Bay Area Air Quality Management District

939 Ellis Street
San Francisco, CA 94109
(415) 771-6000

Final
Permit Evaluation
and
Statement of Basis
for
Significant and Minor Revisions of

MAJOR FACILITY REVIEW PERMIT

for

ConocoPhillips – San Francisco Refinery
Facility #A0016

Facility Address:
1380 San Pablo Avenue
Rodeo, CA 94572

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November 2005

Application Engineer: Brenda Cabral
Site Engineer: Brenda Cabral

Application: 11626

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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.

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

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

Each facility in the Bay Area is assigned a facility identifier that consists of a letter and a 4-digit number. This identifier is also considered to be the identifier for the permit. The identifier for this facility is A0016.

This facility received its initial Title V permit on December 1, 2003. The permit was reopened and re-issued on December 16, 2004. This application is for significant and minor revisions to the permit. The proposed permit shows all changes to the permit in strikeout/underline format. This statement of basis addresses only the proposed changes to the permit. The statements of basis for the permits issued on December 1, 2003 and December 16, 2004 contain the basis for the rest of the permit.

These revisions to the Major Facility Review permit incorporate the changes to the facility and permit conditions authorized by the District in Applications 11293 and 11630. The changes approved in Application 11293 require a significant revision to the permit. The changes approved in Application 11630 require significant and minor revisions to the permit. The minor revisions are effective upon proposal. The significant revision is not effective until the public comment and EPA review process are over and the permit is issued. In this case, the public comment period and the EPA review period ran concurrently commencing March 31, 2005. No comments were received.

Application 11293 allows the existing S437/S438 hydrogen plant to allow greater use of liquid feeds (isopentane and butane), resulting in an increase in hydrogen gas production capacity from 25 MM scf/day to 28.5 MM scf/day. S437 is the source number assigned to the overall hydrogen plant, while S438 is the source number assigned to the hydrogen reforming furnace

within S437. The throughput increase is a significant revision because the BACT analysis for S438 is a case-by-case emission limit determination in accordance with BAAQMD Regulation 2-6-223.5.

The detail of the changes is in the engineering evaluation for Application 11293, which is in Appendix B and which hereby is incorporated into this statement of basis. The Authority to Construct was issued on February 16, 2005.

The evaluation for Application 11293 contained two errors in the discussion of toxic risk management. The risk screening trigger level for copper shown in the summary table of toxic emissions was incorrectly shown as 0.046 lb/yr (4.6 E-02), when it should have been 460 lb/yr (4.6 E+02). Nonetheless, the conclusion that a risk screening was not triggered by copper emissions was correct.

Also, the summary table of toxic emissions includes a listing for hexavalent chromium emissions (0.0071 lb/yr). As discussed in Section 4.1 of the evaluation, toxic emission factors used in the evaluation of Application 11293 were the same as were used in the risk assessment for Application 5814 where S438 was originally permitted. In Application 5814, an emission factor for chromium, but not for hexavalent chromium, was used. Therefore, the listing in the summary table of toxic emissions in Application 5814 should have been for chromium and not for hexavalent chromium. Because chromium has no assigned risk screening trigger level, the conclusion that a risk screening was not triggered by chromium emissions was correct.

Application 11630 allows 2 combustion devices (S36 and S461) to operate without normal selective catalytic reduction (SCR) abatement, as long as all applicable emission limits and other requirements are satisfied. This is a minor revision.

Application 11630 also allows ConocoPhillips to monitor TRS concentration at S36 and S461 in a similar manner to the monitoring of TRS in Condition 1694, part 3a. In that case, the total sulfur in refinery fuel gas is monitored 3 times per day as a surrogate for TRS. Once a month, the gas is analyzed to determine the ratio of total sulfur to TRS, which is defined as hydrogen sulfide, methyl mercaptan, methyl sulfide, and dimethyl disulfide. This test applies to all the gas in the refinery fuel gas system.

In this case, refinery fuel gas from the main fuel gas header is processed through two new caustic scrubbers of a novel design before combustion at S36 and S461 in order to meet lower BACT limits for TRS. Since this is a new system, the facility will be allowed to use total sulfur as a surrogate for TRS, but will be required to determine the TRS level whenever the total sulfur level exceeds the annual limit for TRS. Since TRS must be below the total sulfur, this monitoring is equivalent. This is a minor revision because the monitoring is equivalent and is not a relaxation.

However, the equivalent monitoring is not feasible for every sample. An outside lab in Sacramento that only works Mondays through Fridays performs the TRS analysis. The samples cannot be held for more than 36 hours before they deteriorate. Since the analysis is not feasible on Saturdays and Sundays, the facility will not be required to analyze any samples pulled on Friday and Saturday.

This is a significant revision of the Title V permit because the monitoring is not equivalent and therefore, it is a relaxation of monitoring pursuant to BAAQMD Regulation 2-6-226.3.

The reason for the revision is that the facility does not have the capability of monitoring TRS directly at these sources. Since the total sulfur is expected to be extremely low, the District does not expect that determination of TRS will be necessary for every sample.

Additionally, Application 11630 proposes an addition to the custom schedule of compliance. S36 and S461 are subject to the SO2 limit and H2S monitoring in Subpart J. The sources will comply with the limit but will not comply with the requirement for continuous monitoring of SO2 or HS2. The facility has submitted a petition for alternative monitoring to EPA, Region 9. Until the petition is approved, the facility will be out of compliance with Subpart J. Therefore, a custom schedule of compliance is required. The changes to the schedule of compliance are shown in Section C.V of this statement of basis. This is not a significant revision because no emission limit or monitoring requirement is changed.

The detail of the changes is in the engineering evaluation for Application 11630, which is in Appendix C and which hereby is incorporated into this statement of basis.

There will be no change in emissions due to Application 11630. There will be a small change in emissions for Application 11293, which is shown below:

Pollutant	Amount, tons/year
POC	0.30
NOx	0.62
SO2	0.12
CO	1.72
PM10	0.30
NH3	0.46

Changes before final issuance

The monitoring strategy proposed in Application 11630 allowed the facility to use a total sulfur measurement in lieu of a GC to determine compliance with the "TRS" limits (4 compounds) at S36 and S461, Heaters. The limits, which are in BAAQMD Conditions 21096 and 21097, are a daily average of 100 ppm TRS and an annual average of 45 ppm TRS. These low limits are feasible because the refinery fuel gas for these heaters is processed through caustic scrubbers (Merichem units) to comply with BACT for SO2. Therefore, the gas was expected to and does have less sulfur than normal refinery fuel gas.

Following is a brief description of the monitoring strategy: The owner/operator is required to take a sample 3 times per day and use a total sulfur analyzer to determine total sulfur. If the total sulfur is less than 45 ppm, then the TRS compounds must be less than 45 ppm and no further analysis is necessary. If the total sulfur is more than 45 ppm, the owner/operator is required to send one sample per day to a laboratory for GC analysis to determine the sum of the 4 TRS compounds. Outside analysis was not required on weekends.

Based on about seven months of data, the District concludes that the total sulfur is generally above 45 ppm. The owner/operator has sent many samples to an outside lab for analysis. The owner/operator has sent the data for about 90 of the samples to the District. Based on this data, the 4 TRS compounds make up about 20% of the total sulfur; carbonyl sulfide is about 35%; 2 thiophenes are about 20% together. The caustic scrubber generally removes most of the four compounds in the limit. It is obvious, though, that total sulfur is not a good indicator of the four compounds in the limit.

Moreover, using this monitoring strategy, the 100 ppm TRS daily limit is unenforceable because the daily limit is an average of three samples and only one sample is ever sent out for GC analysis. To avoid these problems, the owner/operator has decided to purchase a GC to analyze the samples on-site. In the meantime, the total sulfur monitoring will continue as proposed.

To make the daily limit enforceable, the owner/operator will assume, for the purposes of the daily limit, that any sample for which there is only total sulfur data is 100% TRS. Compliance will be based on 3 data points per day.

For the annual limit, the owner/operator will use the average of samples with GC data. Since at least one sample per week must be analyzed, compliance will be based on at least 52 data points.

The owner/operator also proposed to use the original monitoring strategy for compliance with 40 CFR 60, Subpart J, for these sources. The limit in Subpart J is 230 mg/dscm (0.10 grain/dscf) H2S. The total sulfur instrument is capable of measuring H2S directly. The District will approve an alternative monitoring plan in this action for compliance with Subpart J at these sources by taking three samples/day and analyzing them for H2S using the existing Houston-Atlas analyzer. Any sample that is out of compliance will be a violation.

The units were started up at the end of March, 2005.

B. Facility Description

This facility is an oil refinery. For a complete description, see the Statement of Basis for Application 9296.

C. Permit Content

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

I. Standard Conditions

This section contains administrative requirements and conditions that apply to all facilities.

Changes to permit

There are no changes to Section I in this action.

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., A24). .

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.

Changes to permit:

Table II A - Permitted Sources

Each of the following sources has been issued a permit to operate pursuant to the requirements of BAAQMD Regulation 2, Permits. The capacities in this table are the maximum allowable capacities for each source, pursuant to Standard Condition I.J and Regulation 2-1-301.

S-#	Description	Make or Type	Model	Capacity
437	Hyd~~1~~rogen Manufacturing Unit			28.5~~25~~ million scf/day
438	U110, H-1 (H2 Plant Reforming) Furnace (natural gas, refinery fuel gas, PSA offgas)	John Zinc PFFG burners~~Claudius Peters~~	reforming furnace	250~~210~~ MM BTU/hr

Table II B – Abatement Devices

A#	Description	Source(s) Controlled	Applicable Requirement	Operating Parameters	Limit or Efficiency
46	SCR System	S438	BAAQMD Condition 1694, Part E	NOx, O2 CEMs	7~~10~~ ppmv NOx at 3% O2 (1~~3~~-hr average)

The basis for the above changes is set out in the engineering evaluation for Application 11293.

III. Generally Applicable Requirements

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

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

Changes to permit
The address for the EPA's SIP website has been moved to this page.

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.

Changes to permit:
The address for the EPA's SIP website has been moved to this page.

Following are the proposed changes in Section IV for S36 and S461:

Table IV – A.24
Source-specific Applicable Requirements
S36 – UNIT 200, B-102 HEATER

Applicable Requirement	Regulation Title or Description of Requirement	Federally Enforceable (Y/N)	Future Effective Date
BAAQMD Regulation 1	**General Provisions and Definitions (5/2/01)**		startup date
1-520	Continuous Emission Monitoring	Y	startup date
1-520.8	Monitors pursuant to Regulation 2-1-403	Y	startup date
1-521	Monitoring May Be Required	Y	startup date
1-522	Continuous Emission Monitoring and Recordkeeping Procedures		startup date
1-522.4	reporting of inoperative CEMs	Y	startup date
1-522.5	CEM calibration requirements	Y	startup date
1-522.6	CEM accuracy requirements	Y	startup date
1-522.7	emission limit exceedance reporting requirements	N	startup date
1-522.8	monitoring data submittal requirements	Y	startup date
1-522.9	recordkeeping requirements	Y	startup date
1-522.10	Regulation 1-521 monitors shall meet requirements specified by District	Y	startup date
1-602	Area and Continuous Monitoring Requirements	N	startup date
SIP Regulation 1	**PROVISIONS NO LONGER IN CURRENT RULE General Provisions and Definitions (6/28/99)**		startup date
1-522	Continuous Emission Monitoring and Recordkeeping Procedures	Y – note 1	startup date
1-522.7	emission limit exceedance reporting requirements	Y - note 1	startup date
BAAQMD Regulation 2, Rule 1	**Regulation 2, Rule 1 - Permits, General Requirements (5/2/01; SIP approved 1/26/99 {adopted 11/01/89})**		startup date
2-1-403	Permit conditions requiring measurement of emissions	N	startup date

Table IV – A.24
Source-specific Applicable Requirements
S36 – UNIT 200, B-102 HEATER

Applicable Requirement	Regulation Title or Description of Requirement	Federally Enforceable (Y/N)	Future Effective Date
2-1-501	Monitors shall comply with Volume V of the Manual of Procedures	Y	startup date
SIP Regulation 2, Rule 1	**PROVISIONS NO LONGER IN CURRENT RULE Permits, General Requirements (1/26/99 {adopted 11/01/89})**		startup date
2-1-403	Permit conditions requiring measurement of emissions	Y – note 1	startup date
BAAQMD Regulation 6	**Particulate Matter and Visible Emissions (12/19/90)**		startup date
6-301	Ringelmann #1 Limitation	Y	startup date
6-305	Visible Particles	Y	startup date
6-310.3	Particulate Weight Limitation	Y	startup date
BAAQMD Manual of Procedures, Volume V	**Continuous Emission Monitoring Policy and Procedures (1/20/82)**	Y	startup date
40 CFR 60 Subpart A	**General Provisions (03/16/1994)**		
60.13	Monitoring Requirements	Y	
60.13(i)	Approval of Alternative Monitoring	Y	
NSPS 40 CFR 60 Subpart J	**Standards of Performance for Petroleum Refineries (7/1/00)**		startup date
60.100	Applicability	Y	startup date
60.104	Standards for Sulfur Oxides: Compliance Schedule	Y	startup date
60.104(a)(1)	fuel gas H2S concentration limited to 230 mg/dscm (0.10 gr/dscf) except for gas burned as a result of process upset or gas burned at flares from relief valve leaks or other emergency malfunctions	Y	startup date
60.105	Monitoring of Emissions and Operations	Y	startup date
~~60.105(a)(4)~~	~~monitoring requirement for H2S (dry basis) in fuel gas prior to combustion (in lieu of separate combustion device exhaust SO2 monitors as required by 60.105(a)(3))~~	~~Y~~	~~startup date~~
60.105(e)(3)(ii)	Excess H2S emission definitions for 60.7(c)	Y	startup date
60.106(a)	Test methods and procedures	Y	startup date
60.106(e)(1)	Method 11 shall be used to verify compliance with 60.104(a)(1)	Y	startup date
NSPS 40 CFR 60 Appendix A	**Appendix A to Part 60 – Test Methods**	Y	startup date
~~**NSPS 40 CFR 60**~~	~~**Performance Specifications**~~		~~startup date~~

Table IV – A.24
Source-specific Applicable Requirements
S36 – UNIT 200, B-102 HEATER

Applicable Requirement	Regulation Title or Description of Requirement	Federally Enforceable (Y/N)	Future Effective Date
~~**Appendix B**~~			
~~Performance Specification 7~~	~~H2S continuous emission monitoring systems~~	~~Y~~	~~startup date~~
BAAQMD Condition 1694			
Part A.2a	Fuel restrictions [Basis: Regulation 2, Rule 1]	Y	
Part A.4	SO2 emission limit [Basis: SO2 Bubble]	Y	
Part A.5c	Records of SO2 emissions [Basis: Regulation 2, Rule 1; SO2 Bubble; Regulation 2-6-409.2]	Y	
BAAQMD Condition 21097			startup date
Part 1	Fuel restrictions [Basis: BACT, Cumulative Increase]	Y	startup date
Part 2	Heat ratings, annual firing limits [Basis: Cumulative Increase]	Y	startup date
Part 3a	Abatement requirement [Basis: BACT, Cumulative Increase]	Y	after initial performance test
Part 3b	Emission rate limits [Basis: BACT, Cumulative Increase, Toxic Management]	Y, except for ammonia limit (Toxic Management)	after initial performance test
Part 4	Continuous fuel monitor requirement [Basis: Cumulative Increase]	Y	startup date
Part 5a	NOx, O2 CEM requirement [Basis: BACT, Cumulative Increase]	Y	startup date
Part 5b	Annual CO source test requirement [Basis: BACT, Cumulative Increase]	Y	startup date
Part 6	Fuel gas TRS concentration limit [Basis: BACT, Cumulative Increase, SO2 bubble]	Y	startup date
Part 7a	TRS testing requirement [Basis: BACT, Cumulative Increase, SO2 Bubble]	Y	startup date
Part 7b	TRS records requirement [Basis: BACT, Cumulative Increase, SO2 Bubble]	Y	startup date
Part 8	Initial source test requirement [Basis: BACT, Cumulative Increase, Toxic Management]	Y, except for ammonia limit (Toxic Management)	90 days after startup
Part 9	Initial source test procedures TRS reporting requirements [Basis: BACT, Cumulative Increase, Toxic Management]	Y, except for ammonia limit (Toxic	90 days after startup

