

SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT OFFICE OF ENGINEERING AND COMPLIANCE APPLICATION PROCESSING AND CALCULATIONS	PAGES 50	PAGE 1
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	PROCESSED BY: Bob Sanford	CHECKED BY

PERMIT TO OPERATE
Application Nos. 380597, 405265 and 405267

COMPANY NAME: Chevron Products Company

MAILING ADDRESS: 324 W. El Segundo Blvd.
El Segundo, CA 90245

EQUIPMENT LOCATION: 324 W. El Segundo Blvd.
El Segundo, CA 90245

BACKGROUND/SUMMARY

The Naphtha Hydrotreater No. 1 (Plant No. 45) (NHT-1), Naphtha Hydrotreater No. 1 (NHT-1) reactor charge heater (F-4531) and associated SCR are operating under temporary permits to operate (POs) in Section H of Chevrons Title RECLAIM/TV Facility Permit (FP). Chevron has submitted change of condition application nos. 405267 and 405265 for the heater and SCR, respectively. This document serves the dual purpose of evaluating the validity of issuance of regular POs for the plant, heater and SCR and evaluating the requested condition changes for the heater and SCR.

Summary of Permits to Construct

Naphtha Hydrotreater No. 1 (Plant No. 45)

Permits to construct (PCs) have been issued under the following applications since issuance of the last regular PO for the NHT-1: 289724 and 380597. The PCs are summarized below.

A/N 289724 – Under Phase 2 of the California Air Resources Board (CARB) Clean Fuels Project, a PC was issued in 1995 for installation of Hydrotreater Reactor R-4530 (D3003), Guard Reactor R-4533 (D3004), Desulfurizer Reflux Drum V-4534 (D3006) and associated heat exchangers and pumps.

A/N 380597 - Under Phase 3 of the CARB Clean Fuels Project, Chevron expanded the capacity of the NHT System No. 1 to process all of the straight run naphtha and coker naphtha in order to free up the NHT System No. 3 for heavy FCC gasoline hydrotreating. Previously, NHT-1 and NHT-3 shared the refinery naphtha-treating load, with a small amount processed in NHT-2. To meet the CARB 3 gasoline specifications, Chevron dedicated NHT-3 for FCC gasoline treating service only. While the NHT-1 naphtha treating capacity increased, the total naphtha treating in the refinery remained the same. The modifications to the NHT-1 included the installation of a new fin fan exchanger on the reactor effluent, E-4536, addition of new feed filters, J-4530 A/B, and modification of the feed charge pumps, P-4531 /A.

Chevron also requests that the listed heights in the equipment descriptions of some of the vessels in this permit unit be corrected. These corrections are shown in the permit pages in the *Equipment Description* section of this evaluation.

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Naphtha Hydrotreater No. 1 Reactor Charge (F-4531) Heater and SCR

The current NHT-1 Reactor Charge (F-4531) Heater and associated SCR have each been issued two PCs. Neither permit unit has been issued a regular PO. PCs were issued for the heater under A/Ns 380611 and 416188. PCs have been issued for the SCR under A/Ns 380610 and 419512. The PCs are summarized below.

A/N 380611 (heater) and A/N 380610 (SCR) - To accommodate the increase in NHT-1 feed rate, the existing feed furnace, F-4531, which was rated at 36.7 MMBtu/hr, was replaced with a larger and more efficient SCR-equipped furnace. The new 78 MMBtu/hr NHT-1 Reactor Charge Heater was also called F-4531.

A/N 416188 (heater) and 419512 (SCR) – PC A/N 416188 for the new F-4531 heater was for revision of the source test condition to allow performance of the source test at less than 80% load. PC A/N 419512 for the new SCR was issued for a change of the averaging period for the 9 ppmv NH3 limit from 1-hr to 3-hr.

Requested Permit Condition Changes

The permit condition changes requested by Chevron under ANs 405267 and 405265 are summarized below.

F-4531 Heater

1. Specify a 60-minute averaging period for the 25 ppmv CO limit.
2. Delete the requirement to keep records of CO source test data from condition K67.26.
3. Add a new condition E54.xx to allow bypass of the SCR during startups and shutdowns of the heater.

F-4531 Heater SCR

1. Delete condition D12.20, which specifies a continuous monitoring system and recorder for the ammonia-to-emitted NOx mole ratio
2. Delete the following language in recordkeeping condition K67.24: “ammonia injected to emitted NOx mole ratio” and “calibration data on the NH3 to NOx injection ratio continuous monitoring systems”.
3. Replace monitoring condition D12.3 for SCR differential pressure with D12.40 and D12.19 for SCR inlet temperature with D12.42. These replacement monitoring and recording conditions include the following language that mirrors the failure, calibration, routine maintenance and repair period allowances specified for CEMS in District Rule 218(f)(3).
 - The operator shall notify the Executive Officer within 24 hours or the next working day, in the event of a system failure or shutdown, which exceeds 24 hours. Zero and calibration checks and routine maintenance do not require reporting.
 - In the case of a CMD failure or shutdown, compliance with permit requirements to monitor and record data is waived for a period not to exceed 96 consecutive hours.

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- Continuous parameter monitoring and recording requirements shall not apply during calibration checks, routine maintenance and repairs lasting 60 minutes or less.

EQUIPMENT DESCRIPTION:

The subject permit units are operating under temporary permits to operate in Section H of Chevrons Title V/RECLAIM Facility Permit (FP). A regular Permit to Operate is proposed for issuance in Section D of the FP. In the proposed permit pages below, new and deleted condition text is indicated by underline and strikeout, respectively. Modified conditions are indicated by parenthesis. Copies of the applicable permit pages from Section H of the FP are contained in the [engineering file](#).

Section D: Facility Description and Equipment Specific Conditions

Equipment	ID No.	Connect To	RECLAIM Source	Emissions and Requirements	Conditions
PROCESS 4: HYDROTREATING					P13.1
SYSTEM 3: NAPHTHA HYDROTREATER NO. 1 (PLANT NO. 45)					S7.2, S11.1, S13.2, S15.7, S15.8, S15.9, S15.10, S31.14, S31.15
COLUMN, FEED STRIPPER, C-4530, NAPHTHA, HEIGHT: 39 FT <u>8 IN</u> ; DIAMETER: 7 FT A/N: 380597	D365				
COLUMN, DESULFURIZER, C-4531, HEIGHT: 74 <u>76</u> FT <u>6 IN</u> ; DIAMETER: 9 FT 6 IN A/N: 380597	D366				
REACTOR, HYDROGENATION, R-4531, NO. 1, HEIGHT: 27 FT 6 IN; DIAMETER: 6 FT 6 IN A/N: 380597	D367				
REACTOR, HYDROGENATION, R-4532, NO. 2, HEIGHT: 27 FT 6 IN; DIAMETER: 6 FT 6 IN A/N: 380597	D368				
VESSEL, SEPARATOR, V-4531, HIGH PRESSURE, HEIGHT: 22 <u>21</u> FT <u>8 IN</u> ; DIAMETER: 6 FT 6 IN A/N: 380597	D369				
VESSEL, SEPARATOR, V-4533, LOW PRESSURE, LENGTH: 28 <u>27</u> FT <u>8 IN</u> ; DIAMETER: 9 FT 6 IN A/N: 380597	D371				

