons/yr, which is 1.59 tons/yr. Although the NMOC emission increase requires offsets, Valero has enough contemporaneous emission reduction credit from the refund of VIP-Cogen Phase II cancellation to fully offsets 1.59 tons/yr NMOC emission increase. Valero understood that any emissions resulting from the VIP Amendments that is above 15 tons/yr will be considered as a modification subject to BACT review.

Table IV
Summary of Provided Offsets (Tons per Year)
VIP Application 5846, VIP Amendments Application 16937 and NMOC Main Stack Baseline Application 15606

	NO_x	VOC	PM_{10}	SO2
Offsets Required				
VIP Increase from cargo carriers and fugitives (excluding the pipeline shipping contingency in part 24)	42.4	9.6	2.6	16.3
VIP Amendments from PS Still Furnaces, Scrubber, H2U and additional fugitives	-191.75	10.18[1]	3.29	-5715.6
ULSD – Certificate 914 restricted to Tesoro			0.037	
Total	-149.35	19.78[1]	5.93	-5,699

Offsets Provided				
VIP-Light Ends Rail Rack Arm Drains (S-1027) Application 2390	--	-15.8	--	--
VIP-MTBE Phase-Out Shipping	-36.7	-3.48	-1.61	--
VIP-Remaining Cogeneration Contemporaneous Offsets	0.0	0.0	-0.99	0.0
VIP-Cogen Phase II cancellation refund	-18.256	-7.62	-2.796	
Total	-54.956	-26.90	-5.4	0.0
Net Emissions less Offsets Provided	**-204.31**	**-7.12**[1]	**0.53**	**-5,699**
Certificate Number			**# 974**	
Starting balance			2.193	
Reduction			0.53	
Ending balance			**1.663**	

[1] This number has changed based on the outcome of A/N 15606.

VII. STATEMENT OF COMPLIANCE

The emission limitations, monitoring, and sampling requirements from Regulation 9-1 apply to the FCCU (S-5) and the Coker Unit (S-6). Regulation 9, Rule 1, Section 310, Emission Limitations for Fluid Catalytic Cracking Units, Fluid Cokers, and Coke Calcining Kilns, limits SO_2 emissions sources S-5 and S-6 to 1,000 ppmvd. The Valero refinery will continue to comply with the requirements of Regulation 9, Rule 1 (Inorganic Gaseous Pollutants, Sulfur Dioxide).

Regulation 9, Rule 1, Section 301 and Regulation 9, Rule 2, Section 301 limits ground-level concentrations of H2S for the whole refinery. Section 9-2-301 states that "a person shall not emit during any 24 hour period, hydrogen sulfide in such quantities as to result in ground level concentrations in excess of 0.06 ppm averaged over three consecutive minutes or 0.03 ppm averaged over any 60 consecutive minutes. Valero refinery will continue to comply with the requirements of Regulation 9, Rule 2 (Inorganic Gaseous Pollutants, Hydrogen Sulfide).

Sources S-3 and S-4 (CO Boilers for S-5 and S-6) are subject to and expected to comply with the requirement of Regulation 9, Rule 10 –304 and 305 – Nitrogen Oxides and Carbon Monoxide from Boilers, Steam Generators and Process Heaters in Petroleum Refineries. Emission limits, monitoring, and reporting requirements in this regulation apply to sources S-3 and S-4. Regulation 9, Rule 10, Section 304.1 limits NO_x emissions to 150 ppmvd at 3 percent O_2, dry, and Section 305 limits CO emissions to 400 ppmvd at 3 percent O_2, dry. Valero refinery will continue to comply with the requirements of Regulation 9, Rule 10.

Sources S-3 and S-4 are subject to and expected to be in compliance with Regulation 1- Public Nuisance. No person shall discharge from any source whatsoever such quantities of air contaminants or other material which cause injury, detriment, nuisance or annoyance to any considerable number of persons or the public; or which endangers the comfort, repose, health or safety of any such persons or the public, or which causes, or has a natural tendency to cause, injury or damage to business or property.

Sources S-3 and S-4 are subject to and expected to comply with the requirement of Regulation 6 – Particulate Matter and Visible Emissions. Visible particulate emissions are limited by section 6-1-301 which prohibits visible emissions greater than or equal to Ringelmann No. 1 for no more than 3 minutes in an hour, and 6-1-302 limits the source to less than 20% opacity. Section 6-1-305 prohibits fallout of visible particles onto neighboring properties in sufficient quantities to cause annoyance to any other person. In addition, Regulation 6-1-311 limits PS Furnaces' PM_{10} emissions to be less than 40 lb/hr.

Sources S-3 and S-4 (fugitive emissions) are subject to Regulation 8, Rule 18- Equipment Leaks. The equipment should comply with the Standards of Regulation 8, Rule 18 for Valves, Compressors and Flanges. The VOC leak standards for valves, pumps and flanges are the same and are set at 100 ppmvd.

Sources S-5 and S-6 are subject to and expected to comply with the following Regulation 10: New Source Performance Standards (NSPS), (40 CFR, Part 60)

- 40 CFR, Part 60, Subpart A - General Provisions
- 40 CFR, Part 60, Subpart GGG/VV Standards of Performance for Equipment Leaks of VOC in Petroleum Refineries

Sources S-5 and S-6 are subject to and expected to comply with the following Section 112 of the Clean Air Act, National Emission Standards for Hazardous Air Pollutants (NESHAP)

- 40 CFR Part 61, Subpart A – General Provisions
- 40 CFR Part 63, Subpart CC – Petroleum Refineries
- 40 CFR Part 63, Subpart A – General Provisions
- 40 CFR Part 63, Subpart UUU – Petroleum Refineries: Catalytic Cracking Units, Catalytic Reforming Units and Sulfur Recovery Units, or
- 40 CFR Part 63, Subpart DDDDD – Industrial, Commercial and Institutional Boilers and Process Heaters. The Washington DC Circuit Court vacated this rule on June 8, 2007. Where there is no MACT for a new source and the deadline for promulgation of a standard by the EPA is past, local agencies must determine on a case-by-case basis, MACT for the new source, in accordance with 40 CFR 63.52(a). The emission limit for these sources in the vacated standard was 400 ppm CO. There were no other limits for gaseous-fueled boilers.

California Environmental Quality Act CEQA

The NMOC baseline emission was part of the project (VIP and VIP Amendments) that were subject to CEQA per Regulation 2-1-310. The City of Benicia acted as the lead agency under CEQA. To document potential environmental impacts from the project, the City of Benicia prepared a draft Environmental Impact Report (SCH# 2002042122) for the VIP, which included the proposed actions covered in the VIP Authority to Construct (permit application 5846). The City of Benicia Planning Commission certified an EIR and approved a use permit for the Valero Improvement Project (VIP) on April 28, 2003.

The VIP Amendments include the changes in an approved VIP project. Valero requested that the December 31, 2009 use permit expiration date be extended to December 31, 2014 to allow for construction of the project as amended. Valero prepared and submitted an Environmental Assessment as part of its application for a use permit for the VIP Amendments to the City of Benicia on October 2007. The assessment concluded that the Addendum to the VIP EIR would be the appropriated CEQA documentation for the VIP Amendments.

The District, as a CEQA Responsible Agency, provided comments the City of Benicia on the Addendum to the VIP EIR on December 13, 2007 and April 17, 2008. The EIR Addendum comprised of (1) Valero's Environmental Assessment and (2) the City's independent peer review was prepared and made available for public comment on June 11, 2008. The City of Benicia considered and approved the VIP EIR Addendum at public noticed hearing on July 10, 2008. The City of Benicia sent notice of approval for VIP Use Permit Amendment (07PLN-32) and conditions in Resolution No. 08-5 (PC) to Valero on July 16, 2008. All information regarding the VIP Project is available on the City's website (http://www.ci.benicia.ca.us) under Community Development Department. The Use Permit for VIP Amendments can be found at http://www.ci.benicia.ca.us/vertical/Sites/%7B3436CBED-6A58-4FEF-BFDF-5F9331215932%7D/uploads/%7B96172BA6-68C7-43B3-8E68-895B86046124%7D.PDF.

The requirements of CEQA have been met through Addendum VIP EIR approved by the City of Benicia. Therefore, no further environmental analysis needs to be performed for this project.

This project is over 1,000 ft from the nearest public school and is therefore not subject to the public notification requirements of Regulation 2-1-412.

PSD is not triggered.

VIII. CONDITIONS

Condition # 20820, VIP Application No. 5864, Amended by VIP Amendments, Application No. 16937, Amended by Application No. 15606 to revise the NMOC baseline.

FUGITIVE EQUIPMENT

2. a. The Owner/Operator shall equip all light hydrocarbon control valves installed as part of the VIP with live loaded packing systems and polished stems, or equivalent. [Basis: BACT, Cumulative Increase, offsets]

b. The Owner/Operator shall equip all flanges/connectors installed in the light hydrocarbon piping systems as a result of the VIP with graphitic-based gaskets unless the service requirements prevent this material. [Basis: BACT, Offsets, Cumulative Increase]

b. The Owner/Operator shall equip all new hydrocarbon centrifugal compressors installed as part of the VIP with "wet" dual mechanical seals with a heavy liquid barrier fluid, or dual dry gas mechanical seals buffered with inert gas. [Basis: BACT, Offsets, Cumulative Increase]

c. The Owner/Operator shall equip all new light hydrocarbon centrifugal pumps installed as part of the VIP with a seal-less design or with dual mechanical seals with a heavy liquid barrier fluid, or equivalent. [Basis: BACT, Offsets, Cumulative Increase]

d. The Owner/Operator shall integrate all new fugitive equipment installed as part of the VIP, in organic service, into the owner's fugitive equipment monitoring and repair program. [Basis: Compliance monitoring]

41. The Owner/Operator shall submit a count of installed pumps, compressors, valves, and flanges/connectors every 180 days until completion of the project. For flanges/connectors, the owner/operator shall also provide a count of the number of graphitic-based and non-graphitic gaskets used. The Owner/Operator has been permitted to install fugitive components with a total NMOC emission rate of 6.0 TPY. It is estimated that the fugitive components count are approximately 4, 000 valves, 12,000 flanges/connectors and 40 pumps). If there is an increase in the total fugitive component emissions, the plant's cumulative emissions for the project shall be adjusted to reflect the difference between emissions based on predicted versus actual component counts. The Owner/Operator may have enough remaining contemporaneous emissions reduction credits (ERC's) to cover any increase in NMOC fugitive emissions beyond the original projection. If not, the Owner/Operator shall provide to the District all additional required offsets at an offset ratio of 1.15:1 no later than 14 days after the submittal of the final NMOC fugitive equipment count. If the actual component count is less than the predicted, at the completion of the project, the total will be adjusted accordingly. Any ERC's applied by the facility in excess of the actual total fugitive emissions will be credited back to Owner/Operator prior to issuance of the permits. [Basis: Cumulative Increase, Toxics]

FUEL GAS SYSTEM

42. The Owner/Operator shall fire refinery low-pressure fuel gas in S-1061 at a concentration at or below the following: (a) 100 ppmvd totaled reduced sulfur (TRS), averaged over a calendar day and (b) H2S concentration limitation specified in NSPS 40 CFR Subpart Ja. [Basis: NSPS Subpart Ja, BACT]

43. The Owner/Operator shall fire refinery low-pressure fuel gas in S-1061 at a concentration at or below 45 ppmvd of total reduced sulfur, averaged over any rolling consecutive 365-day period. [Basis: BACT]

44. The Owner/Operator shall install and operate a District approved continuous gaseous fuel monitor/recorder to determine the H2S content and total reduced sulfur content of the refinery low-pressure fuel gas prior to combustion in S-1061 Furnace. [Basis: Refinery fuel gas monitoring for SO2, BACT]

45. To demonstrate compliance with parts 3 and 4, the Owner/Operator shall measure and record the 24-hour average TRS content and 365-day average TRS content of the refinery fuel gas fired in S-1061. On a quarterly basis, the Owner/Operator shall report: (a) the daily fuel consumption at S-1061, (b) daily averaged H2S content of the fired refinery fuel gas, (c) daily averaged TRS content, (d) quarterly daily averaged H2S content, (e) quarterly daily averaged TRS content, and (f) annual averaged TRS content using the last four quarters. The report shall be sent to the District's Director of Compliance and Enforcement, and the Manager of the Permit Evaluation Section no later than 60 days after the end of the quarter. [Basis: BACT, Offsets, Cumulative Increase,]

HYDROGEN REFORMER FURNACE (S-1061)

46. The Owner/Operator shall fire only refinery fuel gas and/or natural gas in the S-1061 Hydrogen Reformer Furnace. [Basis: BACT]

47. Total combustion emissions from this combustion source (S-1061), abated by SCR, shall not exceed the following annual limits in any calendar year: [Basis: Cumulative Increase, Offsets]

Pollutant	*Annual (tons)*
NOx	*25.3*
CO	*30.8*
SO2	*28.0*
PM10	*10.7*
NMOC	*9.9*

a. The Owner/Operator shall determine the annual emissions using continuous emission monitor (CEM) data for NOx, CO, O2, TRS, H2S and using source test data and fuel consumption for PM10 and NMOC. [Basis: Monitoring]

b. The Owner/Operator shall submit an annual report to the Compliance and Enforcement Division and Engineering Division no later than 45 days following the end of each calendar year. The report shall include the actual daily emissions based on CEM data for NOx, CO, TRS, H2S, O2, and the daily emissions of PM10 and NMOC based on the most recent source test data. Also, the report shall include the annual totals of each pollutant to demonstrate compliance with the above limits. The report shall also include the total daily heat input for S-1061 Hydrogen Reformer Furnace. [Basis: Reporting Requirements]

48. The Owner/Operator shall equip the S-1061 Hydrogen Reformer Furnace with a District approved continuous fuel flow monitor and recorder in order to determine fuel consumption. (This is not a parametric monitor as defined in Regulation 1-238.) [Basis: Monitoring]

49. Startups and shutdowns of the S-1061 Hydrogen Reformer Furnace shall not exceed 24 consecutive hours. The 24-consecutive-hour startup period is in addition to furnace dryout/warmup periods,which shall not exceed 72 consecutive hours. [Basis: Time allowances for startup and shutdown periods]

50. Except during startup and shutdown, the Owner/Operator shall maintain emissions of nitrogen oxides from the S-1061 Hydrogen Reformer Furnace at or below 5 ppmv, dry, corrected to 3% oxygen (0.0059 lb/MM Btu), averaged over any 3 consecutive hours. [Basis: BACT]

51. Except during periods of startup and shutdown, the Owner/Operator shall maintain emissions from the S-1061 Hydrogen Reformer Furnace at or below the following levels: (a) CO emissions - 10 ppmv, dry, corrected to 3% oxygen (0.0072 lb/MM Btu), averaged over 3 hours, and (b) PM10 emissions - 0.0025 lb/MMBtu, averaged over 3 hours, and (c) NMOC emissions - 0.0023 lb/MMBtu, averaged over 3 hours.

52. The Owner/Operator shall monitor compliance with Parts 11 and 12 by using a District-approved CEM for NOx and CO, respectively. The Owner/Operator shall perform an annual source test and monitor fuel consumption data for PM10 and NMOC to demonstrate compliance with Part 12. [Basis: BACT]

53. Except during periods of startup and shutdown, the Owner/Operator shall maintain ammonia emissions (ammonia slip) from the SCR unit (A-1061) at or below 10 ppmv of ammonia, dry, corrected to 3% oxygen, averaged over any rolling consecutive 3-hour period. [Basis: Toxics, BACT]

54. The Owner/Operator shall perform an initial source test in accordance with the requirements set forth in Part 17 to demonstrate compliance with the ammonia limitation in part 14. [Basis: Toxics, Source Tests]

55. For source S-1061, the Owner/Operator shall install, calibrate, maintain, and operate a District-approved continuous emission monitor and recorder for NOx, CO, O2, fuel gas TRS and H2S. [Basis: CEM Monitoring]

56. No later than 60 days from the startup of the S-1061 Hydrogen Reformer Furnace, the Owner/Operator shall conduct a District-approved source test to determine initial compliance with the limits in parts 11, and 12 for NOx, CO, NMOC and PM10. The Owner/Operator shall conduct the source tests in accordance with part 20. The Owner/Operator shall submit the source test results to the Source Test Section and Engineering Division no later than 60 days after the source test. [Basis: Compliance determination via source tests]

57. The Owner/Operator shall maintain the total heat input for S-1061 at or below the following limits: (1) 8,584,800 million BTUs (HHV) in any 365 consecutive day period and (2) 980 million BTUs (HHV) over any one hour period. [Basis: Cumulative Increase]

58. The Owner/Operator shall conduct an annual source test to demonstrate subsequent compliance with the NMOC and PM10 mass rates specified in part 12. The Owner/Operator shall conduct the source tests in accordance with part 20. The Owner/Operator shall submit the source test results to the Source Test Sectionand Engineering Division no later than 60 days after the source test. [Basis: Periodic Monitoring]

59. The owner/operator shall obtain approval for all source test procedures from the District's Source Test Section prior to conducting any tests. The owner/operator shall comply with all applicable testing requirements for continuous emissions monitors as approved by the District's Source Test Section. The owner/operator shall notify the District's Source Test Section, in writing, of the source test protocols and projected test dates at least 7 days prior to testing. [Basis: Source test compliance verification and accuracy]

FCCU/CKR SCRUBBER AND MAIN STACKS

21. The emission limitations in part 21 shall go into effect upon the implementation of any changes permitted in the Valero Improvement Project and VIP Amendments that have the

potential to increase main stack emissions. These changes are reflected by any one of the following events: [Project Implementation]

a. VIP/VIP Amendments Triggers for FCCU/CKR Scrubber and Main Stacks

i. Processing more than 135,000 barrels (BBL) of crude in any calendar day at S-1006 Pipestill.

ii. Operation of a third air blower, or oxygen injection, to the FCCU Regenerator (S-5) or the Coker Burner (S-6), indicating a change to the combustion process in these units.

iii. Operation of new CO furnaces, F-105 or F-106 (S-1059 or S-1060).

b. VIP/VIP Amendments Implemented – FCCU/CKR Scrubber and Main Stacks' Emissions Limitation

Upon implementation of the VIP/VIP Amendments as triggered in part 21a, the Owner/Operator shall limit the FCCU/CKR Scrubber and Main Stacks' emissions to no more than the following based on BACT requirements of the FCCU/CKR Scrubber and 3-year baseline (4/05 to3/08) of the Main Stack [Basis: FCCU/CKR and Main stacks baseline]:

i. NOx – 77.9 ppm @ 3% O2, 365-day average, determined by CEM. 779.9 tons per calendar year.

ii. SO2 – 440 ppm @ 3% O2, 365-day average, determined by CEM. 6,132 tons per calendar year, determined by CEM. These values may be modified administratively after installation of the main stack scrubber. The modified values will reflect any ERCs granted due to installation of the scrubber.

iii. PM10 – 40 lb/hr, as determined by BAAQMD ST-15 or EPA Method 17 in conjunction with EPA Methods 1, 2, 3 and 4 115.4 tons/calendar year, determined by summing each of the daily emissions, per the most recent source test.

iv. NMOC 13.41tons/calendar year, as determined in accordance with part 63c. .

v. CO – 35.2 ppm @ 3% O2, 365-day average, determined by CEM. 214.5tons/calendar year.

c. PM10 and NMOC Periodic Monitoring: Initial & Annual Source Tests

The Owner/operator shall conduct a District approved source test for PM10 and NMOC emissions within 90 days following the effective date of the above limitations and annually thereafter. The owner/operator shall submit the Source test results to the Source Test Section and Engineering Division within 60 days following completion of the source test. [Basis: FCCU/CKR and Main stacks baseline monitoring, reporting]

d. *Annual Emissions Reporting on FCCU/CKR Scrubber and Main Stacks*

The owner/operator shall submit an annual report to the District no later than 45 days following the end of each applicable calendar year. The owner/operator shall list for each

pollutant, the daily emissions and the annual emissions total, to document compliance with the above limitations. [Basis: Reporting Requirements]

***e**. FCCU/CKR Scrubber and Main Stacks: Surplus Reduction Used for Shipping Contingency*
If** FCCU/CKR Scrubber and **Main Stacks emissions for a calendar year are less than the above limits, the owner/operator may apply the surplus reduction, if required, as an offset for the shipping contingency under part 24. [Basis: Offsets]

22. In accordance with Regulation 2-4-301.1, sulfur dioxide (SO2) emission reductions greater than those required by any District regulation and EPA Consent Decree, resulting from the installation of A-1047 FCCU/CKR Preccrubber/Regenerative Amine Scrubber, shall be eligible for banking after being demonstrated by source testing or other means acceptable to the APCO. The baseline emissions shall be calculated in accordance with Regulation 2-2-605. [Basis: Banking]

CARGO CARRIER and DOCK

23. The emission limits in part 23 will begin on January 1 of the year when the owner/operator processes more than 135,000 BBL of crude oil at S-1006 on any one day or the moment that the storage tanks in part 32 (Sources S-57 through S-62, S-1047 and S-1048) exceed a combined total of 141.5 kbbl/day (annual daily average), whichever event occurs first.

Ship and barge emissions associated with the import of crude and gas oil across the plant's main Benicia crude dock, combined with the ship emissions associated with the export of product coke across the Plant's Benicia coke dock, will not exceed the following annual calendar year limits: [Basis Cumulative Increase, Offsets]

Pollutant	*Base Line*		*VIP Increase*	*Total Annual (tons)*
Nox	*96.14*	*39.98*	*136.12*	
SOx	*32.87*	*16.19*	*49.06*	
NMOC	*7.34*	*3.22*	*10.56*	
PM10	*5.43*	*2.39*	*7.82*	
CO	*13.83*	*5.88*	*19.71*	

24. To accommodate any unforeseen changes in shipping requirements, the above total annual limits for each pollutant may be further increased to accommodate a shift in crude imports from pipeline to ships. All increases in combustion emissions from ships will need to be offset through contemporaneous emissions reductions. The VOC contingency has been provided as part of Application #5846. The emission reduction credits (ERC's) for the other pollutants will be provided by a corresponding reduction in the main stack annual emission limit (Part 21). However, in no event shall the Owner/Operator allow the total additional increase for the contingency to exceed the contingency allowance presented below. [Basis: Cumulative Increase, Offsets]

Pollutant	*Base Line plus*	*VIP Increase*	*Contingency Total Annual (tons)*

NOx	***136.12***	***32.95***	***169.07***
SOx	***49.06***	***15.76***	***64.82***
NMOC	***10.56***	***3.10***	***13.66***
PM10	***7.82***	***2.06***	***9.88***
CO	***19.71***	***5.21***	***24.92***

25. The Owner/Operator shall use the following emission factors for determining compliance with parts 23 and 24. [Basis: Compliance Verification]

Crude and Gas Oil Ship Receipts at Main Benicia Crude Dock in pounds per 1000 BBL (lb/kBBL):
5.1 NOx, 1.8 SOx, 0.29 PM10, 0.42 NMOC, 0.76 CO.

Crude and Gas Oil Barge Receipts at Main Benicia Crude Dock in lb/kbbl:
12.78 NOx, 0.16 SOx, 0.56 PM10, 0.29 NMOC, 1.27 CO.

Coke Exports via Ship at Valero Coke Dock in lb/1000 tons:
44.2 NOx, 33.1 SOx, 3.6 PM10, 3.4 NMOC, 6.2 CO.

26. The Owner/Operator shall submit calendar year reports to the District, due the 45th day following the end of the year, detailing the annual emissions to document compliance with parts 23 and 24. [Basis: Annual Report]

27. The owner/operator shall maintain daily records (calendar day), in a District approved log, for: (1) the total number of deliveries of crude oil by ship and barge, (2) the total number of deliveries of PGO by ship and barge, and (3) the total number of shipments of coke by ship. The daily throughput of crude oil transferred at the plant's dock from the cargo ship or barge to the crude storage tanks (Facility B5574 S-57 through S-62, Facility B2626 S-1047 and S-1048) shall be recorded in a District approved log. All records shall be retained for a period of at least five years from the date of entry. This log shall be kept on site and made available to District staff upon request. [Basis: Recordkeeping]

OFFSETS

28. Prior to the implementation of the VIP shipping, the Owner/Operator shall do the following to provide contemporaneous offsets for the ship, rail and barge emissions: [Basis: Contemporaneous Emissions Reduction Credits]

- ***e. Complete Light Ends Rail Rack Arm Drains (15.8 tpy NMOC). Completed 3/8/04***
- ***f. Halt MTBE ship imports no later than 90 days following VIP implementation (36.7 TPY NOx, 3.48 TPY NMOC, 1.61 TPY PM10). Completed***
- ***g. Shut down S-38 and S-39 Boilers, per Cogeneration Project Condition 19177, part 47 (0.99 tpy PM10). Completed***
- ***h. Reduce Main Stack SO2 emissions per part 23 by 16.2 TPY.***

Note: VIP shipping is triggered as described in Part 23.

29. Prior to implementation of the VIP phase pertaining to NMOC fugitives or crude tankage, the Owner/Operator shall do the following to offset the NMOC emissions increase in part 2 from fugitives (3.0 tpy), and the S-1047 and S-1048 crude storage tanks (3.3 tpy): [Basis: Offsets]

a. Complete Light Ends Rail Rack Drains (15.8 tons NMOC/year). Completed 3/8/04

Note: The VIP phase in part 29 is triggered upon commissioning the first VIP fugitive components, or the commissioning of the first crude tank (S-1047 or S-1048).

STORAGE TANKS

30. For the S-1047 and S-1048 Storage Tanks (external floating roof), the Owner/Operator shall comply with all applicable NSPS requirements of 40 CFR 60 Subpart Kb and the requirements of District Regulation 8-5. [Basis: BACT, NSPS]

31. Owner/Operator shall not store any material in S-1047 or S-1048 storage tanks other than crude oil if the new material will result in an emission increase of NMOC or an increase in toxicity. This prohibition includes (but is not limited to) the storage of a new material with a: a) Higher vapor pressure at actual storage temperature; (b) lower initial boiling point: (c) larger percentage of a toxic component; (d) new toxic compounds. Owner/Operator shall notify the District, in writing, of any proposed product storage changes, as prohibited herein, and received written authorization from the APCO in advance of any such use. [Basis: Cumulative Increase, Toxics]

32. The Owner/Operator shall limit the combined material throughput at storage tanks, Facility B5574 S-57 through S-62, and Facility B2626 S-1047 and S-1048, to no more than 171.5 kbbl/day (annual daily average) or 62.6 Million Barrels per year. [Basis: Cumulative Increase]

33. The Owner/Operator shall maintain the daily combined material throughput at storage tanks, Facility B5574 S-57 through S-62, and Facility B2626 S-1047 and S-1048, in a District approved log to demonstrate whether or not the VIP has been triggered per part 23 and compliance with part 32. The Owner/Operator shall keep these records on site and make them available for District inspection for a period of at least 5 years from the date on which a record is made. [Basis: Recordkeeping]

MISCELLANEOUS UNITS, VESSELS AND REACTORS

34. The Owner/Operator of S-7 (F-103) shall perform District's approved source tests to determine the NOx, SO2, CO, NMOC and PM10 emissions after S-1059 and S-1060 startup. [Basis: Cumulative Increase, Offsets, Recordkeeping]

35. Deleted, redundant with Part 58.

36. For each new fractionation/stripping process vessel (S-1034 through S-1045), the Owner/Operator shall not operate the sources beyond the following throughput limitation: [Basis: Cumulative Increase]

100 kbbl/day, Daily Average, each vessel.

37. Upon startup of each source in part 36, the Owner/Operator shall submit documentation of the final design throughput for the source. The Owner/Operator may adjust the throughput limit for each source in part #36 as long as it does not exceed the 100 kbbl/day, daily average. [Basis: Cumulative Increase]

38. The Owner/Operator shall maintain the daily material throughputs for each new fractionation/stripping source, S-1034 through S-1045, in a District approved log. The Owner/Operator shall keep these records on site and make them available for District inspection for a period of at least 5 years from the date on which a record is made. [Basis: Recordkeeping]

39. For each new hydrofining reactor process vessel (S-1049 through S-1056), the Owner/Operator shall not operate the sources beyond the following throughput limitation: [Basis: Cumulative Increase]

100 kbbl/day, Daily Average, each vessel.

40. Upon startup of each source, the Owner/Operator shall submit documentation of the final design throughput for the source. The Owner/Operator may adjust the throughput limit for each source in part 39 as long as it does not exceed 100 kbbl/day, daily average. [Basis: Cumulative Increase]

41. The Owner/Operator shall maintain the daily material throughputs for each new hydrofining source, S-1049 through S-1056, in a District approved log. The Owner/Operator shall keep these records on site and make them available for District inspection for a period of at least 5 years from the date on which a record is made. [Basis: Recordkeeping]

42. For each individual sulfur plant train, S-1 and S-2, the Owner/Operator shall not operate the sources beyond the following sulfur production limits: [Basis: Cumulative Increase, odors]

240 short tons per day, daily maximum
87,600 short tons per year

Note: Registration #76227 limits the daily throughput of S-1 and S-2. This limit will be deleted when the VIP project is started up.

43. The Owner/Operator shall maintain the daily sulfur production at each individual sulfur plant train, S-1 and S-2, in a District approved log. The Owner/Operator shall keep these

records on site and make them available for District inspection for a period of at least 5 years from the date on which a record is made. [Basis: Recordkeeping]

44. For the sulfur storage pit and product tank, S-157 and S-236, the Owner/Operator shall not operate the sources beyond the following throughput limits: [Basis: Cumulative Increase, Odors]

480 short tons per day, daily maximum
175,200 short tons per year

45. The Owner/Operator shall maintain the daily material throughput at the sulfur storage pit and product tank, S-157 and S-236, in a District approved log. The Owner/Operator shall maintain these records on site and make them available for District inspection for a period of at least 5 years from the date on which a record is made. [Basis: Recordkeeping]

46. For the FCCU, S-5, the Owner/Operator shall not operate the source beyond the following throughput limits:
[Basis: Cumulative Increase]
80 kbbl per day, daily maximum
77 kbbl per day, annual average

47. The Owner/Operator shall maintain the daily material throughput at the FCCU, S-5, in a District approved log. The Owner/Operator shall keep these records on site and make them available for District inspection for a period of at least 5 years from the date on which a record is made. [Basis: Recordkeeping]

48. For the coke silos, S-8, the Owner/Operator shall not operate the source beyond the following limits:
[Basis: Cumulative Increase]
2,400 tons per day, daily maximum
876 ktons per year

49. The Owner/Operator shall maintain the daily material throughput at the coke silos, S-8, in a District approved log. The Owner/Operator shall keep these records and make them available for District inspection for a period of at least 5 years from the date on which a record is made. [Basis: Recordkeeping]

50. The Owner/Operator shall not operate the S-9 Blow down system or the S-1006 Pipestill Unit beyond the following throughput limits: [Basis: Cumulative Increase]

180 kbbl per day, daily maximum
165 kbbl per day, annual average

Note: Condition #815, part 1 covers the daily throughput limit for S-1006. Condition #815, part 1 will be deleted when the VIP project is implemented.

51. The Owner/Operator shall maintain the daily crude throughput at the S-9 Crude blow down system and the S-1006 pipestill unit in a District approved log. The Owner/Operator

shall keep these records on site and make them available for District inspection for a period of at least 5 years from the date on which a record is made.

Note: Condition #815, part 2 covers the recordkeeping and reporting requirement for S-1006. This condition will be deleted when the VIP project is started up.

52. To demonstrate compliance with the throughput limit specified in part 50, the Owner/Operator shall submit a report to the District's Compliance and Enforcement Division and Engineering Division on a monthly basis. The Owner/Operator shall forward the report to the District no later than 30 days after the close of each month. [Basis: Recordkeeping]

53. For the feed drums and the hydrocracker unit, S-51, S-52 and S-1003, the Owner/Operator shall not operate the source beyond the following throughput limits: [Basis: Cumulative Increase]

44 kbbl per day, daily maximum
40 kbbl per day, annual average

54. The Owner/Operator shall maintain the daily material throughput at the feed drums and the hydrocracker unit, S-51, S-52 and S-1003, in a District approved log. The Owner/Operator shall keep these records on site and make them available for District inspection for a period of at least 5 years from the date on which a record is made. [Basis: Recordkeeping]

55. For the powerformer unit, S-1004, the Owner/Operator shall not operate the source beyond the following throughput limits: [Basis: Cumulative Increase]

39.8 kbbl per day, daily maximum
14.5 MMBBL per year

Note: Condition #18794, part 1 covers the daily and annual throughput limits for S-1004. Part 1 of Condition #18794 will be deleted when the VIP project is implemented.

56. The Owner/Operator shall maintain the daily feed throughput at the powerformer unit, S-1004, in a District approved log. The Owner/Operator shall keep these records on site and make them available for District inspection for a period of at least 5 years from the date on which a record is made.
[Basis: Recordkeeping]

Note: Condition #18794, part 2 covers the recordkeeping requirements for S-1004. Part 2 of Condition #18794 will be deleted when the VIP project is implemented.

57. For the hydrogen plants, S-1010 and S-1062 combined, the Owner/Operator shall not operate the source beyond the following throughput: [Basis: Cumulative Increase]

190 MMSCF per day, daily maximum

69,350 MMSCF per year

58. The Owner/Operator shall maintain the daily throughput of product hydrogen at the hydrogen plants, S-1010 and S-1062 combined, in a District approved log. The Owner/Operator shall keep these records on site and make them available for District inspection for a period of at least 5 years from the date on which a record is made. [Basis: Recordkeeping]

59. For the dimersol unit, S-1012, the Owner/Operator shall not operate the source beyond following throughput limits:
[Basis: Cumulative Increase]
7 kbbl per day, daily maximum
2.555 MMBBL per year

60. The Owner/Operator shall maintain the daily feed throughput at the Dimersol Unit, S-1012, in a District approved log. The Owner/Operator shall keep these records on site and make them available for District inspection for a period of at least five years. [Basis: Recordkeeping]

PS FURNACES (S-1059 AND S-1060)

61. The Owner/Operator shall abate emissions from Sources S-5, FCCU, and S-6, Fluid Coker, with PS Furnaces, S-1059 and/or S-1060, which are followed by Pre-scrubber/Regenerative Amine Scrubber, A-1047 during all periods of operation, except during start-up, shutdown, bypass and emergency bypass periods as defined in Part 65. Vapor flow rate from A-1047 shall not exceed 360,000 SCFM, dry, at 0% O2, averaged over any 365 consecutive days. [Basis: Cumulative Increase]

62. The Owner/Operator shall fire only refinery fuel gas, CO gas and/or natural gas in the S-1059 and S-1060 PS Furnaces. [Basis: BACT]

63. Total combustion emissions from S-1059 and S-1060 PS Furnaces, shall not exceed the following emissions limits, except as allowed in Parts 65, 66, 67 and 68: [Basis: Cumulative Increase, BACT, Offsets]

Emissions Limit Table for Parts 63, 66, 67 and 68

Pollutant	***Concentrations***	***Emissions***
NOx	***42.8 ppmvd @ 3% O2 365-day avg.***	***610.6 tpy[2]***
NOx	***85.6 ppmvd @ 3% O2 7-day avg.***	***6,194 lbs/day, 7-day avg.***
NOx	***150 ppmvd[1] @ 3% O2 1-calendar day avg.***	***10,344 lbs/day[1]***
SO2	***21.4 ppmvd @ 3% O2 365-day avg.***	***393.2 tpy***
SO2	***42.8 ppmvd @ 3% O2 7-day avg.***	***4,309 lbs/day, 7-day avg.***
SO2	***440 ppmvd[1] @ 3% O2 1-calendar day avg.***	***22.1 ton/day[1]***
CO	***35.2 ppmvd @ 3% O2 365-day avg.***	***209.5 tpy***
CO	***100 ppmvd[1] @ 3% O2 1-calendar day***	***4,402 lbs/day[1]***

	avg.	
PM10	***40 lbs/hr[1] as determined by BAAQMD ST-15 or EPA Method 17 in conjunction with EPA Methods 1, 2,3 and 4***	***114.8 tpy***
NMOC[3]	***10 ppmvd as tested by BAAQMD modified Method ST-7 or a combination of EPA Methods 18 and 25A***	***14.47tpy***

[1] These values may be adjusted based on source test results as specified in Parts 66, 67 and 68.
[2] Emissions include startup, shutdown, emergency bypass or bypass scenarios.
[3] NMOC: Non-methane organic compounds

a. The Owner/Operator shall monitor compliance with emissions limits above by using District approved continuous emission monitor (CEM) data for NOx, CO, O2 and SO2, source test data for PM10 and NMOC, and A-1047 flow rates. [Basis Monitoring, BACT]

b. The Owner/Operator shall install, calibrate, maintain, and operate a District-approved continuous opacity monitoring system (COMS) for reasonable assurance of compliance with Regulation 6-310 or submit an alternative monitoring plan (AMP) for opacity at the outlet of the FCCU/CKR stack. The owner/operator shall operate A-1047 Pre-scrubber/Regenerative Amine Scrubber that abate S-1059 and S-1060 PS Furnaces with no more than one 6-minute average in an hour that exceeds 30% opacity. An exceedance of the opacity limit shall be deemed an exceedance of the particulate limit in Regulation 6-1-310. [Basis: Regulation 2-6-503]

c. The Owner/Operator shall submit an annual report to the Compliance and Enforcement Division and the Engineering Division no later than 45 days following the end of each calendar year. The report shall include the actual daily emissions based on CEM data for NOx, CO and SO2, and A-1047 flow rate. In addition, the report shall include the estimated daily emissions of PM10 and NMOC, based on emission factors (lb/MMdscf) determined from source test data and applied to the actual average A-1047 flow rate. Also, the report shall include the annual totals of each pollutant to demonstrate compliance with the above limits. The report shall also include the total daily heat input for S-1059 and S-1060 PS Furnaces. [Basis: Reporting Requirements]

d. Except during periods of startup, shutdown, bypass and emergency bypass as defined in Part 65, the Owner/Operator shall maintain ammonia emissions (ammonia slip) from the SCR units (A-1059 and A-1060) at or below 10 ppmv of ammonia, dry, corrected to 3% oxygen, averaged over any rolling consecutive 3-hour period. [Basis: Toxics, BACT]

e. The Owner/Operator shall perform an initial source test in accordance with the requirements set forth in Part 73 to demonstrate compliance with the ammonia limitation in part 63d. [Basis: Toxics, Source Tests]

64. The Owner/Operator shall equip the S-1059 and S-1060 PS Furnaces with a District approved continuous fuel flow meter and recorder in order to determine refinery fuel gas consumption. (Prior to the Permit to Operate's issuance, the District will determine whether the fuel flow meter is a parametric monitor or not). [Basis: Monitoring]

65. Definitions of Startup, shutdown, emergency bypass and bypass:

- ***a. Startup of the SCRs is defined as the introduction of CO gas from S-5 FCCU or S-6 CKR to S-1059 and S-1060 PS Furnaces, not the beginning of fuel gas firing. The start up period of A-1059 and A-1060 SCRs may last up to 12 hours. NOx emissions on a concentration and mass basis will not be included in the 1-day, 7-day and 365-day average for this scenario.***
- ***b. Shutdown of the SCRs is defined as the cessation of CO fuel into S-1059 and S-1060 PS Furnaces. The shutdown period of A-1059 and A-1060 SCRs may last up to 8 hours. NOx emissions on a concentration and mass basis will not be included in the 1-day, 7-day and 365-day average for this scenario.***
- ***c. Emergency bypass of the SCRs is defined as when both SCR units are damaged and the Owner/Operator must replace the catalyst. The emergency bypass of A-1059 and A-1060 SCRs may last up to 7 days (168 hours) to permit catalyst replacement and restoration of abatement efficiency. NOx emissions on a concentration and mass basis will not be included in the 1-day, 7-day and 365-day average for this scenario.***
- ***d. Bypass of the SCRs is defined as when loading coke into the CKR before startup or unloading coke following a CKR shutdown, while the FCCU is operating or FCCU is not operating. The bypass of A-1059 and A-1060 SCRs may last up to 96 hours to avoid coke dust entrainment in the PS Furnaces and SCRs. NOx emissions on a concentration and mass basis will be included in the 365-day average, but will be excluded in the 1-day, and 7-day average for this scenario.***

[Basis: Definition, Cumulative Increase]

66. Except during periods of startup, shutdown, bypass and emergency bypass as defined in Part 65, the Owner/Operator shall maintain emissions from S-1059 and S-1060 PS Furnaces at or below the following levels: (a) Nitrogen Oxides (NOx) emissions – 42.8 ppmv, dry, corrected to 3% oxygen, any 365 consecutive days average, and (b) Nitrogen Oxides (NOx) emissions – 85.6 ppmv dry, corrected at 3% oxygen, any 7–calendar days average, and (c) Nitrogen Oxides (NOx) emissions – 150 ppmv dry, corrected to 3% oxygen, any 1-calendar day average. The daily limit shall be established based on the results of a District-approved source test or District-certified CEM data. The test report must be submitted to the District within 150 days of initial startup of S-1059 and S-1060. [Basis: BACT]

67. Except during periods of startup and shutdown, bypass and emergency bypass as defined in Part 65, the Owner/Operator shall maintain emissions from S-1059 and S-1060 PS Furnaces at or below the following levels: (a) SO2 emissions – 21.4 ppmv, dry, corrected to 3% oxygen, any 365 consecutive days average, and (b) SO2 emissions – 42.8 ppmv dry, corrected at 3% oxygen, any 7–calendar days average, and (c) SO2 emissions – 440 ppmv dry, corrected to 3% oxygen, any 1-calendar day average. The daily limit shall be established based on the results of a District-approved source test or District-certified CEM

data. The test report must be submitted to the District within 150 days of initial startup of S-1059 and S-1060. [Basis: BACT]

68. Except during periods of startup and shutdown, bypass and emergency bypass as defined in Part 65, the Owner/Operator shall maintain emissions from S-1059 and S-1060 PS Furnaces at or below the following levels: (a) CO emissions – 100 ppmv, dry, corrected to 3% oxygen, as determined by CEM, 1-calendar day average, and (b) PM10 emissions - 40 lbs/hr, as tested by BAAQMD Method ST-15 or EPA Method 17 in conjunction with EPA Methods 1, 2, 3 and 4 and (c) NMOC emissions – 14.47tons/yr and 10 ppmv, dry, as tested by BAAQMD modified Method ST-7 or a combination of EPA Methods 18 and 25A. The CO limit shall be established based on the results of a District-approved source test or District-certified CEM data. The PM10 may be adjusted based on source test results or more reliable information. The test report must be submitted to the District within 150 days of initial startup of S-1059 and S-1060. [Basis: BACT]

69. For sources S-1059 and S-1060, the Owner/Operator shall install, calibrate, maintain, and operate a District-approved continuous emission monitor and recorder for NOx, SO2, CO, and O2. The Owner/Operator shall install, calibrate, maintain, and operate a District-approved flow meter at the outlet of the A-1047 FCCU/CKR stack. (This is not a parametric monitor as defined in Regulation 1-238). [Basis: CEM Monitoring]

70. No later than 90 days from the startup of the S-1059, S-1060, A-1059, A-1060 and A-1047, the Owner/Operator shall conduct a District-approved source test to determine initial compliance with the limits in parts 63, 66, 67, and 68 for NOx, SO2, CO, NMOC, and PM10. The Owner/Operator shall conduct the source tests in accordance with Part 73. The Owner/Operator shall submit the source test results to the Source Test Section and Engineering Division no later than 150 days after the initial startup date. [Basis: Compliance determination via source tests]

71. The Owner/Operator shall maintain the total heat input for S-1059 at or below 4,634,400 million BTUs (HHV) during any rolling 12-month period, and the total heat input for S-1060 at or below 2,268,840 million BTUs (HHV) during any rolling 12-month period. [Basis: Cumulative Increase]

72. The Owner/Operator shall conduct a District-approved source test at least once per quarter to demonstrate subsequent compliance with the NMOC and PM10 mass rates specified in part 63. The quarterly source tests shall be conducted at least 2 months apart and not more than 4 months apart. The Owner/Operator shall submit the source test results to the Source Test Section and Engineering Division no later than 60 days after the source test. After acquiring one year of source test data, the Owner/Operator may switch to semi-annual or annual source testing if test variability is low upon District's approval. [Basis: Periodic Monitoring]

73. The Owner/Operator shall obtain approval for all source test procedures from the District's Source Test Section prior to conducting any tests. The owner/operator shall comply with all applicable testing requirements for continuous emissions monitors as approved by the District's Source Test Section. The owner/operator shall notify the District's Source Test Section, in writing, of the source test protocols and projected test

dates at least 7 days prior to testing. [Basis: Source test compliance verification and accuracy]

SULFURIC ACID MIST (SAM)

74. The Owner/Operator of sources S-1059, S-1060, A-1059, A-1060, A-1047, and S-1061 shall not emit more than 7 tons per year of sulfuric acid mist (SAM). [Basis: PSD]

75. Within 90 days of initial startup, the Owner/Operator shall conduct a District approved source test to demonstrate compliance with the SAM emissions in Part 74. For purposes of SAM, the applicant shall also test for SO2, SO3, SAM and ammonium sulfates. The Owner/Operator shall conduct the source tests in accordance with Part 73. The test results shall be forwarded to the District within 150 days of the initial startup date. The test should verify emission compliance at 80% or more of maximum firing on CO and refinery fuel gas for S-1059, S-1060 PS Furnaces and at 80% or more of maximum firing on refinery fuel gas for S-1061 Hydrogen Reformer Furnace.

    If Sources S-1059, S-1060 and S-1061 cannot achieve 80% or more of maximum firing on CO and/or refinery fuel within 90 days of initial startup, the Owner/Operator shall conduct another District's approved source test no later than 2 months after operating in that mode to demonstrate compliance with the SAM emissions in Part 74. [Basis: compliance demonstration, PSD avoidance]

Contemporaneous Emissions reduction credit

76. The owner/operator of sources S-3, S-4, and A-1 through A-5 shall completely shutdown the equipment no later than 90 days after startup of S-1059 and S-1060 PS Furnaces, A-1059, A-1060 PS Furnace SCRs, A-1047 FCCU/CKR Prescrubber/Regenerative Amine Scrubber. The owner/operator shall enter into the record log the date when the unit was shutdown.

    The owner/operator of sources S-21 and S-22 shall completely shutdown one of the units no later than 90 days after startup of S-1061 and S-1062 Hydrogen Reformer Furnace and Hydrogen Unit with PSA. The owner/operator shall enter into the record log the date when the unit was shutdown. (Basis: offsets)

IX. RECOMMENDATION

Issue a change of conditions to the Permit to Operate to Valero Refining Company for the following equipment:

S-3 CO Furnace F-101 or will be replaced with S-1059 PS Furnace (F-105)

S-4 CO Furnace F-102 or will be replaced with S-1060 PS Furnace (F-106)

S-5 FCCU

S-6 Fluid Coker

S-7 Pipestill Hydrofiner Furnace F-103

Thu H. Bui
Senior Air Quality Engineer
Engineering Division
Date:

THB:T:\Valero\15606\15606e\revised May 12, 2009

EVALUATION REPORT
Valero Refining Company
Application #15934- Plant #12626

3400 E. Second St.,
Benicia, CA 94510

I. BACKGROUND

Valero has applied for an Authority to Construct/Permit to Operate for the following equipment:

A-65 Thermal Oxidizer, Propane fired, Envent Corporation, EMTOS-1000 SCFM, 3.00 MMBtu/hr capacity, to abate existing sources S-193, S-196, S-205 and S-206 Diversion Tanks

Sources S-193, S-196, S-205 and S-206 are currently abated by A-36 and A-37 (two 1,200 pounds Carbon Canisters in series). These are fixed roof tanks that are used to store wastewater at the refinery. This proposed thermal oxidizer is to supplement the activated carbon systems. It will work in parallel with the existing carbon canisters to abate Non-Methane Hydrocarbon (NMHC) and help to comply with the Permit Condition 11880, Part 2, which imposes a limit of 15 lbs/day averaged over one month. The gas stream from four tanks will be diverted between the existing carbon canister and the new thermal oxidizer. It will also handle the occasional overflows incase of higher flow rates.

The new thermal oxidizer will expect to have better or the same performance as the activated carbon systems. Valero will use propane to run this thermal oxidizer. This project qualified for the accelerated permitting program; therefore, the temporary permit to operate was granted to Valero on 4/5/07. Since then, Best Environmental conducted the source test for the thermal oxidizer on April 17, 2007. The source test results showed compliance with District's RACT emission level of 50 ppmv NOx @ 15% O2 and 350 ppmv CO @ 15% O2 for combustion emissions of a secondary pollutant. See attached source test results.

The new themal oxidizer is currently subject to NSPS under 40 CFR, Part 60, Subpart J for fuel gas combustion devices located with in a refinery. Subpart J requires the owner/operator of A-65 to install either SO2 monitoring and recording system to determine compliance with 20 ppmv (dry basis, zero excess air) of SO2 emissions into the atmosphere, or H2S monitoring and recording system to determine compliance with the concentration (dry basis, zero excess air) of 230 mg/dscm (0.1 gr/dscf or 163 ppmv) of H2S in fuel gases before being burned. However, this abatement may or may not be required to install the H2S continuous monitoring and recording system since the definition of fuel gas has been revised and anticipated to be approved by April 2008.

II. EMISSION CALCULATIONS

The emission increase from the process is not expected from the installation of this thermal oxidizer. Combustion emissions of NOx and CO are based on RACT level of 50 ppmv NOx @ 15% O2 and 350 ppmv CO @ 15% O2. The emission factors for SO2, PM10, POC and NPOC are taken from AP-42, Table 1.5-1 (revised 10/96) for LPG Combustion of Commercial Boiler with heat capacity between 0.3 – 10 MMBtu/hr.

Emission increases from combustion of propane gas at thermal oxidizer

Basis:

* Total fuel throughput (3 MMBtu/hr capacity) = 286.43 X 10^3 gallon/yr of propane

* Operation hours = 24 hour/day, 7 day/wk, 52 wk/yr
* Heat capacity = 91.5 MMBtu/10^3 gallon propane
* Design Flow Rate of Thermal Oxidizer = 1000 scfm
* NOx = 0.181 lb/MMBtu (50 ppmv @ 15% O_2), and CO = 0.771 lb/MMBtu (350 ppmv @ 15% O2) – Memo on RACT levels for thermal oxidizer dated April 13, 1999
* Other emission factors taken from AP-42, Table 1.5-1 (revised 10/96) for LPG Combustion of Commercial Boiler
  PM10 = 0.4 lb/10^3 gallon
  POC = 0.5 lb/10^3 gallon
  NPOC – methane = 0.2 lb/10^3 gallon
  SO2 = 0.10 S = 0.1 X 10 gr/100 ft^3 = 1.0 lb of SO2/1000 gal propane
  where S = sulfur content in gr/100 ft^3 gas vapor = 10 gr/100 ft^3 taken from Santa Barbara County Air Pollution Control District Website for propane

Combustion Emission Calculations:
NOx = 50 ppm X 46 lb/lbmol X 60 min/hr X 24 hrs/day X 1000 scfm / [386.9 scf/mole X 10^6] = 8.56 lb/day or 3,116 lb/yr (1.558 tpy NOx)
CO = 350 ppm X 28 lb/lbmol X 60 min/hr X 24 hrs/day X 1000 scfm / [386.9 scf/mole X 10^6] = 36.475 lb/day or 13,277 lb/yr (6.638 tpy CO)
PM10 = 0.4 lb/10^3 gallon X 286.43 X 10^3 gallon/yr = 114.57 lb/yr, or 0.057 ton/yr
POC = 0.5 lb/10^3 gallon X 286.43 X 10^3 gallon/yr = 143.22 lb/yr, or 0.072 ton/yr
NPOC = 0.2 lb/10^3 gallon X 286.43 X 10^3 gallon/yr = 57.29 lb/yr, or 0.029 ton/yr
SO2 = 1.0 lb of SO2/1000 gal X 286.43 X 10^3 gallon/yr = 286.43 lb/yr or 0.143 ton/yr

III. PLANT CUMULATIVE INCREASE

Current	New Ton/yr	New Total Ton/yr	Lbs/yr	Tons/yr
POC =	0.00	0.071	142.5	0.071
NO_x =	0.00	1.558	3,116	1.558
SO_2 =	0.00	0.0012	1.0	0.0012
CO =	0.00	6.638	13,277	6.638
NPOC =	0.00	0.028	57.0	0.0028
PM_{10} =	0.00	0.057	114.0	0.057

IV. TOXIC SCREENING ANALYSIS

A "Risk Screening Analysis Questionnaire" form was not required with this application since none of the toxic trigger level was exceeded.

V. BEST AVAILABLE CONTROL TECHNOLOGY

Thermal Oxidizer, A-65, triggers BACT for CO if propane is used as fuel. BACT is not required for a secondary pollutant as stated in Regulation 2-2-112; however it must meet RACT. The District determinations of RACT for NOx emissions from A-65 is 50 ppmv @ 15%O2, and for CO emissions is 350 ppmv @ 15%O2 as stated in the interoffice memo dated April 13, 1999 for secondary pollutant emissions from thermal oxidizer (in this case combustor's combustion emissions). Thermal Oxidizer A-65 met the above requirements by compliance demonstration of source test performed on April 17, 2007.

VI. OFFSETS

Offsets are required for this project because Valero is a major facility with emissions greater than 100 ton/yr for each component per Regulation 2-2-302. The POC, NOx, PM10, SO2 emissions

will be required offsets. The company used the Certificate of Deposit # 833 to provide offsets with the ratio of 1:1.15 for NOx and POC per Regulation 2-2-302. Valero uses Certificate of Deposit # 974 and # 976 to provide offsets with the ratio of 1:1 for PM10 and SO2, respectively.

At this time, Valero will also provide offsets for Application 8427, which was deferred because the NOx, PM10 and POC emission increases were less than 1 ton/yr.

		Ton/yr	Ton/yr	Ton/yr	Ton/yr
		NOx	SO2	**PM10**	**POC**
A/N 15934	A-65	1.558	0.143	0.057	0.072
A/N 8427	A-64	0.006	neglible	0.0004	0.00032
Total		1.564	0.143	0.057	0.072
Offset Ratio = 1.15:1.0		**1.799**			**0.083**
per BAAQMD 2-2-302					
Offset Ratio = 1.0:1.0			**0.143**	**0.057**	
per BAAQMD 2-2-303					
Certificate Number		**# 833**	**# 976**	**# 974**	**# 833**
Starting balance		79.917[1]	1.163	2.25	80.000
Reduction		1.799	0.143	0.057	0.083
Ending balance		**78.118**	**1.020**	**2.193**	**79.917[1]**

[1]Note: Valero uses POC emission credits to provide offsets for NOx emissions with 1.0 to 1.0 ratio per Regulation 2-2-302.2.

Thus, the Banking Certificate # 833 will be reissued to Valero in the amount of 78.118 tons POC/yr. The Banking Certificate # 976 will be reissued to Valero in the amount of 1.020 tons SO2/yr, and the Banking Certificate # 974 will be reissued to Valero in the amount of 2.193 tons PM10/yr

VII. STATEMENT OF COMPLIANCE

Sources S-193, S-196, S-205 and S-206 are subject to and expected to be in compliance with Regulation 8, Rule 2 – Miscellaneous Operations. These sources will not discharge into the atmosphere an emission containing more than 6.8 kg (15 lbs) per day and containing a concentration of more than 300 PPM total carbon on a dry basis (Amended May 21, 1980).

This project is considered to be categorically exempt under the District's CEQA Regulation 2-1-312.2 and therefore is not subject to CEQA review. This permit application is to install air pollution control or abatement equipment.

This project is not subject to the Standard of Performance for New Stationary Sources (NSPS), 40 CFR, Part 60, Subpart J – Standards of Performance for Petroleum Refineries (dated 6/24/08). This abatement is not required to install the H2S continuous monitoring and recording system to comply with the concentration (dry basis, zero excess air) of 230 mg/dscm (0.1 gr/dscf or 163 ppmv) of H2S in fuel gases before being burned since the definition of fuel gas has been revised to exclude vapors that are collected and combusted to compoly with the Wastewater provisions. Therefore, these vapors are exempt from the sulfur dioxide (SO2) treatment standard and are not required to be monitored. The revised 40 CFR, Part 60, Subpart J became effective on June 24, 2008.

This project is over 1,000 ft from the nearest public school and is therefore not subject to the public notification requirements of Regulation 2-1-412.

A toxic risk screening analysis is not required.

BACT, PSD, and NESHAPS are not required

CONDITIONS

Condition # 11880
For Sources S-193, S-196, S-205 and S-206 Wastewater Diversion and Surge Tanks
Abated by A-36 Carbon Canisters and A-65 Thermal Oxidizer
Updated by Application 15934

1. The Owner/Operator shall abate S-193, S-196, S-205 and S-206 using two 1200 lb (minimum) carbon canisters in series (A-36) and/or A-65 thermal oxidizerat all times. [Basis: Cumulative Increase]

2. The Owner/Operator shall limit the combined non-methane hydrocarbons (NMHC) emissions at the outlets of the second carbon canisters of A-36 and A-37, and Thermal Oxidizers A-57 and A-65 to no more than 15 pounds per day, as averaged over one month. [Basis: Regulation 8, Rule 2]

3. To demonstrate compliance with Part 2, the Owner/Operator shall determine the NMHC flow rates and NMHC concentrations at the outlets of the second carbon canisters of A-36 and A-37 in accordance with ST-7 of the District's Manual of Procedures Volume IV. The Owner/Operator shall use District approved monitors. NMHC concentration shall be calculated by subtracting the average known methane content of 2500 parts per million (PPM) from the total hydrocarbon analyzer reading measured at the outlets of the second carbon canisters of A-36 and A-37. Alternatively, the methane contents can also be obtained by actual gas samples. [Basis: Cumulative Increase]

   To demonstrate compliance with Part 2, the Owner/Operator shall determine the NMHC emissions from A-57 and A-65 Thermal Oxidizers based upon the results of the District-approved initial source tests [Basis: Cumulative Increase]

4. To demonstrate compliance with Part (2), the Owner/Operator shall maintain the following records in a District approved log. These records shall be kept on site and made available for District inspection for a period of at least 60 months from the date on which a record is made. [Basis: Cumulative Increase]
   a. Daily NMHC emission rate in pounds per day.
   b. Daily NMHC emission rate, as averaged over one month, in pounds per day.
   c. Carbon canister daily flow rate and outlet NMHC concentrations.
   d. Carbon canister changeout dates
   e. Total volume of gas recorded between carbon canister changeouts.

5. Deleted. [Basis: The inspection and maintenance program for fugitive components is covered under Regulation 8, Rule 18.]

6. Deleted. [Basis: The inspection and maintenance program for fugitive components is covered under Regulation 8, Rule 18.]

7. The Owner/Operator shall use a monitoring device that continuously indicates and records the VOC concentration level or reading of organics in the exhaust gases of the outlet gas stream or inlet and outlet gas streams of the A-36 carbon canisters. [Basis: Cumulative Increase]

8. The Owner/Operator shall not fire more than 284,950 gallons of propane at the Thermal Oxidizer A-65 during any consecutive 12 month periods. [Basis: cumulative increase]

9. The Owner/Operator shall not emit more than 50 ppmvd NOx at 15% O2 from Thermal Oxidizer A-65. [Basis: RACT, Source Test Method 13A]

10. The Owner/Operator shall not emit more than 350 ppmvd CO at 15% O2 from Thermal Oxidizer A-65. [Basis: RACT, Source Test Method 6]

11. The Owner/Operator shall operate A-65 at a minimum temperature of 1400 degrees F. The District may adjust this minimum temperature, if source test data demonstrates that an alternate temperature is necessary for or capable of maintaining compliance with Parts 2, 9 and 10 above. [basis: Regulation 2-1-403]

12. To determine compliance with the temperature requirement in Part 11, the Owner/Operator shall equip A-65 with a temperature measuring device capable of continuously measuring and recording the temperature in A-65. The Owner/Operator shall install and maintain the temperature measuring device in accordance with manufacturer's recommendations. [basis: Regulation 2-1-403]

13. The temperature limit in Part 11 shall not apply during an "Allowable Temperature Excursion", provided that the temperature controller setpoint complies with the temperature limit. An Allowable Temperature Excursion is one of the following:
    a. A temperature excursion not exceeding 20 degrees F; or
    b. A temperature excursion for a period or periods which when combined are less than or equal to 15 minutes in any hour; or
    c. A temperature excursion for a period or periods which when combined are more than 15 minutes in any hour, provided that all three of the following criteria are met.
        i. the excursion does not exceed 50 degrees F;
        ii. the duration of the excursion does not exceed 24 hours; and
        iii. the total number of such excursions does not exceed 12 per calendar year.

    Two or more excursions greater than 15 minutes in duration occurring during the same 24-hour period shall be counted as one excursion toward the 12-excursion limit. (basis: Regulation 2-1-403)

14. For each Allowable Temperature Excursion that exceeds 20 degrees F and 15 minutes in duration, the Permit Holder shall keep sufficient records to demonstrate that they meet the qualifying criteria described above. Records shall be retained for a minimum of five years from the date of entry, and shall be made available to the District upon request. Records shall include at least the following information:
    a. Temperature controller setpoint;
    b. Starting date and time, and duration of each Allowable Temperature Excursion;
    c. Measured temperature during each Allowable Temperature Excursion;
    d. Number of Allowable Temperature Excursions per month, and total number for the current calendar year; and
    e. All strip charts or other temperature records.

    (basis: Regulation 2-1-403)

15. The owner/operator shall maintain the following records for each month of operation of the Thermal Oxidizer A-65: [Basis: Recordkeeping]
    a. The hours and times of operation and which sources A-65 is controlling
    b. Temperature of A-65

    All measurements, records and data required to be maintained by the operator shall be retained and made available for inspection by the District for at least five years following the date the data is recorded.

IX. RECOMMENDATION

Issue a conditional Permit to Operate to Valero Refining Company for the following equipment since Valero has demonstrated compliance with emission levels as required in Condition Parts 2, 9 and 10 :

A-65 Thermal Oxidizer, Propane fired, Envent Corporation, EMTOS-1000 SCFM, 3.00 MMBtu/hr capacity, to abate existing sources S-193, S-196, S-205 and S-206 Diversion Tanks

_____
Thu H. Bui
Senior Air Quality Engineer
Permit Services Division
Date: _____

THB:disk-v\Valero\15934e

EVALUATION REPORT
VALERO REFINING CO.
Application #16706 - Plant #12626

3400 E. Second St.
Benicia, CA 94510

I. BACKGROUND

Valero has applied for a change of condition to the Permit to Operate for the following equipment:

S-237 Boiler SG-1032, Babcock & Wilcox, 315 MMBtu/hr, abated by the A-58 Selective Catalyst Reduction System

S-237 steam generator first received the Permit to Operate on July 14, 2000 under operating Condition # 16027. Condition # 16027, Part 10 required S-237 to limit the Visible emissions from the S-237 Boiler to at or below Ringelmann No. 1.0 or 20% opacity, as required by Regulation 6-301, but does not require monthly visible emissions. Another Condition # 19466, Part 3 required that the owner/operator of S-237 must monitor visible emission monthly to demonstrate compliance with BAAQMD Regulation 6-301 (Ringlemann 1 or 20% opacity). Condition # 19466, Part 3 grouped S-237 boiler among the high particulate emission sources such as the Sulfur Plant Flexorb Unit (S-1 & S-2), Coke Silos (S-8), Carbon Black Storage (S-11), Brine Tank (S-176) and Mogas Reformulation Unit Hot Oil Furnace (S-233).

Valero requests that the monthly visible emission monitoring be removed from the permit condition because S-237 is a utility boiler (600 pounds steam generator), which uses refinery fuel gas. The proposed change is acceptable with the District since the steam boiler S-237 is more likely to have no visible emissions that exceed Ringlemann 1 or 20% opacity. Valero submitted monthly records of the past 3 years from S-237 to demonstrate no visible emission observations (zero %) performed by Best Environmental. See attached records from April 2004 to September 2007. In addition, there was no violation notice record for exceeding Regulation 6-301 at S-237 since its starting operation in 2000.

Valero submitted a significant change to the TV permit concurrently under Application # 16710. This application will be added to the current TV permit during the renewal period.

II. EMISSION CALCULATIONS

This application will not result in an emission increase.

III. PLANT CUMULATIVE INCREASE SINCE 4/5/1991

There are no net changes to the plant cumulative emissions.

IV. TOXIC SCREENING ANALYSIS

This application will not result in an increase in toxic air contaminant emissions from existing levels. Therefore, a Toxic RSA is not required per Regulation 2-5.

V. BEST AVAILABLE CONTROL TECHNOLOGY

This application will not result in any emission increase from existing levels. Therefore, BACT is not triggered per Regulation 2-2-301.

VI. OFFSETS

This application does not result in emission increases. Therefore, offsets are not needed per Regulation 2-2-302.

VII. STATEMENT OF COMPLIANCE

Source S-237, Steam Boiler, is subject to and expected to be in compliance with all requirements of Regulation 1 (General Provision), Regulation 6 (Particulate Matter and Visible Emissions), and Regulation 9-3-303 (Nitrogen Oxides From Heat Transfer Operations). Boiler S-237 will not exceed 125 ppmv of NOx when gaseous fuel is burned.

- Source S-237 is subject to and expected to comply with the following Regulation 10: New Source Performance Standards (NSPS), (40 CFR, Part 60).

- 40 CFR, Part 60, Subpart J Standards of Performance for Petroleum Refineries.

This project is considered to be ministerial under the District's CEQA Regulation 2-1-311 and therefore is not subject to CEQA review. The engineering review for this project requires only the application of standard permit conditions and standard emission factors in accordance with Permit Handbook Chapter 2.1, and therefore is not discretionary as defined by CEQA.

This project is over 1,000 ft from the nearest public school and is therefore not subject to the public notification requirements of Regulation 2-1-412.

PSD is not triggered.

VIII. CONDITIONS

Permit condition # 19466, Valero Refining Company, Application # 13201, amended by Application 16706, Plant # 12626.

1. Deleted. (Basis: Sampling is a safety problem and there is reasonable assurance that compliance with Regulation 9-1-313.2 is achieved. See detailed analysis in Statement of Basis)

2a. Deleted. (Basis: S-188 vents to the refinery fuel gas system).

2b. Deleted. (Basis: S-189 vents to the refinery fuel gas system).

2c. Deleted. (Basis: S-160 was modified in May, 2005 and now vents to Vapor Recovery System A-13/A26)

2d. The Owner/Operator shall operate S-160 Seal Oil Sparger only when abated by A-13/A-26 Vapor Recovery Compressor to be returned to the refinery fuel gas system. (Basis: Cumulative Increase)

3. The Owner/Operator shall monitor and record on a monthly basis the visible emissions from Sources S-1, S-2, S-8, S-11, S-176, and S-233 to demonstrate compliance with Regulation 6-301 (Ringlemann 1 or 20% opacity). For S-176 only, this monitoring is only required when dry salt is added to the tank. These records shall be kept for a period of at least 5 years from date of entry and shall be made available to District staff upon request. [Basis: Regulation 6-301]

4. The owner/operator shall notify the District in writing by fax or email no less than three calendar days in advance of any scheduled startup or shutdown of any process unit and as soon as feasible for any unscheduled startup or shutdown of a process unit, but no later than 48 hours or within the next normal business day after the unscheduled startup/shutdown. The notification shall be sent in writing by fax or email to the Director of Enforcement and Compliance. The requirement is not federally enforceable. [Regulation 2-1-403]

5a. The Owner/Operator shall abate the emissions from the S-3 and S-4, CO Boilers, by at least four of the five A-1 through A-5 Electrostatic Precipitators, except as indicated in Part 5b, and the Owner/Operator shall exhaust those emissions through the main stack (P-1). [Basis: Regulation 6-301 and Regulation 6-304].

5b. For no more than 30 days per calendar year to allow for source testing and emergency ESP repairs, the Owner/Operator shall abate the emissions from the S-3 and S-4 CO Boilers by at least three of the five A-1 through A-5 Electrostatic Precipitators at all times. If, at anytime, the abatement of S-3 and S-4 with less than four of the five Electrostatic Precipitators does not comply with all District Regulations, this 30-day allowance is rescinded and the Part will be deleted. [Basis: Regulation 6-301 and Regulation 6-304].