Table IV – A.24
Source-specific Applicable Requirements
S36 – UNIT 200, B-102 HEATER

Applicable Requirement	Regulation Title or Description of Requirement	Federally Enforceable (Y/N)	Future Effective Date
		Management)	
Part 10	Recordkeeping [2-6-503]	Y	
BAAQMD Condition 21099			
Part 1	Light hydrocarbon control valve requirements [Basis: BACT]	Y	startup date
Part 2	Light hydrocarbon flange/connector requirements [Basis: BACT]	Y	startup date
Part 3	Centrifugal compressor requirements [Basis: BACT]	Y	startup date
Part 4	Light hydrocarbon centrifugal pump requirements [Basis: BACT]	Y	startup date
Part 5	Monitoring and repair program requirement [Basis: BACT]	Y	startup date
Part 6	ULSD project component count report requirement [Basis: BACT, Cumulative Increase, Toxic Management Policy]	Y	startup date

Table IV – A.35
Source-specific Applicable Requirements
S461 – UNIT 250, B-701 HEATER

Applicable Requirement	Regulation Title or Description of Requirement	Federally Enforceable (Y/N)	Future Effective Date
BAAQMD Regulation 1	**General Provisions and Definitions (5/2/01)**		startup date
1-520	Continuous Emission Monitoring	Y	startup date
1-520.8	Monitors pursuant to Regulation 2-1-403	Y	startup date
1-521	Monitoring May Be Required	Y	startup date
1-522	Continuous Emission Monitoring and Recordkeeping Procedures		startup date
1-522.4	reporting of inoperative CEMs	Y	startup date
1-522.5	CEM calibration requirements	Y	startup date
1-522.6	CEM accuracy requirements	Y	startup date
1-522.7	emission limit exceedance reporting requirements	N	startup date
1-522.8	monitoring data submittal requirements	Y	startup date
1-522.9	recordkeeping requirements	Y	startup date
1-522.10	Regulation 1-521 monitors shall meet requirements specified by District	Y	startup date
1-602	Area and Continuous Monitoring Requirements	N	startup date
SIP Regulation 1	**PROVISIONS NO LONGER IN CURRENT RULE General Provisions and Definitions (6/28/99)**		startup date
1-522	Continuous Emission Monitoring and Recordkeeping Procedures	Y – note 1	startup date
1-522.7	emission limit exceedance reporting requirements	Y - note 1	startup date

Table IV – A.35
Source-specific Applicable Requirements
S461 – UNIT 250, B-701 HEATER

Applicable Requirement	Regulation Title or Description of Requirement	Federally Enforceable (Y/N)	Future Effective Date
BAAQMD Regulation 2, Rule 1	**Regulation 2, Rule 1 - Permits, General Requirements (5/2/01; SIP approved 1/26/99 {adopted 11/01/89})**		startup date
2-1-403	Permit conditions requiring measurement of emissions	N	startup date
2-1-501	Monitors shall comply with Volume V of the Manual of Procedures	Y	startup date
SIP Regulation 2, Rule 1	**PROVISIONS NO LONGER IN CURRENT RULE Permits, General Requirements (1/26/99 {adopted 11/01/89})**		startup date
2-1-403	Permit conditions requiring measurement of emissions	Y – note 1	startup date
BAAQMD Regulation 6	**Particulate Matter and Visible Emissions (12/19/90)**		startup date
6-301	Ringelmann #1 Limitation	Y	startup date
6-305	Visible Particles	Y	startup date
6-310.3	Particulate Weight Limitation	Y	startup date
BAAQMD Manual of Procedures, Volume V	**Continuous Emission Monitoring Policy and Procedures (1/20/82)**	Y	startup date
40 CFR 60 Subpart A	**General Provisions (03/16/1994)**		
60.13	Monitoring Requirements	Y	
60.13(i)	Approval of Alternative Monitoring	Y	
NSPS 40 CFR 60 Subpart J	**Standards of Performance for Petroleum Refineries (7/1/00)**		startup date
60.100	Applicability	Y	startup date
60.104	Standards for Sulfur Oxides: Compliance Schedule	Y	startup date
60.104(a)(1)	fuel gas H2S concentration limited to 230 mg/dscm (0.10 gr/dscf) except for gas burned as a result of process upset or gas burned at flares from relief valve leaks or other emergency malfunctions	Y	startup date
60.105	Monitoring of Emissions and Operations	Y	startup date
~~60.105(a)(4)~~	~~monitoring requirement for H2S (dry basis) in fuel gas prior to combustion (in lieu of separate combustion device exhaust SO2 monitors as required by 60.105(a)(3))~~	~~Y~~	~~startup date~~
60.105(e)(3)(ii)	Excess H2S emission definitions for 60.7(c)	Y	startup date
60.106(a)	Test methods and procedures	Y	startup date
60.106(e)(1)	Method 11 shall be used to verify compliance with 60.104(a)(1)	Y	startup date
NSPS	**Appendix A to Part 60 – Test Methods**	Y	startup date

Table IV – A.35
Source-specific Applicable Requirements
S461 – UNIT 250, B-701 HEATER

Applicable Requirement	Regulation Title or Description of Requirement	Federally Enforceable (Y/N)	Future Effective Date
40 CFR 60 Appendix A			
~~**NSPS 40 CFR 60 Appendix B**~~	~~**Performance Specifications**~~		~~startup date~~
~~Performance Specification 7~~	~~H2S continuous emission monitoring systems~~	~~Y~~	~~startup date~~
BAAQMD Condition 1694			
Part A.2a	Fuel restrictions [Basis: Regulation 2, Rule 1]	Y	
Part A.4	SO2 emission limit [Basis: SO2 Bubble]	Y	
Part A.5c	Records of SO2 emissions [Basis: Regulation 2, Rule 1; SO2 Bubble; Regulation 2-6-409.2]	Y	
BAAQMD Condition 21096			startup date
Part 1	Fuel restrictions [Basis: BACT, Cumulative Increase]	Y	startup date
Part 2	Heat ratings, annual firing limits [Basis: Cumulative Increase]	Y	startup date
Part 3a	Abatement requirement [Basis: BACT, Cumulative Increase]	Y	after initial performance test
Part 3b	Emission rate limits [Basis: BACT, Cumulative Increase, Toxic Management]	Y, except for ammonia limit (Toxic Management)	after initial performance test
Part 4	Continuous fuel monitor requirement [Basis: Cumulative Increase]	Y	startup date
Part 5a	NOx, O2 CEM requirement [Basis: BACT, Cumulative Increase]	Y	startup date
Part 5b	Annual CO source test requirement [Basis: BACT, Cumulative Increase]	Y	startup date
Part 6	Fuel gas TRS concentration limit [Basis: BACT, Cumulative Increase, SO2 bubble]	Y	startup date
Part 7a	TRS testing requirement [Basis: BACT, Cumulative Increase, SO2 Bubble]	Y	startup date
Part 7b	TRS records requirement [Basis: BACT, Cumulative Increase, SO2 Bubble]	Y	startup date
Part 8	Initial source test requirement [Basis: BACT, Cumulative Increase, Toxic Management]	Y, except for ammonia limit (Toxic	90 days after startup

Table IV – A.35
Source-specific Applicable Requirements
S461 – UNIT 250, B-701 HEATER

Applicable Requirement	Regulation Title or Description of Requirement	Federally Enforceable (Y/N)	Future Effective Date
		Management)	
Part 9	Initial source test procedures TRS reporting requirements [Basis: BACT, Cumulative Increase, Toxic Management]	Y, except for ammonia limit (Toxic Management)	90 days after startup
Part 10	Recordkeeping [2-6-503]	Y	
BAAQMD Condition 21099			
Part 1	Light hydrocarbon control valve requirements [Basis: BACT]	Y	startup date
Part 2	Light hydrocarbon flange/connector requirements [Basis: BACT]	Y	startup date
Part 3	Centrifugal compressor requirements [Basis: BACT]	Y	startup date
Part 4	Light hydrocarbon centrifugal pump requirements [Basis: BACT]	Y	startup date
Part 5	Monitoring and repair program requirement [Basis: BACT]	Y	startup date
Part 6	ULSD project component count report requirement [Basis: BACT, Cumulative Increase, Toxic Management Policy]	Y	startup date

A relaxation of the TRS monitoring was approved in Application 11630. This is a significant revision to the permit in accordance with BAAQMD Regulation 2-6-223.3. The details are in Section C.VI, Permit Conditions, of this statement of basis.

Alternative monitoring for H2S in fuel gas for compliance with Subpart J, Section 104(a)(1), is proposed in Application 11630. The facility has also submitted a petition to EPA for approval. Therefore, this action proposes to delete 40 CFR 60, Subpart J, Section 105(a)(4), and Appendix B to 40 CFR 60 and to add 40 CFR 60, Subpart A, Section 60.13(i), Alternative Monitoring. This proposal will be finalized when EPA approves alternative monitoring.

BAAQMD and SIP Regulations 1-520 and 1-522 will still apply if there is no requirement for a CEM for H2S because the sources have CEMs for NOx.

In addition, BAAQMD Condition 1694, parts A.2a, A.4, and A.5c regarding the SO2 bubble regarding fuel restrictions and the SO2 bubble have been added because they apply to the sources and have been omitted in error.

Following are the proposed changes in Section IV for S438:

Table IV – A.34
Source-specific Applicable Requirements
S438 – UNIT 110, H-1 FURNACE

Applicable Requirement	Regulation Title or Description of Requirement	Federally Enforceable (Y/N)	Future Effective Date
BAAQMD Condition 1694			
Part A.1	Heat ratings, firing limits [Basis: Regulation 2-1-234.3]	N	
Part A.2a	Fuel restrictions [Basis: Regulation 2, Rule 1]	Y	
Part A.3a	TRS testing requirement [Basis: SO2 Bubble]	Y	
Part A.3b	TRS reporting requirements [Basis: SO2 Bubble]	Y	
Part A.4	SO2 emission limit [Basis: SO2 Bubble]	Y	
Part A.5	Records [Basis: Regulation 2, Rule 1; SO2 Bubble; Regulation 2-6-409.2]	Y	
Part E.1	S438 abatement requirement [Basis: BACT, Cumulative Increase]	Y	
Part E.2	S438 annual firing limit [Basis: Cumulative Increase]	Y	
Part E.3	S438 PSA offgas fuel TRS limit [Basis: BACT, Cumulative Increase]	Y	
Part E.4	S438 NOx, ~~and~~ CO and POC emission limits [Basis: BACT, Cumulative Increase]	Y	
Part E.5	S438 fuel gas TRS limit [Basis: BACT, Cumulative Increase]	Y	
Part E.6	S438 Records [Basis: Cumulative Increase~~Recordkeeping~~]	Y	
Part E.7	S438 modification startup source test requirement [Basis: BACT, Cumulative Increase]	Y	90 days after S438 startup following modification
Part E.8	S438 modification startup source test requirement [Basis: BACT, Cumulative Increase]	Y	prior to conducting source test in part E.7

The basis for BAAQMD Condition 1694, part E.6 was corrected from "Recordkeeping" to "Cumulative Increase."

An emission limit for POC was added in part E.4. This is a cumulative increase requirement.

Source test requirements for NOx, CO, and POC were added in parts E.7 and E.8.

Changes before final issuance

Table IV – A.24
Source-specific Applicable Requirements
S36 – UNIT 200, B-102 HEATER

Applicable Requirement	Regulation Title or Description of Requirement	Federally Enforceable (Y/N)	Future Effective Date
BAAQMD Condition 21097			
Part 7c	Alternative monitoring for compliance with 40 CFR 60.104(a)(1) H2S limit	Y	

Table IV – A.35
Source-specific Applicable Requirements
S461 – UNIT 250, B-701 HEATER

Applicable Requirement	Regulation Title or Description of Requirement	Federally Enforceable (Y/N)	Future Effective Date
BAAQMD Condition 21096			
Part 7c	Alternative monitoring for compliance with 40 CFR 60.104(a)(1) H2S limit	Y	

Also, since sources S36 and S461 have started up, the references to the startup date in the "Future Effective Date" column have been deleted.

Since the ammonia limit is not federally enforceable as explained in the original proposal, BAAQMD Conditions 21096, part 3b, and 21097, part 3b, have been split into parts 3b and 3c.

Since the source tests required in BAAQMD Conditions 21096, part 8 and 9, and 21097, part 8 and 9, have been concluded satisfactorily, the parts have been deleted.

The tank tables have been renamed from "B" series to "BB" series because they come after the "AB" series.

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."

The District has determined that the facility is out of compliance with the requirement to monitor H2S continuously in accordance with 40 CFR 60, Subpart J, at the following sources: S36, S425, S426, and S461. The facility has petitioned EPA for alternate monitoring for all four sources. The petition for S425 and S426 was submitted on May 11, 2004. A schedule of compliance for these sources was added to the permit when it was re-issued on December 16, 2004.

As of March 8, 2005, new sources S36 and S461 have not started up.

The District has approved non-continuous monitoring in Application 5814 that is not in compliance with Subpart J. In addition, the periodic monitoring is for TRS, not H2S. In regards to the limit, this would assure compliance because H2S is a subset of TRS, and the TRS limit is lower than EPA's limit for H2S. The monitoring does not comply because it is not continuous and because H2S is not measured.

Furthermore, this action proposes monitoring total sulfur content as a surrogate, with TRS analysis of many, but not all, samples for which total sulfur is above the TRS limit. Again, the monitoring does not comply because it is not continuous and because H2S is not measured.

Because the gas burned at S36 and S461 goes through a second desulfurization step through caustic scrubbers, the gas is expected to comply with the emission limit in Subpart J. The facility has petitioned EPA to accept the reduction in monitoring because the gas is low in H2S. To acknowledge non-compliance and to ensure reasonable progress towards compliance, the following additional schedule of compliance is proposed:

C. CUSTOM SCHEDULE OF COMPLIANCE

The owner/operator is out of compliance with the requirement in 40 CFR 60 Subpart J 60.105(a)(4) to verify the H2S concentration in gas combusted at S36 and S461, Heaters. Therefore, the District is imposing the following Schedule of Compliance.

Milestones

The proposed alternative monitoring plan was submitted to U.S. EPA in a letter dated February 3, 2005.

Reporting Requirements

Progress reports shall be submitted on the last day of every month to the Director of Enforcement until a monitoring program is established. The progress reports shall contain the date by which the item in the custom schedule of compliance was achieved or an explanation of why the item was not achieved by the above date and any corrective measures adopted.

Changes before final issuance

The District is issuing an alternative monitoring plan for compliance with the H2S limit in 40 CFR 60.104(a)(1). See the discussion of part 7c of BAAQMD Conditions 21096 and 21096 at the end of Section C.VI of this statement of basis. Therefore, the above proposed schedule of compliance will be deleted from the permit.

VI. Permit Conditions

The Major Facility Review permit contains conditions that 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.

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

Each permit condition is identified with a unique numerical identifier, up to five digits.

All changes to existing permit conditions that are proposed in this action 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.

Changes to permit:

The District approved the following changes in permit conditions through Applications 11292 and 11630. The engineering evaluations for these applications are attached and are considered part of this statement of basis.

The text of BAAQMD Condition 1694, parts A.2a, A.4, and A.5c is included here because they were added to the requirements for S36 and S461.

CONDITION 1694

CONDITIONS FOR COMBUSTION SOURCES AND SO2 CAP, EXCEPT FOR GAS TURBINES AND DUCT BURNERS

A. Heater Firing Rate Limits and General Requirements

1. Each heater listed below shall not exceed the indicated daily firing rate limit (based on higher heating value of fuel), which are considered maximum sustainable firing rates. The indicated hourly firing rate is the daily limit divided by 24 hours and is the basis for permit fees and is the rate listed in the District database.