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Equipment	ID No.	Connect To	RECLAIM Source	Emissions and Requirements	Conditions
VESSEL, V-4534, DESULFURIZER REFLUX, LENGTH: 45 <u>14</u> FT <u>8</u> IN; DIAMETER: 5 FT A/N: 380597	D372				
POT, V-4535, WATER DRAW, HEIGHT: 4 <u>3</u> FT <u>8</u> IN; DIAMETER: 3 FT A/N: 380597	D373				
VESSEL, V-4536, SULFUR SORBER, HEIGHT: 13 FT 6 IN; DIAMETER: 6 FT 6 IN A/N: 380597	D374				
TANK, V-4540, WASH WATER BREAK, HEIGHT: 4 FT 6 IN; DIAMETER: 4 FT 6 IN A/N: 380597	D376				
COMPRESSOR, RECYCLE, K-4532, HYDROGEN, DUAL CYLINDERS, RECIPROCATING A/N: 380597	D377				
COMPRESSOR, RECYCLE, K-4532A, HYDROGEN, (STANDBY), DUAL CYLINDERS, RECIPROCATING A/N: 380597	D378				
EJECTOR, K-4533, STEAM A/N: 380597	D379				
REACTOR, GUARD, R-4530, HEIGHT: 45 <u>16</u> FT <u>6</u> <u>9</u> IN; DIAMETER: 10 FT 6 IN A/N: 380597	D3003				
REACTOR, HYDROTREATING, R-4533, HEIGHT: 27 FT 6 IN; DIAMETER: 8 FT 6 IN A/N: 380597	D3004				
DRUM, V-4534, DESULFURIZER REFLUX, HEIGHT: 45 <u>14</u> FT <u>8</u> IN; DIAMETER: 5 FT A/N: 380597	D3006				
FILTER, J-4501, FUEL GAS A/N: 380597	D3300				
FUGITIVE EMISSIONS, MISCELLANEOUS A/N: 380597	D3585			HAP: (10) [40CFR 63 Subpart CC, #5A, 6-23-2003]	H23.19

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Equipment	ID No.	Connect To	RECLAIM Source	Emissions and Requirements	Conditions
FILTER, NAPHTHA FEED, J-4530A/B A/N: 380597	D3783				K171.1

Equipment	ID No.	Connect To	RECLAIM Source	Emissions and Requirements	Conditions
PROCESS 4: HYDROTREATING					P13.1
SYSTEM 4: ISOMAX NHT HEATERS					S7.2 , S31.15
HEATER, NHT-1 REACTOR CHARGE, F-4531, TULSA MODEL NO. J01-343, NATURAL GAS, REFINERY GAS, WITH LOW NOx BURNERS, 78 MMBTU/HR, WITH BURNER, NATURAL GAS, REFINERY GAS, JOHN ZINK, MODEL QMR-CR-PC-16, 8 BURNERS, WITH LOW NOx BURNER, 78 MMBTU/HR A/N: 416188 405267	D3778	C3780	NOX: MAJOR SOURCE**; SOX: MAJOR SOURCE**	CO: 25 PPMV (4) [RULE 1303(a)(1)-BACT, 5-10-1996]; CO: 2000 PPMV (5) [RULE 407, 4-2-1982]; NOX: 5 PPMV REFINERY/ NATURAL GAS (4) [RULE 2005, 4-20-2001]; PM: (9) [RULE 404, 2-7-1986]; PM: 0.1 GRAINS/SCF (5) [RULE 409, 8-7-1981]	A63.27, A99.7 , A195.1, A195.27 , B61.3 , B61.4 , B61.6, C1.83, C1.85, D12.10 , D12.18 , D28.21 , D29.17 , D82.5, D90.20, E54.14 , E71.17 , H23.2, H23.50 , K67.26 , K171.1
SELECTIVE CATALYTIC REDUCTION, R-4540, HALDOR TOPSOE, WITH CERAMIC PLATE, DNX 930 CATALYST, 92.17 CU. FT. TOTAL; SPACE VELOCITY – 18,448/HR, WIDTH: 20 FT; HEIGHT: 5 FT 6 IN.; LENGTH: 7 FT 3 IN WITH AMMONIA INJECTION, 29% AQUEOUS NH3, WITH TWO-15 KW VAPORIZERS/ INLINE HTRS, TWO-5 CFM AIR BLOWERS, NH3 INJECTION GRID, PIPING AND INSTRUMENTATION A/N: 419215 405265	C3780	D3778 S3782		NH3: 9 PPMV (4) [RULE 1303(a)(1)-BACT, 5-10-1996]	A99.7 , A99.8, A195.3, D12.3 , D12.19 , D12.20 , D12.40 , D12.42 , D29.17 , D82.5 , , E71.19, K67.24 , K171.2
STACK A/N: 419215 405265	D3782				

CONDITIONS:

Process Conditions

P13.1 All devices under this process are subject to the applicable requirements of the following rules or regulations:

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Contaminant	Rule	Rule/Subpart
Benzene	40CFR61	Subpart FF

[40CFR 61 Subpart FF, 12-4-2003]

[Processes subject to this condition: 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 16]

System Conditions

S7.2 The following conditions shall apply to all refinery operation and related devices from this system:

The operator shall comply with all applicable mitigation measures stipulated in the "Statement of Findings, Statement of Overriding Considerations, and Mitigation Monitoring Plan" document which is part of the AQMD Certified Final Environmental Impact Report dated 30-Nov-2001 for this facility.

[CA PRC CEQA, 11-23-1970]

[Systems subject to this condition: Process 3, System 5; ~~Process 4, System 3, 4~~; Process 8, System 8; Process 14, System 28;]

S11.1 The following conditions shall apply to all refinery operation and related devices from this system:

The operator shall comply with all applicable mitigation measures stipulated in the "Statement of Findings, Statement of Overriding Considerations, and Mitigation Monitoring Plan" document which is part of the AQMD Certified Final Environmental Impact Report dated 09-May-1995 for this facility.

This condition shall only apply to equipment listed in Section H of this facility permit.

[CA PRC CEQA, 11-23-1970]

[Systems subject to this condition: Process 1, System 17; ~~Process 4, System 3~~; Process 8, System 1, 7; Process 9, System 2; Process 14, System 17; Process 20, System 24]

[**Note:** There are no on-going requirements for conditions S7.2 and S11.1]

S13.2 All devices under this system are subject to the applicable requirements of the following rules or regulations:

Contaminant	Rule	Rule/Subpart
VOC	District Rule	1123

[RULE 1123, 12-7-1990]

[Systems subject to this condition : Process 1, System 3, 5, 13, 17; Process 2, System 1, 5, 6; Process 3, System 1, 5; ~~Process 4~~, System 1, ~~3~~, 5, 7, 9, 11, 13; Process 5, System 1; Process 6, System 4; Process 7, System 2, 4, 7; Process 8, System 1, 2, 5, 7, 8, 10; Process 9, System 1, 2; Process 10, System 1, 4; Process 12, System 2, 4, 7, 9, 10, 11, 12, 13, 16, 17, 18, 22, 26, 27, 28; Process 20, System 3, 7, 10, 11, 12, 14, 18, 19, 23; Process 21, System 13, 14, 16, 18]

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S15.7 The vent gases from all affected devices of this process/system shall be vented as follows:

All emergency vent gases shall be directed to the vapor recovery system and/or flare system, except Devices IDs D15, D3195, D3199, D3200 (Process 1, System 3), D106 (Process 1, System 13), D3574, D3371, D3373, D591, D595, D597, D3372, D592, D598 & D602 (Process 6, System 4) that vent to the atmosphere.

This process/system shall not be operated unless the vapor recovery system(s) and/or flare(s) is in full use and has a valid permit to receive vent gases from this system.

[RULE 1303(a)(1)-BACT, 5-10-1996; RULE 1303(b)(2)-Offset, 5-10-1996]

[Systems subject to this condition : Process 1, System 3, 5, 13, 17; Process 2, System 1; Process 3, System 1, 5; **Process 4, System 1, 3**, 5, 7, 9, 11, 13; Process 5, System 1; Process 6, System 4; Process 7, System 4 , 7; Process 8, System 1, 2, 5, 7, 8, 10; Process 9, System 1, 2; Process 10, System 1; Process 12, System 2, 7, 9, 11, 13, 17, 22, 23, 25, 26, 27; Process 17, System 7; Process 20, System 18, 19; Process 21, System 18]

S15.8 The vent gases from all affected devices of this process/system shall be vented as follows:

All emergency vent gases shall be directed to the vapor recovery system and/or flare system.

This process/system shall not be operated unless the vapor recovery system(s) and/or flare(s) is in full use and has a valid permit to receive vent gases from this system.

[RULE 1303(a)(1)-BACT, 5-10-1996; RULE 1303(b)(2)-Offset, 5-10-1996]

[Systems subject to this condition: Process 1, System 17; ~~Process 4, System 3~~ , 5; Process 9, System 1; Process 10, System 4; Process 21, System 14, 16]

[Note: This condition is redundant with S15.7.]