5c. In order to demonstrate that operation of S-3 and S-4 with abatement using 3 out of 5 Electrostatic Precipitators does not impact emissions, and to demonstrate compliance with Regulations 6-301, 6-304 and 6-310, the Owner/Operator shall conduct a District approved source test during the operation of 3 ESP units. All source testing shall be completed in accordance with the District's Manual of Procedures. This source test shall be completed and the source test report demonstrating compliance submitted to the District's Compliance and Enforcement Division and the District's Engineering Division. This source test report shall be approved by the District's Source Test Section prior to 3 ESP unit operation after the initial source test. [Basis: Regulations 6-301, 6-304 and 6-310]

6. The Owner/Operator shall perform an annual source test on Sources S-5 and S-6 to demonstrate compliance with Regulation 6-310 (outlet grain loading no greater than 0.15 grain/dscf). The Owner/Operator shall submit the test results to the District's Compliance and Enforcement Division and the District's Permit Services Division no less than 45 days after the test. These records shall be kept for a period of at least 5 years from date of entry and shall be made available to District staff upon request. [Basis: Regulation 6-310]

7. The Owner/Operator shall perform an annual source test on Sources S-8 and S-176 to demonstrate compliance with Regulation 6-310 (outlet grain loading no greater than 0.15

grain/dscf). The Owner/Operator shall submit the test results to the District's Compliance and Enforcement Division and the District's Permit Services Division no less than 45 days after the test. These records shall be kept for a period of at least 5 years from date of entry and shall be made available to District staff upon request. For S-176 only, this source test is only required when dry salt is added to the tank. [Basis: Regulation 6-310]

8. The Owner/Operator shall perform annually a source test on S-1 and S-2 to determine compliance with Regulation 6-330 (Outlet grain loading not to exceed 0.08 grain/dscf of SO3 and H2SO4). The Owner/Operator shall submit the test results to the District's Compliance and Enforcement Division and the District's Permit Services Division no less than 45 days after the test. These records shall be kept for a period of at least 5 years from date of entry and shall be made available to District staff upon request. [Basis: Regulation 6-330]

9. The Owner/Operator shall perform an annual source test on Sources S-5, S-6 and S-8 to demonstrate compliance with Regulation 6-311 (PM mass emissions rate not to exceed $4.10P^{0.67}$ lb/hr). The Owner/Operator shall submit the test results to the District's Compliance and Enforcement Division and the District's Permit Services Division no less than 45 days after the test. These records shall be kept for a period of at least 5 years from date of entry and shall be made available to District staff upon request. [Basis: Regulation 6-311]

10. The Owner/Operator shall conduct a District-approved source test on a semi-annual basis on Sources S-7, S-20, S-21, S-22, S-23, S-24, S-25, S-26, S-30, S-31, S-32, S-33, S-34, S-40, S-41 and on an annual basis on sources S-35 and S-173 to demonstrate compliance with Regulation 9-10-305 (CO not to exceed 400 ppmv, dry, at 3% O2, operating day average). The Owner/Operator shall submit the test results to the District's Compliance and Enforcement Division and the District's Permit Services Division no less than 45 days after the test. These records shall be kept for a period of at least 5 years from date of entry and shall be made available to District staff upon request.

    The Owner/Operator shall ensure that S-220 does not exceed 400 ppmv of CO, dry, at 3% O2, operating day average, measured by a properly installed CEM for CO and O2. [Basis: Regulation 9-10-305]

11. The Owner/Operator shall conduct a semi-annual District-approved source test on Sources S-43, S-44 and S-46 to demonstrate compliance with Regulation 9-9-301.1 (NOx not to exceed 55 ppmv, dry, at 15% O2, fired on refinery fuel gas). The Owner/Operator shall submit the test results to the District's Compliance and Enforcement Division and the District's Permit Services Division no less than 45 days after the test. These records shall be kept for a period of at least 5 years from date of entry and shall be made available to District staff upon request. [Basis: Regulation 9-9-301.1]

12. The Owner/Operator shall abate the VOC emissions from the S-159 Lube Oil Reservoir using the S-36 Boiler. [Basis: Cumulative Increase]

13. The Owner/Operator shall vent the VOC emissions from S-167 and S-168 Seal Oil Spargers in a closed system to the flare gas recovery header to be returned to the refinery fuel gas system. [Basis: Cumulative Increase]

14. The Owner/Operator shall use the continuous emission monitors required by Regulation 9, Rule 10, to monitor compliance for all NOx limits at the following sources:
CO Furnaces: S-3, S-4
Process Furnaces: S-21, S-22, S-23, S-25, S-30, S-31, S-32, S-33, S-220
Steam Generators: S-40, S-41

15. The Owner/Operator shall use the continuous opacity monitors required by Regulation 1-520 to monitor compliance for the opacity limits at the Main Stack for the following sources:
S-5 Fluid Catalytic Cracking Unit, Catalyst Regenerator
S-6 Fluid Coker, Burner

16. To allow sufficient time to prepare test plans, train employees, and install any necessary equipment, the monitoring requirements Parts 1, 2c, 3, 6, 7, 8, 9, 10, 11, 14 and 15 are effective April 1, 2004.

IX. RECOMMENDATION

Issue a conditional change to the Permit to Operate to Valero Refining Company for the following equipment:

S-237 Boiler SG-1032, Babcock & Wilcox, 315 MMBtu/hr

Thu H. Bui
Senior Air Quality Engineer
Engineering Division
Date:

THB:C:\Valero\16706\16706e\12/11/07

EVALUATION REPORT
VALERO REFINING CO.
Application #16707 - Plant #12626

3400 E. Second St.
Benicia, CA 94510

I. BACKGROUND

Valero has applied for a change of condition to the Permit to Operate for the following equipment:

S-173 Coker Steam Superheat Furnace F-902, 22 MMBtu/hr

S-43 Process Gas Turbine GT-401, GE, 132.4 MMBtu/hr

S-44 Process Gas Turbine GT-701, GE, 141 MMBtu/hr

S-46 Process Gas Turbine GT-1031, GE, 132.4 MMBtu/hr

Condition # 254, Part 3 required that the owner/operator of S-173 must test the NOx emission twice a year to demonstrate compliance with BAAQMD Regulation 9-10 for nitrogen oxide (NOx) and carbon monoxide (CO) from boilers, steam generators and process heaters in petroleum refineries. Similarly, Condition #19466, part 11 required that the owner/operator of S-42, S-44 and S-46 must test the NOx emission twice a year to demonstrate compliance with BAAQMD Regulation 9-9-301.1. Valero requests that the semiannual test frequency be reduced to an annual test frequency for all four sources above.

Below are the source test results that Valero collected for sources S-173, S-43, S-44 and S-46 in the past three years. They are all within 10% or below the permitted level.

Source S-173 (F-902), Unit listed is in ppmv @ 3% O2 Retest of 6/23/06

Limits	11/19/04	5/9/05	10/5/05	6/23/06	9/6/06	12/11/06	6/4/07
NOx = 40	34.6	41.1	39	44.4	33.4	35.38	40
CO = 200	<4.0	<2.0	<2.0	<4.0	<4	3.23	-----

Source S-43 (GT-401), Unit listed is in ppmv @ 5% O2

	8/10/04	3/14/05	9/21/05	3/7/06	12/13/06	6/18/07	Limit
NOx	30.7	41.0	41.4	41.43	34.9	42.75	55

No CO limit

Source S-44 (GT-701), Unit listed is in ppmv @ 15% O2

	8/11/04	3/15/05	9/21/05	3/7/06	12/13/06	6/18/07	Limit
NOx	30.2	27.9	33.3	38.94	49.73	41.47	55

No CO limit

Source S-46 (GT-1031), Unit listed is in ppmv @ 15% O2

	8/12/04	3/16/05	9/23/05	3/11/06	12/13/06	6/18/07	Limit
NOx	48	44.0	41.4	39.73	42.73	40	55

No CO limit

There is an existing Condition # 21233, Part 7A (NOx Box condition) required the owner/operator of source S-173 to perform an annual source test to comply with Regulation 9-10 – under the control plan of refinery wide NOx emissions for sources with less than 25 MMBtu/hr. Another existing Condition # 19466, Part 10 required the owner/operator of source S-173 to test the CO emission on an annual basis. Therefore, the District agreed to change the source test frequency for NOX and CO from semiannual to annual in Condition # 254, Part 3 for consistency.

In addition, the newly adopted Regulation 9-9-504 now required an annual source test for compliance demonstration for S-43, S-44 and S-46, gas turbines, with less than 150 MMBtu/hr (<10 MW). To be consistent with the District's regulation, the District agreed to reduce the source test frequency from semiannual to annual for NOx emission. Valero submitted a significant revision to the TV permit concurrently under Application # 16708 for condition changes because the application would be considered as a relaxation of the applicable monitoring, reporting or recordkeeping condition per Regulation 2-6-226.3.

II. EMISSION CALCULATIONS

This application will not result in an emission increase.

III. PLANT CUMULATIVE INCREASE SINCE 4/5/1991

There are no net changes to the plant cumulative emissions.

IV. TOXIC SCREENING ANALYSIS

This application will not result in an increase in toxic air contaminant emissions from existing levels. Therefore, a Toxic RSA is not required per Regulation 2-5.

V. BEST AVAILABLE CONTROL TECHNOLOGY

This application will not result in any emission increase from existing levels. Therefore, BACT is not triggered per Regulation 2-2-301.

VI. OFFSETS

This application does not result in emission increases. Therefore, offsets are not needed per Regulation 2-2-302.

VII. STATEMENT OF COMPLIANCE

Source S-173, Steam Boiler, is subject to and expected to be in compliance with all requirements of Regulation 1 (General Provision), Regulation 6 (Particulate Matter and Visible Emissions), and Regulation 9-10-301 (Nitrogen Oxides and Carbon Monoxides From Boilers, Steam Generators and Process in Petroleum Refineries). Steam Boiler S-173 will not exceed a refinery-wide emission rate from affected units, 0.033 pounds NO_x per million BTU of heat input.

Sources S-43, S-44 and S-46, Gas Turbines, are subject to and expected to be in compliance with all requirements of Regulation 1 (General Provision), Regulation 6 (Particulate Matter and Visible Emissions), and Regulation 9-9-301.1.1 (Nitrogen Oxides From Stationary Gas Turbines). Gas Turbines S-43, S-44 and S-46 will not exceed 55 ppmv of NOx when refinery fuel gas is burned.

- Source S-173 is subject to and expected to comply with the following Regulation 10: New Source Performance Standards (NSPS), (40 CFR, Part 60).

- 40 CFR, Part 60, Subpart J Standards of Performance for Petroleum Refineries.

This project is considered to be ministerial under the District's CEQA Regulation 2-1-311 and therefore is not subject to CEQA review. The engineering review for this project requires only the application of standard permit conditions and standard emission factors in accordance with Permit Handbook Chapters 2.1 and 2.3, and therefore is not discretionary as defined by CEQA.

This project is over 1,000 ft from the nearest public school and is therefore not subject to the public notification requirements of Regulation 2-1-412.

PSD is not triggered.

VIII. CONDITIONS

Permit Condition # 254, Valero Refining Company, Amended by Application # 16707, Plant # 12626.

For S-173 Process Furnace (F-902)

1. The Owner/Operator shall maintain the NOx emissions from S-173 at or below 40 ppm "dry" at 3% oxygen. [Basis: Cumulative Increase]

2. The Owner/Operator shall operate the Furnace F-1060 for no more than 30 days per year. [Basis: Cumulative Increase]

3. The Owner/Operator shall conduct a District approved Source Test on source S-173 on an annual basis to determine compliance with part #1. [Basis: Cumulative Increase]

4. Any "banking" application submitted by the Owner/Operator relative to this permit shall, at a minimum, include an analysis of the entire coker, specifically emissions associated with "running normal rates for longer periods." [Basis: Cumulative Increase]

Permit condition # 19466, Valero Refining Company, Application # 13201, amended by Application 16706 and Application 16707, Plant # 12626.

1. Deleted. (Basis: Sampling is a safety problem and there is reasonable assurance that compliance with Regulation 9-1-313.2 is achieved. See detailed analysis in Statement of Basis)

2a. Deleted. (Basis: S-188 vents to the refinery fuel gas system).

2b. Deleted. (Basis: S-189 vents to the refinery fuel gas system).

2c. Deleted. (Basis: S-160 was modified in May, 2005 and now vents to Vapor Recovery System A-13/A26)

2d. The Owner/Operator shall operate S-160 Seal Oil Sparger only when abated by A-13/A-26 Vapor Recovery Compressor to be returned to the refinery fuel gas system. (Basis: Cumulative Increase)

3. The Owner/Operator shall monitor and record on a monthly basis the visible emissions from Sources S-1, S-2, S-8, S-11, S-176, and S-233 to demonstrate compliance with Regulation 6-301 (Ringlemann 1 or 20% opacity). For S-176 only, this monitoring is only required when dry salt is added to the tank. These records shall be kept for a period of at least 5 years from date of entry and shall be made available to District staff upon request. [Basis: Regulation 6-301]

4. The owner/operator shall notify the District in writing by fax or email no less than three calendar days in advance of any scheduled startup or shutdown of any process unit and as soon as feasible for any unscheduled startup or shutdown of a process unit, but no later than 48 hours or within the next normal business day after the unscheduled startup/shutdown. The notification shall be sent in writing by fax or email to the Director of Enforcement and Compliance. The requirement is not federally enforceable. [Regulation 2-1-403]

5a. The Owner/Operator shall abate the emissions from the S-3 and S-4, CO Boilers, by at least four of the five A-1 through A-5 Electrostatic Precipitators, except as indicated in Part 5b, and the Owner/Operator shall exhaust those emissions through the main stack (P-1). [Basis: Regulation 6-301 and Regulation 6-304].

5b. For no more than 30 days per calendar year to allow for source testing and emergency ESP repairs, the Owner/Operator shall abate the emissions from the S-3 and S-4 CO Boilers by at least three of the five A-1 through A-5 Electrostatic Precipitators at all times. If, at anytime, the abatement of S-3 and S-4 with less than four of the five Electrostatic Precipitators does not comply with all District Regulations, this 30-day allowance is rescinded and the Part will be deleted. [Basis: Regulation 6-301 and Regulation 6-304].

5c. In order to demonstrate that operation of S-3 and S-4 with abatement using 3 out of 5 Electrostatic Precipitators does not impact emissions, and to demonstrate compliance with Regulations 6-301, 6-304 and 6-310, the Owner/Operator shall conduct a District approved source test during the operation of 3 ESP units. All source testing shall be completed in accordance with the District's Manual of Procedures. This source test shall be completed and the source test report demonstrating compliance submitted to the District's Compliance and Enforcement Division and the District's Engineering Division. This source test report shall be approved by the District's Source Test Section prior to 3 ESP unit operation after the initial source test. [Basis: Regulations 6-301, 6-304 and 6-310]

6. The Owner/Operator shall perform an annual source test on Sources S-5 and S-6 to demonstrate compliance with Regulation 6-310 (outlet grain loading no greater than 0.15 grain/dscf). The Owner/Operator shall submit the test results to the District's Compliance and Enforcement Division and the District's Permit Services Division no less than 45 days after the test. These records shall be kept for a period of at least 5 years from date of entry and shall be made available to District staff upon request. [Basis: Regulation 6-310]

7. The Owner/Operator shall perform an annual source test on Sources S-8 and S-176 to demonstrate compliance with Regulation 6-310 (outlet grain loading no greater than 0.15 grain/dscf). The Owner/Operator shall submit the test results to the District's Compliance and Enforcement Division and the District's Permit Services Division no less than 45 days after the test. These records shall be kept for a period of at least 5 years from date of entry and shall be made available to District staff upon request. For S-176 only, this source test is only required when dry salt is added to the tank. [Basis: Regulation 6-310]

8. The Owner/Operator shall perform annually a source test on S-1 and S-2 to determine compliance with Regulation 6-330 (Outlet grain loading not to exceed 0.08 grain/dscf of SO3 and H2SO4). The Owner/Operator shall submit the test results to the District's Compliance and Enforcement Division and the District's Permit Services Division no less than 45 days after the test. These records shall be kept for a period of at least 5 years from date of entry and shall be made available to District staff upon request. [Basis: Regulation 6-330]

9. The Owner/Operator shall perform an annual source test on Sources S-5, S-6 and S-8 to demonstrate compliance with Regulation 6-311 (PM mass emissions rate not to exceed $4.10P^{0.67}$ lb/hr). The Owner/Operator shall submit the test results to the District's Compliance and Enforcement Division and the District's Permit Services Division no less than 45 days after the test. These records shall be kept for a period of at least 5 years from date of entry and shall be made available to District staff upon request. [Basis: Regulation 6-311]

10. The Owner/Operator shall conduct a District-approved source test on a semi-annual basis on Sources S-7, S-20, S-21, S-22, S-23, S-24, S-25, S-26, S-30, S-31, S-32, S-33, S-34, S-40, S-41 and on an annual basis on sources S-35 and S-173 to demonstrate compliance with Regulation 9-10-305 (CO not to exceed 400 ppmv, dry, at 3% O2, operating day average). The Owner/Operator shall submit the test results to the District's Compliance and Enforcement Division and the District's Permit Services Division no less than 45 days after the test. These records shall be kept for a period of at least 5 years from date of entry and shall be made available to District staff upon request.

    The Owner/Operator shall ensure that S-220 does not exceed 400 ppmv of CO, dry, at 3% O2, operating day average, measured by a properly installed CEM for CO and O2. [Basis: Regulation 9-10-305]

11. The Owner/Operator shall conduct an annual District-approved source test on Sources S-43, S-44 and S-46 to demonstrate compliance with Regulation 9-9-301.1 (NOx not to exceed 55 ppmv, dry, at 15% O2, fired on refinery fuel gas). The Owner/Operator shall submit the test results to the District's Compliance and Enforcement Division and the District's Permit Services Division no less than 45 days after the test. These records shall

be kept for a period of at least 5 years from date of entry and shall be made available to District staff upon request. [Basis: Regulation 9-9-301.1]

12. The Owner/Operator shall abate the VOC emissions from the S-159 Lube Oil Reservoir using the S-36 Boiler. [Basis: Cumulative Increase]

13. The Owner/Operator shall vent the VOC emissions from S-167 and S-168 Seal Oil Spargers in a closed system to the flare gas recovery header to be returned to the refinery fuel gas system. [Basis: Cumulative Increase]

14. The Owner/Operator shall use the continuous emission monitors required by Regulation 9, Rule 10, to monitor compliance for all NOx limits at the following sources:
CO Furnaces: S-3, S-4
Process Furnaces: S-21, S-22, S-23, S-25, S-30, S-31, S-32, S-33, S-220
Steam Generators: S-40, S-41

15. The Owner/Operator shall use the continuous opacity monitors required by Regulation 1-520 to monitor compliance for the opacity limits at the Main Stack for the following sources:
S-5 Fluid Catalytic Cracking Unit, Catalyst Regenerator
S-6 Fluid Coker, Burner

16. To allow sufficient time to prepare test plans, train employees, and install any necessary equipment, the monitoring requirements Parts 1, 2c, 3, 6, 7, 8, 9, 10, 11, 14 and 15 are effective April 1, 2004.

IX. RECOMMENDATION

Issue a conditional change to the Permit to Operate to Valero Refining Company for the following equipment:

S-173 Coker Steam Superheat Furnace F-902, 22 MMBtu/hr

S-43 Process Gas Turbine GT-401, GE, 132.4 MMBtu/hr

S-44 Process Gas Turbine GT-701, GE, 141 MMBtu/hr

S-46 Process Gas Turbine GT-1031, GE, 132.4 MMBtu/hr

Thu H. Bui
Senior Air Quality Engineer
Engineering Division
Date:

THB:C:\Valero\16707\16707e\3/18/08

EVALUATION REPORT
VALERO REFINING CO.
Application #16866 - Plant #12626

3400 E. Second St.
Benicia, CA 94510

I. BACKGROUND

Valero has applied for a change of condition to the Authority to Construct/Permit to Operate for the following equipment:

S-247 F-5401 Reactor Charge Heater, ULSD Unit, Callidus Ultra Low NOx Burners, 21.95 MMBtu/hr

S-248 F-5402 Stripper Reboiler Heater, ULSD Unit, Callidus Ultra Low NOx Burners, 35.10 MMBtu/hr

The District issued an Authority to Construct to Valero for the Ultra Low Sulfur Diesel (ULSD) unit consists of equipment mentioned above on March 22, 2006 under Application # 13009 and Condition # 22949. The feed to the ULSD Unit is a combination of diesel, Coker Naphtha and light cracked slop. The initial startup of the ULSD Unit began on July 16, 2007. Valero requested to extend the Authority to Construct's startup period from 60 days to 180 days because of unexpected problems with meeting the NOx and CO concentration limits, and potentially with the PM10 and POC emissions. The District granted this extension request on September 18, 2007 and indicated that the initial source test report must be submitted by December 13, 2007.

So far, Valero has consulted with the vendor and tried many different possible solutions, but none has worked. The preliminary, uncertified CEM data indicate higher than expected NOx and CO concentrations from the heaters due to the following problems:

1. At low fire duties (high turndown), high excess air from incidental firebox leakage results in high NOx levels. In addition, low firebox temperatures at low fired duties result in high CO levels due to incomplete combustion, in spite of high excess air present. At high fired duties, NOx and CO concentration limits are difficult to meet continually.
2. Valero was designed to conserve water by using air fin cooling systems instead of cooling water. The air fin cooling has impacted the fuel gas quality during hot weather and diurnal effect operations by allowing more heavy material entering the fuel gas system and increasing the heating value of the fuel gas. Thus, at constant fired duty, the fuel gas flow rate decreases as fuel gas heating value increases. The ULSD heaters are equipped with ultra low NOx burners, which rely on internal flue gas recirculation in the firebox to reduce NOx emissions. When less fuel gas is used during the heat of the day or due to the diurnal effects, less internal flue gas recirculates to dissipate combustion heat release; therefore, the flame temperature increases, which resulted in increase of NOx emissions.

Valero submitted uncertified CEM data for NOx and CO on October 15, 2007 meeting with the District's staff to discuss the condition change from concentration limits (PPM) to mass emission limits (lbs/hr). The data showed that the mass emission limits of NOx and CO would ensure compliance and provide operating flexibility during the low firing rate, while meeting the BACT concentration limits for these heaters.

In addition, although Valero has not conduct any initial source test for PM10 and POC, Valero is concerned about meeting the POC and PM10 emission factor limits for fears that these emissions may vary with combustion efficiency similar to CO emissions. At this time, Valero requests to convert the emission factor limits for PM10 and POC to their equivalent mass emission limits also. Table 1 below summarized the current and the newly, proposed mass limits of NOx, CO, PM10 and POC.

Table 1

Condition 22949	*Pollutant*	*Current Limit*	*Current Emission Factor*	*Total Fired Duty Limit (S-247 & S-248)*	*Equivalent Mass Emission Limit*
Part 8a	PM10	0.0050 lb/MMBtu	0.0050 lb/MMBtu	57.05	0.29 lb/hr
Part 8a	POC	0.0026 lb/MMBtu	0.0026 lb/MMBtu	57.05	0.15 lb/hr
Part 11	NOx	17 ppmvd @ 3% O2, 3-hr avg.	0.0200 lb/MMBtu	57.05	1.14 lb/hr, 3-hr avg.
Part 12	CO	50 ppmvd @ 3% O2, 3-hr avg.	0.0357 lb/MMBtu	57.05	2.04 lb/hr, 8-hr avg.

Since the CO concentration and mass emissions vary more than NOx, Valero proposes to increase the averaging period for CO mass emissions from 3 to 8 hours. The District has issued BACT permits to Valero and other facilities with CO limits based on averaging periods of 8 hours before, so this is not an issue for BACT.

Based on the information provided by Valero and the reasons above, the District's staff has decided to grant Valero the above requests since the mass emission limits are equivalent to the concentration limits. BACT analysis and emission offsets are not required since there is no emission increase from this application.

II. EMISSION CALCULATIONS

This application will not result in an emission increase.

III. PLANT CUMULATIVE INCREASE SINCE 4/5/1991

There are no net changes to the plant cumulative emissions.

IV. TOXIC SCREENING ANALYSIS

This application will not result in an increase in toxic air contaminant emissions from existing levels. Therefore, a Toxic RSA is not required per Regulation 2-5.

V. BEST AVAILABLE CONTROL TECHNOLOGY

This application will not result in any emission increase from existing levels. Therefore, BACT is not triggered per Regulation 2-2-301.

VI. OFFSETS

This application does not result in emission increases. Therefore, offsets are not needed per Regulation 2-2-302.

VII. STATEMENT OF COMPLIANCE

This ULSD Unit will comply with the following District Rules and Regulations:

Regulation 1, General Provisions
- 1-301: Public Nuisance
- 1-520 Continuous Emission Monitoring
- 1-522 Continuous Emission Monitoring and Recordkeeping Procedures
- 1-523 Parametric Monitoring and Recordkeeping Procedures

Regulation 2, Rule 2 NEW SOURCE REVIEW
- 2-2-301 Best Available Control Technology Requirement
- 2-2-302 Offset Requirements, Precursor Organic Compounds and Nitrogen Oxides, NSR
- 2-2-303 Offset Requirement, PM10 and Sulfur Dioxide, NSR

Regulation 6, PARTICULATE MATTER AND VISIBLE EMISSIONS
- 6-301 Ringelmann No. 1 Limitation
- 6-310 Particulate Weight Limitation

Regulation 8, Rule 18 EQUIPMENT LEAKS

Regulation 12, Rule 12 FLARES AT PETROLEUM REFINERIES

The ULSD Unit is subject to and will be in compliance with the following federal regulations:

NSPS 40 CFR, Part 60 Subpart J PETROLEUM REFINERIES

NSPS 40 CFR, Part 60 Subpart GGG EQUIPMENT LEAKS OF VOC IN PETROLEUM REFINERIES

NSPS 40 CFR, Part 60 Subpart VV EQUIPMENT LEAKS OF VOC IN SYNTHETIC ORGANIC CHEMICALS MANUFACTURING INDUSTRY

NESHAPS 40 CFR, Part 63 Subpart CC PETROLEUM REFINERIES

NESHAPS 40 CFR, Part 63 Subpart DDDDD National Emission Standards for Hazardous Air Pollutants for Industrial, Commercial, and Institutional Boilers and Process Heaters

Pursuant to Regulation 9-10 220, S-247 and S-248 are not subject to Regulation 9, Rule 10 because the process heaters did not have an Authority to Construct prior to January 5, 1994. Parenthetically, the BACT requirements (0.0220 lb NOx/MMBtu and 50 ppmv CO @ 3%O2) are more stringent that the requirements of Regulation 9, Rule 10 (0.033 lb NOx/MMBtu and 400 ppmv CO @ 3% O2).

The ULSD Unit compiles with CEQA as demonstrated in the City of Benicia's EIR and Use Permit granted April 28, 2003.

This project is over 1,000 ft from the nearest public school and is therefore not subject to the public notification requirements of Regulation 2-1-412.

BACT, offsets, and PSD are not triggered.

VIII. CONDITIONS

Permit condition # 22949 the ULSD Unit, Valero Refining Company, Application # 13009, amended by Application # 16866, Plant # 12626.

FUGITIVE EQUIPMENT

3. a. The Owner/Operator shall equip all light hydrocarbon control valves installed as part of the VIP with live loaded packing systems and polished stems, or equivalent. [Basis: BACT, Cumulative Increase, offsets]

c. The Owner/Operator shall equip all flanges/connectors installed in the light hydrocarbon piping systems as a result of the VIP with graphitic-based gaskets unless the service requirements prevent this material. [Basis: BACT, Offsets, Cumulative Increase]

d. The Owner/Operator shall equip all new hydrocarbon centrifugal compressors installed as part of the VIP with "wet" dual mechanical seals with a heavy liquid barrier fluid, or dual dry gas mechanical seals buffered with inert gas. [Basis: BACT, Offsets, Cumulative Increase]

e. The Owner/Operator shall equip all new light hydrocarbon centrifugal pumps installed as part of the VIP with a seal-less design or with dual mechanical seals with a heavy liquid barrier fluid, or equivalent. [Basis: BACT, Offsets, Cumulative Increase]

f. The Owner/Operator shall integrate all new fugitive equipment installed as part of the VIP, in organic service, into the owner's fugitive equipment monitoring and repair program. [Basis: Compliance monitoring]

60. The Owner/Operator shall submit a count of installed pumps, compressors, valves, and flanges/connectors every 180 days until completion of the project. For flanges/connectors, the owner/operator shall also provide a count of the number of graphitic-based and non-graphitic gaskets used. The Owner/Operator has been permitted to install fugitive components (1,372 valves, 920 flanges/connectors, 16 pumps, 50 PSD, 1 compressor) with a total POC emission rate of 0.64 TPY for the entire ULSD Project. If there is an increase in the total fugitive component emissions from the ULSD Project, the plant's cumulative emissions for the ULSD Project shall be adjusted to reflect the difference between emissions based on predicted versus actual component counts. The Owner/operator may have enough remaining contemporaneous emissions reduction credits (ERC's) to cover any increase in POC fugitive emissions beyond the original projection. If not, the Owner/Operator shall provide to the District all additional required offsets at an offset ratio of 1.15:1 no later than 14 days after the submittal of the final POC fugitive equipment count for the ULSD Project. If the actual component count is less than the predicted, at the completion of the ULSD Project, the total will be adjusted accordingly. Any ERC's applied by the facility in excess of the actual total fugitive emissions will be credited back to Owner/Operator prior to issuance of the permits. [Basis: Cumulative Increase, Toxics]

FUEL GAS SYSTEM

61. The Owner/Operator shall fire refinery low-pressure fuel gas in S-247 and S-248 heaters at a concentration at or below the following: (a) 155 ppmv total reduced sulfur (TRS), averaged over a calendar day and (b) the H2S concentration limitation specified in NSPS 40 CFR, Part 60 Subpart J. [Basis: NSPS, BACT]

62. The Owner/Operator shall fire refinery low-pressure fuel gas in S-247 and S-248 heaters at a concentration at or below 45 ppmv of total reduced sulfur (TRS), averaged over any rolling consecutive 365 day period. (equivalent to 0.00610 lb SO2/MMBtu fuel gas). [Basis: BACT, Cumulative Increase]

63. The Owner/Operator shall install and operate a District approved continuous gaseous fuel monitor/recorder to determine the H2S content and total reduced sulfur content of the refinery low pressure fuel gas prior to combustion in S-247 and S-248 heaters. [Basis: Refinery fuel gas monitoring for SO2, BACT]

64. To demonstrate compliance with parts 3 and 4, the Owner/Operator shall measure and record the daily average TRS content, 3-hour average H2S content, and 365-day average TRS content of the refinery fuel gas fired in S-247 and S-248 heaters. On a quarterly basis, the Owner/Operator shall report: (a) the daily fuel consumption at S-247 and S-248, (b) daily average H2S content of the fired refinery fuel gas, (c) daily average TRS content, (d) quarterly daily average H2S content, (e) quarterly daily average TRS content, and (f) annual average TRS content using the last four quarters. The report shall be sent to the District's Director of Compliance and Enforcement, and the Manager of the Permit Evaluation Section no later than 60 days after the end of the quarter. [Basis: BACT, Offsets, Cumulative Increase, NSPS]

COMBUSTION SOURCES (S-247 and S-248)

65. The Owner/Operator shall fire only refinery fuel gas in the S-247 and S-248 heaters. [Basis: BACT]

66. Total combined combustion emissions from S-247 and S-248 shall not exceed the following annual limits in any calendar year: [Basis: Cumulative Increase, Offsets]

Pollutant	*Annual (tons)*
NOx	*5.00*
CO	*8.92*
SO2	*1.52*
PM10	*1.25*
POC	*0.65*

a. The Owner/Operator shall determine annual emissions using fuel consumption, fuel heating value, continuous emission monitor (CEM) data

for TRS, NOx and CO, and the emission factors from the latest souce test for PM10, and POC. [Basis: Monitoring]

b. The Owner/Operator shall submit an annual report to the Compliance and Enforcement Division and Permit Services Division no later than 45 days following the end of each calendar year. The report shall include the actual daily emissions based on CEM data for NOx and CO, the actual daily emissions of SOx based on the CEM for TRS, and the estimated daily emissions of PM10 and POC based on the above emission factors. Also, the report shall include the annual totals of each pollutant to demonstrate compliance with the above limits. The report shall also include the total daily heat input for S-247 and S-248 heaters and the total daily fuel gas consumption at S-247 and S-248. [Basis: Reporting Requirements]

67. The Owner/Operator shall equip the S-247 and S-248 heaters each with District approved continuous fuel flow monitors and recorders in order to determine fuel consumption. (This is not a parametric monitor as defined in Regulation 1-238.) [Basis: Monitoring]

68. Startups and shutdowns of the S-247 and S-248 heaters each shall not exceed 24 consecutive hours. The 24-consecutive-hour startup period is in addition to furnace dryout/warmup periods,which each shall not exceed 72 consecutive hours. [Basis: Time allowances for startup and shutdown periods]

10.1 This part does not apply until after the conclusion of the initial startups of S-247 and S-248.

69. Except during periods of startup and shutdown, the Owner/Operator shall maintain combined emissions of nitrogen oxides in the common stack from S-247 and S-248 Furnaces at or below 17 ppmv, dry, corrected to 3% oxygen (0.0200 lb/MM Btu), averaged over any 3 consecutive hours, or 1.14 lbs/hr, averaged over any 3 consecutive hours. [Basis: BACT]

70. Except during startup and shutdown, the Owner/Operator shall maintain combined emissions of CO in the common stack from S-247 and S-248 heaters at or below 50 ppmv, dry, corrected to 3% oxygen (0.0357 lb/MM Btu), averaged over 8 hours, or 2.04 lbs/hr, averaged over 8 hours. [Basis: BACT]

71. Except during startup and shutdown, the Owner/Operator shall maintain combined mass emissions of PM10 and POC in the common stack from S-247 and S-248 heaters at or below:
PM10 : 0.0050 lbs/MMBTU or 0.29 lbs/hr
POC: 0.0026 lbs/MMBTU or 0.15 lbs/hr
[Basis: Monitoring]

72. For S-247 and S-248, the Owner/Operator shall install, calibrate, maintain, and operate District-approved continuous emission monitors and recorders for NOx, CO and O2 on the common stack. [Basis: CEM Monitoring]

73. The startup period for this Authority to Construct has been extended up to 180 days until January 12, 2008. No later than 150 days from the startup of the S-247 and S-248, the Owner/Operator shall submit to the District all approved source tests on the common stack to determine initial compliance with the limits in parts 11 and 12 for NOx and CO, the limits in part 13 for PM10 and POC, and the limit in part 4 for SO2. All source test results must be submitted to the District by December 13, 2007. The Owner/Operator shall conduct the source test in accordance with part 17. [Basis: Compliance determination via source tests]

74. The Owner/Operator shall maintain the heat input for S-247 at or below the following limits: (1) 192,282 million BTUs (HHV) in any 365 consecutive day period and (2) 21.95 million BTUs (HHV) in any one hour period. The Owner/Operator shall maintain the heat input for S-248 at or below the following limits: (1) 307,476 million BTUs (HHV) in any 365 consecutive day period and (2) 35.10 million BTUs (HHV) in any one hour period. [Basis: Cumulative Increase]

75. The owner/operator shall obtain approval for all source test procedures from the District's Source Test Section prior to conducting any tests. The owner/operator shall comply with all applicable testing requirements for continuous emissions monitors as specified in Volume V of the District's Manual of Procedures. The owner/operator shall notify the District's Source Test Section, in writing, of the source test protocols and projected test dates at least 7 days prior to testing. [Basis: Source test compliance verification and accuracy]

76. The Owner/Operator shall conduct a source test every five years to demonstrate subsequent compliance with the POC and PM10 limits specified in part 13. The Owner/Operator shall conduct the source test in accordance with part 17. The Owner/Operator shall submit the source test results to the District staff no later than 60 days after the source test. [Basis: Periodic Monitoring, Title V Compliance Verification]

MISCELLANEOUS VESSELS AND REACTORS

77. The owner/operator shall operate the ULSD Unit only when the Diesel product delivered to the Diesel storage tanks does not exceed 9,125,000 Barrels in a calendar year. [Basis: Cumulative Increase]

78. For each new fractionation/stripping process vessel (S-1036), the Owner/Operator shall not operate the sources beyond the following throughput limitation:

25 kbbl/day, Daily Average.

Upon startup of S-1036, the Owner/Operator shall submit documentation of the final design throughput for the source. The Owner/Operator may adjust the throughput limit for S-1036 as long as it does not exceed the 25 kbbl/day, daily average.
[Basis: Cumulative Increase]

79. For each new hydrofining reactor process vessel (S-1051 and S-1052), the Owner/Operator shall not operate the sources beyond the following throughput limitation:

25 kbbl/day, Daily Average.

Upon startup of each source, the Owner/Operator shall submit documentation of the final design throughput for the source. The Owner/Operator may adjust the throughput limit for each source as long as it does not exceed 25 kbbl/day, daily average.
[Basis: Cumulative Increase]

80. The Owner/Operator shall maintain the daily unit throughputs for S-1036 (Stripper), S-1051 (Diolefin Reactor), and S-1052 (Hydrotreating Reactor), in a District approved log. The Owner/Operator shall keep these records on site and make them available for District inspection for a period of at least 5 years from the date on which a record is made. [Basis: Recordkeeping]

81. ***The Owner/Operator shall send any process vessel depressurization gas to a control device with an overall capture and destruction efficiency of 95% on a mass basis. [Basis: Cumulative Increase]***

X. RECOMMENDATION

Issue a conditional change to the Permit to Operate to Valero Refining Company for the following equipment:

S-247 F-5401 Reactor Charge Heater, ULSD Unit, Callidus Ultra Low NOx Burners, 21.95 MMBtu/hr
S-248 F-5402 Stripper Reboiler Heater, ULSD Unit, Callidus Ultra Low NOx Burners, 35.10 MMBtu/hr

Thu H. Bui
Senior Air Quality Engineer
Engineering Division
Date:

THB:C:\Valero\16866\16866e\11/15/07

ENGINEERING EVALUATION REPORT
VALERO BENICIA REFINERY

3400 East Second Street
Benicia, California 94510
PLANT NUMBER 12626

VALERO IMPROVEMENT PROJECT AMENDMENTS
PERMIT APPLICATION NUMBER 16937
December 12, 2008
Revised May 1, 2009 per Application 15606 – POC Baseline

BAY AREA AIR QUALITY MANAGEMENT DISTRICT
939 ELLIS STREET
SAN FRANCISCO, CALIFORNIA 94109

BY: THU BUI
SENIOR AIR QUALITY ENGINEER

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I. EXECUTIVE SUMMARY

In 2003, the Bay Area Air Quality Management District (BAAQMD) issued an Authority to Construct for Valero Improvement Project (VIP) under Application # 5846 with Condition # 20820. The VIP allows Valero to process lower grades of raw materials, to substitute raw materials, to optimize operations for efficient production of clean-burning fuels, and to mitigate any impacts to avoid detrimental effects to the community. Valero Refinery is currently implementing VIP. A significant portion of the work was and will be performed during the turn-around periods starting in 2004 and ending in 2014.

The proposed VIP Amendments fall within the overall scope and purpose of the VIP. The VIP Amendments include further reductions to air emissions, improved energy efficiency and reductions in emissions of greenhouse gases (GHGs), minimize flaring, and clarifications to certain technical details of the VIP scope. The VIP Amendments will not increase the permitted capacities of the Benicia Refinery's process units beyond the level permitted and approved in the current VIP Authority to Construct.

This application includes the four changes to the VIP scope as described below:

1. A modified scrubber to control all emissions from the Fluid Coker (CKR) and Fluid Catalytic Cracking Unit (FCCU) instead of from the CKR and partial emissions from the FCCU as proposed in the VIP
2. Replacing the two existing Pipe Still (PS) Furnaces with two new furnaces
3. Installing a new hydrogen plant and decommissioning one of two trains of the existing hydrogen plant
4. Installing a new desalter (fugitive emission) and dismantling the existing Electrostatic Precipitators (ESPs)

The net emissions changes are summarized in Table I (detailed calculations are presented in Appendix A and B):

Table I
VIP Amendments Emission Summary, tons per year (TPY)

	POC	NOx	SO2	CO	PM_{10}	Ammonia
Current	17.16[1]	827.68	6,136.71	210.55	122.25	397.19
Future	27.34[1]	635.93	421.13	240.30	125.54	67.47
pre-net emissions	10.18[1]	(191.75)	(5,715.58)	29.75	3.29	(329.7)
Offsets Required	10.18[1]	none	none	none	3.29[2]	none
Post - Net emissions	10.18[1]	(191.75)	(5,715.58)	29.75	3.29	(329.7)

The number in parenthesis ( ) is the reduction from this project.

[1] This number has changed based on the outcome of A/N 15606.

[2] POC (non-methane organic compounds) and PM10 Offsets will be provided by onsite contemporaneous emission reduction shown in Table VII.

The proposed new equipment triggered Best Available Control Technology (BACT) pursuant to Regulation 2-2-301. Compliance with BACT for all sources and all pollutants will be enforced through permit conditions. This proposed project requires offsets for NOx, and SO2 per Regulation 2-2-302 and 303. Offsets are satisfied through contemporaneous emission reduction credits (ERCs). Valero may bank any allowable excess of emissions reductions, in accordance with Regulation 2, Rule 4, after the project is built and the actual equipment has shut down.

The District also required a Health Risk Assessment (HRA) for emissions of toxic air pollutants. For the purpose of this evaluation, the District only considered the increased health risks described in the VIP and VIP Amendments. The carcinogenic risk from this project, based on urban modeling results, is less than one in a million. In accordance with Regulation 2, Rule 5 "New Source Review of Toxic Air Contaminants", this level of risk passed the risk screening analysis and is acceptable to the District. The sum of the chronic Health Indexes for the project is well below the significance level of 1.0. (See Appendix C for HRA)

The City of Benicia was the Lead Agency for review under the California Environmental Quality ACT (CEQA). The City of Benicia approved the Use Permit and certified the Environmental Report for the VIP in April 28, 2003. Valero submitted an updated Use Permit application to the City for the VIP Amendments in February 2008 for the changes mentioned above. On July 10, 2008, the City of Benicia Planning Commissioners approved the amendments to the VIP Use Permits based on findings and conditions in Resolution No. 08-5. See CEQA Analysis in Appendix D and the notification letter dated July 16, 2008 from City of Benicia regarding July 10, 2008 approval.

II. INTRODUCTION

Valero refinery is limited by its BAAQMD permit to process a maximum of 135,000 barrels per day of crude oil. The VIP proposed to implement a series of modifications and additions to the Valero Benicia Refinery, so that it can increase the crude oil feed up to 165,000 barrels per day on an average, and 180,000 barrels per day maximum. Valero is currently making improvements to the refinery as authorized in the conditional Authority to Construct.

This VIP Amendment application allows Valero to implement project refinements that will better achieve operational efficiency, air emissions reductions, and minimization of flaring. The VIP Amendment will involve the modification and installations of the followings:

- *Replacing two existing PS Furnaces (S-3 and S-4) with two new ones at the same capacities (S-1059 and S-1060), which will be equipped with low NOx burners and abated by two Selective Catalyst Reductions (SCRs) A-1059 and A-1060. The associated emissions will be routed to a new stack on top of the new FCCU/CKR Scrubber (A1047)*

- *Modifying the approved scrubber that was not yet installed (A-1047 Amine Scrubber). See Figure I, Existing and Modified FCCU/CKR Scrubber Flow Diagram*
- *Dismantling five existing Electrostatic Precipitators (A-1 through A-5)*
- *Installing the new Hydrogen Reformer Furnace (S-1061) and Hydrogen Unit with Pressure Swing Adsorption (S-1062), and shutting down one of the two existing hydrogen trains (S-21 or S-22). See Figure II and III, Existing and VIP Amendments Hydrogen Production Configurations, respectively*
- *Installing the new desalter (S-1046) in series with the existing one to remove the salt and solid from crude oil before feeding into the PS Unit (Crude Unit). See Figure IV, VIP Amendments – Desalter*

The proposed VIP Amendments has many beneficial effects and will further:

(i) reduce NOx, and SO2 emissions by shutting down the two existing PS Furnaces and installing two new PS Furnaces, which will meet current BACT standards throught the use of SCRs, and

(ii) reduce GHG emissions because of the new configuration of the hydrogen plant, and

(iii) reduce the frequency of flaring because the hydrogen new plant will use refinery fuel gas as a primary feed stock instead of natural gas. The new hydrogen plant will not be flaring during startup and shutdown, and

(iv) reduce sulfur dioxide (SO_2) emissions by installing a larger flue gas scrubber that will treat the CKR and the FCCU flue gases

III. PROJECT DESCRIPTION

The VIP Amendments will have the same maximum capacity as represented in the original VIP permit application that was submitted in 2002. Valero has continued to perform detailed engineering and design work and would like to clarify some minor technical details in this application. The District will eventually incorporate the VIP into the Title V Permit.

The VIP Amendments will use all possible existing equipment, while shutting down and adding the following equipment:

<u>New Equipment:</u>

S-1059 PS Furnace (F-105), 529 MMBtu/hr refinery and CO fuel gases, equipped with Low NOx Burners, abated by A-1059 and A-1060 Selective Catalytic Reduction Systems (SCRs) in parallel

S-1060 PS Furnace (F-106), 259 MMBtu/hr refinery and CO fuel gases, equipped with Low NOx Burners, abated by A-1059 and A-1060 Selective Catalytic Reduction Systems (SCRs) in parallel

S-1061 Hydrogen Unit Reformer Furnace, 980 MMBtu/hr, equipped with Low NOx Burners, abated by A-1061 Selective Catalytic Reduction System (SCR)

S-1062 Hydrogen Unit with Pressure Swing Adsorption (PSA), 95 MMscfd

P-1059 FCCU/CKR Scrubber Stack
P-1061 Hydrogen Unit Stack

Modified Equipment:
A-1047 FCCU/CKR Prescrubber/Regenerative Amine Scrubber (Permitted but not yet constructed)
S-1046 Desalter (exempt source, Regulation 2-1-103)

Altered Equipment:
S-1010 Hydrogen Plant (one train to be shut down, second train unchanged)

Existing Equipment to be shutdown:
S-3 PS Furnace (F-101), 529 MMBtu/hr refinery and CO fuel gases
S-4 PS Furnace (F-102), 259 MMBtu/hr refinery and CO fuel gases
A-1 Electrostatic Precipitator Cell A
A-2 Electrostatic Precipitator Cell B
A-3 Electrostatic Precipitator Cell C
A-4 Electrostatic Precipitator Cell D
A-5 Electrostatic Precipitator Cell E
S-21 Hydrogen Unit Furnace (F-301), 614 MMBtu/hr or
S-22 Hydrogen Unit Furnace (F-351), 614 MMBtu/hr

Equipment in the VIP that will not be constructed (will be removed from Valero's Equipment List):
S-1046 PS Helper Furnace (F-102A) – (source number will be re-used for the Desalter)
S-1057 Pressure Swing Adsorption Unit
A-1046 SCR for S-1046

Under the VIP Amendments, the fired heat input capacities of the new PS Furnaces will be the same as the existing furnaces that they will replace. S-1059 will have the same maximum heat input rate of 529 MMBtu/hr and S-1060 will have the same maximum heat input rate of 259 MMBtu/hr. The new hydrogen unit will also have the same maximum hydrogen production capacity of 190 MMscfd as permitted in the VIP.

1. PS Furnaces (S-1049 and S-1050)

The Fluid Catalyst Cracking Unit (FCCU) and Fluid Coker (CKR) CO gases will be routed to the new PS Furnaces, S-1059 (529 MMBtu/hr) and S-1060 (259 MMBtu/hr), which will replace the existing PS Furnaces, S-3 and S-4. The new furnaces will have the same maximum heating design capacities as the old ones. Both new furnaces will be abated by two new SCRs, A-1059 and A-1060, with ammonia injection to control NOx emission in the exhaust gases. The SCR control will consist of two units in parallel. Each will have 60% of the required capacity to control emissions from S-1059 and S-1060, which will allow the process units to continue operating at reduced capacity if one SCR unit is down. The two existing furnaces are currently using selective non-catalytic reduction (SNCR), which requires ammonia injection for NOx control.

Valero is replacing both furnaces because the existing furnaces, S-3 and S-4, cannot operate at the higher pressures necessary to accommodate the new FCCU/CKR scrubber (A-1047). The gas stream entering the SCR will have a higher particulate load than is typical for sources controlled by SCR technology. Valero will use an SCR design (steam soot blowing) that will ensure the SCR catalyst will not be contaminated by the particular matter (PM) in the gas stream.

The PS Furnaces will use two SCRs to control NOX emissions. Aqueous ammonia will be consumed by the SCRs. The aqueous ammonia will be stored in existing aqueous ammonia storage tanks. The existing ammonia storage and handling system is adequate to cover the anticipated ammonia usage. Hence, additional storage or modifications to the aqueous ammonia delivery system would not be needed, other than the necessary piping connections.

2. FCCU/CKR Prescrubber and Regenerative Amine Scrubber (A-1047)

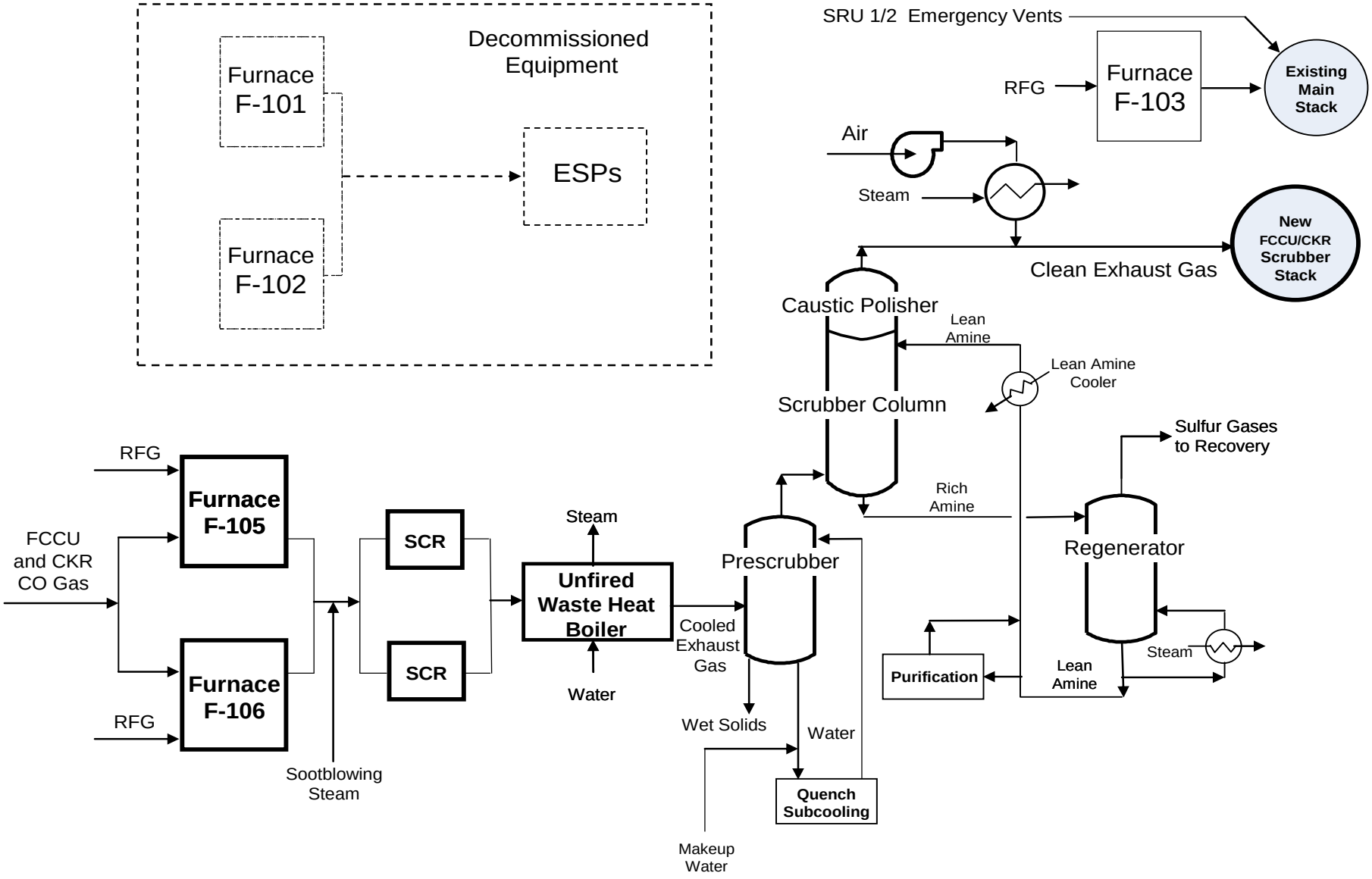
The modified design of the FCCU/CKR Scrubber (A-1047) will control the SO2 emission from the combusted CO gas from both the CKR and FCCU instead of from the CKR and a portion of the FCCU as proposed in the original VIP. Valero proposed to install the FCCU/CKR scrubber to satisfy the Consent Decree FCCU and CKR SO2 requirements that was agreed between Valero and EPA on November 23, 2005. Initially, Valero agreed to use SO2 adsorbing catalyst (DeSOx) to treat the flue gas from the FCCU and to install a regenerative scrubber to control SO2 emission from the CKR. However, in lieu of using DeSOx catalyst for the FCCU, Valero has now elected to install a regenerative scrubber to control SO2 emissions from the FCCU, in addition to the CKR. This proposed scrubber will reduce more SO2 emissions when compare to the use of DeSOx catalyst on the FCCU.

The FCCU/CKR scrubber unit actually has two sections (the Pre-Scrubber column and the Scrubber column). The exhaust gas streams from the PS Furnace's SCRs continue to pass through an unfired Waste Heat Boiler prior to entering the Pre-Scrubber. The unfired waste heat boiler will recover heat to produce steam while cooling the gas prior to entering the scrubber system. The pre-scrubber will reduce the gas stream temperature entering the Scrubber further and will also serve as a particulate control device and maintain a neutral pH.

The installation of the FCCU/CKR Scrubber will affect emissions of sulfuric acid (H2SO4) mist (SAM). A portion of the sulfur in the crude oil processed in the FCCU/CKR is converted to sulfur trioxide (SO3) rather than SO2. SO3 reacts with water vapor in the exhaust gas to create SAM. The new pre-scrubber will remove a portion of the SO3 from the exhaust gas. The vendor of the pre-scrubber guarantees 60 percent reduction in SO3 emissions.

The FCCU/CKR Scrubber will exhaust through a new dedicated stack. An additional small source, S-7 (F-103) furnace, which currently exhausts through the Main Stack will continue to exhaust through the Main Stack. After implementation of the VIP Amendments, only the two emergency tail gas incinerator vents from the refinery's Sulfur Recovery Units (SRUs) and F-103 will continue to be routed to the existing Main Stack.

The installation of the FCCU/CKR Scrubber will allow Valero to dismantle the five existing Electrostatic Precipitators (ESPs), A-1 through A-5. The pre-scrubber will remove particulate emissions in addition to the sulfur trioxide (SO3); therefore, the existing ESPs will not be needed.


Decommissioned Equipment
Furnace F-101
Furnace F-102
ESPs
SRU 1/2 Emergency Vents
RFG
Furnace F-103
Existing Main Stack
Air
Steam
New FCCU/CKR Scrubber Stack
Clean Exhaust Gas
Caustic Polisher
Lean Amine
Lean Amine Cooler
Scrubber Column
Sulfur Gases to Recovery
RFG
Furnace F-105
FCCU and CKR CO Gas
Furnace F-106
RFG
SCR
SCR
Steam
Unfired Waste Heat Boiler
Water
Prescrubber
Rich Amine
Regenerator
Cooled Exhaust Gas
Purification
Lean Amine
Steam
Wet Solids
Water
Quench Subcooling
Sootblowing Steam
Makeup Water

3. New Hydrogen Unit

In VIP, Valero proposed to make process modifications in the existing H2U in order to increase hydrogen production capacity, purity and to support hydrofining and hydrocracking operations at the Benicia Refinery. The VIP proposed to enhance the production of hydrogen by implementing the following modifications:

- Switching to a new, more efficient CO_2 absorption fluid used for hydrogen purification;
- Replacing internal tubes in top section of the reformer furnaces so that incoming feed can be pre-heated;
- Modifying the Naphtha Reformer Unit (NRU) including use of a new catalyst and associated equipment modifications; and
- Adding a PSA Unit to purify medium-purity hydrogen streams.

These planned modifications would increase hydrogen production capacity by approximately 30 million standard cubic feet per day (MMscfd) from the existing rated capacity of 160 MMscfd to 190 MMscfd, which is the same as permitted in VIP.

Description	Rated Production Capacity MMscfd
Certified EIR	
Pre-VIP Production Capacity[1]	160
VIP Increase	+30
Certified EIR Projected Total Production Capacity	190
VIP Amendments	
Pre-VIP Production Capacity[1]	160
Shutdown of one H2U Train	-65
New H2U with PSA	+95
Post-VIP Amendments Total Production Capacity	190

[1] Pre-VIP production capacity includes both trains of the existing H2U and hydrogen produced by the Naptha Reforming Unit.

For the VIP Amendments, Valero proposed to shut down one of the two trains of the existing H2U (S-21 or S-22) and will install a new H2U. This means that the originally proposed use of a CO_2 absorption fluid, modifications to the reformer furnace (i.e., tube replacement), and modifications to the Naphtha Reforming Unit will not be implemented.

The new H2U reformer furnace (S-1061) will be more thermally efficient than the unit it will replace, thus reducing energy consumption per unit of hydrogen produced and thereby indirectly reducing GHG emissions. The new H2U reformer furnace will use an SCR to control NO_X emissions, which will significantly reduce emissions of nitrogen oxides (NO_X). The new H2U (S-1062) will be installed with a Hydrogen Purification Unit (HPU) (e.g., a PSA) to purify the hydrogen produced from this unit. Additional aqueous ammonia will be consumed by the SCR. The

aqueous ammonia will be stored in existing aqueous ammonia storage tanks as described above.

The new H2U will be fed primarily with desulfurized RFG and tailgas from the refinery's hydrogen consumers. When RFG is not available in sufficient quantities, the balance of the feed to the new H2U will include natural gas. The H2U feed will have a sulfur content less than 10 parts per million by volume (ppmvd). The gaseous raw materials and steam will be fed to a steam methane reforming furnace that converts the water and hydrocarbon molecules into primarily hydrogen and CO using a solid catalyst housed within internal tubes inside the reformer furnace. After the reforming reaction takes place, the effluent gas stream is fed to a shift reactor that converts excess CO and water to additional hydrogen and CO_2 using a catalyst. The process stream is then fed to the PSA to remove impurities, resulting in a product that is approximately 99% pure hydrogen. The HPU tailgas, containing impurities such as CO, CO_2, and hydrocarbons, is recycled to the reformer furnace, where it is mixed with RFG and burned as fuel. Therefore, the new H2U will not result in methanol vent at the de-aerator drum as the old hydrogen unit (S-1010).

The new H2U will produce more steam than it consumes, and will thereby allow for a reduction in steam production from the existing boilers at the Benicia Refinery. This process synergy represents energy efficiency inherent in the modern technology incorporated in the new H2U. The Certified EIR included a 100 MMBtu/hr increase in firing of the steam generator SG-1032 for additional steam make-up. However, the VIP Amendments and the new H2U will make it unnecessary to generate additional steam, so this increase will not occur. Thus, the VIP Amendments will cause a 100 MMBtu/hr reduction in fuel consumption associated with the same hydrogen production as in the Certified EIR, which will reduce criteria pollutant and GHG emissions.

SG-1032 was chosen for the 100 MMBtu/hr increase in steam production because it is relatively new and efficient compared to other boilers at the Benicia Refinery. Valero may continue to take advantage of the higher efficiency and increase utilization of SG-1032 beyond current operations. In this case, the 100 MMBtu/hr decrease in boiler fuel firing associated with the VIP Amendments will be achieved by reducing the firing at other boilers at the Benicia Refinery.

The new H2U will consume RFG as a primary feedstock. Since the current H2U feedstock is primarily natural gas, the modifications proposed in the VIP Amendments will increase the Benicia Refinery's internal consumption of RFG. Therefore, the VIP Amendments will improve the refinery's RFG balance. An imbalance of RFG is created when more RFG is produced by the refinery than is needed by the RFG consumers (furnaces, boilers, gas turbines, and the Cogeneration Plant). When there is an RFG imbalance, the excess RFG must be flared. In an effort to minimize flaring, the Benicia Refinery makes operational changes, including cuts to production rates, in an effort to prevent or minimize occurrences and durations of RFG imbalance and thus prevent or minimize flaring. However, fuel gas imbalances cannot always be prevented or may take a period of time to completely eliminate. Therefore, operations changes and production rate cuts cannot always prevent flaring. As such, any improvement to the refinery fuel gas balance (i.e., increased consumption of RFG), will decrease the frequency and duration of flaring.

As with the existing H2U trains, the new H2U will not cause flaring during startup and shutdown of the unit when undergoing turnarounds and other maintenance. Uncommon and infrequent operational upsets and malfunctions at the H2U can

result in flaring from the existing refinery flares. The occurrence of operational upsets and malfunctions at the new H2U are expected to be less frequent than at the older H2U train that will be shut down. Therefore, the new H2U is expected to reduce any flaring that could be caused by H2U upsets and malfunctions. The new H2U will not be constructed with a new flare.

The new H2U will include forced draft and induced draft fans, and gas compressors, and miscellaneous equipment, which will collectively demand approximately 4.7 MW of electricity. The electrical demand of the H2U to be shut down is approximately 0.5 MW. Since Valero will forego building the PSA projected in the Certified EIR, the projected 1 MW from that unit will not be required. Overall, the H2U production elements of the VIP Amendments will result in an increase in the Benicia Refinery's electrical demand of approximately 3.2 MW compared to the design basis outlined in the Certified EIR.

Figure 2 – Existing Hydrogen Production Configuration

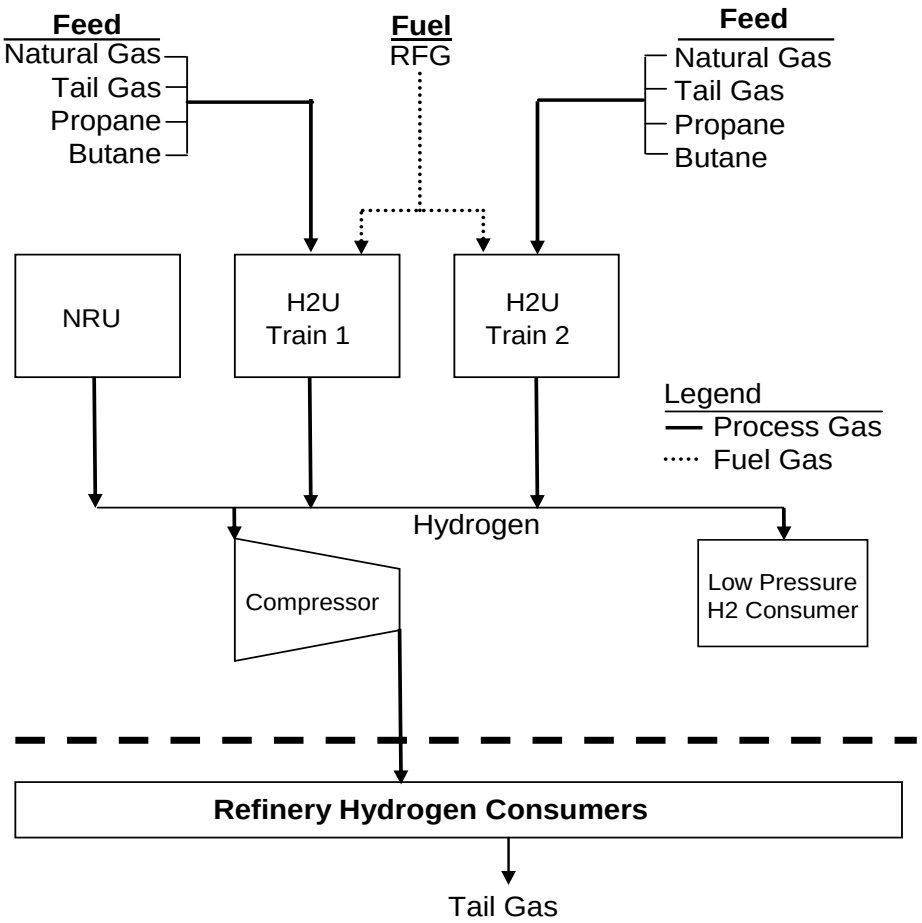
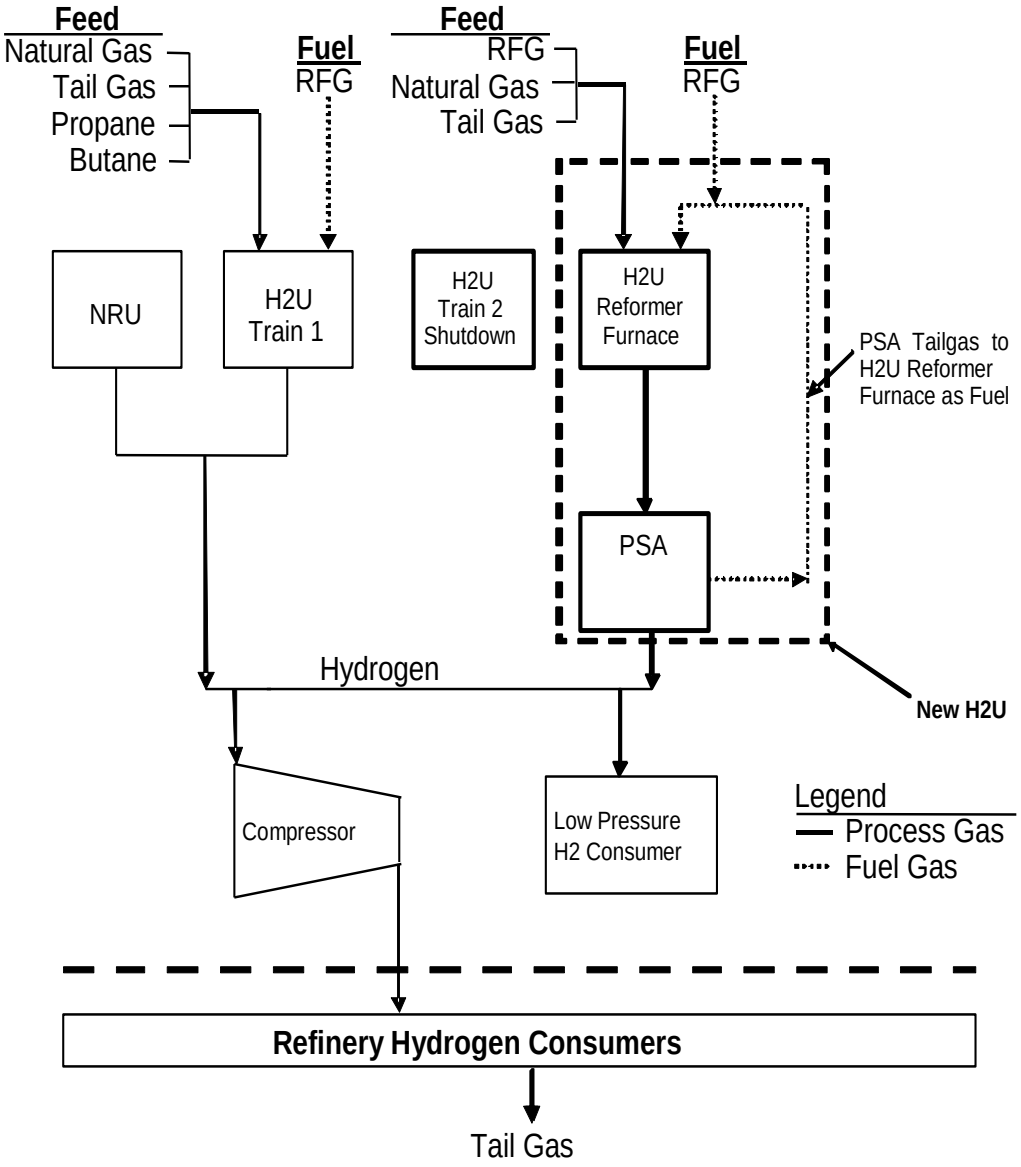


Figure 3 – VIP Amendments Hydrogen Production Configuration



4. Desalter and Other Equipment

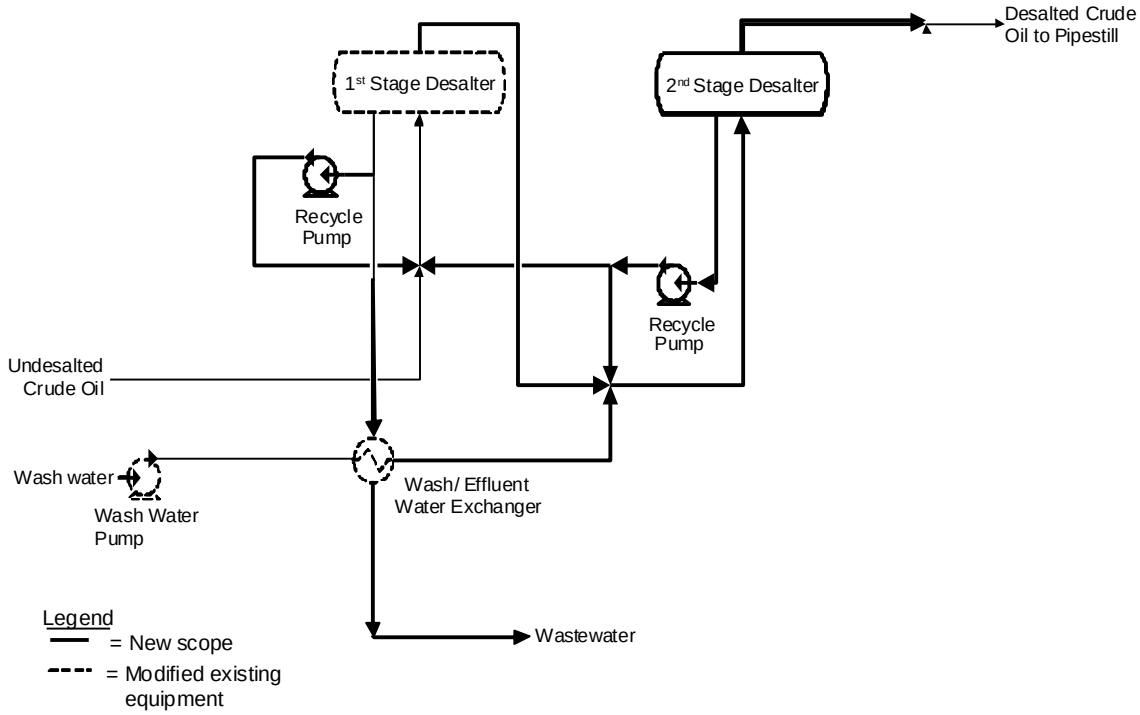
The Desalter (S-1046) is the existing equipment that has not been given a District's source number in the past. Valero currently uses a single stage desalter (vessel) to wash salts and solids from the feedstock crude oil of the Crude Unit (Pipestill). Valero proposed to add a new second stage desalter in series with the existing first stage desalter. This equipment was exempt from permit and will continue to be exempt

because there are no air emissions associated with this enclosed unit per District's Regulation 2-1-103.