District Firing Source Number	Refinery ID Number	Daily Firing Limit (MM BTU/day)	Hourly Rate (MM BTU/hr)
S-2	U229/B301	528	22
S-3	U230/B201	1,488	62
S-4	U231/B101	2,304	96
S-5	U231/B102	2,496	104
S-7	U231/B103	1,536	64
S-8	U240/B1	6,144	256
S-9	U240/B2	1,464	61
S-10	U240/B101	5,352	223
S-11	U240/B201	2,592	108
S-12	U240/B202	1,008	42
S-13	U240/B301	4,656	194
S-14	U240/B401	13,344	556
S-15 thru S19	U244/B501 thru B505	5,754	239.75
S-20	U244/B506	552	23
S-21	U244/B507	194.4	8.1
S-22	U248/B606	744	31
S-29	U200/B5	2,472	103
S-30	U200/B101	1,200	50
S-31	U200/B501	480	20
S-43	U200/B202	5,520	230
S-44	U200/B201	1,104	46
S-336	U231/B104	2,664	111
S-337	U231/B105	816	34
S-351	U267	2,424	101
S-371/372	U228/B520 and B521	1,392	58
S438	U110	6,000~~5,040~~	250~~210~~

[Regulation 2-1-234.3 except for S438, Cumulative Increase for S438]

2a. All sources shall use only refinery fuel gas and natural gas as fuel, EXCEPT for S438 which may also use pressure swing adsorption (PSA) off gas as fuel, and EXCEPT for S-3 and S-7 which may also use naphtha fuel.
[Regulation 9-1-304 (sulfur content), Regulation 2, Rule 1]

4. Emissions of SO2 shall not exceed ~~1,611~~1612 lb/day on a monthly average basis from non-cogeneration sources burning fuel gas or liquid fuel. [SO2 Bubble]

5. The following records shall be maintained in a District-approved log for at least 5 years and shall be made available to the District upon request:

a. Daily and monthly records of the type and amount of fuel combusted at each source listed in Part A.1. [Regulation 2, Rule 1]

b. TRS sample results as required by Part A.3 [SO2 Bubble]
c. SO2 emissions as required by Part A.4 [SO2 Bubble]
d. The operator shall keep records of all visible emission monitoring required by Part 2b, shall identify the person performing the monitoring and shall describe all corrective actions taken.

[Regulation 2-6-409.2]

e. The operator shall keep records of all visible emission monitoring required by Part 2c, of the results of required visual monitoring and Method 9 evaluations on these sources, shall identify the person performing the monitoring and shall describe all corrective actions taken.

[Regulation 2-6-409.2]

E. S438 FURNACE

1. The S438 furnace shall be abated by the A46 SCR unit at all times, except that S438 may operate without SCR abatement on a temporary basis for periods of planned or emergency maintenance. A District-approved NOx CEM shall monitor and record the S438 NOx emission rate whenever S438 operates without abatement. All emission limits applicable to S438 shall remain in effect whether or not it is operated with SCR abatement.

[BACT, Cumulative Increase]

2. Total fuel fired in S438 shall not exceed 2.19~~2.04~~ E 12 BTU in any rolling consecutive 365 day period. [Cumulative Increase]

3. Pressure swing adsorption (PSA) off gas used as fuel at S438 shall not exceed 1.0 ppm (by weight) total reduced sulfur (TRS). TRS shall include hydrogen sulfide, methyl mercaptan, methyl sulfide, dimethyl disulfide. [BACT, Cumulative Increase]

4. The following emission concentration limits from S438 shall not be exceeded. These limits shall not apply during startup periods not exceeding 24 hours (72 hours when drying refractory or during the first startup following catalyst replacement) and shutdown periods not exceeding 24 hours. The District may approve other startup and shutdown durations.

NOx: 7~~10~~ ppmv @ 3% oxygen, averaged over any 1-hr~~3 hour~~ period
CO: 32 ppmv @ 3% oxygen, averaged over any calendar day
POC: 0.0023 lb/MM BTU of fuel used [BACT, Cumulative Increase]

5. The concentration of TRS in the blended fuel gas shall not exceed 14~~50~~ ppmv averaged over any calendar month. [~~BACT,~~ SO2 Bubble, Cumulative Increase]

6. Daily records of the type and amount of fuel combusted at S438 and of the TRS and hydrogen sulfide concentration in the blended fuel gas, and monthly records of average blended fuel gas TRS concentration, shall be maintained for at least five years and shall be made available to the District upon request. [Cumulative Increase~~Recordkeeping~~]

7. No later than 90 days from the startup of the S438, the owner/operator shall conduct District-approved source tests to determine initial compliance with the limits in Part 4 for NOx, CO and POC. The owner/operator shall conduct the source tests in accordance with Part 8. The owner/operator shall submit the source test results to the District staff no later than 60 days after the source test. [BACT, Cumulative Increase]

8. 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. [BACT, Cumulative Increase]

The changes resulting from Application 11292 to BAAQMD Condition 1694 are a significant revision to the Major Facility Review permit because a case-by-case determination for BACT for NOx was made in accordance with BAAQMD Regulation 2-6-226.5.

In this action, the basis for BAAQMD Condition 1694, part 5 is being corrected from "BACT, Cumulative Increase" to "SO2 Bubble, Cumulative Increase." No BACT determination was made for SO2.

The basis for all changes to BAAQMD Condition 1694 is given in Application 11292. The engineering evaluation is in Appendix B and is part of this statement of basis.

Follow are Conditions 21096 and 21097 as proposed on July, 2005.

Condition 21096:
CONDITIONS FOR S461 HEATER

1. The owner/operator of the S461 heater shall fire only refinery fuel gas or natural gas at this unit. [BACT, Cumulative Increase]

2. Based on refinery gas HHV, the owner/operator of S461 shall not exceed the following firing rates:

   a. 50.2 million BTU/hr
   b. 439,800 million BTU in any consecutive 12-month period. [Cumulative Increase]

3a. The owner/operator of S461 shall abate emissions from S461 at the A461 SCR system whenever S461 is operated, except that S461 may operate without SCR abatement on a temporary basis for periods of planned or emergency maintenance. A District-approved NOx CEM shall monitor and record the S461 NOx emission rate whenever S461 operates without abatement. All emission limits applicable to S461 shall remain in effect whether or not it is operated with SCR abatement. [BACT, Cumulative Increase]

3b. The owner/operator of A461 shall not exceed the following emission rates from S461/A461 except during startups and shutdowns. Startups and shutdowns shall not exceed 24 consecutive hours. The 24 consecutive-hour startup period is in addition to heater dryout/warmup periods, which shall not exceed 72 consecutive hours.

NOx	10 ppmv @ 3% oxygen (3 hr average) [BACT, Cumulative Increase]
CO	28 ppmv @ 3% oxygen (8 hr average) at 25.1 MM BTU/hr and higher firing rates, 50 ppmv @ 3% oxygen (8 hr average) at firing rates below 25.1 MM BTU/hr [BACT, Cumulative Increase]
POC	5.5 lb/MM ft3 [Cumulative Increase]
PM10	7.6 lb/MM ft3 [Cumulative Increase]
ammonia	10 ppmv @ 3% oxygen (8 hr average) [Toxic Management]

Note: Parts 3a and 3b shall not apply until after the conclusion of the initial startup of S461.

4. The owner/operator shall equip S461 with a District-approved continuous fuel flow monitor and recorder in order to determine fuel consumption. A parametric monitor as defined in Regulation 1-238 is not acceptable. The owner/operator shall keep continuous fuel flow records for at least five years and shall make these records available to the District upon request. [Cumulative Increase]

5a. The owner/operator shall install, calibrate, maintain, and operate a District-approved continuous emission monitor and recorder for NOx and O2. The owner/operator shall keep NOx and O2 data for at least five years and shall make these records available to the District upon request. [BACT, Cumulative Increase]

5b. Following the initial source test required in Part 8, the owner/operator shall monitor compliance with the CO emission rate limit in Part 3b with a District-approved semi-annual source test, with at least one source test per year deemed by the District to be representative of normal operation. The owner/operator shall submit the source test results to the District staff no later than 60 days after the source test. The time interval between source tests shall not exceed 8 months. CO source tests performed by the District may be substituted for semi-annual CO source tests. If two or more CO source tests, over any consecutive five year period, indicate a CO emission rate of 200 ppmv @ 3% O2 or higher, the owner/operator shall install and operate a District-approved continuous CO monitor/recorder within the time period specified in the District Manual of Procedures.[BACT, Cumulative Increase]

6. The owner/operator shall use only refinery fuel gas at S461 ~~which~~ that does not exceed the following limits:

   a. 100 ppmv totaled reduced sulfur (TRS), averaged over a calendar day
   b. 45 ppmv TRS, averaged over any rolling consecutive 365-day period.

   [BACT, Cumulative Increase]

7a. The owner/operator shall test refinery fuel gas prior to combustion at S461 to determine total reduced sulfur (TRS) concentration by GC analysis at least once per 8-hour shift (3 times per calendar day). At least 90% of these samples shall be taken each calendar month. No readable samples or sample results shall be omitted. TRS shall include hydrogen sulfide, methyl mercaptan, methyl sulfide, dimethyl disulfide. As an alternative to GC TRS analysis, the fuel gas total sulfur content may be measured with a dedicated total sulfur analyzer (Houston Atlas or equivalent). If the measured total sulfur concentration exceeds 45 ppm, the owner/operator shall analyze the sample for TRS, provided that:

   a. Only one sample per day shall be analyzed;
   b. If more than one sample on one day is over 45 ppm of total sulfur concentration, the highest sample for that day shall be analyzed;
   c. Analysis shall only be performed on samples that are collected on Sundays through Thursday.
   d. If all samples are under 45 ppm of total sulfur concentration, one sample per week shall be analyzed.

   Within 2 months of startup, the owner/operator shall submit a report to the Engineering Division and to the Compliance and Enforcement division that contains the following information:

   d. The total sulfur for all samples collected in the two months;
   e. The TRS results for all samples that are analyzed in the two months.

7b. If the TRS value, averaged over any rolling consecutive 365-day period, exceeds 35 ppmv, the owner/operator shall install and operate a District-approved continuous monitor/recorder to determine the total reduced sulfur content of the refinery fuel gas prior to combustion in S461 within the time period specified in the District Manual of Procedures. [BACT, Cumulative Increase]

8. No later than 90 days from the startup of the S461, the owner/operator shall conduct District-approved source tests to determine initial compliance with the limits in Part 3b for NOx, CO, POC, PM10 and ammonia. The owner/operator shall conduct the source tests in accordance with Part 9. The owner/operator shall submit the source test results to the District staff no later than 60 days after the source test. [BACT, Cumulative Increase, Toxic Management]

9. 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. [BACT, Cumulative Increase, Toxic Management]

10. The owner/operator shall record the duration of all startups, shutdowns, and heater dryout/warmup periods to determine compliance with part 3b. The owner/operator shall keep the records for at least five years and shall make these records available to the District upon request. [2-6-503]

CONDITION 21097
CONDITIONS FOR S36 HEATER

1. The owner/operator of the S36 heater shall fire only refinery fuel gas or natural gas at this unit. [BACT, Cumulative Increase]

2. Based on refinery gas HHV, the owner/operator of S36 shall not exceed the following firing rates:

   a. 82.1 million BTU/hr
   b. 719,200 million BTU in any consecutive 12-month period. [Cumulative Increase]

3a. The owner/operator of S36 shall abate emissions from S36 at the A36 SCR system whenever S36 is operated, except that S36 may operate without SCR abatement on a temporary basis for periods of planned or emergency maintenance. A District-approved NOx CEM shall monitor and record the S36 NOx emission rate whenever S36 operates without abatement. All emission limits applicable to S36 shall remain in effect ~~whether or not~~ even if it is operated without SCR abatement. [BACT, Cumulative Increase]

3b. The owner/operator of S36 shall not exceed the following emission rates from S36/A36 except during startups and shutdowns. Startups and shutdowns shall not exceed 24 consecutive hours. The 24 consecutive-hour startup period is in addition to heater dryout/warmup periods, which shall not exceed 72 consecutive hours.

NOx	10 ppmv @ 3% oxygen (3 hr average)	[BACT, Cumulative Increase]
CO	28 ppmv @ 3% oxygen (8 hr average)	[BACT, Cumulative Increase]
POC	5.5 lb/MM ft3	[Cumulative Increase]

PM10	7.6 lb/MM ft3	[Cumulative Increase]
ammonia	10 ppmv @ 3% oxygen (8 hr average)	[Toxic Management]

Note: Parts 3a and 3b shall not apply until after the conclusion of the initial startup of S36.

4. The owner/operator shall equip S36 with a District-approved continuous fuel flow monitor and recorder in order to determine fuel consumption. A parametric monitor as defined in Regulation 1-238 is not acceptable. The owner/operator shall keep continuous fuel flow records for at least five years and shall make these records available to the District upon request. [Cumulative Increase]

5a. The owner/operator shall install, calibrate, maintain, and operate a District-approved continuous emission monitor and recorder for NOx and O2. The owner/operator shall keep NOx and O2 data for at least five years and shall make these records available to the District upon request. [BACT, Cumulative Increase]

5b. Following the initial source test required in Part 8, the owner/operator shall monitor compliance with the CO emission rate limit in Part 3b with a District-approved semi-annual source test, with at least one source test per year deemed by the District to be representative of normal operation. The owner/operator shall submit the source test results to the District staff no later than 60 days after the source test. The time interval between source tests shall not exceed 8 months. CO source tests performed by the District may be substituted for semi-annual CO source tests. If two or more CO source tests, over any consecutive five year period, indicate a CO emission rate of 200 ppmv @ 3% O2 or higher, the owner/operator shall install and operate a District-approved continuous CO monitor/recorder within the time period specified in the District Manual of Procedures. [BACT, Cumulative Increase]

6. The owner/operator shall use only refinery fuel gas at S36 ~~which~~ that does not exceed the following limits:

a. 100 ppmv totaled reduced sulfur (TRS), averaged over a calendar day
b. 45 ppmv TRS, averaged over any rolling consecutive 365-day period.

[BACT, Cumulative Increase]

7a. The owner/operator shall test refinery fuel gas prior to combustion at S36 to determine total reduced sulfur (TRS) concentration by GC analysis at least once per 8-hour shift (3 times per calendar day). At least 90% of these samples shall be taken each calendar month. No readable samples or sample results shall be omitted. TRS shall include hydrogen sulfide, methyl mercaptan, methyl sulfide, and dimethyl disulfide. As an alternative to GC TRS analysis, the fuel gas total sulfur content may be measured with a dedicated total sulfur analyzer (Houston Atlas or equivalent). If the measured total sulfur concentration exceeds 45 ppm, the owner/operator shall analyze the sample for TRS, provided that:

a. Only one sample per day shall be analyzed;
b. If more than one sample on one day is over 45 ppm of total sulfur concentration, the highest sample for that day shall be analyzed;
c. Analysis shall only be performed on samples that are collected on Sundays through Thursday. No sample will be analyzed on a holiday.
d. If all samples are under 45 ppm of total sulfur concentration, one sample per week shall be analyzed.

Within 2 months of startup, the owner/operator shall submit a report to the Engineering Division and to the Compliance and Enforcement division that contains the following information:

d. The total sulfur for all samples collected in the two months;
e. The TRS results for all samples that are analyzed in the two months.

7b. If the TRS value, averaged over any rolling consecutive 365-day period, exceeds 35 ppmv, the owner/operator shall install and operate a District-approved continuous monitor/recorder to determine the total reduced sulfur content of the refinery fuel gas prior to combustion in S36 within the time period specified in the District Manual of Procedures. [BACT, Cumulative Increase]

8. No later than 90 days from the startup of the S36, the owner/operator shall conduct District-approved source tests to determine initial compliance with the limits in Part 3b for NOx, CO, POC, PM10 and ammonia. The owner/operator shall conduct the source tests in accordance with Part 9. The owner/operator shall submit the source test results to the District staff no later than 60 days after the source test. [BACT, Cumulative Increase, Toxic Management]

9. 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. [BACT, Cumulative Increase, Toxic

10. The owner/operator shall record the duration of all startups, shutdowns, and heater dryout/warmup periods to determine compliance with part 3b. The owner/operator shall keep the records for at least five years and shall make these records available to the District upon request. [2-6-503]

The basis for all changes to BAAQMD Conditions 21096 and 21097 as shown above is given in Application 11630. The engineering evaluation is in Appendix C and is part of this statement of basis.

The conditions are not being issued as proposed. Following are the final amendments to Conditions 21096 and 21097 to address the issues discussed in Section A of this final Statement of Basis.

Changes before final issuance

The stricken sections have been changed. The new language is shown in bold, italicized text. The purpose of the changes to part 7a of both conditions is to make the daily limit enforceable and to allow the facility to use the total sulfur analyzer until they have the GC instrument onsite, which will take a few months to purchase. Until the instrument is onsite, they are able to send any sample out for TRS analysis by GC.