S15.9 The vent gases from all affected devices of this process/system shall be vented as follows:

All sour gases shall be directed to the sour gas treating unit(s).

This process/system shall not be operated unless the sour gas treating unit(s) is in full use and has a valid permit to receive vent gases from this system.

[RULE 1303(a)(1)-BACT, 5-10-1996; RULE 1303(b)(2)-Offset, 5-10-1996]

[Systems subject to this condition : Process 1, System 3 , 5 , 13; Process 2, System 1; Process 3, System 1; **Process 4, System 1, 3**, 7, 9, 11, 13; Process 7, System 4; Process 8, System 1, 5; Process 10, System 1; Process 12, System 7; Process 20, System 4, 10, 28 , 29, 30, 37]

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S15.10 The vent gases from all affected devices of this process/system shall be vented as follows:

All vent gases under normal operating conditions shall be directed to the vapor recovery system.

This process/system shall not be operated unless the vapor recovery system(s) is in full use and has a valid permit to receive vent gases from this system.

[RULE 1303(a)(1)-BACT, 5-10-1996; RULE 1303(b)(2)-Offset, 5-10-1996]

[Systems subject to this condition : Process 1, System 3, 5, 13, 17; Process 2, System 1; Process 3, System 1 , 5; **Process 4, System 1, 3, 5, 7, 9, 11, 13**; Process 5, System 1; Process 6, System 4; Process 7, System 4 , 7; Process 8, System 1, 2, 5, 7, 8, 10; Process 9, System 1 , 2; Process 10, System 1; Process 12, System 2, 7, 9, 11, 13, 17, 22, 23, 25, 26, 27; Process 20, System 18]

S31.14 The following BACT requirements shall apply to VOC service fugitive components associated with the devices that are covered by application number(s) 284288, 284290, **289724**, 290190, 326619, 329314 and 403039:

The operator shall provide to the District, no later than 60 days after initial startup, a recalculation of the fugitive emissions based on actual components installed and removed from service. The valves and flanges shall be categorized by size and service. The operator shall submit a listing of all new non-bellows seal valves which shall be categorized by tag no., size, type, operating temperature, operating pressure, body material, application, and reasons why bellows seal valves were not used.

All new valves in VOC service, except those specifically exempted by Rule 1173, shall be bellows seal valves for 2-inch and smaller sizes, except as approved by the District, in the following applications: heavy liquid service, control valve, instrument piping/tubing, applications requiring torsional valve stem motion, applications where valve failure could pose safety hazard (e.g., drain valves with valve stems in horizontal position), retrofits/special applications with space limitations.

All new valves greater than 2-inch and major components in VOC service as defined by Rule 1173, except those specifically exempted by Rule 1173 and those in heavy liquid service as defined in R1173, shall be distinctly identified from other components through their tag numbers (e.g., numbers ending in the letter "N"), and shall be noted in the records.

All new components in VOC service with a leak greater than 500 ppmv but less than 1,000 ppmv, as methane, measured above background using EPA Method 21 shall be repaired within 14 days of detection. Components shall be defined as any valve, fitting, pump, compressor, pressure relief valve, diaphragm, hatch, sight-glass, and meter, which are not exempted by Rule 1173.

All new components in VOC service as defined in Rule 1173, except valves and flanges, shall be inspected quarterly using EPA reference Method 21. All new valves and flanges in VOC service, except those specifically exempted by Rule 1173, shall be inspected monthly using EPA Method 21.

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If 98.0 percent or greater of the new (non-bellows seal) valves and the new flange population inspected is found to leak gaseous or liquid volatile organic compounds at a rate less than 500 ppmv for two consecutive months, then the operator may change to a quarterly inspection program with the approval of the District.

The operator shall revert from quarterly to monthly inspection program if less than 98.0 percent of the new (non-bellows seal) valves and the new flange population inspected is found to leak gaseous or liquid volatile organic compounds at a rate less than 500 ppmv.

The operator shall keep records of the monthly inspection (quarterly where applicable), subsequent repair, and reinspection, in a manner approved by the District. Records shall be kept and maintained for at least two years, and shall be made available to the Executive Officer or his authorized representative upon request.

[RULE 1303(a)(1)-BACT, 5-10-1996; RULE 1303(b)(2)-Offset, 5-10-1996]

[Systems subject to this condition: Process 1, System 17; **Process 4, System 3**; Process 8, System 1, 7; Process 9, System 1, 2, Process 16, System 4]

S31.15 The following BACT requirements shall apply to VOC service fugitive components associated with the devices that are covered by application number(s) 378811, 380595, 380596, **380597, 380611**, 385371, 385372, 385373, 385374 and 475142:

The operator shall provide to the District, no later than 60 days after initial startup, a recalculation of the fugitive emissions based on actual components installed and removed from service. The valves and flanges shall be categorized by size and service. The operator shall submit a listing of all new non-bellows seal valves which shall be categorized by tag no., size, type, operating temperature, operating pressure, body material, application, and reasons why bellows seal valves were not used.

All new valves in VOC service, except those specifically exempted by Rule 1173, shall be bellows seal valves, except as approved by the District, in the following applications: heavy liquid service, control valve, instrument piping/tubing, applications requiring torsional valve stem motion, applications where valve failure could pose safety hazard (e.g., drain valves with valve stems in horizontal position), retrofits/special applications with space limitations, and valves not commercially available.

All new valves and major components in VOC service as defined by Rule 1173, except those specifically exempted by Rule 1173 and those in heavy liquid service as defined in R1173, shall be distinctly identified from other components through their tag numbers (e.g., numbers ending in the letter "N"), and shall be noted in the records.

All new components in VOC service as defined in Rule 1173, except valves and flanges, shall be inspected quarterly using EPA reference Method 21. All new valves and flanges in VOC service, except those specifically exempted by Rule 1173, shall be inspected monthly using EPA Method 21.

If 98.0 percent or greater of the new (non-bellows seal) valves and the new flange population inspected is found to leak gaseous or liquid volatile organic

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compounds at a rate less than 500 ppmv for two consecutive months, then the operator may change to a quarterly inspection program with the approval of the District.

The operator shall revert from quarterly to monthly inspection program if less than 98.0 percent of the new (non-bellows seal) valves and the new flange population inspected is found to leak gaseous or liquid volatile organic compounds at a rate less than 500 ppmv.

All new components in VOC service with a leak greater than 500 ppmv but less than 1,000 ppmv, as methane, measured above background using EPA Method 21 shall be repaired within 14 days of detection. Components shall be defined as any valve, fitting, pump, compressor, pressure relief valve, diaphragm, hatch, sight-glass, and meter, which are not exempted by Rule 1173.

The operator shall keep records of the monthly inspection (quarterly where applicable), subsequent repair, and reinspection, in a manner approved by the District. Records shall be kept and maintained for at least two years, and shall be made available to the Executive Officer or his authorized representative upon request.

[RULE 1303(a)(1)-BACT, 5-10-1996; RULE 1303(b)(2)-Offset, 5-10-1996]

[Systems subject to this condition: Process 1, System 18; Process 3, System 5; **Process 4, System 3, 4**; Process 8, System 8; Process 14, System 28; Process 16, System 8, 10]

Device Conditions

A63.27 The operator shall limit emissions from this equipment as follows:

Contaminant	Emissions Limit
VOC	Less than or equal to 11.23 lbs in any one day
PM10	Less than or equal to 18.72 lbs in any one day
CO	Less than or equal to 35.57 lbs in any one day

The operator shall calculate the emission limit(s) for compliance determination purposes for VOC and PM10 based on At least three one-hour source tests using District-approved test methods for emission rates and fuel usage as determined by a RECLAIM-certified fuel meter during the day of the test (0000 – 2400 hours). For compliance determination purposes, CO emissions shall be calculated based on certified continuous monitor, which shall have the capability to show cumulative daily emissions.

[RULE 1303(b)(2)-Offset, 5-10-1996]

[Devices subject to this condition: **D3778**]

A99.7 The 5 PPM NOx emission limit(s) shall not apply during refractory dryout, startup or shutdown.