Increasing the water usage (93,600 gpd) through the desalter will increase the POC emissions going into the wastewater treatment plant at Valero. However, this organic loading is relatively small compared to other streams going into the wastewater treatment plant.

The minor modifications for the new second stage desalter vessel and other VIP Amendments components will require additional piping for liquid and gas streams. The piping will include components such as valves, pumps and flanges, which will increase the fugitive emission of POC by three tons per year (3.0 tpy).

Figure 4 – VIP Amendments - Desalter



5. VIP Amendments Impact to other Refinery Process Units

The VIP amendments will increase the water going into the refinery wastewater treatment plant by 184,320 gallons per day. However, this increase is offset by 70 gallon per minute or 100,800 gallons per day (gpd) water reduction resulting from the NRU Catalyst Regeneration Facility project, which commenced routine operation in April 2007. The total wastewater increase (184,320 gpd) from the VIP Amendment (FCCU/CKR prescubber/scrubber, desalter and soot blowing) will exceed the main stack scrubber, which is certified at 172,800 gpd. Thus, the overall wastewater increase

will be 11,520 gpd. This increase will not have a significant effect on the wastewater treatment plant's capacity. Valero will consult with the San Francisco Bay Regional Water Quality Control Board (RWQCB) to determine whether a technical study of potential loading impacts will be required to address the mass increase of pollutants proposed to be discharged. The Valero Benicia Refinery currently operates under National Pollutant Discharge Elimination System (NPDES) permit No. CA0005550 issued in 2002 and expired on November 30, 2007. In May 2007, Valero submitted a NPDES permit renewal application.

The VIP amendments include the same minor modifications as in the VIP. The purpose is to optimize and maximize performance of the Hydrocracking, Alkylation, Dimersol, and Reforming Units, secondary gasoline component production units at the refinery. The downstream facilities in the refinery may, in the future, require additional heat and energy relative to typical current operations. This heat and energy can be supplied from the refinery's existing combustion equipment (gas turbines, steam boilers, and process furnaces) without modifications. The impact from VIP Amendments will be the same as evaluated in the VIP. Please refer to the attached Appendix F for the VIP permit evaluation # 5846 on impacts to downstream equipment.

IV. EMISSION SUMMARY

Air emissions have been calculated for each replacement source as well as for sources that will be shutting down (onsite contemporaneous emission reductions). The emission rates are based on Best Available Control Technology (BACT) determinations and operational data supplied by Valero. Calculation methods use EPA emission factors, emission factors based on source test results, material balances, other established emission factors, and continuous emission monitoring (CEM) data. Detailed emission calculations for each source are included in Appendix A and Appendix B.

1. Future Increases

Sources S-1059 –and 1060 PS Furnaces

The new furnace S-1059 is designed to replace the existing furnace S-3, which will have the same design capacity of 529 MMBtu/hr and will be equipped with low-NOx burners fired on refinery fuel gas (RFG) and CO fuel gas, and abated by selective catalytic reduction (SCR). The existing S-3 furnace is currently using the selective non-catalyst reduction (SNCR); thus, switching to SCR reduces the volume of aqueous ammonia usage, storing and handling.

The new furnace S-1060 is designed to replace the existing furnace S-4, which will have the same design capacity of 259 MMBtu/hr and will be equipped with low-NOx burners fired on refinery fuel gas (RFG) and CO fuel gas, and abated by selective catalytic reduction (SCR). Like source S-3 above, the existing S-4 furnace is currently using the selective non-catalyst reduction (SNCR) or Thermal De-NOx system.

The NOx emission factor for the new furnace is based upon BACT limits. The SO2 emission rate is based on the EPA Consent Decree (Section 114) Settlement, which was issued to Valero in 2005.

POC (precursor organic compounds) are defined as non-methane organic compounds for the purposes of this document and resulting permit conditions. The original POC

baseline of 6.7 tpy was based on a single source test conducted in January 2002. Subsequent testing under normal operations revealed that a single data point is not representative of actual performance of POC emissions. The originally proposed limit was re-evaluated under Application 15606 submitted in 2006 and issued in May 2009. The basis for the revised POC emission baseline includes results from 23 source tests conducted by various certified source testing companies and the BAAQMD from 2005 through 2008. The data show variability in POC concentrations from 1 – 6 ppm. This range of concentrations translates to approximately 4 – 16 tpy POC.

Because of the high variability in the dataset under normal operations, Valero and the BAAQMD agreed to use the mass value resulting from the 90% confidence interval of the 23 source tests as the initial *value for the revised POC baseline, or 13.41 tpy POC, with an option to increase the baseline if POC offsets were provided up to a maximum of 15 tpy POC. Valero has opted to provide 1.59 tpy POC offsets to establish the POC baseline at 15 tpy. The demonstration of compliance will be by source test as described in the permit conditions below.*

In addition to providing 1.59 tpy POC offsets to establish the POC baseline and permit limit at 15 tpy, Valero accepts a concurrent concentration limit of 10 ppmv, dry at 0% O2, 1-hr average, based on the BAAQMD BACT survey for POC resulting from FCCU operations (reference RBLC ID: TX-0429). There is no BACT data for POC from fluid Cokers available in the BACT survey.

Finally, Valero agrees that once this 15 tpy limit is established and subsequent request to raise the POC limit would be considered a modification and subject to a new BACT review.

The PM10 emission (115.4 tpy) and CO emission (214.5 tpy) are also from the VIP amendments' baseline. BACT for CO is 100 ppmvd at 3%O2 per District BACT guideline (Document 17.4.1, 4/21/93). BACT will be set at 100 ppmvd at 3% O2 for 1-calendar day and 214.5 tpy (35.2 ppmvd at 3% O2, 365-day average) of VIP Amendments main stack baseline for CO. BACT may be ratcheted downward based on the unit emissions performance during source tests. Similarly, since BACT for PM10 for the new furnaces is not determined, Valero will accept the interim PM10 (40 lb/hr) using VIP main stack baseline limits and source tests. Initial and quarterly source tests will ensure compliance with the POC and PM10 annual limits.

In addition, Valero proposes to bypass the SCR during the infrequent startups and shutdowns of the FCCU and CKR. The following definitions of startup, shutdown, emergency bypass and bypass describe four different scenarios:

Definitions of Startup, shutdown, emergency bypass and bypass:

- ***a. Startup of the SCRs is defined as the introduction of CO gas from S-5 FCCU or S-6 CKR to S-1059 and S-1060 PS Furnaces. It is not the beginning of fuel gas firing. The start up period of A-1059 and A-1060 SCRs may last up to 12 hours. NOx emissions on a concentration and mass basis will not be included in the 1-day, 7-day and 365-day average for this scenario.***
- ***b. Shutdown of the SCRs is defined as the cessation of CO fuel into S-1059 and S-1060 PS Furnaces. The shutdown period of A-1050***

and A-1060 SCRs may last up to 8 hours. NOx emissions on a concentration and mass basis will not be included in the 1-day, 7-day and 365-day average for this scenario.

c. Emergency bypass of the SCRs is defined as when both SCR units are damaged and the Owner/Operator must replace the catalyst. The emergency bypass of A-1050 and A-1060 SCRs may last up to 7 days (168 hours) to permit catalyst replacement and restoration of abatement efficiency. NOx emissions on a concentration and mass basis will not be included in the 1-day, 7-day and 365-day average for this scenario.

d. Bypass of the SCRs is defined as when loading coke into the CKR before startup or unloading coke following a CKR shutdown, while the FCCU is operating or FCCU is not operating. The bypass of A-1050 and A-1060 SCRs may last up to 96 hours to avoid coke dust entrainment in the PS Furnaces and SCRs. NOx emissions on a concentration and mass basis will be included in the 365-day average, but will be excluded in the 1-day, and 7-day average for this scenario.

Aqueous ammonia at no more than 30% concentration will be used for the SCR and 10 ppmvd on an eight-hour average of ammonia slip is allowed in the exhaust outlet at the heaters as consistent with other heaters equipped with SCR within the District.

NOx – 150 ppmvd @ 3% O2 for 1-calendar day (Interim BACT, equivalent to Regulation 9-10-304 at 150 ppmvd at 3% O2, new BACT will be established by source tests)
NOx = 85.6 ppmvd @ 3% O2 for 7-calendar day (BACT, equivalent to 100 ppmvd @ 0% O2)
NOx = 42.8 ppmvd @ 3% O2 for 365-day average (BACT, equivalent to 50 ppmvd @ 0% O2)

- *As mentioned above, for annual NOx emissions, Valero is allowed 168 hours for emergency SCR bypass, 12 hours of SCR startup and 8 hours of SCR shutdown at 400 ppmvd NOx @ 0% O2. Thus, the total of 188 hours (57.6 tpy of NOx emissions) at 400 ppmvd NOx @ 0% O2 was included in the annual NOx emissions.*
- *For daily NOx emissions, Valero is allowed a total 284 hours (168 hours for emergency SCR bypass, 12 hours of SCR startup, 8 hours of SCR shutdown at 400 ppmvd NOx @ 0% O2, and 96 hours of loading and unloading coke from CKR for startup and shutdown when the FCCU is operating or not operating at 275 ppmvd NOx @ 0% O2) of SCR bypass. The maximum daily NOx emission is 7.57 tons/day during the emergency SCR bypass at 400 ppmvd NOx @ 0%O2 and 220,000 dscfm gas flowrate. See detailed calculation for each bypass scenarios in Appendix A.*

SO2 = 440 ppmvd @ 3% O2 for 1-calendar day (VIP Amendments main stack baseline limit, new BACT will be established by source tests)
SO2 = 42.8 ppmvd @ 3% O2 for 7-calendar day (BACT, equivalent to 50 ppmvd @ 0%O2 - Consent Decree)
SO2 = 21.45 ppmvd @ 3% O2 for 365-day average (BACT, equivalent to 25 ppmvd @ 0%O2 - Consent Decree)

CO = 214.5 tpy or 35.2 ppmvd for 365-day average @ 3% O2 (VIP Amendments main stack baseline limit for S-3, S-4 and S-7)
CO = 100 ppmvd @ 3% O2 for 1-calendar day, (Interim BACT, new BACT will be established by source tests)

POC = 15 tpy and 10 pppmv, dry @ 0% O2 for 1-hr average based on the outcome of A/N 15606 as discussed on page 16. Initially and quarterly source tests will ensure compliance with the annual limits

PM10 = 115.4 tpy (VIP Amendments main stack baseline limit for S-3, S-4 and S-7, initial and quarterly source tests will ensure compliance with the annual limits)
PM10 = 40 lbs/hr (Regulation 6-1) – good combustion practice

NH3 = 10 ppmvd @ 3% O2, 3-hour average, for SCR (BACT)

S-1061 Hydrogen Unit Reformer Furnace, 980 MMBtu/hr, equipped with low-NOx burners fired on RFG or PSA Tailgas, and abated by SCR.

The new hydrogen reformer furnace S-1061 is designed to replace the existing hydrogen reformer furnace S-21 or S-22. The design capacity of S-1061 is 980 MMBtu/hr and will be equipped with low-NOx burners fired on refinery fuel gas (RFG), and abated by selective catalytic reduction (SCR). The existing S-21 or S-22 furnaces are low NOx burners; thus, the aqueous ammonia usage, storing and handling will be increased. However, this increase will be offset by the replacement of two new PS Furnaces (S-1059 and S-1060).

NOx = 5 ppmvd @ 3% O2 (1-calendar day) - (BACT)
Total Sulfur = 100 ppmvd maximum for treated refinery gas fuel per day (BACT)
Total Sulfur = 45 ppmvd annual average for treated refinery gas fuel (BACT)
SO2 = 45 ppmvd as TRS - (BACT)
CO= 10 ppmvd @ 3% O2 (3-hour average) - (BACT)
POC = 0.0023 lb/MMBtu (3-hour average) - (BACT)
PM10 = 0.0025 lb/MMBtu (3-hour average) - (BACT)
NH3 = 10 ppmvd @ 3% O2 (3-hour average) – for SCR – (BACT)

Emissions from existing S-7 (F-103) furnace, 53 MMBtu/hr
Source S-7 (F-103) furnace, which currently exhausts through the Main Stack will continue to exhaust through the Main Stack. After implementation of the VIP Amendments, only the two emergency tail gas incinerator vents from the refinery's Sulfur Recovery Units (SRUs) and S-7 (F-103) will continue to be routed to the existing Main Stack. The emissions from S-7 remain the same. There is no modification associated with S-7. S-7 will emit through the main stack, while the FCCU and CKR gases from new PS Furnaces, S-1059 and S-1060, will be treated in the prescrubber/scrubber and emitted through a new stack.

Since source S-7 will continue to operate without any changes, the onsite contemporaneous emissions reduction from sources existing furnaces, S-3 and S-4, will be the actual CEM emissions of the Main Stack minus the emissions from source S-7.

The CEM of the main stack actually measured total emissions from three sources (S-3, S-4 and S-7).

The basis that is used to calculate emissions from existing S-7 are as follows:

NOx = 50 ppmvd @ 3% O2 (1-calendar day) - (RACT)
SO2 = 45 ppmvd in the fuel gas - (RACT)
PM10 = 0.0025 lb/MMBtu (3-hour average) - (RACT from ULSD project, A/N 13009)
POC = 0.0023 lb/MMBtu (3-hour average) - (RACT from ULSD project, A/N 13009)
CO= 30 ppmvd @ 3% O2 (3-hour average) - (RACT)
Higher Heating Value of Fuel gas = 1,150 Btu/scf

Fugitive Emissions and Altered Equipment
The Desalter (S-1046) is an enclosed process that does not emit any emissions except for the fugitive emissions from valves and flanges that are associated with new piping and connections. Valero intends to use recycled water from the first stage (cascade system) in the second stage; thus, the water already saturated with organics will not result in an increased organics due to the addition of the second stages. However, if more water is used, there will be an increase in the organics going to the Waste Water Treatment Plant (WWTP). The additional quantities of POC in the wastewater entering the Waste Water Treatment Plant (WWTP) will be low or negligible compared to the other streams to the WWTP. This organic increase in the wastewater has been addressed in the Environmental Analysis for the VIP Amendments and is deemed to be within the range of current operations. There is no physical modification or throughput increase due to the addition of the second stage desalter. Therefore, the addition of the second stage desalter is not expected to result in an increase in POC emissions from the WWTP.

Valero has estimated that the fugitive emissions from the VIP Amendment will be an additional 3.0 tons POC/yr. At this time, Valero does not have the exact number of valves, flanges, pumps and connections. Valero will provide the type and service of each component when the detailed engineering is completed. The methodology for estimating emissions from fugitives will be the same, actual emissions factors compiled by Valero Refinery that were used in the ULSD application.

The total fugitive emissions estimated in VIP Application 5846 were 3.0 tons POC/year. Besides the ULSD Unit project, the only VIP project element that has been defined past the preliminary engineering stage is the new Butamer Unit project (also known as Alkylation Optimization) S-1034, S-1035, S-1049 and S-1050. The Butamer Unit Project estimated fugitive emissions totaling 0.38 tons POC/year. Thus, the VIP project fugitive emission reconciliation is as follows:

VIP A/N 5846 Fugitives =	3.0 tons/yr POC	
Butamer Unit Fugitives (A/N 17876) =	-0.38 tons/yr POC	
ULSD Unit Fugitives as built (A/N 13009) =	-1.21 tons/yr POC	
VIP Fugitives "Balance" =		*1.41 tons/yr POC*
VIP Amendment additional allowance =		*3.0 tons/yr POC*

Truck Traffic emissions

The VIP Amendments will require up to 2 truck trips per week on average more than what was analyzed in the Certified EIR of VIP. The truck trips are used to transport additional hazardous waste generated by the scrubber and small quantities of chemical such as sodium hydroxide. The waste is expected to be transported to Clean Harbors landfill in Buttonwillow, California. The round trip travel distance from Valero to the BAAQMD border on I-580 is approximately 100 miles.

The District only considers the PM10 emissions from truck trips within Valero's facility, from Valero's gate into the new H2U, S-1062. The emission is based on the Air Resources Board (ARB) Emission Inventory Methodology 7.9, Entrained Pave Road Dust (1997), Table 3 for local roads in Solano County.

The emission factor (gr/mi) = 7.26 [Silt Loading/2]$^{0.65}$[Weight/3]$^{1.5}$
Where: Silt load = 0.32 gr/m^2
Weight = 2.4 ton on-road average vehicle

Table II
Future Project Emission Summary

Source	***NOx (lbs/day) 7-day avg***	***SO2 (lbs/day) 7-day avg***	***PM10 (lbs/day)***	***POC (lbs/day)***	***CO (lbs/day)***	***NH3 (slip) (lbs/day)***
S-1059	*4,156*	*2,891*	*422.1*	*53.2*[1]	*770.4*	*179.3*
S-1060	*2,038*	*1,418*	*207.0*	*26.1*[1]	*377.5*	*87.93*
S-1061	*138.6*	*153.2*	*58.8*	*54.2*	*168.7*	*102.4*
Fugitives	-----	-----	-----	*16.4*	-----	-----
Onsite Truck	-----	-----	*0.0090*	-----	-----	-----
Total	*6,332.6*	*4,462.2*	*687.9*	*149.9*[1]	*1,316.7*	*369.6*

Source	***NOx (tons/yr)***	***SO2 (tons/yr)***	***PM10 (tons/yr)***	***POC (tons/yr)***	***CO (tons/yr)***	***NH3 (slip) (tons/yr)***
S-1059	*409.7*	*263.8*	*77.03*	*9.71*[1]	*140.6*	*32.73*
S-1060	*200.9*	*129.4*	*37.77*	*4.76*[1]	*68.9*	*16.05*
S-1061	*25.3*	*27.95*	*10.73*	*9.87*	*30.8*	*18.69*
Fugitives	-----	-----	-----	*3.0*	-----	-----
Onsite Truck	-----	-----	*0.0005*	-----	-----	-----
Total	*635.93*	*421.13*	*125.54*	*27.34*[1]	*240.30*	*67.47*

[1] *This number has changed based on the outcome of A/N 15606.*
See Appendix A for detail future emission calculations

2. Onsite Project Contemporaneous Emission Reductions

S-3 PS Furnace (F-101)

The emission reductions for S-3 PS Furnace are based on the actual Continuous Emission System (CEM) data for NOx, SO2 and CO, averaged of the past three years (April 2005 - March 2008), which is referred as the VIP Amendments main stack baseline. The average 3- year NOx concentration at the main stack is 77.9 ppmv at 3% O2, which is below the RACT concentration limit of 150 ppmv at 3% O2 of Regulation

9-10 for CO boilers. As long as the NOx average 3-year concentration is below the RACT concentration limit, Valero will be allowed to use the entire actual emissions as onsite emission reduction credit for NOx when S-3 and S-4 shutdown without any RACT adjustment. Similarly, RACT adjustment for CO is not necessary because the average 3- year CO concentration is 35.2 ppmv at 3% O2, which is below the RACT concentration limit of 400 ppmv at 3% O2 of Regulation 9-10.

For PM10, Valero is using the average emission factor of three source tests (March 28, 2008, April 26, 2007 and March 21, 2006) in lb/hr per thousand actual cubic foot/min. The test result from March 28, 2008 exceeded the 40 lb/hr of PM10 from Regulation 6 requirement; thus, the District uses the RACT adjusted maximum 40 lbs/hr for this test to average the three-year emission factor.

For POC, Valero is using the established baseline (6.7 tpy) from the VIP. This number is currently being re-evaluated under Application 15606 since the basis for this POC emission baseline was a single data point obtained from a source test conducted in January 2002. The ammonia slip from the Main Stack was based on the 50 ppmvd as measured by Valero. See Appendix B - "Main Stack Baseline Calculation and an example of CEM daily readout"

S-4 PS Furnace (F-102) and S-7 Furnace (F-103)
The emission reductions for S-4 PS Furnace and S-7 Furnace are based on the same information as S-3 above.

Table III
S-3, S-4 and S-7 (Main Stack's CEM)

Pollutant	***3-yr Ave. (2005-2008), ton/yr***
NOx	*779.93*
SO2	*6,132.42*
PM10	*115.4*
POC (non-methane organic compounds)	*13.41*[1]
CO	*214.5*
NH3	*397.19*

[1] *This number has changed based on the outcome of A/N 15606.*

S-21 or S-22 Hydrogen Unit Furnace (F-301 or F-351)
The emission reductions for S-21 or S-22 Hydrogen Unit Furnace are based on the actual Continuous Emission System (CEM) data for SO2 and NOx, averaged of the past three years (April 2005 - March 2008).

The average 3- year NOx emission factor for the H2U Furnace is 0.0336 ppmv at 3% O2, which is slightly above the RACT emission factor of 0.033 lb/MMBtu at 3% O2 per Regulation 9-10 for furnaces. Since the actual emission factor is higher than the regulation requirement, the NOx emission factor will be adjusted to the current RACT level. Therefore, Valero can only claim the NOx emission up to the RACT level of 0.033 lb/MMBtu for the onsite emission reduction credit.

There were no source tests for PM10 and POC; thus, the onsite emission reduction credits were based on the current BACT level of 0.004 lb/MMBtu for PM10 and 0.0023 lb/MMBtu for POC per Condition 10574, Part 20.

RACT adjustment is not required for CO, since the actual emission factor is 0.00054 lb/MMBtu, which is less than the RACT limit of 0.0200 lb/MMBtu per Condition 10574, Part 20. RACT adjustment is not required for SO2, since the actual emission factor is 0.0031 lb/MMBtu, which is less than the RACT limit of 0.0069 lb/MMBtu per Condition 10574, Part 20. Therefore, the District will allow Valero to use the entire actual emissions as onsite emission reduction credit for CO and SO2 when S-21 or S-22 shutdown without any RACT adjustment.

Table IV
S-21 (F-301) or S-22 (F-351) – RACT adjusted for NOx, POC and PM10 & Lowest between the two for other pollutants

Pollutant	***3-yr Ave. (2005-2008), ton/yr***
NOx	*61.42*
SO2	*5.80*
PM10	*7.44*
POC	*4.28*
CO	*1.04*
NH3	*none*

Table V
Onsite Contemporaneous Emission Reduction Summary

Source	***NOx (tons/yr)***	***SO2 (tons/yr)***	***PM10 (tons/yr)***	***POC (tons/yr)***	***CO (tons/yr)***	***NH3 (slip) (tons/yr)***
S-3 and S-4	*766.26*	*6,130.91*	*114.81*	*12.88*[1]	*209.5*	*397.19*
S-21 or S-22	*61.42*	*5.80*	*7.44*	*4.28*	*1.04*	------
Total	*827.68*	*6136.71*	*122.25*	*17.16*[1]	*210.55*	*397.19*

[1] *This number has changed based on the outcome of A/N 15606.*

Net Project Emissions Changes

Table VI
VIP Amendments Emission Summary, tons per year (TPY)

	NOx	SO2	PM_{10}	POC	CO	Ammonia
Current (3-yr baseline, S-3, S-4, S-21)	*827.68*	*6,136.71*	*122.25*	*17.16*[1]	*210.55*	397.19
Future (S-1059, S-1060, S-1061, Fugitive)	*635.93*	*421.13*	*125.54*	*27.34*[1]	*240.30*	*67.47*
Net emissions	(191.75)	(5,715.58)	3.29	10.18[1]	29.75	(329.7)

The number in parenthesis ( ) is the reduction from this project.
[1] This number has changed based on the outcome of A/N 15606.

V. STATEMENT OF COMPLIANCE

1. Best Available Control Technology (BACT)

The proposed facility includes sources that triggers the Best Available Control Technology (BACT) requirement of New Source Review (District Regulation 2, Rule 2-301, NSR) for emissions of nitrogen oxides (NOx), carbon monoxide (CO), precursor organic compounds (POC), sulfur dioxide (SO2), and particulate matter of less than 10 microns in diameter (PM10) because its emissions of these pollutants are above 10 pounds per highest day [Regulation 2-2-301].

The District will allow Valero to bypass the SCR during the startup and shut down periods of the FCCU and CKR because it is not feasible to operate the SCR for the furnaces (S-1059 and S-1060) during that time. The catalyst in the SCRs could be damaged due to entrainment of coke particles during shutdown coke unloading (48 hours) and startup coke loading (48 hours) operations at the Fluid Coker. The BACT limits for two new furnaces include a 1 calendar-day average limit, rolling 7-day average limit and a rolling 365-days average limit. Valero shall include the actual startup and shutdown emissions in the rolling 365-day average. The startup and shutdown periods shall be excluded from the requirement to meet the 7-day average and 1 calendar-day average. The District will allow Valero up to 96 hours for startup and shut down of the FCCU and CKR where both SCR's can be bypassed. The NOx concentration and mass limits will not be included in the 1-calendar and 7-day average for this scenario. However, the NOx concentration and mass limits will be included in the long-term 365-day average.

- Source S-1059 and S-1060 PS Furnaces: The NOx, SO2, CO, and oxygen concentrations for S-1059 and S-1060 will be monitored continuously using a continuous emissions monitor (CEM), which has a read out in parts per million by volume (ppmvd). Valero will also install instrumentation to measure gas flow, temperature, moisture, sample ports for PM10 and POC sampling. Valero is working with EPA to submit an Alternative Monitoring Plan to monitor opacity since a continuous Opacity Monitoring System (COMS) will not function with high-moisture content of the scrubber flue gas.

Nitrogen Oxides (NOx) Emissions

The CO gas from the FCCU and CKR exhaust will feed the PS Furnaces (S-1059 and S-1060). This configuration is unique and no other example of CO Boilers/Furnaces that process CO laden gases from both FCCU and CKR units were found. CKR emits higher levels of NOx than FCCU because there are more ammonia and nitrogen in CKR CO gas than in FCCU CO gas.

BACT is the use of low NOx burners and SCR technologies for appropriate NOx control after considering others such as LoTox and Wet Gas Scrubber Plus (WGS+) as well. The reasons are explained as follows.

The LoTOx technology is a NOx removal system that injects ozone into the exhaust gas stream to oxidize insoluble NOx to soluble oxidized compounds, which are absorbed in a wet scrubber. Ozone is produced on site and on demand by passing oxygen through an ozone generator. LoTOx will use significant electrical power and required more capital and operating costs when compare to SCR. In addition, the technology has a very high electrical power demand, which results in potentially significant indirect emissions of GHGs from the power generation.

WGS+ is a two-stage NOx control process. The first stage oxidizes NOx and partially scrubs the NO with oxidant using a once-through mix of water, sodium hypochlorite and sodium chlorite. The second stage provides additional absorption by using buffer solution of sodium sulfite, bisulfite and sulfate for additional NO2 absorption. This technology would require a significant supply of water and would not achieve a comparable level of NOx emission reduction compared to SCR even with the use of SNCR pre-control.

Based on Valero's engineering evaluation and input from the furnace and SCR vendors, BACT is a NOx outlet concentration of 85.6 ppmvd at 3% O2 on a 7-day rolling average basis and 42.8 ppmvd at 3% O2 on a 365-day rolling average basis. In addition, the calendar day BACT average for NOx will be determined when the PS Furnaces, SCRs and pre-scrubber/scrubber system have started to operate since there is no other FCCU and CKR CO boiler/furnace combination that is new and currently in operation in the United States. In the interim, the BACT 1-calendar day average is taken to be 150 ppmvd on NOx at 3% O2.

The ammonia will be limited to 10 ppmvd on a 3-hour average, which is the same limit used in other recent permit determinations.

The District's CO Boiler – Refinery BACT Guideline dated 4/21/93 in the BACT/TBACT Workbook is not used in this application since the BACT limit for NOx in the guideline is outdated.

Sulfur Dioxide (SO2) Emissions

Emissions of SO2 from PS Furnaces (S-1059 and S-1060) are a function of the sulfur content of the CO gas from the FCCU and CKR. From the EPA – RACT/BACT/LAER Clearinghouse, North Dakota State Department of Health issued a permit for an FCCU abated by the wet gas scrubber with 18 ppmvd at 0% O2 on a 7-day rolling average basis and 20 ppmvd at 0% O2 on a 365-day rolling average basis on July 13, 2007. However, this wet gas scrubber only controls an FCCU (not multiple sources) and has not been in operation as of today.

Valero is required to reduce the SO2 to 50 ppmvd at 0% O2 (equivalent to 42.8 ppmvd @ 3%O2) on a 7-day rolling average basis and 25 ppmvd at 0% O2 (21.4 ppmvd @ 3%O2) on a 365-day rolling average basis by the Consent Decree in the FCCU/CKR scrubber. These limits are acceptable as BACT with the District. Similarly, The calendar day BACT average for SO2 will be determined when the FCCU/CKR Prescrubber/Scrubber (A-1047) has started to operate since there is no other FCCU and CKR CO boiler/furnace combination that is new and currently in operation in the United States. In the interim, the BACT 1-calendar day average is taken to be 440 ppmvd on SO2 at 3% O2, which was the actual daily CEM average of the past three year baseline.

Carbon Monoxide (CO) Emissions

District BACT Guideline 17.4.1, dated April 21, 1993, specifies 100 ppmv at 3% O2 dry as BACT (achieved in practice) for CO, for a CO boiler. However, the CO emissions from the VIP Amendments should not exceed the baseline limit of 209.5 tpy (214.5 tpy main stack total – 4.99 tpy from S-7), which was the VIP Amendment main stack baseline 3-yr average. At the flow rate of 360,000 dscfm from both furnaces, 209.5 tpy is equivalent to 35.2 ppm of CO at 3% O2 for a 365-day average. In the interim, BACT will be a CO mass emissions rate not to exceed 209.5 tpy and 100 ppmv at 3% O2 dry for 1-calendar day as proposed in the current District BACT guideline. The CO catalyst cannot be used in the SCR that follows by a scrubber in the presence of water. The reason for this is that the CO catalyst increases the formation of SO3 from SO2, where SO3 can lead to increased particulate formation and can increase the chance of a visible "blue plume". Therefore, CO emissions will be minimized through the use of good combustion practices without CO catalyst. The BACT level for CO will be established after startup of the system.

Precursor Organic Compound (POC: non-methane organic compounds) Emissions

District BACT Guideline 17.4.1, dated April 21, 1993, does not specify BACT (achieved in practice) for POC, for a CO boiler. Per Application # 15606, the District determined that BACT for POC in the VIP Amendments is 10 ppmv at 0% O2, 1-hr average, based on a similar operation at Valero's FCCU in Texas. The reference is full burn combustion FCCU in TX (Reference RBLC ID #TX-0429, Permit Number PSD-TX-822M2). Even though Valero Benicia's FCCU is a partial burn unit, Valero accepts 10 ppmv concentration limit with a demonstration by source test. There is one other BACT determination for the FCCU at Valero in New Jersey, but the limit for VOC is 9.8 lb/hr, which is not as stringent as the one in Texas. Other BACT is the use of CO Boiler or good combustion practice. There is no BACT data for POC from fluid Cokers available in the BACT survey.POC emissions at Valero Benicia REfinery will be minimized through the use of good combustion practices.

The most important good combustion practice for the new CO furnaces is firebox's operating temperature. This parameter should be maintained at a reasonable tube's temperatures to ensure proper combustion and to reduce coking. Firebox temperature is controlled by addition of excess air. These CO furnaces will operate with excess air in the range of 5-8%, which is comparable to excess air levels in the existing CO furnaces but well above excess air levels of about 3% in conventional heaters and boilers. High excess air promotes good combustion of POC emissions and also helps to reduce CO

emissions. In addition, the new CO furnaces incorporate the latest mechanical design practices, which helps to promote mixing of flue gases in the firebox and hence more complete combustion of POC emissions.

Particulate Matter (PM10) Emissions
District BACT Guideline 17.4.1, dated April 21, 1993, does not specify BACT (achieved in practice) for PM10, for a CO boiler. However, the PM10 emissions from the VIP Amendments should not exceed the baseline limit of 114.8 tpy (115.4 tpy main stack total – 0.58 tpy from S-7), which was established in the VIP. BACT will be a PM10 mass emissions rate not to exceed 114.8 tpy or maximum 40 lbs/hr. PM10 emissions will be minimized through the use of good combustion practices. The interim 40 lbs/hr BACT level for PM10 may be adjusted based on source test results.

- Source S-1061 Hydrogen Reformer Furnace abated by A-1061, SCR and S-1062 Hydrogen Unit with Pressure Swing Adsorption (PSA)

BACT is the use of low NOx burners and SCR technologies for appropriate NOx control, which is consistent with the District's BACT guideline. CO emissions will also be minimized through the use of a CO catalyst bed in the SCR and good combustion practices. The NOx, CO, and oxygen concentrations for S-1061 and S-1062 will be monitored continuously using a continuous emissions monitor (CEM), which has a read out in parts per million by volume (ppmvd). Valero will also install the continuous gas flow meter, TRS, H2S, sample ports for PM10 and POC sampling.

Emissions of NOx, SO2 and CO from the combustion of refinery and natural gases are based on the District's updated, BACT Guideline, Document # 94.3.1 for Heaters greater than 50 MMBTU/hr – Refinery Process, dated 1/14/08. Emissions of PM10 and POC are based on emission factors derived from testing similar sources at Valero Refinery. The emission factors are listed below and the District BACT Guideline can be found in Appendix D.

NOx = 5 ppmvd @ 3% O2 (3-hour average or 0.0059 lb/MMBtu
SO2 = 45 ppmvd total reduced sulfur (TRS) in fuel feed to the furnace (365-day average) or 0.0065 lb/MMBtu
PM10 = 0.0025 lb/MMBTU (3-hour average)
POC = 0.0023 lb/MMBTU (3-hour average)
CO = 10 ppmvd @ 3% O2 (3-hour average) or 0.0072 lb/MMBTU
Ammonia = 10 ppmvd for ammonia slip, (3-hour average), emission control by SCR

Per VIP's Application # 5836, BACT for SO2 will be a total reduced sulfur (TRS) level not to exceed the achieved in practice level of 45 ppmv (rolling consecutive 365-day average) and 100 ppmv over a calendar day. This project will maintain the same permitted level as the VIP.

Offsets

Offsets are required for this project pursuant to Regulation 2, Rule 2, Sections 302 and 303. Valero has enough contemporaneous emission reduction credits to fully offset NOx, POC, and SO2 as shown in Table VII. The emissions from this table are the

combined VIP and VIP Amendments. The VIP's NOx, VOC, PM10 and SO2 emission increase from cargo carriers and fugitives were taken from Application # 5846.

The PM10 emission increase (0.53 ton/yr) requires offsets at this time. Valero will use Emission Reduction Credit, Certificate of Deposit # 974 to provide offsets with the ratio of 1:1 for PM10. Thus, the Banking Certificate #974 will be reissued to Valero in the amount of 1.663 tons PM10/yr.

The POC emission increase (1.59 ton/yr) requires offsets at this time. Per Application # 15606, Valero accepted 15 ton//yr as the POC limit at the Main Stack, which is 1.59 ton/yr higher than the Main Stack's POC baseline of 13.41 ton/yr. Valero will use the contemporaneous emission reduction credits refunded from the VIP Cogen Phase II cancellation to provide the needed offsets for POC at a ratio of 1:1 per Regulation 2-2-302.2.

The total POC emissions may also change based on the actual final fugitive component count consisting of valves, pumps and flanges/connectors. Since Valero's offset obligation for POC may increase or decrease at that time, the District will make adjustments to reflect the actual fugitive components count in accordance with the operating condition.

Table VII

Summary of Provided Offsets (Tons per Year)
VIP Application 5846, VIP Amendments Application 16937 and Main Stack POC Baseline Application 15606

	NO_x	VOC	PM_{10}	SO2
Offsets Required				
VIP Increase from cargo carriers and fugitives (excluding the pipeline shipping contingency in part 24)	42.4	9.6	2.6	16.3
VIP Amendments from PS Still Furnaces, Scrubber, H2U and additional fugitives	-191.75	10.18[1]	3.29	-5715.6
ULSD – Certificate 914 restricted to Tesoro			0.037	
Total	-149.35	19.78[1]	5.93	-5,699
Offsets Provided				
VIP-Light Ends Rail Rack Arm Drains (S-1027) Application 2390	--	-15.8	--	--
VIP-MTBE Phase-Out Shipping	-36.7	-3.48	-1.61	--
VIP-Remaining Cogeneration Contemporaneous Offsets	0.0	0.0	-0.99	0.0
VIP-Cogen Phase II cancellation refund	-18.256	-7.62	-2.796	
Total	-54.956	-26.90	-5.4	0.0

Net Emissions less Offsets Provided	**-204.31**	**-7.12**[1]	**0.53**	**-5,699**
Certificate Number			**# 974**	
Starting balance			2.193	
Reduction			0.53	
Ending balance			**1.663**	

[1] *This number has changed based on the outcome of A/N 15606.*

NOx Banking Credits

Valero has generated NOx IERC credits from the main stack in the past. After the replacement of two PS Furnaces (S-1059 and S-1060), this practice will be discontinued in the future since the new PS Furnace is subject to BACT. Valero may request emission reduction credits (ERCs) for NOx if Valero elects to accept a more stringent limit than the BACT limit or applicable regulations. A more stringent limit may be considered BACT since it has not been firmly established.

SO2 Banking Credits

The SO2 limit of two new PS Furnaces (S-1059 and S-1060) are subject to the EPA Consent Decree, which was set for Valero Benicia's FCCU (S-5) and Fluid Coker (S-6). Valero may request emission reduction credits (ERCs) for SO2 if Valero elects to accept a more stringent limit than the Consent Decree limit, BACT limit and applicable regulations.

POC Banking Credits

Valero may request emission reduction credits (ERCs) for POC if Valero elects to accept a more stringent limit than the BACT limit and applicable regulations.

PM10 Banking Credits

Valero may request emission reduction credits (ERCs) for PM10 if Valero elects to accept a more stringent limit than the BACT limit and applicable regulations.

Health Risk Assessment

A Toxic Risk Screening Analysis is required for this project because the following sources triggered the following toxic trigger level. See attached Appendix C for detailed toxic calculations of each source.

Table VIII
Sources Required Toxic Risk Analysis

VIP Amendments Sources	***Toxic Pollutant Increases***	***Hour Rate Emission (lb/hr)***	***Acute Trigger Level (lb/hr)***	***Annual Emission (lb/yr)***	***Chronic Trigger Level (lb/yr)***
Fugitives	*Benzene*	*0.0274*	*2.9*	*1.2E+2*	*6.4*
S-1061	*Arsenic*	*2.4 E-4*	*4.2 E-4*	*2.1 E+0*	*1.2 E-2*
H2U Furnace	*Benzene*	*2.0 E-3*	*2.9*	*17.0*	*6.4*
	Cadium	*9.0 E-5*	-------	*7.9 E-1*	*4.5 E-2*
	Chromium	*9.0 E-4*		*7.9 E+0*	*1.3 E-3*
	Formaldehyde	*9.9 E-3*	*2.1 E-1*	*8.7 E+1*	*3.0 E+1*

Table VIII
Sources Required Toxic Risk Analysis

VIP Amendments Sources	***Toxic Pollutant Increases***	***Hour Rate Emission (lb/hr)***	***Acute Trigger Level (lb/hr)***	***Annual Emission (lb/yr)***	***Chronic Trigger Level (lb/yr)***
	Hex.Chromium	*1.6 E-4*	*-------*	*1.4 E+0*	*1.3 E-3*
	Hydrogen Sulfide	*2.2 E-1*	*9.3 E-2*	*1.9 E+3*	*9.3 E-2*
	Mercury	*2.9 E-4*	*4.0 E-3*	*2.5 E+0*	*5.6 E-1*
	Nickel	*1.9 E-3*	*1.3 E-2*	*1.7 E+1*	*7.3 E-1*
S-1059	*Arsenic*	*8.9 E-3*	*4.2 E-4*	*5.2 E+1*	*1.2 E-2*
S-1060	*Benzene*	*3.2 E-2*	*2.9*	*2.8 E+2*	*6.4*
PS Furnaces	*Cadium*	*1.1 E-2*	*-------*	*1.0 E+2*	*4.5 E-2*
	Chromium	*-------*		*-------*	*1.3 E-3*
	Formaldehyde	*2.8 E-1*	*2.1 E-1*	*2.4 E+3*	*3.0 E+1*
	Hex.Chromium	*9.9 E-5*	*-------*	*8.5 E-1*	*1.3 E-3*
	Hydrogen Sulfide	*1.6 E+1*	*9.3 E-2*	*1.4 E+5*	*9.3 E-2*
	Mercury	*3.8 E-2*	*4.0 E-3*	*3.3 E+2*	*5.6 E-1*
	Nickel	*1.0 E-2*	*1.3 E-2*	*9.1 E+1*	*7.3 E-1*

VIP Sources	***Toxic Pollutant Increases***	***Hour Rate Emission (lb/hr)***	***Acute Trigger Level (lb/hr)***	***Annual Emission (lb/yr)***	***Chronic Trigger Level (lb/yr)***
Fugitives	*Benzene*	*0.0274*	*2.9*	*1.2E+2*	*6.4*
S-1047 and S-1048 Crude Tanks	*Benzene*	*7.8 E-3*	*2.9*	*6.8 E+1*	*6.4*

The District's Toxic Evaluation Section conducted a risk screen analysis for the VIP Amendments. The risk analysis included the following emissions:

1. Emissions of TACs from the new H2U reformer furnace (S-1061). The toxic emission factors are from Valero's source test on F-4460 Hot Oil Furnace, S-220, performed in January and February 1996 by Best Environmental, Inc., which is included in Appendix C
2. Emissions of TACs from two new PS Furnaces (S-1059 and S-1060) were assumed to be the same as the TACs from two existing CO Boilers S-3 and S-4, which were submitted as part of the VIP
3. Total fugitive organic Toxic Air Contaminants (TACs) emissions from valves, flanges and pumps of VIP and VIP Amendments
4. Two new Crude tanks from VIP
5. Railcars, ships (hotel & pumping), and tugboats (docking, transit near facility) from VIP

There is a reduction of ammonia emissions from the replacement of NSCR to SCRs operation; thus, ammonia is not included in the HRSA.

BAAQMD permitting rules require potential health risks be evaluated for increases in permitted emission levels associated with only the new or modified sources. Results from the health risk screening analysis indicate that the maximum cancer risk at the point of maximum impact (PMI) is estimated at 2.2 in a million. The estimated

maximum chronic hazard index (0.02) and acute hazard index (0.3) at the PMI are both less than 1.0. None of the individual sources have a maximum cancer risk that is more than one in a million or a chronic hazard index that is more than 0.2. In accordance with the District's Regulation 2, Rule 5, these risk levels are considered acceptable.

Table IX
HEALTH RISK RESULTS – VALERO VIP Amendments

Receptor	Cancer Risk	Chronic Hazard Index	Acute Hazard Index
Worker	2.2 in a million	0.01	0.3 Max
Residential	**1.3 in a million**	**0.02**	**0.0002**

Further details on these health risk calculations can be found in the Appendix C – Interoffice Memorandum dated October 8, 2008. The proposed actions contained in this Authority to Construct application comply with Regulation 2, Rule 5 "New Source Review of Toxic Air Contaminants".

PSD Air Quality Air Impact Analysis

Because the Valero VIP Amendments is a modification of a major facility under District regulations, the cumulative impact analysis under Section 2-2-304 must be performed. If the project's net emission increase minus contemporaneous emissions reduction credits exceeds the relevant threshold, a Prevention of Significant Deterioration (PSD) analysis must be performed.

In order to determine whether or not the PSD requirement (Section 2-2-304) is triggered, the emissions from the project are calculated. PSD applicability is determined by comparing the PSD emission increase thresholds to the facility's net emission increase over a contemporaneous period from five years prior to the anticipated start of construction of a project until the anticipated start of operations. Since construction of the VIP Amendments is projected to begin in the last quarter of 2008 and is projected to begin operations in 2010, the contemporaneous period begins in July 2003 and ends in 2010.

PSD allows the facility to utilize any consecutive two-year period during the ten years prior to the application as a baseline. Separate baseline periods may be used for each pollutant. To simplify the calculation, Valero uses the three-year baseline period (1999-2001 from VIP) for all pollutants. The approach deviates from the standard baseline, but it is more conservative as a three-year baseline is lower than the highest possible two-year baseline during the same period.

This project does not exceed any PSD threshold that would require a PSD permit. Table IX lists the criteria pollutants for the project and shows that none of the PSD level has been exceeded. The SO2 emissions are less than 40 tons/yr, the CO emissions are less than 100 tons/yr and the POC are less 40 tons/yr from the PSD triggered threshold. There are no emission increases in NOx and PM10. The project's emission reductions

resulting from the VIP amendments will occur from the replacing of one of the two existing Hydrogen Reformer Furnaces (F-301 or F-351) with a more efficient furnace (S-1061), and the replacement of the two PS Still Furnaces (CO boilers) (S-3 and S-4) with two new furnaces (S-1059 and S-1060).

Table X
PSD REQUIREMENT APPLICABILITY DETERMINATION

Project Name	Start Oper.	Net Emissions Tons/Year				
		NO_X	**SO_2**	**PM10**	**POC**	**CO**
Light Ends Rail Rack						
Post-Project Potential	1Q2004	0.0	0.0	0.0	0.2	0.0
Pre-Project Baseline (1999 – 2001)		0.0	0.0	0.0	16.0	0.0
Net Emission Increase		0.0	0.0	0.0	-15.8	0.0
ULSD F-5401 / F-5402 + fugems	3Q2007	5.0	1.5	1.3	1.3	8.9
Two 650 Mbbl Crude Tanks	1Q2009	0.0	0.0	0.0	3.3	0.0
Incremental VIP & VIP Amendments Firing						
Post-VIP/VIP Amendments Potential	2010	1,032.8	50.1	98.2	43.8	636.2
Combustion Baseline (1999 – 2001)		1,060.8	58.4	110.8	46.3	625.0
Net Emission Increase		-28.0	-8.3	-12.6	-2.5	11.2
Cargo Carrier and Dock						
Post-VIP Potential Shipping	2010	169.1	64.8	9.9	13.7	25.0
Shipping Baseline (1999 – 2001)		96.1	32.9	5.4	7.3	13.8
Net Emission Increase		72.9	32.0	4.5	6.3	11.2
Fugitive Emissions						
Post-Project Potential	2010	0.0	0.0	0.0	79.2	0.0
Fugitives Baseline (1999 – 2001)		0.0	0.0	0.0	73.2	0.0
Net Emission Increase		0.0	0.0	0.0	6.0	0.0
FCCU/CKR Scrubber and F-103						
Post-VIP Amendments PTE	2010	1,365.0	6,818.7	106.5	16.1	288.0
Main Stack Baseline (1999 – 2001)		1,365.0	6,835.0	107.0	16.1	288.0
Net Emission Increase		0.0	-16.3	-0.5	0.0	0.0
Shut-down H2U Train						
Post-Shutdown Emissions	2010	0.0	0.0	0.0	0.0	0.0
F-301 Baseline (1999 – 2001)		90.8	9.5	15.6	4.7	35.6
Net Emission Increase		-90.8	-9.5	-15.6	-4.7	-35.6
New H2U	2010	25.3	21.7	10.7	9.9	30.8
Net Emissions Increase		**-15.6**	**21.7**	**-12.2**	**3.8**	**26.5**
PSD Threshold		**40**	**40**	**15**	**40**	**100**
Exceed PSD Threshold?		**No**	**No**	**No**	**No**	**No**

PSD for Lead

Lead (Pb) emissions from the project will be less than the PSD threshold of 0.6 ton/year per Regulation 2-2-306. The estimated lead emissions for the VIP and VIP Amendments are 1.2 lbs/yr or 0.0006 tpy (new H2U = 2.3 lbs/yr minus the shutdown H2U = 1.1 lbs/yr). Lead emissions from the FCCU/CKR are not expected to be greater than the projected emissions. The lead emission factor was based on the source test conducted on the Hot Oil Furnace S-220 (F-4460) in 1996.

PSD for Mercury and Beryllium

Mercury (Hg) and beryllium (Be) emissions from the project will be less than the PSD threshold of 0.1 and 0.0004 ton/year, respectively.

To the District's knowledge, beryllium has never been detected in the exhaust of a refinery combustion device. Valero has not done a source test on its refinery gas for beryllium. However, based on the value from Appendix C - EERC August 14, 1998 Document "Air Toxic Emission Factors for Combustion Sources Using Petroleum Based Fuels, Final Report, Vol. II" – Development of Emission Factors using CARB approach, the beryllium emissions from the heaters are below the limit of detection (LOD). When all test results are below LOD, the emission rate is reported as zero.

Valero has done a source test on its refinery gas for mercury. Mercury has been detected in the source tests conducted on S-220 (F-4460) in 1996. The estimated Mercury emission for the VIP and VIP Amendments is 1.3 lbs/yr or 0.00065 tpy (new H2U = 2.5 lbs/yr minus the shutdown H2U = 1.2 lbs/yr). Mercury emissions from the FCCU/CKR are not expected to be greater than the future emissions. Thus, the Mercury emission from the project will be less than the PSD threshold of 0.1 tpy. (See Appendix C - Toxic Summary)

PSD For Sulfuric Acid Mist

The sulfuric acid mist (SAM) emissions from the project will be less than the PSD threshold of 7 tons per year. The VIP Amendments will further reduce the SAM emissions because the FCCU/CKR exhaust will be abated by the pre-scrubber/scrubber system. The new pre-scrubber will remove 60 % of the SO3 from the exhaust gas as guaranteed by the vendor. The regenerative amine scrubber may provide 15% additional reductions; therefore, the pre-scrubber/scrubber will have an overall 75% control efficiency.

The new Hydrogen Reformer Furnace S-1061 will be abated by an SCR. The conversion from SO2 to SO3 is approximately 7 % by weight base on available source test data. Table X summarized the SAM reduction for this project. Detailed calculation of SAM is in Appendix C.

Table X
Sulfuric Acid Mist (SAM) Emissions

Source	***H_2SO_4, Tons/yr***
Current ***(Baseline 4/1/05 to 3/1/08)***	
Main Stack	***525.9***
H2U	***0.4***
Future	
FCCU/CKR Stack	***399.6***

New H2U	***1.3***
VIP Amendments Emissions	***-125.4***

The applicant has accepted an enforceable permit condition (Part 77) to conduct an initial source test for SO2, SO3, SAM and ammonium sulfates to demonstrate that the existing main stack and H2U unit will emit less sulfuric acid mist than the future FCCU/CKR and Main stacks and H2U unit. Compliance will be determined by use of emission factors (using fuel gas rate and sulfur content as input parameters) derived from initial compliance source tests. This approach is necessary because the extent of conversion in the heater of fuel sulfur to SO3, and then to H2SO4 is not well established.

5. Other Applicable District Rules and Regulations

Sources S-1059 and S-1060, PS Furnaces

- Sources S-1059 and S-1060 are subject to and expected to be in compliance with Regulation 1- Public Nuisance. No person shall discharge from any source whatsoever such quantities of air contaminants or other material which cause injury, detriment, nuisance or annoyance to any considerable number of persons or the public; or which endangers the comfort, repose, health or safety of any such persons or the public, or which causes, or has a natural tendency to cause, injury or damage to business or property.

- Sources S-1059 and S-1060 are subject to and expected to comply with the requirement of Regulation 6 – Particulate Matter and Visible Emissions. Visible particulate emissions are limited by section 6-1-301 which prohibits visible emissions greater than or equal to Ringelmann No. 1 for no more than 3 minutes in an hour, and 302 limits the source to less than 20% opacity. Section 305 prohibits fallout of visible particles onto neighboring properties in sufficient quantities to cause annoyance to any other person. In addition, Regulation 6-1-311 limits PS Furnaces' PM_{10} emissions to be less than 40 lb/hr.

- Sources S-1059 and S-1060 (fugitive emissions) are subject to Regulation 8, Rule 18- Equipment Leaks. The equipment should comply with the Standards of Regulation 8, Rule 18 for Valves, Compressors and Flanges. The VOC leak standards for valves, pumps and flanges are the same and are set at 100 ppmvd.

VALVES -- Most valves will use graphite packing, which is the best material available to achieve low emissions in a wide variety of applications. These new components will be included in the Valero Benicia Refinery's quarterly inspection and maintenance program in compliance with BAAQMD Regulation 8, Rule 18, with a leak criteria of 100 ppmvd expressed as methane measured at 1 centimeter (cm). This meets BAAQMD BACT guidelines for POCs.

PUMPS -- The pumps will be equipped with double mechanical seals with barrier fluid. The pumps will be included in the Valero Benicia Refinery's quarterly inspection and maintenance program in compliance with BAAQMD Regulation 8, Rule 18, and BAAQMD BACT guidelines for POCs with a leak criteria of 100 ppmvd expressed as methane measured at 1 centimeter (cm).

FLANGES/CONNECTORS -- The flanges/connectors will use graphite or equivalent designed flange gaskets to reduce POC fugitive emissions. These new flanges/connectors will be included in the Valero Benicia Refinery's quarterly inspection and maintenance program in compliance with BAAQMD Regulation 8, Rule 18, with a leak criteria of 100 ppmvd expressed as methane measured at 1 centimeter (cm). This meets BAAQMD BACT guidelines for POCs

- Sources S-1059 and S-1060 (fugitive emissions) are subject to Regulation 8, Rule 28- Episodic Releases from Pressure Release Devices at Petroleum Refinery and Chemical Plants. This rule requires that new and modified pressure release valves shall meet all applicable requirements of Regulation 2, Rule 2, including BACT. Valero will comply with this rule by normally venting all pressure relief valves to a recycle compressor to recover the gas, or a flare with a recovery/destruction efficiency greater than or equal to 98% during overflow or emergency situation.

  - The emission limitations, monitoring, and sampling requirements from Regulation 9-1 apply to the FCCU (S-5) and the Coker Unit (S-6). Regulation 9, Rule 1, Section 310, Emission Limitations for Fluid Catalytic Cracking Units, Fluid Cokers, and Coke Calcining Kilns, limits SO_2 emissions sources S-5 and S-6 to 1,000 ppmvd. The Valero refinery will continue to comply with the requirements of Regulation 9, Rule 1 (Inorganic Gaseous Pollutants, Sulfur Dioxide).

- Regulation 9, Rule 1, Section 301 and Regulation 9, Rule 2, Section 301 limits ground-level concentrations of H2S for the whole refinery. Section 9-2-301 states that "a person shall not emit during any 24 hour period, hydrogen sulfide in such quantities as to result in ground level concentrations in excess of 0.06 ppm averaged over three consecutive minutes or 0.03 ppm averaged over any 60 consecutive minutes. Valero refinery will continue to comply with the requirements of Regulation 9, Rule 2 (Inorganic Gaseous Pollutants, Hydrogen Sulfide).

- Sources S-1059 and S-1060 are subject to and expected to comply with the requirement of Regulation 9, Rule 10 –304 and 305 – Nitrogen Oxides and Carbon Monoxide from Boilers, Steam Generators and Process Heaters in Petroleum Refineries. Emission limits, monitoring, and reporting requirements in this regulation apply to sources S-1059 and S-1060. Regulation 9, Rule 10, Section 304.1 limits NO_x emissions to 150 ppmvd at 3 percent O_2, dry, and Section 305 limits CO emissions to 400 ppmvd at 3 percent O_2, dry. Valero refinery will continue to comply with the requirements of Regulation 9, Rule 10.

  - Sources S-1059 and S-1060 are subject to and expected to comply with the following Regulation 10: New Source Performance Standards (NSPS), (40 CFR, Part 60)
    - 40 CFR, Part 60, Subpart A - General Provisions
    - 40 CFR, Part 60, Subpart GGG/VV and GGGa/VVa Standards of Performance for Equipment Leaks of VOC in Petroleum Refineries

  - Sources S-1059 and S-1060 are subject to and expected to comply with the following Section 112 of the Clean Air Act, National Emission Standards for Hazardous Air Pollutants (NESHAP)
    - 40 CFR. Part 61, Subpart A – General Provisions
    - 40 CFR. Part 63, Subpart CC – Petroleum Refineries
    - 40 CFR. Part 63, Subpart A – General Provisions

- 40 CFR, Part 63, Subpart UUU – Petroleum Refineries: Catalytic Cracking Units, Catalytic Reforming Units and Sulfur Recovery Units, or
- 40 CFR, Part 63, Subpart DDDDD – Industrial, Commercial and Institutional Boilers and Process Heaters. The Washington DC Circuit Court vacated this rule on June 8, 2007. Where there is no MACT for a new source and the deadline for promulgation of a standard by the EPA is past, local agencies must determine on a case-by-case basis, MACT for the new source, in accordance with 40 CFR, Part 63.52(a). The emission limit for these sources in the vacated standard was 400 ppm CO. There were no other limits for gaseous-fueled boilers.

  The EPA had determined that CO was an appropriate surrogate for organic HAPs. The argument was that high CO was indicative of poor combustion and therefore, poor destruction of organic HAPs. This is a reasonable assumption.

  If the District agrees with the EPA that low CO levels indicate low levels of organic HAPs, then lower CO levels are better than higher CO levels. For new S-1059 and S-1060 PS Furnaces, there is no "best-controlled sources" known. Therefore, the District will limit the CO emissions from new PS furnaces to the same achieved levels of that of existing furnaces, which is approximately 35 ppmvd at 3% O2. This level of control will be considered to be the presumptive MACT level for these sources until the EPA re-proposes and re-promulgates MACT.

- Sources S-1059 and S-1060 are subject to and expected to comply with the 40 CFR, Part 64, Compliance Assurance Monitoring, since the sources are equipped with CEMs for NOx, CO, SO2, O2, temperature correction for flow rate, Moisture content correction for flow rate, opacity, sample ports, and gas flow meter.

<u>Sources S-1061 and S-1062, Hydrogen Reformer Furnace and Hydrogen Unit with PSA</u>
- Sources S-1601 and S-1602 are subject to and expected to be in compliance with Regulation 1- Public Nuisance. No person shall discharge from any source whatsoever such quantities of air contaminants or other material which cause injury, detriment, nuisance or annoyance to any considerable number of persons or the public; or which endangers the comfort, repose, health or safety of any such persons or the public, or which causes, or has a natural tendency to cause, injury or damage to business or property.

- Sources S-1061 and S-1062 are subject to and expected to be in compliance with Regulation 6, Particulate Matter and Visible Emissions. This regulation limits the quantity of particulate matter in the atmosphere by controlling emission rates, concentration, visible emissions, and opacity. Ringelmann No. 1 limitation can be exceeded for no more than 3 minutes in an hour. Visible particulate emissions are limited by section 6-1-301 which prohibits visible emissions greater than or equal to Ringelmann No. 1, and 302 limits the source to less than 20% opacity. Section 305 limits the particulate emissions from any operation in sufficient quantity to cause annoyance to any other person. In addition, Regulation 6-1-311 limits S-1601 and S-1602 PM_{10} emissions to be less than 40 lb/hr.

- Sources S-1061 and S-1062 are subject to and expected to be in compliance with Regulation 9, Rule 1 – Sulfur Dioxide. This regulation limits the ground level concentration of sulfur dioxide to less than 0.5 ppm continuously for 3 consecutive minutes or 0.25 ppm averaged over 60 consecutive minutes, or 0.05 ppm averaged over 24 hours per Regulation 9-1-301. Regulation 9-1-302 limits stack SO2 concentration to 300 ppm dry unless the applicant is subject to the monitoring requirements of Regulation 1. Regulation 9-1-303 limits the sulfur content of liquid and solid fuels to less than 0.5 percent by weight.

- Sources S-1061 will burn only gaseous fuels. The total reduced sulfur in the refinery fuel gas will be limited to 45 ppm on an annual average and 100 ppm 1-calendar day maximum. All other fuels will contain less sulfur compounds. Valero will continue to monitor ground level SO2 concentrations at the refinery property line, and therefore, is expected to comply with these provisions.

- Regulation 9-2-301 limits the maximum ground level concentration of H2S to 0.06 and 0.03 ppm (42 ug/m3), averaged over three minutes and one hour, respectively. Valero will continue to monitor ground level H2S concentrations at the refinery property line, and therefore, is expected to comply with these provisions.

- Source S-1061 is subject to and expected to comply with the requirement of Regulation 9, Rule 10 –304 and 305 – Nitrogen Oxides and Carbon Monoxide from Boilers, Steam Generators and Process Heaters in Petroleum Refineries. Emission limits, monitoring, and reporting requirements in this regulation apply to source S-1061. Regulation 9, Rule 10, Section 304.1 limits NO_x emissions to 150 ppmvd at 3 percent O_2, dry, and Section 305 limits CO emissions to 400 ppmvd at 3 percent O_2, dry. The Valero refinery will continue to comply with the requirements of Regulation 9, Rule 10.

- Sources S-1061 and S-1062 are subject to and expected to comply with the following Regulation 10: New Source Performance Standards (NSPS), (40 CFR, Part 60)

- 40 CFR, Part 60, Subpart A - Standards of Performance for New Stationary Sources - General Provisions
- 40 CFR, Part 60, Subpart GGG and GGGa Standards of Performance for Equipment Leaks of VOC in Petroleum Refineries

- Sources S-1061 and S-1062 are subject to and expected to be in compliance with the following requirements of NSPS 40 CFR, Part 60 Subpart J-Standard of Performance for Petroleum Refineries.

a. H2S in refinery fuel gas is limited to 0.1 grain/dscf (163 pmm), on a 3 hour average;
b. A continuous SO2 monitor is required on the outlet from the heater unit tail gas; or
c. A continuous H2S monitor is required for the inlet fuel gas system

Valero will comply with these requirements by installing a fuel flow meter and TRS fuel gas monitor.

- Sources S-1061 and S-1062 are subject to and expected to comply with the following Section 112 of the Clean Air Act, National Emission Standards for Hazardous Air Pollutants (NESHAP)

- 40 CFR, Part 61, Subpart A – General Provisions

- 40 CFR, Part 63, Subpart CC – Petroleum Refineries
- 40 CFR, Part 63, Subpart A – General Provisions
- 40 CFR, Part 63, Subpart DDDDD – Industrial, Commercial and Institutional Boilers and Process Heaters. The Washington DC Circuit Court vacated this rule on June 8, 2007. Where there is no MACT for a new source and the deadline for promulgation of a standard by the EPA is past, local agencies must determine on a case-by-case basis, MACT for the new source, in accordance with 40 CFR, 63.52(a).

  The EPA had determined that CO was an appropriate surrogate for organic HAPs. The argument was that high CO was indicative of poor combustion and therefore, poor destruction of organic HAPs. This is a reasonable assumption.

  The District does not have the resources to survey all industrial, commercial, and institutional boilers and process heaters in the United States and determine the MACT "floor." However, the District notes that the CO BACT limit in the District's BACT workbook for boilers over 50 MMBtu/hr has been 50 ppmvd since 2005. For refinery process heaters over 50 MMBtu/hr, the BACT limit has been 50 ppmvd since 1994. The South Coast AQMD has had BACT limits for CO of 50 ppm for boilers since 2000.

  If the District agrees with the EPA that low CO levels indicate low levels of organic HAPs, then lower CO levels are better than higher CO levels. Considering that the "best-controlled sources" have CO levels that are 50 ppm or lower, and the Hydrogen Reformer furnace will be limited to a CO level of 10 ppm CO at 3% O2, this level of control will be considered to be the presumptive MACT level for these sources until the EPA re-proposes and re-promulgates MACT.

- Sources S-1061 and S-1062 are subject to and expected to comply with the 40 CFR, Part 64, Compliance Assurance Monitoring, since the sources are equipped with CEMs for NOx, CO, O2, TRS, H2S and fuel gas flow meter.

This project is over 1,000 ft from the nearest public school and is therefore not subject to the public notification requirements of Regulation 2-1-412.

6. California Environmental Quality Act (CEQA)

This project is subject to CEQA per Regulation 2-1-310. The City of Benicia acted as the lead agency under CEQA. To document potential environmental impacts from the project, the City of Benicia prepared a draft Environmental Impact Report (SCH# 2002042122) for the VIP, which included the proposed actions covered in the VIP Authority to Construct (permit application 5846). The City of Benicia Planning Commission certified an EIR and approved a use permit for the Valero Improvement Project (VIP) on April 28, 2003.

The VIP Amendments include the changes in an approved VIP project. Valero requested that the December 31, 2009 use permit expiration date be extended to December 31, 2014 to allow for construction of the project as amended. Valero prepared and submitted an Environmental Assessment as part of its application

for a use permit for the VIP Amendments to the City of Benicia on October 2007. The assessment concluded that the Addendum to the VIP EIR would be the appropriated CEQA documentation for the VIP Amendments.

The District, as a CEQA Responsible Agency, provided comments the City of Benicia on the Addendum to the VIP EIR on December 13, 2007 and April 17, 2008. The findings are attached in Appendix E.

The City of Benicia approved that the VIP EIR Addendum was prepared in compliance with the CEQA. The EIR Addendum comprised of (1) Valero's Environmental Assessment and (2) the City's independent peer review was prepared and made available for public comment on June 11, 2008. The City of Benicia considered and approved the VIP EIR Addendum at public noticed hearing on July 10, 2008. The City of Benicia sent notice of approval for VIP Use Permit Amendment (07PLN-32) and conditions in Resolution No. 08-5 (PC) to Valero on July 16, 2008. All information regarding the VIP Project is available on the City's website (http://www.ci.benicia.ca.us) under Community Development Department. The Use Permit for VIP Amendments can be found at http://www.ci.benicia.ca.us/vertical/Sites/%7B3436CBED-6A58-4FEF-BFDF-5F9331215932%7D/uploads/%7B96172BA6-68C7-43B3-8E68-895B86046124%7D.PDF.

The requirements of CEQA have been met through Addendum VIP EIR approved by the City of Benicia. Therefore, no further environmental analysis needs to be performed for this project.

VI. CONDITIONS

Condition # 20820, VIP Application No. 5864, Amended by VIP Amendments, Application No. 16937, Amended by Application No. 15606 to revise the NMOC baseline.