7b has been amended to show a daily instead of a 24-hour average, since samples are taken 3 times per day, not hourly.

Part 7c has been added to allow the facility to make a direct H2S measurement for compliance with the H2S limit in 40 CFR 60.104(a)(1). This measurement is more appropriate for this standard. The facility has shown that the H2S levels in this fuel gas are generally below 6 or 7 ppm, which is the detection level for the Houston Atlas analyzer. Because the H2S levels are so

low, the District is approving this alternative monitoring in lieu of the continuous H2S monitor required by 40 CFR 60.105(a)(4), in accordance with 40 CFR 60.13(i) as allowed by the EPA's delegation of the New Source Performance Standards to the District. Since reporting of excess emissions would be required for an H2S monitor, equivalent reporting is being added to this condition.

The source test conditions in parts 8 and 9 of BAAQMD Conditions 21096 and 21097 has been deleted since the source test have been performed satisfactorily and compliance has been determined.

CONDITION 21096

CONDITIONS FOR S461 HEATER

5b. Following the initial source test ~~required in Part 8~~, the owner/operator shall monitor compliance with the CO emission rate limit in Part 3b with a District-approved semi-annual source test, with at least one source test per year deemed by the District to be representative of normal operation. The owner/operator shall submit the source test results to the District staff no later than 60 days after the source test. The time interval between source tests shall not exceed 8 months. CO source tests performed by the District may be substituted for semi-annual CO source tests. If two or more CO source tests, over any consecutive five year period, indicate a CO emission rate of 200 ppmv @ 3% O2 or higher, the owner/operator shall install and operate a District-approved continuous CO monitor/recorder within the time period specified in the District Manual of Procedures.[BACT, Cumulative Increase]

6. The owner/operator shall use only refinery fuel gas at S461 that does not exceed the following limits:

a. 100 ppmv totaled reduced sulfur (TRS), averaged over a calendar day
b. 45 ppmv TRS, averaged over any rolling consecutive 365-day period.

[BACT, Cumulative Increase]

7a. The owner/operator shall test refinery fuel gas prior to combustion at S461 to determine total reduced sulfur (TRS) concentration by GC analysis at least once per 8-hour shift (3 times per calendar day). At least 90% of these samples shall be taken each calendar month. No readable samples or sample results shall be omitted. TRS shall include hydrogen sulfide, methyl mercaptan, methyl sulfide, ***and*** dimethyl disulfide.

1. As an alternative to GC TRS analysis, the fuel gas total sulfur content may be measured with a dedicated total sulfur analyzer (Houston Atlas or equivalent). ***For the purposes of the daily limit, the owner/operator will presume that the results are TRS, unless the sample is analyzed for TRS by GC analysis.*** ~~If the measured total sulfur concentration exceeds 45 ppm, the owner/operator shall analyze the sample for TRS , provided that:~~

~~a. Only one sample per day shall be analyzed;~~
~~b. If more than one sample on one day is over 45 ppm of total sulfur concentration, the highest sample for that day shall be analyzed;~~
~~c. Analysis shall only be performed on samples that are collected on Sundays through Thursday.~~
~~d. If all samples ***in a week*** are under 45 ppm of total sulfur concentration,~~ One sample per week shall be analyzed using a GC. ~~***until may 31, 2006,***~~ ***The owner/operator shall use the results of the samples that have been analyzed by GC analysis for the purposes of the annual limit.***

~~Within 2 months of startup, the owner/operator shall submit a report to the Engineering Division and to the Compliance and Enforcement division that contains the following information:~~

~~d. The total sulfur for all samples collected in the two months;~~

~~e. The TRS results for all samples that are analyzed in the two months.~~

7b. To demonstrate compliance with Part 6, the owner/operator shall measure and record the ~~24-hour~~***daily*** average TRS content and the 365-day average TRS content of the refinery fuel gas fired in S461, unless required to operate a District-approved continuous monitor/recorder by Part 7a. The owner/operator shall keep TRS records, whether they are the results of GC analysis or continuous analyzer data, for at least five years and shall make these records available to the District upon request. [BACT, Cumulative Increase]

7c. For the purpose of demonstrating compliance with the H2S limit in 40 CFR 60.104(a)(1), the owner/operator shall test refinery fuel gas prior to combustion at S461 to determine total H2S concentration at least once per 8 hour shift (3 times per calendar day). At least 90% of these samples shall be taken each calendar month. No readable samples or sample results shall be omitted. Records of H2S monitoring shall be kept for at least five years after the date the record was made. The owner/operator shall submit a semi-annual report regarding this monitoring to the District and to EPA. The reporting periods shall start on January 1st and July 1st of each year. The reports shall be submitted by January 31st and July 31st of each year. If the limit has not been exceeded during the reporting period, this information shall be stated in the report. If the limit has been exceeded, the owner/operator shall report the date and time that the exceedance began and the date and time that the exceedance ended. The owner operator shall estimate and report the excess emissions during the exceedance. [40 CFR 60.13(i)]

8. ~~No later than 90 days from the startup of the S461, the owner/operator shall conduct District-approved source tests to determine initial compliance with the limits in Part 3b for NOx, CO, POC, PM10 and ammonia. The owner/operator shall conduct the source tests in accordance with Part 9. The owner/operator shall submit the source test results to the District staff no later than 60 days after the source test. [BACT, Cumulative Increase, Toxic Management]~~ ***Deleted Application 11626.***

9. ~~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. [BACT, Cumulative Increase, Toxic Management]~~ ***Deleted Application 11626.***

CONDITION 21097

CONDITIONS FOR S36 HEATER

5b. Following the initial source test ~~required in Part 8~~, the owner/operator shall monitor compliance with the CO emission rate limit in Part 3b with a District-approved semi-annual source test, with at least one source test per year deemed by the District to be representative of normal operation. The owner/operator shall submit the source test results to the District

staff no later than 60 days after the source test. The time interval between source tests shall not exceed 8 months. CO source tests performed by the District may be substituted for semi-annual CO source tests. If two or more CO source tests, over any consecutive five year period, indicate a CO emission rate of 200 ppmv @ 3% O2 or higher, the owner/operator shall install and operate a District-approved continuous CO monitor/recorder within the time period specified in the District Manual of Procedures.[BACT, Cumulative Increase]

6. The owner/operator shall use only refinery fuel gas at S36 that does not exceed the following limits:

a. 100 ppmv totaled reduced sulfur (TRS), averaged over a calendar day
b. 45 ppmv TRS, averaged over any rolling consecutive 365-day period.

[BACT, Cumulative Increase]

7a. The owner/operator shall test refinery fuel gas prior to combustion at S36 to determine total reduced sulfur (TRS) concentration by GC analysis at least once per 8-hour shift (3 times per calendar day). At least 90% of these samples shall be taken each calendar month. No readable samples or sample results shall be omitted. TRS shall include hydrogen sulfide, methyl mercaptan, methyl sulfide, ***and*** dimethyl disulfide.

1. As an alternative to GC TRS analysis, the fuel gas total sulfur content may be measured with a dedicated total sulfur analyzer (Houston Atlas or equivalent). ***For the purposes of the daily limit, the owner/operator will presume that the results are TRS, unless the sample is analyzed for TRS by GC analysis.*** ~~If the measured total sulfur concentration exceeds 45 ppm, the owner/operator shall analyze the sample for TRS , provided that:~~

~~a. Only one sample per day shall be analyzed;~~
~~b. If more than one sample on one day is over 45 ppm of total sulfur concentration, the highest sample for that day shall be analyzed;~~
~~c. Analysis shall only be performed on samples that are collected on Sundays through Thursday.~~
~~d. If all samples ***in a week*** are under 45 ppm of total sulfur concentration,~~ One sample per week shall be analyzed using a GC. ~~***Until May 31, 2006, The***~~ ***owner/operator shall use the results of the samples that have been analyzed by GC analysis for the purposes of the annual limit.***

~~Within 2 months of startup, the owner/operator shall submit a report to the Engineering Division and to the Compliance and Enforcement division that contains the following information:~~
~~d. The total sulfur for all samples collected in the two months;~~
~~e. The TRS results for all samples that are analyzed in the two months.~~

7b. To demonstrate compliance with Part 6, the owner/operator shall measure and record the ~~24-hour~~***daily*** average TRS content and the 365-day average TRS content of the refinery fuel gas fired in S461, unless required to operate a District-approved continuous monitor/recorder by Part 7a. The owner/operator shall keep TRS records, whether they are the results of GC analysis or continuous analyzer data, for at least five years and shall make these records available to the District upon request. [BACT, Cumulative Increase]

7c. For the purpose of demonstrating compliance with the H2S limit in 40 CFR 60.104(a)(1), the owner/operator shall test refinery fuel gas prior to combustion at S36 to determine total H2S concentration at least once per 8 hour shift (3 times per calendar day). At least 90% of these samples shall be taken each calendar month. No readable samples or

sample results shall be omitted. Records of H2S monitoring shall be kept for at least five years after the date the record was made. The owner/operator shall submit a semi-annual report regarding this monitoring to the District and to EPA. The reporting periods shall start on January 1st and July 1st of each year. The reports shall be submitted by January 31st and July 31st of each year. If the limit has not been exceeded during the reporting period, this information shall be stated in the report. If the limit has been exceeded, the owner/operator shall report the date and time that the exceedance began and the date and time that the exceedance ended. The owner operator shall estimate and report the excess emissions during the exceedance. [40 CFR 60.13(i)]

8. ~~No later than 90 days from the startup of the S36, the owner/operator shall conduct District-approved source tests to determine initial compliance with the limits in Part 3b for NOx, CO, POC, PM10 and ammonia. The owner/operator shall conduct the source tests in accordance with Part 9. The owner/operator shall submit the source test results to the District staff no later than 60 days after the source test. [BACT, Cumulative Increase, Toxic Management]~~***Deleted Application 11626.***

9. ~~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. [BACT, Cumulative Increase, Toxic~~ ***Deleted Application 11626.***

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.

Changes to permit:

Table VII – A.24
Applicable Limits and Compliance Monitoring Requirements
S36 – UNIT 200, B-102 HEATER

Type of Limit	Citation of Limit	FE Y/N	Future Effective Date	Limit	Monitoring Requirement Citation	Monitoring Frequency (P/C/N)	Monitoring Type
NOx		Y	~~Startup~~	CEM for NOx and O2 (or CO2)	BAAQMD 1-520.8	C	CEM
NOx	BAAQMD Condition 21097, Part 3b	Y	~~after initial performance test~~	10 ppmv NOx at 3% O2 (3 hour average), except startups and shutdowns	BAAQMD Condition 21097, Part 5a	C	CEM

Table VII – A.24
Applicable Limits and Compliance Monitoring Requirements
S36 – UNIT 200, B-102 HEATER

Type of Limit	Citation of Limit	FE Y/N	Future Effective Date	Limit	Monitoring Requirement Citation	Monitoring Frequency (P/C/N)	Monitoring Type
~~All combustion emissions~~ Heat input	BAAQMD Condition 21097, Part 2	Y	~~Startup~~	~~heat ratings, firing limits~~ 82.1 MMbtu/hr; 719,200 MMbtu/12-month period	BAAQMD Condition 21097, Part 4	C	continuous fuel flow monitor
O2		Y	~~startup~~	No limit	BAAQMD Condition 21097, Part 5a	C	O2 Monitor
CO	BAAQMD Condition 21097, Part 3b	Y	~~after initial perfor-mance test~~	28 ppmv CO at 3% O2 (8 hour average), except startups and shutdowns	BAAQMD Condition 21097, Part 5b	P/SA	source test
POC	BAAQMD Condition 21097, Part 3b	Y	~~after initial perfor-mance test~~	5.5 lb POC per MM ft3 of fuel	BAAQMD Condition 21097, Part 8	E/startup	source test
PM10	BAAQMD Condition 21097, Part 3b	Y	~~after initial perfor-mance test~~	7.6 lb PM10 per MM ft3 of fuel	BAAQMD Condition 21097, Part 8	E/startup	source test
ammonia	BAAQMD Condition 21097, Part 3b	N	~~after initial perfor-mance test~~	10 ppmv ammonia at 3% O2 (8 hour average), except startups and shutdowns	BAAQMD Condition 21097, Part 8	E/startup	source test
Opacity	BAAQMD 6-301	Y	~~startup~~	Ringelmann 1 for no more than 3 minutes in any hour	None for gaseous-fueled sources	N	None
FP	BAAQMD 6-305	Y	~~startup~~	Prohibition of nuisance	None for gaseous-fueled sources	N	None

Table VII – A.24
Applicable Limits and Compliance Monitoring Requirements
S36 – UNIT 200, B-102 HEATER

Type of Limit	Citation of Limit	FE Y/N	Future Effective Date	Limit	Monitoring Requirement Citation	Monitoring Frequency (P/C/N)	Monitoring Type
FP	BAAQMD 6-310.3	Y	~~startup~~	0.15 grain/dscf @ 6% O2	None for gaseous-fueled sources	N	None
SO2	BAAQMD Condition 1694, Part A.4	Y	~~startup~~	1,611 lb/day SO2 over any month from non-cogeneration sources burning fuel gas or liquid fuel	BAAQMD Condition 1694, Part A.3a	P/3 times per day	GC or total sulfur analysis~~TRS analysis~~
TRS	BAAQMD Condition 21097, Part 6	Y	~~Startup~~	100 ppmv TRS (1 day average), 45 ppmv TRS (annual average)	BAAQMD Condition 21097, Part 7a, 7b	P/3 times/day~~C~~	GC or total sulfur analysis~~stipulatedTRS analysis~~
H2S	40 CFR 60 Subpart J 60.104(a)(1)	Y	~~Startup~~	fuel gas H2S concentration limited to 230 mg/dscm (0.10 gr/dscf) except for gas burned as a result of process upset ~~or gas burned at flares from relief valve leaks or other emergency malfunctions; this requirement applies to sources installed/modified after 6/11/73 and burning refinery gas~~	40 CFR 60 Subpart J ~~60.105(a)(4)~~ 60.105(i)(12); Condition 21097, part 7a, 7b	~~C~~P/3 times/day	~~H2S analyzer~~ H2S analysis ~~stipulated~~
Duration of startup	BAAQMD Condition 21096, Part 3b	Y		24 consecutive hours	Condition 21097, part 10	P/E	records
Duration of shutdown	BAAQMD Condition 21096, Part 3b	Y		24 consecutive hours	Condition 21097, part 10	P/E	records
Duration of heater dryout/ warmup periods	BAAQMD Condition 21096, Part 3b	Y		72 consecutive hours	Condition 21097, part 10	P/E	records

The "type of limit" for BAAQMD Condition 21097, part 2 has been changed from "all combustion emissions" to "heat input," which is more appropriate. The hourly and daily limits have been added, instead of having the section refer to the permit condition.

A note has been added to BAAQMD Condition 1694, part A.4, that the SO2 "bubble" applies only to non-cogeneration sources that burn fuel gas or liquid fuel.

The monitoring for BAAQMD Condition 21097, part 6, has been changed from "C," meaning "continuous" to "P/3 times per day," meaning "periodic, 3 times per day." The "TRS" analysis has been changed to a GC or total sulfur analysis as stipulated in Condition 21097, part 7a.

The note about the exemptions for upset gas or gas burned at flares in Subpart J was deleted because this gas will not be burned at this source. The monitoring for 40 CFR 60, Subpart J, Section 104(a)(1) has been changed from a continuous H2S monitor to the total sulfur analysis monitoring, etc., above. See the discussion in Section C.V.

Limits on duration of startups, shutdowns, and heater dryout/warmup periods that are in BAAQMD Condition 21096, part 3b, have been added to this table. A recordkeeping condition has been added as part 10.