[RULE 2005, 5-6-2005]

Devices subject to this condition: **C3780, D3778**]

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[**Note:** This condition will be moved from the SCR to the Heater since the heater is subject to the NOx limit.]

A99.8 The 9 PPM NH3 emission limit(s) shall not apply during refractory dryout, startup or shutdown.

[RULE 1303(a)(1)-BACT, 5-10-1996]

[Devices subject to this condition: [C3780](#)]

A195.1 The 5 PPMV NOx emission limit(s) is averaged over 3 hours, 3 percent O2, dry.

[RULE 2005, 5-6-2005]

[Devices subject to this condition: D3530, [D3778](#)]

[**Note:** Maximum NOx concentration measured by the NOx CEMS during May through July 2012 was 3.5 ppmvd.]

A195.3 The 9 PPMV NH3 emission limit(s) is averaged over 3 consecutive hours, 3 percent oxygen, dry basis.

[RULE 1303(a)(1)-BACT, 5-10-1996]

[Devices subject to this condition: [C3780](#)]

[**Note:** Maximum NH3 concentration measured by the NH3 CEMS during May through July 2012 was 8.1 ppmvd]

A195.27 The 25 PPMV CO emission limit(s) is averaged over 1 hour, 3 percent O2, dry basis.

[RULE 1303(a)(1)-BACT, 5-10-1996]

[Devices subject to this condition: [D3778](#)]

[**Note:** Maximum CO concentration measured by the CO CEMS during May through July 2012 was 15.9 ppmvd.]

B61.3 The operator shall not use refinery gas containing the following specified compounds:

Compound	ppm by volume
Total Sulfur as H2S greater than	40

The 40 ppmv total sulfur limit shall be averaged over 4 hours.

[RULE 2005, 5-6-2005]

[Devices subject to this condition: [D3778](#)]

[**Note:** Condition B61.4 will be consolidated into condition B61.3.]

[**Note:** Maximum fuel sulfur (TRS) concentration measured by the fuel sulfur GC during May through July 2012 was 28.8 ppmvd.]

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~~B61.4~~ The operator shall not use refinery gas containing the following specified compounds:

Compound	ppm by volume
Total Sulfur as H ₂ S greater than	40

~~The total sulfur concentration limit as H₂S shall be based on a 4 hour averaging period.~~

~~[RULE 2005, 5-6-2005]~~

~~[Devices subject to this condition: D3778]~~

B61.6 The operator shall not use fuel gas, except uncombined natural gas, containing the following specified compounds:

Compound	ppm by volume
H ₂ S greater than	160

The H₂S concentration limit shall be based on a rolling 3-hour averaging period

[40CFR 60 Subpart J, 6-24-2008]

[Devices subject to this condition: D84, D471, D472, D473, D641, D643, D2198, D2199, D2207, D2208, D2216, D3031, D3054, **D3778**, C3148, C3530, C3805, C3806, D3973]

C1.83 The operator shall limit the firing rate to no more than 78 MM Btu per hour.

For the purpose of this condition, firing rate shall be defined as energy or heat input to the equipment combustion chamber based on the higher heating value (HHV) of the natural gas and/or refinery fuel gas used.

To comply with this condition, the operator shall install and maintain a(n) continuous monitoring system that includes a continuous fuel flow meter for natural gas and refinery gas and continuous or semi-continuous HHV analyzer for refinery gas and use the RECLAIM default HHV value for natural gas.

The operator shall also install and maintain a device to continuously record the parameter being measured.

This limit shall be based on a rolling 1 hour averaging period.

[RULE 1303(b)(2)-Offset, 5-10-1996; RULE 2012, 5-6-2005]

[Devices subject to this condition: **D3778**]

[**Note:** Condition D12.18 is being consolidated into condition C1.83.]

C1.85 The operator shall limit the duration of startup or shutdown to no more than 48 hour(s).

The operator shall not be subject to the NO_x, CO and NH₃ emission limits specified for this equipment during refractory dryout, startup or shutdown.

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The duration of refractory dryout operation shall not exceed 48 hours.

The operator shall maintain records in a manner approved by the District, to demonstrate compliance with this condition.

[RULE 2005, 4-20-2001]

[Devices subject to this condition: [D3778](#)]

D12.3 The operator shall install and maintain a(n) differential pressure gauge to accurately indicate the differential pressure across the SCR catalyst beds in inches water column.

The operator shall also install and maintain a device to continuously record the parameter being measured.

The measuring device or gauge shall be accurate to within +/- 5 percent. It shall be calibrated once every twelve months.

For the purpose of this condition, continuously record shall be defined as recording at least once every week and shall be calculated based upon the average of the continuous monitoring for that week.

[RULE 1303(a)(1)-BACT, 5-10-1996]

[Devices subject to this condition: C85, C162, C469, C1967, C2210, C2213, C3058, [C3780](#)]

[**Note:** This condition will be replaced with condition D12.40.]

~~**D12.10** The operator shall install and maintain a(n) continuous monitoring system to accurately indicate the oxygen concentration at the exhaust stack.~~

~~**[RULE 1303(a)(1) BACT, 5-10-1996]**~~

~~[Devices subject to this condition: [D3778](#)]~~

[**Note:** This condition will be consolidated into condition D82.1.]

~~**D12.18** The operator shall install and maintain a(n) continuous monitoring system to accurately indicate the energy input being supplied to the combustion chamber per RECLAIM requirements.~~

~~The operator shall also install and maintain a device to continuously record the parameter being measured.~~

~~**[RULE 2012, 5-6-2005]**~~

~~[Devices subject to this condition: [D3778](#)]~~

[**Note:** This condition is being consolidated into condition C1.83.]

~~**D12.19** The operator shall install and maintain a(n) temperature reading device to accurately indicate the temperature at the inlet to the SCR catalyst beds.~~

~~**[RULE 1303(a)(1) BACT, 5-10-1996]**~~

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~~{Devices subject to this condition: [C3780](#)}~~

[**Note:** This condition will be replaced with condition D12.42]

~~**D12.20** The operator shall install and maintain a(n) continuous monitoring system to accurately indicate the ammonia to emitted NOx mole ratio being supplied to the SCR.~~

~~The operator shall also install and maintain a device to continuously record the parameter being measured.~~

~~The measuring device or gauge shall be accurate to within plus or minus 5 percent. It shall be calibrated once a month.~~

~~[**RULE 1303(a)(1)-BACT, 5-10-1996; RULE 2012, 5-6-2005**]~~

~~{Devices subject to this condition: [C3780](#)}~~

D12.40 The operator shall install and maintain a(n) differential pressure gauge to accurately indicate the differential pressure across the SCR catalyst beds in inches water column except during calibration checks, or routine maintenance and repair lasting 60 minutes or less.

The measuring device or gauge shall be accurate to within +/- 5 percent. It shall be calibrated once every twelve months.

The operator shall also install and maintain a device to continuously record the parameter being measured except during calibration checks, or routine maintenance and repair lasting 60 minutes or less.

For the purpose of this condition, continuously record shall be defined as recording at least once every week and shall be calculated based upon the average of the continuous monitoring for that week.

In the event of a monitoring and/or recording system malfunction or failure, which exceeds 24 hours, the operator shall notify the Executive Officer within 24 hours or the next working day. During the system failure, compliance with the requirement to continuously monitor and record data is waived for a period not to exceed 96 consecutive hours.

[**RULE 1303(a)(1)-BACT, 5-10-1996**]

{Devices subject to this condition: C2213, [C3780](#)}

D12.42 The operator shall install and maintain a(n) temperature reading device to accurately indicate the temperature at the inlet to the SCR catalyst bed except during calibration checks, or routine maintenance and repair lasting 60 minutes or less.

The measuring device or gauge shall be accurate to within +/- 5 percent. It shall be calibrated once every 12 months.

The operator shall also install and maintain a device to continuously record the parameter being measured except during calibration checks, or routine maintenance and repair lasting 60 minutes or less.

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For the purpose of this condition, continuously record shall be defined as recording at least once every hour and shall be calculated based upon the average of the continuous monitoring for that hour.