FUGITIVE EQUIPMENT

4. a. The Owner/Operator shall equip all light hydrocarbon control valves installed as part of the VIP with live loaded packing systems and polished stems, or equivalent. [Basis: BACT, Cumulative Increase, offsets]
   b. The Owner/Operator shall equip all flanges/connectors installed in the light hydrocarbon piping systems as a result of the VIP with graphitic-based gaskets unless the service requirements prevent this material. [Basis: BACT, Offsets, Cumulative Increase]
   c. The Owner/Operator shall equip all new hydrocarbon centrifugal compressors installed as part of the VIP with "wet" dual mechanical seals with a heavy liquid barrier fluid, or dual dry gas mechanical seals buffered with inert gas. [Basis: BACT, Offsets, Cumulative Increase]
   d. The Owner/Operator shall equip all new light hydrocarbon centrifugal pumps installed as part of the VIP with a seal-less design or with dual mechanical seals with a heavy liquid barrier fluid, or equivalent. [Basis: BACT, Offsets, Cumulative Increase]
   e. The Owner/Operator shall integrate all new fugitive equipment installed as part of the VIP, in organic service, into the owner's fugitive equipment monitoring and repair program. [Basis: Compliance monitoring]

82. The Owner/Operator shall submit a count of installed pumps, compressors, valves, and flanges/connectors every 180 days until completion of the project. For flanges/connectors, the owner/operator shall also provide a count of the number of graphitic-based and non-graphitic gaskets used. The Owner/Operator has been permitted to install fugitive components with a total NMOC emission rate of 6.0 TPY. It is estimated that the fugitive components count are approximately 4, 000 valves, 12,000 flanges/connectors and 40 pumps). If there is an increase in the total fugitive component emissions, the plant's cumulative emissions for the project shall be adjusted to reflect the difference between emissions based on predicted versus actual component counts. The Owner/Operator may have enough remaining contemporaneous emissions reduction credits (ERC's) to cover any increase in NMOC fugitive emissions beyond the original projection. If not, the Owner/Operator shall provide to the District all additional required offsets at an offset ratio of 1.15:1 no later than 14 days after the submittal of the final NMOC fugitive equipment count. If the actual component count is less than the predicted, at the completion of the project, the total will be

adjusted accordingly. Any ERC's applied by the facility in excess of the actual total fugitive emissions will be credited back to Owner/Operator prior to issuance of the permits. [Basis: Cumulative Increase, Toxics]

FUEL GAS SYSTEM

83. The Owner/Operator shall fire refinery low-pressure fuel gas in S-1061 at a concentration at or below the following: (a) 100 ppmvd totaled reduced sulfur (TRS), averaged over a calendar day and (b) H2S concentration limitation specified in NSPS 40 CFR, Part Subpart Ja. [Basis: NSPS Subpart Ja, BACT]

84. The Owner/Operator shall fire refinery low-pressure fuel gas in S-1061 at a concentration at or below 45 ppmvd of total reduced sulfur, averaged over any rolling consecutive 365-day period. [Basis: BACT]

85. The Owner/Operator shall install and operate a District approved continuous gaseous fuel monitor/recorder to determine the H2S content and total reduced sulfur content of the refinery low-pressure fuel gas prior to combustion in S-1061 Furnace. [Basis: Refinery fuel gas monitoring for SO2, BACT]

86. To demonstrate compliance with parts 3 and 4, the Owner/Operator shall measure and record the 24-hour average TRS content and 365-day average TRS content of the refinery fuel gas fired in S-1061. On a quarterly basis, the Owner/Operator shall report: (a) the daily fuel consumption at S-1061, (b) daily averaged H2S content of the fired refinery fuel gas, (c) daily averaged TRS content, (d) quarterly daily averaged H2S content, (e) quarterly daily averaged TRS content, and (f) annual averaged TRS content using the last four quarters. The report shall be sent to the District's Director of Compliance and Enforcement, and the Manager of the Permit Evaluation Section no later than 60 days after the end of the quarter. [Basis: BACT, Offsets, Cumulative Increase,]

HYDROGEN REFORMER FURNACE (S-1061)

87. The Owner/Operator shall fire only refinery fuel gas and/or natural gas in the S-1061 Hydrogen Reformer Furnace. [Basis: BACT]

88. Total combustion emissions from this combustion source (S-1061), abated by SCR, shall not exceed the following annual limits in any calendar year: [Basis: Cumulative Increase, Offsets]

Pollutant	Annual (tons)
NOx	25.3
CO	30.8

SO2	28.0	
PM10	10.7	
NMOC		9.9

a. The Owner/Operator shall determine the annual emissions using continuous emission monitor (CEM) data for NOx, CO, O2, TRS, H2S and using source test data and fuel consumption for PM10 and NMOC. [Basis: Monitoring]

b. The Owner/Operator shall submit an annual report to the Compliance and Enforcement Division and Engineering Division no later than 45 days following the end of each calendar year. The report shall include the actual daily emissions based on CEM data for NOx, CO, TRS, H2S, O2, and the daily emissions of PM10 and NMOC based on the most recent source test data. Also, the report shall include the annual totals of each pollutant to demonstrate compliance with the above limits. The report shall also include the total daily heat input for S-1061 Hydrogen Reformer Furnace. [Basis: Reporting Requirements]

89. The Owner/Operator shall equip the S-1061 Hydrogen Reformer Furnace with a District approved continuous fuel flow monitor and recorder in order to determine fuel consumption. (This is not a parametric monitor as defined in Regulation 1-238.) [Basis: Monitoring]

90. Startups and shutdowns of the S-1061 Hydrogen Reformer Furnace shall not exceed 24 consecutive hours. The 24-consecutive-hour startup period is in addition to furnace dryout/warmup periods,which shall not exceed 72 consecutive hours. [Basis: Time allowances for startup and shutdown periods]

91. Except during startup and shutdown, the Owner/Operator shall maintain emissions of nitrogen oxides from the S-1061 Hydrogen Reformer Furnace at or below 5 ppmv, dry, corrected to 3% oxygen (0.0059 lb/MM Btu), averaged over any 3 consecutive hours. [Basis: BACT]

92. Except during periods of startup and shutdown, the Owner/Operator shall maintain emissions from the S-1061 Hydrogen Reformer Furnace at or below the following levels: (a) CO emissions - 10 ppmv, dry, corrected to 3% oxygen (0.0072 lb/MM Btu), averaged over 3 hours, and (b) PM10 emissions - 0.0025 lb/MMBtu, averaged over 3 hours, and (c) NMOC emissions - 0.0023 lb/MMBtu, averaged over 3 hours.

93. The Owner/Operator shall monitor compliance with Parts 11 and 12 by using a District-approved CEM for NOx and CO, respectively. The Owner/Operator shall perform an annual source test and monitor fuel consumption data for PM10 and NMOC to demonstrate compliance with Part 12. [Basis: BACT]

94. Except during periods of startup and shutdown, the Owner/Operator shall maintain ammonia emissions (ammonia slip) from the SCR unit (A-1061) at or below 10 ppmv of ammonia, dry, corrected to 3% oxygen, averaged over any rolling consecutive 3-hour period. [Basis: Toxics, BACT]

95. The Owner/Operator shall perform an initial source test in accordance with the requirements set forth in Part 17 to demonstrate compliance with the ammonia limitation in part 14. [Basis: Toxics, Source Tests]

96. For source S-1061, the Owner/Operator shall install, calibrate, maintain, and operate a District-approved continuous emission monitor and recorder for NOx, CO, O2, fuel gas TRS and H2S. [Basis: CEM Monitoring]

97. No later than 60 days from the startup of the S-1061 Hydrogen Reformer Furnace, the Owner/Operator shall conduct a District-approved source test to determine initial compliance with the limits in parts 11, and 12 for NOx, CO, NMOC and PM10. The Owner/Operator shall conduct the source tests in accordance with part 20. The Owner/Operator shall submit the source test results to the Source Test Section and Engineering Division no later than 60 days after the source test. [Basis: Compliance determination via source tests]

98. The Owner/Operator shall maintain the total heat input for S-1061 at or below the following limits: (1) 8,584,800 million BTUs (HHV) in any 365 consecutive day period and (2) 980 million BTUs (HHV) over any one hour period. [Basis: Cumulative Increase]

99. The Owner/Operator shall conduct an annual source test to demonstrate subsequent compliance with the NMOC and PM10 mass rates specified in part 12. The Owner/Operator shall conduct the source tests in accordance with part 20. The Owner/Operator shall submit the source test results to the Source Test Section and Engineering Division no later than 60 days after the source test. [Basis: Periodic Monitoring]

100. The owner/operator shall obtain approval for all source test procedures from the District's Source Test Section prior to conducting any tests. The owner/operator shall comply with all applicable testing requirements for continuous emissions monitors as approved by the District's Source Test Section. The owner/operator shall notify the District's Source Test Section,

in writing, of the source test protocols and projected test dates at least 7 days prior to testing. [Basis: Source test compliance verification and accuracy]

FCCU/CKR SCRUBBER AND MAIN STACKS

21. The emission limitations in part 21 shall go into effect upon the implementation of any changes permitted in the Valero Improvement Project and VIP Amendments that have the potential to increase main stack emissions. These changes are reflected by any one of the following events: [Project Implementation]

a. VIP/VIP Amendments Triggers for FCCU/CKR Scrubber and Main Stacks

i. Processing more than 135,000 barrels (BBL) of crude in any calendar day at S-1006 Pipestill.

ii. Operation of a third air blower, or oxygen injection, to the FCCU Regenerator (S-5) or the Coker Burner (S-6), indicating a change to the combustion process in these units.

iii. Operation of new CO furnaces, F-105 or F-106 (S-1059 or S-1060).

b. VIP/VIP Amendments Implemented – FCCU/CKR Scrubber and Main Stacks Emissions Limitation

Upon implementation of the VIP/VIP Amendments as triggered in part 21a, the Owner/Operator shall limit the FCCU/CKR Scrubber and Main Stacks' emissions to no more than the following based on BACT requirements of the FCCU/CKR Scrubber and 3-year baseline (4/05 to3/08) of the Main Stack [Basis: FCCU/CKR and Main stacks baseline]:

i. NOx – 77.9 ppm @ 3% O2, 365-day average, determined by CEM.
779.9 tons per calendar year.

ii. SO2 – 440 ppm @ 3% O2, 365-day average, determined by CEM.
6,132 tons per calendar year, determined by CEM. These values may be modified administratively after installation of the main stack scrubber. The modified values will reflect any ERCs granted due to installation of the scrubber.

iii. PM10 – 40 lb/hr, as determined by BAAQMD ST-15 or EPA Method 17 in conjunction with EPA Method 1, 2, 3 and 4
115.4 tons/calendar year, determined by summing each of the daily emissions, per the most recent source test.

iv. NMOC – 13.41 tons/calendar year, as determined in accordance with Part 63c..

v. CO – 35.2 ppm @ 3% O2, 365-day average, determined by CEM.

214.5tons/calendar year.

c. PM10 and NMOC Periodic Monitoring: Initial & Annual Source Tests
The Owner/operator shall conduct a District approved source test for PM10 and NMOC emissions within 90 days following the effective date of the above limitations and annually thereafter. The owner/operator shall submit the Source test results to the Source Test Section and Engineering Division within 60 days following completion of the source test. [Basis: FCCU/CKR and Main stacks baseline monitoring, reporting]

d. Annual Emissions Reporting on FCCU/CKR Scrubber and Main Stacks
The owner/operator shall submit an annual report to the District no later than 45 days following the end of each applicable calendar year. The owner/operator shall list for each pollutant, the daily emissions and the annual emissions total, to document compliance with the above limitations. [Basis: Reporting Requirements]

e. FCCU/CKR Scrubber and Main Stacks: Surplus Reduction Used for Shipping Contingency
If FCCU/CKR Scrubber and Main Stacks emissions for a calendar year are less than the above limits, the owner/operator may apply the surplus reduction, if required, as an offset for the shipping contingency under part 24. [Basis: Offsets]

22. In accordance with Regulation 2-4-301.1, sulfur dioxide (SO2) emission reductions greater than those required by any District regulation and EPA Consent Decree, resulting from the installation of A-1047 FCCU/CKR Preccrubber/Regenerative Amine Scrubber, shall be eligible for banking after being demonstrated by source testing or other means acceptable to the APCO. The baseline emissions shall be calculated in accordance with Regulation 2-2-605. [Basis: Banking]

CARGO CARRIER and DOCK

23. The emission limits in part 23 will begin on January 1 of the year when the owner/operator processes more than 135,000 BBL of crude oil at S-1006 on any one day or the moment that the storage tanks in part 32 (Sources S-57 through S-62, S-1047 and S-1048) exceed a combined total of 141.5 kbbl/day (annual daily average), whichever event occurs first.

Ship and barge emissions associated with the import of crude and gas oil across the plant's main Benicia crude dock, combined with the ship emissions associated with the export of product coke across the Plant's

Benicia coke dock, will not exceed the following annual calendar year limits: [Basis Cumulative Increase, Offsets]

Pollutant Annual (tons)	Base Line		VIP Increase	Total
Nox	96.14	39.98	136.12	
SOx	32.87	16.19	49.06	
NMOC	7.34	3.22	10.56	
PM10	5.43	2.39	7.82	
CO	13.83	5.88	19.71	

24. To accommodate any unforeseen changes in shipping requirements, the above total annual limits for each pollutant may be further increased to accommodate a shift in crude imports from pipeline to ships. All increases in combustion emissions from ships will need to be offset through contemporaneous emissions reductions. The VOC contingency has been provided as part of Application #5846. The emission reduction credits (ERC's) for the other pollutants will be provided by a corresponding reduction in the main stack annual emission limit (Part 21). However, in no event shall the Owner/Operator allow the total additional increase for the contingency to exceed the contingency allowance presented below. [Basis: Cumulative Increase, Offsets]

Pollutant	Base Line plus	VIP Increase	Contingency	Total Annual (tons)
NOx	136.12	32.95	169.07	
SOx	49.06	15.76	64.82	
NMOC	10.56	3.10	13.66	
PM10	7.82	2.06	9.88	
CO	19.71	5.21	24.92	

25. The Owner/Operator shall use the following emission factors for determining compliance with parts 23 and 24. [Basis: Compliance Verification]

Crude and Gas Oil Ship Receipts at Main Benicia Crude Dock in pounds per 1000 BBL (lb/kBBL):
5.1 NOx, 1.8 SOx, 0.29 PM10, 0.42 NMOC, 0.76 CO.

Crude and Gas Oil Barge Receipts at Main Benicia Crude Dock in lb/kbbl:
12.78 NOx, 0.16 SOx, 0.56 PM10, 0.29 NMOC, 1.27 CO.

Coke Exports via Ship at Valero Coke Dock in lb/1000 tons:
44.2 NOx, 33.1 SOx, 3.6 PM10, 3.4 NMOC, 6.2 CO.

26. The Owner/Operator shall submit calendar year reports to the District, due the 45th day following the end of the year, detailing the annual emissions to document compliance with parts 23 and 24. [Basis: Annual Report]

27. The owner/operator shall maintain daily records (calendar day), in a District approved log, for: (1) the total number of deliveries of crude oil by ship and barge, (2) the total number of deliveries of PGO by ship and barge, and (3) the total number of shipments of coke by ship. The daily throughput of crude oil transferred at the plant's dock from the cargo ship or barge to the crude storage tanks (Facility B5574 S-57 through S-62, Facility B2626 S-1047 and S-1048) shall be recorded in a District approved log. All records shall be retained for a period of at least five years from the date of entry. This log shall be kept on site and made available to District staff upon request. [Basis: Recordkeeping]

OFFSETS

28. Prior to the implementation of the VIP shipping, the Owner/Operator shall do the following to provide contemporaneous offsets for the ship, rail and barge emissions: [Basis: Contemporaneous Emissions Reduction Credits]

    i. Complete Light Ends Rail Rack Arm Drains (15.8 tpy NMOC). Completed 3/8/04
    j. Halt MTBE ship imports no later than 90 days following VIP implementation (36.7 TPY NOx, 3.48 TPY NMOC, 1.61 TPY PM10). Completed
    k. Shut down S-38 and S-39 Boilers, per Cogeneration Project Condition 19177, part 47 (0.99 tpy PM10). Completed
    l. Reduce Main Stack SO2 emissions per part 23 by 16.2 TPY.

    Note: VIP shipping is triggered as described in Part 23.

29. Prior to implementation of the VIP phase pertaining to NMOC fugitives or crude tankage, the Owner/Operator shall do the following to offset the NMOC emissions increase in part 2 from fugitives (3.0 tpy), and the S-1047 and S-1048 crude storage tanks (3.3 tpy):
[Basis: Offsets]

    a. Complete Light Ends Rail Rack Drains (15.8 tons NMOC/year). Completed 3/8/04

Note: The VIP phase in part 29 is triggered upon commissioning the first VIP fugitive components, or the commissioning of the first crude tank (S-1047 or S-1048).

STORAGE TANKS

30. For the S-1047 and S-1048 Storage Tanks (external floating roof), the Owner/Operator shall comply with all applicable NSPS requirements of 40 CFR, Part 60 Subpart Kb and the requirements of District Regulation 8-5. [Basis: BACT, NSPS]

31. Owner/Operator shall not store any material in S-1047 or S-1048 storage tanks other than crude oil if the new material will result in an emission increase of NMOC or an increase in toxicity. This prohibition includes (but is not limited to) the storage of a new material with a: a) Higher vapor pressure at actual storage temperature; (b) lower initial boiling point: (c) larger percentage of a toxic component; (d) new toxic compounds. Owner/Operator shall notify the District, in writing, of any proposed product storage changes, as prohibited herein, and received written authorization from the APCO in advance of any such use. [Basis: Cumulative Increase, Toxics]

32. The Owner/Operator shall limit the combined material throughput at storage tanks, Facility B5574 S-57 through S-62, and Facility B2626 S-1047 and S-1048, to no more than 171.5 kbbl/day (annual daily average) or 62.6 Million Barrels per year. [Basis: Cumulative Increase]

33. The Owner/Operator shall maintain the daily combined material throughput at storage tanks, and Facility B2626 S-57 through S-62, and Facility B2626 S-1047 and S-1048, in a District approved log to demonstrate whether or not the VIP has been triggered per part 23 and compliance with part 32. The Owner/Operator shall keep these records on site and make them available for District inspection for a period of at least 5 years from the date on which a record is made. [Basis: Recordkeeping]

MISCELLANEOUS UNITS, VESSELS AND REACTORS

34. The Owner/Operator of S-7 (F-103) shall perform District's approved source tests to determine the NOx, SO2, CO, NMOC and PM10 emissions after S-1059 and S-1060 startup. [Basis: Cumulative Increase, Offsets, Recordkeeping]

35. Deleted, redundant with Part 58.

36. For each new fractionation/stripping process vessel (S-1034 through S-1045), the Owner/Operator shall not operate the sources beyond the following throughput limitation: [Basis: Cumulative Increase]

100 kbbl/day, Daily Average, each vessel.

37. Upon startup of each source in part 36, the Owner/Operator shall submit documentation of the final design throughput for the source. The Owner/Operator may adjust the throughput limit for each source in part #36 as long as it does not exceed the 100 kbbl/day, daily average. [Basis: Cumulative Increase]

38. The Owner/Operator shall maintain the daily material throughputs for each new fractionation/stripping source, S-1034 through S-1045, in a District approved log. The Owner/Operator shall keep these records on site and make them available for District inspection for a period of at least 5 years from the date on which a record is made. [Basis: Recordkeeping]

39. For each new hydrofining reactor process vessel (S-1049 through S-1056), the Owner/Operator shall not operate the sources beyond the following throughput limitation: [Basis: Cumulative Increase]

100 kbbl/day, Daily Average, each vessel.

40. Upon startup of each source, the Owner/Operator shall submit documentation of the final design throughput for the source. The Owner/Operator may adjust the throughput limit for each source in part 39 as long as it does not exceed 100 kbbl/day, daily average. [Basis: Cumulative Increase]

41. The Owner/Operator shall maintain the daily material throughputs for each new hydrofining source, S-1049 through S-1056, in a District approved log. The Owner/Operator shall keep these records on site and make them available for District inspection for a period of at least 5 years from the date on which a record is made. [Basis: Recordkeeping]

42. For each individual sulfur plant train, S-1 and S-2, the Owner/Operator shall not operate the sources beyond the following sulfur production limits: [Basis: Cumulative Increase, odors]

240 short tons per day, daily maximum
87,600 short tons per year

Note: Registration #76227 limits the daily throughput of S-1 and S-2. This limit will be deleted when the VIP project is started up.

43. The Owner/Operator shall maintain the daily sulfur production at each individual sulfur plant train, S-1 and S-2, in a District approved log. The Owner/Operator shall keep these records on site and make them available for District inspection for a period of at least 5 years from the date on which a record is made. [Basis: Recordkeeping]

44. For the sulfur storage pit and product tank, S-157 and S-236, the Owner/Operator shall not operate the sources beyond the following throughput limits: [Basis: Cumulative Increase, Odors]

    480 short tons per day, daily maximum
    175,200 short tons per year

45. The Owner/Operator shall maintain the daily material throughput at the sulfur storage pit and product tank, S-157 and S-236, in a District approved log. The Owner/Operator shall maintain these records on site and make them available for District inspection for a period of at least 5 years from the date on which a record is made. [Basis: Recordkeeping]

46. For the FCCU, S-5, the Owner/Operator shall not operate the source beyond the following throughput limits:
[Basis: Cumulative Increase]
    80 kbbl per day, daily maximum
    77 kbbl per day, annual average

47. The Owner/Operator shall maintain the daily material throughput at the FCCU, S-5, in a District approved log. The Owner/Operator shall keep these records on site and make them available for District inspection for a period of at least 5 years from the date on which a record is made. [Basis: Recordkeeping]

48. For the coke silos, S-8, the Owner/Operator shall not operate the source beyond the following limits:
[Basis: Cumulative Increase]
    2,400 tons per day, daily maximum
    876 ktons per year

49. The Owner/Operator shall maintain the daily material throughput at the coke silos, S-8, in a District approved log. The Owner/Operator shall keep these records and make them available for District inspection for a period of at least 5 years from the date on which a record is made. [Basis: Recordkeeping]

50. The Owner/Operator shall not operate the S-9 Blow down system or the S-1006 Pipestill Unit beyond the following throughput limits: [Basis: Cumulative Increase]

180 kbbl per day, daily maximum
165 kbbl per day, annual average

Note: Condition #815, part 1 covers the daily throughput limit for S-1006.

Condition #815, part 1 will be deleted when the VIP project is implemented.

51. The Owner/Operator shall maintain the daily crude throughput at the S-9 Crude blow down system and the S-1006 pipestill unit in a District approved log. The Owner/Operator shall keep these records on site and make them available for District inspection for a period of at least 5 years from the date on which a record is made.

Note: Condition #815, part 2 covers the recordkeeping and reporting requirement for

S-1006. This condition will be deleted when the VIP project is started up.

52. To demonstrate compliance with the throughput limit specified in part 50, the Owner/Operator shall submit a report to the District's Compliance and Enforcement Division and Permit Services Division on a monthly basis. The Owner/Operator shall forward the report to the District no later than 30 days after the close of each month. [Basis: Recordkeeping]

53. For the feed drums and the hydrocracker unit, S-51, S-52 and S-1003, the Owner/Operator shall not operate the source beyond the following throughput limits: [Basis: Cumulative Increase]

44 kbbl per day, daily maximum
40 kbbl per day, annual average

54. The Owner/Operator shall maintain the daily material throughput at the feed drums and the hydrocracker unit, S-51, S-52 and S-1003, in a District approved log. The Owner/Operator shall keep these records on site and make them available for District inspection for a period of at least 5 years from the date on which a record is made. [Basis: Recordkeeping]

55. For the powerformer unit, S-1004, the Owner/Operator shall not operate the source beyond the following throughput limits: [Basis: Cumulative Increase]

39.8 kbbl per day, daily maximum
14.5 MMBBL per year

Note: Condition #18794, part 1 covers the daily and annual throughput limits for S-1004.

Part 1 of Condition #18794 will be deleted when the VIP project is implemented.

56. The Owner/Operator shall maintain the daily feed throughput at the powerformer unit, S-1004, in a District approved log. The Owner/Operator shall keep these records on site and make them available for District inspection for a period of at least 5 years from the date on which a record is made.
[Basis: Recordkeeping]

Note: Condition #18794, part 2 covers the recordkeeping requirements for S-1004.

Part 2 of Condition #18794 will be deleted when the VIP project is implemented.

57. For the hydrogen plants, S-1010 and S-1062 combined, the Owner/Operator shall not operate the source beyond the following throughput: [Basis: Cumulative Increase]

190 MMSCF per day, daily maximum
69,350 MMSCF per year

58. The Owner/Operator shall maintain the daily throughput of product hydrogen at the hydrogen plants, S-1010 and S-1062 combined, in a District approved log. The Owner/Operator shall keep these records on site and make them available for District inspection for a period of at least 5 years from the date on which a record is made. [Basis: Recordkeeping]

59. For the dimersol unit, S-1012, the Owner/Operator shall not operate the source beyond following throughput limits:
[Basis: Cumulative Increase]

7 kbbl per day, daily maximum
2.555 MMBBL per year

60. The Owner/Operator shall maintain the daily feed throughput at the Dimersol Unit, S-1012, in a District approved log. The Owner/Operator shall keep these records on site and make them available for District inspection for a period of at least five years. [Basis: Recordkeeping]

PS FURNACES (S-1059 AND S-1060)

75. The Owner/Operator shall abate emissions from Sources S-5, FCCU, and S-6, Fluid Coker, with PS Furnaces, S-1059 and/or S-1060, which are followed by Pre-scrubber/Regenerative Amine Scrubber, A-1047 during all periods of operation, except during start-up, shutdown, bypass and emergency bypass periods as defined in Part 65. Vapor flow rate from A-1047 shall not exceed 360,000 SCFM, dry, at 0% O2, averaged over any 365 consecutive days. [Basis: Cumulative Increase]

76. The Owner/Operator shall fire only refinery fuel gas, CO gas and/or natural gas in the S-1059 and S-1060 PS Furnaces. [Basis: BACT]

77. Total combustion emissions from S-1059 and S-1060 PS Furnaces, shall not exceed the following emissions limits, except as allowed in Parts 65, 66, 67 and 68: [Basis: Cumulative Increase, BACT, Offsets]

Emissions Limit Table for Parts 63, 66, 67 and 68

Pollutant	Concentrations	Emissions
NOx	42.8 ppmvd @ 3% O2 365-day avg.	610.6 tpy[2]
NOx	85.6 ppmvd @ 3% O2 7-day avg.	6,194 lbs/day, 7-day avg.
NOx	150 ppmvd[1] @ 3% O2 1-calendar day avg.	10,344 lbs/day[1]
SO2	21.4 ppmvd @ 3% O2 365-day avg.	393.2 tpy
SO2	42.8 ppmvd @ 3% O2 7-day avg.	4,309 lbs/day, 7-day avg.
SO2	440 ppmvd[1] @ 3% O2 1-calendar day avg.	22.1 ton/day[1]
CO	35.2 ppmvd @ 3% O2 365-day avg.	209.5 tpy
CO	100 ppmvd[1] @ 3% O2 1-calendar day avg.	4,402 lbs/day[1]
PM10	40 lbs/hr[1] as determined by BAAQMD ST-15 or EPA Method 17 in conjunction with EPA Methods 1, 2,3 and 4	114.8 tpy
POC[3]	10 ppmvd as tested by BAAQMD modified Method ST-7 or a combination of EPA Methods 18 and	14.47 tpy

	25A	

[1] These values may be adjusted based on source test results as specified in Parts 66, 67 and 68.

[2] Emissions include startup, shutdown, emergency bypass or bypass scenarios.

[3] *NMOC: Non-methane organic compounds*

a. The Owner/Operator shall monitor compliance with emissions limits above by using District approved continuous emission monitor (CEM) data for NOx, CO, O2 and SO2, source test data for PM10 and NMOC, and A-1047 flow rates. [Basis Monitoring, BACT]

b. The Owner/Operator shall install, calibrate, maintain, and operate a District-approved continuous opacity monitoring system (COMS) for reasonable assurance of compliance with Regulation 6-310 or submit an alternative monitoring plan (AMP) for opacity at the outlet of the FCCU/CKR stack. The owner/operator shall operate A-1047 Pre-scrubber/Regenerative Amine Scrubber that abate S-1059 and S-1060 PS Furnaces with no more than one 6-minute average in an hour that exceeds 30% opacity. An exceedance of the opacity limit shall be deemed an exceedance of the particulate limit in Regulation 6-1-310. [Basis: Regulation 2-6-503]

c. The Owner/Operator shall submit an annual report to the Compliance and Enforcement Division and the Engineering Division no later than 45 days following the end of each calendar year. The report shall include the actual daily emissions based on CEM data for NOx, CO and SO2, and A-1047 flow rate. In addition, the report shall include the estimated daily emissions of PM10 and NMOC, based on emission factors (lb/MMdscf) determined from source test data and applied to the actual average A-1047 flow rate. Also, the report shall include the annual totals of each pollutant to demonstrate compliance with the above limits. The report shall also include the total daily heat input for S-1059 and S-1060 PS Furnaces. [Basis: Reporting Requirements]

d. Except during periods of startup, shutdown, bypass and emergency bypass as defined in Part 65, the Owner/Operator shall maintain ammonia emissions (ammonia slip) from the SCR units (A-1059 and A-1060) at or below 10 ppmv of ammonia, dry, corrected to 3% oxygen, averaged over any rolling consecutive 3-hour period. [Basis: Toxics, BACT]

e. The Owner/Operator shall perform an initial source test in accordance with the requirements set forth in Part 73 to demonstrate compliance with the ammonia limitation in part 63d. [Basis: Toxics, Source Tests]

78. The Owner/Operator shall equip the S-1059 and S-1060 PS Furnaces with a District approved continuous fuel flow meter and recorder in order to determine refinery fuel gas consumption. (Prior to the Permit to Operate's issuance, the District will determine whether the fuel flow meter is a parametric monitor or not). [Basis: Monitoring]

79. Definitions of Startup, shutdown, emergency bypass and bypass:
    a. Startup of the SCRs is defined as the introduction of CO gas from S-5 FCCU or S-6 CKR to S-1059 and S-1060 PS Furnaces, not the beginning of fuel gas firing. The start up period of A-1059 and A-1060 SCRs may last up to 12 hours. NOx emissions on a concentration and mass basis will not be included in the 1-day, 7-day and 365-day average for this scenario.
    b. Shutdown of the SCRs is defined as the cessation of CO fuel into S-1059 and S-1060 PS Furnaces. The shutdown period of A-1059 and A-1060 SCRs may last up to 8 hours. NOx emissions on a concentration and mass basis will not be included in the 1-day, 7-day and 365-day average for this scenario.
    c. Emergency bypass of the SCRs is defined as when both SCR units are damaged and the Owner/Operator must replace the catalyst. The emergency bypass of A-1059 and A-1060 SCRs may last up to 7 days (168 hours) to permit catalyst replacement and restoration of abatement efficiency. NOx emissions on a concentration and mass basis will not be included in the 1-day, 7-day and 365-day average for this scenario.
    d. Bypass of the SCRs is defined as when loading coke into the CKR before startup or unloading coke following a CKR shutdown, while the FCCU is operating or FCCU is not operating. The bypass of A-1059 and A-1060 SCRs may last up to 96 hours to avoid coke dust entrainment in the PS Furnaces and SCRs. NOx emissions on a concentration and mass basis will be included in the 365-day average, but will be excluded in the 1-day, and 7-day average for this scenario.

    [Basis: Definition, Cumulative Increase]

80. Except during periods of startup, shutdown, bypass and emergency bypass as defined in Part 65, the Owner/Operator shall maintain emissions from S-1059 and S-1060 PS Furnaces at or below the following levels: (a) Nitrogen Oxides (NOx) emissions – 42.8 ppmv, dry, corrected to 3% oxygen, any 365 consecutive days average, and (b) Nitrogen Oxides (NOx) emissions – 85.6 ppmv dry, corrected at 3% oxygen, any 7–calendar days average, and (c) Nitrogen Oxides (NOx) emissions – 150 ppmv dry, corrected to 3% oxygen, any 1-calendar day average. The daily limit shall be established based on the results of a District-approved source test or District-certified

CEM data. The test report must be submitted to the District within 150 days of initial startup of S-1059 and S-1060. [Basis: BACT]

81. Except during periods of startup and shutdown, bypass and emergency bypass as defined in Part 65, the Owner/Operator shall maintain emissions from S-1059 and S-1060 PS Furnaces at or below the following levels: (a) SO2 emissions – 21.4 ppmv, dry, corrected to 3% oxygen, any 365 consecutive days average, and (b) SO2 emissions – 42.8 ppmv dry, corrected at 3% oxygen, any 7–calendar days average, and (c) SO2 emissions – 440ppmv dry, corrected to 3% oxygen, any 1-calendar day average. The daily limit shall be established based on the results of a District-approved source test or District-certified CEM data. The test report must be submitted to the District within 150 days of initial startup of S-1059 and S-1060. [Basis: BACT]

82. Except during periods of startup and shutdown, bypass and emergency bypass as defined in Part 65, the Owner/Operator shall maintain emissions from S-1059 and S-1060 PS Furnaces at or below the following levels: (a) CO emissions – 100 ppmv, dry, corrected to 3% oxygen, 1-calendar day average, and (b) PM10 emissions - 40 lbs/hr, as tested by BAAQMD Method ST-15 or EPA Method 17 in conjunction with EPA Methods 1, 2, 3 and 4 and (c) NMOC emissions – 14.47 tons/yr and 10 ppmv, dry, as tested by BAAQMD modified Method ST-7 or a combination of EPA Methods 18 and 25A. The CO limit shall be established based on the results of a District-approved source test or District-certified CEM data. The PM10 may be adjusted based on source test results or more reliable information. The test report must be submitted to the District within 150 days of initial startup of S-1059 and S-1060. [Basis: BACT]

83. For sources S-1059 and S-1060, the Owner/Operator shall install, calibrate, maintain, and operate a District-approved continuous emission monitor and recorder for NOx, SO2, CO, and O2. The Owner/Operator shall install, calibrate, maintain, and operate a District-approved flow meter at the outlet of the A-1047 FCCU/CKR stack. (This is not a parametric monitor as defined in Regulation 1-238). [Basis: CEM Monitoring]

84. No later than 90 days from the startup of the S-1059, S-1060, A-1059, A-1060 and A-1047, the Owner/Operator shall conduct a District-approved source test to determine initial compliance with the limits in parts 63, 66, 67, and 68 for NOx, SO2, CO, NMOC, and PM10. The Owner/Operator shall conduct the source tests in accordance with Part 73. The Owner/Operator shall submit the source test results to the Source Test Section and Engineering

Division no later than 150 days after the initial startup date. [Basis: Compliance determination via source tests]

85. The Owner/Operator shall maintain the total heat input for S-1059 at or below 4,634,400 million BTUs (HHV) during any rolling 12-month period, and the total heat input for S-1060 at or below 2,268,840 million BTUs (HHV) during any rolling 12-month period. [Basis: Cumulative Increase]

86. The Owner/Operator shall conduct a District-approved source test at least once per quarter to demonstrate subsequent compliance with the NMOC and PM10 mass rates specified in part 63. The quarterly source tests shall be conducted at least 2 months apart and not more than 4 months apart. The Owner/Operator shall submit the source test results to the Source Test Section and Engineering Division no later than 60 days after the source test. After acquiring one year of source test data, the Owner/Operator may switch to semi-annual or annual source testing if test variability is low upon District's approval. [Basis: Periodic Monitoring]

87. The Owner/Operator shall obtain approval for all source test procedures from the District's Source Test Section prior to conducting any tests. The owner/operator shall comply with all applicable testing requirements for continuous emissions monitors as approved by the District's Source Test Section. The owner/operator shall notify the District's Source Test Section, in writing, of the source test protocols and projected test dates at least 7 days prior to testing. [Basis: Source test compliance verification and accuracy]

SULFURIC ACID MIST (SAM)

88. The Owner/Operator of sources S-1059, S-1060, A-1059, A-1060, A-1047, and S-1061 shall not emit more than 7 tons per year of sulfuric acid mist (SAM). [Basis: PSD]

75. Within 90 days of initial startup, the Owner/Operator shall conduct a District approved source test to demonstrate compliance with the SAM emissions in Part 74. For purposes of SAM, the applicant shall also test for SO2, SO3, SAM and ammonium sulfates. The Owner/Operator shall conduct the source tests in accordance with Part 73. The test results shall be forwarded to the District within 150 days of the initial startup date. The test should verify emission compliance at 80% or more of maximum firing on CO and refinery fuel gas for S-1059, S-1060 PS Furnaces and at 80% or more of maximum firing on refinery fuel gas for S-1061 Hydrogen Reformer Furnace.

If Sources S-1059, S-1060 and S-1061 cannot achieve 80% or more of maximum firing on CO and/or refinery fuel within 90 days of initial startup, the

Owner/Operator shall conduct another District's approved source test no later than 2 months after operating in that mode to demonstrate compliance with the SAM emissions in Part 74. [Basis: compliance demonstration, PSD avoidance]

Contemporaneous Emissions reduction credit

76. The owner/operator of sources S-3, S-4, and A-1 through A-5 shall completely shutdown the equipment no later than 90 days after startup of S-1059 and S-1060 PS Furnaces, A-1059, A-1060 PS Furnace SCRs, A-1047 FCCU/CKR Prescrubber/Regenerative Amine Scrubber. The owner/operator shall enter into the record log the date when the unit was shutdown.

The owner/operator of sources S-21 and S-22 shall completely shutdown one of the units no later than 90 days after startup of S-1061 and S-1062 Hydrogen Reformer Furnace and Hydrogen Unit with PSA. The owner/operator shall enter into the record log thedatewhen the unit was shutdown. (Basis: offsets)

Condition# 24197 For Sources S-21 or S-22, S-151, S-220, S-227, S-1007, S-1011, S-1020, S-1021, S-1022, S-1023, S-1024, S-1026 and S-1058

CLEAN FUELS PROJECT
APPLICATION 10392
APPLICATION 3782 Alkylation Production Project
Supersedes Condition 10574 upon startup of the VIP Amendments, Application No. 16937

PERMIT CONDITIONS

S-220 Hot Oil System
S-21 Hydrogen Reformer Furnace, F-301 or
S-22 Hydrogen Reformer Furnace, F-351
Refinery Fuel Gas System

Source Test/Continuous Emission Monitors

For any source test or continuous emission monitor/recorder (CEM) required by any permit condition associated with the Clean Fuels Project (CFP), the following shall apply:

A. Completed

B. Completed

C. Completed

D. Completed

E. Completed

F. The Owner/Operator shall install, maintain, calibrate and operate each CEM in accordance with all applicable District regulations. For Part number 15, the Owner/Operator shall include a data logging device that averages the CEM concentration readings for the Refinery fuel gas over the 24-hour time period (calendar day). [Basis: BACT]

Recordkeeping and Monthly Reporting

G. The Owner/Operator shall keep records of all necessary information to demonstrate compliance with all permit conditions associated with the Clean Fuels Project. The Owner/Operator shall retain all records for at least five years from the date of entry, and shall be made available to the District upon request. This includes, but is not limited to, records of the following: [Basis: BACT]

Fuel usage type and amount for:
S-220 Hot Oil System
S-21 Hydrogen Reformer Furnace or
S-22 Hydrogen Reformer Furnace

CEM data and CEM indicated excesses;
Fuel gas H2S concentration (24-hour Average);
Fuel gas total reduced sulfur Concentration (24-hour Average)
Fuel gas usage rates (cubic feet/day)
Fuel heat content, HHV [24-hour average]
Actual Firing Rate (Btu/month)
Miscellaneous

H. The Owner/Operator shall vent any process vessel depressurization gas to a control device with an overall capture and destruction efficiency of 95%, on a mass basis. [Basis: Cumulative Increase]

I. Deleted. [Basis: Recordkeeping is covered by BAAQMD Regulation 9-10-504.]

FUGITIVES

S-1020 Heartcut Tower
S-1021 Heartcut Saturation Unit
S-1022 Catalytic Reformer T90 Tower
S-1023 Catalytic Naphtha T90 Tower
S-1024 Light Catalytic Naphtha Hydrotreater
S-1026 C5/C6 Splitter
S-220 Hot Oil System
S-227 Storage Tank
Deleted. [Basis: S-228 Storage Tank was never installed.]
Deleted. [Basis: S-229 Storage Tank was never installed.]
S-1007 Alkylation Unit
S-1011 Heavy Catalytic Naphtha Hydrotreater
S-1058Virgin Light Ends Unit
S-151 Waste Water Treatment Unit

S-1003 Hydrocracking Unit

1. The Owner/Operator shall equip any new pump installed in light liquid hydrocarbon service as part of the Clean Fuels Project (CFP) with any sealless pump technology approved by the APCO or one of the following approved BACT technologies: [Basis: Cumulative Increase, Offsets, Toxics]
   a) equipped with dual mechanical seals, having a heavy liquid barrier fluid. The barrier fluid reservoir shall be vented to a control device having at least 95% control efficiency, or the barrier fluid shall be operated at a pressure higher than the process stream pressure.
   b) equipped with a "canned" pump
   c) equipped with a magnetically driven pump
4. The Owner/Operator shall equip all hydrocarbon flow control valves installed as part of the Clean Fuels Project with live loaded packing systems and polished stems, or equivalent. [Basis: BACT]
5. Except as required by Part number 4, the Owner/Operator shall equip all other hydrocarbon valves greater than 2 inches installed as part of the CFP withone of the following types: (1) bellows sealed, (2) live loaded, (3) graphitic-packed, (4) teflon packed valves or (5) equivalent. [Basis: BACT]
7. The Owner/Operator shall equip all flanges installed in the piping systems as a result of the CFP with graphitic-based gaskets, except in services that are not compatible with graphitic material. Asbestos type gaskets shall be used in service where graphitic-based gaskets are not compatible. Deleted rest of condition. [Deletion Basis: Leak repair requirements are covered under Regulation 8, Rule 18.] [Basis: BACT, Offsets, Cumulative Increase, Toxics]
8. The Owner/Operator shall equip all new hydrocarbon centrifugal compressors installed as part of the CFP with "wet" dual mechanical seals with a heavy liquid barrier fluid, or dual dry gas mechanical seals buffered with inert gas. The Owner/Operator shall vent all reciprocating compressors installed in hydrocarbon service as part of the CFP to a control device having at least a 95% control efficiency. Any new compressor in hydrocarbon service with less than 50% hydrogen must comply with the applicable standards of NSPS 40 CFR, Part 60, Subpart GGG. [Basis: BACT, Offsets, Cumulative Increase, Toxics, NSPS]
11. The Owner/Operator shall fit all process drains installed as part of the CFP with a "P" trap sealing system which inhibit POC emissions from the process wastewater system from escaping through the drain. [Basis: BACT]
12. TheOwner/Operator shall limit the total fugitive POC emissions from all new and modified equipment installed as a result of the Clean Fuels Project, which includes Sources S-1020 through S-1024, S-1026, S-220, S-227, S-1007, S-1011, S-1058 and S-151 to no more than 20.8 tons in any rolling 365 consecutive day period. This total may be adjusted by the District in accordance with the provisions of Part # 9. [Basis: Cumulative Increase]

FUEL GAS SYSTEM

13. The Owner/Operator shall limit the refinery fuel gas combusted in any CFP equipment to no more than any of the following: (a) 100 ppmv H2S, averaged over a 24-hour calendar day and (b) the H2S concentration limitation specified

in NSPS 40 CFR, Part 60 Subpart J. [Basis: Cumulative Increase, BACT, NSPS]

14. The Owner/Operator shall limit the refinery fuel gas combusted in any CFP equipment to no more than 51 ppmv of total reduced sulfur, averaged over any consecutive four quarter period. [Basis: Contemporaneous offsets provided in Application #18888 for S-237 Boiler, BACT]

15. The Owner/Operator shall install and operate a District approved continuous gaseous fuel monitor/recorder to determine the H2S content and total reduced sulfur content of the refinery fuel gas prior to combustion in the CFP combustion sources (S-21 or S-22 and S-220) [Basis: Monitoring and Records].

16 The Owner/Operator shall calculate and record the 24-hour average H2S content and total reduced sulfur content of the refinery fuel gas, for determining compliance with Parts No. 13 and 14, based on the previous 24 individual hourly averages. On a quarterly basis, the Owner/Operator shall report for the following S-220, S-21 or S-22:

(a)the daily fuel consumption,
(b) daily averaged H2S content of the refinery fuel gas
(c) daily averaged total reduced sulfur content
(d) quarterly daily averaged H2S content
(e) quarterly daily averaged total reduced sulfur content
(f) annual averaged total reduced sulfur content using the last four quarters. [Basis: Contemporaneous offsets provided in Application #18888 for S-237 Boiler, BACT]

COMBUSTION SOURCES

General Combustion

The following are general requirements for all new or modified combustion sources associated with the Clean Fuels Project:

17. The Owner/Operator shall only fire in all new and modified combustion sources (S-21 or S-22 and S-220), as part of the CFP, natural gas, LPG/pentane gases or refinery fuel gas. In no case shall any combustion source burn a fuel with a H2S concentration exceeding 100 ppmv, averaged over 24 hours (calendar day). [Basis: BACT, Cumulative Increase]

18. The Owner/Operator shall limit the total combined emissions from these new and modified combustion sources (S-21 or S-22 and S-220), installed as a part of the CFP to no more than the following annual limits: [Basis: BACT, Cumulative Increase, Offsets[[Basis: SO2 Contemporaneous offset credits for SO2 and PM10 in Application #18888]

S-21 or S-22 and S-220

Pollutant	Annual (tons)
NOx(1)	17.11 (S-220 only)
CO (2)	134.904

SO2 (2)	59.358
PM10 (2)	26.981
POC (2)	15.514

Note 1. Deleted. [Basis: There is no NOx increase in emissions from the S-21 and S-22 Hydrogen Heaters.]

Note 2. To be adjusted upon shutdown of S-21 or S-22 per Condition 20820, Part 76.

19. The Owner/Operator shall equip the three furnaces (S-21 or S-22 and S-220) with a District approved continuous fuel flow monitor and recorder in order to determine fuel consumption. [Basis: Regulation 9-10-502.2]

20. The Owner/Operator shall calculate and totalize NOx, CO, POC, SO2 and PM10 emissions from all new and modified combustion sources (S-21 or S-22 and S-220) in the Clean Fuels Project on a calendar year basis to demonstrate compliance with Condition number 18. The emission factors or procedure to be used for this purpose shall be:

NOx: Summation of daily emissions in Alternative Compliance Plan for Regulation 9-10 compliance
CO: 0.0200 lb/MMBtu
POC: 0.0023 lb/MMBtu
SO2: 0.0069 lb/MMBtu
PM10: 0.0040 lb/MMBtu

The Owner/Operator shall retain the results on site for a period of at least five years and make them available to District staff upon request.
[Basis: BACT, Cumulative Increase]

21. Except for no more than 3 minutes in any hour, the Owner/Operator shall limit the visible emissions from the three combustion sources (S-21 or S-22 and S-220) or the three abatement devices (A-43, A-44 and A-45) installed as part of the CFP to no more than Ringelmann No. 1.0 or 20% opacity. [Basis: BAAQMD 6-301]

22. For purposes of permitting S-220, S-21 or S-22, a maximum limit of 24 consecutive hours has been set for startup and shutdown. The 24-consecutive-hour startup period may be extended to include furnace dryout/warmup periods (mechanical and process) that are limited to not exceed an additional 72 consecutive hours. The 24 hour period does not apply during the initial startup of the Units. [Basis: Cumulative Increase]

S-220 Hot Oil System

23. Except during startup and shutdown, the Owner/Operator shall limit emissions of nitrogen oxides from the S-220 Hot Oil System to no more than 10 ppmv, dry, corrected to 3% oxygen, (0.0118 lb/MMBtu) averaged over any 3 consecutive hours. [Basis: BACT, Offsets, Cumulative Increase]

24. For the S-220 Hot Oil System, the Owner/Operator shall limit the CO emissions to no more than 28 ppmv, dry, corrected to 3% oxygen, (0.02 lb/MM Btu) averaged over 8 hours, except during periods of startup and shutdown. [Basis: BACT, Offsets, Cumulative Increase]

25. The Owner/Operator shall abate S-220 at all times by A-45 Selective Catalytic Reduction System when it is in operation. Operation of the A-45 Selective Catalytic System shall be in accordance with manufacturer's recommended procedures during periods of operation. [Basis: BACT, Offsets, Cumulative Increase]

26. Except during periods of startup and shutdown, the Owner/Operator shall limit ammonia emissions (ammonia slip) from the SCR unit (A-45) to no more than 10 ppmv of ammonia, dry, corrected to 3% oxygen, averaged over any consecutive 3 hour period. [Basis: BACT, Offsets, Cumulative Increase]

27. .For source S-220, the Owner/Operator shall install, calibrate, maintain, and operate a District-approved continuous emission monitor and recorder for NOx and O2. [Basis: Monitoring]

29. The Owner/Operator shall limit the total combined heat input for S-220 to no more than 28.908 million therms (2.89 trillion Btus) in any 365 consecutive day period. [Basis: BACT, Offsets, Cumulative Increase]

30. The Owner/Operator shall limit the firing rate of the S-220 MRU Hot Oil Furnace to no more than 351 million Btu per hour (Maximum firing rate). (Basis: Cumulative Increase, Toxics)

S-21 Hydrogen Reformer Furnace, F-301 or
S-22 Hydrogen Reformer Furnace, F-351

31. For the S-21 or S-22 furnaces, the Owner/Operator shall limit the emissions of nitrogen oxides based on CEM data to no more than 60 ppmv, dry, corrected to 3% oxygen, (0.0708 lb/MMBtu) averaged over any consecutive 24 hour period, except during periods of startup and shutdown. For the S-21 or S-22 furnaces when monitored without a CEM, the Owner/Operator shall limit the emissions of nitrogen oxides to no more than 60 ppmv, dry, corrected to 3% oxygen determined in accordance with the test method outlined in the District Source Test Method 13A or 13B. [Basis: Cumulative Increase, Offsets]

32. For the S-21 or S-22 furnaces, the Owner/Operator shall limit emissions of CO to no more than 28 ppmv, dry, corrected to 3% oxygen (0.02 lb/MM Btu) averaged over any consecutive 8 hour period, except for periods during periods of startup and shutdown. [Basis: Cumulative Increase]

33. The Owner/Operator shall equip Sources S-21 or S-22 with low NOx burners. The Owner/Operator shall operate the low NOx burners systems in accordance with the manufacturer's recommended procedures during periods of operation. [Basis: BAAQMD 9-10]

37. The Owner/Operator shall limit the total combined heat input for S-21 and S-22 to no more than 106 million therms (10.6 trillion Btus) in any 365 consecutive day period. [Basis: Cumulative Increase, Offsets]
Note 2. To be adjusted upon shutdown of S-21 or S-22 per Condition 20820, Part 76.

38. The Owner/Operator shall limit the firing rate of the S-21 or S-22 Hydrogen Reforming Furnaces to no more than 614 million Btu per hour (maximum firing rate) for all fuels combusted at the source. (Basis: Cumulative Increase, Toxics)

TANKAGE

S-227, 175,000 Barrel Fixed Roof Tank

42. The S-227 Pentane Storage Tank installed by the Owner/Operator shall be a fixed roof tank connected to the A-46/A-47 vapor recovery system. NSPS requirements of 40 CFR, Part 60, Subpart Kb will be applied to this tank. [Basis: Cumulative Increase, Offsets, Toxics]
43. The Owner/Operator shall operate Tank S-227 with a minimum pressure relief valve (PRV) set pressure of 1 psig. [Basis: BAAQMD 8-5]
44. The Owner/Operator shall not store any material in S-227 storage tank, other than the materials specified in this application for the tank, if the new material will result in an emission increase of POC or an increase in toxicity. This prohibition includes (but is not limited to) the storage of a new material with a) higher vapor pressure at actual storage temperature; b) lower initial boiling point; c) larger percentage of a toxic component; and d) new toxic compounds. The Owner/Operator shall notify the District, in writing, of any proposed product storage changes, as prohibited herein, and received written authorization from the APCO in advance of any such use. [Basis: Cumulative Increase, Offsets, BACT, Toxics]
45. The Owner/Operator shall vent all POC emissions from tank cleaning, degassing, or product changeout to a control device with an overall capture and destruction efficiency of at least 90%, on a mass basis. [Basis: RACT]

OFFSETS (DISTRICT EMISSIONS BANK)

51. The total daily throughput of alkylate from the Alkylation Unit (S-1007)shall not exceed 22,800 barrels. (Basis: BACT, Cumulative Increase)
52. The Alkylate Production Project in Application 3782, when installed, shall consist of no more than 100 valves, 200 connectors/flanges, 2 pressure relief valves and 3 pumps. The POC emission from the entire project shall not exceed 0.174 ton/year. The annual mass limit for POC may be adjusted based on the final fugitive component count. Any additional POC offsets required due to a larger fugitive component count would need to be provided prior to permit issuance. (Basis: Cumulative Increase, Offsets)

Condition 24198
Supersedes Condition 19466 upon startup of the VIP Amendments, Application No. 16937

1. The Owner/Operator shall operate S-160 Seal Oil Sparger only when abated by A-13/A-26 Vapor Recovery Compressor to be returned to the refinery fuel gas system. (Basis: Cumulative Increase)

2. The Owner/Operator shall abate emissions from S-8 coke storage tanks by A-8 and/or A-10 baghouses at all times. (Basis: Cumulative Increase)

3. The Owner/Operator shall monitor and record on a monthly basis the visible emissions from Sources S-1, S-2, S-8, S-11, S-176, S-233 and S-237 to demonstrate compliance with Regulation 6-301 (Ringlemann 1 or 20% opacity). For S-176 only, this monitoring is only required when dry salt is added to the tank. For S-8, compliance with Regulation 6-301 shall be demonstrated at the outlet of A-8/A-10 baghouses. These records shall be kept for a period of at least 5 years from date of entry and shall be made available to District staff upon request. [Basis: Regulation 6-301]

4. The Owner/Operator shall notify the District in writing by fax or email no less than three calendar days in advance of any scheduled startup or shutdown of any process unit and as soon as feasible for any unscheduled startup or shutdown of a process unit, but no later than 48 hours or within the next normal business day after the unscheduled startup/shutdown. The notification shall be sent in writing by fax or email to the Director of Enforcement and Compliance. The requirement is not federally enforceable. [Regulation 2-1-403]

5. The Owner/Operator shall abate the emissions from the S-1059 and S-1060, PS Furnaces by SCRs A-1059 and/or A-1060 and Prescrubber/Regenerative Amine Scrubber A-1047, except during startup, shutdown, emergency bypass and bypass periods, and the Owner/Operator shall exhaust those emissions through the FCCU/CKR stack (P-1059). [Basis: Regulation 6-1-301 and Regulation 6-1-304].

6. The Owner/Operator shall perform an annual source test on Sources S-5 and S-6 to demonstrate compliance with Regulation 6-310 (outlet grain loading no greater than 0.15 grain/dscf). The Owner/Operator shall submit the test results to the District's Compliance and Enforcement Division and the District's Permit Services Division no less than 45 days after the test. These records shall be kept for a period of at least 5 years from date of entry and shall be made available to District staff upon request. [Basis: Regulation 6-310]

7. The Owner/Operator shall perform an annual source test on Sources S-8 and S-176 to demonstrate compliance with Regulation 6-310 (outlet grain loading no greater than 0.15 grain/dscf). The Owner/Operator shall submit the test results to the District's Compliance and Enforcement Division and the District's Permit Services Division no less than 45 days after the test. These records shall be kept for a period of at least 5 years from date of entry and shall be made available to District staff upon request. For S-176 only, this source test is only required when dry salt is added to the tank. For S-8, compliance with Regulation 6-301 shall be demonstrated at the outlet of A-8/A-10 baghouses. [Basis: Regulation 6-310]

8. The Owner/Operator shall perform annually a source test on S-1 and S-2 to determine compliance with Regulation 6-330 (Outlet grain loading not to exceed 0.08 grain/dscf of SO3 and H2SO4). The Owner/Operator shall submit the test results to the District's Compliance and Enforcement Division and the District's Permit Services Division no less than 45 days after the test. These records shall

be kept for a period of at least 5 years from date of entry and shall be made available to District staff upon request. [Basis: Regulation 6-330]

9. The Owner/Operator shall perform an annual source test on Source S-5, S-6 and S-8 to demonstrate compliance with Regulation 6-311 (PM mass emissions rate not to exceed $4.10P^{0.67}$ lb/hr). The Owner/Operator shall submit the test results to the District's Compliance and Enforcement Division and the District's Permit Services Division no less than 45 days after the test. These records shall be kept for a period of at least 5 years from date of entry and shall be made available to District staff upon request. For S-8, compliance with Regulation 6-301 shall be demonstrated at the outlet of A-8/A-10 baghouses. [Basis: Regulation 6-311]

10. The Owner/Operator shall conduct a District-approved source test on a semi-annual basis on Sources S-7, S-20, S-21 or S-22, S-23, S-24, S-25, S-26, S-30, S-31, S-32, S-33, S-34, S-40, S-41 and on an annual basis on sources S-35 and S-173 to demonstrate compliance with Regulation 9-10-305 (CO not to exceed 400 ppmv, dry, at 3% O2, operating day average). The Owner/Operator shall submit the test results to the District's Compliance and Enforcement Division and the District's Permit Services Division no less than 45 days after the test. These records shall be kept for a period of at least 5 years from date of entry and shall be made available to District staff upon request.

    The Owner/Operator shall ensure that S-220 does not exceed 400 ppmv of CO, dry, at 3% O2, operating day average, measured by a properly installed CEM for CO and O2. [Basis: Regulation 9-10-305]

11. The Owner/Operator shall conduct a semi-annual District-approved source test on Sources S-43, S-44 and S-46 to demonstrate compliance with Regulation 9-9-301.1 (NOx not to exceed 55 ppmv, dry, at 15% O2, fired on refinery fuel gas). The Owner/Operator shall submit the test results to the District's Compliance and Enforcement Division and the District's Permit Services Division no less than 45 days after the test. These records shall be kept for a period of at least 5 years from date of entry and shall be made available to District staff upon request. [Basis: Regulation 9-9-301.1]

12. The Owner/Operator shall abate the VOC emissions from the S-159 Lube Oil Reservoir using the S-36 Boiler. [Basis: Cumulative Increase]

13. The Owner/Operator shall vent the VOC emissions from S-167 and S-168 Seal Oil Spargers in a closed system to the flare gas recovery header to be returned to the refinery fuel gas system. [Basis: Cumulative Increase]

14. The Owner/Operator shall use the continuous emission monitors required by Regulation 9, Rule 10, to monitor compliance for all NOx limits at the following sources:
    PS Furnaces: S-1059, S-1060
    Process Furnaces: S-21 or S-22, S-23, S-25, S-30, S-31, S-32, S-33, S-220
    Steam Generators : S-40, S-41
    [Basis: Regulation 9-10]

15. The Owner/Operator shall use the continuous opacity monitors or an approved alternate monitoring plan (AMP) required by Regulation 1-520 to monitor compliance for the opacity limits at the FCCU/CKR Stack for the following sources:
    S-5 Fluid Catalytic Cracking Unit, Catalyst Regenerator
    S-6 Fluid Coker, Burner
    [Basis: Regulation 1-520]

Condition# 815
For Source S-1006
Superseded by Condition 20820, Part 21.a.i, Application No. 16937, VIP Amendments

Condition# 10574 For Sources S-21, S-22, S-151, S-220, S-227, S-1007, S-1011, S-1020, S-1021, S-1022, S-1023, S-1024, S-1026 and S-1058
To be superseded by Condition 24197 upon startup of VIP Amendments, Application No. 16937,

Condition# 11030
For Sources S-3 and S-4 Furnaces
Deleted upon startup of VIP amendments, Application No. 16937.

Condition 19329 (Alternative Compliance Plan)
For S-7, S-20, S-21, S-22, S-23, S-24, S-25, S-26, S-30 through S-33, S-34, S-35, S-40, S-41, S-173 and S-220
Application No. 16937, VIP Amendments – Removal of S-3 and S-4 eliminate the opportunity for NOx IERCs. This condition will be deleted upon startup of S-1059 and S-1060.

Condition 19466
To be superseded by Condition 24198 upon startup of VIP Amendments, Application No. 16937.

Superseded by Condition 20820, Parts 61 and 63b, Application No. 16937, VIP Amendments

VII. RECOMMENDATION

Issue a conditional Authority to Construct to Valero for the following equipment:

S-1059 PS Furnace (F-105), 529 MMBtu/hr refinery and CO fuel gases, abated by A-1059 and A-1060 Selective Catalytic Reduction System (SCR) in parallel

S-1060 PS Furnace (F-106), 259 MMBtu/hr refinery and CO fuel gases, abated by A-1059 and A-1060 Selective Catalytic Reduction System (SCR) in parallel

S-1061 Hydrogen Unit Reformer Furnace, 980 MMBtu/hr, FRG and Pressure Swing Adsorption (PSA) tailgas, abated by A-1061 Selective Catalytic Reduction System
S-1062 Hydrogen Unit with Pressure Swing Adsorption (PSA), 95 MMscfd
A-1047 FCCU/CKR Prescrubber/Regenerative Amine Scrubber
P-1059 FCCU/CKR Scrubber Stack
P-1061 Hydrogen Unit Stack

VIII. EXEMPTION

Issue an exemption letter to Valero for the following equipment:

S-1046 Desalter (First and Second Stages). This equipment is qualified for exemption per Regualtion 2-1-103 for any source that is not already exempt from the requirements of Section 2-1-301 and 302 as set forth in Sections 2-1-105 to 2-1-128, is exempt from Section 2-1-301 and 302 if the source meets all of the following criteria:

103.1 The source is not in a source category subject to any of the provisions of Regulation 6(1), Regulation 8(2) excluding Rules 1 through 4, Regulations 9 through 12; and

103.2 The source is not subject to any of the provisions of Sections 2-1-316 through 319; and

103.3 Actual emissions of precursor organic compounds (POC), non-precursor organic compounds (NPOC), nitrogen oxides (NOx), sulfur dioxide (SO2), PM10 and carbon monoxide (CO) from the source are each less than 10 pounds per highest day. A source also satisfies this criterion if actual emissions of each pollutant are greater than 10 lb/highest day, but total emissions are less than 150 pounds per year, per pollutant.

Note 1: Typically, any source may be subject to Regulation 6, Particulate Matter and Visible Emissions. For the purposes of this section, Regulation 6 applicability shall be limited to the following types of sources that emit PM10: combustion source; material handling/processing; sand, gravel or rock processing; cement, concrete and asphaltic concrete production; tub grinder; or similar PM10-emitting source, as deemed by the APCO.

Note 2: If an exemption in a Regulation 8 Rule indicates that the source is subject to Regulation 8, Rules 1 through 4, then the source must comply with all applicable provisions of Regulation 8, Rules 1 through 4, to qualify for this exemption.