Table VII – A.35
Applicable Limits and Compliance Monitoring Requirements
S461 – UNIT 250, B-701 HEATER

Type of Limit	Citation of Limit	FE Y/N	Future Effective Date	Limit	Monitoring Requirement Citation	Monitoring Frequency (P/C/N)	Monitoring Type
NOx		Y	startup	CEM for NOx and O2 (or CO2)	BAAQMD 1-520.8	C	CEM
NOx	BAAQMD Condition 21096, Part 3b	Y	after initial performance test	10 ppmv NOx at 3% O2 (3 hour average), except startups and shutdowns	BAAQMD Condition 21096, Part 5a	C	CEM
~~All combustion emissions~~ Heat input	BAAQMD Condition 21096, Part 2	Y	startup	52 MMbtu/hr; 439,800 MMbtu/12-month period ~~heat ratings, firing limits (see condition)~~	BAAQMD Condition 21096, Part 4	C	continuous fuel flow monitor
O2		Y	startup	No limit	BAAQMD Condition 21096, Part 5a	C	O2 Monitor

Table VII – A.35
Applicable Limits and Compliance Monitoring Requirements
S461 – UNIT 250, B-701 HEATER

Type of Limit	Citation of Limit	FE Y/N	Future Effective Date	Limit	Monitoring Requirement Citation	Monitoring Frequency (P/C/N)	Monitoring Type
CO	BAAQMD Condition 21096, Part 3b	Y	after initial performance test	28 ppmv CO at 3% O2 (8 hour average) when fired 50% capacity or more and 50 ppmv CO at 3% O2 (8 hour average) when fired less than 50% capacity, except startups and shutdowns	BAAQMD Condition 21096, Part 5b	P/SA	source test
POC	BAAQMD Condition 21096, Part 3b	Y	after initial performance test	5.5 lb POC per MM ft3 of fuel	BAAQMD Condition 21096, Part 8	E/startup	source test
PM10	BAAQMD Condition 21096, Part 3b	Y	after initial performance test	7.6 lb PM10 per MM ft3 of fuel	BAAQMD Condition 21096, Part 8	E/startup	source test
ammonia	BAAQMD Condition 21096, Part 3b	N	after initial performance test	10 ppmv ammonia at 3% O2 (8 hour average), except startups and shutdowns	BAAQMD Condition 21096, Part 8	E/startup	source test
Opacity	BAAQMD 6-301	Y	startup	Ringelmann 1 for no more than 3 minutes in any hour	None for gaseous-fueled sources	N	None
FP	BAAQMD 6-305	Y	startup	Prohibition of nuisance	None for gaseous-fueled sources	N	None
FP	BAAQMD 6-310.3	Y	startup	0.15 grain/dscf @ 6% O2	None for gaseous-fueled sources	N	None
SO2	BAAQMD Condition 1694, Part A.4	Y	startup	1,611 lb/day SO2 over any month from non-cogeneration sources burning fuel gas or liquid fuel	BAAQMD Condition 1694, Part A.3a	P/3 times per day	GC or total sulfur analysis~~TRS analysis~~

Table VII – A.35
Applicable Limits and Compliance Monitoring Requirements
S461 – UNIT 250, B-701 HEATER

Type of Limit	Citation of Limit	FE Y/N	Future Effective Date	Limit	Monitoring Requirement Citation	Monitoring Frequency (P/C/N)	Monitoring Type
TRS	BAAQMD Condition 21096, Part 6	Y	startup	100 ppmv TRS (1 day average), 45 ppmv TRS (annual average)	BAAQMD Condition 21096, Part 7a, 7b	P/3 times/day~~C~~	GC or total sulfur analysis~~stipulatedTRS analysis~~
H2S	40 CFR 60 Subpart J 60.104(a)(1)	Y	startup	fuel gas H2S concentration limited to 230 mg/dscm (0.10 gr/dscf) except for gas burned as a result of process upset~~ or gas burned at flares from relief valve leaks or other emergency malfunctions; this requirement applies to sources installed/modified after 6/11/73 and burning refinery gas~~	40 CFR 60 Subpart J ~~60.105(a)(4)~~ 60.105(i)(12); Condition 21096, part 7a, 7b	P/3 times/day~~C~~	~~H2S analyzerstipulated~~ H2S analysis
Duration of startup	BAAQMD Condition 21096, Part 3b	Y		24 consecutive hours	Condition 21097, part 10	P/E	records
Duration of shutdown	BAAQMD Condition 21096, Part 3b	Y		24 consecutive hours	Condition 21097, part 10	P/E	records
Duration of heater dryout/ warmup periods	BAAQMD Condition 21096, Part 3b	Y		72 consecutive hours	Condition 21097, part 10	P/E	records

The "type of limit" for BAAQMD Condition 21096, part 2 has been changed from "all combustion emissions" to "heat input," which is more appropriate. The hourly and daily limits have been added, instead of having the section refer to the permit condition.

A note has been added to BAAQMD Condition 1694, part A.4, that the SO2 "bubble" applies only to non-cogeneration sources that burn fuel gas or liquid fuel.

The monitoring for BAAQMD Condition 21096, part 6, has been changed from "C," meaning "continuous" to "P/3 times per day," meaning "periodic, 3 times per day." The "TRS" analysis has been changed to a GC analysis or total sulfur as stipulated in Condition 21096, part 7a.

The note about the exemptions for upset gas or gas burned at flares in Subpart J was deleted because this gas will not be burned at this source. The monitoring for 40 CFR 60, Subpart J, Section 104(a)(1) has been changed from a continuous H2S monitor to the total sulfur analysis monitoring, etc., above. See the discussion in Section C.V.

Limits on duration of startups, shutdowns, and heater dryout/warmup periods that are in BAAQMD Condition 21096, part 3b, have been added to this table. A recordkeeping condition has been added as part 10.

Table VII – N
Applicable Limits and Compliance Monitoring Requirements

Type of Limit	Citation of Limit	FE Y/N	Future Effective Date	Limit	Monitoring Requirement Citation	Monitoring Frequency (P/C/N)	Monitoring Type
throughput	BAAQMD Condition 20989, Part A	Y		S-304: 3.47 E 6 bbl/yr (only until modified in accordance with A/C 5814) S-305: 9.23 E 6 bbl/yr S-306: 5.66 E 6 bbl/yr S-307: 1.39 E 7 bbl/yr S-435: 6.6 E 6 bbl/yr S-436: 4.7 E 6 bbl/yr S-437: 10.4~~9.1~~ E 9 ft3/yr	BAAQMD Condition 20989, Part A	P/M	records

The annual throughput for S-437 was increased in this table.

Table VII – A.34
Applicable Limits and Compliance Monitoring Requirements
S438 – UNIT 110, H-1 FURNACE

Type of Limit	Citation of Limit	FE Y/N	Future Effective Date	Limit	Monitoring Requirement Citation	Monitoring Frequency (P/C/N)	Monitoring Type
NOx	BAAQMD Condition 1694, Part E.4	Y		7~~10~~ ppmv NOx at 3% O2 over any 1~~3~~ hour~~s~~, except startups and shutdowns~~, at~~ S438	None	C	CEM
~~All combustion emissions~~ Heat input	BAAQMD Condition 1694, Part A.1	N		~~heat ratings, firing limits (see condition)~~ 250 MMbtu/hr, 6,000 MMbtu/day	BAAQMD Condition 1694, Part A.5	P/D	records
~~All combustion emissions~~ Heat input	BAAQMD Condition 1694, Part E.2	Y		2.19~~2.04~~ E 12 BTU/yr fuel combustion~~ at~~ S438	BAAQMD Condition 1694, Part E.6	P/D	records
O2		Y		No limit	None	C	O2 Monitor
CO	BAAQMD Condition 1694, Part E.4	Y		32 ppmv CO at 3% O2 over any 24 hr, except startups and shutdowns, at S438	None	N	None

Table VII – A.34
Applicable Limits and Compliance Monitoring Requirements
S438 – UNIT 110, H-1 FURNACE

Type of Limit	Citation of Limit	FE Y/N	Future Effective Date	Limit	Monitoring Requirement Citation	Monitoring Frequency (P/C/N)	Monitoring Type
TRS	BAAQMD Condition 1694, Part E.3	Y		1 ppmw TRS in PSA offgas used as fuel~~, at S438~~	Overall fuel TRS monitored by BAAQMD Condition 1694, Part E.5	P/D	records
TRS	BAAQMD Condition 1694, Part E.5	Y		14~~50~~ ppmv TRS over any month, in fuel gas~~, at S438~~	BAAQMD Condition 1694, Part E.5	P/3 times per day	TRS analysis
Opacity	BAAQMD 6-304	Y		During tube cleaning, Ringelmann No. 2 for 3 min/hr and 6 min/billion BTU in 24 hours; applies to sources rated over 140 MM BTU/hr (with tubes)	None for gaseous-fueled sources	N	None
Opacity	BAAQMD 6-301	Y		Ringelmann 1 for no more than 3 minutes in any hour	None for gaseous-fueled sources	N	None
FP	BAAQMD 6-305	Y		Prohibition of nuisance	None	N	None
FP	BAAQMD 6-310.3	Y		0.15 grain/dscf @ 6% O2	None for gaseous-fueled sources	N	None
SO2	BAAQMD Condition 1694, Part A.4	Y	startup of S-36, S-461 for modified limit	1,612 lb/day SO2 over any month from non-cogeneration sources~~1,558 lb/day SO2 over any month (1,611 lb/day after startup of S-36 and S-461, 1,612 lb/day after modification of S438)~~	BAAQMD Condition 1694, Part A.3a	P/3 times per day	TRS analysis

Table VII – A.34
Applicable Limits and Compliance Monitoring Requirements
S438 – UNIT 110, H-1 FURNACE

Type of Limit	Citation of Limit	FE Y/N	Future Effective Date	Limit	Monitoring Requirement Citation	Monitoring Frequency (P/C/N)	Monitoring Type
H2S	40 CFR 60 Subpart J 60.104(a)(1)	Y		fuel gas H2S concentration limited to 230 mg/dscm (0.10 gr/dscf) ~~except for gas burned as a result of process upset or gas burned at flares from relief valve leaks or other emergency malfunctions; this requirement applies to sources installed/modified after 6/11/73 and burning refinery gas~~	40 CFR 40 CFR 60.105(a)(4)	C	H2S analyzer

The "type of limit" for BAAQMD Condition 1694, part E.2 has been changed from "all combustion emissions" to "heat input," which is more appropriate. The hourly, daily, and annual limits have been added, instead of having the section refer to the permit condition.

The TRS limit for this source was lowered from 50 ppmw to 14 ppmw to lessen the impact on the SO2 "bubble."

The SO2 bubble was increased from 1558 lb/day to 1,612 lb/day for all non-cogeneration combustion sources because S36 and S461 have started up and because the modification for S438 is complete.

The note about the exemptions for upset gas or gas burned at flares in Subpart J was deleted because this gas will not be burned at this source.

Changes before final issuance

Since the one-time source tests for POC, NH3, and PM10 required in BAAQMD Conditions 21096, part 8 and 9, and 21097, part 8 and 9, for sources S36 and S461, have been concluded satisfactorily, this monitoring has been deleted. Ongoing source testing for these pollutants is not warranted because the emissions are so low. The emissions calculated in Application 5814 are:

Source #	POC	NH3	PM10
S36	1.29 tpy	2.78 tpy for both	1.8 tpy
S461	0.79 tpy	sources	1.1 tpy

Alternative monitoring has been added to allow the facility to make a direct H2S measurement for compliance with the H2S limit at sources S36 and S461. The facility has shown that the H2S

levels in this fuel gas are generally below 6 or 7 ppm, which is the detection level for the Houston Atlas analyzer. Because the H2S levels are so low, the District is approving this alternative monitoring in lieu of the continuous H2S monitor required by 40 CFR 60.105(a)(4), in accordance with 40 CFR 60.13(i) as allowed by the EPA's delegation of the New Source Performance Standards to the District. Since reporting of excess emissions would be required for an H2S monitor, equivalent reporting is being added to this condition.

The tank tables have been renamed from "B" series to "BB" series because they come after the "AB" series.

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
No changes are proposed to this section in this action.

IX. Permit Shield:

Changes to permit:
This action proposes no changes to permit shields.

X. Revision History

Changes to permit:

Significant Revision (Application 11626): [enter approval date]

XI. Glossary

Changes to permit:
The glossary was updated.

XII. Appendix A - State Implementation Plan

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:

See Section C.V above.

H:\pub_data\title V permit appls\1.0 all …\a0016\significant\11626\a0016 11626 sob final issuance

APPENDIX A

GLOSSARY

ARB
Air Resources Board

BAAQMD
Bay Area Air Quality Management District

BACT
Best Available Control Technology

Basis
The underlying authority that allows the District to impose requirements.

CAA
The federal Clean Air Act

CAAQS
California Ambient Air Quality Standards

CEM
Continuous Emission Monitor

CEQA
California Environmental Quality Act

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

CO
Carbon Monoxide

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

District
The Bay Area Air Quality Management District

dscf
Dry Standard Cubic Feet

EPA
The federal Environmental Protection Agency.

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

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

MOP
The District's Manual of Procedures.

NAAQS
National Ambient Air Quality Standards

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

NH3
Ammonia

NOx
Oxides of nitrogen.

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

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

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

POC
Precursor Organic Compounds

PM
Particulate Matter

PM10
Particulate matter with aerodynamic equivalent diameter of less than or equal to 10 microns

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

SCR
Selective Catalytic Reduction

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

SO2
Sulfur dioxide

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

TRMP
Toxic Risk Management Plan

VOC
Volatile Organic Compounds

Units of Measure:

bhp	=	brake-horsepower
btu	=	British Thermal Unit
cfm	=	cubic feet per minute
g	=	grams

gal	=	gallon
gpm	=	gallons per minute
hp	=	horsepower
hr	=	hour
lb	=	pound
in	=	inches
max	=	maximum
m^2	=	square meter
min	=	minute
mm	=	million
MMbtu	=	million btu
MMcf	=	million cubic feet
ppmv	=	parts per million, by volume
ppmw	=	parts per million, by weight
psia	=	pounds per square inch, absolute
psig	=	pounds per square inch, gauge
scfm	=	standard cubic feet per minute
yr	=	year

APPENDIX B

ENGINEERING EVALUATION APPLICATION 11293

ENGINEERING EVALUATION
CONOCOPHILLIPS SAN FRANCISCO REFINERY; PLANT 16
APPLICATION 11293

1.0 BACKGROUND

ConocoPhillips has applied to modify the existing S-437/438 hydrogen plant to allow greater use of liquid feeds (isopentane and butane), resulting in an increase in hydrogen gas production capacity from 25 MM scf/day to 28.5 MM scf/day. S-437 is the source number assigned to the overall hydrogen plant, while S-438 is the source number assigned to the hydrogen reforming furnace within S-437. S-438 uses natural gas, refinery gas and liquid hydrocarbons as sources of elemental hydrogen for conversion to hydrogen gas. Hydrogen gas is used primarily in hydrotreating operations, in which petroleum feedstocks are reacted with hydrogen gas in the presence of a catalyst to remove sulfur from the feedstocks in the form of H2S, and to hydrogenate unsaturated organic compounds.

One of the required modifications for this project is an increase in the firing capacity of the S-438 reformer furnace from 210 MM BTU/hr to 250 MM BTU/hr. Other modifications include:

- installation of a pentane feed system
- replacement of the raw H2 trim cooler with a larger unit
- pressure swing adsorption (PSA) system valve replacements
- replacement of the S-438 waste heat boiler with a larger unit
- change type of catalyst used at the A-46 SCR system that abates S-438 emissions

S-438 was designed to use a liquid hydrocarbon feedstream in addition to natural gas, refinery gas and PSA offgas. However, design limitations in several components in S-437 and S-438 have not allowed the plant to operate at its current 25 MM scf/day capacity when liquid feed is used. The modifications proposed in this application will allow the plant to operate at its original design capacity when using liquid feed, and the capacity will increase to 28.5 MM scf/day when natural gas feed is used exclusively. Similarly, the firing rate at S-438 will increase to the original design basis of 210 MM BTU/hr when liquid feed is used and will increase to 250 MM BTU/hr when natural gas feed is used exclusively.

ConocoPhillips has stated that the purpose of the proposed modifications is not to increase overall hydrogen production capacity, although this will be one result of the modifications, but rather to allow more liquid hydrocarbons (isopentane and butane) to be used in place of purchased natural gas at S-438. Isopentane is generated at the refinery as a byproduct of the isomerization process at Unit 228. Butane is generated at the refinery as a product of fractionation and de-isobutanizer operations at Unit 215.

The ConocoPhillips refinery produces “California gasoline”, as well as “export gasoline” that does not meet CARB gasoline standards. There is high demand for California gasoline and lower distribution costs because it is used locally. Export

gasoline is a commodity that competes for buyers with out-of-state refiners and that has higher distribution costs because it cannot be used locally. Therefore, California gasoline is a more profitable product. The proposed modifications in this application, in addition to reducing the amount of purchased natural gas feed required at S-438, will allow the refinery to produce more California gasoline relative to export gasoline. Specifically, the proposed modifications will allow some isopentane and butane that currently are used to blend export gasoline to instead be converted to hydrogen at S-438 and then used in hydrotreating operations to produce California gasoline.