In the event of a monitoring and/or recording system malfunction or failure, which exceeds 24 hours, the operator shall notify the Executive Officer within 24 hours or the next working day. During the system failure, compliance with the requirement to continuously monitor and record data is waived for a period not to exceed 96 consecutive hours.

[RULE 1303(a)(1)-BACT, 5-10-1996]

[Devices subject to this condition: C2213, [C3780](#)]

~~D28.21~~ The operator shall conduct source test(s) in accordance with the following specifications:

~~The test shall be conducted within 90 days after achieving maximum production rate, but no later than 180 days after initial startup.~~

~~The test shall be conducted when this equipment is operating at 80 percent or greater of the maximum design capacity. If the equipment is not capable of operating at this required load, then the source test may be conducted at a lower load and the operation of the equipment limited to 115% of the level at which the source test was conducted until an additional source test is conducted at a higher operating rate.~~

~~The test shall be conducted as indicated above and at all times, the equipment operation shall be limited to 115% of the maximum duty which source test has been conducted that demonstrates compliance with all applicable limits. After an initial source test has been conducted that demonstrates with all applicable emission limits at 80% or greater of the maximum design capacity, then the limit on the equipment from that time thereafter shall be considered to be the maximum design duty.~~

~~The District shall be notified of the date and time of the test at least 10 days prior to the test.~~

~~The test shall be conducted only at the outlet of the APC device serving the equipment.~~

~~The test shall be conducted to determine the NO_x emissions.~~

~~The test shall be conducted to determine the SO_x emissions.~~

~~The test shall be conducted to determine the non-methane hydrocarbon emissions.~~

~~The test shall be conducted to determine the PM₁₀ emissions.~~

~~The test shall be conducted to determine the CO emissions.~~

~~The test shall be conducted to determine the total particulates emissions.~~

~~The test shall be conducted to determine the oxygen concentration.~~

~~The test shall be conducted to determine the ammonia emissions.~~

~~The test shall be conducted to determine the cadmium emissions.~~

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The test shall be conducted to determine the nickel emissions.

The test shall be conducted to speciate organic compounds at the outlet using District approved methods.

The test shall be conducted to demonstrate compliance with the emission limits of 5 ppmv NO_x, 25 ppmv CO and 9 ppmv NH₃, all at 3 percent oxygen, dry basis, three hour average for NO_x & NH₃, and one hour average for CO.

The test shall be conducted to determine and report the mass emission rate in pounds per day for NO_x, SO_x, ROG, CO, Total PM and PM10.

The test shall be conducted every five years after the initial source test for NO_x, SO_x, ROG, CO, PM10, total PM, NH₃ and O₂. Subsequent test for CO, NH₃ and O₂ shall be conducted until their required CEMS are certified by the District .

Once certified, source test data may be substituted with CEMS data.

The test shall be conducted for NO_x and SO_x (for initial and subsequent testing) until their CEMS are Reclaim certified. Once certified, source test data may be substituted with CEMS data. Chevron may choose to conduct CO testing every three years, or concurrently with a RATA (9 x 30 minute runs).

The test shall be conducted after District approval of a source test protocol submitted in accordance with Section E—Administrative Conditions.

The test shall be conducted and test report submitted to the District in accordance with Section E—Administrative Conditions.

~~[RULE 1303(b)(2) Offset, 5-10-1996; RULE 2005, 4-20-2001; RULE 3004(a)(4)-Periodic Monitoring, 12-12-1997; RULE 407, 4-2-1982]~~

~~[Devices subject to this condition: **D3778**]~~

[Note: Chevron has performed all testing as required. This condition will be replaced with condition D29.17.

D29.17 The operator shall conduct source test(s) for the pollutant(s) identified below.

<u>Pollutant(s) to be tested</u>	<u>Required Test</u>	<u>Averaging Time</u>	<u>Test Location</u>
<u>NO_x emissions</u>	<u>District Method 100.1</u>	<u>1 hour</u>	<u>Stack Outlet</u>
<u>SO_x emissions</u>	<u>District Method 100.1 or 6.1</u>	<u>1 hour</u>	<u>Stack Outlet</u>
<u>CO emissions</u>	<u>District Method 100.1 or 10.1</u>	<u>1 hour</u>	<u>Stack Outlet</u>
<u>ROG emissions</u>	<u>District Method 25.1 or 25.3</u>	<u>1 hour</u>	<u>Stack Outlet</u>
<u>PM emissions</u>	<u>District Method 5.2</u>	<u>District-approved averaging time</u>	<u>Stack Outlet</u>
<u>PM10 emissions</u>	<u>EPA Method 201A</u>	<u>District-approved averaging time</u>	<u>Stack Outlet</u>

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NH3 Emissions

District Method 207.1

District-approved averaging time

Stack Outlet

The test shall be conducted when this equipment is operating at 80 percent or greater of its maximum design capacity or within a capacity approved by the District.

The test shall be conducted to determine and report the concentration and mass emission rate in pounds per day for NO_x, SO_x, ROG, CO, Total PM and PM₁₀.

The test shall be conducted at least every five years. Once certified, CO, NO_x and NH₃ source test data may be substituted with CEMS data. The CEMS data shall be included in the source test report.

The District shall be notified of the date and time of the test at least 10 days prior to the test.

The test shall be conducted after District approval of a source test protocol submitted in accordance with Section E - Administrative Conditions.

The test shall be conducted and test report submitted to the District in accordance with Section E - Administrative Conditions.

[RULE 1303(a)(1)-BACT, 5-10-1996; RULE 1303(b)(2)-Offset, 5-10-1996; RULE 1401, 3-5-2005; RULE 3004(a)(4)-Periodic Monitoring, 12-12-1997; RULE 407, 4-2-1982]

[Devices subject to this condition : [D3778](#), [C3780](#)]

D82.5 The operator shall install and maintain a CEMS to measure the following parameters:

~~The CEMS shall be installed prior to the operation of the equipment. It shall be certified by the District within one year of the date of its operation.~~

CO concentration in ppmv

NO_x concentration in ppmv

NH₃ concentration in ppmv

Oxygen concentration in percent volume

CO, NO_x and NH₃ concentrations shall be corrected to 3 percent oxygen on a dry basis.

The CEMS will convert the actual NO_x and CO concentrations to mass emission rates (lbs/hr) and record the hourly emission rates on a continuous basis.

The NH₃ CEMS shall be accurate to within plus or minus 20 percent relative accuracy. It shall be calibrated at least once every 12 months or as outlined in the Quality Control and Performance Evaluation plan.

[RULE 1303(a)(1)-BACT, 5-10-1996; RULE 2012, 5-6-2005; RULE 3004(a)(4)-Periodic Monitoring, 12-12-1997; RULE 407, 4-2-1982]

[Devices subject to this condition: [D3778](#), [C3780](#)]

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D90.20 The operator shall continuously monitor the H2S concentration in fuel gases before being burned in this device according to the following specifications:

The operator shall use Gas Chromatograph meeting the requirements of 40CFR60 Subpart J to monitor the parameter.

The operator shall also install and maintain a device to continuously record the parameter being monitored.

The operator may monitor the H2S concentration at a single location for fuel combustion devices, if monitoring at this location accurately represents the concentration of H2S in the fuel gas being burned in this device.

[40CFR 60 Subpart J, 6-24-2008]

[Devices subject to this condition: D84, D471, D472, D473, D641, D643, D2198, D2199, D2207, D2208, D2216, D3031, D3054, D3530, **D3778, D3973**]

E54.14 The operator is not required to vent this equipment to the following equipment if all of the requirements listed below are met:

Device ID: C3780 [SELECTIVE CATALYTIC REDUCTION, R-4540]

Requirement number 1: During startups and shutdowns. For the purpose of this condition, start-up and shutdown shall be defined as the time period during the startup and shutdown of the heater when the temperature of the exhaust gas at the inlet to SCR is below 450 degree F.

[RULE 1303(a)(1)-BACT, 5-10-1996]

[Devices subject to this condition: **D3778**]

~~**E71.17** The operator shall only operate this equipment if Heater F-4531 (D389) is removed from service prior to startup.~~

~~**[RULE 1303(b)(2)-Offset, 5-10-1996]**~~

~~[Devices subject to this condition: **D3778**]~~

[**Note:** The old F-4531 heater has been dismantled and removed from the refinery.]