Thu H. Bui
Senior Air Quality Engineer
Engineering Division

THB:T:\Valero\16937\16937e\11/20//08

APPENDIX A
- Detailed emission Calculations/Emission Factors

Detailed Emission Calculations/Emission Factors

1. ***Summary of Criteria Pollutant Emissions Increases and Decreases***
2. ***Summary of Emissions from New and Modified Sources – Future Emissions***
3. ***S-1059 PS Furnace (F-105) Annual Emissions***
4. ***S-1060 PS Furnace (F-106) Annual Emissions***
5. ***S-7 Existing Furnace Annual Emissions***
6. ***S-1059 PS Furnace (F-105) Short Term Emissions***
7. ***S-1060 PS Furnace (F-106) Short Term***
8. ***S-7 Existing Furnace Short Term***
9. ***H2U Reformer Furnace Criteria Pollutants Potential to Emit***
10. ***On-site Vehicle Miles traveled***
11. ***EPA, AP-42 Section 13.2.1.3 Paved Road, Equation (2) dated 12/0. http://www.epa.gov/ttn/chief/ap42/ch13/final/c13s0201.pdf***
12. ***Bypass Calculations***

Valero Refining Company

Valero Improvement Project (VIP) Amendments

Summary of Criteria Pollutant Emissions Increases and Decreases

Criteria Pollutant	Emission Increase - Based on 3-Year Baseline (April 1, 2005- March 31, 2008)		Total Emission Increase (Decrease)
	Pre -Project	Post Project	
	Tons/year		
SO2	6,136.7	421.1	(5,715.6)
NOx	827.7	635.9	(191.8)
CO	210.55	240.3	29.8
POC	17.16	27.34	10.18
PM10	122.2	125.5	3.3

Valero Refining Company

Valero Improvement Project (VIP) Amendments

Summary of Emissions from New and Modified Sources

Future Emissions

Criteria Pollutant	Fugitive Emissions	**S-1059** PS Furnace (F-105)	**S-1060** PS Furnace (F-106)	**S-1061** New H2U Reformer Furnace	**S-7** Existing Furnace (F-103)	**Total Future Source Emissions**
	Lb/hr					
NOx		173.2	84.9	5.77	3.12	267.0
SO_2		120.5	59.1	6.38	0.34	186.3
PM10		17.6	8.6	2.45	0.13	28.8
POC	0.685	4.5	2.2	2.25	0.12	9.76
CO		32.1	15.73	7.03	1.14	56.0
NH_3 (SCR slip)		7.47	3.66	4.27	N/A	15.40
	Lb/day					
NOx		4,156	2,038	138.6	74.94	6,407.4
SO_2		2,891	1,418	153.2	8.27	4,470
PM10		422.1	207.0	58.8	3.18	591.1
POC	16.438	108.4	53.2	54.1	2.91	235.0
CO		770.4	377.5	168.7	27.3	1,343.9
NH_3 (SCR slip)		179.3	87.93	102.4	N/A	369.6
	Tons/year					
NOx		409.7	200.9	25.3	13.68	649.6
SO_2		263.8	129.4	27.95	1.51	422.6
PM10		77.03	37.77	10.73	0.58	126.1
POC	3.0	9.71	4.76	9.9	0.53	27.9
CO		140.6	68.9	30.8	4.99	245.3
NH_3 (SCR slip)		32.73	16.05	18.69	N/A	67.47

Pipestill Furnace Emission - Annual

Furnace	Heat Duty, MMBtu/hr (Total)
F-105	529.3
F-106	259.2

total = 788.5

Annual Emissions - F-103, F-105, and F-106

Pollutants	Annual Emissions TPY	Basis	
NO_X	624.3	Calculated	
SO_2	394.7	Calculated	
PM10/PM2.5	115.4	VIP Amendments - 3 yr baseline	
POC	15.0	Proposed MSEL[1]	
CO	214.5	VIP Amendments - 3 yr baseline	

Estimated Emissions - New CO Furnaces, F-105 and F-106

Dry Gas Flow: 360,000dscfm *Both Furnaces Combined*

Pollutants	Concentration or Emission Factor Annual Average	Emissions TPY	
NO_x	50ppmv @0% O_2	610.6	
SO_2	25ppmv @0% O_2	393.2	
PM10/PM2.5	1.2135lb/MMdscf	114.8	
POC	0.1529lb/MMdscf	14.47	
CO	N/A	209.5	
NH3	10ppmv @3% O_2	48.78	

Estimated Emissions - F-105 0.0

% of Total 67.1%

Pollutants	Concentration or Emission Factor	Emissions TPY
NO_x	50ppmv @0% O_2	409.7
SO_2	25ppmv @0% O_2	263.8
PM10/PM2.5	lb/dscf	77.03
POC	lb/dscf	9.71
CO	N/A	140.6
NH3	10ppmv @3% O_2	32.73

Estimated Emissions - F-106

% of Total 32.9%

Pollutants	Concentration or Emission Factor	Emissions TPY
NO_x	50ppmv @0% O_2	200.9
SO_2	25ppmv @0% O_2	129.4

PM10/PM2.5	N/A	37.77
POC	N/A	4.76
CO	N/A	68.9
NH3	10ppmv @3% O_2	16.05

Estimated Annual Emissions - Existing Furnace F-103

Totals 53.0MMBtu/hr FG *Balance of Currently Permitted Heat Input*

Pollutants	**Concentration or Emission Factor**	**Emissions TPY**
NO_x	50ppmv @3% O_2	13.68
SO_2	45ppmv S in RFG	1.51
PM10/PM2.5	0.0025lb/MMBtu	0.58
POC	0.0023lb/MMBtu	0.53
CO	30ppmv @3% O_2	4.99

MSEL = Main Stack Emission Limitation per BAAQMD Condition #20820 Parts 8 and 21

[1]POC VIP Emission Limitation was based on a single source that did not accurately represent the variability of emissions from the process; application to correct limit submitted to BAAQMD in October 2006

PM10/PM2.5	1.0393lb/MMdscf	114.8
POC	0.1310lb/MMdscf	14.47

DSCFM at 3% O2 = 420335

Higher Heating Value of Fuel Gas (Btu/scf) = 1,150

Refinery Specific F-Factor (scf/MMBtu) = 8,446

Pipestill Furnace Emissions - Short Term

Furnace Fired Heat Duties, HHV (MMBtu/hr)

Fuel	F-105	F-106	F-103
Fuel Gas	349.5	169.8	53
CO Gas	179.8	89.4	0
Total	529.3	259.2	53

For F-105 and F-106, the CO Gas/Fuel Gas breakdowns are approximate

Short-Term Main Stack Emission Limitation

Pollutants	Limits			Comments
NO_x	100	ppmvd @0% O_2		7-day average, 1-calendar day BACT will be established
SO_2	50	ppmvd @0% O_2		7-day average, 1-calendar day BACT will be established
PM10/PM2.5	26.34	Lbs/hr		Demonstrated by Source Test-3-yr baseline
POC	3.42	Lbs/hr		VIP Amendment Limit (15 tpy) by A/N 15606
CO	116.8	ppmvd @0% O_2		Operating Day Average- CEM 3-yr baseline
CO	100	ppmvd @ 3% O2		

Estimated Short-Term Emissions - New CO Furnaces, F-105/F-106

Scrubber Dry Gas Flow: 360,000 dscfm *Both Furnaces Combined*

Pollutants	Concentration or Emission Factor		Emissions Lbs/hr	Emissions Lbs/Day	Comments
NO_x	100	ppmv @0% O_2	258.1	6,194	Interim BACT, will establish BACT after source tests
SO_2	50	ppmv @0% O_2	179.5	4,309	Consent Decree - 7-Day Average, will establish BACT
PM10/PM2.5			26.2	629.1	VIP Amendments baseline - Less F-103 Emissions
POC	10	ppmv @0% O_2	6.7	161.58	BACT established by A/N 15606
CO	116.8	ppmv @0% O_2	183.4	4,402	Interim BACT, will establish BACT after source tests

Estimated Emissions - F-105

Pollutants	Concentration or Emission Factor		Emissions Lbs/hr	Emissions Lbs/Day		Total F-105 + F-106 + F-103 + S-1061 Emissions Lbs/hr	Emissions Lbs/Day
NO_x	100	ppmv @0% O_2	173.2	4,156		267.0	6407.37
SO_2	50	ppmv @0% O_2	120.5	2,891		186.3	4470.21
PM10/PM2.5			17.6	422.1		28.8	691.05
POC	10	ppmv @0% O_2	4.5	108.4		3.8	90.81
CO	116.76	ppmv @0% O_2	123.1	2,954		191.6	4598.11

Estimated Emissions -F-106

Pollutants	Concentration or Emission Factor		Emissions Lbs/hr	Emissions Lbs/Day
NO_x	100	ppmv @0% O_2	84.9	2,038
SO_2	50	ppmv @0% O_2	59.1	1,418
PM10/PM2.5			8.6	207.0
POC	10	ppmv @0% O_2	2.2	53.2
CO	116.76	ppmv @0% O_2	60.3	1,448

Estimated Short-Term Emissions - Existing Furnace F-103

Totals 53.0 MMBtu/hr FG *Balance of Currently Permitted Heat Input*

Pollutants	Concentration or Emission Factor		Emissions Lbs/hr	Emissions Lbs/Day	Emissions tons/yr
NO_x	50	ppmv @3% O_2	3.12	74.94	13.68
SO_2	45	ppmv S in RFG	0.34	8.27	1.51
PM10/PM2.5	0.0025	lb/MMBtu	0.13	3.18	0.58
POC	0.0023	lb/MMBtu	0.12	2.93	0.53
CO	30	ppmv @3% O_2	1.14	27.37	4.99

Hydrogen Plant Reformer Furnace Criteria Pollutant Potential To Emit

Pollutants	BACT Emission Factor	Unit of Measure	Emission Factor (lb/MMBtu)	Reformer Furnace 980MMBtu/hr			Reference
				Lb/hr	Lb/day	TPY	
NO_x	5	ppmv @ 3% O_2	0.0059	5.77	138.6	25.3	Proposed BACT
SO_2	45	ppmv TRS in fuel gas	0.0065	6.38	153.2	28.0	Proposed BACT
PM10/PM2.5	0.0025	lb/MMBtu	0.0025	2.45	58.8	10.7	Permit Condition for Source S-237
POC	0.0023	lb/MMBtu	0.0023	2.25	54.1	9.9	Proposed BACT
CO	10	ppmv @ 3% O_2	0.0072	7.03	168.7	30.8	Proposed BACT
NH_3	10	ppmv @ 3% O_2	0.0044	4.27	102.4	18.7	Proposed by Valero

Higher Heating Value of Fuel Gas (Btu/scf) = 1,150
Refinery Specific F-Factor (scf/MMBtu) = 8,446

On-site Vehicle Miles Traveled

Truck Route	Trucks/Week	Miles R/T	Total Trucks/Yr	Total Mi/Yr
Gate #4 to new H2U	2	2.6	104	270
Totals	2	2.6	104	270

Motor Vehicle Entrained Paved Road PM10 Emission Factor

Vehicle Type	On-Road Average Vehicle Weight (tons)[a]	Road Type	Silt Loading (g/m2)[b]	PM10 Emission Factor (lb/mi)[c]
Off-Site Delivery Truck	2.4	Freeway	0.32	0.0035

a. Off-site average vehicle weight from Methodology 7.9, Entrained Road Dust (1997)
b. From ARB Emission Inventory Methodology 7.9, Entrained Paved Road Dust (1997)
Value in Table 3 for local roads in Solano County

c. Emission factor [g/mi] = 7.26 (Silt Loading/2)0.65 (Weight/3)1.5, from ARB Emission Inventory Methodology 7.9, Entrained Paved Road Dust

Mobile Source Criteria Pollutant Emissions

Pollutant	Emission Factor lb/mile	Emissions Lb/Day	Emissions Tons/yr
PM10/PM2.5	0.0035	0.0090	0.0005

Bypass calculations

Summary of NOx Emissions During Startup/Shutdown Scenarios

Scenario		Max. NOx Conc. ppmvd @ 0% O_2	Gas Flow dscfm	Emissions Lbs/hr	Emissions Tons per Day	Maximum Duration Hours	Emissions Tons per Duration	Scenario Description	Gas Streams	NOx Abatement
1	Normal Operations FCCU and CKR	50	360,000	129	1.55	8,760	565.2	Both FCCU and CKR operating normally and exhausting through the SCR system.	CO gas from FCCU and CKR combusted in F-105/106	SCR operating normally Emissions estimated on annual basis
2	Emergency SCR Catalyst Replacement (non-turnaround)	400	220,000	631	7.57	168	53.0	Emergency bypass required to restore SCR operation by changing catalyst without shutting entire refinery down. Alternative is to approve Emergency Variance	CO gas from FCCU and CKR combusted in F-105/106	None - (assumes catalyst from both SCRs must be replaced in series) Do not include data in 7-day or 365-day averages.
3	Loading or Unloading coke from CKR for Startup or Shutdown. FCCU operating	275	162,000	319	3.83	96	15.3	During coke unloading (for shutdown) or loading (for startup) while the FCCU is operating, the SCR must be bypassed to protect the catalyst beds from coke carryover and	CO gas from FCCU combusted in F-105/106 FCCU feed rate will be reduced to a coordination limit[(a)]	None (SCR bypass) Do not include data in 7-day average; include in 365-day average

Bypass calculations

Summary of NOx Emissions During Startup/Shutdown Scenarios

Scenario		Max. NOx Conc. ppmvd @ 0% O_2	Gas Flow dscfm	Emissions Lbs/hr	Emissions Tons/day	Maximum Duration Hours	Emissions Tons per Duration	Scenario Description	Gas Streams	NOx Abatement
	normally							fire hazard		
4	Loading or Unloading coke from CKR for Startup or Shutdown FCCU not running	50	240,000	86	1.03	96	4.1	During coke unloading or loading when the FCCU is not operating, the SCR must be bypassed to protect the catalyst beds. However there is no coke burn; RFG is combusted in F-105/F-106	Products of RFG combustion in F-105/F-106 and CKR auxiliary burner used to fluff coke bed. NOx concentration is estimated for RFG combustion in burners[(b)]	None - RFG combustion only Do not include data in 7-day average; include in 365-day average

Bypass calculations

Summary of NOx Emissions During Startup/Shutdown Scenarios

Scenario		Max. NOx Conc. ppmvd @ 0% O_2	Gas Flow dscfm	Emissions Lbs/hr	Emissions Tons/day	Maximum Duration Hours	Emissions Tons per Duration	Scenario Description	Gas Streams	NOx Abatement
5	Post Refinery-wide Turnaround FCCU Starts first This Scenario may be preceded by Scenario 4 (loading coke with FCCU in shutdown) or followed by Scenario 3 (loading coke with FCCU running) during which the	275	160,000	315	3.79	12	1.9	SCR requires 12 hours to reach operating temperature after the introduction of CO into F-105/106	CO gas from FCCU combusted in F-105/106	None until SCR reaches operating temperature. Do not include data in 7-day or 365-day averages.

Bypass calculations

Summary of NOx Emissions During Startup/Shutdown Scenarios

Scenario		Max. NOx Conc. ppmvd @ 0% O_2	Gas Flow dscfm	Emissions Lbs/hr	Emissions Tons per Day	Maximum Duration Hours	Emissions Tons per Duration	Scenario Description	Gas Streams	NOx Abatement
	SCRs are bypassed.									
6	Post Refinery-wide Turnaround CKR Starts first This Scenario follows Scenario 4 (loading coke with FCCU in shutdown)	400	160,000	459	5.51	12	2.8	SCR requires 12 hours to reach operating temperature after the introduction of CO into F-105/106	CO gas from CKR combusted in F-105/106	None until SCR reaches operating temperature. Do not include data in 7-day or 365-day averages.

Bypass calculations

Summary of NOx Emissions During Startup/Shutdown Scenarios

Scenario		Max. NOx Conc. ppmvd @ 0% O_2	Gas Flow dscfm	Emissions Lbs/hr	Emissions Tons per Day	Maximum Duration Hours	Emissions Tons per Duration	Scenario Description	Gas Streams	NOx Abatement
7	Refinery-wide Turnaround FCCU/CKR Shutdown	400	160,000	459	5.51	8	1.8	SCR requires 8 hours when the CO fuel is reducing its flow into F105/F106	CO gas from FCCU/CKR combusted in F-105/106	None, SCR reduces operating temperature. Do not include data in 7-day or 365-day averages.

[(a)] A coordination limit takes into account tank inventories, upstream and downstream process limitations such that the feed rate creates equilibrium.
[(b)] The F-105/106 startup will be on refinery fuel gas (RFG) without NOx abatement because the SCR cannot reach operating temperate on refinery fuel gas firing alone. After introduction of CO, the furnace box temperature rises rapidly and the SCR will be brought on-line within 12 hours per the manufacturer's recommended procedure and design basis.

Assumptions & clarifying notes for each scenario
1. Assume FCCU and Coker are full (max feed rate, at or near max air rate, observing all Title V limits
2. Assumes unabated NOx at levels seen prior to SNCR (1994-1997 data).
3. For planned and unplanned Coker turnarounds, there are two bypasses required for each event: one when the coke is unloaded from the reactor and the cyclone diplegs are no longer sealed, and the second one during coke loading until the cyclone diplegs are sealed. The FCCU CO will be combusted in F-105/106, bypass the SCR and proceed unabated to the scrubber train. Estimated NOx concentration is the average NOx from the Valero Delaware City FCCU, which operates without NOx abatement.
4. Typically an FCCU shutdown also means a Coker shutdown; however, the refinery has been able to "idle" the FCCU and keep it hot while making emergency repairs (e.g. boiler feed water system). During this rare operating scenario, the Coker is reduced to minimum stable rates until the FCCU is brought back on-line.
5. & 6. A refinery-wide turnaround occurs once every five to six years. The startup sequence is to light the F-105/106 furnaces on refinery fuel gas first, then to start up either the FCCU or the Coker. The SCR must be bypassed until the introduction of CO fuel from either the

Bypass calculations

Summary of NOx Emissions During Startup/Shutdown Scenarios

Scenario	Max. NOx Conc. ppmvd @ 0% O_2	Gas Flow dscfm	Emissions Lbs/hr	Emissions Tons per Day	Maximum Duration Hours	Emissions Tons per Duration	Scenario Description	Gas Streams	NOx Abatement
FCCU or the Coker to F-105/106. Introduction of the CO allows the combustion process to produce enough heat to bring the SCR on-line within 12 hours.									
For annual NOx emissions - From 2+6 +7 scenarios - Total annual NOx emissions =	8,572	hrs at 50 ppmv @ 0%O2 =				553.1	tpy NOx		
	188	hrs at 400 ppmv @ 0%O2 =				57.6	tpy NOx		
	8,760.0	hrs				610.6	tpy NOx		
For max. hourly NOx emissions - From 2+3+6 +7 scenarios - Max Daily NOx emission - note1 = 188 hrs @400 ppmv & 96 hrs @ 275 ppmv 0%O2	24	hrs at 400 ppmv @ 0%O2 =				630.9	lbs/hr NOx		
	284	hrs (note1)							
						15,140.6	lbs/day NOx		
					Daily total =	7.57	tons/day NOx		

APPENDIX B- Contemporaneous Emission Reduction/CEM data

Contemporaneous Emission Reductions/CEM Data

1. CEM (ton/yr) for Main Stack (S-3, S-4 (CO Boilers) and S-7 furnaces)
2. Main Stack PM10 Source Tests (3/28/08, 4/26/07, and 3/21/06) (Hard copy)
3. CEM (ton/yr) for H2Us (F-301 and F-351 Furnaces)
4. H2U - CO Source Tests (6/9/07, 6/29/06, 4/29/05 and 12/5/06 for F-301)
5. H2U - CO Source Tests (12/6/07, 12/4/06, 6/8/06, 12/5/06 and 12/9/07 for F-351)
6. Main Stack NH3 source tests (9/7/06, 10/2/06, 11/9/06, 11/13/06 and another 11/13/06)

Valero - Main Stack Baseline Calculation (4/1/05 through 3/31/08)

VIP Amendments
NOx, SO2 and CO for S-3, S-4 and S-7

Main Stack Baseline Emissions

Pollutant	Emissions Tons/Year	Emissions Factor lb/MMDSCF
NOx	779.9	
SO_2	6,132.4	
PM10	115.39	1.377
POC	6.7	0.080
CO	214.5	

PM10 Data from Source Tests. POC Data being developed; value shown is best estimate to date
NO_X, SO_2, and CO concentrations corrected to 3 percent excess oxygen

Valero - Main Stack PM10 Baseline Emissions

VIP Amendments

Emissions based on source tests during Baseline period

Test Date	Results Lb/Hr	KDSCFM	(Lb/hr)/(KDSCFM)	DSCFM	
3/28/2008	40	361.7	0.1106	361682	
4/26/2007	24.8	356.6	0.0696	356569	
3/21/2006	24.4	360.4	0.0677	360432	
Average	29.73	359.5610	0.0826	359561	

3/28/2008 actual emissions = 67.1 lb/hr. It is being adjusted to RACT, Reg. 6, which allows max 40 lbs/hr

3-Year Average kDSCFM:	318.88	
3-Year Average Lb/hr	26.34	
Tons/Year	115.39	

Valero - Hydrogen Plant Baseline Emissions (4/1/05 through 3/31/08)

VIP Amendments
Hydrogen Units (F-301 and F-351)

	F-301	F-351				
Other Emission Factors	**Lb/MMBtu**	**Lb/MMBtu**	**Lowest**			
NOx	0.03361	0.03665	0.03361	RACT adj.		
SO2	0.0069	Condition 10574, Part 20 (RACT)		actual CEM	0.0031	lb/MMBtu
POC	0.0023	Condition 10574, Part 20 (RACT)		RACT adj.		
PM10	0.004	Condition 10574, Part 20 (RACT)		RACT adj.		

Emission factors developed by BAAQMD for ULSD Project
RACT Regulation 9-10 adjust to 0.033 lb/MMBtu

H2U Baseline Emissions	**Emissions in Tons/Year**			RACT adj.
Pollutant	**F-301**	**F-351**	**RACT adj +Lowest**	tons/yr
NOx	62.6	70.34	61.42	61.42
SO_2	5.80	5.98	5.80	12.84
PM10	7.44	7.68	7.44	
POC	4.28	4.41	4.28	
CO	1.43	1.04	1.04	actual CEM

CO data from source tests
NO_X, SO_2, and CO concentrations corrected to 3 percent excess oxygen

Valero - Hydrogen Plant Baseline CO Emissions

VIP Amendments

Emissions based on source tests during Baseline period

Test Date	Source	Result (ppmv) Corrected to 3% O2	Average	Daily average Duty MMBtu/day	Calculated Factor ppmv/(MMBtu/day)
6/9/2007	F-301 East F-301 West	0.03 0.05	0.04	11,658	3.43E-06
6/29/2006	F-301 East F-301 West	<4 <4	4	12,261	3.26E-04
4/29/2005	F-301 East F-301 West	<2 <2	2	10,893	1.84E-04

12/5/2006	F-301 East F-301 West	0 0	0	12,261	0.00E+00
				F-301 Avg.	**1.28E-04**

Test Date	Source	Result (ppmv) Corrected to 3% O2	Average	Daily average Duty MMBtu/day	Calculated Factor ppmv/(MMBtu/day)
12/6/2007	F-351 East F-351 West	1.81 0.14	0.975	11,467	8.50E-05
12/4/2006	F-351 East F-351 West	0 0	0	11,610	0.00E+00
6/8/2006	F-351 East F-351 West	<4 <4	4	11,478	3.48E-04
12/5/2006	F-351 East F-351 West	0 0	0	11,761	0.00E+00
12/9/2007	F-351 East F-351 West	0.04 0.06	0.05	9,279	5.39E-06
				F-351 Avg.	**8.78E-05**

Source	Factor	2005-2008 Baseline Duty MMBtu/day	CO Conc. ppmv	CO Emissions tons/year
F-301	1.28E-04	10,198	1.31	**1.43**
F-351	8.78E-05	10,516	0.92	**1.04**

Baseline Main Stack Ammonia Emissions Derived by Source Test

Basis:	Source Test Date	ppm @ 3% O2	Vendor	
	9/7/2006	42	Best	
	10/2/2006	79	Best	
	11/9/2006	30	Best	
	11/13/2006	80	GE	(tested "as found" w/typical ammonia injection for TDN)
	11/13/2006	19	GE	(reduced ammonia to see effect on NOx)

Calculation: Ammonia slip — lbs/hr = ppm * 8.223 E-05 x DSCFM * MW / (Tstd R)

Date	Concentration	Constant	DSCFM	mw	T std R	lb/hr	Average lb/hr
9/7/2006	42	8.22E-05	590,843	17	460	75	91
10/2/2006	79	8.22E-05	665,612	17	460	160	**lbs/day**

11/9/2006	30	8.22E-05	598,606	17	460	55	**2,176**
11/13/2006	80	8.22E-05	543,895	17	460	132	
11/13/2006	19	8.22E-05	543,895	17	460	31	

APPENDIX C
- Health Risk Assessment/ Toxic Emissions

Health Risk Assessment/ Toxic Emissions

1. District's Interoffice Memorandum from Toxic Evaluation Section – Dated October 8, 2008
2. Total HAPs and TACs for All New Sources (H2U, VIP & VIP Amendments Fugitives
3. VIP Crude Tanks (S-1047 and S-1048) Toxic compounds
3. Toxic Air Contaminant Emission Factors, "Air Toxic Emission Factors for Combustion Sources Using Petroleum Based Fuels, Final Report, Vol. II"
4. Sulfuric Acid Mist Emissions Comparison
5. Source Test Report S-220, F-4460 Hot Oil Furnace, January 30, 31 & February 1,2,5 & 6, 1996, Best Environmental, Inc. (hard copy)

Interoffice Memorandum
October 8, 2008

To: Thu Bui Via: Scott Lutz
From: Jane Lundquist Daphne Chong

Subject: Risk Analysis for Valero Refining Company, P# 12626, A# 16937, Hydrogen Unit Furnace, VIP Fugitives, Crude Oil Tanks, and PS Furnaces,

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At your request, a risk screening analysis was performed for the emissions from the hydrogen unit furnace (S1061), VIP fugitives, crude oil tanks (S1047, S1048), and PS furnaces (S1058, S1059) abating the Fluid Catalytic Cracking Unit and Fluid Coker. In addition, emissions from Tug, Tanker and Railcars that were provided with application number 5846 were also included in the analysis. Results from the health risk screening analysis indicate that, for this project, the maximum cancer risk is estimated at *2.2 in a million****, the chronic hazard index is*** *0.02* ***and the acute hazard index is*** *0.3****. None of the individual sources have a maximum cancer risk that is more than one in a million or a chronic hazard index that is more than 0.2. In accordance with the District's Regulation 2, Rule 5, these risk levels are considered acceptable.***

EMISSIONS: The toxic air contaminant (TAC) emissions evaluated in this risk analysis are those we discussed for the H2U furnace, the VIP fugitives, the two new crude tanks and the PS furnaces. In addition, emissions from tugs, tankers and railcars (provided with application number 5846) that are subject to the District's permit requirements are included. Emissions from mobile sources that are not regulated by the District are not included. The health risk value-weighted emissions were entered into the model so that the modeled results are in terms of cancer risk, chronic hazard index and acute hazard index. The lead emission input to determine the one-month averaged lead concentration is conservatively based on the maximum one-hour average emission rate of lead. The cancer potency values, chronic and acute reference exposure levels adopted by the California Office of Environmental Health Hazard Assessment (OEHHA) for use in the Air Toxics "Hot Spots" Program are used in this analysis. The chronic health values used to calculate health value-weighted emissions were derived from CARB's HotSpots Analysis and Reporting Program (HARP). The TACs, health values, emission rates and weighted emissions are listed in the attached Table 1 and Table 2 for the stationary sources and cargo carriers, respectively.

MODELING: The ISCST3 model was run with 2005 Valero Administration Building meteorological data for annual, one-hour and one-month average periods to determine the cancer risk, chronic hazard index, acute hazard index, and lead concentration. The stack and area source parameters provided in this application and in application number 5846 were used in the model. The stationary tug and tanker emissions were modeled as three separate point

sources at the dock and the transit emissions were modeled as four separate area sources. The crude oil tanks, S1047 and S1048 were modeled as stack sources with release heights set equal to the tank height. Tank stack parameters were selected to yield no plume rise and building downwash was based on the tank dimensions. Based on an Auer land use analysis, the area is considered rural; this model option was selected.

HEALTH RISKS: For the project, the cancer risk is below 10.0 in a million, the chronic hazard index less than 1.0 and the acute hazard index that is less than 1.0; this meets the project risk requirements of Regulation 2-5-302. The health risk results for the project are presented in the following table.

HRSA memo for Valero Refining Company
P# 12626, A# 16937,
October 8, 2008
Page 2

Project Health Risk Results			
Receptor	Cancer risk in a million	UTM_E	UTM_N
Resident	1.3	574036	4213461
Worker	2.2	576238.6	4213284
	Chronic Hazard Index		
Resident	0.02	574035.6	4213461
Worker	0.01	578000	4213750
	Acute Hazard Index		
Maximum	0.3	573700	4214600
	Lead Concentration, ug/m3		
Resident	0.0002	574035.6	4213461

The following table below shows the individual source maximum cancer risk. The main stack emissions are from two sources, Fluid Catalytic Cracking Unit (FCCU) and Fluid Coker. TAC emissions from these sources will be abated by combustion in the PS Furnace. The sum cancer risk contribution of the TAC emissions from the FCCU and Coker is less than 1 in a million; the individual maximum cancer risk for each source will also be less than one in a million.

Individual Source Maximum Cancer risk in a million						
Source	Resident	UTM_E	UTM_N	Worker[1]	UTM_E	UTM_N
H2U Furnace	0.54	574085.6	4213511	0.11	574085.6	4213511
VIP Fugitives	0.13	574536	4213111	0.25	576216.9	4213795
Crude Tank S1047	0.06	575800	4212300	0.09	576285.6	4212411
Crude Tank S1048	0.06	575800	4212200	0.07	576313.2	4212256
Main Stack	0.58	574035.6	4213461	0.27	574035.6	4213461
Ship/Railcar	0.72	575800	4211300	2.15	576238.6	4213284

1. Location of the maximum calculated worker cancer risk may not be at a worker receptor location.

Since the project chronic hazard index is less than 0.2, each of the individual source maximum chronic hazard indices will also be less than 0.2. With individual source cancer risk that are less than one in a million and chronic hazard indices less than 0.2, none of the sources trigger the TBACT requirement of Regulation 2-5-301.

In accordance with the OEHHA guidelines, the chronic non-cancer health effects for lead exposure are not based on a hazard index approach. Instead, air concentrations are compared to defined air lead levels associated with specified percentages of children with blood lead levels (BLLs) ≥ 10 μg/dL. The location of the 30-day maximum lead ambient air concentration for this project is not in a high exposure area and a simplified approach for assessing non-cancer risk may be used. Per Table 5, Recommended Risk Management Levels Using the Simplified Approach, of the *ARB Risk Management Guidelines for New, Modified, and Existing Sources of Lead;* permits for projects with maximum offsite air concentrations ≤ 0.30 $\mu g/m^3$ are approvable. The 30-day maximum lead air concentration for this project is 0.0002 $\mu g/m^3$ and is approvable.

CAS No	Pollutant	Emission Factor (lb/MMBtu)[1]	New H2U Furnace (lb/yr) 980 MMBtu/hr	F-301 Baseline Emissions (lb/yr) -425 MMBtu/hr	Certified EIR Fugitive Emissions (lb/yr)	VIP Amendments Fugitive Emissions (lb/yr)	Main Stack Baseline Emissions[3] (lb/yr)	FCCU/CKR Scrubber Emissions[3] (lb/yr)	Total Annual TAC Emissions (lb/yr)	Chronic Trigger Level (lb/yr)	Exceed Chronic Trigger? (Yes/No)	Total Hourly TAC Emissions (lb/hr)	Acute Trigger Level (lb/hr)	Exceed Acute Trigger? (Yes/No)
75-07-0	Acetaldehyde	2.3E-06	2.0E+01	-8.7E+00					1.1E+01	6.40E+01	No	1.3E-03		
7664-41-7	Ammonia[2]	4.4E-03	3.7E+04	-1.6E+04			-7.9E+05	9.8E+04	-6.8E+05	7.70E+03	No	-7.7E+01	7.10E+00	No
7440-38-2	Arsenic	2.5E-07	2.1E+00	-9.2E-01					1.2E+00	1.20E-02	**Yes**	1.4E-04	4.20E-04	No
71-43-2	Benzene	2.0E-06	1.7E+01	-7.6E+00	1.2E+02	1.2E+02			2.5E+02	6.40E+00	**Yes**	2.9E-02	2.90E+00	No
56-55-3	Benzo(a)Anthracene	7.6E-10	6.5E-03	-2.8E-03					3.7E-03	PAH	N/A	4.2E-07	N/A	N/A
50-32-8	Benzo(a)Pyrene	7.6E-10	6.5E-03	-2.8E-03					3.7E-03	PAH	N/A	4.2E-07	N/A	N/A
205-99-2	Benzo(b)Fluoranthene	7.6E-10	6.5E-03	-2.8E-03					3.7E-03	PAH	N/A	4.2E-07	N/A	N/A
205-82-3	Benzo(k)Fluoranthene	7.6E-10	6.5E-03	-2.8E-03					3.7E-03	PAH	N/A	4.2E-07	N/A	N/A
7440-43-9	Cadmium	9.2E-08	7.9E-01	-3.4E-01					4.5E-01	4.50E-02	**Yes**	5.1E-05		
7440-47-3	Chromium (Total)	9.2E-07	7.9E+00	-3.4E+00					4.5E+00	N/A	N/A	5.1E-04	N/A	N/A
7440-50-8	Copper	1.1E-06	9.2E+00	-4.0E+00					5.2E+00	9.30E+01	No	5.9E-04	2.20E-01	No
53-70-3	Dibenzo(a,h)Anthracene	7.6E-10	6.5E-03	-2.8E-03					3.7E-03	PAH	N/A	4.2E-07	N/A	N/A
100-41-4	Ethylbenzene				1.2E+02	1.2E+02			2.4E+02	7.70E+04	No	2.7E-02		
50-00-0	Formaldehyde	1.0E-05	8.7E+01	-3.8E+01					4.9E+01	3.00E+01	**Yes**	5.6E-03	2.10E-01	No
18540-29-9	Hexavalent Chromium	1.6E-07	1.4E+00	-6.0E-01					7.9E-01	1.30E-03	**Yes**	9.0E-05		
7783-06-4	Hydrogen Sulfide	2.3E-04	1.9E+03	-8.4E+02					1.1E+03	3.90E+02	**Yes**	1.3E-01	9.30E-02	**Yes**
193-39-5	Indeno(1,2,3-cd)Pyrene	7.6E-10	6.5E-03	-2.8E-03					3.7E-03	PAH	N/A	4.2E-07	N/A	N/A
7439-92-1	Lead	2.7E-07	2.3E+00	-1.0E+00					1.3E+00	5.40E+00	No	1.5E-04		
7439-96-5	Manganese	4.9E-07	4.2E+00	-1.8E+00					2.4E+00	7.70E+00	No	2.7E-04		
7439-97-6	Mercury	3.0E-07	2.5E+00	-1.1E+00					1.4E+00	5.60E-01	**Yes**	1.6E-04	4.03E-03	No
91-20-3	Naphthalene	9.4E-05	8.1E+02	-3.5E+02					4.6E+02	PAH	N/A	5.2E-02	N/A	N/A
7440-02-0	Nickel	1.9E-06	1.7E+01	-7.3E+00					9.5E+00	7.30E-01	**Yes**	1.1E-03	1.30E-02	No
108-95-2	Phenol	3.7E-06	3.2E+01	-1.4E+01					1.8E+01	7.70E+03	No	2.0E-03	1.30E+01	No
108-88-3	Toluene	5.6E-06	4.8E+01	-2.1E+01	3.0E+02	3.0E+02			6.3E+02	1.20E+04	No	7.2E-02	8.20E+01	No
108-38-3	Xylene	2.8E-06	2.4E+01	-1.0E+01	3.0E+02	3.0E+02			6.1E+02	2.70E+04	No	7.0E-02	4.90E+01	No
7440-66-6	Zinc	2.8E-06	2.4E+01	-1.0E+01					1.3E+01	1.40E+03	No	1.5E-03		

1. Emission factors developed from source test conducted on F-4460 in 1996, except ammonia

2. H2U Ammonia emissions based on BACT

3. Other toxic compounds are emitted from the Main Stack and will be emitted from the FCCU/CKR Scrubber. However these are expected to be the same as presented in the VIP ATC Application

Polycyclic Aromatic Hydrocarbon Equivalence

CAS No	PAH Name	Emissions Increase (lb/yr)	PEF	B(a)P Equivalent
56-55-3	Benzo(a)Anthracene	3.7E-03	0.1	3.7E-04
50-32-8	Benzo(a)Pyrene	3.7E-03	1	3.7E-03
205-99-2	Benzo(b)Fluoranthene	3.7E-03	0.1	3.7E-04
205-82-3	Benzo(k)Fluoranthene	3.7E-03	0.1	3.7E-04
53-70-3	Dibenzo(a,h)Anthracene	3.7E-03	0.1	3.7E-04
193-39-5	Indeno(1,2,3-cd)Pyrene	3.7E-03	1.05	3.9E-03
Benzo(a)Pyrene Equivalent				9.0E-03
PAH Chronic Trigger Level (Benzo(a)Pyrene Equivalent)				1.10E-02
Exceed Trigger Level?				No

TOXIC AIR CONTAMINANT TRIGGER LEVEL EXCEEDANCES

Source and Toxic Air Contaminant	Annual Emission Rate (lb/yr)	Toxic Risk Screen Trigger Level (lb/yr)	Toxic Risk Screen Triggered (Yes/No)
New Crude Tanks (Each)			
Hexane (-n)	34.82	83,000	No
Benzene	33.93	6.7	Yes
Toluene	**21.96**	39,000	**No**
Xylene (-m)	16.76	58,000	No

Toxic Air Contaminant Emission Factors
"Air Toxic Emission Factors for Combustion Sources Using Petroleum Based Fuels, Final Report, Vol. II"

Substance	**lb/MMBtu[1]**	**Substance**	**lb/MMBtu[1]**
Acenaphthene	2.36E-09	Fluorene	1.08E-08
Acenaphthylene	1.55E-09	Formaldehyde	1.11E-04
Acetaldehyde	1.53E-05	Hydrogen Sulfide[2]	(0) ND
Antimony	5.17E-07	Indeno (1,2,3-cd) pyrene	1.03E-07
Arsenic	8.50E-07	Lead	4.89E-06
Barium(2)	(0) ND	Manganese	6.81E-06
Benzene	6.47E-05	Mercury	1.80E-07
Benzo(a)anthracene	3.21E-08	Naphthalene	3.13E-07
Benzo(a)pyrene	8.96E-08	Nickel	9.42E-06
Benzo(b)fluoranthene	4.04E-08	Phenanthrene	1.46E-08
Benzo(g,h,I)perylene[2]	(0) ND	Phenol	5.63E-06
Benzo(k)fluoranthene	2.41E-08	Phosphorus[2]	(0) ND
Beryllium[2]	(0) ND	Propylene	2.17E-06
Cadmium	9.88E-07	Pyrene	2.48E-09
Chromium (Hex) [2]	(0) ND	Selenium	1.96E-08
Chromium (Total)	1.07E-06	Silver	1.61E-06
Chrysene	1.63E-09	Thallium[2]	(0) ND
Copper	4.21E-06	Toluene	1.07E-04
Dibenz(a,h)anthracene[2]	(0) ND	Xylene (Total)	3.73E-05
Ethylbenzene	3.02E-05	Zinc	2.08E-05
Fluoranthene	3.06E-09		

(1) Values are from Appendix B of EERC August 14, 1998 document "Air Toxic Emission Factors for Combustion Sources Using Petroleum Based Fuels, Final Report, Vol. II"
(2) Emission factors presented in the EERC document for these compounds were all based entirely on non-detect analytical values, therefore an emission factor of zero has been substituted based on CAPCOA health risk assessment guidelines

Sulfuric Acid Mist Emissions Comparison

VIP Amendments

Source	Uncontrolled SO_X Tons/Year	SO_3 Fraction of Total SO_X[5]	Uncontrolled SO_3 Tons/Year	Control Efficiency	Controlled SO_3 Tons/Year	H_2SO_4 Tons/Year
Baseline						
Main Stack	6,132.4	7%	429.3	0%	429.3	525.9
H2U - F-301[1]	5.80	5%	0.29	0%	0.29	0.4
Total Baseline						526.2
Post-Project						
F-105/F-106	18,761.0	7%	1,313.3	75%	326.2	399.6
New H2U	21.7	5%	1.1	0%	1.1	1.3
Total Post-Project						400.9
VIP Amendments Emissions Increase						-125.3

Notes:

1 - F-301 is assumed to be the shut-down unit because its baseline emissions were lower during the baseline period

2 - Baseline emissions from 4/1/2005 to 3/31/2008 submitted to BAAQMD July, 2008

3 - Maximum post-project SO_x emissions estimated to be 51.4 tons/day by Valero engineers

4 - Based on 35 ppmv TRS in fuel gas, per ATC application

5 - For Main Stack and F-105/F-106, estimated from existing Main Stack source testing.
For H2U firing, estimated value provided by BAAQMD

6 - Belco Pre-scrubber guaranteed SO_3 control efficiency: 60%;
Cansolv Scrubber SO_3 control efficiency (measured for Deleware City refinery): 37.9%;
Overall control efficiency: 75%

Basis

Pollutant presented as SO_2 in permitting documents represents total SO_X

SO_3 converts to H_2SO_4 on a one-to-one molecular ratio

Molecular weight SO_3 = 80

Molecular weight H_2SO_4 = 98

APPENDIX D- Contra Costa County Health Services letters/BACT Guidelines

BACT Guidelines

1. BACT Guideline – Boiler, CO - Refinery, Document # 17.4.1, 04/21/94
2. BACT Guideline Heater – Refinery Process, Document # 94.3.1, 1/14/08
3. BACT Guideline – Pressure Relief Valves, Emergency, Document # 135.1, 6/30/95
4. BACT Guideline – Flanges, Document # 78.1, 1/18/06
5. BACT Guideline – Process Valves, Document # 136.1, 1/18/06
6. BACT Guideline – Pumps, Document # 137.1, 1/18/06

BAY AREA AIR QUALITY MANAGEMENT DISTRICT
Best Available Control Technology (BACT) Guideline

Source Category

Source:	***Boiler, CO - Refinery***	Revision:	***2***
		Document #:	***17.4.1***
Class:	***All***	Date:	***04/21/93***

Determination

POLLUTANT	BACT 1. Technologically Feasible/ Cost Effective 2. Achieved in Practice	TYPICAL TECHNOLOGY
POC	1. *n/d* 2. *n/s*	1. *n/d* 2. *Minimum Furnace Gas bypassing + Good Comb ustion Practice* [c,d]
NOx	1. *n/s* 2. *80 ppm @ 3% O_2, Dry* [a]	1. *Selective Catalytic Reduction (SCR) + Flue Gas Recirculation + Technologies listed below* [c] 2. *Low NOx Burners + Reduced Air Preheat + Natural Gas or Treated Refinery Gas as Supplemental Fuel* [c,d]
SO_2	1. *Natural gas or Treated Refinery Gas Fuel w/ ≤50 ppm as hydrogen Sulfide as Supplemental Fuel* [c,d] 2. *Natural gas or Treated Refinery Gas Fuel w/ ≤100 PPm as hydrogen Sulfide as Supplemental Fuel* [c,d]	1. *Fuel Selection* [a,d] 2. *Fuel Selection* [a,d]
CO	1. *n/d* 2. *100 ppm @ 3% O_2, Dry* [c]	1. *n/d* 2. *Minimum Furnace Gas Bypassing + Good Combustion Practice* [a,d]
PM_{10}	1. *n/d* 2. *n/s*	1. *n/d* 2. *Electrostatic Precipitator* [a]
NPOC	1. *n/a* 2. *n/a*	1. *n/a* 2. *n/a*

References

a. SOHIO Refinery; Toledo, Ohio

c. BAAQMD
d. See also Catalyst Regeneration - Fluidized Catalytic Cracking Unit

BAY AREA AIR QUALITY MANAGEMENT DISTRICT
Best Available Control Technology (BACT) Guideline

Source Category

Source:	***Heater - Refinery Process***	Revision:	***4***
		Document #:	***94.3.1***
Class:	***≥50 MMBtu/hr Heat Imput***	Date:	***1/14/08***

Determination

POLLUTANT	BACT 1. Technologically Feasible/ Cost Effective 2. Achieved in Practice	TYPICAL TECHNOLOGY
POC	1. *n/d* 2. *n/s*	1. *n/d* 2. *Good Combustion Practice*[a]
NOx	1. *n/d* 2. *5 ppmv @ 3% O_2 Dry*[c,d,e]	1. *n/d* 2. *Selective Catalytic Reduction (SCR) + Low NO_x Burners*[c,d]
SO_2	1. *Natural Gas or Treated Refinery Gas Fuel w/ ≤50 ppmv Hydrogen Sulfide and ≤100 ppmv Total Reduced Sulfur*[a] 2. *Natural Gas or Treated` Refinery Gas Fuel w/ ≤100 ppmv Total Reduced Sulfur*[a]	1. *Fuel Selection*[a] 2. *Fuel Selection*[a]
CO	1. *n/d* 2. *10 ppmv @ 3% O_2 Dry*[c,d,f]	1. *n/d* 2. *Good Combustion Practice in Conjunction w/ Selective Catalytic Reduction (SCR) System*[c,d]
PM_{10}	1. *n/d* 2. *Natural Gas or Treated Refinery Gas Fuel*[a,b]	1. *n/d* 2. *Fuel Selection*[a,b]
NPOC	1. *n/a* 2. *n/a*	1. *n/a* 2. *n/a*

References

a. BAAQMD A #8407
b. BAAQMD A #30783
c. ARB BACT Clearinghouse, based on several South Coast AQMD projects. Recommend ammonia slip limit of 10 ppmv at 3% O_2.
d. Authority to Construct issued for BAAQMD applications 13424 & 13678 for CononcoPhillips Clean Fuels Expansion Project. For 85 MM BTU/hr furnace, the CO limit only applies at firing rates greater than 30 MM BTU/hr.
e. NO_x determination by Continuous Emission Monitor (3-hour average); or BAAQMD approved equivalent.
f. CO determination by Continuous Emission Monitor (3-hour average); or BAAQMD approved equivalent.

BAY AREA AIR QUALITY MANAGEMENT DISTRICT
Best Available Control Technology (BACT) Guideline

Source Category

Source:	***Pressure Relief Valves, Emergency***	Revision:	***4***
		Document #:	***135.1***
Class:	***All***	Date:	***06/30/95***

Determination

POLLUTANT	BACT 1. Technologically Feasible/ Cost Effective 2. Achieved in Practice	TYPICAL TECHNOLOGY
POC	1. *Rupture disk w/ vent to fuel gas recovery system, furnace, or flare with a recovery/destruction efficiency ≥98%*[a,T] 2. *Vent to fuel gas recovery system, furnace, or flare with a recovery/destruction efficiency ≥98%*[a,T]	1. *BAAQMD Approved Design and Operation*[a,T] 2. *BAAQMD Approved Design and Operation*[a,T]
NOx	1. *n/a* 2. *n/a*	1. *n/a* 2. *n/a*
SO_2	1. *n/a* 2. *n/a*	1. *n/a* 2. *n/a*
CO	1. *n/a* 2. *n/a*	1. *n/a* 2. *n/a*
PM_{10}	1. *n/a* 2. *n/a*	1. *n/a* 2. *n/a*
NPOC	1. *Rupture disk w/ vent to carbon adsorption system or vapor recovery system with a capture/recovery efficiency ≥90%*[a,T] 2. *Vent to carbon adsorption system or vapor recovery system with a capture/recovery efficiency ≥90%*[a,T]	1. *BAAQMD Approved Design and Operation*[a,T] 2. *BAAQMD Approved Design and Operation*[a,T]

References

a. BAAQMD
T. TBACT

BAY AREA AIR QUALITY MANAGEMENT DISTRICT
Best Available Control Technology (BACT) Guideline

Source Category

Source:	***Flanges***	Revision:	***3***
		Document #:	***78.1***
Class:	***All***	Date:	***01/18/06***

Determination

POLLUTANT	BACT 1. Technologically Feasible/ Cost Effective 2. Achieved in Practice	TYPICAL TECHNOLOGY
POC	1. *n/d* 2. *100 ppm expressed as methane measured using EPA Reference Method 21*[a,T]	1. *n/d* 2. *Graphitic Gaskets and BAAQMD Approved Inspection and Maintenance*[a,T]
NOx	1. *n/a* 2. *n/a*	1. *n/a* 2. *n/a*
SO_2	1. *n/a* 2. *n/a*	1. *n/a* 2. *n/a*
CO	1. *n/a* 2. *n/a*	1. *n/a* 2. *n/a*
PM_{10}	1. *n/a* 2. *n/a*	1. *n/a* 2. *n/a*
NPOC	1. *n/d* 2. *100 ppm expressed as methane measured using EPA Reference Method 21*[a,T]	1. *n/d* 2. *Graphitic Gaskets and BAAQMD Approved Inspection and Maintenance*[a,T]

References

a. BAAQMD
T. TBACT

BAY AREA AIR QUALITY MANAGEMENT DISTRICT
Best Available Control Technology (BACT) Guideline

Source Category

Source:	***Process Valves***	Revision:	***3***
		Document #:	***136.1***
Class:	***All***	Date:	***01/18/06***

Determination

POLLUTANT	BACT 1. Technologically Feasible/ Cost Effective 2. Achieved in Practice	TYPICAL TECHNOLOGY
POC	1. *n/d* 2. *100 ppm expressed as methane measured using EPA Reference Method 21*[a,T]	1. *n/d* 2. *Bellows Valves; Diaphragm Valves; Quarter Turn Valves; Live Loaded Valves; or Other Low-Emission Valves; Each w/BAAQMD Approved Inspection and Maintenance*[a,T]
NOx	1. *n/a* 2. *n/a*	1. *n/a* 2. *n/a*
SO_2	1. *n/a* 2. *n/a*	1. *n/a* 2. *n/a*
CO	1. *n/a* 2. *n/a*	1. *n/a* 2. *n/a*
PM_{10}	1. *n/a* 2. *n/a*	1. *n/a* 2. *n/a*
NPOC	1. *n/d* 2. *100 ppm expressed as methane measured using EPA Reference Method 21*[a,T]	1. *n/d* 2. *Bellows Valves; Diaphragm Valves; Quarter Turn Valves; Live Loaded Valves; or Other Low-Emission Valves; Each w/BAAQMD Approved Inspection and Maintenance*[a,T]

References

a. BAAQMD
T. TBACT

BAY AREA AIR QUALITY MANAGEMENT DISTRICT
Best Available Control Technology (BACT) Guideline

Source Category

Source:	***Pumps***	Revision:	***4***
		Document #:	***137.1***
Class:	***All***	Date:	***01/18/06***

Determination

POLLUTANT	BACT 1. Technologically Feasible/ Cost Effective 2. Achieved in Practice	TYPICAL TECHNOLOGY
POC	1. *100 ppm expressed as methane measured using EPA Reference Method 21*[a,T] 2. *500 ppm expressed as methane measured using EPA Reference Method 21*[a,T]	1. *Double Mechanical Seals w/ Barrier Fluid; Magnetically Coupled Pumps; Canned Pumps; Magnetic Fluid Sealing Technology; or Gas Seal System Vented to Thermal Oxidizer or Other BAAQMD Approved Control Device; all w/BAAQMD Approved Quarterly Inspection and Maintenance Program*[a,b,T] 2. *Double Mechanical Seals w/ Barrier Fluid, and BAAQMD Approved Quarterly Inspection and Maintenance Program*[a,b,T]
NOx	1. *n/a* 2. *n/a*	1. *n/a* 2. *n/a*
SO_2	1. *n/a* 2. *n/a*	1. *n/a* 2. *n/a*
CO	1. *n/a* 2. *n/a*	1. *n/a* 2. *n/a*
PM_{10}	1. *n/a* 2. *n/a*	1. *n/a* 2. *n/a*
NPOC	1. *100 ppm expressed as methane measured using EPA Reference Method 21*[a,T] 2. *500 ppm expressed as methane measured using EPA Reference Method 21*[a,T]	1. *Double Mechanical Seals w/ Barrier Fluid; Magnetically Coupled Pumps; Canned Pumps; or Magnetic Fluid Sealing Technology; all w/ BAAQMD Approved Quarterly Inspection and Maintenance Program*[a,b,T] 2. *Double Mechanical Seals w/ Barrier Fluid, and BAAQMD Approved Quarterly Inspection and Maintenance Program*[a,b,T]

References

a. BAAQMD
b. EPA NSPS: 40 CFR 60 Subpart GGG (Petroleum Refineries) and 40 CFR 60 Subpart VV (Chemical Plants)
T. TBACT

APPENDIX E
- CEQA Analysis For Coker Modification Project

CEQA Analysis For VIP Amendments

1. BAAQMD Comment Letter dated December 13, 2007 to the City of Benicia – Community Development Department
2. BAAQMD Comment Letter dated April 17, 2008 to the City of Benicia – Community Development Department
3. The City of Benicia Letter dated July 16, 2008 – 07PLN-32 VIP Use Permit Amendment

December 13, 2007

Mr. Charlie Knox, Director
Community Development Department
City of Benicia
250 East L Street
Benicia, CA 94510

Subject: Environmental Analysis for the Valero Improvement Project Amendments

Dear Mr. Knox:

Bay Area Air Quality Management District (District) staff reviewed the environmental analysis for the Valero Improvement Project (VIP) amendments submitted by Valero Refining Company (Valero) to the City of Benicia (City) in October 2007. We understand that the environmental analysis was prepared as part of a proposed Addendum to the certified EIR for the VIP approved by the City in 2003.

Valero's proposal to amend the original scope of the VIP would result in the following primary changes:

1 Instead of installing a small, new scrubber to treat sulfur dioxide (SO_2) gas from the Fluid Coker, Valero proposes to build a large, new scrubber to treat SO_2 gas from the Fluid Coker and the Fluid Catalytic Cracking Unit;

2 Instead of the new gas-fired Crude Unit Helper Furnace, Valero proposes a new high-pressure carbon monoxide (CO) furnace to accept CO gases from the Fluid Coker and the Fluid Catalytic Cracking Unit. The two existing CO furnaces would be converted to fire on refinery fuel gas only; and

3 Instead of retrofitting the existing Hydrogen Unit to meet the hydrogen demand of VIP, Valero proposes to replace one of the two existing hydrogen trains with a new, larger, and more efficient hydrogen train.

Below are our comments on the environmental analysis for the VIP amendments.

- At the top of page 3-19, the revised environmental analysis presents the San Francisco Bay Area Air Basin California Clean Air Act attainment classifications for ozone and carbon monoxide. To complete the discussion, the particulate matter (PM) and the other pollutants' attainment status should be included in the document. For the current attainment status of the

Bay Area, please see the table at the following web link: http://www.baaqmd.gov/pln/air_quality/ambient_air_quality.htm.

- The District strongly recommends deleting from page 3-31 the "use of ULSD fuel" as a diesel emission mitigation measure since ULSD fuel is already mandated by the California Air Resources Board.

  The environmental analysis refers to the Phase II Cogeneration, while Valero has recently decided to cancel the Authority to Construct, issued by the District for the associated equipment from Phase II Cogeneration, such as source SG-1032 (pages 1-5, 2-18, 3-62, 4-2 and throughout).

- Figure 3.1.1-8 shows the incorrect existing view for Rose Drive (page 3-11)

- Table 3.1.3-1 (page 3-38) does not match what is calculated in Table 7 (Appendix B) for greenhouse gas emissions.

- In the second paragraph on page 3-62 (Public Health section 3.1.8), the environmental analysis states: "For each analysis, the incremental impacts at the off-site point of maximum impact (PMI) from the VIP Amendments were added to the impacts at the PMI identified in the Certified EIR. The overall impact was then compared to significance levels established by the Office of Environmental Health Hazard Assessment (OEHHA)." However, a comparison of the overall impact is not included in this section. The overall impacts identified in the VIP Amendments and the certified EIR should be included in Tables 3.1.8-2 and 3.1.8-3.

  The environmental analysis should state the proposed sulfur content of the feed (not the fuel) to the H_2 plant and how that sulfur rate would be achieved.

- Sulfuric Acid Mist (SAM): the environmental analysis did not address the emissions of SAM, which triggers the Prevention for Significant Determination (PSD) at 7 tons per year. The document should explain that SAM emissions from the completed parts of the VIP are larger than expected. The risk assessment should include the impact from the additional SAM. Valero should estimate whether there would be reductions in SAM due to the reductions in SO_2 emitted.

  New Desalter at Pipestill: the installation of a new desalter may result in additional loading of benzene and POC to the wastewater even if there is no increase in the amount of wastewater from the system. The document should analyze whether the installation of the new desalter would result in any additional emissions. This analysis should be performed using the Waters8 program. If additional toxics will be emitted, the impacts should be included in the risk assessment.

  Selective Catalytic Reduction (SCR) at source F-105: the environmental analysis should consider whether the high-sulfur and high-particulate products of combustion from source F-105 would contaminate the SCR catalyst at source F-105.

- The environmental analysis should include the VIP and VIP amendment total CO_2 emissions analysis. Additionally, it should provide the following metric: CO_2 emissions per unit of hydrogen for the old hydrogen train and for the new one.

Please contact Thu Bui, Senior Air Quality Engineer, at 415-749-5119 if you have any questions regarding these comments.

Sincerely,

Jean Roggenkamp
Deputy Air Pollution Control Officer

cc: BAAQMD Director John F. Silva

April 17, 2008

Mr. Charlie Knox, Director
Community Development Department
City of Benicia
250 East L Street
Benicia, CA 94510

Subject: Environmental Analysis for the Revised Valero Improvement Project Amendments

Dear Mr. Knox:

Bay Area Air Quality Management District (District) staff reviewed the February 2008 revisions to the environmental analysis for the Valero Improvement Project (VIP) amendments originally submitted by Valero Refining Company (Valero) to the City of Benicia (City) in October 2007. District staff also provided comments on the original VIP amendments. We understand that the environmental analysis was prepared as part of a proposed Addendum to the certified EIR for the VIP approved by the City in 2003.

The main changes from the previously proposed VIP amendments are:

1. Design change: Valero will replace both existing carbon monoxide (CO) boilers (S-3 and S-4) with two new CO boilers that can operate at a higher pressure instead of replacing only one boiler. S-3 and S-4 cannot be modified to operate at a high pressure so both will be shut down instead of reused.

2. Design change: Valero will install a new stack (~100 ft) with stainless steel material so that it can handle the corrosive gases, such as acid mist coming out of the new scrubber. The existing main stack's refractory cannot withstand the corrosive gases. The main stack will still be in use for other existing sources.

Below are our comments on the environmental analysis for the revised VIP amendments.

- On page 1-5 four projects have been identified, but only two are listed.
- The third paragraph of page 3-20 should be modified to state "The 2005 Ozone Strategy indicates how the Bay Area region would attain the State ozone standard by the earliest practicable date." instead of, "The 2005 Ozone Strategy indicates how the BAAQMD will attain the State ozone standard by the earliest practicable date."

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- Overall, the net reduction in consumption of gaseous fuels has changed, relative to the certified EIR, from 30 MMBtu/hr in the VIP amendments to 21 MMBtu/hr in the revised VIP amendments. This change needs to be incorporated in pages 3-57 and A-11.
- District staff is in the process of determining the baseline precursor organic compounds (POC) emission from the Pipe Still (PS) furnace. District staff already performed source tests on March 25, 26 and 27, 2008 and is awaiting results at this time. The estimated 16.1 tons/hr of POC, which is different from the certified EIR value of 6.5 tons/hr, will be adjusted once the results are known.
- District staff will calculate and impose the total fugitive emissions from valves, flanges/connectors and pumps. If there is an increase in the total fugitive component emissions, the facility's cumulative emissions for the project shall be adjusted to reflect the difference between emissions, based on predicted versus actual component counts. The Owner/Operator may have enough remaining contemporaneous emissions reduction credits (ERCs) to cover any increase in POC fugitive emissions beyond the original projection. If not, the Owner/Operator shall provide to the District all additional required offsets at an offset ratio of 1.15:1. If the actual components count is less than predicted, at the completion of the project, the total will be adjusted accordingly. Any ERCs applied by the facility in excess of the actual total fugitive emissions will be credited back to the Owner/Operator prior to issuance of the permits.
- Excavation equipment and operations generate fugitive dust emissions, exhaust emissions of criteria pollutants, and toxic air contaminants (TAC), specifically diesel exhaust particulate matter (DPM), a known carcinogen. All relevant construction activities associated with the VIP amendments should comply with the dust mitigation measures in the District's CEQA guidelines. The VIP amendments should also include all feasible mitigation measures to reduce construction equipment exhaust emissions to lessen pollutant emissions. Such measures could include, but are not limited to: maintaining properly tuned engines; minimizing the idling time of diesel powered construction equipment to two minutes; using alternative powered construction equipment (i.e., hybrid, compressed natural gas, biodiesel, electric); using add-on control devices such as diesel oxidation catalysts or particulate filters; and requiring all contractors to use equipment that meets California Air Resources Board's (ARB) most recent certification standard for off-road heavy duty diesel engines.

Please contact Thu Bui, Senior Air Quality Engineer, at 415-749-5119 if you have any questions regarding these comments.

Sincerely,

Jean Roggenkamp
Deputy Air Pollution Control Officer

cc: BAAQMD Director John F. Silva

CITY HALL • 250 EAST L STREET • BENICIA, CA 94510 • (707) 746-4200 • FAX (707) 747-8120

July 16, 2008

Todd Lopez
Valero Refining Company
3400 East Second Street
Benicia, CA 94510

RE: 07PLN-32 VIP Use Permit Amendment

Dear Mr. Lopez,

On July 10, 2008, the Planning Commission approved your request for a Use Permit amendment for the Valero Improvement Project at 3400 East Second Street, based on the attached findings and conditions in Resolution No.08-5 (PC).

Please be advised that the decision of the Planning Commission is final ten (10) business days from the date of approval unless an appeal to the City Council is filed. The deadline to file an appeal with the Community Development Department is 5pm, Thursday, July 24, 2008.

If you have any questions, please call the Community Development Department at (707) 746-4280

Sincerely,

Gina D. Eleccion
Management Analyst

Encl

RESOLUTION NO. 08-5

A RESOLUTION OF THE PLANNING COMMISSION OF THE CITY OF BENICIA APPROVING A USE PERMIT FOR AMENDMENTS TO THE VALERO IMPROVEMENT PROJECT (07PLN-00032)

WHEREAS, on April 28, 2003, the City of Benicia Planning Commission certified an Environmental Impact Report (EIR) and approved a conditional Use Permit for the Valero Improvement Project (Application PLN 2002-00022) to be carried out at the Valero Benicia Refinery; and

WHEREAS, Valero Refining Company – California has submitted Application 07PLN-00032 requesting Use Permit approval for amendments to the Valero Improvement Project (VIP) that was approved in 2003; and

WHEREAS, an Addendum to the VIP EIR disclosing the environmental effects of the VIP Amendments was prepared and has been made available for public comment since June 11, 2008; and

WHEREAS, the Planning Commission has considered the Addendum with the Final EIR for the VIP; and

WHEREAS, the Planning Commission at a regular meeting on July 10, 2008, considered and discussed the Addendum, the staff report and the proposed Use Permit with conditions of approval for the VIP Amendments, and conducted a public hearing to receive testimony from members of the public regarding the documentation and the proposed Use Permit;

NOW, THEREFORE, BE IT RESOLVED THAT the Planning Commission of the City of Benicia makes the following findings based on the application for the Valero Improvement Project Amendments, the staff report, the Addendum to the Final EIR for the VIP together with the Final EIR itself, and information presented at the public hearing on July 10, 2008:

1) The Addendum to the VIP EIR is appropriate under the California Environmental Quality Act (CEQA) to address the environmental effects of the VIP Amendments because:

   a) Neither the VIP Amendments themselves, nor changes in circumstances under which they would be undertaken, would result in the involvement of new significant effects or a substantial increase in severity of previously identified significant effects; and
   b) No new information not known at the time of the EIR shows significant effects not discussed in the EIR or that significant effects identified in the EIR would be substantially more severe as a result of the VIP Amendments; and
   c) No mitigation measures or alternatives previously found not to be feasible would in fact be feasible and would substantially reduce one or more significant effects of the project.

APPENDIX F

Supporting Documents

1. VIP Permit Evaluation, A/N 5846 (hard copy)

EVALUATION REPORT
VALERO REFINING CO.
Application #17681 - Plant #12626

3400 E. Second St.
Benicia, CA 94510

I. BACKGROUND

Valero has applied for a change of condition to the Authority to Construct/Permit to Operate for the following equipment:

S-1010 Hydrogen Plant Deaerator vent

Valero would like the flexibility to route the vents from the Refinery boiler feed water deaerator drum to either the boilers (current limit) or to the atmosphere (proposed option) as long as the atmospheric vents comply with Regulation 8, Rule 2 – Miscellaneous Operation. The District issued Condition # 15512 that required the two hydrogen vents to two existing boilers (S-40 and/or S-41) at all times after discovered that the deaerator vents emitted 63.6 lbs/day of methanol emissions, containing 24 lbs/day of Non Methane Organic Compounds (NMOC) per District's source test reports in August 1997. The basis for Condition # 15512 was specified as Reasonably Achieved Control Technology (RACT).

In February 1999, Valero replaced the catalyst into the "Low Methanol Production" catalyst at the Hydrogen Unit, Train B. Then in February 2006, Valero also replaced the Hydrogen Unit, Train A with the "Low Methanol Production" catalyst. Hence since 2006, both Hydrogen Unit Trains A & B have been operating with the Low Methanol Production catalyst designated as LK-823 LTS catalyst.

In July 2006, Valero conducted a source test on the deaerator vents and the methanol emissions have been reduced to 12.9 lbs/day, containing 4.8 lbs/day of NMOC. See attached test results from BAAQMD in 1997 and Best Environmental in 2006. Valero met with District's management on June 26, 2008 to discuss the possibility of changing the language in Condition # 15512 to the specific RACT limit. In this case, the RACT is limit is the 15 lbs/day and containing a concentration of less than or equal 300 ppmv of total carbon on a dry basis of Regulation 8-2-301.

The deaerator vent to atmosphere will allow both boilers (S-40 and S-41) to be shut down together for inspection or repair of the common equipment such as the knock-out drum upstream of the boilers. At the same, it could potentially reduce the fired duty to heat up the vent stream.

Based on the information provided by Valero and the reasons above, the District's staff has decided to grant Valero the above request if Valero can demonstrate compliance by testing the two-deaerator vents initially and every 3 months thereafter. Valero may request for an annual source testing after the unit consistently demonstrates compliance with the requirement for four consecutive times. BACT analysis and emission offsets are not required since there is no emission increase from this application.

II. EMISSION CALCULATIONS

This application will not result in an emission increase.

III. PLANT CUMULATIVE INCREASE SINCE 4/5/1991

There are no net changes to the plant cumulative emissions.

IV. TOXIC SCREENING ANALYSIS

This application will not result in an increase in toxic air contaminant emissions from existing levels. Therefore, a Toxic RSA is not required per Regulation 2-5.

V. BEST AVAILABLE CONTROL TECHNOLOGY

This application will not result in any emission increase from existing levels. Therefore, BACT is not triggered per Regulation 2-2-301.

VI. OFFSETS

This application does not result in emission increases. Therefore, offsets are not needed per Regulation 2-2-302.

VII. STATEMENT OF COMPLIANCE

The deaerator vents from the hydrogen plant S-1010 are subject to and expected to continue to comply with Regulation 8-2-301 – Miscellaneous Operations requirement, which is emitting less than 15 lbs/day and containing a concentration of less than or equal 300 ppmv of total carbon on a dry basis.

This project qualifies for a CEQA categorical exemption of Regulation 2-1-312.6 for permit applications relating exclusively to the repair, maintenance or minor modification of existing facilities, and therefore is not subject to CEQA review.

This project is over 1,000 ft from the nearest public school and is therefore not subject to the public notification requirements of Regulation 2-1-412.

Toxics, BACT, offsets, and PSD are not triggered.

VIII. CONDITIONS

Permit condition # 15512, Valero Refining Company, Application # 17877, amended by Application # 17877, Plant # 12626.

1. The Owner/Operator shall route the precursor organic compounds from the deaerator vents associated with the operation of S-1010 Hydrogen Plant downstream to the S-40 and/or S-41 boilers or to atmosphere ~~at all times in which the source is in operation~~. ~~[RACT]~~ Whenever the deaerator vents are routed to atmosphere with S-1010 in operation, the Owner/Operator shall conduct a source test on the vents within 60 days of initially routing the vents to atmosphere and quarterly thereafter, to demonstrate compliance with Regulation 8 Rule 2 Section 301. The Owner/Operator shall obtain approval for all source test procedures

from the District's Source Test Section prior to conducting any tests. The Owner/Operator shall notify the District's Source Test Section, in writing, of the source test protocols and projected test dates at least 7 days prior to testing. The Owner/Operator shall submit the source test results to the District staff no later than 60 days after the source test. After submitting the results of four consecutive compliance source tests of the deaerator vents, the Owner/Operator may request an annual source test upon District approval. [Basis: Regulation 8-2-301]

X. RECOMMENDATION

Issue a conditional change to the Permit to Operate to Valero Refining Company for the following equipment:

S-1010 Hydrogen Plant Deaerator vent

Thu H. Bui
Senior Air Quality Engineer
Engineering Division
Date:

THB:T:\Valero\17681\17681e\8/20/08

EVALUATION REPORT
VALERO REFINING COMPANY
Application #17876 - Plant #12626

3400 East Second St.
Benicia, CA 94510

I. BACKGROUND

Valero has applied for a change of condition to the Permit to Operate for the following equipment:

S-1034 Butamer Unit Deisobutanizer (T-4801)
S-1035 Butamer Unit Reactor Effluent Stripper (T-4802) abated by A-67 Caustic Scrubber
S-1049 Butamer Reactor (R-4803A), N-Butane Conversion
S-1050 Butamer Reactor (R-4803B), N-Butane Conversion

Valero would like to install a new Butamer Unit, which is a component of the Valero Improvement Project (VIP) under Application # 5846. Butamer optimizes feedstocks to the Alkylation Unit (S-1007) by converting normal butane (nC4) to isobutane (iC4), thereby reducing the isobutane imports via railcar and eliminating excess normal butane. Valero currently imports as much as five rail cars per day (1,825 rail cars per year).

Butamer is an isomerization process with reactor operating conditions that are less severe than typical hydrofining conditions. The maximum operating temperature at the isomerization reactors is around 400 ^{o}F; therefore, heater and furnaces are not necessary at the reactors. Instead, the Butamer Unit will use total 50 MMBtu/hr of steam to provide necessary energy (heat). This amount of steam will be provided from one or more refinery boilers. The certified EIR of the VIP estimated an increase in fired duty of 400 MMBtu/hr. However, with the replacement of a hydrogen unit in the VIP Amendments, there will be a net energy reduction of 21 MMBtu/hr from 400 MMBtu/hr, since the new Hydrogen Unit will have a more efficient hydrogen furnace with additional steam production and shutdown of a less efficient hydrogen furnace.

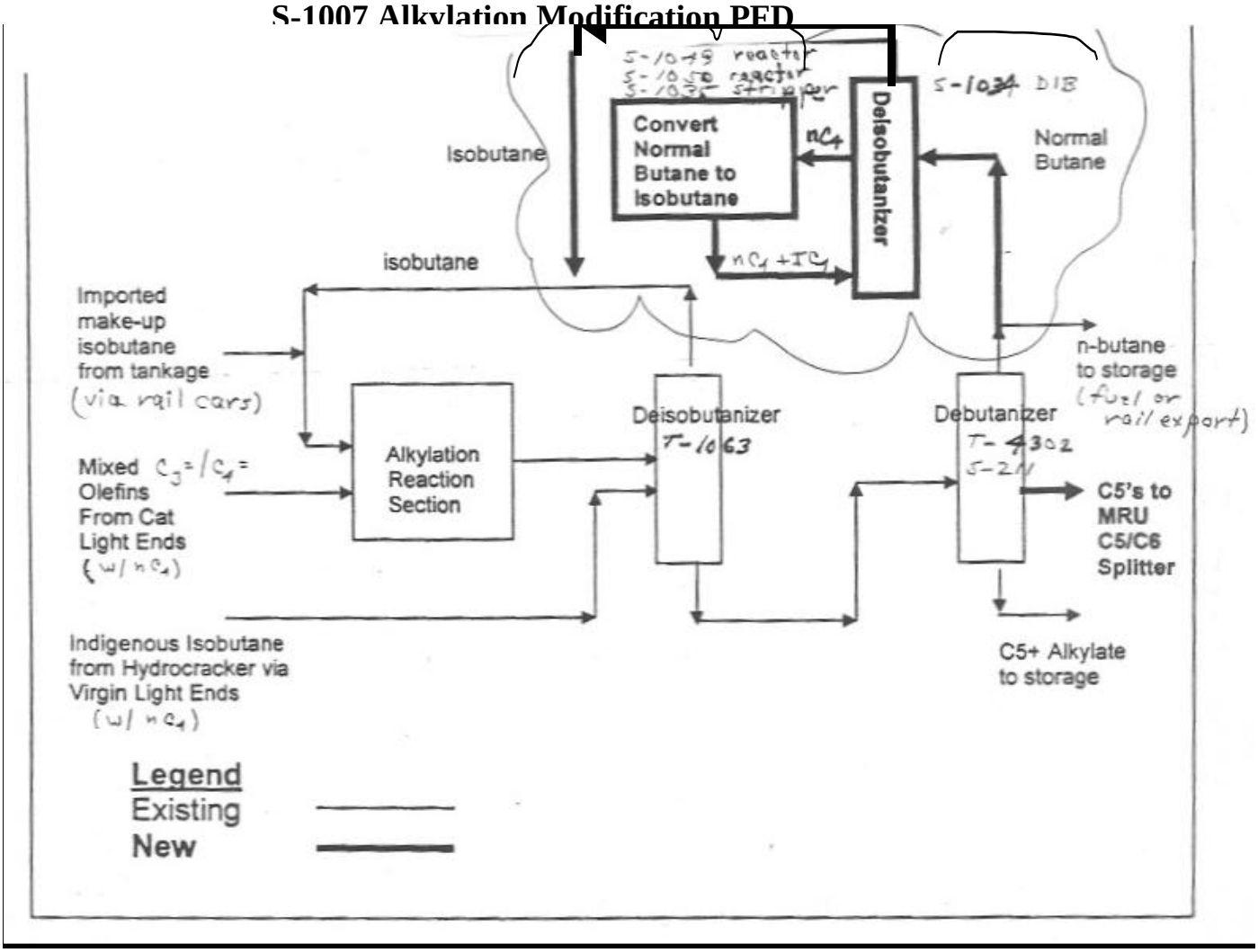
The normal butane from the Debutanizer S-211 of the Alkylation Unit is sent to the new Deisobutanizer (S-1034) along with refinery hydrogen and Percholoethylene (PERC) into the two new Reactor (S-1049 And S-1050). The reactors' effluent is then entering into the Stripper (S-1035) and being stripped by the water and caustic scrubber (A-67). The mix iso/normal butane is then recycled back to the Deisobutanizer in the Alkylation Unit. See Attachment I, S-1007 Alkylation Modification PFD and Attachment II, Butamer Unit, for details below.