This project will result in increased utility steam production at S-437, as well as increased demand for cooling water (1.9 gpm), reaction feed water (10.8 gpm) and miscellaneous utility water (0.5 gpm). Natural gas and refinery gas consumption as well as electricity consumption will increase nominally.

2.0 EMISSIONS

Emissions at process units like S-437 are generally limited to emissions of organics from related fugitive emission sources. The other project emission increase is related to the increase in firing capacity at the S-438 furnace (combustion emissions and ammonia emissions from SCR operation).

2.1 Annual Average Fugitive Emission Increase at S-437

ConocoPhillips has proposed to estimate fugitive emissions from new fugitive components by using the “correlation equation” method from the 1999 document “California Implementation Guidelines for Estimating Mass Emissions of Fugitive Hydrocarbon Leaks at Petroleum Refineries”. This document, prepared by the California Air Resource Board and the California Air Pollution Control Officers Association, is the accepted District standard for estimating fugitive emissions. The correlation equation method is one of four methods described in this document, and is intended to be used to estimate emissions from an actual population of sources, using the measured emission concentrations from each source, and a corresponding emission factor. There are three possible types of emission factors: one corresponds to components with no measured leak, the second corresponds to non-pegged detected leaks, and the third corresponds to leaks that peg the analyzer high. Different sets of factors are provided for valves, pump seals, connectors, flanges, open-ended lines and “others” (a category that includes compressor seals). However, the service for each type of component (light liquid, heavy liquid or gas) is not considered.

Here, the intent is to estimate the emissions from fugitive sources that are not yet in service. ConocoPhillips has proposed to implement the correlation equipment method by assuming that each fugitive component will have a leak with the maximum allowed concentration (“screening value”) in ppm, as specified in District Regulation 8, Rule 18 (“Equipment Leaks”). Thus, the

correlation equations that apply to non-pegged detected leaks will be used.

COMPONENT	COMPONENT COUNT	CORRELATION EQUATION (KG/HR), PER COMPONENT	SCREENING VALUE (PPM)
VALVES	46	2.27E-6(screening value)^0.747	100
CONNECTORS	226	1.53E-6(screening value)^0.736	100

Notes:
1. Component counts are from Table 3 of the application
2. Screening values are taken from District Regulation 8, Rule 18.
3. All emissions from fugitive components are assumed to be POC compounds.

Thus, the resulting emissions are:

[(46)(2.27E-6(100)^0.747) + (226)(1.53E-6(100)^0.736)] kg/hr

x (2.205 lb/kg) (24 hr/day) = **0.71 lb/day POC = 0.13 ton/yr POC**

2.2 Annual Average Combustion Emission Increase at S-438

S-438 was originally permitted in Application 12412. In that application, the basis for emission calculations was a total fuel consumption of 2.04 E 12 BTU/yr of a blend of PSA offgas and refinery gas. The basis for the emission increase in this application will be the difference between the new maximum annual fuel consumption and the annual consumption in Application 12412.

The new maximum annual fuel consumption is:

(250 MM BTU/hr)(8,760 hr/yr) = 2.19 E 12 BTU/yr

Then, the increase in annual consumption is:

(2.19 – 2.04) E 12 BTU/yr = 0.15 E 12 BTU/yr

The same emission factors that were used in Application 12412 will be used here (a copy of page 25 of the evaluation for Application 12412 is attached), except that NOx and SO2 factors will be adjusted for the lower emission rate limits proposed as BACT in this application (see Section 6.0).

The adjusted NOx factor, corresponding to a 7 ppmv concentration limit instead of 10 ppmv, is:

(7/10)(0.0118 lb/MM BTU) = 0.0083 lb/MM BTU

SO2 emissions will be based on the proposed TRS content limit of the blended fuel gas (14 ppmv). From Application 12412, 230 ppmv TRS is equivalent to an emission factor of 0.027 lb/MM BTU. Therefore, for 14 ppmv, the factor is:

(14/230)(0.027 lb/MM BTU) = 0.0016 lb/MM BTU

NOx: 0.0083 lb/MM BTU
PM10: 0.004 lb/MM BTU
POC: 0.0023 lb/MM BTU
CO: 0.023 lb/MM BTU
SO2: 0.0016 lb/MM BTU

Ammonia slip emissions occur at the A-46 SCR system that abates S-438. These emissions are quantified in Section 5.0 (Toxics) since ammonia is only regulated as a toxic compound.

NOx: (0.15 E 12 BTU/yr)(0.0083 lb/MM BTU)/(365 day/yr)
= **3.41 lb/day** = **0.62 ton/yr**

CO: (0.15 E 12 BTU/yr)(0.023 lb/MM BTU)/(365 day/yr)
= **9.45 lb/day** = **1.72 ton/yr**

SO2: (0.15 E 12 BTU/yr)(0.0016 lb/MM BTU)/(365 day/yr)
= **0.66 lb/day** = **0.12 ton/yr**

POC: (0.15 E 12 BTU/yr)(0.0023 lb/MM BTU)/(365 day/yr)
= **0.95 lb/day** = **0.17 ton/yr**

PM10: (0.15 E 12 BTU/yr)(0.004 lb/MM BTU)/(365 day/yr)
= **1.64 lb/day** = **0.30 ton/yr**

2.3 Daily Fugitive Emissions at S-437

Daily emissions are calculated to determine if best available control technology (BACT) requirements are triggered. In accordance with District Regulation 2-2-301, BACT is triggered for any new or modified source with the potential to emit 10 pounds of emissions or more of any class of regulated pollutant (NOx, CO, POC, SO2, PM10) on any day.

Fugitive emissions are assumed to occur continuously and at a constant rate. Therefore, the daily emissions from fugitive components at S-437 are equivalent to the annual average emissions. Because BACT is triggered for a source, and not for a project, the existing fugitive emissions must be considered in addition to the new fugitive emissions. As shown on page 22 of the evaluation for Application 12412, the total existing fugitive emissions at S-437 are 6.42 lb/day POC. Therefore, the proposed new total is:

(0.71 + 6.42) lb/day POC = 7.13 lb/day POC

This total is still less than 10 lb/day and therefore fugitive emissions at S-437 do not trigger BACT.

2.4 Daily Combustion Emissions at S-438

Based on the new maximum firing rate at S-438, maximum daily emissions are:

NOx: (250 MM BTU/hr) (24 hr/day) (0.0083 lb/MM BTU) = **50 lb/day**

CO: (250 MM BTU/hr) (24 hr/day) (0.023 lb/MM BTU) = **138 lb/day**

SO2: (250 MM BTU/hr) (24 hr/day) (0.0016 lb/MM BTU) = **9.6 lb/day**

POC: (250 MM BTU/hr) (24 hr/day) (0.0023 lb/MM BTU) = **14 lb/day**

PM10: (250 MM BTU/hr) (24 hr/day) (0.004 lb/MM BTU) = **24 lb/day**

Therefore, BACT is triggered for NOx, CO, POC and PM10 emissions, as it was in Application 12412. BACT is discussed further in Section 5.0.

2.5 Related Emissions at Other Sources

Changes to equipment capacity and allowed throughput at one or more sources may result directly in emission increases at these sources, or indirectly in emission increases at other sources. Direct emission increases at S-437 and S-438 are quantified in Sections 2.1 through 2.4. Indirect emission increases at other sources may occur to the extent that the proposed changes cause or allow other sources to produce more emissions.

As discussed in Section 1.0, the proposed changes will have the net effect of reducing demand for purchased natural gas as a feed material at the S-438 reformer furnace and also of shifting production from export gasoline to California gasoline. The reduction in natural gas demand may be assumed to have no emissions effect. The production shift from export to California gasoline will require additional processing of gasoline intermediates to meet CARB gasoline standards. In Application 12412, ConocoPhillips applied to modify the refinery in order to perform the additional processing required for production of California gasoline. These processing requirements are summarized in Table 3-3 of the EIR for that project (copy attached). The proposed modifications in this application may be viewed as a continuation or extension of the modifications in Application 12412, since the purpose of both applications is the same: to allow increased production of California gasoline instead of export gasoline. The infrastructure for production of California gasoline was permitted in Application 12412, resulting emissions of POC, NOx and SO2 were offset, and permit conditions limiting emissions, directly or indirectly with throughput limits or design requirements, were established. ConocoPhillips has applied to modify only the production capacities and annual throughputs for S-437 and S-438 and will offset the resulting direct emission increases in this application. Because all other sources related to production of California gasoline, as permitted in Application 12412, continue to operate under direct or indirect emission limits that have been fully offset, it may be assumed that no indirect emission increases will result.

3.0 CUMULATIVE INCREASE

Current cumulative increase values are taken from the District database. Proposed increases are as calculated in Sections 2.1 and 2.2.

POLLUTANT	CURRENT (TON/YR)	PROPOSED (TON/YR)	OFFSET RATIO (NOTE 2) (TON/YR)	OFFSET AMOUNT (NOTE 3) (TON/YR)	NEW TOTAL AFTER OFFSETS (TON/YR)
POC	0.002	0.30	1.15	0.347	0.00
NOx	0.00 (note 1)	0.62	1.15	0.713	0.00
SO2	0.00	0.12	1.0	0.00	0.12 (note 2)
CO	160.2	1.72	NA	0.00	161.90
PM10	12.34	0.30	NA	0.00	12.64

Notes:

1. The database entry for NOx is actually -0.007. However, in accordance with the definition in Regulation 2-2-212, a cumulative increase is a positive number or zero. Therefore, a value of zero is used here.

2. Offset ratios are from Regulations 2-2-302 (for POC and NOx) and 2-2-303 (for SO2). Offsets are not required for PM10 because this is not a Major Facility for PM10 (100 ton/yr of emissions or more). Offsets are not required for SO2 until the cumulative increase amount exceeds 1.0 ton/yr. Offsets are not required for CO. Offsets are discussed further in Section 6.0.

3. The offset amount is the sum of the proposed emission increases, plus the pre-existing cumulative increase, multiplied by the offset ratio

4.0 TOXIC RISK MANAGEMENT

In accordance with District Regulation 2-1-316, if “project emissions” of any compound that is identified in Table 2-1-316 of Regulation 2, Rule 1 exceeds the indicated “trigger level”, then a risk analysis is required. “Project emissions” include emissions from new sources and increased emissions from modified sources. The purpose of a risk analysis is to verify that the resulting toxic risk is not excessive. The District Toxic Risk Management Policy requires that emissions of all toxic air contaminants (TACs) associated with a project be included in the risk analysis if any single TAC exceeds its trigger level. Because trigger levels are expressed in units of “lb/yr”, the annual average emission rates from new and modified sources are the appropriate basis for project emissions. Also, emissions from “related projects” must also be considered. Related projects, according to the District Toxic Risk Management Policy, include all projects within the two-year period preceding an application, unless the emissions are demonstrated to be unrelated to those in the application.

4.1 S-438 Combustion Emissions

Toxic emission factors for S-438 are the same as were used in Application 5814. These factors were taken from the Shell Reformulated Fuels Project (Application 8407) with PAH, xylene and toluene factors increased by a factor of 10 as discussed in the Health Risk Assessment (HRA) protocol for Application 12412. These factors are based on Shell source test data and data compiled by Almega Corporation.
Because S-437 and S-438 have been in service for more than 2 years (since 1997), the existing emissions do not constitute a "related project". Therefore, the appropriate basis for estimating toxic risk at S-438 is the incremental risk related to the proposed increase in annual fuel usage (0.15 E 12 BTU/yr).

COMPOUND	EMISSION FACTOR (LB/MM BTU)	EMISSIONS (NOTE 1) (LB/YR)	TRIGGER LEVEL (LB/YR)
acetaldehyde	2.06E-06	0.31	72
ammonia	1.36E-03	204	(note 2)
arsenic	9.77E-08	0.01	0.025
benzene	7.36E-06	1.1	6.7
benzo(a)anthracene	1.02E-08	0.0015	0.044
benzo(a)pyrene	5.90E-09	0.0009	0.044
benzo(b)fluoranthene	6.60E-09	0.0010	0.044
benzo(k)fluoranthene	5.90E-09	0.0009	0.044
cadmium	4.16E-08	0.006	0.046
copper	6.13E-07	0.092	0.046
dibenzo(a,h)anthracene	5.90E-09	0.0009	0.044
formaldehyde	5.12E-05	7.7	33
hexavalent chromium	4.71E-08	0.0071	0.0013
hydrogen sulfide	0.00E+00	0.0	8,100
indeno(1,2,3-cd)pyrene	5.90E-09	0.0009	0.044
lead	3.84E-07	0.058	16
manganese	9.84E-07	0.15	77
mercury	4.85E-08	0.007	58
naphthalene	3.12E-06	0.468	270
nickel	1.50E-07	0.023	0.73
phenol	1.87E-06	0.28	8,700
selenium	0.00E+00	0.0	97
toluene	3.34E-04	50.1	39,000
xylenes	3.40E-04	51.0	58,000
zinc	3.57E-06	0.54	6,800

Notes:

1. Based on proposed increase in annual fuel consumption of 0.15 E 6 MM BTU/yr
2. See Section 4.2 for combined S-438/A-46 ammonia emissions

Emissions of each compound are less than the associated risk screening trigger level. Therefore, no risk screening is required.

4.2 Ammonia Slip Emissions from A-46

Ammonia is present in the exhaust stream of the A-46 SCR system associated with S-438. Because the aqueous ammonia used at A-46 is not completely reacted, there is some amount of ammonia "slip" in the SCR exhaust. ConocoPhillips has proposed to limit slip to 10 ppmv @ 3% O2.

As in Section 4.1, the appropriate basis for estimating toxic risk at S-438 is the incremental risk related to the proposed increase in annual fuel usage (0.15 E 12 BTU/yr). The ammonia emissions related to the increase in S-438 fuel usage in Section 4.1 will also be considered here.

Convert ammonia "ppm" to "lb/MM scf":

This conversion may be done using the EPA "Fd" factor from 40 CFR Part 60 test methods, for example Method 19, Table 19-1-F. Fd is the ratio of the volume of dry flue gas to the heat value of the fuel used to produce the flue gas. Fd for natural gas is 8,710 dscf/MM BTU (from Method 19), Fd for refinery fuel gas is 8,700 dscf/MM BTU (from application Appendix B-2). Emission factors will be based on refinery fuel gas since this yields the higher emission factor. The conversion assumes that the flue gas is ideal (since flue gas molar volume is assumed to be 359 cf/lbmole) which is a valid assumption because of the relatively high temperature and low pressure of the flue gas. The conversion includes a correction of the pollutant concentrations from 3% O2 to 0% O2 (in accordance with District procedure ST-13A) since the flue gas volume assumes stoichiometric combustion (zero excess air and O2).

Ammonia Emission Factor (molecular weight 17.03):

(10/MM)(20.95%-0%/(20.95%-3%))(8,700 ft3/MM BTU)

(lbmole/359 ft3)(17.03 lb/lbmole) = **0.0048 lb/MM BTU**

The proposed increase in fuel usage at S-438 is 0.15 E 6 MM BTU/yr. Therefore, annual ammonia emissions would be:

(0.0048 lb/MM BTU)(150,000 MM BTU/yr) = **720 lb/yr**

When added to the ammonia emissions related to the increase in S-438 fuel usage (Section 4.1), the total ammonia emission increase is:

(204 + 720) lb/yr = **924 lb/yr**

The trigger level for ammonia in Table 2-1-316 of Regulation 2, Rule 1 is 19,000 lb/yr. Therefore, a risk screening is not required for ammonia emissions.

4.3 Organic Compounds in Fugitive Emissions

The toxic emission factors for fugitive components are taken from the California Air Resources Board document "Organic Gas Speciation Profiles". Specifically, speciation profiles are taken from the spreadsheet ORGPROF_03_19_03.xls ("Refinery pipes/valves/flanges – composite"). This spreadsheet includes profiles for many classes of sources. Because the new fugitive components will be all valves and connectors in isopentane and butane service, the most appropriate profile is number 316. The table below shows the composition data for compounds with assigned risk screening trigger levels in Regulation 2, Rule 1, and the resulting emissions based on the total fugitive emission rate (259 lb/yr) from Section 2.1:

COMPOUND	PROFILE 316 COMPOSITION (WT %)	TOTAL POC EMISSIONS (LB/YR)	COMPOUND EMISSIONS (LB/YR)	TRIGGER LEVEL (LB/YR)
benzene	0.1	259	0.26	6.7
n-hexane	3.4	259	8.81	83,000
toluene	0.5	259	1.30	39,000
total xylene	0.2	259	0.52	58,000

Emissions of each compound are less than the associated risk screening trigger level. Benzene is also emitted from S-438 (Section 4.1). However, combined benzene emissions from S-438 and fugitive sources are still below the benzene trigger level. Therefore, no risk screening is required.