E71.19 The operator shall only inject ammonia into this equipment if the flue gas inlet temperature is at least 450 degrees F.

[RULE 1303(a)(1)-BACT, 5-10-1996]

[Devices subject to this condition: **C3780**]

H23.2 This equipment is subject to the applicable requirements of the following rules or regulations:

Contaminant	Rule	Rule/Subpart
H2S	40CFR60, Subpart	J

[40CFR 60 Subpart J, 6-24-2008]

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[Devices subject to this condition: D84, D471, D472, D473, D641, D643, D3031, C3148, D3530, **D3778**, C3805, C3806, D3973]

H23.19 This equipment is subject to the applicable requirements of the following rules or regulations:

Contaminant	Rule	Rule/Subpart
VOC	District Rule	1173
VOC	40CFR60, Subpart	GGG

[RULE 1173, 5-13-1994; RULE 1173, 2-6-2009; 40CFR 60 Subpart GGG, 6-7-1985]

[Devices subject to this condition: D196, D633, D1047, D1048, D1049, D1054, D1929, D1930, D3522, D3527, D3580, D3581, D3583, **D3585**, D3587, D3589, D3613, D3622, D3636, D3638, D3652, D3653, D3675, D3726, D3803, D4303, D4353]

H23.50 This equipment is subject to the applicable requirements of the following rules or regulations:

Contaminant	Rule	Rule/Subpart
HAP	40CFR63, Subpart	DDDDD

[40CFR 63 Subpart DDDDD, 4-1-2013]

[Devices subject to this condition: **D3778]**

~~**K67.24** The operator shall keep records, in a manner approved by the District, for the following parameter(s) or item(s):~~

~~Calibration data on the NH₃ to NO_x injection ratio continuous monitoring system.~~

~~Duration of startup and shutdown.~~

~~Ammonia injected to emitted NO_x mole ratio.~~

~~NH₃ emission in ppmv at 3 percent oxygen, dry basis, 3-hour ave.~~

~~Records shall be kept and maintained for at least two years, and shall be made available to the Executive Officer or his authorized representative upon request. Once the Title V permit is issued, records shall be maintained for five years.~~

~~**[RULE 1303(a)(1) BACT, 5-10-1996; Rule 1303(b)(2) Offset, 5-10-1996; RULE 2005, 5-6-2005]**~~

~~[Devices subject to this condition: **C3780**]~~

[Note: This condition is being deleted for the following reasons:

- Recordkeeping for the NH₃ injection rate is specified in device condition D12.20 and administrative condition no. 21 in Section K of the Title V permit.
- Recordkeeping for SU and SD is specified in device condition C1.85.
- Recordkeeping for CEMs data is specified in administrative condition no. 21 in Section K of the Title V Permit.]

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~~K67.26~~ The operator shall keep records, in a manner approved by the District, for the following parameter(s) or item(s):

~~Duration of Refractory Dryout, Startup and Shutdown.~~

~~Firing Rate.~~

~~NOx (as NO2) emission in ppmv at 3 percent oxygen, dry basis, 3 hour ave.~~

~~Source test data on VOC, PM10 and CO emissions.~~

~~Records shall be kept and maintained for at least two years, and shall be made available to the Executive Officer or his authorized representative upon request. Once the Title V permit is issued, records shall be maintained for five years.~~

~~[RULE 1303(a)(1)-BACT, 5-10-1996; Rule 1303(b)(2)-Offset, 5-10-1996; RULE 2012, 5-6-2005]~~

~~[Devices subject to this condition: D3778]~~

[Note: This condition is being deleted for the following reasons:

- Recordkeeping for duration of refractory dryout, SU and SD is specified in device condition C1.85.
- Recordkeeping for firing rate is specified in device condition C1.83.
- Recordkeeping for NOx CEMs data is specified in the Title V Permit in condition no. 11 in Section G and administrative condition no. 21 in Section K
- The requirement to submit a source test report is specified in device condition D29.17 and administrative condition no. 10 in Section E in the Title V permit.]

K171.1 The operator shall provide to the District the following items:

Final drawings and/or specifications of the equipment installed/constructed shall be submitted to the District within 60 days prior to the operation of the equipment.

[RULE 1303(a)(1)-BACT, 5-10-1996; RULE 1303(b)(2)-Offset, 5-10-1996]

[Devices subject to this condition: D3778, D3783, D3790, D3791, D3792, D3793, D3794, D3795, D3796]

[Note: Chevron has provided the required drawings.]

~~K171.2~~ The operator shall provide to the District the following items:

~~Final drawings and/or specifications of the equipment installed/constructed, including details on the catalyst used and the ammonia injection grid shall be submitted to the District within 60 days prior to the operation of the equipment.~~

~~[RULE 1303(a)(1)-BACT, 5-10-1996]~~

~~[Devices subject to this condition: C3780]~~

[Note: Chevron has provided the required drawings.]

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FEE ANALYSIS

As shown in the following table, Chevron has paid all applicable fees for all of the subject applications.

Summary of Fee Analysis

A/N	Equipment Description	BCAT/ CCAT	Fee Schedule	Fee Type	Fiscal Year (1)	Fee
405265	Selective Catalytic Reduction	81 (CCAT)	C	Change of Condition	02-03	\$ 1,175.13
405267	Heater/Furnace (>50 MMBtu/Hr) Process Gas	019605 (BCAT)	E	Change of Condition	02-03	\$ 2,950.83
Total						\$ 4,125.96
Fees Paid						\$ 4,125.96
Outstanding Balance						\$ 0.00

(1) Based on the date that the application was submitted.

PERMIT HISTORY

Permit History for Naptha Hydrotreater No. 1

Permit to Construct		Permit to Operate		Description of Modification
No.	Issue Date	No.	Issue Date	
A63128	4/28/71	P48179	1/17/72	Original construction.
C18379	9/11/78	M12832	3/06/80	Installation of Sulfur Sorber (V-4536) & Desulfurizer Bottoms Pump (P-4537).
C41793	5/22/84	M45497	8/23/85	Installation of heat exchangers E-4531E & E-4531F.
289724	4/27/95	na.	na.	Installation of Hydrotreater Reactor R-4530 (D3003), Guard Reactor R-4533 (D3004), Desulfurizer Reflux Drum V-4534 (D3006) and associated heat exchangers. Also replaced some existing heater exchangers and pumps.
380597	3/08/02	na.	na.	Installation of Naphtha Feed Filter J-4530A/B (D3738) and associated pump & heat exchanger as part of the refinery's CARB Phase 3 Clean Fuels Project..

Permit History for Isomax NHT-1 Reactor Charge Heater (A/N 405267)

Permit to Construct		Permit to Operate		Description of Modification
No.	Issue Date	No.	Issue Date	
380611	1/24/02	na.	na.	Original Construction as part of the refinery's CARB Phase 3 Clean Fuels Project. The 78 MMBtu/hr furnace replaced an existing 36.7 MMBtu/hr furnace.
416188	8/28/03	na.	na.	Modification of the source test condition to allow performance of the ST at less than 80% of maximum design capacity. The firing rate is then limited to 115% of the rate at which the ST was performed.
405267	na.	na.	na.	Application for change of permit conditions that is being evaluated in this document.

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Permit History for NHT-1 Reactor Charge Heater SCR (A/N 405265)

Permit to Construct		Permit to Operate		Description of Modification
No.	Issue Date	No.	Issue Date	
380610	1/24/02	na.	na.	Original Construction as part of the refinery's CARB Phase 3 Clean Fuels Project.
419215	2/25/04	na.	na.	Changed the averaging period for the 9 ppmv NH3 limit from 1 hour to 3 hours.
405265	na.	na.	na.	Application for change of permit conditions that is being evaluated in this document.

COMPLIANCE RECORD REVIEW

There are no ongoing violations for any of the equipment covered in this evaluation.