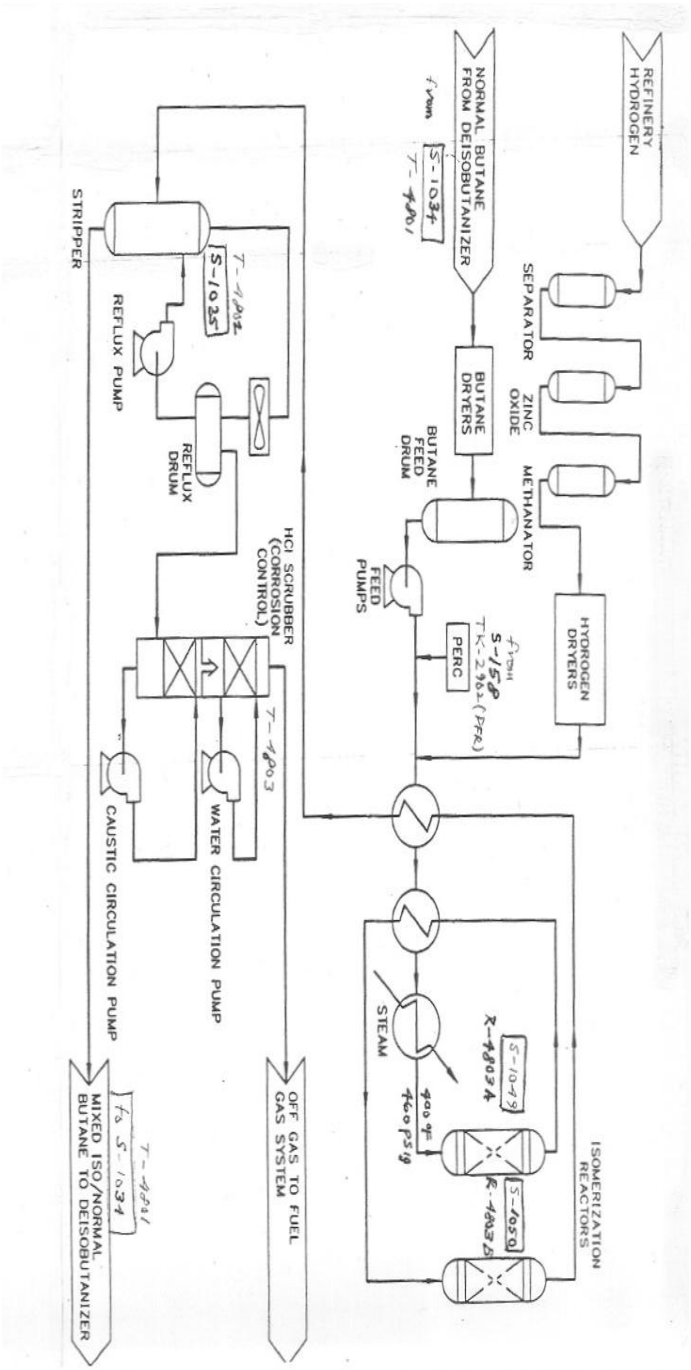
PERC is used as a catalyst promoter. A small amount of PERC is continuously injected into the process prior to the heat exchangers and Butamer reactors. As the PERC flows through the heat exchangers and reactors, it reaches the proper pressure and temperature and is converted into Hydrogen Chloride (HCl) in the presence of hydrogen and catalyst. This HCl provides the acidic conditions on the catalyst to promote the isomerization process that converts normal butane to isobutane. Valero does not anticipate any formation of Dioxins from PERC because oxygen is not present in the Butamer process. Valero will use approximately 7000 to 10,000 gallons per year of PERC. The increase in PERC storage has been included in permitted NSR Application # 16302 for S- 158 PERC Storage Tank.

Reactor effluent containing excess HCl is sent through a fractionation tower (S-1035, Butamer Effluent Stripper T-4802) to separate the HCl and light ends (propanes and lighter) from the isobutane product. The overhead HCl and light ends are then sent to a scrubber tower (A-67, Scrubber T-4803) to neutralize the HCl with caustic. The light ends from the Scrubber are then sent to the fuel gas system.

Attachment I

S-1007 Alkylation Modification PFD




REFINERY HYDROGEN
NORMAL BUTANE FROM DEISOBUTANIZER
SEPARATOR
ZINC OXIDE
METHANATOR
BUTANE DRYERS
BUTANE FEED DRUM
FEED PUMPS
PERC
HYDROGEN DRYERS
ISOMERIZATION REACTORS
STEAM
400 psi
460 PSIg
HCl SCRUBBER (CORROSION CONTROL)
OFF GAS TO FUEL GAS SYSTEM
WATER CIRCULATION PUMP
CAUSTIC CIRCULATION PUMP
REFLUX DRUM
REFLUX PUMP
STRIPPER
MIXED ISO/NORMAL BUTANE TO DEISOBUTANIZER

Valero indicated that all pressure relief devices in hydrocarbon service would be routed to the refinery's flare gas recovery system. Valero does not expect flaring to occur during startup and shutdown of Butamer. Development of detailed procedures for startup and shutdown of Butamer will include steps to minimize or eliminate flaring. The annual update of Valero's Flare Minimization Plan, which includes the Butamer Unit was submitted to the District on July 16, 2008

The Butamer project is considered as a modification to the Alkylation Plant. Instead of sending the normal butane from the Alkylation Unit to fuel storage or rail export, the normal butane is being converted to isobutane and recycle back to Alkylation Plant as feedstock. There is no increase of Alkylation throughput. This project only increases the fugitive emissions from pumps, valves, flanges, and PSDs. These increased emissions were already included in the VIP permit.

Valero is working to submit an application to modify the TV permit for this minor revision application.

II. EMISSION CALCULATIONS

The emissions for Butamer Unit are quantified for information only. The Fugitive emission increases are offset through contemporaneous emission reduction credits in VIP. The total 0.23 ton/yr of fugitive emissions was the estimated 0.38 ton/yr in the VIP, which is part of the 3.0 ton/yr of fugitive emissions.

Component	Emission Factor (lbs/day/source)*	Emissions			
		Counts	Lb/day	Lb/yr	Ton/yr
S-1034 Deisobutaner					
Pump	0.0117	2	0.0234	8.54	0.00
Valves	0.00119	300	0.357	130.31	0.07
Flanges/Connectors	0.00166	150	0.249	90.89	0.05
PSD	0.00275	6	0.0165	6.02	0.00
S-1035 Stripper					
Pump	0.0117	2	0.0234	8.54	0.00
Valves	0.00119	80	0.0952	34.75	0.02
Flanges/Connectors	0.00166	24	0.03984	14.54	0.01
PSD	0.00275	3	0.00825	3.01	0.00
S-1034 Deisobutaner					
Pump	0.0117	2	0.0234	8.54	0.00
Valves	0.00119	700	0.833	304.05	0.15
Flanges/Connectors	0.00166	210	0.3486	127.24	0.06
PSD	0.00275	7	0.04675	17.06	0.01
Total			**2.064**	**753.48**	**0.38**

*Factors from Valero Fugitive Program CY 2003, approved by District from Valero's Actual Monitoring Data

III. PLANT CUMULATIVE INCREASE SINCE 4/5/1991

This Butamer Unit will increase 0.23 ton/yr of VOC emission to the plant cumulative emissions.

IV. TOXIC SCREENING ANALYSIS

The toxic emissions are from equipment in chemical service. The fugitive emissions are estimated below. None of the toxic exceeds the toxic air contaminant trigger levels; therefore, a Toxic RSA is not required per Regulation 2-5.

Component	Emission Factor (lbs/day/source)*	Emissions			
		Counts	Lb/day	Lb/yr	BAAQMD Trigger Lb/yr
S-1035 Stripper (HCL reqd for S/U)					
Pump	0.0117	0	0.00	0.00	
Valves	0.00119	2	0.002	0.869	
Flanges/Connectors	0.00166	3	0.005	1.818	
PSD	0.00275	1	0.00275	1.004	
Total			0.01	3.69	1,400

S-1035 Stripper (Sodium Hydroxide)					BAAQMD Trigger Lb/yr
Pump	0.0117	3	0.035	12.812	
Valves	0.00119	24	0.029	10.424	
Flanges/Connectors	0.00166	40	0.066	24.236	
PSD	0.00275	1	0.00275	1.004	
Total			0.13	48.48	930

S-1049/1050 Reactors (Perchloroethylene)					BAAQMD Trigger Lb/yr
Pump	0.0117	2	0.023	8.541	
Valves	0.00119	26	0.031	11.293	
Flanges/Connectors	0.00166	7	0.012	4.241	
PSD	0.00275	2	0.006	2.008	
Total			0.07	26.08	33

V. BEST AVAILABLE CONTROL TECHNOLOGY

This application does not exceed the 10 lb POC/highest day trigger level. Therefore, BACT is not triggered per Regulation 2-2-301. However, as part of VIP, all fugitive components from the Alkylation Modification/Butamer Unit are subject to BACT.

VI. OFFSETS

Valero uses the contemporaneous onsite emission reduction credits from the projects listed below to offset the fugitive emission increases from this application per Regulation 2-2-302.

Valero Emission Reduction Credit (ERC) "Refunds":

Appl. Number	Description	Tons/year POC	NOx	SO2	PM10
	Cogen Phase II Cancellation Emission Reduction Credits:				
2695	Refund of POC Credits from Certificate 682	(7.622)			
2695	Refund of NOx Credits from Certificate 703		(18.256)		
2488	Cogen Phase I Boiler S/D Contemporaneous Reductions				(2.796)
	Subtotal, Cogen Phase II Cancellation Emission Credits	(7.622)	(18.256)		(2.796)
	VIP Contemporaneous Emission Reductions:				
2390	Light Ends Rail Rack Loading Arm Drain Controls	(15.800)			
2035	MTBE Phaseout Shipping Emissions	(3.480)	(36.700)		(1.610)
2488	Cogen Phase I Boiler S/D Contemporaneous Reductions				(0.990)
	Subtotal, VIP Contemporaneous Emission Reductions	(19.280)	(36.700)		(2.600)
	Total, Cogen Phase II and VIP Emission Reduction Credits	*(26.902)*	*(54.956)*		*(5.396)*
	Project Emission Increases (including offset ratios):				
	VIP Crude Tanks (under construction):	3.30			
	VIP Fugitive Emissions (to date):				
17876	- Butamer Unit - permit basis	0.380			
13009	- ULSD Unit - permit basis	0.640			
16866	- ULSD Unit - final component count adjustment	0.570			
13009	- ULSD Unit - PM10 offsets originally provided by Certificate 914, but PM10 usage restricted to (Tesoro) Avon.				0.037

Total Project Emission Increases	*4.638*	*0.000*	*0.000*	*0.037*
Net ERC's to Valero	**(22.012)**	**(54.956)**	**0.000**	**(5.359)**

VII. STATEMENT OF COMPLIANCE

Sources of this application are subject to and expected to comply with Regulation 8-18 and 8-28 for Equipment Leak and Pressure Relief Devices.

The Alkylation Modification/Butamer Unit is subject and expected to comply with NSPS Part 60, Subpart GGG (BAAQMD Reg. 10-59) and NSPS Part 60, Subpart VV (BAAQMD Reg. 10-52).

Valero is not located within 1,000 feet of any school. The public notification requirements of Regulation 2-1-412 are not required.

This project is subject to CEQA review. On July 17, 2008, the City of Benicia Community Development Department sent a letter to Valero certified that the elements of the Alkylation Unit Modification/Butamer Unit are consistent with the Land Use Permit granted by the city's Planning Commission on April 23, 2003. Therefore, the CEQA requirement has been satisfied.

Toxics, and PSD are not applicable.

VIII. CONDITIONS

Condition # 24080 for Alkylation/Butamer Unit, Application #17876, Plant # 12626 – Valero Refinery.

FUGITIVE EQUIPMENT

5. a. The Owner/Operator shall equip all light hydrocarbon control valves installed as part of the VIP with live loaded packing systems and polished stems, or equivalent. [Basis: BACT, Cumulative Increase, offsets]

b. The Owner/Operator shall equip all flanges/connectors installed in the light hydrocarbon piping systems as a result of the VIP with graphitic-based gaskets unless the service requirements prevent this material. [Basis: BACT, Offsets, Cumulative Increase]

c. The Owner/Operator shall equip all new light hydrocarbon centrifugal pumps installed as part of the VIP with a seal-less design or with dual mechanical seals with a heavy liquid barrier fluid, or equivalent. [Basis: BACT, Offsets, Cumulative Increase]

d. The Owner/Operator shall integrate all new fugitive equipment installed as part of the VIP, in organic service, into the owner's fugitive equipment monitoring and repair program. [Basis: Compliance monitoring]

6. The Owner/Operator shall submit a count of installed pumps, valves, and flanges/connectors every 180 days until completion of the project. For flanges/connectors, the owner/operator shall also provide a count of the number of graphitic-based and non-

graphitic gaskets used. The Owner/Operator has been permitted to install fugitive components (1,080 valves, 384 flanges/connectors, 6 pumps, 26 PSDs) with a total POC emission rate of 0.38 TPY for the entire Alkylation Modification/Butamer Unit Project. If there is an increase in the total fugitive component emissions from the Alkylation Modification/Butamer Unit Project, the plants cumulative emissions for the Alkylation Modification/Butamer Unit Project shall be adjusted to reflect the difference between emissions based on predicted versus actual component counts. The Owner/operator may have enough remaining contemporaneous emissions reduction credits (ERC's) to cover any increase in POC fugitive emissions beyond the original projection. If not, the Owner/Operator shall provide to the District all additional required offsets at an offset ratio of 1.15:1 no later than 14 days after the submittal of the final POC fugitive equipment count for the Alkylation Modification/Butamer Unit Project. If the actual component count is less than the predicted, at the completion of the Alkylation Modification/Butamer Unit Project, the total will be adjusted accordingly. Any ERC's applied by the facility in excess of the actual total fugitive emissions will be credited back to Owner/Operator prior to issuance of the permits. [Basis: Cumulative Increase, Toxics]

IX. RECOMMENDATION

Issue a conditional Authority to Construct to Valero for the following equipment:

S-1034 Butamer Unit Deisobutanizer (T-4801)
S-1035 Butamer Unit Reactor Effluent Stripper (T-4802) abated by A-67 Caustic Scrubber
S-1049 Butamer Reactor (R-4803A), N-Butane Conversion
S-1050 Butamer Reactor (R-4803B), N-Butane Conversion

_____
Thu H. Bui
Senior Air Quality Engineer
Engineering Division

Date: _____

THB:F:\Valero\17876\17876e

EVALUATION REPORT
Valero Refining Company
Application #18164 - Plant #12626

3400 E. Second St.,
Benicia, CA 94510

I. BACKGROUND

In November 2005, Valero entered into a Clean Air Act Settlement with the U.S. Environmental Protection Agency and several state air quality agencies. This settlement is more commonly known as the "Consent Decree". The Consent Decree requires that the following sources be "affected facilities" under 40 CFR 60, NSPS Subparts A and J.

S-5 Fluid cat cracker, FCC fresh feed, refinery FCCU REGENERATOR (R-702)

S-7 Process Heater/Furnace, Refinery make gas, Front firing PROCESS FURNACE, JET FUEL HYDROFINING, F-103, 53MM Btu/hr

S-18 Refinery Waste Gas Flare – Subject to Monitoring SOUTH FLARE, ST-2101

S-19 Refinery Waste Gas Flare – Subject to Monitoring NORTH FLARE, ST-2103

S-20 Process Heater/Furnace, Refinery make gas, Front firing PROCESS FURNACE, NAPHTHA HYDROFINING, F-104, 62 MM Btu/hr

S-24 Process Heater/Furnace, Refinery make gas, Front firing PROCESS FURNACE, CAT FEED HYDROFINING, F-601

S-25 Process Heater/Furnace, 230 MM BTU/hr max, Refinery make gas PROCESS FURNACE, CAT FEED PREHEAT, F-701

S-30 Process Heater/Furnace, 326 MM BTU/hr max, Refinery make gas PROCESS FURNACE, PFR PREHEAT, F-2901

S-31 Process Heater/Furnace, Refinery make gas, Front firing PROCESS FURNACE, PFR PREHEAT, F-2902

S-32 Process Heater/Furnace, Refinery make gas, Front firing PROCESS FURNACE, PFR PREHEAT, F-2903

S-33 Process Heater/Furnace, Refinery make gas, Front firing PROCESS FURNACE, PFR PREHEAT, F-2904

S-34 Process Heater/Furnace, Refinery make gas, Front firing PROCESS FURNACE, GAS HEATER, F-2905, 74MM Btu/hr

S-35 Process Heater/Furnace, Refinery make gas, Front firing PROCESS FURNACE, GAS HEATER, F-2906, 14MM Btu/hr

S-42 Process Heater/Furnace, Refinery make gas, Front firing PROCESS FURNACE, TREAT GAS PREHTR, F-1060

A-57 Thermal Oxidizer for WWTP On-Site Equipment

This NSR engineering evaluation also includes discussion and the addition of a new permit condition for the EPA approved Alternate Monitoring Plan (AMP) for the span on the NOx continuous emission monitoring systems (CEMS) for the following sources:

S-220 Combustion, Furnace - Other, Refinery make gas (RMG) (F-4460 Hot Oil Furnace)

S-237 BOILER-SG1032
S-1031 Heat Recovery Steam Generator

Source S-5, FCCU

Source S-5, FCCU is subject to the NSPS 40 CFR 60, Subpart J carbon monoxide (CO) and particulate matter (PM) standards per the Consent Decree, Paragraphs 94, 95, 96, 100, 101, and 102 as shown in the excerpts from the Consent Decree shown below.

VII. CO, OPACITY AND PARTICULATE EMISSIONS FROM FCCUs

Program Summary: ***Valero and Tesoro shall implement a program to limit CO and particulate emissions from their FCCUs and shall implement monitoring at each FCCU sufficient to demonstrate compliance with emission standards specified in this Part.***

94. CO Emission Standard. Valero shall limit CO emissions from the FCCUs at Valero's Refineries subject to this Consent Decree to 500 ppmvd (at 0% O_2), measured as a one-hour block average, in accordance with the schedule identified herein. Tesoro shall limit CO emissions from the FCCU at the Golden Eagle Refinery to 500 ppmvd (at 0% O_2), measured as a one-hour block average, in accordance with the schedule identified in Paragraph 99.

95. Particulate Emission Standard. Valero shall limit particulate emissions from the FCCUs at Valero's Refineries and the Corpus Christi West HOC subject to this Consent Decree to one (1) pound per 1,000 pounds of coke burned (front half only according to Method 5B or 5F, as appropriate), measured as a one-hour average over three performance test runs, in accordance with the schedule identified herein. Tesoro shall limit particulate emissions from the FCCU at the Golden Eagle Refinery to one (1) pound per 1,000 pounds of coke burned (front half only according to Method 5B or 5F, as appropriate), measured as a one-hour average over three performance test runs, in accordance with the schedule identified in Paragraph 99.

96. Except as specified in Paragraphs 104 and 105 and by no later than one hundred eighty (180) days from the Date of Entry of this Consent Decree, Valero shall ensure that the FCCUs located at the Benicia, Corpus Christi West, Houston, McKee, Paulsboro and Texas City Refineries shall comply with the CO, opacity and particulate emission standards specified in Paragraphs 94 and 95, respectively, and all applicable requirements of 40 C.F.R. Part 60, Subparts A and J, as such requirements relate to CO, opacity and particulate emissions from FCCU regenerators and the Corpus Christi West HOC.

100. Lodging of this Consent Decree shall satisfy any obligation otherwise applicable to Valero or Tesoro to provide notification in accordance with 40 C.F.R. Part 60, Subparts A and J, including without limitation 40 C.F.R. § 60.7, with respect to the provisions of 40 C.F.R. Part 60, Subparts A and J, as such requirements relate to CO, opacity and particulate emissions from FCCU regenerators.

101. CEMS or an EPA approved alternative monitoring plan or monitoring waiver will be used to demonstrate compliance with the respective CO emission limits established pursuant to this Part VII. Valero and Tesoro shall make CEMS data available to EPA and any appropriate Plaintiff-Intervener upon demand as soon as practicable. The Companies shall install, certify, calibrate, maintain and operate all CEMS required by this paragraph in accordance with the provisions of 40 C.F.R. § 60.13 that are applicable to CEMS (excluding those provisions applicable only to continuous opacity monitoring systems) and Part 60, Appendices A and F, and the applicable performance specification test of 40 C.F.R. Part 60, Appendix B. With respect to 40 C.F.R. Part 60 Appendix F, in lieu of the requirements of 40 C.F.R. Part 60, Appendix F §§ 5.1.1, 5.1.3 and 5.1.4, the Companies must conduct either a RAA or a RATA on each CEMS at least once every three (3) years. The Companies must also conduct a CGA each calendar quarter during which a RAA or a RATA is not performed. To the extent that the Companies have conducted any performance testing of the relevant unit for PM emissions, and such performance testing was conducted in accordance with the procedures specified in EPA Method 5B or 5F, as appropriate, or 40 C.F.R. Part 63,

Subpart UUU, and demonstrated compliance with the emission limits established under this part, then such performance testing shall satisfy any obligation otherwise applicable under this Part to conduct performance testing under 40 C.F.R. Part 60, Subparts A and J. Any future performance testing performed by Valero or Tesoro, as applicable, to demonstrate compliance with the particulate emission limitations established by this Part shall be conducted in accordance with EPA Method 5B or 5F, as appropriate, set forth at 40 C.F.R. Part 60, Appendix A.

102. The CO, opacity, and particulate limits established pursuant to this Part VII shall not apply during periods of startup, shutdown or malfunction of the FCCUs or malfunction of the applicable CO or particulate control equipment, if any, provided that during startup, shutdown or malfunction, Valero or Tesoro, as applicable, shall, to the extent practicable, maintain and operate the relevant affected facility, including associated air pollution control equipment, in a manner consistent with good air pollution control practices for minimizing emissions.

The key 40 CFR 60 NSPS Subpart J CO and PM emission limit citations for S-5 are:

60.102 – Standard for Particulate Matter

(a) No owner or operator subject to the provisions of this subpart shall discharge or cause the discharge into the atmosphere from any fluid catalytic cracking unit catalyst regenerator:

(1) Particulate matter in excess of 1.0 kg/Mg (2.0 lb/ton) of coke burn-off in the catalyst regenerator.

(2) Gases exhibiting greater than 30 percent opacity, except for one six-minute average opacity reading in any one hour period.

60.103 – Standard for Carbon Monoxide

(a) No owner or operator subject to the provisions of this subpart shall discharge or cause the discharge into the atmosphere from any fluid catalytic cracking unit catalyst regenerator any gases that contain carbon monoxide (CO) in excess of 500 ppm by volume (dry basis).

Valero's FCCU is also subject to the 40 CFR 63 Subpart UUU (Petroleum Refinery MACT II) emission limits for PM and CO. 40 CFR 63.1564(a), associated with Subpart UUU Table 1, allows four options for HAP emission limitations from Catalytic Cracking Units. Valero has selected Option 1, meet NSPS requirements, complying with 63.1564(a)(1)(i). Therefore, Valero is already subject to NSPS Subpart J 60.102(a)(1) PM emission standard through 40 CFR 63 Subpart UUU. 40 CFR 63.1565(a)(1), associated with Subpart UUU Table 8, allows two options for Organic HAP emission limitations from Catalytic Cracking Units. Valero has selected Option 1, meet NSPS requirements, complying with 63.1565(a)(1)(i). Therefore, Valero is already subject to NSPS Subpart 60.103(a) CO emission standard through 40 CFR 63 Subpart UUU.

Compliance with the PM (including opacity) and CO emission standards for 40 CFR 60 NSPS J and with the PM emission standards for 40 CFR 63 Subpart UUU are addressed by EPA-approved Alternative Monitoring Plan (AMPs).

For PM and CO, Valero requested approval of an AMP to address the unique configuration of the catalyst regenerator at the Benicia Refinery. Unlike typical catalyst regenerators, the S-5 FCCU

at the Valero Benicia refinery operates as a partial-burn unit. The energy-rich vent gas is immediately combined with the effluent from the S-6 Fluid Coking Unit, distributed and combusted in two separate process furnaces (S-3/S-4 CO Furnaces), recombined and process through a series of electrostatic precipitators, and finally discharged to the atmosphere through the Main Stack. The emissions at the stack are a combination of both the S-5 FCCU regenerator and the S-6 Fluid Coking Unit.

For PM compliance with 40 CFR 60, NSPS J and 40 CFR 63, Subpart UUU, Valero requested approval for a Site-Specific Test Plan to determine the regenerator contribution to the emissions by testing for PM at three locations: after the regenerator, after the coker, and at the Main Stack. The ratio of PM measured after the regenerator and coker were used to proportion the regenerator fraction of the Main Stack PM emissions. Valero was granted approval to use this procedure in 2005 to demonstrate compliance with the PM provisions of 40 CFR 63, Subpart UUU in an EPA letter dated June 22, 2005. Valero was then granted approval to use this procedure again in 2007 to demonstrate compliance with the PM provisions of 40 CFR 60, Subpart J in an EPA letter dated January 10, 2007 (see approved AMP in Attachment 1).

For CO compliance with 40 CFR 60, NSPS J, Valero asked to use the option under 40 CFR 63, Subpart UUU, 63.1565(b)(1)(ii) which allows the regenerator vent to be routed to a boiler or process heater with a design capacity of at least 44 megawatts in lieu of installation a CO CEMS. The AMP noted that CO emissions are already monitored at the Main Stack to comply with a local standard of 400 ppm @ 3% oxygen, less than the 500 ppm standard required by NSPS Subpart J solely for the FCCU regenerator. Valero was granted approval to use the Subpart UUU compliance option in an EPA letter dated January 10, 2007 (see approved AMP in Attachment 1).

For opacity, Valero requested approval of an AMP for an alternate stack location for the continuous opacity monitoring system (COMS) on the Main Stack used to demonstrate compliance with the 40 CFR 60, NSPS J and 40 CFR 63, Subpart UUU opacity limit. The COMS was installed in the late 1970's in a location that is approximately 2.5 duct diameters downstream of the introduction of exhaust from the electrostatic precipitators (ESPs). It was initially installed to meet BAAQMD opacity monitoring requirements. Subsequently, in 2005 it became subject to federal monitoring requirements pursuant to 40 CFR 63, Subpart UUU. Although the COMS does not meet the specification to be located at least four duct diameters downstream of particulate control equipment [40CFR60, Appendix B – Performance Specification 1, Section 8.2(2)(i)], it otherwise complies with the federal performance specification, and the federal calibration and quality assurance requirements [40CFR60, Subpart A – General Provisions and 40CFR60, Appendix B – Performance Specification 1]. Valero was granted approval for the alternate stack

location of the COMS in an EPA letter dated February 18, 2009 (see approved AMP in Attachment 2).

The portion of this application for S-5, FCCU is for a change in conditions to add a new Permit Condition 24239 for the Consent Decree NSPS Subpart J CO, PM, and opacity emission standards and associated AMPs.

Sources S-7, S-20, S-24, S-25, S-30, S-31, S-32, S-33, S-34, S-35, S-42 – Fuel Gas Combustion Devices

These process furnace/heaters are subject to the NSPS 40 CFR 60, Subpart J sulfur dioxide standards per the Consent Decree as "fuel gas combustion devices, per Paragraphs 12, 115, 118, and 122 as shown in the excerpts from the Consent Decree shown below.

IX. SO_2 AND NSPS REQUIREMENTS FOR HEATERS AND BOILERS

12. Valero shall implement at the Valero Refineries, and Tesoro shall implement at the Golden Eagle Refinery, various NOx emission reduction measures and techniques to achieve system-wide and Golden Eagle Refinery-wide, respectively, NOx emission levels for certain identified heaters and boilers at Valero's Refineries and the Golden Eagle Refinery. For purposes of this Consent Decree, "heaters and boilers" shall be defined to include any stationary combustion unit used for the purpose of burning fossil fuel for the purpose of (i) producing power, steam or heat by heat transfer or (ii) heating a material for initiating or promoting a process or chemical reaction in which the material participates as a reactant or catalyst, but expressly excluding any turbine, internal combustion engine, duct burner, CO boiler, incinerator or incinerator waste heat boiler.

115. By no later than December 31, 2007, Valero shall ensure that all heaters and boilers located at the Benicia, Corpus Christi West, Denver, Houston, Krotz Springs, St. Charles, Texas City and Wilmington Refineries are "affected facilities" as fuel gas combustion devices, for purposes of 40 C.F.R. Part 60, Subpart J, and shall comply with all requirements of 40 C.F.R. Part 60, Subparts A and J, as such requirements apply to fuel gas combustion devices.

118. By no later than the dates specified in Paragraphs 115 - 117, all heaters and boilers at such refineries shall comply with the applicable requirements of NSPS Subpart A and J for fuel gas combustion devices, except for those heaters or boilers listed in Appendix O, which shall be affected facilities and shall be subject to and comply with the requirements of NSPS Subparts A and J for fuel gas combustion devices by the dates listed in Appendix O. All CEMS installed pursuant to this paragraph shall be installed, certified, calibrated, maintained and operated in accordance with the applicable requirements of 40 C.F.R. §§ 60.11 and 60.13 and 40 C.F.R. Part 60, Appendix F as provided in Paragraph 121 below.

122. The SO_2 limits established pursuant to this Part shall not apply during periods of startup, shutdown or malfunction of the heaters and boilers or the malfunction of SO_2 control equipment, if any, provided that during startup, shutdown or malfunction, Valero or Tesoro, as applicable, shall, to the extent practicable, maintain and operate the relevant affected facility including associated air pollution control equipment in a manner consistent with good air pollution control practices for minimizing emissions.

The key 40 CFR 60 NSPS Subpart J SO2 emission limit citations for Fuel Gas Combustion Devices (FGCDs) are:

60.104 Standards for sulfur oxides

(a) No owner or operator subject to the provisions of this subpart shall:

(1) Burn in any fuel gas combustion device any fuel gas that contains hydrogen sulfide (H_2S) in excess of 230 mg/dscm (0.10 gr/dscf). The combustion in a flare of process upset gases or fuel gas that is released to the flare as a result of relief valve leakage or other emergency malfunctions is exempt from this paragraph.

60.105 Monitoring of emissions and operations.

(a) Continuous monitoring systems shall be installed, calibrated, maintained, and operated by the owner or operator subject to the provisions of this subpart as follows:

(4) Instead of the SO_2monitor in paragraph (a)(3) of this section for fuel gas combustion devices subject to §60.104(a)(1), an instrument for continuously monitoring and recording the concentration (dry basis) of H_2S in fuel gases before being burned in any fuel gas combustion device.

A single supply system called the low-pressure fuel gas (LPFG) system provides refinery fuel gas (RFG) to all FGCDs at the Valero Benicia Refinery. Compliance with the SO2 emission standards for FGCDs subject to NSPS J by construction date is already demonstrated by H2S fuel gas monitoring of the LPFG system. Because they are also supplied fuel by the same LPFG system, the FGCDs that are now subject to NSPS J per Consent Decree demonstrate compliance with the NSPS J SO2 emission standards by the same monitoring method. The H2S CEMS on the LPFG is also subject to BAAQMD Regulation 1-522 CEMS maintenance, calibration, operating, recordkeeping, and reporting requirements.

The portion of this application for the fuel gas combustion devices listed above is for a change in conditions to add a new Permit Condition 24245, Parts 4, 5, 6, and 7 for the Consent Decree NSPS Subpart J SO2 emission standards.

Sources S-18 – South Flare, S-19 – North Flare

Sources S-18 and S-19 are flares at the Valero Benicia Refinery that are subject to the NSPS 40 CFR 60, Subpart J sulfur dioxide (SO2) standards per the Consent Decree, Paragraphs 231, 232, 235, and 238(a)(i) as shown in the excerpts from the Consent Decree shown below.

C. FLARING DEVICES - NSPS APPLICABILITY

231. In accordance with the schedule in this Section XII.C, Valero and Tesoro, as applicable, accept NSPS Subpart J applicability for each Flaring Device at their refineries, as currently identified in Appendix N.

232. Upon the Date of Entry of this Consent Decree, Valero shall continue to operate the existing flare gas recovery systems at the Wilmington, Benicia and Paulsboro Refineries on those flares covered by such systems. Valero will accept NSPS Subpart J applicability to all flares at the Wilmington Refinery and the North Flare at the Benicia Refinery beginning December 31, 2006.

235. For each Flaring Device, Valero or Tesoro, as applicable, will elect to use one or any combination of following NSPS Subpart J compliance methods:

(a) Operate and maintain a flare gas recovery system to control continuous or routine combustion in the Flaring Device. Use of a flare gas recovery system on a flare obviates the need to continuously monitor and maintain records of hydrogen sulfide in the gas as otherwise required by 40 C.F.R. §§ 60.105(a)(4) and 60.7;

(b) Operate the Flaring Device as a fuel gas combustion device and comply with NSPS monitoring requirements by use of a CEMS pursuant to 40 C.F.R. § 60.105(a)(4) or with a predictive monitoring system approved by EPA as an alternative monitoring system pursuant to 40 C.F.R. § 60.13(i);

(c) Eliminate the routes of continuous or intermittent, routinely-generated fuel gases to a Flaring Device and operate the Flaring Device such that it receives only process upset gases, fuel gas released as a result of relief valve leakage or gases released due to other emergency malfunctions; or

(d) Eliminate to the extent practicable routes of continuous or intermittent, routinely-generated fuel gases to a Flaring Device and monitor the Flaring Device by use of a CEMS and a flow meter; provided however, that this compliance method may not be used unless Valero or Tesoro, as applicable: (i) demonstrates to EPA that the Flaring Device in question emits less than 500 pounds per day of SO2 under normal conditions; (ii) secures EPA approval for use of this method as the selected compliance method; and (iii) uses this compliance method for five or fewer of the Flaring Devices listed in Appendix N.

238. In each Refinery's Compliance Plan for Flaring Devices, Valero or Tesoro, as applicable, will:

(a) Certify compliance with one or more of the four compliance methods set forth in Paragraph 235 and accept NSPS applicability for at least (i) 50% of the system-wide Flaring Devices identified in Appendix N, including the Denver Refinery Flare; and (ii) one Flaring Device per Refinery where such Refinery has three or more Flaring Devices (Tesoro shall certify compliance with NSPS for at least 50% of the flares located at the Golden Eagle Refinery), provided, however, that if the selected compliance method is a flare gas recovery system, as identified in Paragraph 235(a), then Valero may certify that compliance will be achieved by no later than December 31, 2008;

239. By no later than December 31, 2011, Valero or Tesoro, as applicable, will certify compliance to EPA and the applicable Plaintiff-Intervener with one or more of the four compliance methods in Paragraph 235 and will accept NSPS applicability for all of the Flaring Devices in Appendix N.

The key 40 CFR 60 NSPS Subpart J SO2 emission limit citations for Flares are:

60.101 Definitions

(e) Process upset gas means any gas generated by a petroleum refinery process unit as a result of start-up, shut-down, upset or malfunction

60.104 Standards for sulfur oxides

(a) No owner or operator subject to the provisions of this subpart shall:

(1) Burn in any fuel gas combustion device any fuel gas that contains hydrogen sulfide (H_2S) in excess of 230 mg/dscm (0.10 gr/dscf). The combustion in a flare of process upset gases or fuel gas that is released to the flare as a result of relief valve leakage or other emergency malfunctions is exempt from this paragraph

60.105 Monitoring of emissions and operations

(a) Continuous monitoring systems shall be installed, calibrated, maintained, and operated by the owner or operator subject to the provisions of this subpart as follows:

(4) Instead of the SO_2monitor in paragraph (a)(3) of this section for fuel gas combustion devices subject to §60.104(a)(1), an instrument for continuously monitoring and recording the concentration (dry basis) of H_2S in fuel gases before being burned in any fuel gas combustion device.

(iv) The owner or operator of a fuel gas combustion device is not required to comply with paragraph (a)(3) or (4) of this section for fuel gas streams that are exempt under §60.104(a)(1) and fuel gas streams combusted in a fuel gas combustion device that are inherently low in sulfur content. Fuel gas streams meeting one of the requirements in paragraphs (a)(4)(iv)(A) through (D) of this section will be considered inherently low in sulfur content. If the composition of a fuel gas stream changes such that it is no longer exempt under §60.104(a)(1) or it no longer meets one of the requirements in paragraphs (a)(4)(iv)(A) through (D) of this section, the owner or operator must begin continuous monitoring under paragraph (a)(3) or (4) of this section within 15 days of the change.

Per Consent Decree Paragraph 238(a)(i), Valero elected to comply with Paragraph 235, Option (a), to operate and maintain a flare gas recovery system to control continuous or routine combustion for 50% of the flares listed in Appendix N. For the Valero Benicia Refinery, Appendix N lists Butane Tank Flare, S17, South Flare, S18, and North Flare, S19. Valero elected to comply with S18 and S19 by December 31, 2008 as prescribed by Paragraph 238(a). Valero elects to accept NSPS J applicability for the final Appendix N flare, S17 by December 31, 2011 as prescribed by Paragraph 239.

Per Consent Decree Paragraph 235, use of a flare gas recovery system on a flare obviates the need to continuously monitor and maintain records of fuel gas H2S content. Further, 40 CFR 60.105(a)(4)(iv) exempts process upset gases or fuel gas streams that are released to the flare as a result of relief valve leakage or other emergency malfunctions. Therefore, the Consent Decree requirements do not impose any additional monitoring requirements for the S-18 and S-19 flares.

The portion of this application for the flares listed above is for a change in conditions to add a new Permit Condition 24245, Parts 1, 2, and 3 for the Consent Decree NSPS Subpart J SO2 emission standards.

Thermal Oxidizer for WWTP On-Site Equipment

Updates to 40 CFR 60, NSPS J on June 24, 2008 clarified the definition of fuel gas in §60.101(d) to specifically exclude "vapors that are collected and combusted to comply with the wastewater provisions in §60.692, 61.343 through 61.348, or 63.647". The A-57 WWTP thermal oxidizer is used to control organic emissions from wastewater treatment sources subject to 40 CFR 61, Subpart FF, including §§61.343 through 61.348. Therefore, the A-57 WWTP thermal oxidizer is no longer subject to NSPS J and the applicability and monitoring requirements should be removed from the Title V permit. There are no associated Change in Conditions to the Permit to Operate for this abatement device, but it was included in this application because it related to the other NSPS Subpart J changes.

Approved AMP - NOx CEMS Span for S-220, S-237, and S-1031

The Benicia Refinery installed and operates CEMS to monitor compliance with the 40 CFR 60, Subpart Db NOx emission standard. However, due to monitoring requirements associated with more restrictive local BAAQMD emission standards, the CEMS span values specified in the federal rule have not been implemented as specified. In order to demonstrate compliance with the more restrictive BAAQMD emission standards, the NOx CEMS are spanned lower than the 0 - 500 ppm span specified by the federal rule. On February 5, 2009, EPA approved an Alternate Monitoring Plan (AMP) allowing the use of alternate NOx CEMS span values for the three affected units: S-220, S-237, and S-1031. The portion of this application for these sources is for a

change in conditions to add a new Permit Condition 24261 for the AMP approved by EPA on February 5, 2009 for alternate NOx CEMS span values.

II. EMISSION CALCULATIONS

There are no changes in emissions due to this application. This application is to add an H2S emission limitation and will not result in a decrease or an increase in emissions.

III. PLANT CUMULATIVE INCREASE

There are no net changes to the plant cumulative emissions.

IV. TOXIC SCREENING ANALYSIS

This proposed change in conditions to add new permit conditions would not result it emission of toxic compounds in amounts different than previously emitted. Therefore, a toxic risk screen is not required per Regulation 2-5.

V. BEST AVAILABLE CONTROL TECHNOLOGY

BACT is triggered for new or modified sources that emit criteria pollutants in excess of 10 lbs/day. However, Regulation 2-1-234 defines a modified source as one that results in an increase in daily or annual emissions of a regulated air pollutant. For this application, there is no change in emissions. Therefore, BACT does not apply per Regulation 2-2-301.

VI. OFFSETS

Offsets are not required for this project because there is no emission increase for the proposed change in conditions per Regulation 2-2-302.

VII. STATEMENT OF COMPLIANCE

Source S-5, FCCU

This application will not change compliance for S-5. This application only adds the NSPS Subpart J CO, PM, and opacity limits. Compliance with Regulation 1, Regulation 6, Rule 1 (and SIP Regulation 6), Regulation 9, Rule 1 and 40 CFR 63 Subpart UUU (Petroleum Refinery MACT II) will not be changed.

40 CFR 60.105(a)(1) requires continuous opacity monitoring which is already satisfied by 40 CFR 63 Subpart UUU and the associated AMP discussed above. 40 CFR 60.105(a)(2) requires continuous CO monitoring which is satisfied with the associated AMP discussed above. The NSPS Subpart A 60.7 notification requirements do not apply per Consent Decree Paragraph 100 and the initial performance testing requirements of 60.8 are satisfied by compliance demonstration for 40 CFR 63, Subpart UUU per Consent Decree Paragraph 101.

This project is considered to be categorically exempt under the District's CEQA Regulation 2-1-312.1 because it is an application for a change of conditions for existing permitted sources and does not involve any increases in emissions or physical modifications.

This project is over 1,000 ft from the nearest public school and is therefore not subject to the public notification requirements of Regulation 2-1-412.

CONDITIONS

CONDITION 24239

S-5 FCCU Catalyst Regenerator

APPLICATION # 18164/TV Application #18165 (Mar 2009), Add NSPS Subpart J CO and PM emission standards per Consent Decree

1. The owner/operator of FCCU Regenerator (S-5) shall be subject to 40 CFR 60 Subpart J for carbon monoxide (CO), particulate matter, and opacity and the Owner/Operator shall comply with all applicable provisions of 40 CFR 60 Subparts A and J for FCCU Regenerators. (Basis: Consent Decree VII. Paragraph 96)

2. The owner/operator of the FCCU (S-5) shall not exceed 500 ppmvd of CO at 0% O2, measured as a one-hour block average. (Basis: Consent Decree VII. Paragraph 94)

3. The owner/operator of the FCCU (S-5) shall not exceed 1 pound of particulate emission per 1000 pounds of coke burned (front half only according to Method 5B or 5F, as appropriate), measured as a one-hour average over three performance test runs. (Basis: Consent Decree VII. Paragraph 95)

4. The owner/operator of the FCCU (S-5) does not need to comply with the CO, opacity, and particulate limits in Parts 1-3 during periods of startup, shutdown or malfunction of the FCCU or malfunction of the applicable control equipment, if any. (Basis: Consent Decree VII. Paragraph 102)

5. The Owner/Operator is exempt from notification requirements in accordance with 40 CFR 60, Subparts A and J, including without limitation 40 CFR §60.7, with respect to the provisions of 40 CFR 60, Subparts A and J, as such requirements apply to relate to CO, opacity, and particulate matter emissions from FCCU regenerators. (Basis: Consent Decree VII. Paragraph 100)

6. To the extent that the Owner/Operator has conducted any performance testing for PM emissions in accordance with Method 5B or 5F, as appropriate, or 40 CFR 63, Subpart UUU, and demonstrated compliance with the PM emission limits, then such performance testing shall satisfy any obligation otherwise applicable to conduct performance testing under 40 CFR 60, Subparts A and J. Any future performance testing to demonstrate compliance with the PM emission limitations shall be conducted in accordance with EPA Method 5B or 5F, as appropriate per 40 CFR 60, Appendix A. (Basis: Consent Decree VII. Paragraph 101)

7. The owner/operator of the FCCU (S-5) shall maintain the Alternate Monitoring Plans for CO, PM, and Opacity as follows:

    a. Alternative monitoring for CO. Compliance with CO achevied through use of 40 CFR 63, Subpart UUU, 63.1565(b)(1)(ii) option to vent emissions to a boiler or process heater with a design capacity of at least 44 MW in lieu of CO CEMS. AMP approved by EPA January 10, 2007.
    b. Alternative monitoring for PM. Compliance with PM demonstrated through use of a Site-Specific Test Plan used to determine the FCCU regenerator contribution to Main Stack PM emissions. AMP approved by

EPA January 10, 2007.

c. Alternative monitoring for Opacity. Compliance with opacity demonstrated by COMS in approved alternate stack location. AMP approved by EPA February 18, 2009. (Basis: 40 CFR 60.13(i), Alternate Monitoring Plans)

Condition # 24245

APPLICATION # 18164/TV Application #18165 (Mar 2009): Add NSPS Subpart J SO2 emission standards per Consent Decree

1. The South Flare (S18) and North Flare (S19) shall be affected facilities under 40 CFR 60 Subpart J. (Basis: Consent Decree §§ 231, 232, 238(a)(i))

2. Permittee/Owner/Operator shall comply with 40 CFR 60 Subpart J for the South Flare (S18) and North Flare (S19) by operating and maintaining a flare gas recovery system to control continuous or routine combustion in the flaring devices. Use of a flare gas recovery system on a flare obviates the need to continuously monitor and maintain records of hydrogen sulfide in the gas as otherwise required by 40 C.F.R. §§ 60.105(a)(4) and 60.7. (Basis: Consent Decree §§ 235(a))

3. The combustion in a Flaring Device of process upset gases (as defined by 40 CFR 60.101(e)) or fuel gas that is released to the Flaring Device as a result of relief valve leakage or other emergency malfunctions is exempt from the requirement to comply with 40 CFR 60.104(a)(1). (Basis: Consent Decree §§ 241)

4. S7 Process Furnace (F103)
S20 Process Furnace (F104)
S24 Process Furnace (F601)
S25 Process Furnace (F701)
S30 Process Furnace (F2901)
S31 Process Furnace (F2902)
S32 Process Furnace (F2903)
S33 Process Furnace (F2904)
S34 Process Furnace (F2905)
S35 Process Furnace (F2906)
S42 Process Furnace (F1060)

The heaters and boilers listed above shall be "affected facilities" under 40 CFR 60 Subpart J as fuel gas combustion devices. Except as allowed in this permit condition, the owner/operator shall comply with all applicable provisions of 40 CFR 60 Subparts A and J for these fuel gas combustion devices, except during periods of startup, shutdown, or malfunction of the affected facilities or the malfunction of the associated control equipment, if any, provided that during startup, shutdown, or malfunction, the owner/operator shall, to the extent practicable, maintain and operate the affected facilities including associated air pollution control equipment in a manner consistent with good air pollution control practices for minimizing emissions. (Basis: NSPS Subparts A and J, EPA Consent Decree §§ 12, 115, 118, 122)

5. The owner/operator is exempt from notification requirements in accordance with 40 CFR Part 60 Subparts A and J, including without limitation 40 CFR 60.7, with

respect to the provisions of 40 CFR Part 60 Subparts A and J, as such requirements apply to the fuel gas combustion devices listed in Part 4 of this permit condition. (Basis: EPA Consent Decree §§ 120)

6. The owner/operator shall use either continuous emissions monitoring systems (CEMS) or an approved alternative monitoring plan (AMP) to demonstrate compliance with the 40 CFR 60 Subpart J emission limits for the fuel gas combustion devices listed in Part 4 of this permit condition. (Basis: NSPS Subparts A and J, EPA Consent Decree §§ 121)

7. The owner/operator shall conduct the accuracy tests listed below on the CEMS used to comply with Part 6 unless that CEMS is otherwise subject to the requirements of 40 CFR 60 Subparts A and J. These accuracy tests are allowed in lieu of the requirements of 40 CFR Part 60, Appendix F §§ 5.1.1, 5.1.3, and 5.1.4.
   a. Conduct either a RAA or a RATA on each CEMS at least once every three years.
   b. Conduct a CGA on each CEMS each calendar quarter during which a RAA or a RATA is not performed.
   c. Conduct a FAT, as defined in BAAQMD regulations or procedures, if desired, in lieu of any required RAA or CGA.

   (Basis: EPA Consent Decree §§ 121)

Condition # 24261

APPLICATION # 18164/TV Application #18165 (Mar 2009): AMPs for NOx CEMS Span, S-220, S-237, S-1031

1. The Owner/Operator shall maintain the approved Alternate Monitoring Plan (AMP) for Nitrogen Oxides to demonstrate compliance with the 40 CFR 60.48b(e)(2)(i) requirement for NOx CEMS span. AMP approved by EPA February 5, 2009. (Basis: 40 CFR 60.13(i), Alternate Monitoring Plans)

IX. RECOMMENDATION

Issued a condition change to the Permit to Operate to Valero for the following equipment:

Add Condition # 24239 to:

S-5 Fluid cat cracker, FCC fresh feed, refinery FCCU REGENERATOR (R-702)

Add Condition # 24245 to:

S-7 Process Heater/Furnace, Refinery make gas, Front firing PROCESS FURNACE, JET FUEL HYDROFINING, F-103, 53MM Btu/hr

S-18 Refinery Waste Gas Flare – Subject to Monitoring SOUTH FLARE, ST-2101

S-19 Refinery Waste Gas Flare – Subject to Monitoring NORTH FLARE, ST-2103

S-20 Process Heater/Furnace, Refinery make gas, Front firing PROCESS FURNACE, NAPHTHA HYDROFINING, F-104, 62 MM Btu/hr

S-24 Process Heater/Furnace, Refinery make gas, Front firing PROCESS FURNACE, CAT FEED HYDROFINING, F-601

S-25 Process Heater/Furnace, 230 MM BTU/hr max, Refinery make gas PROCESS FURNACE, CAT FEED PREHEAT, F-701

S-30 Process Heater/Furnace, 326 MM BTU/hr max, Refinery make gas PROCESS FURNACE, PFR PREHEAT, F-2901

S-31 Process Heater/Furnace, Refinery make gas, Front firing PROCESS FURNACE, PFR PREHEAT, F-2902

S-32 Process Heater/Furnace, Refinery make gas, Front firing PROCESS FURNACE, PFR PREHEAT, F-2903

S-33 Process Heater/Furnace, Refinery make gas, Front firing PROCESS FURNACE, PFR PREHEAT, F-2904

S-34 Process Heater/Furnace, Refinery make gas, Front firing PROCESS FURNACE, GAS HEATER, F-2905, 74MM Btu/hr

S-35 Process Heater/Furnace, Refinery make gas, Front firing PROCESS FURNACE, GAS HEATER, F-2906, 14MM Btu/hr

S-42 Process Heater/Furnace, Refinery make gas, Front firing PROCESS FURNACE, TREAT GAS PREHTR, F-1060

Add Condition # 23261 to:

S-220 Combustion, Furnace - Other, Refinery make gas (RMG) (F-4460 Hot Oil Furnace)

S-237 BOILER-SG1032
S-1031 Heat Recovery Steam Generator

_____
Thu H. Bui
Senior Air Quality Engineer
Permit Services Division
Date: _____

THB:disk-t\Valero\18164e

EVALUATION REPORT
Valero Refining Company
Application #18292- Plant #12626

3400 E. Second St.,
Benicia, CA 94510

I. BACKGROUND

Valero has applied for an Authority to Construct/Permit to Operate for the following equipment:

S-251 Emergency Diesel Generator, Cummins QSL9-G3-NR3, 399 BHP capacity.

II. EMISSION CALCULATIONS

Source S-251 has been certified by CARB to be a cleaner burning engine. Except for SO2, the emission factors for these engines are from the CARB Certification (CARB Executive Order # U-R-002-0449). The SO2 emissions were calculated based on the ultra low sulfur diesel fuel (15 ppmw) with the assumption that all of the sulfur present will be converted to SO2 during the combustion process. The POC emission factor is assumed to be 5% of the total CARB's certified NOx and POC factor. This was based on the data from AP-42, Table 3.4-1 for Large IC Engine. These engines passed the toxic screening analysis at 50 hr/yr with the maximum cancer risk of 0.05 in a million and a chronic hazard index of 0.00003. The emission calculations are as follows:

Hours of Operation = 50 hr/yr
Fuel Consumption = 19.2 gal/hr
Estimated Fuel Usage = 19.2 gal/hr X 50 hr/yr = 960 gal/yr.
Engine power = 399 BHP
Density of Diesel Fuel = 7.1 lb/gal

NOx = 2.76 gm/hp-hr (399 hp)(1 lb/453.6 gm)(50 hr/yr) = 121.45 lb/yr or 0.0607 TPY
CO = 2.46 gm/hp-hr (399 hp)(1 lb/453.6 gm)(50 hr/yr) = 108.18 lb/yr or 0.0541 TPY
POC = 0.15 gm/hp-hr (399 hp)(1 lb/453.6 gm)(50 hr/yr) = 6.39 lb/yr or 0.0032 TPY
PM10 = 0.11 gm/hp-hr (399 hp)(1 lb/453.6 gm)(50 hr/yr) = 4.92 lb/yr or 0.0025 TPY
SO2 = (19.2 gal/hr)(7.1 lb/gal)(0.000015 S)(64 lb SO2/32 lb S)(50 hr/yr) = 0.204 lb/yr or 0.0001 TPY

Summary of S-251 Emergency Diesel Generator Emissions

Pollutant	Emission Factor (gm/hp-hr)	Daily Emissions (lb/day)	Annual Emissions (lb/yr)	Cumulative Increase (Ton/yr)
Nitrogen Oxides	2.76	58.30	121.45	0.061
Carbon Monoxide	2.46	51.93	108.18	0.054
POC	0.15	3.07	6.39	0.0032
PM-10	0.11	2.36	4.92	0.002
Sulfur Dioxide	0.001515	0.098	0.204	0.0001

Daily emissions = EF * 399 HP * 24 hr/day / 453.6 gm/lb. Annual emissions based on 50 hrs/yr.

III. PLANT CUMULATIVE INCREASE SINCE 4/5/1991

	Current Ton/yr	New Ton/yr	New Total tons/yr
POC =	0	0.0032	0.0032
NO_X =	0	0.061	0.061
SO_2 =	0	0.0001	0.0001
CO =	0	0.054	0.054
PM_{10} =	0	0.002	0.002

IV. OFFSETS

Offsets are required for this project because Valero is a major facility with POC emissions greater than 100 ton/yr. Valero will provide the SO2 and PM10 offsets at a 1.0:1.0 ratio per Regulation 2-2-303. NOx and PM10 will be provided at a 1.15:1.0 offset ratio per Regulation 2-2-302. Valero will use the Certificate of Deposit # 833, 976 and 974 submitted to the District on August 22, 2007 to provide offsets for Application Nos. 15934, 8427 and this application as shown below.

		Ton/yr	Ton/yr	Ton/yr	Ton/yr
		POC	SO2	**PM10**	NOx
A/N 15934	A-65	0.072	0.143	0.057	1.558
A/N 8427	A-64	0.00032	negligible	0.0004	0.006
A/N 18292	S-251	0.0032	0.0001	0.002	0.061
Total		0.076	0.143	0.059	1.625
Offset Ratio = 1.15:1.0		**0.087**			**1.869**
per BAAQMD 2-2-302					
Offset Ratio = 1.0:1.0			**0.143**	**0.059**	
per BAAQMD 2-2-303					
Certificate Number		**# 833**	**# 976**	**# 974**	**# 833**
Starting balance		80.000	1.163	2.25	79.913[1]
Reduction		0.087	0.143	0.059	1.869
Ending balance		**79.913[1]**	**1.020**	**2.191**	**78.044**

[1]Note: Valero uses POC emission credits to provide offsets for NOx emissions with 1.0 to 1.0 ratio per Regulation 2-2-302.2.

Thus, the Banking Certificate # 833 will be reissued to Valero in the amount of 78.044 tons POC/yr. The Banking Certificate # 976 will be reissued to Valero in the amount of 1.020 tons SO2/yr, and the Banking Certificate # 974 will be reissued to Valero in the amount of 2.191 tons PM10/yr.

V. TOXIC SCREENING ANALYSIS

Toxic Pollutant Emitted	**Emission Rate for S-246 (lb/yr)**	**Risk Screening Trigger (lb/yr)**
PM 10 (Diesel Particulate)	4.92	0.58

S-251 meets Best Available Control Technology requirement for toxics (TBACT) since the Diesel particulate emission factor is less than 0.15 gm/hp-hr. For an engine that meets the TBACT requirement, it must also pass the toxic risk screening level of less than ten in a million. The cancer risk is conservative. It assumes a constant exposure of the ultra sensitive population (young people, the elderly, and the infirm, etc.) at 24 hours for a 70 years life.

This emergency generator passed the Health Risk Screening Analysis (HRA) conducted on July 23, 2008 by the District's Toxic Evaluation Section. The source poses no significant toxic risk, since the risk to the maximally exposed receptors is 0.05 in a million. Valero has decided to relocate S-251 to a new location that is 60 feet North of the original proposed location after the risk screening has been done (see attached aerial photographs). The risk of this new engine will still be less than 1 in a million. Thus, in accordance with the District's Regulation 2-5, the risk screen passes.

VI. BEST AVAILABLE CONTROL TECHNOLOGY

BACT is triggered for any single pollutant that exceeds 10 pounds per highest day per Regulation 2-2-301. For this proposed project, BACT is triggered for NOx since the highest day emissions are 58.30 pounds for the engine. As shown in the table below, Source S-251, Emergency Diesel Generator, meets BACT(2) limit for NOx for diesel engines more than 175 hp (Reference: BACT/TBACT Handbook, IC Engine-Compression Ignition, Document #96.1.2).

	Certified CARB g/bhp-hr	BACT g/bhp-hr
POC	0.15	1.5
NOx	2.76	6.9
CO	2.46	2.75
PM10	0.11	0.15

NSPS

The engine is subject to 40 CFR 60, Subpart IIII, Standards of Performance for Stationary Compression Ignition Internal Combustion Engines because it was manufactured after April 1, 2006, as required by Section 60.4200(a)(2)(i).

The engine has a total displacement of 8.9 liters and has 6 cylinders, so each cylinder has a volume of less than 10 liters. The engine is a 2008 model year engine and is not a fire pump. Section 60.4205(b) requires these engines to comply with the emission standards in Section 60.4202, which refers to 40CFR89.112 and 40CFR89.113 for all pollutants. For engines greater than or equal to 600 hp and less than 750 hp, these standards are:

NMHC+NOx: 3.0 g/hp-hr
CO: 2.6 g/hp-hr
PM: 0.15 g/hp-hr
20% opacity during acceleration mode
15% opacity during lugging mode
50% opacity during peaks in acceleration or lugging mode

According to CARB Executive Order U-R-002-0449, the engine will comply with the standards.

Sections 60.4206 and 60.4211(a) require that the owner/operator operate and maintain the engine according to the manufacturer's written instructions or procedures developed by the owner or operator that are approved by the engine manufacturer, over the entire life of the engine. The owner/operator is expected to comply with this requirement.

Section 60.4207(a) requires that by October 1, 2007, the owner/operator must use fuel that complies with 40 CFR 80.510(a). This means that the fuel must have a sulfur content of 500 parts per million (ppm) maximum, a cetane index of 40 or a maximum aromatic content of 35 volume percent. The owner/operator is expected to comply with this requirement because CARB diesel is required to be used in California.

Section 60.4207(b) requires that by October 1, 2010, the owner/operator must use fuel that complies with 40 CFR 80.510(b). This means that the fuel must have a sulfur content of 15 parts per million (ppm) maximum, and the same cetane index or aromatic content as above. The owner/operator is expected to comply with this requirement because CARB diesel is required to be used in California.

Section 60.4209(a) requires a non-resettable hour meter. This requirement is already in the standard permit conditions.

The engine will comply with the requirements of Section 60.4211(c) because it has been certified in accordance with 40 CFR Part 89.

The engine will comply with the requirement in Section 60.4211(e) to run for less than 100 hours per year for maintenance checks and readiness testing, and the prohibition of running for any reason other than emergency operation, maintenance, and testing because they are limited by permit condition to 50 hours per year for reliability testing and otherwise may only operate for emergencies.

The owner/operator is not required to perform tests in accordance with Section 60.4212 or 60.4213.

Section 60.4214 states that owner/operators do not have to submit an initial notification to EPA for emergency engines.

Because the engine does not have a diesel particulate filter, it is not subject to Section 60.4214(c).

The owner/operator is required to comply with certain sections of 40 CFR 60, Subpart A, General Provisions. The owner/operator is expected to comply with this requirement.

NESHAP

This engine is not subject to 40 CFR 63, Subpart ZZZZ, National Emission Standards for Hazardous Air Pollutants for Stationary Reciprocating Internal Combustion Engines, because it is located at a major facility for hazardous air pollutants, but is not more than 500 bake horsepower.

CARB Stationary Diesel Engine ATCM

The State Office of Administrative Law approved the Airborne Toxic Control Measure (ATCM) on November 8, 2004. State law requires the local Air Districts to implement and enforce the requirements of the ATCM. Effective January 1, 2005, there is a prohibition on the operation of new diesel emergency standby engines greater than 50 bhp unless the following operating requirements and emission standards are met:

"Stationary Diesel Engine ATCM" section 93115, title 17, CA Code of Regulations.

Diesel PM – General Requirements

1. Meet 0.15 g/bhp-hr PM standard
2. Operate 50 hours per year, or less, for maintenance and testing (except emergency use and emissions testing)

HC,NOx, NMHC+NOx, CO

1. Meet standards for off-road engines of the same model year and horsepower rating
   As specified in the OFF-Road Compression Ignition Engine Standards;
   Or if no standards have been established

   2. Meet the Tier 3 standards in Title 13, CCR, Section 2423 for off-road engines of the same horsepower rating, irrespective of the new engine's model year

The emergency standby diesel engine (S-251) complies with the above ATCM requirements. The diesel engine will operate for no more than 50 hours per year for maintenance and reliability testing. This engine is subject to the EPA Tier 3 requirements for HC, NOx, NMHC+NOx and CO. As shown in the table below, the engine meets these requirements.

	CARB g/bhp-hr	ATCM Tier 3 g/bhp-hr
HC (POC)	0.15	-----
NOx	2.76	-----
HC+NOx	2.91	3.0
CO	2.46	2.6
PM	0.11	0.15

VII. STATEMENT OF COMPLIANCE

S-251 will be operated as an emergency standby engine and therefore is not subject to the emission rate limits in Regulation 9, Rule 8 ("NOx and CO from Stationary Internal Combustion Engines"). S-251 is subject to the monitoring and record keeping requirements of Regulation 9-8-530 and the SO2 limitations of 9-1-301 (ground-level concentration) and 9-1-304 (0.5% by weight in fuel). Regulation 9-8-530 requirements are incorporated into the proposed permit conditions. Compliance with Regulation 9, Rule 1 is very likely since diesel fuel with a 0.0015% by weight sulfur is mandated for use in California. Like all combustion sources, S-251 is subject to Regulation 6 ("Particulate and Visible Emissions"). This engine is not expected to produce visible emissions or fallout in violation of this regulation and will be assumed to be in compliance with Regulation 6 pending a regular inspection.

This project is considered to be ministerial under the District's CEQA Regulation 2-1-311 and therefore is not subject to CEQA review. The engineering review for this project requires only the application of standard permit conditions and standard emission factors in accordance with Permit Handbook Chapter 2.3.

This project is over 1,000 ft from the nearest public school and is therefore not subject to the public notification requirements of Regulation 2-1-412.

PSD is not triggered.

VIII. CONDITIONS

Condition # 22850 for Emergency Diesel Engines, S-251, at Plant #12626, Valero Benicia Refinery, Application # 18292.

1. The owner/operator shall not exceed 50 hours per year per engine for reliability-related testing.
   [Basis: "Stationary Diesel Engine ATCM" section 93115, title 17, CA Code of Regulations, subsection (e)(2)(A)(3) or (e)(2)(B)(3)]

2. The owner or operator shall operate each emergency standby engine only for the following purposes: to mitigate emergency conditions, for emission testing to demonstrate compliance with a District, state or Federal emission limit, or for reliability-related activities (maintenance and other testing, but excluding emission testing). Operating while mitigating emergency conditions or while emission testing to show compliance with District, state or Federal emission limits is not limited.
   [Basis: "Stationary Diesel Engine ATCM" section 93115, title 17, CA Code of Regulations, subsection (e)(2)(A)(3) or (e)(2)(B)(3)]]

3. The owner/operator shall operate each emergency standby engine only when a non-resettable totalizing meter (with a minimum display capability of 9,999 hours) that measures the hours of operation for the engine is installed, operated and properly maintained.
   [Basis: "Stationary Diesel Engine ATCM" section 93115, title 17, CA Code of Regulations, subsection (e)(4)(G)(1)]

4. Records: The owner/operator shall maintain the following monthly records in a District-approved log for at least 36 months from the date of entry (60 months if the facility has been issued a Title V Major Facility Review Permit or a Synthetic Minor Operating Permit). Log entries shall be retained on-site, either at a central location or at the engine's location, and made immediately available to the District staff upon request.
   a. Hours of operation for reliability-related activities (maintenance and testing).
   b. Hours of operation for emission testing to show compliance with emission limits.
   c. Hours of operation (emergency).
   d. For each emergency, the nature of the emergency condition.
   e. Fuel usage for each engine(s).
   [Basis: "Stationary Diesel Engine ATCM" section 93115, title 17, CA Code of Regulations, subsection (e)(4)(I), (or Regulation 2-6-501)]

5. At School and Near-School Operation:
   If the emergency standby engine is located on school grounds or within 500 feet of any school grounds, the following requirements shall apply:
   The owner/operator shall not operate each stationary emergency standby diesel-fueled engine for non-emergency use, including maintenance and testing, during the following periods:
   a. Whenever there is a school sponsored activity (if the engine is located on school grounds)
   b. Between 7:30 a.m. and 3:30 p.m. on days when school is in session. "School" or "School Grounds" means any public or private school used for the purpose of the education of more than 12 children in kindergarten or any of grades 1 to 12, inclusive, but does not include any private school in which education is primarily conducted in a private home(s). "School" or "School Grounds" includes any building or structure, playground, athletic field, or other areas of school property but does not include unimproved school property.

[Basis: "Stationary Diesel Engine ATCM" section 93115, title 17, CA Code of Regulations, subsection (e)(2)(A)(1)] or (e)(2)(B)(2)]

IX. RECOMMENDATION

Issue a conditional Authority to Construct to Valero Refining Company for the following equipment:

S-251 Emergency Diesel Generator, Cummins QSL9-G3-NR3, 399 BHP capacity.

Thu H. Bui
Senior Air Quality Engineer
Engineering Division
Date:

THB:disk-T\Valero\18292\18292e\

EVALUATION REPORT
Valero Refining Company
Application NSR #18582/TV # 18792 - Plant #12626

3400 E. Second St.,
Benicia, CA 94510

I. BACKGROUND

Valero has applied for an Authority to Construct/Permit to Operate for the following equipment:

S-209 Ethanol Truck Unloading Rack

S-210 Ethanol Storage Tank, TK-1820

S-1003 Hydrocracker Unit

S-1011 Heavy Cat Naphtha Hydrofiner (add a Hydrofiner Reactor)

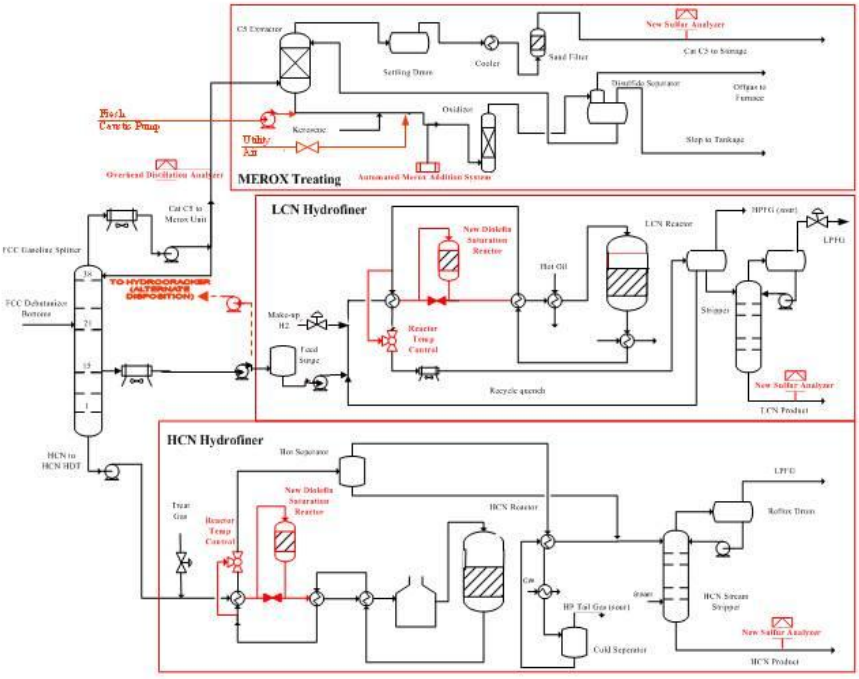
S-1014 Cat Light Ends Unit

S-1024 Light Cat Naphtha Hydrotreater (add a Hydrofiner Reactor)

Valero is proposing to implement equipment and operational changes in order to meet the modified gasoline reformulation requirements set forth in the California Air Resources Board's (CARB) Phase 3 Amendments, which were adopted in 2007 and require compliance by December 31, 2009. The new requirements include increased ethanol content from 5.7% to 10%, and decreased olefin and sulfur contents in finished gasoline. This regulatory-driven, mandated project is beyond the scope of the original Valero Improvement Project (VIP) and the VIP Amendments Project. The changes in this NSR application will be incorporated into Valero's TV permit under Application # 18792.