5.0 BEST AVAILABLE CONTROL TECHNOLOGY (BACT)

As determined in Section 2.4, BACT is triggered for NOx, CO, POC and PM10 emissions at the S-438. S-438 previously triggered BACT for these same pollutants in Application 12412 in 1995. The following table shows current BACT measures required at S-438 (and included in Condition 1694, Part E), as well as current BACT guidelines from BACT determination 94.3.1.

POLLUTANT	CURRENT BACT – CONDITION 1694	BACT DETERMINATION 94.3.1 (NOTE 1)
NOx	10 ppmv @ 3% O2 in exhaust gas, accomplished with low-NOx burners and SCR	BACT 1: Not determined BACT 2: same as current BACT for S-438
PM10	none	BACT 1: Not determined BACT 2: natural gas or treated refinery gas fuel
POC	none	BACT 1: Not determined BACT 2: Not specified (good combustion practice recommended)
CO	32 ppmv @ 3% O2 (daily average) in exhaust gas	BACT 1: Not determined BACT 2: 50 ppmv @ 3% O2 in exhaust gas

Notes:

1. BACT 1 measures may be imposed if technologically feasible and cost effective; BACT 2 measures have been achieved in practice

Current BACT measures are at least equivalent to those in the current BACT determination for this class of source.

To determine if other, more current BACT measures are appropriate, U.S. EPA's RACT/BACT/LAER Clearinghouse and CARB's BACT Clearinghouse were searched for applicable determinations in the category of refinery heaters larger than 50 MM BTU/hr. The EPA clearinghouse has no applicable determinations. CARB's clearinghouse includes 2 determinations from the South Coast AQMD for hydrogen reformer furnaces. The first, in Application 341340, is for a furnace that fires only natural gas and refinery gas. Since S-438 fires a large amount of low-BTU PSA offgas, this BACT determination is not applicable. However, the second determination, in Application 326118, appears to be applicable and is included as Attachment 1. This determination includes NOx, SO2 and ammonia emission limits. Only the NOx limit is more stringent than the existing limit at S-438. The limit in Application 326118 is: 7 ppmv @ 3% O2 (15-minute average). However, compliance with this limit was verified only on a 1-hour average basis by source test. Based on this determination, BACT will be as described in the table above for current BACT, however, the NOx emission limit will be reduced to 7 ppmv @ 3% O2 with a 1-hour averaging period (S-438 is equipped with a NOx CEM).

6.0 OFFSETS

As determined in Section 3.0, offsets are required for NOx, POC and SO2 emissions, as required in Regulation 2-2-302 and 2-2-303. The required offsets and source of these offsets is as follows:

POLLUTANT	REQUIRED OFFSETS (TONS)	BANKING CERTIFICATES / AVAILABLE BALANCES
POC	0.347	Certificate 921 (69.877 tons POC)
NOx	0.713	Certificate 920 (13.27 tons NOx, 64.62 tons CO, 6.65 tons PM10)

7.0 CEQA and Other Regulations

This application is considered to be ministerial under the District's CEQA guidelines (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 2.4 and 3.4.

S-437 and S-438 will remain subject to the same applicable requirements shown in Part IV of the Major Facility Permit,

except for those changes to Conditions 1694 and 20989 indicated in Section 8.0. Other minor changes to the Major Facility Permit are shown in Section 8.2 to reflect the proposed new firing rates, production capacities and annual throughputs. No new District or federal rules will apply to these sources, and the specific requirement of District or federal rules that currently apply to these sources will not change.

8.0 PERMIT CONDITIONS / PERMIT REVISIONS

8.1 Permit Conditions

A "future" condition will be created, based on current Condition 1694 for the proposed Authority to Construct. The current version of Condition 1694 is the version issued in Application 10116. This condition, amended to include any other changes made to the condition in the intervening time, will replace the current version of Condition 1694 when modifications permitted in the Authority to Construct are completed. The future condition is shown here as a revision of Condition 1694 in strikethrough/underline format.

The ConocoPhillips refinery operates under an "SO2 bubble" included in Condition 1694, Part A. Since the new SO2 emissions in this application will be offset, the cap could be managed in two ways: 1) the cap amount could be increased by the amount of offset emissions, with new emissions included under the cap, or 2) the cap amount could be left unchanged, with new emissions not required to be included under the cap. Since the first option will result in the simplest recordkeeping, this option will be implemented and the cap amount will be increased by 0.66 lb/day.

Permit Condition 1694, Parts A and E:

A. Heater Firing Rate Limits and General Requirements

1. Each heater listed below shall not exceed the indicated daily firing rate limit (based on higher heating value of fuel) which are considered maximum sustainable firing rates. The indicated hourly firing rate is the daily limit divided by 24 hours and is the basis for permit fees and is the rate listed in the District database.

District Firing Source Number	Refinery ID Number	Daily Firing Limit (MM BTU/day)	Hourly Rate (MM BTU/hr)
S-2	U229/B301	528	22
S-3	U230/B201	1,488	62
S-4	U231/B101	2,304	96
S-5	U231/B102	2,496	104
S-7	U231/B103	1,536	64
S-8	U240/B1	6,144	256
S-9	U240/B2	1,464	61

S-10	U240/B101	5,352	223
S-11	U240/B201	2,592	108
S-12	U240/B202	1,008	42
S-13	U240/B301	4,656	194
S-14	U240/B401	13,344	556
S-15 thru S19	U244/B501 thru B505	5,754	239.75
S-20	U244/B506	552	23
S-21	U244/B507	194.4	8.1
S-22	U248/B606	744	31
S-29	U200/B5	2,472	103
S-30	U200/B101	1,200	50
S-31	U200/B501	480	20
S-43	U200/B202	5,520	230
S-44	U200/B201	1,104	46
S-336	U231/B104	2,664	111
S-337	U231/B105	816	34
S-351	U267	2,424	101
S-371/372	U228/B520 and B521	1,392	58
S-438	U110	6,000~~5,040~~	250~~210~~

[Regulation 2-1-234.3 except for S-438, Cumulative Increase for S-438]

2a. All sources shall use only refinery fuel gas and natural gas as fuel, EXCEPT for S-438 which may also use pressure swing adsorption (PSA) off gas as fuel, and EXCEPT for S-3 and S-7 which may also use naphtha fuel.
[Regulation 9-1-304 (sulfur content), Regulation 2, Rule 1]

2b. Sources S-3 and S-7 are permitted to use naphtha fuel. These sources shall be monitored for visible emissions during tube cleaning. If any visible emissions are detected when the operation commences, corrective action shall be taken within one day, and monitoring shall be performed after the corrective action is taken. If no visible emissions are detected, monitoring shall be performed on an hourly basis. [Regulation 2-6-409.2]

2c. Sources S-3 and S-7 are permitted to use naphtha fuel. These sources shall be monitored for visible emissions before each 1 million gallons of liquid fuel is combusted at each source. If an inspection documents visible emissions, a Method 9 evaluation shall be completed within 3 working days, or during the next scheduled operating period if the specific unit ceases firing on liquid fuel within the 3 working day time frame.
[Regulation 2-6-409.2]

3a. The refinery fuel gas shall be tested for total reduced sulfur (TRS) concentration by GC analysis at least once per 8 hour shift (3 times per calendar day). At least 90% of these samples shall be taken each calendar month. No readable samples or sample results shall be omitted. TRS shall include hydrogen sulfide, methyl mercaptan, methyl sulfide, dimethyl disulfide. As an alternative to GC TRS analysis, the fuel gas total sulfur content may be measured with a dedicated total sulfur analyzer (Houston Atlas or equivalent), and TRS concentration estimated based on the total sulfur/TRS ratio, with the TRS estimate increased by a 5% margin for conservatism. The total sulfur/TRS ratio shall be determined at least on a monthly basis through GC analyses of total sulfur and TRS values, and the most recent ratio shall be used to estimate TRS concentration. [SO2 Bubble]

3b. The average of the 3 daily refinery fuel gas TRS sample results shall be reported to the District in a table format each calendar month, with a separate entry for each daily average.

Sample reports shall be submitted to the District within 30 days of the end of each calendar month. Any omitted sample results shall be explained in this report.[SO2 Bubble]

4. Emissions of SO2 shall not exceed 1,612~~1,611~~ lb/day on a monthly average basis from non-cogeneration sources burning fuel gas or liquid fuel. [SO2 Bubble]

5. The following records shall be maintained in a District-approved log for at least 5 years and shall be made available to the District upon request:

a. Daily and monthly records of the type and amount of fuel combusted at each source listed in Part A.1. [Regulation 2, Rule 1]
b. TRS sample results as required by Part A.3 [SO2 Bubble]
c. SO2 emissions as required by Part A.4 [SO2 Bubble]
d. The operator shall keep records of all visible emission monitoring required by Part 2b, shall identify the person performing the monitoring and shall describe all corrective actions taken. [Regulation 2-6-409.2]
e. The operator shall keep records of all visible emission monitoring required by Part 2c, of the results of required visual monitoring and Method 9 evaluations on these sources, shall identify the person performing the monitoring and shall describe all corrective actions taken. [Regulation 2-6-409.2]

E. S-438 FURNACE

1. The S-438 furnace shall be abated by the A-46 SCR unit at all times, except that S-438 may operate without SCR abatement on a temporary basis for periods of planned or emergency maintenance. A District-approved NOx CEM shall monitor and record the S-438 NOx emission rate whenever S-438 operates without abatement. All emission limits applicable to S-438 shall remain in effect whether or not it is operated with SCR abatement. [BACT, Cumulative Increase]

2. Total fuel fired in S-438 shall not exceed 2.19~~2.04~~ E 12 BTU in any rolling consecutive 365 day period. [Cumulative Increase]

3. Pressure swing adsorption (PSA) off gas used as fuel at S-438 shall not exceed 1.0 ppm (by weight) total reduced sulfur (TRS). TRS shall include hydrogen sulfide, methyl mercaptan, methyl sulfide, dimethyl disulfide. [BACT, Cumulative Increase]

4. The following emission concentration limits from S-438 shall not be exceeded. These limits shall not apply during startup periods not exceeding 24 hours (72 hours when drying refractory or during the first startup following catalyst replacement) and shutdown periods not exceeding 24 hours. The District may approve other startup and shutdown durations.

NOx: 7~~10~~ ppmv @ 3% oxygen, averaged over any 1-hr~~3 hour~~ period
CO: 32 ppmv @ 3% oxygen, averaged over any calendar day
POC: 0.0023 lb/MM BTU of fuel used [BACT, Cumulative Increase]

5. The concentration of TRS in the blended fuel gas shall not exceed 14~~50~~ ppmv averaged over any calendar month. [BACT, Cumulative Increase]

6. Daily records of the type and amount of fuel combusted at S-438 and of the TRS and hydrogen sulfide concentration in the blended fuel gas, and monthly records of average

blended fuel gas TRS concentration, shall be maintained for at least five years and shall be made available to the District upon request. [Cumulative Increase~~Recordkeeping~~]

7. No later than 90 days from the startup of the S-438, the owner/operator shall conduct District-approved source tests to determine initial compliance with the limits in Part 4 for NOx, CO and POC. The owner/operator shall conduct the source tests in accordance with Part 8. The owner/operator shall submit the source test results to the District staff no later than 60 days after the source test. [BACT, Cumulative Increase]

8. 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. [BACT, Cumulative Increase]

8.2 Other Changes to Permit

In addition to the changes to Condition 1694 described in Section 8.1, the following parts of the Major Facility Permit must be revised through a significant revision. A significant revision is necessary in accordance with Regulation 2-6-226.5 because the BACT analysis for S-438 in Section 5.0 constitutes a case-by-case emission limit determination. The following parts of the permit require revision:

8.2.1 Table II-A (only revised entries are shown)

Table II A - Permitted Sources

Each of the following sources has been issued a permit to operate pursuant to the requirements of BAAQMD Regulation 2, Permits. The capacities in this table are the maximum allowable capacities for each source, pursuant to Standard Condition I.J and Regulation 2-1-301.

S-#	Description	Make or Type	Model	Capacity
437	Hydrogen Manufacturing Unit			28.5~~25~~ million scf/day
438	U110, H-1 (H2 Plant Reforming) Furnace (natural gas, refinery fuel gas, PSA offgas)	John Zinc PFFG burners~~Claudius Peters~~	reforming furnace	250~~210~~ MM BTU/hr

8.2.2 Condition 20989 (only revised entries are shown)

A. THROUGHPUT LIMITS

The following limits are imposed through this permit in accordance with Regulation 2-1-234.3. Sources require BOTH hourly/daily and annual throughput limits (except for tanks and similar liquid storage sources, and small manually operated sources such as cold cleaners which require only annual limits). Sources with previously imposed

hourly/daily AND annual throughput limits are not listed below; the applicable limits are given in the specific permit conditions listed above in this section of the permit. Also, where hourly/daily capacities are listed in Table II-A, these are considered enforceable limits for sources that have a New Source Review permit. Throughput limits imposed in this section and hourly/daily capacities listed in Table II-A are not federally enforceable for grandfathered sources. Grandfathered sources are indicated with an asterisk in the source number column in the following table. Refer to Title V Standard Condition J for clarification of these limits.

In the absence of specific recordkeeping requirements imposed as permit conditions, monthly throughput records shall be maintained for each source.

source number	hourly / daily throughput limit	annual throughput (any consecutive 12-month period period unless otherwise specified)
437	Table II-A	10.4~~9.1~~ E 9 ft3

8.2.3 Table VII-N (only revised entries are shown)

Table VII – N
Applicable Limits and Compliance Monitoring Requirements

Type of Limit	Citation of Limit	FE Y/N	Future Effective Date	Limit	Monitoring Requirement Citation	Monitoring Frequency (P/C/N)	Monitoring Type
throughput	BAAQMD Condition 20989, Part A	Y		S-304: 3.47 E 6 bbl/yr (only until modified in accordance with A/C 5814) S-305: 9.23 E 6 bbl/yr S-306: 5.66 E 6 bbl/yr S-307: 1.39 E 7 bbl/yr S-435: 6.6 E 6 bbl/yr S-436: 4.7 E 6 bbl/yr S-437: 10.4~~9.1~~ E 9 ft3/yr	BAAQMD Condition 20989, Part A	P/M	records

8.2.4 Table II-B (only revised entries are shown)

Table II B – Abatement Devices

A-#	Description	Source(s) Controlled	Applicable Requirement	Operating Parameters	Limit or Efficiency
46	SCR System	S-438	BAAQMD Condition 1694, Part E	NOx, O2 CEMs	7~~10~~ ppmv NOx at 3% O2 (1~~3~~-hr average)

8.2.5 Table IV-A.34 (only revised entries are shown)

Table IV – A.34
Source-specific Applicable Requirements
S-438 – UNIT 110, H-1 FURNACE

Applicable Requirement	Regulation Title or Description of Requirement	Federally Enforceable (Y/N)	Future Effective Date
BAAQMD Condition 1694			
Part A.1	Heat ratings, firing limits [Basis: Regulation 2-1-234.3]	N	
Part A.2a	Fuel restrictions [Basis: Regulation 2, Rule 1]	Y	
Part A.3a	TRS testing requirement [Basis: SO2 Bubble]	Y	
Part A.3b	TRS reporting requirements [Basis: SO2 Bubble]	Y	
Part A.4	SO2 emission limit [Basis: SO2 Bubble]	Y	
Part A.5	Records [Basis: Regulation 2, Rule 1; SO2 Bubble; Regulation 2-6-409.2]	Y	
Part E.1	S-438 abatement requirement [Basis: BACT, Cumulative Increase]	Y	
Part E.2	S-438 annual firing limit [Basis: Cumulative Increase]	Y	
Part E.3	S-438 PSA offgas fuel TRS limit [Basis: BACT, Cumulative Increase]	Y	
Part E.4	S-438 NOx~~, and~~ CO and POC emission limits [Basis: BACT, Cumulative Increase]	Y	
Part E.5	S-438 fuel gas TRS limit [Basis: BACT, Cumulative Increase]	Y	
Part E.6	S-438 Records [Basis: Cumulative Increase~~Recordkeeping~~]	Y	
Part E.7	S-438 modification startup source test requirement [Basis: BACT, Cumulative Increase]	Y	90 days after S-438 startup following modification
Part E.8	S-438 modification startup source test requirement [Basis: BACT, Cumulative Increase]	Y	prior to conducting source test in part E.7