PROCESS DESCRIPTION:

Naptha Hydrotreater No. 1 (Plant No. 45)

The main component of the NHT-1 is a series of three hydrogenation reactors. The naphtha feed to the unit is mixed with fresh and recycled hydrogen and heated in a train of heat exchangers and the reactor charge heater (F-4531) before entering the hydrogenation reactors (R-4531, R4532 & R4533; D367, D368 & D3004). In these reactors, the nitrogen compounds react with the hydrogen to form ammonia and the sulfur compounds react with the hydrogen to form hydrogen sulfide (H₂S). The reactors also convert olefins to saturated hydrocarbons. The product from the reactors is called Hydrobate.

The hydrobate from the reactors is cooled in a heat exchanger and cooler. Water is injected into the hydrobate stream between the heat exchanger and cooler to dissolve the ammonia and hydrogen sulfide, which combine into ammonium sulfide. Hydrogen, which is recycled back to the feed stream, is separated out of the hydrobate stream in the high pressure separator (V-4531; D369). Sour water is separated out of the hydrobate stream in both the high pressure separator and a low pressure separator (V-4533; D371). The pressure of the hydrobate stream is reduced in these separators.

The hydrobate stream from the low pressure separator is heated in the desulfurizer feed/bottoms exchanger train prior to being fed to the desulfurizer column (C-4531; D366) for removal of hydrogen sulfide, LPG (butanes and lighter) and water. The hydrobate (bottoms) stream from the desulfurizer column is cooled and sent to the sulfur sorber (V-4536; D374) for removal of trace amounts of hydrogen sulfide. The treated hydrobate stream is further cooled and sent to the Naphtha Prefractionator (P1S17) for separation into light hydrobate and heavy hydrobate.

The modifications made to the NHT-1 under PC A/Ns 289724 and 380597 are summarized below. Additional details are contained in the engineering evaluations for the subject PCs.

PC A/N 289724 – The primary modifications made under this PC were installation of Guard Bed Reactor R-4530 (D3003) upstream of the F-4531 Heater from removal of silicon and diolefins and installation of a third hydrogenation reactor (R-4533; D3004).

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Other modifications included:

- Installation of a reactor feed/effluent exchanger.
- Installation of the Desulfurizer Reflux Drum V-4534 (D3006).
- Addition of a desulfurizer reboiler preheater with condenser pot.
- Addition of two injection water strainers.
- Replacement of the following equipment: desulfurizer overhead condensers, reactor effluent coolers, stripper feed pumps, reactor feed pumps, desulfurizer reflux pumps, and desulfurizer feed/bottoms exchangers.

PC A/N 380597 – The modifications made under this PC included installation of a new fin fan exchanger on the hydrogenation reactor effluent, E-4536, addition of new feed filters, J-4530A/B (D3783), and modification of the feed charge pumps, P-4531 /A. Installation of the new hydrogen reactor effluent (hydrobate) finfan cooler and modification of the feed pumps were required to process the increased throughput. The new feed filters were needed to reduce fouling of the Reactor Charge HXs, E-4531A-C to meet operating temperature requirements of the Guard Bed Reactor R-4530 and F-4531 Heater.

According to Chevron, all of the modifications were made as proposed.

NHT-1 Reactor Charge Heater (F-4531) and SCR

The F-4531 Heater, which has a maximum permitted heat input rating of 78 MMBtu/hr is equipped with eight (8) John Zink QMR-CR-PC-16 low NOx burners. John Zink guarantees the burner CO and NOx emissions to be less than 25 and 50 ppmv (3% O2), respectively. It normally operates around 50% of the maximum capacity. Refinery fuel gas is the primary fuel and natural gas is a secondary fuel. To improve efficiency, the heater is equipped with a combustion air preheating system consisting of a forced draft fan (K-4540/A), induced draft fan (K-4541/A), cold air preheater (E-4540) and hot air preheater (E-4542).

The furnace is equipped with a selective catalyst reduction (SCR) system for additional NOx control. The SCR catalyst utilizes injected ammonia in the presence of the catalyst to reduce NOx concentrations. Diluted ammonia vapor is injected into the exhaust gas stream via a grid of nozzles located upstream of the catalyst module. The specifications for the SCR are contained in the table below.

Specifications for Selective Catalyst Reduction (SCR)

Catalyst Properties	Specifications
Manufacturer	Haldor Topsoe
Catalyst Type	DNX 930, Monolithic Catalyst
Catalyst Description	Ti-V-W
Catalyst Dimensions	5 ft 6 in (h) x 20 ft (w) x 7 ft 3 in (l)
Catalyst Volume	92.2 ft ³
Design Space Velocity	18,450 hr ⁻¹
Minimum Operating Temperature	450°F
Ammonia Injection Rate	6.5 lb/hr aqueous ammonia (30% by weight)
NOx Removal efficiency	89 percent

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The F-4531 Heater and associated air pollution control system is subject to the following stack gas emission limits: CO – 25 ppmv (1 hr. avg., 3% O₂); NO_x – 5 ppmv (3 hr. avg., 3% O₂); and NH₃ – 9 ppmv (3 hr. avg., 3% O₂). The CO, NO_x and NH₃ CEMS data for May through July 2012 was reviewed. As seen in the table below, compliance with each of these limits was demonstrated.

Pollutant	Stack Gas Concentration Limit	Average Stack Gas Conc. (1)	Maximum Stack Gas Conc. (1)
CO	25 ppmv (1 hr. avg., 3% O ₂)	2.2	15.9
NO _x	5 ppmv (3 hr. avg., 3% O ₂)	1.9	3.5
NH ₃	9 ppmv (3 hr. avg., 3% O ₂)	2.6	8.2

(1) Based on CEMS data for May through July 2012.

The following parameter monitoring data for May through July 2012 was also reviewed: ammonia flow rate, SCR inlet temperature, and SCR differential pressure. While there are no permit limits on these parameters, they were within expected operating ranges during this period.

CALCULATIONS

NHT-1 Reactor Charge Heater (F-4531) - Combustion Emissions

None of the proposed changes of permit conditions will impact the maximum potential emissions of CO, NO_x, PM₁₀, VOC, SO_x or toxic air contaminants from combustion of natural gas or refinery fuel gas in the F-4531 Heater. The heater was subject to NSR upon original construction in 2002. This section contains a review of the emission estimates for original construction of the heater under A/N 380611.

Some of the emission increases for the new heater were offset through contemporaneous emission reductions achieved by shutdown of the existing heater. As specified in Rule 1304(c)(2), *an exemption from the offset requirement of Rule 1303(b)(2) shall be allowed for a source that is part of a concurrent facility modification with emission reductions occurring after the submittal of an application for a permit to construct a new or modified source, but before the start of operation of the source, provided that it results in a net emission decrease, as determined by Rule 1306.* The methodology for calculating emission increases and emission decreases is specified in Rule 1306(b) and Rule 1306(c), respectively.

The emission decrease for shutdown of the old heater was calculated per Rule 1306(c) as the average daily emissions for the last two year period prior to the processing of A/N 380611. The emission increase for the new heater was calculated per Rule 1306(b) as the maximum potential emissions based on combustion of natural gas and/or refinery fuel gas at the maximum permitted heater capacity of 78 MMBtu/hr for 24 hr/day and 365 day/yr.

As seen in Appendix J of the engineering evaluation for PC A/N 380611, the emission factors in the table below were utilized to estimate the maximum potential emissions.

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Emission Factors utilized to Estimate Max. PTE

CO (lb/MMBtu)	PM10 (lb/MMBtu)	VOC (lb/MMBtu)	NOx (lb/MMBtu)	SO2 (lb/MMScf)
0.019 (1)	0.01 (2)	0.006 (3)	0.00625 (4)	6.76 (5)

- (1) Based on max. permitted exhaust gas concentration of 25 ppmvd at 3% O2.
- (2) Based on vendor guarantee.
- (3) Based on vendor guarantee of 10 ppmvd at 3% O2.
- (4) Based on max. permitted exhaust gas concentration of 5 ppmvd at 3% O2.
- (5) Based on max. permitted fuel sulfur concentration of 40 ppmv.

The net change in combustion emissions for replacement of the NHT-1 Reactor Charge Heater is shown in the table below.