Gasoline olefin and sulfur contents will be decreased by altering the way in which the naphtha product from the Fluid Catalytic Cracking Unit ("Cat Naphtha") is fractionated and treated in downstream processes. The FCCU Naphtha Splitter Tower (T-805) in the Cat Light Ends Process Unit (S-1014) splits the FCCU (Cat) full boiling range naphtha stream into three streams for further processing. The three naphtha streams are part of the gasoline blending component pool. The T-805 overhead stream (Cat pentanes) is processed in the Merox Unit (caustic treatment). The T-805 sidecut stream (Light Cat Naphtha or LCN) is processed in the Light Cat Naphtha Hydrofiner (LCNHF, S-1024). An option is included to route a portion of LCN production to the Hydrocracker Unit (HCU, S-1003). The T-805 bottoms stream (Heavy Cat Naphtha or HCN) is processed in the Heavy Cat Naphtha Hydrofiner (HCNHF, S-1011). The FCCU Naphtha Splitter Tower, Merox Unit (Cat pentanes), LCNHF, HCNHF, and facilities to route a portion of the LCN to the HCU are shown in Figure 1.

Figure 1
Process Flow Diagram
FCCU (Cat) Naphtha Treating Changes – LCNHF Processing



Gasoline olefin and sulfur contents will be decreased by treating the tail (heavy) end of Cat pentanes in the LCNHF or HCU rather than in the Merox Unit (caustic treatment) process. The tail end of Cat pentanes contains ring sulfur compounds, which are not easily removed by caustic treating in the Merox Unit, but are more easily removed by hydrofining in the LCNHF or hydrotreating in the HCU. The operation of the FCCU Naphtha Splitter Tower (T-805) will be adjusted to shift the tail (heavy) end of the Cat pentane overhead stream down into the LCN side stream draw. No modifications will be made to T-805, and only changes to air and fresh caustic will be made to the Merox Unit.

In addition**,** gasoline olefin and sulfur contents will be decreased by adding a new diolefin saturation reactor to the LCNHF upstream of and in series with the existing hydrofining reactor. The new diolefin reactor will convert gum-forming and fouling diolefins into low-fouling mono-olefins. The new reactor will allow the existing hydrofining reactor to be operated at higher temperature and severity to reduce olefin and sulfur contents, while maintaining catalyst run length.

FCCU operations will be adjusted to maintain LCN side draw rate from T-805 within existing LCN equipment capacities. LCN production will be hydrofined entirely in the LCNHF, or a portion of LCN production will be hydrotreated in the HCU and the rest of the LCN production will be hydrofined in the LCNHF. The total feed into the HCU will remain the same at its current limit; therefore, the diversion portion of the LCN product will not result in emission increase.

Finally, gasoline olefin and sulfur contents will be decreased by adding a new diolefin saturation reactor to the HCNHF upstream of and in series with the existing hydrofining reactor. The new diolefin reactor will convert gum-forming and fouling diolefins to low-fouling mono-olefins. The new diolefin reactor will allow the existing hydrofining reactor to be operated at higher temperature and severity to reduce the LCN olefin and sulfur contents, while maintaining catalyst run length.

To accommodate the increase in ethanol blending to about 10% for gasoline loaded at Valero's Fuels Terminal (Plant #12611), there will be an increase in truck imports of ethanol to the Refinery storage tank TK-1820 for blending at the Fuels Terminal. It is expected that ethanol imports into the Refinery will be increased from 575,000 to 1,303,000 barrels per year by increasing truck deliveries from 2,920 to 6,620 per year (8 to 18 trucks/day) at the existing ethanol truck unloading rack (S-209) and ethanol storage facilities (S-210) in the Refinery.

The shipment of blended gasoline from the Fuels Terminal (Plant # 12611), S-1 and S-2 Tank Truck Loading racks, will continue to be tied to demand and will not increase above current permit condition limits. Therefore, POC emissions from S-1 and S-2 will not increase and TAC emissions are expected to be slightly reduced since the ratio of ethanol, which has lower levels of TACs, to gasoline is increasing. Truck traffic from shipment of blended products will not increase.

II. EMISSION CALCULATIONS

The addition of two new hydrofiner reactors at S-1011 and S-1024 does not result in any emission because there is no intended opening and from which no significant quantities of air contaminants are emitted.

Project criteria pollutant emissions are summarized in Table 1-A (LCN to LCNHF) and 2-A (LCN to HCU). Fugitive emissions are based on emission factors and fugitive component counts as shown in Table 1-B (LCN to LCNHF) and Table 2-B (LCN to HCU). Tank 1820 emissions are summarized in Table 3. For the option "LCN to LCNHF", fugitive component counts and fugitive emissions assume that the new components for routing LCN to the HCU are isolated and not in POC service. For the option "LCN to HCU", fugitive component counts and fugitive emissions include the new components for routing LCN to the HCU are in POC service. The emission factors in this application were obtained from Valero's permit for the Ultra Low Sulfur Diesel Project (A/N 13009).

Table 1-A Project Criteria Emissions Summary [LCN to LCNHF]

Criteria Pollutant	Tank 1820	Project Fugitives	Project Total	Project Total
	lb/year	lb/year	lb/year	Tons/year
CO				
NOx				
SO2				
PM10/PM2.5				
POC	115	**73**	**187**	0.09

Table 1-B Fugitive Component Count for Project [LCN to LCNHF]

New Equipment	Equipment Description	Safety valves *	Valves	Flanges	Pumps	Service
R-804	HCNHFU diolefin reactor	0	15	10	0	Cat Naphtha
R-4442	LCNHFU diolefin reactor	0	15	10	0	Cat Naphtha
LCNHT	Safety valves *	6	12	0	0	Cat Naphtha
Sampling	Valves	0	16	8	0	Cat Naphtha
Miscellaneous	To be defined	0	20	20	0	Cat Naphtha
P-1855D	Ethanol pump (replacement)	0	14	6	0	Ethanol
Total Components		6	92	54	0	
Emission Factors, lbs/day/component		0	0.00119	0.00166	0.0117	**Total**
Total Fugitive Emissions, lbs/year		0	40	33	0	***73***

* Since Regulation 8 Rule 28 requires new pressure relief devices to be abated, fugitive emissions at the discharge are zero.

Table 2-A Project Criteria Emissions Summary [LCN to HCU]

Criteria Pollutant	Tank 1820	Project Fugitives	Project Total	Project Total
	lb/year	lb/year	lb/year	Tons/year
CO				
NOx				
SO2				
PM10/PM2.5				
POC	115	**109**	**224**	0.11

Table 2-B Fugitive Component Count for Project [LCN to HCU]

New Equipment	Equipment Description	Safety valves *	Valves	Flanges	Pumps	Service
R-804	HCNHFU diolefin reactor	0	15	10	0	Cat Naphtha
R-4442	LCNHFU diolefin reactor	0	15	10	0	Cat Naphtha
LCNHFU	Safety Valves *	6	12	0	0	Cat Naphtha
Sampling	Valves	0	16	8	0	Cat Naphtha
Miscellaneous	To be defined	0	20	20	0	Cat Naphtha
P-8XXX	LCN booster pump to HCU (new)	0	12	20	2	Cat Naphtha
Control Valve	Control valve manifold for LCN to HCU (new)	0	8	12	0	Cat Naphtha
P-1855D	Ethanol pump (replacement)	0	14	6	0	Ethanol
Total Components		6	112	86	2	
Emission Factors, lbs/day/component		0	0.00119	0.00166	0.0117	**Total**
Total Fugitive Emissions, lbs/year		**0**	48	52	9	***109***

* Since Regulation 8 Rule 28 requires new pressure relief devices to be abated, fugitive emissions at the discharge are zero.

Tank emissions from TK-1820 (S-210) were estimated using TANKS 4.09d software, and are summarized in Table 3. TK-1820 is an internal floating roof tank equipped with primary and secondary seals. TK-1820 was originally permitted as a methanol feed storage tank for the MTBE plant (Case 1). The current throughput limit of 575,000 barrels per year and associated truck delivery limit of 2,920 per year to the ethanol/methanol unloading facility (S-209) were based on original methanol service, including offsets. The tank was re-permitted as an ethanol/methanol storage tank for operating flexibility during the MTBE Phase-out Project (Case 2). However, the tank emissions were not re-calculated for ethanol service, because ethanol is a heavier component, has a lower vapor pressure, and has fewer emissions than methanol. In addition, no adjustment was made to offsets for the MTBE Phase-out Project, because methanol was not removed from the list of material allowed in the tank.

This application proposes to limit the material unloaded at S-209 and stored in TK-1820 to ethanol only (i.e., delete methanol), and to increase the throughput at both sources to 1,303,000 barrels per year, based on 6,620 ethanol delivery trucks per year (Case 3). As shown in Table 3, the estimated increase in tank emissions of 115 lbs/year is based on comparing Case 3 emissions with Case 1 emissions.

Table 3 Tank 1820 (S210) Emissions Increase from Increased Ethanol Throughput

	Tank Throughput bbl/year	POC Emissions lb/year	POC Emissions Increase (compared with Case 1)		
			lb/year	lb/day	tpy
Case 1 Methanol	575,000	236	NA	NA	NA
Case 2 Ethanol	575,000	213	(23)	(0.063)	(0.012)
Case 3 Ethanol	1,303,000	351	**115**	0.314	0.057

Case 1 represents the original MTBE Project.
Case 2 represents the MTBE Phaseout Project. Emissions, offsets, and HRSA analysis were not repeated, because methanol was not removed from the permit.
Case 3 represents this project (CARB Phase 3 Project). Tank emission increases must be relative to Case 1, because the existing tank offsets and HRSA are based on Case 1.

Finally, the additional sulfur removed (<0.1 ST/D) by increased hydrofining will be processed in the SRU/TGCU, which is currently permitted for 320 ST/D of sulfur production. Any H2S emissions at the TGCU Flexsorb stack from the incremental sulfur load will be negligible.

III. PLANT CUMULATIVE INCREASE

The cumulative increase in POC emissions for this project is based on the option to route a portion of the LCN production to the HCU [LCN to HCU], since this option has the largest number of new fugitive components in POC service.

Current	New Ton/yr	New Total Ton/yr	Lbs/yr	Tons/yr
POC =	0.00	0.112	224	0.112
NO_x =	0.00	0.000	0.0	0.000
SO_2 =	0.00	0.000	0.0	0.000
CO =	0.00	0.000	0.0	0.000
NPOC =	0.00	0.000	0.0	0.000
PM_{10} =	0.00	0.000	0.0	0.000

IV. TOXIC SCREENING ANALYSIS

A Health Risk Screening Analysis (HRSA) was not required for this application, since none of the toxic trigger levels in Regulation 2 Rule 5 were exceeded. Toxic air contaminant (TAC) emissions for the application are shown in Table 4-A (LCN to LCNHF) and Table 4-B (LCN to HCU).

Table 4-A Project TAC Emissions Summary [LCN to LCNHF]

	S-210 Ethanol Tank	Project Fugitives		Total TAC	BAAQMD Toxic Triggers (Regulation 2-5)		BAAQMD Trigger Exceedance	
		Naphtha	Ethanol		Acute	Chronic	Acute	Chronic
TAC	**lb/year**	**lb/year**	**lb/year**	**lb/year**	**lb/hr**	**lb/year**		
Benzene	0.42	2.08	0.01	2.52	2.90	6.40E+00	NO	NO
Cyclohexane		5.76		5.76	NA	NA	NO	NO
Cyclopentane		9.89		9.89	NA	NA	NO	NO
Ethylbenzene		0.26		0.26	NA	7.70E+04	NO	NO
Heptane (-n)		4.38		4.38	NA	NA	NO	NO
Hexane (-n)		21.56		21.56	NA	2.70E+05	NO	NO
Hydrogen Sulfide		0.18		0.18	0.09	3.90E+02	NO	NO
Methyl-cyclohexane		3.33		3.33	NA	NA	NO	NO
Naphthalene		0.00		0.00	NA	NA	NO	NO
Nonane (-n)		0.27		0.27	NA	NA	NO	NO
Octane (-n)		0.87		0.87	NA	NA	NO	NO
Pentane (-n)		12.08		12.08	NA	NA	NO	NO
Toluene		0.99		0.99	82.00	1.20E+04	NO	NO
Water		0.88		0.88	NA	NA	NO	NO
Xylenes (mixed)		0.43		0.43	49.00	2.70E+04	NO	NO

Table 4-B Project TAC Emissions Summary [LCN to HCU]

	S-210 Ethanol Tank	Project Fugitives		Total TAC	BAAQMD Toxic Triggers (Regulation 2-5)		BAAQMD Trigger Exceedance	
		Naphtha	Ethanol		Acute	Chronic	Acute	Chronic
TAC	**lb/year**	**lb/year**	**lb/year**	**lb/year**	**lb/hr**	**lb/year**		
Benzene	0.42	3.30	0.01	3.73	2.90	6.40E+00	NO	NO
Cyclohexane		9.11		9.11	NA	NA	NO	NO
Cyclopentane		15.64		15.64	NA	NA	NO	NO
Ethylbenzene		0.42		0.42	NA	7.70E+04	NO	NO
Heptane (-n)		6.93		6.93	NA	NA	NO	NO
Hexane (-n)		34.10		34.10	NA	2.70E+05	NO	NO
Hydrogen Sulfide		0.28		0.28	0.09	3.90E+02	NO	NO

Table 4-A Project TAC Emissions Summary [LCN to LCNHF]

	S-210 Ethanol Tank	Project Fugitives		Total TAC	BAAQMD Toxic Triggers (Regulation 2-5)		BAAQMD Trigger Exceedance	
		Naphtha	Ethanol		Acute	Chronic	Acute	Chronic
TAC	**lb/year**	**lb/year**	**lb/year**	**lb/year**	**lb/hr**	**lb/year**		
Methyl-cyclohexane		5.27		5.27	NA	NA	NO	NO
Naphthalene		0.00		0.00	NA	NA	NO	NO
Nonane (-n)		0.43		0.43	NA	NA	NO	NO
Octane (-n)		1.37		1.37	NA	NA	NO	NO
Pentane (-n)		19.10		19.10	NA	NA	NO	NO
Toluene		1.56		1.56	82.00	1.20E+04	NO	NO
Water		1.38		1.38	NA	NA	NO	NO
Xylenes (mixed)		0.69		0.69	49.00	2.70E+04	NO	NO

Valero estimated TAC emissions by speciating the criteria pollutant emissions estimates for the project sources, including TK-1820 and the fugitive components. Using composition data for naphtha and ethanol obtained from Valero's MSDS's, TANKS 4.09d was used to estimate: 1) vapor-phase TAC emissions from modeling S-73 (TK-1733) Light Cat Naphtha storage tank as basis for calculating TAC emissions from fugitive components in naphtha service; and 2) vapor-phase TAC emissions from modeling S-210 (TK-1820) ethanol storage tank as a basis for calculating TAC emissions from fugitive components in ethanol service.

Regarding TAC emissions from S-210 ethanol storage tank and ethanol fugitive emissions, ethanol itself is not a TAC. However, in order to denature fuel grade ethanol and make it unsuitable for human consumption, a contaminant such as gasoline must be added to the ethanol. Based on Valero's MSDS for fuel grade ethanol, about 5% gasoline has been added. Gasoline contains benzene, which is a toxic substance. The MSDS also states that fuel grade ethanol contains less than 1,100 ppm (0.11%) benzene. The changes for this project will increase ethanol emissions from S-210 by about 115 lbs/year above current permitted levels based on methanol service, with a corresponding increase in benzene emissions of about 0.42 lbs/year from the gasoline in ethanol, and benzene emissions of about 0.01 lbs/year from the gasoline in ethanol fugitive emissions.

V. BEST AVAILABLE CONTROL TECHNOLOGY

BACT requirements are specified in Regulation 2-2 (New Source Review), which applies to new or modified sources with an increase in emissions of 10.0 pounds or more per highest day of POC emissions. Since increased emissions from this project are less than 1 lb/day, BACT requirements do not apply, except for Regulation 8-28-302 which requires new pressure relief devices to be abated.

VI. OFFSETS

Offsets are required for this project because Valero is a major facility with emissions greater than 100 ton/yr for POC emissions per Regulation 2-2-302. POC emissions will require offsets at a 1.15 to 1.0 ratio. Estimated POC offsets based on the emissions in Table 1-A (LCN to LCNHF) are 1.15 x 187 lb/year or 0.108 tons/year. Estimated project POC offsets based on the emissions in Table 2-A (LCN to HCU) are 1.15 x 224 lb/year or 0.129 tons/year. The final fugitive component count will be determined after construction is completed and within 60 days after the project is started up. Final POC offsets for the project will be based on the final fugitive component count. Valero will surrender the required emission reduction credits using Certificate of Deposit # 833.

Thus, the Banking Certificate # 833 will be reissued to Valero in the amount of 77.989 tons POC/yr (original amount = 78.118 tons/yr – 0.129 tons/yr).

VII. STATEMENT OF COMPLIANCE

The owner/operator of S-210 is subject to and expected to continue to comply with Regulation 8, Rule 5 (Storage of Organic Liquids). Per 8-5-301 (Storage Tank Control Requirements), the tank is 630,000 gallon capacity and stores denatured ethanol with a vapor pressure of 4.5 psi and is an internal floating roof tank. Per 8-5-305 (Requirements for Internal Floating Roof Tanks), the tank has a mechanical shoe primary seal (subject to 8-5-321) and a rim-mounted secondary seal (subject to 8-5-322). The owner operator is also subject to and expected to comply with 8-5-320, Floating Roof Tank Fitting Requirements.

The fugitive components summarized in Tables 1 or 2 above will be subject to Sections 301, 302, 303, 304, 306, and 307 in Regulation 8, Rule 18 "Equipment Leaks". Sections 301, 302, and 304 require, among other things, that organic compound leaks, not exceed 100 ppm for general components, valves, and connections. In similar fashion, Section 303 requires, among other things, that organic compound leaks, not exceed 500 ppm for pumps and compressors.

NSPS: The owner/operator of S-210 is subject to and expected to continue to comply with 40 CFR 60 Subpart Kb – Standards of Performance for Volatile Organic Liquid Storage Vessels for Which Construction, Reconstruction, or Modification Commenced after July 23, 1984.

A "process unit" is defined in Section 60.591 of 40 CFR Part 60, Subpart GGGa "Standards of Performance for Equipment Leaks of VOC in Petroleum Refineries for Which Construction, Reconstruction, or Modification commenced after November 7, 2006 " (NSPS GGGa) as follows:

"*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*."

It can seen from above that S-1011 and S-1024 meet the above definition of a process unit in NSPS GGGa. Therefore, the fugitive components summarized in Tables 1 or 2 above are subject to the above rule.

NESHAPS: The owner/operator of S-210 are subject to and expected to continue to comply with 40 CFR 63 Subpart CC – National Emission Standards for Hazardous Air Pollutants for Petroleum Refineries. Per Section 63.640(n)(1), existing affected sources must comply with this regulation by compliance with control requirements of 40 CFR 60 Subpart Kb, except for section 63.640(n)(8).

This project is considered to be ministerial under the District's CEQA Regulation 2-1-311 and therefore is not subject to CEQA review. The engineering review for this project requires only the application of standard permit conditions and standard emission factors in accordance with Permit Handbook Chapter 3.1 and 3.4, and therefore is not discretionary as defined by CEQA.

Valero has completed and submitted to the District CEQA Appendix H, Environmental Information Form, for the project. The addition of two new hydrofiner reactors at S-1011 and S-1024 does not result in any emission because there is no intended opening and no significant quantities of air contaminants are emitted. The District has reviewed the CEQA Appendix H form. Valero only checked "Yes" for item 29 regarding "Use or disposal of potentially hazardous materials, such as toxic substances, flammables or explosives". All other items on the form were checked "No". Valero's rationale in responding "Yes" to item 29 was to shed light on the fact that the ethanol, which will be stored in S-210 is flammable. Valero has indicated that S-210 and the ethanol unloading rack S-209 were designed to prevent leaks, spillage, and reduce the risk of fires.

A memo from Dr. Glen Long – Supervising Air Quality Engineer, Toxics Evaluation Section to Barry Young – Supervising Air Quality Engineer, Permit Evaluation Section dated October 27, 2005 states that an increase of 21 round-trip diesel fueled delivery trucks per day (42 one-way trips) corresponds to a maximum lifetime cancer risk of 10 in a million and a maximum chronic hazard index of 0.00602. Therefore, an increase in diesel fueled truck traffic below the 21 round-trip diesel fueled delivery trucks per day threshold will not exceed the lifetime cancer risk of 10 in a million, implying a detailed site-specific Health Risk Screening Analysis (HRSA) is not required for such projects.

This project is over 1,000 ft from the nearest public school and is therefore not subject to the public notification requirements of Regulation 2-1-412.

A toxic risk screening analysis is not required.

BACT and PSD are not required

CONDITIONS

Condition # 9296
Amended by Application #18582
For Sources:

S-209	Ethanol Truck Unloading Rack
S-210	Ethanol Storage Tank, TK-1820
S-1003	Hydrocracker Unit
S-1011	Heavy Cat Naphtha Hydrofiner
S-1014	Cat Light Ends Unit
S-1024	Light Cat Naphtha Hydrotreater

For Sources S-40 Steam Boiler, S-158 Fixed Roof Tank, S-209 Ethanol Railcar Unloading Facility, S-210 Floating Roof Tank, S-211 Alkylate Debutanizer (at former MTBE Unit) and S-1024 Light Cat Naphtha Hydrofiner

A1. Deleted. [Basis: Superseded by BAAQMD Condition 18043]

A2. Deleted. [Basis: Inspection and Maintenance program is covered by Regulation 8, Rule 18.]

A3. Deleted. [Basis: Inspection and Maintenance program is covered by Regulation 8, Rule 18.]

A4. The MTBE unit shall be completely shutdown except for the MTBE tower used to remove butane from the Alkylate as part of the MTBE Phaseout Project. <Basis: Banking Credits>

S-209 Ethanol Unloading Station

B1. The Owner/Operator shall only permit the transport trucks to travel on paved roads at all times inside of the facility. [Basis: Cumulative Increase]

B2. All deliveries of ethanol shall be from the transport trucks unless the Owner/Operator first received prior written approval from the APCO to use other delivery modes. [Basis: Cumulative Increase]

B3. Deleted. [Basis: The Owner/Operator paved the unpaved road prior to the operation of the MTBE facility.]

B4. The Owner/Operator shall limit the total number of truck deliveries of ethanol at the facility to no more than 6,620 trucks in any rolling 12 consecutive month period. [Basis: Cumulative Increase]

B5. The Owner/Operator shall deliver the dispensed ethanol from the transport trucks to the S-210 ethanol tank or any tank with equivalent controls subject to advance written approval by the APCO. [Basis: Cumulative Increase]

B6. The Owner/Operator shall limit the total fugitive POC emissions from S-209 to no more than 0.41 ton in any rolling 12 consecutive month period. [Basis: Cumulative Increase]

B7. Deleted. [Basis: Inspection and Maintenance program is covered by Regulation 8, Rule 18.]

B8. Deleted. [Basis: Maximum leak concentrations are covered by Regulation 8, Rule 18.]

B9. The Owner/Operator shall record the total number of truck deliveries of ethanol weekly in a District approved log and totalized monthly. The Owner/Operator shall retain these records for a period of at least 5 years from date of entry. The log shall be kept on site and made available to District staff upon request. [Basis: Banked POC credits]

S-210 Ethanol Tank

C1. The Owner/Operator shall limit the total throughput of product from S-210 to no more than 1,303,000 barrels of ethanol in any rolling 12 consecutive month period. [Basis: Cumulative Increase, BACT, Offsets]

C2. The Owner/Operator shall limit the total POC emissions from S-210 Storage Tank, including associated fugitive POC emissions, to no more than 0.87 ton in any rolling 12 consecutive month period. [Basis: Cumulative Increase, BACT, Offsets]

C3. Deleted. [Basis: Inspection and Maintenance program is covered by Regulation 8, Rule 18.]

C4. Deleted. [Basis: Maximum leak concentration is covered by Regulation 8, Rule 18.]

C5. The Owner/Operator shall only store ethanol in the S-210 internal floating roof tank unless written authorization is received from the APCO allowing the use of another product in advance of any use of such product. [Basis: Cumulative Increase, Offsets, Toxics]

C6. The Owner/Operator shall record the total monthly throughput of ethanol withdrawn from the S-210 Storage Tank in a District approved log. This record shall be retained for a period of at least 5 years from date of entry. The log shall be kept on site and made available to District staff upon request. [Basis: Cumulative Increase]

S-40 Steam Boiler

D1. The Owner/Operator shall equip the steam boiler (S-40) with Low NOx burners and flue gas recirculation. [Basis: BAAQMD Regulation 9-10, Offsets, Cumulative Increase]

D2. The Owner/Operator shall limit the NOx concentration from S-40 to no more than 30 ppmv, dry, corrected to 3 % oxygen, as averaged over any consecutive 12 month period. (Basis: Offsets)

D3. TheOwner/Operator shall limit the CO concentration to no more than 400 ppmv, dry, corrected to 3 % oxygen. [Basis: BAAQMD Regulation 9-10, Cumulative Increase]

D4. The Owner/Operator shall operate the scrubber system upstream of S-40 Boiler at an annualized daily averaged (calendar year) total reduced sulfur concentration at or below 51 ppm, by volume. [Basis: Offsets]

D5. Completed

D6. The Owner/Operator shall maintain daily records, in a District approved log, of the total reduced sulfur concentration required in part 4. These records shall be retained for a period of at least 5 years from date of entry. The logs shall be kept on site and made available to District staff upon request. [Basis: Banked POC credits]

D7. The Owner/Operator shall operate the S-40 Utility package Boiler at a firing rate at or below 218 million Btu per hour. (Basis: Cumulative Increase, Toxics)

D8. Deleted. Basis: This part was not part of the NSR Authority to construct and was inadvertently left in this section. Furthermore, it is covered by BAAQMD Regulation 9-10-502.1.

D9. Deleted. Basis: This part was not part of the NSR Authority to construct and was inadvertently left in this section. Furthermore, it is covered by BAAQMD Regulation 9-10-502.2.

D10. Deleted. Basis: This part was not part of the NSR Authority to construct and was inadvertently left in this section. Furthermore, it is covered by BAAQMD Regulation 9-10-504.

D11. Deleted. [Basis: Recordkeeping is covered by BAAQMD Regulation 9-10-504.]

S-1024 Light Cat Naphtha Hydrofiner

E1. The total throughput of product at this source shall not exceed 24,000 barrels per day, as average over any calendar year. [Basis: Cumulative Increase, Toxics]

E2. The total daily throughput of product at this source shall be recorded daily in a District approved log. This record shall be retained for a period of at least five years from the date of entry. It shall be kept on site and made available to the District staff upon request. [Basis: Recordkeeping]

CARB Phase III Fugitive Equipment

F1.a. The Owner/Operator shall equip all light hydrocarbon control valves installed as part of the CARB Phase III with live loaded packing systems and polished stems, or valves complying with Regulation 8, Rule 18 requirement. [Basis: Cumulative Increase, offsets]

e. The Owner/Operator shall equip all flanges/connectors installed in the light hydrocarbon piping systems as a result of the CARB Phase III with graphitic-based gaskets unless the service requirements prevent this material. [Basis: Offsets, Cumulative Increase]

f. The Owner/Operator shall equip all new light hydrocarbon centrifugal pumps installed as part of the CARB Phase III with a seal-less design or with dual mechanical seals with a heavy liquid barrier fluid, or pumps complying with Regulation 8, Rule 18 requirement. [Basis: Offsets, Cumulative Increase]

g. The Owner/Operator shall integrate all new fugitive equipment installed as part of the CARB Phase III, in organic service, into the owner's fugitive equipment monitoring and repair program. [Basis: Compliance monitoring]

F2. The Owner/Operator shall submit a count of installed pumps, valves, and flanges/connectors every 180 days until completion of the project. For flanges/connectors, the owner/operator shall also provide a count of the number of graphitic-based and non-graphitic gaskets used. The Owner/Operator has been permitted to install fugitive components (112 valves, 86 flanges/connectors, 2 pumps, 6 PRDs) with a total POC emission rate of 0.055 TPY for the entire CARB Phase III project. If there is an increase in the total fugitive component emissions from the CARB Phase III Project, the plants cumulative emissions for the CARB Phase III Project shall be adjusted to reflect the difference between emissions based on predicted versus actual component counts. The Owner/operator may have enough remaining contemporaneous emissions reduction credits (ERC's) to cover any increase in POC fugitive emissions beyond the original projection. If not, the Owner/Operator shall provide to the District all additional required offsets at an offset ratio of 1.15:1 no later than 14 days after the submittal of the final POC fugitive equipment count for the CARB Phase III Project. If the actual component count is less than the predicted, at the completion of the CARB Phase III Project, the total will be adjusted accordingly. Any ERC's applied by the facility in excess of the actual total fugitive emissions will be credited back to Owner/Operator prior to issuance of the permits. [Basis: Cumulative Increase, Toxics]

IX. RECOMMENDATION

Issue a conditional Authority to Construct to Valero Refining Company for the following equipment:

S-209	**Ethanol Truck Unloading Rack**
S-210	**Ethanol Storage Tank, TK-1820**
S-1011	**Heavy Cat Naphtha Hydrofiner (add a Hydrofiner Reactor)**
S-1014	**Cat Light Ends Unit**
S-1024	**Light Cat Naphtha Hydrotreater (add a Hydrofiner Reactor)**

_____
Thu H. Bui
Senior Air Quality Engineer
Permit Services Division
Date: _____

THB:disk-T\Valero\18582e\March 5, 2009

EVALUATION REPORT
VALERO REFINING COMPANY
Application #19634/TV #19636 - Plant #12626

3400 East Second St.
Benicia, CA 94510

I. BACKGROUND

Valero has applied to reclassify several sources at the Wastewater Treatment Plant. In the associated Title V permit application (A/ N 19636) they have requested changes in the applicable requirements for the reclassified sources. The affected sources are:

S-131 Wastewater Sludge Tank (TK-2069)
S-150 Primary Sludge Thickener (PST-2051)
S-192 BIOX Sludge Thickener (TK-2052)
S-199 Oil-Water Separator Slop Oil Vessel (D-2055)
S-200 Collection Drum (D-2056)
S-208 Coker Feed Drum (D-920)
S-217 Sludge Tank (TK-791NSD)
S-218 Sludge Tank (TK-424SD)
S-219 Sludge Tank (TK-131SD)

In the Title V permit, these sources are currently classified as tanks with respect to BAAQMD Regulation 8, Organic Liquids and are subject to requirements of Regulation 8, Rule 5 Storage of Organic Liquids. Valero has applied to reclassify these sources as wastewater sources subject to BAAQMD Regulation 8, Rule 8 Wastewater Collection and Separation. Figure 1 is a process flow diagram for the wastewater treatment plant and the affected sources. Figure 2 is a plot plan showing the locations of the affected sources. The following paragraphs explain the requested reclassifications and the rationale for each.

S-150 (TK-2051). TK-2051 (S-150) is the primary sludge thickener (PST). As shown in Figure 1, it receives sludge from the Induced Static Flotation cells (ISF) (S-197 and S-198) and performs a three-phase separation (Oil/Water/Sludge) with an internal rotating element. It has internals that include a large scraper arm (similar to a biox mechanical clarifier), skimming weirs, and four skim arms that skim free oil (if any accumulates) to D-2056 (S-200) to be re-processed at the ISFs. This vessel is analogous to a settling drum or vessel as it provides for separation and further processing of each phase of material. The emissions from S-150 are abated by the A-37 carbon canisters and/or the A-57 thermal oxidizer at the Waste Water Treatment Plant (WWTP).

In the Title V permit application (A/N 19636), Valero has applied to reclassify S-150 in the as a sludge-dewatering unit, subject to the wastewater source requirements in Regulation 8-8-304 rather than to storage tank requirements in Regulation 8, Rule 5. The abatement devices (A-37 and/or A-57) satisfy the requirements for abatement in Regulation 8-8-304. For compliance with the Benzene Waste Operations NESHAP 40 CFR 61 Subpart FF (BWON), Valero states that S-150 is correctly classified as a tank subject to 40 CFR 61.343 and abated by A-37 and/or A-57, which are subject to 61.349. S-150 is currently called a tank due to the fact that it was a storage tank prior to BAAQMD Regulation 8, Rule 8 in 1991, and it has retained its original designation in Valero's internal systems. In addition to the proposed applicability changes in the Title V permit, Valero proposes to redesignate S-150 as PST-2051 rather than TK-2051 in the Permit to Operate, Title V permit, and in Valero's internal systems. Valero proposes to create new tables

for this source in the Title V permit in the wastewater sections (H) as Tables IV-H7 and Table VII-H7 and to delete the existing tables for S-150 in Section J (Table IV-J37 and Table VII-J37).

S-131 (TK-2069). TK-2069 (S-131) is the wastewater sludge tank at the WWTP. As shown in Figure 1, this source receives sludge from the primary sludge thickener (S-150) and the BIOX sludge thickener (S-192). Sludge from this tank is sent to the Coker Feed Drum (S-208). The emissions from S-131 are abated by the A-37 carbon canisters and/or the A-57 thermal oxidizer at the WWTP. In the Title V permit application (A/N 19636), Valero has applied to reclassify S-131 as part of the sludge-dewatering unit, subject to the wastewater source requirements in Regulation 8-8-304 rather than to storage tank requirements in Regulation 8, Rule 5. The abatement devices (A-37 and/or A-57) satisfy the requirements for abatement in Regulation 8-8-304. For compliance with BWON, Valero states that S-131 is correctly classified as a tank subject to 40 CFR 61.343 and abated by A-37 and/or A-57, which are subject to 61.349. In the Title V permit, Valero proposes to consolidate this source with S-150 in new tables in Section H (Table IV-H7 and Table VII-H7), and to delete the existing tables for S-131 in Section J (Table IV-J36 and Table VII-J36).

S-192 (TK-2052). TK-2052 (S-192) is the BIOX sludge thickener. It is an open-roof tank and does not contain organic liquids as organic liquids are defined in Regulation 8-5-204. In this application, Valero explains that this source should not be subject to Regulation 8, Rule 5 because it does not store organic liquids. Since it should not be subject to Regulation 8, Rule 5, then it also should not be subject to permit condition 20762, which applies to organic liquid storage tanks that are exempt from Regulation 8, Rule 5 per 8-5-117 due to low vapor pressure. Further, the source meets the definition of Secondary Treatment Processes in Regulation 8-8-208 and is exempt from Regulation 8, Rule 8 per 8-8-113. In the Title V permit, Valero proposes to make changes for S-192 in existing Table IV-H6 and Table VII-H6.

S-199 (D-2055). D-2055 (S-199) is a 1300 gallon drum that was designed to receive any oil skimmed from the overhead of the Corrugated Plate Separators (CPS) (S-194 and S-195) as shown in Figure 1. The emissions from S-199 are abated by the A-37 carbon canisters and/or the A-57 thermal oxidizer at the WWTP. In this application, Valero explains that currently, each CPS operates well below the level where the skimming facilities are located. Occasionally, the level will build in one or both of the CPS units due to flow imbalances into and out of the vessels. When this occurs, the overhead of the CPS collects in D-2055 (S-199) and is returned to the process. In the Title V permit application (A/N 19636), Valero proposes to reclassify S-199 in the Title V permit as an oil-water separator slop oil vessel, subject to the wastewater source requirements in Regulation 8-8-305 rather than to storage tank requirements in Regulation 8, Rule 5. S-199 will comply with the 8-8-305.2 option for control of oil-water separator slop oil vessels, which is satisfied by abatement with A-37 and/or A-57. For compliance with the Benzene Waste Operations NESHAP (BWON), Valero states that S-199 is correctly classified as a tank subject to 40 CFR 61.343 and abated by A-37 and/or A-57, which are subject to 61.349. In the Title V permit, Valero proposes to create new tables for this source in the wastewater sections (H) as Tables IV-H8 and Table VII-H8 and to delete the existing tables for S-199 and S-200 in Section J (Table IV-J38 and Table VII-J38).

S-200 (D-2056). D-2056 (S-200) is a 2300 gallon drum that was designed to be the feed surge drum for the P-2007 pumps to protect the pumps from cavitation. As shown in Figure 1, the P-2007 pumps take the overflow water from the primary sludge thickener (S-150) and recycle it to the front end of the ISFs (S-197 and S-198) for retreatment. The emissions from S-200 are abated by the A-37 carbon canisters and/or the A-57 thermal oxidizer at the WWTP. In this application, Valero states that functionally, S-200 is part of the S-150 sludge-dewatering unit and that it should be subject to the wastewater source requirements in Regulation 8-8-304 rather than

to storage tank requirements in Regulation 8, Rule 5. The abatement devices (A-37 and/or A-57) satisfy the requirements for abatement in Regulation 8-8-304. For compliance with the Benzene Waste Operations NESHAP (BWON), Valero states that S-200 is correctly classified as a tank subject to 40 CFR 61.343 and abated by A-37 and/or A-57, which are subject to 61.349. In the Title V permit, Valero proposes to consolidate S-200 with S-131 and S-150 in new Tables IV-H7 and Table VII-H7 and to delete the existing tables for S-199 and S-200 (Table IV-J38 and Table VII-J38).

S-208 (D-920). D-920 (S-208) is the Coker Feed Drum and is designed to provide surge capacity for the sludge feed pumps at the Coker. As shown in Figure 1, primary sludge or BIOX sludge stored at the WWTP in TK-2069 (S-131) and Baker Tanks (2050 A, B, and C) is either pumped or vacuum trucked to D-920 (S-208) so that the Coker can process the sludge. Valero has applied to reclassify D-920 as a process vessel. This argument is based on the definition for process vessel in recent amendments to Regulation 8, Rule 10 Process Vessel Depressurization. This definition states, "… These vessels shall include, but, are not limited to reactors, accumulator vessels, knockout pots, surge / settling drums, or other similar devices" (8-10-204). Valero argues that the process vessel definition helps to further clarify and distinguish the functional differences between a storage tank and process vessel. D-920 (S-208) is integral to the operation of the coker and was intended to maintain a liquid level to protect associated equipment (in this case, the coker sludge feed pumps). S-208 is abated by venting to the refinery flare gas recovery system (refinery fuel gas system), as are many other process vessels. S-208 has a throughput limit in Condition #8771. The purpose of this limit is to limit the amount of wastewater sludge fed to the coker. The basis for this limit was based on the District's concern that dioxins could be formed in the Fluid Coker if residual chlorine remained in the wastewater sludge feed stream. This throughput limit remains valid, however, since there are multiple sources of the sludge used for coker feed and since the sludge can be pumped or vacuum trucked to S-208, there is no single source upstream of S-208 to which the sludge throughput limit can be effectively transferred. Valero proposes to reassign the coker sludge feed throughput limit in Condition 8771 to S-6 (Fluid Coker).

For compliance with the Benzene Waste Operations NESHAP (BWON), Valero states that S-208 is exempt from BWON standard because its emissions are vented to the fuel gas recovery system per 61.340(d). S-208 is still subject to annual BWON inspections for no detectable emissions, and quarterly visual inspections for leaks. S-208 is also subject to BWON requirements for control device bypass lines. S-208 is required to have a control device, but is exempt from the BWON control device monitoring standards in 61.349 per 61.340(d) because it is controlled by the refinery fuel gas system.

S-217 (TK-791NSD), S-218 (TK-424SD), and S-219 (TK-131SD). These sources are used to store BIOX sludge as shown in Figure 1. Valero states that these sources meet the definition of Secondary Treatment Processes in Regulation 8-8-208 and are exempt from Regulation 8, Rule 8 per 8-8-113. Valero explains that these sources are Baker tanks and do not contain organic liquids as defined in Regulation 8-5-204, therefore, they should not be subject to Regulation 8, Rule 5. Since they should not be subject to Regulation 8, Rule 5, then they also should not be subject to permit condition 20762, which applies to organic liquid storage tanks that are exempt from Regulation 8, Rule 5 per 8-5-117 due to low vapor pressure In the Title V permit, Valero proposes to consolidate these sources with the BIOX sludge thickener (S-192) in existing Tables IV-H6 and Table VII-H6 and to delete the existing tables for S-217, S-218, and S-219 (Tables IV-H7 and Table VII-H7).

Based on the information provided by Valero and the analysis below, the District's staff has decided to grant Valero the above request. BACT analysis and emission offsets are not required since there is no emission increase from this application.

II. EMISSION CALCULATIONS

This application will not result in an emission increase.

III. PLANT CUMULATIVE INCREASE SINCE 4/5/1991

There are no net changes to the plant cumulative emissions.

IV. TOXIC SCREENING ANALYSIS

This application will not result in an increase in toxic air contaminant emissions from existing levels. Therefore, a Toxic RSA is not required per Regulation 2-5.

V. BEST AVAILABLE CONTROL TECHNOLOGY

This application will not result in any emission increase from existing levels. Therefore, BACT is not triggered per Regulation 2-2-301.

VI. OFFSETS

This application does not result in emission increases. Therefore, offsets are not needed per Regulation 2-2-302.

VII. STATEMENT OF COMPLIANCE

A. S-131 (TK-2069), S-150 (PST-2051), and S-200 (D-2056) are subject to and comply with the following Rule and Regulations:

Regulation 8, Rule 8 WASTEWATER COLLECTION AND SEPARATION SYSTEMS
8-8-304 Sludge dewatering unit; organic compound vapor recovery system with efficiency >= 95%

Regulation 8, Rule 18 EQUIPMENT LEAKS

Condition 11879

BAAQMD State Implementation Plan, Regulation 8, Rule 8
8-8-304 Sludge dewatering unit; organic compound vapor recovery system with efficiency >= 95%

40 CFR 61 Subpart FF Benzene Waste Operations NESHAPs
61.343 Requirements for tanks

61.349 Requirements for closed vent systems and control devices

40 CFR 63 Subpart CC NESHAPs for Petroleum Refineries
63.647 Requirements for Group 1 wastewater streams

B. S-192 (TK-2052), S-217 (TK-791NSD), S-218 (TK-424SD), and S-219 (TK-131SD) are subject to and comply with the following Rules and Regulations:

Regulation 8, Rule 8 WASTEWATER COLLECTION AND SEPARATION SYSTEMS
8-8-113 Exemption, Secondary Wastewater Treatment Processes And Stormwater Sewer Systems

BAAQMD State Implementation Plan, Regulation 8, Rule 8
8-8-113 Exemption, Secondary Wastewater Treatment Processes And Stormwater Sewer Systems

C. S-199 (D-2055) is subject to and complies with the following Rules and Regulations:

Regulation 8, Rule 8 WASTEWATER COLLECTION AND SEPARATION SYSTEMS
8-8-305.2 Oil water separator and/or sludge dewatering unit slop oil vessel; organic compound vapor recovery system with efficiency >= 70%

Regulation 8, Rule 18 EQUIPMENT LEAKS

Condition 11879

BAAQMD State Implementation Plan, Regulation 8, Rule 8
8-8-305.2 Oil water separator and/or sludge dewatering unit slop oil vessel; organic compound vapor recovery system with efficiency >= 70%

40 CFR 61 Subpart FF Benzene Waste Operations NESHAPs
61.343 Requirements for tanks
61.349 Requirements for closed vent systems and control devices

40 CFR 63 Subpart CC NESHAPs for Petroleum Refineries
63.647 Requirements for Group 1 wastewater streams

D. S-208 (D-920) is subject to and comply with the following Rule and Regulations:

Regulation 8, Rule 2 MISCELLANEOUS OPERATIONS
8-2-301 Miscellaneous operation with an emission containing less than 6.8 kg. (15 lbs.) per day and containing a concentration of more than 300 PPM total carbon on a dry basis

Regulation 8, Rule 18 EQUIPMENT LEAKS

40 CFR 61 Subpart FF Benzene Waste Operations NESHAPs

40 CFR 63 Subpart CC NESHAPs for Petroleum Refineries

This project is considered to be ministerial under the District's CEQA Regulation 2-1-311 and therefore is not subject to CEQA review. The engineering review for this project requires only

the application of standard permit conditions and standard emission factors in accordance with Permit Handbook Chapter 3.3 and therefore is not discretionary as defined by CEQA.

These sources are over 1,000 ft from the nearest public school and is therefore not subject to the public notification requirements of Regulation 2-1-412.

BACT, offsets, and PSD are not triggered.

VIII. CONDITIONS

No change in Condition #8771 for S-208.

IX. RECOMMENDATION

Reclassify the source specific applicable requirements in the TV Permit from Regulation 8-5-Storage of Organic Liquids to Regulation 8-8-Wastewater Collection and Separation Systems for the following sources:

S-131 Wastewater Sludge Tank (TK-2069)
S-150 Primary Sludge Thickener (PST-2051)
S-192 BIOX Sludge Thickener (TK-2052)
S-199 Oil-Water Separator Slop Oil Vessel (D-2055)
S-200 Collection Drum (D-2056)
S-217 Sludge Tank (TK-791NSD)
S-218 Sludge Tank (TK-424SD)
S-219 Sludge Tank (TK-131SD)

Reclassify the source specific applicable requirements in the TV Permit from Regulation 8-5-Storage of Organic Liquids to Regulation 8-2-Miscellaneous Operations for the following source:

S-208 Coker Feed Drum (D-920)

_____

Thu H. Bui
Senior Air Quality Engineer
Engineering Division
Date: _____

THB:T:\Valero\19634\19634e\March 5, 2009

EVALUATION REPORT
VALERO REFINING CO.
Application #19826/19897 (Title V) - Plant #12626

3400 E. Second St.
Benicia, CA 94510

BACKGROUND

Valero has submitted this application (A/N 19826) together with an associated Title V application (A/N 19897) to revise both permits with respect to the Benzene Waste Operations NESHAP (40 CFR 61 Subpart FF) and other wastewater regulations.

A This application (A/N 19826) includes a request for a change of condition to the Authority to Construct/Permit to Operate for the following equipment (Condition 4882).

S-9 Vapor Recovery System

S-18 South Flare (ST-2101)

S-188 Oil/Water/Sediment Separator

S-189 Induced Static Flotation Cell

S-188 and S-189 are located at the Waste Water Treatment Plant. Permit condition 4882 requires that S-188 and S-189 are to be vented to the existing flare (S-18) at all times. These sources are actually vented to the refinery fuel gas system through the flare gas recovery system (S-9) and are vented to the flare only in the event of an overpressure in the flare gas recovery system. The emissions from these sources are exempt from the control standards in the Benzene Waste Operations NESHAP (BWON) 40 CFR 61 Subpart FF in accordance with the 61.340(d) exemption for emissions vented to fuel gas. The requested change in condition correctly describes the control method for S-188 and S-189 emissions.

B The associated Title V application (A/N 19897) proposes to incorporate the changes to the permit conditions as requested in this application and to modify the applicable requirements for the Benzene Waste Operations NESHAP (40 CFR 61 Subpart FF) in the Facility A0901 Title V Permit to reflect the compliance option selected by Valero for the Benicia Asphalt Plant. The requirements for the following sources will be modified:

S-161 Oily Water Sewer Pipeline

S-188 Oil/Water/Sediment Separator

S-189 Induced Static Flotation Cell

S-194 Oil/Water/Sediment Separator #2006

S-195 Oil/Water/Sediment Separator #2056

S-197 Induced Static Flotation Cell #2007

S-198 Induced Static Flotation Cell #2057

A-57 WWTP Thermal Oxidizer

A-37 WWTP Carbon Canisters

Sitewide

1. Remove applicable Benzene Waste Operations NESHAP (BWON) 40 CFR 61 Subpart FF requirements for treatment units from the Sitewide tables (Table IV-A and Table VII-A). There are no BWON treatment units at the facility. Additional changes to remove treatment unit requirements are presented in the separate application to reclassify wastewater sources (A/N 19634/19636 (Title V).
2. Add additional applicable BWON requirements for sources vented to fuel gas (S188 and S189). BWON 61.340(d) only exempts the emissions that are vented to fuel gas, so the sources are still subject to annual BWON inspections for no detectable emissions, and quarterly visual inspections for leaks. These sources are also subject to BWON requirements for control device bypass lines. They are required to have a control device, but are exempt from the BWON control device monitoring standards in 61.349 per 61.340(d) because control is provided by venting to the refinery fuel gas system.
3. Roll out wastewater regulation requirements to a greater level of detail in the Table IV's. This does not change the applicability of the requirements, but facilitates compliance and development of Valero's compliance assurance system.
4. Change the list of applicable 40 CFR 63 Subpart CC requirements for all BWON sources at the facility, including any sources that manage uncontrolled BWON wastes subject to 61.342(e)(2). The BWON waste streams, including the uncontrolled waste streams, are Group 1 wastewater streams as defined in 40 CFR 63 Subpart CC, and are subject to 63.640(c)(3); 63.641; 63.647(a); 63.647(c); and 63.654(a).
5. Add 40 CFR 60 Subpart QQQ requirements for individual drain systems either in a separate table or in the sitewide tables. Some of the drains in the refinery are subject to 40 CFR 60 Subpart QQQ.

Valero has historically elected to comply with, and is now required by the EPA Consent Decree to comply with, the 61.342(e) compliance option (Treat to 6 or 6BQ option) for the Benzene Waste Operations NESHAP, 40 CFR 61 Subpart FF (BWON). Valero complies with the regulation for the Refinery (B2626), the Asphalt Plant (A0901), and the Valero-operated, Nustar-owned tanks (B5574) as a single consolidated facility.

In the 6BQ compliance option, the facility must control all non-aqueous waste streams from their point of generation until they are either treated to remove the benzene to specified levels or until the waste is recycled to the process [61.342(e)(1)]. The facility may elect not to control their aqueous waste streams (>= 10% water) as long as the total benzene in the uncontrolled waste streams does not exceed 6 Mg/year [61.342(e)(2)]. To comply, the facility must identify each benzene waste stream subject to the regulation, determine whether the waste stream is to be controlled or uncontrolled, determine the quantity of each waste stream and the benzene concentration in each waste stream at the point of generation, and calculate the total annual amount of benzene in the facility's waste (TAB). The total annual benzene in the uncontrolled waste streams is also tabulated separately and reported as the target benzene quantity or TBQ for compliance with 61.342(e)(2). The TBQ must not exceed 6 Mg/year. The regulation specifies the allowable methods for determining the waste stream quantities and benzene concentrations and for calculating the TAB and TBQ for each waste stream in 61.355 (Test methods, procedures, and compliance provisions). The methodology for determining the total annual benzene (TAB) is found in 61.355 with paragraphs 61.355(a), (b), and (c) applying to the Valero Benicia facilities. The methodology for determining the target benzene quantity (TBQ) for compliance with 61.342(e)(2) is found in 61.355(k). Valero estimates the TAB and TBQ quarterly and projects the TBQ annually each quarter to verify that they remain on track to comply with the 6 Mg/year limit. Each year, Valero reviews and updates the list of benzene waste streams at the

facilities and the benzene quantification data for each waste stream to determine the TAB and TBQ for that year. Both the TAB and the TBQ are reported in the annual report.

Each controlled waste stream must be managed in waste management units (individual drain systems, tanks, oil-water separators, treatment systems, containers, closed vent systems, and control devices) that comply with the waste management unit standards in 61.343 through 61.347 and the closed vent system and control device standards in 61.349. To comply with the standards for the waste management units and the closed vent systems and control devices, the facility must perform periodic inspections as required in 61.343 through 61.349. They must monitor the operation of the waste management units and the control devices in 61.354, and must perform recordkeeping and reporting as required in 61.356 and 61.357, respectively.

Detailed records must be kept for each waste stream subject to the regulation as required in 61.356(b). If treatment units are used, then records must be kept, including design information and performance test records. If control devices are used, then records must be kept, including design information and performance test records. Specific records are required for specific types of control devices as specified in 61.356(f). Records must be kept per 61.356(g) for each periodic (quarterly) inspection required by 61.343 through 61.347 that identifies a problem. Records must be kept per 61.356(h) for each annual test of no detectable emissions required by 61.343 through 61.347 and 61.349. Records must be kept per 61.356(j) for each control device operation.

Reporting requirements for facilities with a TAB equal to or greater than 10 Mg/year are specified in 61.357(d). An annual report is required per 61.357(d)(2) and (d)(5). The annual report must contain the TAB and waste stream data specified in 61.357(a)(1) through (a)(3), and, for compliance with 61.342(e), a table of information for each waste stream as specified in 61.357(d)(5). A quarterly report is required per 61.357(d)(6) and (d)(7). The quarterly report must certify that the required inspections have been completed as required per 61.357(d)(6) and must contain the information specified in 61.357(d)(7) for the affected units.

Figure 1 is a process flow diagram of the wastewater system at the Benicia Refinery. Figure 2 is a plot plan showing the location of the various wastewater sources.

Based on the information provided by Valero and the analysis below, the District's staff has decided to grant Valero the above request. BACT analysis and emission offsets are not required since there is no emission increase from this application.

II. EMISSION CALCULATIONS

This application will not result in an emission increase.

III. PLANT CUMULATIVE INCREASE SINCE 4/5/1991

There are no net changes to the plant cumulative emissions.

IV. TOXIC SCREENING ANALYSIS

This application will not result in an increase in toxic air contaminant emissions from existing levels. Therefore, a Toxic RSA is not required per Regulation 2-5.

V. BEST AVAILABLE CONTROL TECHNOLOGY

This application will not result in any emission increase from existing levels. Therefore, BACT is not triggered per Regulation 2-2-301.

VI. OFFSETS

This application does not result in emission increases. Therefore, offsets are not needed per Regulation 2-2-302.

VII. STATEMENT OF COMPLIANCE

A. S-161 is uncontrolled with respect to BWON. The wastes managed in S-161 are subject to and comply with 61.342(e)(2). The wastewater components in S-161 are subject to and comply with the following Rules and Regulations:

Regulation 8, Rule 8 WASTEWATER COLLECTION AND SEPARATION SYSTEMS

- 8-8-308 Junction boxes
- 8-8-312 Controlled components
- 8-8-313 Uncontrolled components
- 8-8-314 New components

B. S-188 and S-189 are subject to and comply with the following Rules and Regulations:

Regulation 8, Rule 8 WASTEWATER COLLECTION AND SEPARATION SYSTEMS

- 8-8-302.3 (S-188) Wastewater separators >=300 gallons/minute; organic compound vapor recovery system with efficiency >= 95%
- 8-8-307.2 (S-189) Air Flotation Unit; organic compound vapor recovery system with efficiency >= 70%

Regulation 8, Rule 18 EQUIPMENT LEAKS

Condition 4882

BAAQMD State Implementation Plan, Regulation 8, Rule 8

- 8-8-302.3 (S-188) Wastewater separators >=300 gallons/minute; organic compound vapor recovery system with efficiency >= 95%
- 8-8-307.2 (S-189) Air Flotation Unit; organic compound vapor recovery system with efficiency >= 70%

40 CFR 61 Subpart FF Benzene Waste Operations NESHAPs

40 CFR 63 Subpart CC NESHAPs for Petroleum Refineries

C. S-194, 195, 197 and S-198 are subject to and comply with the following Rules and Regulations:

Regulation 8, Rule 8 WASTEWATER COLLECTION AND SEPARATION SYSTEMS
- 8-8-302.3 (S-194 and S-195) Wastewater separators >=300 gallons/minute; organic compound vapor recovery system with efficiency >= 95%
- 8-8-307.2 (S-197 and S-198) Air Flotation Unit; organic compound vapor recovery system with efficiency >= 70%

Regulation 8, Rule 18 EQUIPMENT LEAKS

Condition 11879

BAAQMD State Implementation Plan, Regulation 8, Rule 8
- 8-8-302.3 (S-194 and S-195) Wastewater separators >=300 gallons/minute; organic compound vapor recovery system with efficiency >= 95%
- 8-8-307.2 (S-197 and S-198) Air Flotation Unit; organic compound vapor recovery system with efficiency >= 70%

40 CFR 61 Subpart FF Benzene Waste Operations NESHAPs
- 61.347 Oil-water separator requirements

40 CFR 63 Subpart CC NESHAPs for Petroleum Refineries

D. WWTP Thermal Oxidizer A-57 and WWTP Carbon Canisters are subject to and comply with the following Rules and Regulations as the control devices for S-194, S-195, S-197, and S-198:

Regulation 8, Rule 8 WASTEWATER COLLECTION AND SEPARATION SYSTEMS
- 8-8-302.3 Wastewater separators >=300 gallons/minute; organic compound vapor recovery system with efficiency >= 95%
- 8-8-307.2 Air Flotation Unit; organic compound vapor recovery system with efficiency >= 70%

Regulation 8, Rule 18 EQUIPMENT LEAKS

Condition 11879

BAAQMD State Implementation Plan, Regulation 8, Rule 8
- 8-8-302.3 Wastewater separators >=300 gallons/minute; organic compound vapor recovery system with efficiency >= 95%
- 8-8-307.2 Air Flotation Unit; organic compound vapor recovery system with efficiency >= 70%

40 CFR 61 Subpart FF Benzene Waste Operations NESHAPs
- 61.349 Closed vent system and control device requirements

40 CFR 63 Subpart CC NESHAPs for Petroleum Refineries

This project is considered to be ministerial under the District's CEQA Regulation 2-1-311 and therefore is not subject to CEQA review. The engineering review for this project requires only

the application of standard permit conditions and standard emission factors in accordance with Permit Handbook Chapter 3.3 and therefore is not discretionary as defined by CEQA.

This project is over 1,000 ft from the nearest public school and is therefore not subject to the public notification requirements of Regulation 2-1-412.

BACT, offsets, and PSD are not triggered.

VIII. CONDITIONS

Permit condition # 4882 is amended as follows:

Condition# 4882
For Sources S-188 Oil/Water Separator and S-189 Oil/Water Separator

1. The Owner/Operator shall vent the emissions from the Oil/Water/Sediment Separator (S-188) and the Induced Static Flotation Cell (S-189) to the flare gas recovery header (S-9) at all times. [Basis: Cumulative Increase]
2. The Owner/Operator shall operate S-188 and S-189 within the designed capacities (700 gallons per minute or less). [Basis: Cumulative Increase]

IX. RECOMMENDATION

Issue a change of condition to the Permit to Operate to Valero Refining Company for the following equipment:

S-9 Vapor Recovery System

S-18 South Flare (ST-2101)

S-188 Oil/Water/Sediment Separator

S-189 Induced Static Flotation Cell

Thu H. Bui
Senior Air Quality Engineer
Engineering Division
Date:

THB:T:\Valero\19826\19826e\February 19, 2009

Evaluation Report
A/N 20304
G# 6764 (Plant 12626, Source 165)
Valero Refinery, Benicia

Background

Gettler Ryan on behalf of Valero has applied for an A/C to replace the Phase II vapor recovery on the existing GDF at the Benicia refinery with an EVR certified Phase II system. No other work is proposed under this application.

Valero currently operates one 6K tank and 1 single product nozzles with OPW EVR 2-point Phase I and balance Phase II vapor recovery equipment. They also operate a 10K diesel nozzle tank with one nozzle that is exempt from permit and vapor recovery requirements. This project is limited to replacing the hanging hardware with VR-203 certified equivalents and installing the Veeder Root Vapor Polisher and other components of the VST EVR Phase II system without ISD.

Emissions

No change in permitted throughput has been requested.

As the EVR Phase II equipment is certified to slightly more stringent standards than the existing balance Phase II vapor recovery equipment, there should be no increase in emissions per unit throughput.

The net emission increase under this A/N will be zero.

Statement of Compliance

As there will be no net emissions increase from this project, this application is not subject to the BACT and offset requirements of Regulation 2, Rule 2.

The proposed VST EVR Phase II equipment is certified under VR-203. Plans submitted with this application verify that the installation will satisfy the requirements of this Executive order:

- Each dispenser will each be equipped with VST-EVR-NB nozzles (one per side) and VST hoses.
- The site has a V-R TLS 350 console and will be equipped with the proper software and controls for operation of the VST EVR Phase II system with the V-R Vapor Polisher
- A Vapor Pressure Sensor will be installed in the dispenser nearest the tanks.
- This site is not equipped with vapor pots or condensate traps. This site has not modified their underground piping since April 1, 2003 and thus is not subject the piping size requirements of VR-203
- The outlet of the V-R Vapor Polisher will be 12’ above grade, and the vent pipes will be adequately supported

Valero is currently conditions to 92,000 gal/yr under cond #22323. They are thus not subject to ISD requirements.

Use of CARB certified equipment satisfies all requirements of District Regulation 8, Rule 7.

Permit Conditions

Authority to Construct Conditions:

COND# 24297 ----------

1. The VST EVR Phase II Vapor Recovery System with the Veeder-Root Vapor Polisher, including all associated underground plumbing, shall be installed, operated, and maintained in accordance with the most recent revision of the California Air Resources Board (CARB) Executive Order (E.O.). VR-203. Section 41954(f) of the California Health and Safety Code prohibits the sale, offering for sale, or installation of any vapor control system unless the system has been certified by the state board.

2. Only CARB-certified EVR Phase I vapor recovery systems shall be used in conjunction with the VST EVR Phase II Vapor Recovery System.

3. The owner/operator of the facility shall maintain records in accordance with the following requirements. Records shall be maintained on site and made available for inspection for a period of 24 months from the date the record is made.
   a. Monthly throughput of gasoline pumped, summarized on an annual basis
   b. A record of all testing and maintenance as required by E.O. VR-203, Exhibit 2. The records shall include the maintenance or test date, repair date to correct test failure, maintenance or test performed, affiliation, telephone number, name and Certified Technician Identification Number of individual conducting maintenance or test.

4. All applicable components shall be maintained to be leak free and vapor tight. Leak Free, as per BAAQMD (District) Regulation 8-7-203, is a liquid leak of no greater than

three drops per minute. Vapor Tight is as defined in District Manual of Procedures, Volume IV, ST-30.

5. Start-up notification: applicant must contact the assigned Permit Engineer, listed in the correspondence section of this letter, by phone, by fax [(415) 749-4949], or in writing at least three days before the initial operation of the equipment is to take place. Operation includes any start-up of the source for testing or other purposes. Operation of equipment without notification being submitted to the District, may result in enforcement action.
Please do not send start-up notifications to the Air Pollution Control Officer.

6. The following performance tests shall be successfully conducted at least ten (10) days, but no more than thirty (30) days after start-up. For the purpose of compliance with
this Condition, all tests shall be conducted after back-filling, paving, and installation of all required Phase I and Phase II components.

a. Static Pressure Performance Test using CARB Test Procedure TP-201.3 (3/17/99) in accordance with E.O. VR-203, Ex. 4. If the tank size is 500 gallons or less, the test shall be performed on an empty tank.
b. Dynamic Back Pressure Test using CARB Test Procedure TP-201.4 (7/3/02) in accordance with the condition listed in item 1 of the Vapor Collection Section of E.O. VR-203, Exhibit 2. The dynamic back pressure shall not exceed 0.35" WC @ 60 CFH and 0.62" WC @ 80 CFH.
c. Liquid Removal Test using E.O. VR-203, Exhibit 5.
d. Vapor Pressure Sensor Verification Test using E.O. VR-203, Exhibit 8
e. Nozzle Bag Test on all nozzles in accordance with E.O. VR-203, Exhibit 10.
f. Veeder-Root Vapor Polisher Operability Test in accordance with E.O. VR-204, Exhibit 11.
g. Veeder-Root Vapor Polisher Emissions Test in accordance with E.O. VR-204, Exhibit 12.

7. The VST EVR Phase II system with the Veeder-Root Vapor Polisher shall be capable of demonstrating on-going

compliance with the vapor integrity requirements of CARB Executive Order E.O. VR-203. The owner or operator shall conduct and pass the following tests at least once in each consecutive 12-month period following successful completion of start-up testing. Tests shall be conducted and evaluated using the above referenced test methods and standards.

a. Static Pressure Performance Test - TP-201.3
b. Dynamic Back Pressure Test - TP-201.4
c. Liquid Removal Test - E.O. VR-203, Exhibit 5
d. Vapor Pressure Sensor Verification Test - E.O. VR-203, Exhibit 8
e. Veeder-Root Vapor Polisher Operability Test in accordance with E.O. VR-204, Exhibit 11.
f. Veeder-Root Vapor Polisher Emissions Test in accordance with E.O. VR-204, Exhibit 12.

8. The applicant shall notify Source Test by email at gdfnotice@baaqmd.gov or by FAX at (510) 758-3087, at least 48 hours prior to any testing required for permitting. Test results for all performance tests shall be submitted in a District-approved format within thirty days of testing. Start-up tests results submitted to the District must include the application number and the GDF number. (For annual test results submitted to the District, enter "Annual" in lieu of the application number.) Test results may be submitted by email (gdfresults@baaqmd.gov), FAX (510) 758-3087) or mail (BAAQMD Source Test Section, Attention Hiroshi Doi, 939 Ellis Street, San Francisco CA 94109).

9. The maximum length of the coaxial hose assembly, including breakaway, swivels, and whip hoses, shall be fifteen (15) feet..

10. The dispensing rate shall not exceed ten (10.0) gallons per minute (gpm), nor be less than six (6.0) gpm with the trigger at the highest setting. Compliance with this condition shall be verified using the applicable provisions of E.O. VR-203, Ex. 5. Flow limiters may not be used.

11. A Vapor Pressure Sensor shall be installed in the dispenser closest to the underground tanks.

12. The TLS console controlling the Veeder-Root Vapor

Polisher shall be equipped with a printer and have an open RS232 port that is accessible to District staff during operating hours.

13. Except when necessary for testing and maintenance, the Veeder-Root Vapor Polisher shall be on and in automatic vapor processor mode with the inlet valve in the open position per E.O. VR-203, Ex. 2. The handle shall not be removed for any reason.

14. The outlet of the Veeder-Root Vapor Polisher shall be at least 12 feet above grade.

15. The station shall maintain OSHA-approved access to the Veeder-Root Vapor Polisher. This access should be provided immediately upon request by District personnel

16. The VST EVR Phase II Vapor Recovery System shall be maintained and operated in accordance with E.O. VR-203 and the System Operating Manual approved by CARB.

17. Security tags shall be installed and maintained on the Veeder-Root Vapor Polisher. A Veeder-Root Vapor Polisher Operability Test and a Veeder-Root Vapor Polisher Emissions Test shall be performed after the replacement of any damaged or missing tags using the above referenced test methods and subject to the above notification and reporting requirements.

18. The headspace of all underground tanks connected to VST EVR Phase II Vapor Recovery System shall be connected by a manifold below grade at the tanks and/or a manifold between the vent lines.

19. For stations installed or performing a major modification of underground vapor piping after April 1, 2003, all vapor recovery piping shall be a minimum of 2" from the vent stack or dispensers to the first manifold and a minimum of 3" in diameter from the manifold to the underground tanks, with the headspace of all tanks connected by a below-grade manifold. The following piping shall slope down towards the lowest octane tank with a minimum slope of 1/8" per linear foot:

a) Any manifold piping connecting the storage tank headspaces.
b) All vapor recovery piping between the dispenser and storage tank.
c) Vent piping from the base of the vent pipe to the storage tank(s).

A major modification is considered a project that adds to, replaces, or removes more than 50% of the underground vapor piping.

20. Condensate traps or knock-out pots are prohibited.

21. Each storage tank vent pipe shall be equipped with a CARB certified pressure/vacuum relief valve as required by the applicable Phase I E.O.. Vents pipes may be manifolded to reduce the number of relief valves needed. No relief valve shall be installed on the Veeder-Root Vapor Polisher outlet.

22. The Veeder-Root EVR system and TLS console may only be installed and serviced by contractors that have completed the Veeder-Root training program. Installation and start-up shall be in accordance with VR-203 and the Veeder Root installation manual.

Permit to Operate Conditions

COND# 22323 ----------

1. Pursuant to BAAQMD Toxic Section Policy, the owner/operator shall ensure that the annual gasoline throughput does not exceed 92,000 gallons in any consecutive 12 month period.

COND# 20666 ----------

1. The OPW EVR Phase I Vapor Recovery System, including all associated plumbing and components, shall be operated and maintained in accordance with the most recent version of California Air Resources Board (CARB) Executive Order VR-102. Section 41954(f) of the California Health and Safety Code prohibits the sale, offering for sale, or installation of any vapor control

system unless the system has been certified by the state board.

2. The owner or operator shall conduct and pass a Rotatable Adaptor Torque Test (CARB Test Procedure TP201.1B) and either a Drop Tube/Drain Valve Assembly Leak Test (TP201.1C) or, if operating drop tube overfill prevention devices ("flapper valves"), a Drop Tube Overfill Prevention Device and Spill Container Drain Valve Leak Test (TP201.1D) at least once in each 36-month period. Measured leak rates of each component shall not exceed the levels specified in VR-102.