8.2.6 Table VII-A.34 (only revised entries are shown)

Table VII – A.34
Applicable Limits and Compliance Monitoring Requirements
S-438 – UNIT 110, H-1 FURNACE

Type of Limit	Citation of Limit	FE Y/N	Future Effective Date	Limit	Monitoring Requirement Citation	Monitoring Frequency (P/C/N)	Monitoring Type
NOx	BAAQMD Condition 1694, Part E.4	Y		7~~10~~ ppmv NOx at 3% O2 over any 1~~3~~ hour~~s~~, except startups and shutdowns~~, at S-438~~	None	C	CEM
All combustion emissions	BAAQMD Condition 1694, Part A.1	N		heat ratings, firing limits (see condition)	BAAQMD Condition 1694, Part A.5	P/D	records
all combustion emissions	BAAQMD Condition 1694, Part E.2	Y		2.19~~2.04~~ E 12 BTU/yr fuel combustion~~ at S-438~~	BAAQMD Condition 1694, Part E.6	P/D	records
O2		Y		No limit	None	C	O2 Monitor
CO	BAAQMD Condition 1694, Part E.4	Y		32 ppmv CO at 3% O2 over any 24 hr, except startups and shutdowns~~, at S-438~~	None	N	None
TRS	BAAQMD Condition 1694, Part E.3	Y		1 ppmw TRS in PSA offgas used as fuel~~, at S-438~~	Overall fuel TRS monitored by BAAQMD Condition 1694, Part E.5	P/D	records
TRS	BAAQMD Condition 1694, Part E.5	Y		14~~50~~ ppmv TRS over any month, in fuel gas, at S-438	BAAQMD Condition 1694, Part E.5	P/3 times per day	TRS analysis
Opacity	BAAQMD 6-304	Y		During tube cleaning, Ringelmann No. 2 for 3 min/hr and 6 min/billion BTU in 24 hours; applies to sources rated over 140 MM BTU/hr (with tubes)	None for gaseous-fueled sources	N	None
Opacity	BAAQMD 6-301	Y		Ringelmann 1 for no more than 3 minutes in any hour	None for gaseous-fueled sources	N	None

Table VII – A.34
Applicable Limits and Compliance Monitoring Requirements
S-438 – UNIT 110, H-1 FURNACE

Type of Limit	Citation of Limit	FE Y/N	Future Effective Date	Limit	Monitoring Requirement Citation	Monitoring Frequency (P/C/N)	Monitoring Type
FP	BAAQMD 6-305	Y		Prohibition of nuisance	None	N	None
FP	BAAQMD 6-310.3	Y		0.15 grain/dscf @ 6% O2	None for gaseous-fueled sources	N	None
SO2	BAAQMD Condition 1694, Part A.4	Y	startup of S-36, S-461 for modified limit	1,558 lb/day SO2 over any month (1,611 lb/day after startup of S-36 and S-461, 1,612 lb/day after modification of S-438)	BAAQMD Condition 1694, Part A.3a	P/3 times per day	TRS analysis
H2S	40 CFR 60 Subpart J 60.104(a)(1)	Y		fuel gas H2S concentration limited to 230 mg/dscm (0.10 gr/dscf) except for gas burned as a result of process upset or gas burned at flares from relief valve leaks or other emergency malfunctions; this requirement applies to sources installed/modified after 6/11/73 and burning refinery gas	40 CFR 40 CFR 60.105(a)(4)	C	H2S analyzer

8.0 RECOMMENDATION

Grant Authority to Construct to ConocoPhillips for:

S-437 Unit 110 Hydrogen Plant: Increase capacity to 25 MM scf/day when using liquid feed, 28.5 MM scf/day when using natural gas feed exclusively

S-438 Unit 110 Hydrogen Reformer Furnace: Increase maximum firing rate to 250 MM BTU/hr, change type of catalyst

A-46 SCR Unit for S-438: Change catalyst type

By: _____

J. Julian Elliot
Senior Air Quality Engineer

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APPENDIX C

ENGINEERING EVALUATION APPLICATION 11630

Engineering Evaluation
CONOCOPHILLIPS SAN FRANCISCO REFINERY; PLANT 16
APPLICATION 11630

1.0 BACKGROUND

ConocoPhillips has applied for changes to BAAQMD Conditions 21096 and 21097 for Sources S-36 and S461 in Application 11630. The original Authority to Construct for these sources was Application 5814. These sources have been built and will start up in March 2005. The facility has also applied for a Title V schedule of compliance regarding alternative monitoring at these sources in Application 11953. Application 11953 will be cancelled and the alternative monitoring will be considered as part of Application 11626.

1.1 Changes to SCR Condition

ConocoPhillips has applied in order to allow 2 combustion devices (S36 and S461) to operate without normal selective catalytic reduction (SCR) abatement during maintenance, as long as all applicable emission limits and other requirements are satisfied. SCR is an abatement technology used to reduce NOx emission rates from combustion operations. During certain maintenance activities, SCR systems do not operate properly. The affected sources, the associated SCR systems and permit conditions are:

source	Description	SCR system	permit condition #
S-36	B-102 heater	A-36	21097, Part 3a
S-461	B-701 heater	A-6	21096, part 3a

Copies of Conditions 21096 and 21097 are attached.

These sources are each subject to a permit condition that requires abatement with SCR at all times. The proposed amendment would modify this requirement for the purpose of planned or emergency maintenance, as long as applicable emission rate limits for NOx are not exceeded. Such maintenance is required periodically to maintain SCR operation. For example, ammonia injection systems associated with the SCR system may require washing or other maintenance to eliminate plugging of the system. In some cases such maintenance can be performed without removing the heater from service, and while maintaining compliance with emission limits.

Each source is equipped with a NOx continuous emission monitor (CEM) that allows verification of compliance with NOx emission rate limits. The District permit conditions and the Major Facility Permit require monitoring of NOx at each of these sources with a CEM. The District CEM procedure (Section 5.1) in the Manual of Procedures allows periods of CEM inoperation up to 15 consecutive days, with no overall limit on the number of days of inoperation per year. Nonetheless, the proposed amendments require that the CEMs operate during any period when SCR abatement is not used on these sources.

1.2 Changes to TRS Monitoring

ConocoPhillips has also applied to modify the permit conditions for monitoring of TRS concentration so that they are similar to the conditions for monitoring of TRS in Condition 1694, part 3a. In that

case, the total sulfur in refinery fuel gas is monitored 3 times per day as a surrogate for TRS. Once a month, the gas is analyzed to determine the ratio of total sulfur to TRS, which is defined as hydrogen sulfide, methyl mercaptan, methyl sulfide, and dimethyl disulfide. This test applies to all the gas in the refinery fuel gas system.

In this case, refinery fuel gas from the main fuel gas header is processed through two new caustic scrubbers of a novel design before combustion at S36 and S461 in order to meet lower BACT limits for TRS. The facility will be allowed to use total sulfur as a surrogate for TRS, but will be required to determine the TRS level whenever the total sulfur is over the annual average limit for TRS. Since TRS must be below the total sulfur, this monitoring is equivalent.

However, the equivalent monitoring is not feasible for every sample. An outside lab in Sacramento that only works Mondays through Fridays performs the TRS analysis. The samples cannot be held for more than 36 hours before they deteriorate. Since the analysis is not feasible on Saturdays and Sundays, the facility will not be required to analyze any samples pulled on Friday and Saturday.

This is a significant revision of the Title V permit because it is a relaxation of monitoring pursuant to BAAQMD Regulation 2-6-226.3.

The reason for the revision is that the facility does not have the capability of monitoring TRS directly at these sources. Since the total sulfur is expected to be extremely low, the District does not expect that determination of TRS will be necessary for every sample.

After the permittee has some data on the ratio of TRS to total sulfur, the permittee intends to apply to use the ratio together with the total sulfur analysis for compliance, and only analyze for TRS on a monthly basis.

1.3 Subpart J Monitoring

Application 5814, the original application for these sources, stated that the sources would comply with the H2S limit in 40 CFR 60, Subpart J: 230 mg/dscm in the fuel gas. The application also states that "... The fuel gas system header will continue to be sampled to verify compliance." However, the refinery has now stated that the fuel gas that is sampled is not representative of the fuel gas that is fed to the caustic scrubbers. Therefore, the facility must monitor this stream for compliance with Subpart J.

As discussed above, the facility is proposing alternate monitoring for these sources, as allowed by 40 CFR 60.106(i)(12). Until EPA approves the alternate monitoring, the facility will be out of compliance with Subpart J. A custom schedule of compliance will be written for the Major Facility Review permit.

BAAQMD Regulation 10 adopted Subpart J by reference. Therefore, Subpart J is an "applicable regulation" of the District and the state board (Air Resources Board.) Since California Health and Safety Code Section 42301(b) prohibits the issuance of a permit to any equipment

that does not comply with an "applicable regulation," the authority to construct will be issued, but the permit to operate for these sources cannot be issued until EPA approves the alternate monitoring and brings the sources into compliance.

2.0 Emissions Increase

Because each source is subject to a NOx emission rate limit imposed in an NSR permit evaluation, and because none of these limits will be changed, no annual average emission increase will be considered to occur, and no change will be made to the facility cumulative increase. Also, permitted daily emissions will not increase because refinery sources are assumed to operate 24 hr/day. Thus, if the emission rate limit is not increased, and the source is not physically modified to increase exhaust flowrate, the resulting daily emissions will also not increase.

SO2 emissions are not expected to increase as a result of the proposed monitoring changes.

Because no annual average or daily emission increase is permitted, no NSR requirements (e.g. BACT, offsets) are applicable to this application.

3.0 CUMULATIVE INCREASE

Because no annual average or daily emission increase is permitted, there is no cumulative increase associated with this application.

4.0 NSR, OFFSETS, PSD

Because no annual average or daily emission increase is permitted, no NSR requirements (e.g. BACT, offsets) or PSD requirements are applicable to this application.

5.0 Federal Requirements

As stated in Section 1.3, the sources will be out of compliance with Subpart J until EPA approves the alternate monitoring. The Major Facility Review permit can be issued with a schedule of compliance, but the final District permit cannot be issued until the monitoring is approved.

These sources are not subject to any NESHAPS in 40 CFR 61 or 40 CFR 63.

6.0 Other District Rules and Regulations

The sources are expected to be in compliance with Regulation 6. Regulation 9, Rule 1, Sulfur Dioxide applies only generally because the facility has ground level monitors for SO2. Because the sources were built after 1994, they are not subject to Regulation 9, Rule 10, NO_x and CO from Boilers, Steam Generators, and Process Heaters in Petroleum Refineries. The District regulations are fully discussed in Application 5814.

7.0 CEQA and Other Regulations

This application is categorically exempt from CEQA in accordance with Regulation 2-1-312.1 because the proposed permit condition amendments

apply to permitted equipment and do not involve permitted emission increases or physical modifications. No Appendix H form is provided because no physical modifications or site development are proposed. The only potential impacts are related to air quality. As discussed in Section 1.0, no emission increase is permitted since all existing emission limits will remain in effect at all times. Not operating SCR systems when not necessary to achieve compliance with emission limits will result in a reduction in ammonia slip emissions.

8.0 Toxic Risk Management

Since this application will result in no increase in toxic air contaminants, additional consideration of toxic risk is not required.

9.0 PERMIT CONDITIONS

The changes to permit conditions described in Section 2.0 will be made in the District Databank when the final permit is issued.

9.1 Amend Condition 21097, Parts 3a, 7a, and 7b for S-36:

3a. The owner/operator of S-36 shall abate emissions from S-36 at the A-36 SCR system whenever S-36 is operated, except that S-36 may operate without SCR abatement on a temporary basis for periods of planned or emergency maintenance. A District-approved NOx CEM shall monitor and record the S-36 NOx emission rate whenever S-36 operates without abatement. All emission limits applicable to S-36 shall remain in effect ~~whether or not~~ even if it is operated without SCR abatement. [BACT, Cumulative Increase]

7. The owner/operator shall test refinery fuel gas prior to combustion at S-36 to determine total reduced sulfur (TRS) concentration by GC analysis at least once per 8-hour shift (3 times per calendar day). At least 90% of these samples shall be taken each calendar month. No readable samples or sample results shall be omitted. TRS shall include hydrogen sulfide, methyl mercaptan, methyl sulfide, and dimethyl disulfide. As an alternative to GC TRS analysis, the fuel gas total sulfur content may be measured with a dedicated total sulfur analyzer (Houston Atlas or equivalent). If the measured total sulfur concentration exceeds 45 ppm, the owner/operator shall analyze the sample for TRS, provided that:
   a. Only one sample per day shall be analyzed;
   b. If more than one sample on one day is over 45 ppm of total sulfur concentration, the highest sample for that day shall be analyzed;
   c. Analysis shall only be performed on samples that are collected on Sundays through Thursday. No sample will be analyzed on a holiday.
   d. If all samples are under 45 ppm of total sulfur concentration, one sample per week shall be analyzed.

   Within 2 months of startup, the owner/operator shall submit a report to the Engineering Division and to the Compliance

and Enforcement division that contains the following information:

d. The total sulfur for all samples collected in the two months;

e. The TRS results for all samples that are analyzed in the two months.

7b. If the TRS value, averaged over any rolling consecutive 365-day period, exceeds 35 ppmv, the owner/operator shall install and operate a District-approved continuous monitor/recorder to determine the total reduced sulfur content of the refinery fuel gas prior to combustion in S-36 within the time period specified in the District Manual of Procedures. [BACT, Cumulative Increase]

9.2 Amend Condition 21096, Part 3a, 7a, and 7b for S-461:

3a. The owner/operator of S-461 shall abate emissions from S-461 at the A-461 SCR system whenever S-461 is operated, except that S-461 may operate without SCR abatement on a temporary basis for periods of planned or emergency maintenance. A District-approved NOx CEM shall monitor and record the S-461 NOx emission rate whenever S-461 operates without abatement. All emission limits applicable to S-461 shall remain in effect whether or not it is operated with SCR abatement. [BACT, Cumulative Increase]

7. The owner/operator shall test refinery fuel gas prior to combustion at S-461 to determine total reduced sulfur (TRS) concentration by GC analysis at least once per 8-hour shift (3 times per calendar day). At least 90% of these samples shall be taken each calendar month. No readable samples or sample results shall be omitted. TRS shall include hydrogen sulfide, methyl mercaptan, methyl sulfide, dimethyl disulfide. As an alternative to GC TRS analysis, the fuel gas total sulfur content may be measured with a dedicated total sulfur analyzer (Houston Atlas or equivalent). If the measured total sulfur concentration exceeds 45 ppm, the owner/operator shall analyze the sample for TRS, provided that:

a. Only one sample per day shall be analyzed;

b. If more than one sample on one day is over 45 ppm of total sulfur concentration, the highest sample for that day shall be analyzed;

c. Analysis shall only be performed on samples that are collected on Sundays through Thursday.

d. If all samples are under 45 ppm of total sulfur concentration, one sample per week shall be analyzed.

Within 2 months of startup, the owner/operator shall submit a report to the Engineering Division and to the Compliance and Enforcement division that contains the following information:

d. The total sulfur for all samples collected in the two months;

e. The TRS results for all samples that are analyzed in the two months.

7b. If the TRS value, averaged over any rolling consecutive 365-day period, exceeds 35 ppmv, the owner/operator shall install and operate a District-approved continuous monitor/recorder to determine the total reduced sulfur content of the refinery fuel gas prior to combustion in S-461 within the time period specified in the District Manual of Procedures. [BACT, Cumulative Increase]

10.0 RECOMMENDATION

Recommend that an Authority to Construct be issued to Sources S-36 and S-461 for the above changes in permit conditions.

By: _____ 3/10/05

Brenda Cabral **Date**
Senior Air Quality Engineer