The applicant shall notify Source Test by email at gdfnotice@baaqmd.gov or by FAX at (510) 758-3087, at least 48 hours prior to any testing required for permitting. Test results for all performance tests shall be submitted within fifteen (15) days of testing. Start-up tests results submitted to the District must include the application number and the GDF number. (For annual test results submitted to the District, enter "Annual" in lieu of the application number.) Test results may be submitted by email (gdfresults@baaqmd.gov), FAX (510) 758-3087) or mail (BAAQMD Source Test Section, Attention Hiroshi Doi, 939 Ellis Street, San Francisco CA 94109).

COND# 24298 ----------

1. The VST EVR Phase II Vapor Recovery System with the Veeder-Root Vapor Polisher without ISD, including all associated underground plumbing, shall be installed, operated, and maintained in accordance with the most recent revision of the California Air Resources Board (CARB) Executive Order (E.O.). VR-203. Section 41954(f) of the California Health and Safety Code prohibits the sale, offering for sale, or installation of any vapor control system unless the system has been certified by the state board.

2. The owner/operator of the facility shall maintain records in accordance with the following requirements. Records shall

be maintained on site and made available for inspection for a period of 24 months from the date the record is made.

a. Monthly throughput of gasoline pumped, summarized on an annual basis

3. All applicable components shall be maintained to be leak free and vapor tight. Leak Free, as per BAAQMD (District) Regulation 8-7-203, is a liquid leak of no greater than three drops per minute. Vapor Tight, as per District Regulation 8-7-206, is a leak of less than 100 percent of the lower explosive limit on a combustible gas detector measured at a distance of 1 inch from the source or absence of a leak as determined by the District Manual of Procedures, Volume IV, ST-30 or CARB Method TP-201.3.

4. The VST EVR Phase II system with the Veeder-Root Vapor Polisher without ISD shall be capable of demonstrating on-going compliance with the vapor integrity requirements of CARB Executive Order E.O. VR-203. The owner or operator shall conduct and pass the following tests at least once in each consecutive 12-month period following successful completion of start-up testing. Tests shall be conducted and evaluated using the below referenced test methods and standards.

a. Static Pressure Performance Test - TP-201.3
b. Dynamic Back Pressure Test - TP-201.4 (7/3/02) in accordance with the condition listed in item 1 of the Vapor Collection Section of E.O. VR-203, Exhibit 2. The dynamic back pressure shall not exceed 0.35" WC @ 60 CFH and 0.62" WC @ 80 CFH
c. Liquid Removal Test - E.O. VR-203, Exhibit 5, Option 1 (Only test hoses containing more than 25 ml liquid)
d. Vapor Pressure Sensor Verification Test - E.O. VR-203, Exhibit 8,
e. Veeder-Root Vapor Polisher Operability Test. E.O. VR-203, Exhibit 11
f. Veeder-Root Vapor Polisher Emissions Test - E.O. VR-203, Exhibit 12

5. The applicant shall notify Source Test by email at gdfnotice@baaqmd.gov or by FAX at (510) 758-3087, at least 48 hours prior to any testing required for permitting. Test

results for all performance tests shall be submitted in a District-approved format within thirty days of testing. Start-up tests results submitted to the District must include the application number and the GDF number. (For annual test results submitted to the District, enter "Annual" in lieu of the application number.) Test results may be submitted by email (gdfresults@baaqmd.gov), FAX (510) 758-3087) or mail (BAAQMD Source Test Section, 939 Ellis Street, San Francisco CA 94109).

6. The maximum length of the coaxial hose assembly, including breakaway, swivels, and whip hoses, shall be fifteen (15) feet..

7. The dispensing rate shall not exceed ten (10.0) gallons per minute (gpm), nor be less than six (6.0) gpm with the nozzle trigger at the highest setting. Compliance with this condition shall be verified using the applicable provisions of E.O. VR-203, Ex. 5. Flow limiters may not be used.

8. The TLS console controlling the Veeder-Root Vapor Polisher shall be equipped with a printer and have an open RS232 port that is accessible to District staff during operating hours.

9. Except when necessary for testing and maintenance, the Veeder-Root Vapor Polisher shall be on and in automatic vapor processor mode with the inlet valve in the open position per E.O. VR-203, Ex. 2. The handle shall not be removed for any reason.

10. The station shall maintain OSHA-approved access to the Veeder-Root Vapor Polisher. This access should be provided immediately upon request by District personnel

11. Security tags shall be installed and maintained on the Veeder-Root Vapor Polisher. A Veeder-Root Vapor Polisher Operability Test and a Veeder-Root Vapor Polisher Emissions Test shall be performed after the replacement of any damaged or missing tags using the above referenced test methods and subject to the above notification and reporting requirements.

12. Each storage tank vent pipe shall be equipped with a

CARB certified pressure/vacuum relief valve as required by the applicable Phase I E.O.. Vents pipes may be manifolded to reduce the number of relief valves needed. No relief valve shall be installed on the Veeder-Root Vapor Polisher outlet.

Title V Permit Revisions

This plant has a Title V permit. This project will require a minor revision of the Title V permit.

Proposed revisions to the Title V permit are attached.

Recommendation

All fees have been paid. Recommend that an A/C be issued for the above project.

By _____ date_____

Scott Owen
Supervising AQ Engineer

Table IV - E2

Source-Specific Applicable Requirements
Gasoline Dispensing
S-165 (FD-165)

Applicable Requirement	Regulation Title or Description of		Federally Enforceable (Y/N)	Future Effective Date
BAAQMD · Regulation 8 · Rule 7	**Organic Compounds, Gasoline Dispensing Facilities (11/17/1999)**			
8-7-113	Tank Gauging and Inspection Exemption	Y		
8-7-301.1	Requirement for CARB Phase I System		Y	
8-7-301.2	Installation of Phase I Equipment per CARB Requirements		Y	
8-7-301.3	Submerged Fill Pipes		Y	
8-7-301.5	Maintenance of Phase I Equipment per Manufacturers		Y	
8-7-301.6	Leak-Free, Vapor-Tight		Y	
8-7-301.7	Poppetted Drybreaks		Y	
8-7-301.8	No-Coaxial Phase I Systems on New and Modified Tanks		Y	
8-7-301.9	CARB-Certified Anti-Rotational Coupler or Swivel Adapter		Y	
8-7-301.10	System Vapor Recovery Rate		Y	
8-7-301.11	CARB-Certified Spill Box		Y	
8-7-301.12	Drain Valve Permanently Plugged		Y	
8-7-302.1	Requirements for CARB Certified Phase II System		Y	
8-7-302.2	Maintenance of Phase II System per CARB Requirements		Y	
8-7-302.3	Maintenance of All Equipment as Specified by Manufacturer		Y	
8-7-302.4	Repair of Defective Parts Within 7 Days		Y	
8-7-302.5	Leak-Free, Vapor-Tight		Y	
8-7-302.6	Insertion Interlocks		Y	
8-7-302.7	Built-In Vapor Check Valve		Y	
8-7-302.8	Minimum Liquid Removal Rate		Y	
8-7-302.9	Coaxial Hose		Y	
8-7-302.10	Galvanized Piping or Flexible Tubing		Y	
8-7-302.11	ORVR Compatible		Y	
8-7-302.12	Liquid Retain Limit		Y	
8-7-302.13	Spitting Limit		Y	
8-7-303	Topping Off		Y	
8-7-304	Certification Requirements		Y	
8-7-306	Prohibition of Use		Y	
8-7-307	Posting of Operating Instructions		Y	
8-7-308	Operating Practices		Y	
8-7-309	Contingent Vapor Recovery Requirements		Y	
8-7-313	Requirements for New or Modified Phase II Installations		Y	
8-7-313.1	Total Organic Compound Emissions From Nozzle/Fillpipe Interface, Storage Tank Vent Pipes, and Pressure-Related Fugitives Shall Not Exceed 0.42 lb/1000 Gallons		Y	
8-7-313.2	Total Organic Compound Emissions From Spillage Shall Not Exceed 0.42 lb/1000 Gallons		Y	
8-7-313.3	Total Organic Compound Emissions From Liquid Retain and Spitting Shall Not Exceed 0.42 lb/1000 Gallons		Y	
8-7-315	Pressure Vacuum Valve Requirements, Underground Storage Tanks		Y	
8-7-401	Equipment Installation and Modification		Y	
8-7-406	Testing Requirements, New and Modified Installations		Y	
8-7-501	Burden of Proof		Y	
8-7-502	Right of Access		Y	
8-7-503.1	Gasoline Dispensed Records		Y	
8-7-503.2	Dispensing Facility Maintenance Records		Y	
8-7-503.3	Dispensing Records Retention		Y	
8-7-601	Determination of Equipment in Compliance with Dynamic Backpressure Requirements and Vapor Tight	Y	Y	
8-7-602	Determination of Phase I Vapor Recovery Efficiency		Y	
8-7-603	Determination of Applicability		Y	
8-7-604	Determination of Equipment in Compliance with Liquid Removal Requirements		Y	
8-7-606	Determination of Applicability		Y	

Table VII – E2 Fuel Dispensing

Applicable Limits and Compliance Monitoring Requirements
S-165 – GASOLINE DISPENSING FACILITY G#6764

Type of Limit	Emission Limit Citation	FE Y/N	Future Effective Date	Limit	Monitoring Requirement Citation	Monitoring Frequency	Monitoring Type
VOC	BAAQMD Regulation 8-7-313.1	Y		Fugitives $\leq$ 0.42 lb/1000 gallon	None	N	Use CARB Certified Vapor Recovery System
VOC	BAAQMD Regulation 8-7-313.2	Y		Spillage $\leq$ 0.42 lb/1000 gallon	None	N	Use CARB Certified Vapor Recovery System
VOC	BAAQMD Regulation 8-7-313.3	Y		Liquid Retain + Spitting $\leq$ 0.42 lb/1000 gallon	None	N	Use CARB Certified Vapor Recovery System
VOC	None	Y		None	BAAQMD Regulation 8-7-503	P/M	Records
VOC	SIP Regulation 8-7-301.2	Y		95% recovery of gasoline vapors		N	
VOC	BAAQMD Regulation 8-7-301.6 8-7-302.5	Y		Leak free and vapor tight fugitive components	BAAQMD Regulation 8-7-301.13	A	Vapor Tightness Test
VOC	BAAQMD Regulation 8-7-302.14	Y		None	BAAQMD Regulation 8-7-302.14	A	Backpressure Test
POC	Cond #24298 pt. 4	Y		Liquid Removal Test per CARB E.O. VR-203, Exhibit 5, Option 1	CARB E.O VR-203	P/A	Annual Liquid Removal Test
POC	Cond #24298 pt. 4	Y		Vapor Pressure Sensor Verification Test per E.O. VR-203, Exhibit 8,	CARB E.O VR-203	P/A	Annual Vapor Pressure Sensor Verification
POC	Cond #24298 pt. 4	Y		Veeder-Root Vapor Polisher Operability Test. E.O. VR-203, Exhibit 11	CARB E.O VR-203	P/A	Annual Vapor Pressure Operability Test

POC	Cond #24298 pt. 4	Y		Veeder-Root Vapor Polisher Emissions Test - E.O. VR-203, Exhibit 12	CARB E.O VR-203	P/A	Annual Vapor Polisher Emissions Test
POC	Cond #20666 pt. 2	Y		Drob Tube Test per CARB TP 201.1C or 201.1D	CARB E.O. 102	P/3A	Trtiennial druop tube test
POC	Cond #20666 pt. 2	Y		Drob Tube Test per CARB TP 201.1C or 201.1D	CARB E.O. 102	P/3A	Trtiennial druop tube test

EVALUATION REPORT
VALERO REFINING CO.
Application #TV 16840 - Plant #12626

3400 E. Second St.
Benicia, CA 94510

I. BACKGROUND

Valero Refinery has applied for a combined throughput condition from the Permit to Operate for the following groups of equipment:

S-57 Crude Oil Storage Tank TK-1701, External Floating Roof, 6,300,000 gallons capacity

S-58 Crude Oil Storage Tank TK-1702, External Floating Roof, 18,900,000 gallons capacity

S-59 Crude Oil Storage Tank TK-1703, External Floating Roof, 18,900,000 gallons capacity

S-60 Crude Oil Storage Tank TK-1704, External Floating Roof, 6,300,000 gallons capacity

S-61 Crude Oil Storage Tank TK-1705, External Floating Roof, 18,900,000 gallons capacity

S-62 Crude Oil Storage Tank TK-1706, External Floating Roof, 18,900,000 gallons capacity

S-1047 Crude Oil Storage Tank TK-1706, External Floating Roof, 27,300,000 gallons capacity

S-1048 Crude Oil Storage Tank TK-1706, External Floating Roof, 27,300,000 gallons capacity

And

S-63 Gasoline Storage Tank (Tk-1711), External Floating Roof, 10,920,000 gallons capacity

S-73 Gasoline Storage Tank (Tk-1733), External Floating Roof, 5,880,000 gallons capacity

S-74 Gasoline Storage Tank (Tk-1734), External Floating Roof, 7,980,000 gallons capacity

S-75 Gasoline Storage Tank (Tk-1736), External Floating Roof, 3,360,000 gallons capacity

S-76 Gasoline Storage Tank (Tk-1737), External Floating Roof, 5,880,000 gallons capacity

S-78 Gasoline Storage Tank (Tk-1739), External Floating Roof, 6,804,000 gallons capacity

S-97 Storage Tank (Tk-1776), Jet Fuel, External Floating Roof, 4,620,000 gallons capacity

S-163 Gasoline Storage Tank (Tk-1732), External Floating Roof, 3,780,000 gallons capacity

Sources S-57 through S-62 were original owed by Valero Refinery. In 2004, The District transferred the assets from Valero Refinery to Valero Logistic (currently NuStar Logistics), which includes tanks S-57 through S-62. On October 4, 2006, the District issued a separate TV permit for NuStar, and Table IIA listed the combined grandfathered throughput limit of 51.65 MMMBL/yr (141.5 KBBBL/day) for tanks S-57 through S-62. On July 31, 2003, the District issued the Authority to Construct to Valero Refinery for the VIP (Application # 5846), which includes two new crude oil tanks S-1047 and S-1048 under Condition # 20820. Part 32 of Condition # 20820 limits the crude throughput of storage tanks S-57 through S-62, S-1047 and S-1048 to 62.6 MMBBL/yr (171.5 kBBL/day).

This application, NuStar requested to keep the combined throughput limit of 62.6 MMBBL/yr in their TV permit even though NuStar does not own tanks S-1047 and S-1048. Valero Refinery, the current owner of tanks S-1047 and S-1048, also concurs with this request by submitting a modification for their TV permit under application # 16840 because there has been an owner/operator relationship between NuStar and Valero. The combined throughput would allow Valero Refinery the flexibility to load crude oil into any available storage tank within the group of tanks without exceeding the limit. Both facilities would be responsible for operation, maintenance and recordkeeping for the group of eight crude oil tanks above.

The District will grant this request since Valero and NuStar both acknowledged that the new combine throughput put limit now becomes the new source limit that any exceedence of the throughput would result in enforcement action. The emission increase from adding the two new crude oil tanks (S-1047 and S-1048) was calculated in the Valero VIP Application # 5846. The emission offsets for two crude tanks has been addressed in the Valero VIP application already.

Similarly, NuStar requested to keep the same, combined grandfathered throughput for the gasoline tank (S-74) that was transferred to NuStar. Historically, sources S-63, S-73, S-74, S-75, S-76, S-78, S-97 and S-163 shared a grandfathered throughput limit of 62.8 MMBBL/yr of gasoline and other fuels as indicated in Table IIA of Valero's Title V permit. Valero now owns sources S-63, S-73, S-75, S-76, S-78, S-97 and S-163, and NuStar now owns source S-74. In 2006, the District issued a separate TV permit for NuStar and the original grandfathered throughput was split to 14.8 MMBBL/yr as the throughput limit for tank S-74. Since Valero operates and maintains the operation of tank S-74 along with tanks (S-63, S-73, S-75, S-76, S-78, S-97 and S-163), the combined throughput would allow Valero the flexibility to load gasoline and other fuels into any storage tank when available, and would ease the recordkeeping requirement. There is no change in operation for tank S-74 and there is no emission increase from this re-combined throughput request.

The District will incorporate these changes into Valero and NuStar's TV permits during their renewal period.

II. EMISSION CALCULATIONS

This application will not result in an emission increase.

III. PLANT CUMULATIVE INCREASE SINCE 4/5/1991

There are no net changes to the plant cumulative emissions.

IV. TOXIC SCREENING ANALYSIS

This application will not result in an increase in toxic air contaminant emissions from existing levels. Therefore, a Toxic RSA is not required.

V. BEST AVAILABLE CONTROL TECHNOLOGY

This application will not result in any emission increase from existing levels. Therefore, BACT is not triggered per Regulation 2-2-301.

VI. OFFSETS

Offsets were provided by the onsite Contemporaneous Emission Reduction per Regulation 2-2-302 in the Valero VIP Application # 5846.

VII. STATEMENT OF COMPLIANCE

All sources of this application are subject and expected to comply with Regulation 8, Rule 5-301 for Storage Tank Control Requirement and 5-304 External Floating Roof requirements.

All sources of this application are subject and expected to comply with Regulation 10 - Standard of Performance for New Stationary, 40 CFR 60, Subpart Kb - Volatile Organic Liquid Storage Vessels. The internal floating roof will be equipped with either a liquid or mechanical shoe primary and rim mounted secondary seals.

All sources of this application are subject and expected to comply with NESHAP 40 CFR 63, Subpart G – SOCMI HON and NESHAP 40 CFR 63, Subpart CC for Petroleum Refineries.

This project is considered to be ministerial under the District's CEQA Regulation 2-1-311 and therefore is not subject to CEQA review. The engineering review for this project requires only the application of standard permit conditions and standard emission factors in accordance with Permit Handbook Chapter 4.

This project is over 1,000 ft from the nearest public school and is therefore not subject to the public notification requirements of Regulation 2-1-412.

NSPS, NESHAP, and PSD are not triggered.

VIII. RECOMMENDATIONS

It is recommended that the administrative change be incorporated into Valero's Title V permit for the following groups of equipment:

S-57 Crude Oil Storage Tank TK-1701, External Floating Roof, 6,300,000 gallons capacity
S-58 Crude Oil Storage Tank TK-1702, External Floating Roof, 18,900,000 gallons capacity
S-59 Crude Oil Storage Tank TK-1703, External Floating Roof, 18,900,000 gallons capacity
S-60 Crude Oil Storage Tank TK-1704, External Floating Roof, 6,300,000 gallons capacity
S-61 Crude Oil Storage Tank TK-1705, External Floating Roof, 18,900,000 gallons capacity
S-62 Crude Oil Storage Tank TK-1706, External Floating Roof, 18,900,000 gallons capacity
S-1047 Crude Oil Storage Tank TK-1706, External Floating Roof, 27,300,000 gallons capacity
S-1048 Crude Oil Storage Tank TK-1706, External Floating Roof, 27,300,000 gallons capacity
And
S-63 Gasoline Storage Tank (Tk-1711), External Floating Roof, 10,920,000 gallons capacity
S-73 Gasoline Storage Tank (Tk-1733), External Floating Roof, 5,880,000 gallons capacity
S-74 Gasoline Storage Tank (Tk-1734), External Floating Roof, 7,980,000 gallons capacity
S-75 Gasoline Storage Tank (Tk-1736), External Floating Roof, 3,360,000 gallons capacity
S-76 Gasoline Storage Tank (Tk-1737), External Floating Roof, 5,880,000 gallons capacity
S-78 Gasoline Storage Tank (Tk-1739), External Floating Roof, 6,804,000 gallons capacity
S-97 Storage Tank (Tk-1776), Jet Fuel, External Floating Roof, 4,620,000 gallons capacity
S-163 Gasoline Storage Tank (Tk-1732), External Floating Roof, 3,780,000 gallons capacity

Thu H. Bui
Senior Air Quality Engineer
Engineering Division
Date:

THB:F:\Valero\168405\16840e\3/21/08

APPENDIX C

Compliance Assurance Monitoring (CAM) Analysis

Source #	Source Description	Title V Permit Applicability (Current/Future)	Pollutant	Federally Enforceable Emissions Limit or Standard?		Basis of Limit Proposed > 11/15/90? 40 CFR 64.2(b)(1)(i)	Uses a Control Device for Compliance? 40 CFR 64.2(a)(2)	Pre-Control PTE > MST? 40 CFR 64.2(a)(3)	Continuous Compliance Determination Method in Title V Permit?	Subject to CAM?
				Emission Limit	Basis					
1	SULFUR PLANT	Current/Future	SO2	300 ppmvd TRS, 0% excess air, expressed as SO2, 12-hr avg	40 CFR 60 Subpart J, 40 CFR 63 Subpart UUU	Yes - 40 CFR 63, Subpart UUU proposed 9/11/1998	A56, Tail Gas Cleanup Unit (Flexsorb Section); A24, Tail Gas Hydrogenation Unit A (Beavon Section);	Not necessary to evaluate [exempt per 40 CFR 64.2(b)(1)(i) and (b)(1)(vi)]	TRS CEMS	Exempt - 40 CFR 64.2(b)(1)(i) and (b)(1)(vi)
2	SULFUR PLANT	Current/Future	CO	No	NA	NA	NA	NA	CO CEMS	No - No federal emission limit
			NOx	300 ppm NOx (dry, 3% O_2), operating day average	BAAQMD 9-10-303.1	Not necessary to evaluate [exempt per 40 CFR 64.2(b)(1)(vi)]	A52, Thermal DeNox	Not necessary to evaluate [exempt per 40 CFR 64.2(b)(1)(vi)]	NOx CEMS	Exempt - 40 CFR 64.2 (b)(1)(vi)
				150 ppm NOx (dry, 3% O_2), operating day average	BAAQMD Condition 11030.3					
3	CO FURNACE, F101	Current	PM	0.15 grain/dscf @ 6% O_2	SIP 6-310	Not necessary to evaluate [exempt per 40 CFR 64.2(b)(1)(vi)]	A1-A5, ESPs	Not necessary to evaluate [exempt per 40 CFR 64.2(b)(1)(vi)]	COMS	Exempt - 40 CFR 64.2 (b)(1)(vi)
3	CO FURNACE, F101	Future	To Be Removed From Service Upon Startup of S-1059 and S-1060 PS Furnaces per Condition 20820, Part 76							
			CO	No	NA	NA	NA	NA	CO CEMS	No - No federal emission limit
			NOx	300 ppm NOx (dry, 3% O_2), operating day average	BAAQMD 9-10-303.1	Not necessary to evaluate [exempt per 40 CFR 64.2(b)(1)(vi)]	A53, Thermal DeNox	Not necessary to evaluate [exempt per 40 CFR 64.2(b)(1)(vi)]	NOx CEMS	Exempt - 40 CFR 64.2 (b)(1)(vi)
				150 ppm NOx (dry, 3% O_2), operating day average	BAAQMD Condition 11030.3					
4	CO FURNACE, F102	Current	PM	0.15 grain/dscf @ 6% O_2	SIP 6-310	Not necessary to evaluate [exempt per 40 CFR 64.2(b)(1)(vi)]	A1-A5, ESPs	Not necessary to evaluate [exempt per 40 CFR 64.2(b)(1)(vi)]	COMS	Exempt - 40 CFR 64.2 (b)(1)(vi)
4	CO FURNACE, F102	Future	To Be Removed From Service Upon Startup of S-1059 and S-1060 PS Furnaces per Condition 20820, Part 76							
			PM	PM < 1.0 lb/1,000 lb coke burn-off	40 CFR 60 Subpart J, 40 CFR 63 Subpart UUU	Yes - 40 CFR 63, Subpart UUU proposed 9/11/1998	A1-A5, ESPs; A20, Tertiary Cyclone	Not necessary to evaluate [exempt per 40 CFR 64.2(b)(1)(i) and (b)(1)(vi)]	COMS	Exempt - 40 CFR 64.2(b)(1)(i) and (b)(1)(vi)
				30% opacity, except for one 6-minute average opacity in any 1-hr period		Y - 40 CFR 63, Subpart UUU proposed 9/11/1998				Exempt - 40 CFR 64.2(b)(1)(i)
5	FCCU REGENERATOR, R-702	Current	SO2	1000 ppmv, 1-hr avg	BAAQMD 9-1-310.1	Not necessary to evaluate [no control device]	None	Not necessary to evaluate [no control device]	SO2 CEMS	No - No control device
			PM	PM < 1.0 lb/1,000 lb coke burn-off	40 CFR 60 Subpart J, 40 CFR 63 Subpart UUU	Y - 40 CFR 63, Subpart UUU proposed 9/11/1998	A1047, Amine Scrubber; A20, Tertiary Cyclone	Not necessary to evaluate [exempt per 40 CFR 64.2(b)(1)(i) and (b)(1)(vi)]	COMS or approved AMP	Exempt - 40 CFR 64.2(b)(1)(i) and (b)(1)(vi)
				30% opacity, except for one 6-minute average opacity in any 1-hr period		Y - 40 CFR 63, Subpart UUU proposed 9/11/1998				Exempt - 40 CFR 64.2(b)(1)(i)
5	FCCU REGENERATOR, R-702	Future	SO2	1000 ppmv, 1-hr avg	BAAQMD 9-1-310.1	Not necessary to evaluate [no control device]	None	Not necessary to evaluate [no control device]	SO2 CEMS	No - No control device
			PM	0.15 grain/dscf @ 6% O_2	SIP 6-310	Not necessary to evaluate [exempt per 40 CFR 64.2(b)(1)(vi)]	A1-A5, ESPs	Not necessary to evaluate [exempt per 40 CFR 64.2(b)(1)(vi)]	COMS	Exempt - 40 CFR 64.2(b)(1)(vi)
				4.10 $P^{0.67}$ lb/hr particulate, where P is process weight rate in lb/hr	SIP 6-311					
6	FLUID COKER, R-902	Current	SO2	1000 ppmv, 1-hr avg	BAAQMD 9-1-310.1	Not necessary to evaluate [no control device]	None	Not necessary to evaluate [no control device]	SO2 CEMS	No - No control device
			PM	0.15 grain/dscf @ 6% O_2	SIP 6-310	Not necessary to evaluate [exempt per 40 CFR 64.2(b)(1)(vi)]	A1047, Amine Scrubber	Not necessary to evaluate [exempt per 40 CFR 64.2(b)(1)(vi)]	COMS or approved AMP	Exempt - 40 CFR 64.2(b)(1)(vi)
				4.10 $P^{0.67}$ lb/hr particulate, where P is process weight rate in lb/hr	SIP 6-311					
6	FLUID COKER, R-902	Future	SO2	1000 ppmv, 1-hr avg	BAAQMD 9-1-310.1	Not necessary to evaluate [no control device]	None	Not necessary to evaluate [no control device]	SO2 CEMS	No - No control device
8	COKE STORAGE	Current/Future	PM	0.15 grain/dscf	SIP 6-310	Not necessary to evaluate [exempt per 40 CFR 64.2(b)(1)(vi)]	A8-A10, Baghouses; A66, Cyclone Separator	Not necessary to evaluate [exempt per 40 CFR 64.2(b)(1)(vi)]	Yes - Monthly visible emissions monitoring required per Condition 19466, Part 3.	Exempt - 40 CFR 64.2(b)(1)(vi)
9	Blow-down system - w/o control, Crude oil (Vapor Recovery System)	Current/Future	NA	None	NA	NA	NA	NA	NA	No - No federal emission limit
11	ACTIVATED CARBON BIN	Current/Future	PM	0.15 grain/dscf	SIP 6-310	Not necessary to evaluate [exempt per 40 CFR 64.2(b)(1)(vi)]	A6 Baghouse	Not necessary to evaluate [exempt per 40 CFR 64.2(b)(1)(vi)]	Yes - Monthly visible emissions monitoring required per Condition 19466, Part 3.	Exempt - 40 CFR 64.2(b)(1)(vi)
13	PROCESS FURNACE, F-702	Current	PM	0.15 grain/dscf @ 6% O_2	SIP 6-310	Not necessary to evaluate [exempt per 40 CFR 64.2(b)(1)(vi)]	A1-A5, ESPs; A20, Tertiary Cyclone	Not necessary to evaluate [exempt per 40 CFR 64.2(b)(1)(vi)]	COMS	Exempt - 40 CFR 64.2(b)(1)(vi)
13	PROCESS FURNACE, F-702	Future	PM	0.15 grain/dscf @ 6% O_2	SIP 6-310	Not necessary to evaluate [exempt per 40 CFR 64.2(b)(1)(vi)]	A1047, Amine Scrubber; A20, Tertiary Cyclone	Not necessary to evaluate [exempt per 40 CFR 64.2(b)(1)(vi)]	COMS or approved AMP	Exempt - 40 CFR 64.2(b)(1)(vi)
			NOx	9 ppmv (dry, 15% O2), 3-hr avg	BAAQMD Condition 16386.1	Not necessary to evaluate [exempt per 40 CFR 64.2(b)(1)(vi)]	A51, SCR	Not necessary to evaluate [exempt per 40 CFR 64.2(b)(1)(vi)]	NOx CEMS	Exempt - 40 CFR 64.2(b)(1)(vi)

Source #	Source Description	Title V Permit Applicability (Current/Future)	Pollutant	Federally Enforceable Emissions Limit or Standard?		Basis of Limit Proposed > 11/15/90? 40 CFR 64.2(b)(1)(i)	Uses a Control Device for Compliance? 40 CFR 64.2(a)(2)	Pre-Control PTE > MST? 40 CFR 64.2(a)(3)	Continuous Compliance Determination Method in Title V Permit?	Subject to CAM?
				Emission Limit	Basis					
37	WASTE HEAT BOILER, SG-702	Current/Future	PM	0.15 grain/dscf @ 6% O_2	SIP 6-310	Not necessary to evaluate [no control device]	No	Not necessary to evaluate [no control device]	No	No - No control device
45	TURBINE, GT-702	Current/Future	NOx	9 ppmv (dry, 15% O2), 3-hr avg	SIP 9-9-301.3; BAAQMD Condition 16386.1	Not necessary to evaluate [exempt per 40 CFR 64.2(b)(1)(vi)]	A51, SCR	Not necessary to evaluate [exempt per 40 CFR 64.2(b)(1)(vi)]	NOx CEMS	Exempt - 40 CFR 64.2(b)(1)(vi)
			PM	0.15 grain/dscf @ 6% O_2	SIP 6-310	Not necessary to evaluate [no control device]	No	Not necessary to evaluate [no control device]	No	No - No control device
50	PROCESS FURNACE, F-901	Current	PM	0.15 grain/dscf @ 6% O_2	SIP 6-310	Not necessary to evaluate [exempt per 40 CFR 64.2(b)(1)(vi)]	A1-A5, ESPs	Not necessary to evaluate [exempt per 40 CFR 64.2(b)(1)(vi)]	COMS	Exempt - 40 CFR 64.2(b)(1)(vi)
50	PROCESS FURNACE, F-901	Future	PM	0.15 grain/dscf @ 6% O_2	SIP 6-310	Not necessary to evaluate [exempt per 40 CFR 64.2(b)(1)(vi)]	A1047, Amine Scrubber	Not necessary to evaluate [exempt per 40 CFR 64.2(b)(1)(vi)]	COMS or approved AMP	Exempt - 40 CFR 64.2(b)(1)(vi)
55	FIXED ROOF TANK WITH VAPOR RECOVERY TO FUEL GAS, TK-2801	Current/Future	VOC	95% VOC abatement	SIP 8-5-306	No	A19, Vapor Recovery Compressor [NOTE 2]	Not necessary to evaluate [no control device]	No	No - No control device. Vapor recovery compressor (A19) is a material recovery system per 40 CFR 64.1 definition for inherent process equipment. Valero certifies that the system is installed and operated for purposes other than compliance with environmental regulations.
124	FIXED ROOF TANK WITH VAPOR RECOVERY TO FUEL GAS; MACT EXEMPT (MIXED C5S), TK-1735	Current/Future	VOC	95% VOC abatement	SIP 8-5-306	No	A11/A12, Vapor Recovery Compressors [NOTE 2]	Not necessary to evaluate [no control device]	No	No - No control device. Vapor recovery compressors (A11-A12) are a material recovery system per 40 CFR 64.1 definition for inherent process equipment. Valero certifies that the system is installed and operated for purposes other than compliance with environmental regulations.
129	Marine Loading	Current/Future	VOC	2 lb VOC/1,000 BBL loaded	SIP 8-44-301; BAAQMD Condition 1709.3	Not necessary to evaluate [exempt per 40 CFR 64.2(b)(1)(vi)]	A29, CAS on DVRU	Not necessary to evaluate [exempt per 40 CFR 64.2(b)(1)(vi)]	VOC CPMS	Exempt - 40 CFR 64.2(b)(1)(vi)
131	FIXED ROOF TANK WITH CLOSED VENT SYSTEM & TWO CONTROL DEVICES – BENZENE WASTEWATER SLUDGE, TK-2069	Current/Future	VOC	95% VOC abatement; 98.5% VOC abatement for A57; and 15 lb/day total NMHC from A36, A37 and A57	SIP 8-5-306; 60.112b(a)(3)(ii); 61.349(a)(2)(ii); BAAQMD Condition 11888.3 and 10	Not necessary to evaluate [exempt per 40 CFR 64.2(b)(1)(vi)]	A37, A57	Not necessary to evaluate [exempt per 40 CFR 64.2(b)(1)(vi)]	A37 - VOC CPMS A57 - Temperature CPMS	Exempt - 40 CFR 64.2(b)(1)(vi)
133	FIXED ROOF TANK WITH VAPOR RECOVERY TO FUEL GAS, TK-2712	Current/Future	VOC	95% VOC abatement	SIP 8-5-306	No	S-9 Flare Gas Recovery Header [NOTE 3]	Not necessary to evaluate [no control device]	No	No - No control device. Refinery vapor recovery system (S9) is a material recovery system per 40 CFR 64.1 definition for inherent process equipment. Valero certifies that the system is installed and operated for purposes other than compliance with environmental regulations.
150	FIXED ROOF TANK WITH CLOSED VENT SYSTEM & TWO CONTROL DEVICES – BENZENE WASTEWATER SLUDGE, TK-2051	Current/Future	VOC	95% VOC abatement; 98.5% VOC abatement for A57; and 15 lb/day total NMHC from A36, A37 and A57	SIP 8-5-306; 60.112b(a)(3)(ii); 61.349(a)(2)(ii); BAAQMD Condition 11879.3 and 10	Not necessary to evaluate [exempt per 40 CFR 64.2(b)(1)(vi)]	A37, A57	Not necessary to evaluate [exempt per 40 CFR 64.2(b)(1)(vi)]	A37 - VOC CPMS A57 - Temperature CPMS	Exempt - 40 CFR 64.2(b)(1)(vi)
157	Sulfur Storage Pit	Current/Future	PM	None[1]	NA[1]	Not necessary to evaluate [no control device]	No	Not necessary to evaluate [no control device]	No	No - No federal emission limit, No control device
159	Lube Oil Reservoir for SG/GT-701	Current/Future	PM	0.15 grain/dscf	SIP 6-310	No	A27/S36, Vent disposal to SG-701	Yes (1700 PM/year)	No	No - Pre-Control PTE < MST?
			VOC	15 lb/day total NMHC	BAAQMD 8-2-301	No	A27/S36, Vent disposal to SG-701	Yes (1700 VOC/year)	No	No - Pre-Control PTE < MST
160	SEAL OIL SPARGER, C-1031	Current/Future	PM	0.15 grain/dscf	SIP 6-310	No	A13/A26 Vapor Recovery Compressor Flare Gas Recovery Header [NOTE 2]	Not necessary to evaluate [no control device]	No	No - No control device. Refinery flare gas recovery system (A13, A26) is a material recovery system per 40 CFR 64.1 definition for inherent process equipment. Valero certifies that the system is installed and operated for purposes other than compliance with environmental regulations.
			VOC	15 lb/day total NMHC	BAAQMD 8-2-301	No	A13/A26 Vapor Recovery Compressor Flare Gas Recovery Header [NOTE 2]	Not necessary to evaluate [no control device]	No	
176	BRINE SATURATOR TANK	Current/Future	PM	0.15 grain/dscf	SIP 6-310; BAAQMD Condition 3253.1	Not necessary to evaluate [no control device]	No (future requirement if dry salt is added to tank)	Not necessary to evaluate [no control device]	No	No - No control device
188	CPS UNITS, Vented to Fuel Gas	Current/Future	VOC	95% VOC abatement	SIP 8-8-302.3	No	S-9 Flare Gas Recovery Header [NOTE 3]	Not necessary to evaluate [no control device]	No	No - No control device. Refinery flare gas recovery system (A13, A26) is a material recovery system per 40 CFR 64.1 definition for inherent process equipment. Valero certifies that the system is installed and operated for purposes other than compliance with environmental regulations.

Source #	Source Description	Title V Permit Applicability (Current/Future)	Pollutant	Federally Enforceable Emissions Limit or Standard?		Basis of Limit Proposed > 11/15/90? 40 CFR 64.2(b)(1)(i)	Uses a Control Device for Compliance? 40 CFR 64.2(a)(2)	Pre-Control PTE > MST? 40 CFR 64.2(a)(3)	Continuous Compliance Determination Method in Title V Permit?	Subject to CAM?
				Emission Limit	Basis					
189	ISF UNITS, Vented to Fuel Gas	Current/Future	VOC	70% VOC abatement	SIP 8-8-307.2	No	S-9 Flare Gas Recovery Header [NOTE 3]	Not necessary to evaluate [no control device]	No	No - No control device. Refinery flare gas recovery system (A13, A26) is a material recovery system per 40 CFR 64.1 definition for inherent process equipment. Valero certifies that the system is installed and operated for purposes other than compliance with environmental regulations.
193	NSPS SUBPART KB FIXED ROOF TANK WITH CLOSED VENT SYSTEM & CARBON CONTROL DEVICE - BENZENE WASTEWATER	Current/Future	VOC	95% VOC abatement (NSPS Kb) 15 lb/day total NMHC from A-36, A-37 and A-57	SIP 8-5-306; 60.112b(a)(3)(ii); 61.349(a)(2)(ii); BAAQMD Condition 11880.2	Not necessary to evaluate [exempt per 40 CFR 64.2(b)(1)(vi)]	A36	Not necessary to evaluate [exempt per 40 CFR 64.2(b)(1)(vi)]	VOC CPMS	Exempt - 40 CFR 64.2(b)(1)(vi)
196	NSPS SUBPART KB FIXED ROOF TANK WITH CLOSED VENT SYSTEM & CARBON CONTROL DEVICE - BENZENE WASTEWATER	Current/Future	VOC	95% VOC abatement (NSPS Kb) 15 lb/day total NMHC from A-36, A-37 and A-57	SIP 8-5-306; 60.112b(a)(3)(ii); 61.349(a)(2)(ii); BAAQMD Condition 11880.2	Not necessary to evaluate [exempt per 40 CFR 64.2(b)(1)(vi)]	A36	Not necessary to evaluate [exempt per 40 CFR 64.2(b)(1)(vi)]	VOC CPMS	Exempt - 40 CFR 64.2(b)(1)(vi)
194	CPS UNITS	Current/Future	VOC	95% VOC abatement; 98.5% VOC abatement for A-57; and 15 lb/day total NMHC from A-36, A-37 and A-57	SIP 8-5-306; 60.112b(a)(3)(ii); 61.349(a)(2)(ii); BAAQMD Condition 13319.3 and 15	Not necessary to evaluate [exempt per 40 CFR 64.2(b)(1)(vi)]	A37, A57	Not necessary to evaluate [exempt per 40 CFR 64.2(b)(1)(vi)]	A37 - VOC CPMS A57 - Temperature CPMS	Exempt - 40 CFR 64.2(b)(1)(vi)
195	CPS UNITS	Current/Future	VOC	95% VOC abatement; 98.5% VOC abatement for A-57; and 15 lb/day total NMHC from A-36, A-37 and A-57	SIP 8-5-306; 60.112b(a)(3)(ii); 61.349(a)(2)(ii); BAAQMD Condition 13319.3 and 15	Not necessary to evaluate [exempt per 40 CFR 64.2(b)(1)(vi)]	A37, A57	Not necessary to evaluate [exempt per 40 CFR 64.2(b)(1)(vi)]	A37 - VOC CPMS A57 - Temperature CPMS	Exempt - 40 CFR 64.2(b)(1)(vi)
197	ISF UNITS	Current/Future	VOC	95% VOC abatement; 98.5% VOC abatement for A-57; and 15 lb/day total NMHC from A-36, A-37 and A-57	SIP 8-5-306; 60.112b(a)(3)(ii); 61.349(a)(2)(ii); BAAQMD Condition 13319.3 and 15	Not necessary to evaluate [exempt per 40 CFR 64.2(b)(1)(vi)]	A37, A57	Not necessary to evaluate [exempt per 40 CFR 64.2(b)(1)(vi)]	A37 - VOC CPMS A57 - Temperature CPMS	Exempt - 40 CFR 64.2(b)(1)(vi)
198	ISF UNITS	Current/Future	VOC	95% VOC abatement; 98.5% VOC abatement for A-57; and 15 lb/day total NMHC from A-36, A-37 and A-57	SIP 8-5-306; 60.112b(a)(3)(ii); 61.349(a)(2)(ii); BAAQMD Condition 13319.3 and 15	Not necessary to evaluate [exempt per 40 CFR 64.2(b)(1)(vi)]	A37, A57	Not necessary to evaluate [exempt per 40 CFR 64.2(b)(1)(vi)]	A37 - VOC CPMS A57 - Temperature CPMS	Exempt - 40 CFR 64.2(b)(1)(vi)
199	STORAGE DRUMS WITH CLOSED VENT SYSTEM & TWO CONTROL DEVICES – BENZENE WASTEWATER	Current/Future	VOC	95% VOC abatement; 98.5% VOC abatement for A-57; and 15 lb/day total NMHC from A-36, A-37 and A-57	SIP 8-5-306; 60.112b(a)(3)(ii); 61.349(a)(2)(ii); BAAQMD Condition 11882.3 and 10	Not necessary to evaluate [exempt per 40 CFR 64.2(b)(1)(vi)]	A37, A57	Not necessary to evaluate [exempt per 40 CFR 64.2(b)(1)(vi)]	A37 - VOC CPMS A57 - Temperature CPMS	Exempt - 40 CFR 64.2(b)(1)(vi)
200	STORAGE DRUMS WITH CLOSED VENT SYSTEM & TWO CONTROL DEVICES – BENZENE WASTEWATER	Current/Future	VOC	95% VOC abatement; 98.5% VOC abatement for A-57; and 15 lb/day total NMHC from A-36, A-37 and A-57	SIP 8-5-306; 60.112b(a)(3)(ii); 61.349(a)(2)(ii); BAAQMD Condition 11882.3 and 10	Not necessary to evaluate [exempt per 40 CFR 64.2(b)(1)(vi)]	A37, A57	Not necessary to evaluate [exempt per 40 CFR 64.2(b)(1)(vi)]	A37 - VOC CPMS A57 - Temperature CPMS	Exempt - 40 CFR 64.2(b)(1)(vi)
205	NSPS SUBPART KB FIXED ROOF TANK WITH CLOSED VENT SYSTEM & CARBON CONTROL DEVICE - BENZENE WASTEWATER	Current/Future	VOC	95% VOC abatement (NSPS Kb) 15 lb/day total NMHC from A-36, A-37 and A-57	SIP 8-5-306; 60.112b(a)(3)(ii); 61.349(a)(2)(ii); BAAQMD Condition 11880.2	Not necessary to evaluate [exempt per 40 CFR 64.2(b)(1)(vi)]	A36	Not necessary to evaluate [exempt per 40 CFR 64.2(b)(1)(vi)]	VOC CPMS	Exempt - 40 CFR 64.2(b)(1)(vi)
206	NSPS SUBPART KB FIXED ROOF TANK WITH CLOSED VENT SYSTEM & CARBON CONTROL DEVICE - BENZENE WASTEWATER	Current/Future	VOC	95% VOC abatement (NSPS Kb) 15 lb/day total NMHC from A-36, A-37 and A-57	SIP 8-5-306; 60.112b(a)(3)(ii); 61.349(a)(2)(ii); BAAQMD Condition 11880.2	Not necessary to evaluate [exempt per 40 CFR 64.2(b)(1)(vi)]	A36	Not necessary to evaluate [exempt per 40 CFR 64.2(b)(1)(vi)]	VOC CPMS	Exempt - 40 CFR 64.2(b)(1)(vi)
220	PROCESS FURNACE, F-4460	Current/Future	CO	28 ppmv (dry, 3% O_2), 8-hr avg	BAAQMD Condition 10574.24	Not necessary to evaluate [no control device]	No	Not necessary to evaluate [no control device]	CO CEMS	No - No control device
			NOx	Multiple NOx limits	BAAQMD 9-3-303; 9-10-303; 40 CFR 60 Subpart Db; BAAQMD Condition 10574.23	Not necessary to evaluate [exempt per 40 CFR 64.2(b)(1)(vi)]	A45, SCR	Not necessary to evaluate [exempt per 40 CFR 64.2(b)(1)(vi)]	NOx CEMS	Exempt - 40 CFR 64.2(b)(1)(vi)
			SO2	Mulitple fuel gas H2S limits	40 CFR 60 Subpart J; BAAQMD Condition 10574.13	Not necessary to evaluate [no control device]	No	Not necessary to evaluate [no control device]	Fuel gas H2S CEMS	No - No control device
			PM	0.15 grain/dscf @ 6% O_2	SIP 6-310	Not necessary to evaluate [no control device]	No	Not necessary to evaluate [no control device]	No	No - No control device
227	NSPS SUBPART KB FIXED ROOF TANK WITH VAPOR RECOVERY TO FUEL GAS, TK-1741	Current/Future	VOC	95% VOC abatement	SIP 8-5-306; 60.112(b)(a)(3)(ii)	No	A46/A47, Vapor Recovery Compressors [NOTE 2]	Not necessary to evaluate [no control device]	No	No - No control device. Refinery vapor recovery system (S9) is a material recovery system per 40 CFR 64.1 definition for inherent process equipment. Valero certifies that the system is installed and operated for purposes other than compliance with environmental regulations.

Source #	Source Description	Title V Permit Applicability (Current/Future)	Pollutant	Federally Enforceable Emissions Limit or Standard?		Basis of Limit Proposed > 11/15/90?	Uses a Control Device for Compliance?	Pre-Control PTE > MST?	Continuous Compliance Determination Method in Title V Permit?	Subject to CAM?
				Emission Limit	Basis	40 CFR 64.2(b)(1)(i)	40 CFR 64.2(a)(2)	40 CFR 64.2(a)(3)		
232	ESP Fines Vacuum Conveying System	Current	PM	0.15 grain/dscf @ 6% O_2 4.10 $P^{0.67}$ lb/hr particulate, where P is process weight rate in lb/hr	SIP 6-310 SIP 6-311	No	A54, Baghouse	Not necessary to evaluate [source will be removed from service - see below]	No	Would be subject to CAM, but source will be removed from service (see below).
232	ESP Fines Vacuum Conveying System	Future	To Be Removed From Service Upon Startup of S-1059 and S-1060 PS Furnaces per Condition 20820, Part 76							
233	ESP Fines Storage Bin	Current	PM	0.15 grain/dscf @ 6% O_2 4.10 $P^{0.67}$ lb/hr particulate, where P is process weight rate in lb/hr	SIP 6-310 SIP 6-311	No	A55, Baghouse	Not necessary to evaluate [source will be removed from service - see below]	No	Would be subject to CAM, but source will be removed from service (see below).
233	ESP Fines Storage Bin	Future	To Be Removed From Service Upon Startup of S-1059 and S-1060 PS Furnaces per Condition 20820, Part 76							
237	STEAM GENERATOR, SG-1032	Current/Future	CO	50 ppmv (dry, 3% O_2), 8-hr avg	BAAQMD Condition 16027.13	Not necessary to evaluate [no control device]	No	Not necessary to evaluate [no control device]	No	No - No control device
			NOx	Multiple NOx limits	40 CFR 60 Subpart Db; BAAQMD Condition 16027.12	Not necessary to evaluate [exempt per 40 CFR 64.2(b)(1)(vi)]	A58, SCR	Not necessary to evaluate [exempt per 40 CFR 64.2(b)(1)(vi)]	NOx CEMS	Exempt - 40 CFR 64.2(b)(1)(vi)
			SO2	Mulitple fuel gas H2S limits	40 CFR 60 Subpart J; BAAQMD Condition 16027	Not necessary to evaluate [no control device]	No	Not necessary to evaluate [no control device]	Fuel gas H2S CEMS	No - No control device
			PM	0.15 grain/dscf @ 6% O_2	SIP 6-310	Not necessary to evaluate [no control device]	No	Not necessary to evaluate [no control device]	No	No - No control device
1004	CATALYTIC REFORMER	Current/Future	HCl	pH and L/G operating limits	40 CFR 63, Subpart UUU	Yes - 40 CFR 63, Subpart UUU proposed 9/11/1998	Wet Scrubber	Not necessary to evaluate [exempt per 40 CFR 64.2(b)(1)(i) and (b)(1)(vi)]	pH and L/G CPMS	Exempt - 40 CFR 64.2(b)(1)(i) and (b)(1)(vi)
			CO	Multiple CO limits	BAAQMD Condition 19177	Not necessary to evaluate [exempt per 40 CFR 64.2(b)(1)(vi)]	A61, CO Oxidizing Catalyst	Not necessary to evaluate [exempt per 40 CFR 64.2(b)(1)(vi)]	CO CEMS	Exempt - 40 CFR 64.2(b)(1)(vi)
			NOx	Multiple NOx limits	SIP 9-9-301.3, 1; BAAQMD Condition 19177	Not necessary to evaluate [exempt per 40 CFR 64.2(b)(1)(vi)]	A60, SCR	Not necessary to evaluate [exempt per 40 CFR 64.2(b)(1)(vi)]	NOx CEMS	Exempt - 40 CFR 64.2(b)(1)(vi)
			SO2	Mulitple fuel gas H2S limits	40 CFR 60 Subpart J; BAAQMD Condition 19177	Not necessary to evaluate [no control device]	No	Not necessary to evaluate [no control device]	Fuel gas H2S CEMS	No - No control device
1030	COGEN TURBINE, GT-4901	Current/Future	PM	Multiple PM limits	SIP 6-310; BAAQMD Condition 19177	Not necessary to evaluate [no control device]	No	Not necessary to evaluate [no control device]	No	No - No control device
			CO	Multiple CO limits	BAAQMD Condition 19177	Not necessary to evaluate [exempt per 40 CFR 64.2(b)(1)(vi)]	A61, CO Oxidizing Catalyst	Not necessary to evaluate [exempt per 40 CFR 64.2(b)(1)(vi)]	CO CEMS	Exempt - 40 CFR 64.2(b)(1)(vi)
			NOx	Multiple NOx limits	BAAQMD 9-3-303; 40 CFR 60 Subpart Db; BAAQMD Condition 19177	Not necessary to evaluate [exempt per 40 CFR 64.2(b)(1)(vi)]	A60, SCR	Not necessary to evaluate [exempt per 40 CFR 64.2(b)(1)(vi)]	NOx CEMS	Exempt - 40 CFR 64.2(b)(1)(vi)
			SO2	Mulitple fuel gas H2S limits	40 CFR 60 Subpart J; BAAQMD Condition 19177	Not necessary to evaluate [no control device]	No	Not necessary to evaluate [no control device]	Fuel gas H2S CEMS	No - No control device
1031	COGEN HEAT RECOVERY STEAM GENERATOR , SG-4901	Current/Future	PM	Multiple PM limits	SIP 6-310; BAAQMD Condition 19177	Not necessary to evaluate [no control device]	No	Not necessary to evaluate [no control device]	No	No - No control device

Appendix D

EPA's Approved Alternate Monitoring Plans (AMPs)

1. PM emissions from the Main Stack are proportioned by the ratio of the FCCU's PM emissions and Coker's PM emissions. This AMP was approved by EPA on June 22, 2005.

2. Compliance with 40 CFR Part 63, Subpart UUU by routing the FCCU regenerator to the CO boiler with capacity greater than 44 Mega Watts instead of installing the continuous CO monitors. This AMP was approved by EPA on January 10, 2007.

3. Alternate Span Values for continuous NOx monitors at three steam generating units (S-220, S-237, S-1031). This AMP was approved by EPA on February 5, 2009.

4. COMs for the FCCU are located at 2.5 duct diameter downstream of the introduction of exhaust from the electrostatic precipitators instead of 4 duct diameter per 40 CFR Part 63, Subpart UUU. This AMP was approved by EPA on February 18, 2009.

EPA-004-05
xc: A. MIDDLETON, S. CORCORAN, K. DEXTER, T. LORSBACH
A. LACHWACH (SA), M. HODGES (SA),
FILE: 1.2.089 L

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
RESEARCH TRIANGLE PARK, NC 27711

JUN 22 2005

JUN 27 2005

OFFICE OF
AIR QUALITY PLANNING
AND STANDARDS

Mr. Clark Hopper
Valero Benicia Refinery
3400 East Second Street
Benicia, California 94510-1005

Dear Mr. Hopper:

We have reviewed your March 22, 2005 letter to Mr. John Kim of EPA's Region 9 where you propose an alternative method for determining particulate matter (PM) from the fluid catalytic cracking unit (FCCU) catalyst regenerator at the Valero Benicia Refinery in Benicia, California. The regenerator is subject to 40 CFR Part 63, Subpart UUU, National Emission Standards for Hazardous Air Pollutants for Petroleum Refineries. You wish to meet the requirements of the rule by complying with the PM limit in 40 CFR 60.102(a)(1) of the New Source Performance Standards. Specifically, you ask permission to make a minor change in the PM determination since your FCCU regenerator has a unique configuration.

The FCCU at the Benicia refinery operates as a partial burn unit. The energy-rich vent gas is immediately combined with the effluent from a fluid coking unit, distributed and combusted in two separate process furnaces, recombined and processed through a series of electrostatic precipitators, and finally discharged through the main stack. The PM emissions at the stack are a combination of both the regenerator and the coking unit.

You propose to determine the regenerator contribution to the emissions by testing for PM at three locations: after the regenerator, after the coker, and at the main stack. The ratio of PM measured after the regenerator and coker would be used to proportion the regenerator fraction of the stack PM emissions.

We believe your request to determine PM from the FCCU regenerator by adjusting the stack emissions to the fraction emitted from the regenerator is acceptable. We grant permission to use this procedure at Valero's FCCU regenerator at the Benicia Refinery. If you have questions or would like to discuss the matter further, please call Foston Curtis at (919) 541-1063, or you may e-mail him a message at curtis.foston@epa.gov.

Sincerely,

Dan Bivins for CBO

Conniesue B. Oldham, Ph.D., Group Leader
Air Measurements and Quality Group

cc: Foston Curtis (D205-02)
John Kim, Region 9
Bob Lucas (C439-03)

EPA-001-01
cc: A. Middleton, D. Cuffel, D. Strand,
D. Garg, A. Upchurch
File 1.2.0320, B.2.001. Doc 11835.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
RESEARCH TRIANGLE PARK, NC 27711

JAN 17 2007

JAN 10 2007

OFFICE OF
AIR QUALITY PLANNING
AND STANDARDS

Mr. Clark Hopper
Valero Benicia Refinery
3400 East Second Street
Benicia, California 94510-1005

Dear Mr. Hopper:

We have reviewed your September 18, 2006 letter to Mr. John Kim of EPA's Region 9 where you propose alternative methods to determine particulate matter (PM) and carbon monoxide (CO) from the fluid catalytic cracking unit (FCCU) catalyst regenerator at the Valero Benicia Refinery in Benicia, California. The regenerator has become subject to 40 CFR Part 60, Subpart J, New Source Performance Standards (NSPS) for Petroleum Refineries as part of a Clean Air Act settlement with the EPA and Department of Justice. You propose to meet the requirements of 40 CFR 60.105(a)(1) and (2) with alterative procedures due to the unique configuration of your FCCU regenerator exhaust.

Unlike typical catalyst regenerators, the unit at the Benicia refinery operates as a partial-burn unit. The energy-rich vent gas is immediately combined with the effluent from a fluid coking unit, distributed and combusted in two separate process furnaces, recombined and processed through a series of electrostatic precipitators, and finally discharged to the atmosphere through the main stack. The emissions at the stack are a combination of both the regenerator and the coking unit.

For PM, you propose to determine the regenerator contribution to the emissions by testing for PM at three locations: after the regenerator, after the coker, and at the main stack. The ratio of PM measured after the regenerator and coker would be used to proportion the regenerator fraction of the stack PM emissions. Valero was granted approval to use this procedure in 2005 to show compliance with the PM provisions in 40 CFR Part 63, Subpart UUU. Permission was granted in an EPA letter dated June 22, 2005.

For CO, you ask to use the option under 63.1565(b)(1)(ii) of Subpart UUU which allows the regenerator vent to be routed to a boiler or process heater with a design capacity of at least 44 megawatts in lieu of installing a CO continuous emission monitoring system. You note that CO emissions are already monitored at the main stack to comply with a local standard of 400 ppm at 3 percent oxygen which is less than the 500 ppm standard required by Subpart J solely for the regenerator. Over the last 10 years, this monitoring has shown daily CO averages to be less than 50 ppm. Subpart J allows an exemption from CO monitoring if a 30-day test shows CO emissions are less than 50 ppm.

We believe your request to determine PM and CO from the FCCU regenerator by the procedures described above is acceptable. We grant permission to use these procedures at Valero's FCCU regenerator at the Benicia Refinery to show compliance with Subpart J of the NSPS. If you have questions or would like to discuss the matter further, please call Foston Curtis at (919) 541-1063, or you may e-mail him at curtis.foston@epa.gov.

Sincerely,

Conniesue B. Oldham

Conniesue B. Oldham, Ph.D., Group Leader
Measurement Technology Group

cc: Shaun Burke, OECA
Foston Curtis (E143-02)
John Kim, Region 9
William Loscutoff, CARB
Bob Lucas (E143-01)

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION IX
75 Hawthorne Street
San Francisco, CA 94105-3901

FEB 05 2009

Donald W. Cuffel
Valero Benicia Refinery
3400 East Second Street
Benicia, CA 94510

Re: Alternate Span Values ("ASVs") for three steam generating units (S-220, S-237, and S-1031)

Dear Mr. Cuffel:

The United States Environmental Protection Agency ("USEPA") has reviewed Valero Benicia Refinery's ("the Facility") August 30, 2007 request as re-submitted on February 3, 2009 for approval of an alternate span value ("ASV") on a continuous emission monitoring system ("CEMs") for the following three steam generating units:

1. Process furnace w/SCR, F-4460 (BAAQMD S-220)
2. Boiler with SCR, SG-1032 (BAAQMD S-237)
3. Heat Recovery Steam Generator w/SCR, SG-4901 (BAAQMD S-1031)

Section 60.48b(b)(1) of the New Source Performance Standards ("NSPS") Db requires the use of a CEMS to measure NO_x emissions discharged to the atmosphere. Section 60.48b(e)(2)(i) of the NSPS sets forth a 500 ppm span value for a natural gas fired combustion unit and Section 60.48(e)(2)(ii) provides for the election of alternative NO_x CEMs span values as determined by Section 2.1.2 of Appendix A of 40 C.F.R. Part 75. Specifically, Section 2.1.2.3(b) of Part 75 Appendix A states that if an existing State, local or federal requirement for a NO_x CEMs requires a span value lower than required by Section 2.1.2 of Part 75 Appendix A, then the State, local or federal span value may be used. The Facility and all three steam generating units are also subject to Bay Area Air Quality Management District ("BAAQMD") requirements and are operating under a Title V permit (Facility B2626) which contains more restrictive than the limits contained in NSPS Subpart Db. A comparison of BAAQMD NO_x limits and NSPS Subpart Db appears below.

Description	BAAQMD Source Number	Duty (MMBtu/hr)	BAAQMD Emission Standard		40 CFR 60, Subpart Db Emission Standard (lb/MMBtu)	Span Value (ppm)
			(ppmv)	(approx lb/MMBtu		
Process Furnace, w/ SCR, F-4460	S-220	351	10 (3-hr avg, dry @ 3% O_2)	0.0118	0.10 – LHR 0.20 – HHR [40CFR60.44b(a)(1)]	50
Boiler, w/ SCR, SG-1032	S-237	315	9 (3-hr avg, dry @ 3% O_2)	0.0106	0.10 – LHR 0.20 – HHR [40CFR60.44b(a)(1)]	20
Heat Recovery Steam Generator, w/ SCR, SG-4901	S-1031	310	2.5 (1-hr avg, dry @ 15% O_2)	0.0030	0.20 [40CFR60.44b(l)(1)]	10

The Facilty also submitted daily NO_x monitoring data covering the one year period from January 1, 2007 to December 29, 2007 which indicates that the Facility is well within the span required by the Facility's Title V permit.

Based on our review of the information submitted by Valero Benicia Refinery, USEPA has determined that the ASV of 0 - 50 ppm is appropriate for the Facility's three steam generating units (BAAQMD S-220, S-237, S-1031). Therefore, pursuant to 40 C.F.R. § 60.13(i), USEPA is approving your request of August 30, 2007 as resubmitted on February 3, 2009. The approval of the proposed ASV applies only to Units S-220, S-237, and S-1031and does not affect any other requirements of NSPS Subpart Db.

If you have any questions regarding this determination, please contact Margaret Waldon of my staff at (415) 972-3987.

Sincerely,

Douglas K. McDaniel
Chief, Air Enforcement

cc: Kelly Wee, BAAQMD

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION IX
75 Hawthorne Street
San Francisco, CA 94105-3901

FEB 18 2009

Donald W. Cuffel
Valero Benicia Refinery
3400 East Second Street
Benicia, CA 94510

Dear Mr. Cuffel:

The United States Environmental Protection Agency ("USEPA") has reviewed Valero Benicia Refinery's ("the Facility") August 30, 2007 request for approval of an Alternative Monitoring Plan ('AMP") pursuant to 40 C.F.R. Sections 60.13(i) and 63.8(f)(2), for the Continuous Opacity Monitoring System ("COMS") associated with the Fluid Catalytic Cracking Unit ("FCCU")[1]. The FCCU became subject to 40 C.F.R. Part 60, Subpart J, New Source Performance Standards (NSPS Subpart J) for Petroleum Refineries as part of a Clean Air Act settlement with USEPA and Department of Justice in 2005.

Section 60.102(a)(1) of NSPS Subpart J limits particulate matter ("PM") to less than 1.0 kg/Mg (2.0 lb/ton) of coke burn-off; 40 C.F.R. 60.102(a)(2) which limits opacity to ≤30%; and 40 C.F.R. 60.105(a)(1) requires installation and operation of a COMS. The Facility is also subject the 40 C.F.R. Part 63 Subpart UUU, National Emission Standards for Hazardous Air Pollutants for Petroleum Refineries: Catalytic Cracking Units, Catalytic Reforming Units, and Sulfur Recovery Units ("NESHAP Subpart UUU").

The Facility operates as Source B-2626 under a Title V permit issued by BAAQMD. The Facility installed the subject COMS in the late 1970s to meet Bay Area Air Quality Management District's ("BAAQMD") opacity monitoring requirements. The COMS is installed in a location that is approximately 2.5 duct diameters downstream of the introduction of exhaust from the electrostatic precipitators. Section 63.1572(b)(1) of Subpart UUU requires the installation, operation and maintenance of a COMS and Table 40(1) to NESHAP Subpart UUU requires that a COMS be installed in accordance with Performance Specification 1 ("PS-1") at 40 C.F.R. Part 60, Appendix B. PS-1(8)(2)(i) requires that the COMS be located at least 4 duct diameters downstream from all particulate control equipment or flow disturbance, and at least 2 duct diameters upstream of a flow disturbance.

[1] This COMS was also the subject of an AMP submitted by the Facility in September 2005 requesting approval to determine the proportion of emissions from both the FCCU catalyst regenerator and the coking unit. The September 2005 AMP request was approved on June 22, 2005.

Based on our review of the information submitted by Valero Benicia Refinery, USEPA is approving your request pursuant to 40C.F.R. § 60.13(i). The AMP approval applies only to the specific requirement to operate a COMS for the FCCU. The AMP does not alter any of the other requirements (including but not limited to the emissions and opacity standards and all other monitoring requirements) of NSPS Subparts A and J and MACT Subparts A and UUU.

If you have any questions regarding this determination, please contact Margaret Waldon of my staff, at (415) 972-3987.

Sincerely,

Douglas K. McDaniel
Chief, Enforcement Office
Air Division

Cc: Kelly Wee, BAAQMD

APPENDIX E

Source by Source Applicability Analysis of Wastewater Streams

Source	Description	CC WW Group	BWON	QQQ in Section IV Table	QQQ Applicability NOTES
A36	Carbon canisters - Diversion	1	X (CD)	63.640(o)(1) overlap	Would be QQQ (control device for individual drain system) if not BWON
A37	Carbon canisters - WWTP	1	X (CD)	63.640(o)(1) overlap	Would be QQQ control device if not BWON
A57	Thermal oxidizer - WWTP	1	X (CD)	63.640(o)(1) overlap	Would be QQQ control device if not BWON
A65	Thermal oxidizer - Diversion	1	X (CD)	63.640(o)(1) overlap	Would be QQQ (control device for individual drain system) if not BWON
A68	Thermal oxidizer (NEW) - WWTP	1	X (CD)	63.640(o)(1) overlap	Would be QQQ control device if not BWON
S101	Floating Roof Storage vessel - slops	1	X (NSPS Kb)	NA	Tanks not subject to QQQ
S103	Floating Roof Storage vessel - slops	1	X (NSPS Kb)	NA	Tanks not subject to QQQ
S104	Floating Roof Storage vessel - slops	1	X (NSPS Kb)	NA	Tanks not subject to QQQ
S105	Floating Roof Storage vessel - slops	1	X (NSPS Kb)	NA	Tanks not subject to QQQ
S112	Floating Roof Storage vessel - slops	1	X (NSPS Kb)	NA	Tanks not subject to QQQ
S131	OWS sludge tank - WWTP	1	X (fixed roof tk)	~~63.640(o)(1) overlap~~	CC overlap should be removed; Sludge tanks not subject to QQQ. [see Background Information for Promulgated Standards, EPA-450/3-85-001b (2.1.7 Comment and Response), December 1987].
S150	Primary sludge thickener - WWTP	1	X (fixed roof tk)	~~63.640(o)(1) overlap~~	CC overlap should be removed; Sludge tanks not subject to QQQ. [see Background Information for Promulgated Standards, EPA-450/3-85-001b (2.1.7 Comment and Response), December 1987].
S188	OWS	63.640(d)(5) exemption - vent to FG	X (OWS; 61.340(d) exemption - vent to FG	63.640(o)(1) overlap	Would be QQQ OWS if not BWON; CC update needed
S189	OWS (ISF)	63.640(d)(5) exemption - vent to FG	X (OWS; 61.340(d) exemption - vent to FG	63.640(o)(1) overlap	Would be QQQ OWS if not BWON; CC update needed
S193	Storage vessel - diversion	1	X (fixed roof tk)	63.640(o)(1) overlap	Would be QQQ (part of controlled individual drain system) if not BWON
S194	OWS - WWTP	1	X (OWS)	63.640(o)(1) overlap	Would be QQQ OWS if not BWON; CC update

					needed
S195	OWS - WWTP	1	X (OWS)	63.640(o)(1) overlap	Would be QQQ OWS if not BWON; CC update needed
S196	Storage vessel - diversion	1	X (fixed roof tk)	63.640(o)(1) overlap	Would be QQQ (part of controlled individual drain system) if not BWON
S197	OWS (ISF) - WWTP	1	X (OWS)	63.640(o)(1) overlap	Would be QQQ OWS if not BWON; CC update needed
S198	OWS (ISF) - WWTP	1	X (OWS)	63.640(o)(1) overlap	Would be QQQ OWS if not BWON; CC update needed
S199	OWS slops tank - WWTP	1	X (fixed roof tk)	63.640(o)(1) overlap	Would be part of QQQ OWS if not BWON
S200	OWS slops tank - WWTP	1	X (fixed roof tk)	63.640(o)(1) overlap	Would be part of QQQ OWS if not BWON
S202	Vacuum truck loading from S131	1	X	~~63.640(o)(1) overlap~~	CC overlap should be removed; Sludge tanks not subject to QQQ. [see Background Information for Promulgated Standards, EPA-450/3-85-001b (2.1.7 Comment and Response), December 1987].
S205	Storage vessel - surge	1	X (fixed roof tk)	63.640(o)(1) overlap	Would be QQQ (part of controlled individual drain system) if not BWON
S206	Storage vessel - surge	1	X (fixed roof tk)	63.640(o)(1) overlap	Would be QQQ (part of controlled individual drain system) if not BWON
S81	Floating Roof Storage vessel - slops	1	X (NSPS Kb)	NA	Tanks not subject to QQQ
S85	Floating Roof Storage vessel - slops	1	X (NSPS Kb)	NA	Tanks not subject to QQQ
S151	Wastewater Equalization Ponds	2	X (uncontrolled)	NA	CC update needed in Table H1.1
S152	Wastewater Retention Ponds	2	X (uncontrolled)	NA	CC update needed in Table H1.2