Change in Estimated Combustion Emissions for Replacement of the NHT-1 Heater

Pollutant	New Heater (1) (lb/day)	Old Heater (2) (lb/day)	Net Change in Emissions (lb/day)
CO	35.57	24.06	+11.51
PM10	18.72	5.16	+ 13.56
VOC	11.23	4.81	+ 6.42
NOx	11.70	41.13	- 29.43
SOx	12.16	3.58	+ 8.58

- (1) Based on maximum potential emissions. See Appendix L of engineering evaluation for A/N 380611.
- (2) Based on two-year average emissions for 1999 – 2000. See Appendix K of engineering evaluation for A/N 380611.

SCR – Ammonia Emissions

Ammonia is the only pollutant that is generated and emitted directly from the subject SCR. To achieve optimum NOx reduction efficiency, greater than stoichiometric amounts of ammonia are injected upstream of the catalyst. The excess ammonia that flows through the SCR system is commonly referred to as ammonia “slip”. The amount of ammonia slip is limited through a stack gas ammonia concentration limit of 9 ppmv (@ 3% O2) as specified in the “Emissions and Requirements” column of the permit. The estimate of maximum potential ammonia emissions is based on the maximum permitted heat input of the F-4531 Heater and the subject 9 ppmv ammonia concentration limit. This ammonia emission estimate is documented below.

$$\begin{aligned}
 \text{NH}_3 \text{ Emissions} &= 78 \text{ MMBtu/hr} \times \left(\frac{\text{ppmvd}}{1000000} \right) \times \text{MW} \times \left(\frac{1}{\text{MV}} \right) \left(\frac{20.9}{17.9} \right) \times \text{Fd} \times 24 \times 365 \\
 &= 2,802 \text{ lb/yr} \\
 &= 7.8 \text{ lb/day (30-day avg.)}
 \end{aligned}$$

where,

$$\begin{aligned}
 \text{ppmvd} &= \text{Pollutant concentration limit at stack outlet at 3\% O}_2\text{, dry basis} \\
 &= 9 \text{ ppmv}
 \end{aligned}$$

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MW = Molecular weight = 17 lb/lb-mol
 MV = Molar volume at 60°F = 379.5 dscf/lb-mol
 F_d = Dry oxygen f-factor for natural gas = 8,710 dscf/MMBTU

Fugitive VOC Emissions

The NHT-1 and the F-4531 Heater permit units both contain VOC service fugitive components such as valves, pumps, compressors, process drains, pressure relief valves, flanges and connectors that may periodically leak VOC containing gases or liquids. VOC emissions for these fugitive components are estimated by multiplying the total number of each fugitive component type by an appropriate emission factor. The emission factors that were utilized in the engineering evaluations for the subject PCs were developed for estimation of fugitive component VOC emissions for the CARB Reformulated Fuels Projects at the refineries in the South Coast Basin. The District has subsequently switched to the use of fugitive emission factors based on correlation equations from the *California Implementation Guidelines for Estimating Mass Emissions of Fugitive Hydrocarbon Leaks at Petroleum Facilities* (CARB/CAPCOA - 1999).

The fugitive components in the F-4531 Heater permit unit are primarily related to the refinery fuel gas supply system. For the PC A/Ns 380611 and 416188, an independent fugitive VOC baseline was not established for the heater. It appears that the components were included in the count for the NHT-1. As seen in [Appendix A](#) of this evaluation, the estimated fugitive VOC emissions for the heater based on a current (August 2012) fugitive component count are 4.53 lb/day using the CARB Reformulated Fuels Project fugitive emission factors and 6.65 lb/day using the CARB/CAPCOA emission factors. The total VOC emissions for the heater, including fugitive and combustion emissions, are 17.88 lb/day [6.65 lb/day + 11.23 lb/day].

As seen in [Appendix B](#), the estimated fugitive VOC emissions for the NHT-1 permit unit based on a current (August 2012) fugitive component count are 70.97 lb/day using the CARB Reformulated Fuels Project fugitive emission factors and 81.52 lb/day using the CARB/CAPCOA emission factors. All of the fugitive VOC estimates are on a 30-day average basis calculated as the annual VOC emissions divided by 360.

PC A/N 289724 – Permit condition S31.14 required Chevron to provide a post-construction recalculation of the fugitive VOC emission change for the NHT-1 based on the actual number of components installed and removed from service under this PC. There are indications in the application file that Chevron provided the required recalculation in 1996 but the document cannot be located in the file and Chevron has been unable to locate a copy of the document. It was estimated in the PC evaluation that the project would cause a reduction in fugitive VOC emissions of 30.42 lb/day. It is not possible to confirm the actual fugitive VOC emission reduction. In the PC evaluation, the pre-project fugitive VOC emission baseline was estimated to be 127.83 lb/day.

PC A/Ns 380597 and 380611 - Permit condition S31.15 required Chevron to provide a post-construction recalculation of the fugitive VOC emission change under A/Ns 380597 for NHT-1 and 380611 for the F-4531 Heater based on the actual number of components installed and removed from service. Chevron provided a combined count of actual components installed and removed from both permit units. Based on this post-construction count, the permit units had a combined actual fugitive VOC emission increase of 5.38 lb/day

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versus the pre-construction estimated fugitive VOC emission increase of 1.7 lb/day. Based on information provided in the pre- and post-construction fugitive estimates, it is believed that the VOC emission increase for the F-4531 Heater is slightly higher than the NHT-1. Therefore, 3 lb/day of this VOC emission increase will be attributed to the F-4531 Heater and 2.38 lb/day will be attributed to the NHT-1.

EVALUATION OF REQUESTED CHANGES OF PERMIT CONDITIONS

This section contains a review and analysis of the permit condition changes proposed by Chevron for the F-4531 Heater and associated SCR.

Naphtha No. 1 Reactor Charge Heater

1. Specify a 60-minute averaging period for the 25 ppmv CO limit.

An averaging period is not currently specified for the subject CO concentration limit. The averaging period is not discussed in the engineering evaluation or associated documentation for the original permit to construct for the heater. CO emission limits are routinely specified with a 60-minute (1-hr) averaging period. In an August 7, 2007 SCAQMD Policies and Procedures memo from Mr Mohsen Nazemi, it is specified that BACT emission limits for all new permits for combustion equipment shall be imposed on a one-hour averaging period. This is consistent with the shortest averaging period for Federal and State Ambient Air Quality Standards (AAQSs). It is also specified that conversion of a BACT limit to a one hour averaging period from a shorter averaging period would probably not trigger an NSR event if the hourly emission of the equipment is not increased.

Since an averaging period is not specified for the CO limit, it is appropriate to specify an averaging period of 1 hour. Specification of a 1 hour averaging period has no impact on the estimated maximum potential CO emissions under NSR. Therefore, for consistency with other CO emission limits, it is recommended that a 1 hour averaging period be specified for the CO limit. Condition A195.27, which will specify that the CO limit is averaged over a 1 hour period at 3% O₂, will be tagged to the HNT-1 Heater (D3778).

2. Delete the requirement to keep records of CO source test data from condition K67.26.

As discussed in the *Conditions* section of this evaluation, removal of recordkeeping condition K67.26 is recommended. The requirement to submit a source test report including CO data will be specified in proposed device condition D29.17. The requirement to submit a source test report is also included in administrative condition no. 10 in Section E in the Title V permit.

3. Add a new condition E54.xx to allow bypass of the SCR during startups and shutdowns of the heater.

The SCR does not effectively control NO_x until the inlet temperature exceeds 450°F. Agree that it is appropriate to bypass the SCR during heater startup and shutdown if the temperature is below 450°F. Recommend adding the following condition:

E54.14 The operator is not required to vent this equipment to the following equipment if all of the requirements listed below are met:

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Device ID: C3780 [SELECTIVE CATALYTIC REDUCTION, R-4540]

Requirement number 1: During startups and shutdowns. For the purpose of this condition, start-up and shutdown shall be defined as the time period during the startup and shutdown of the heater when the temperature of the exhaust gas at the inlet to SCR is below 450 degree F.

NHT-1 Reactor Charge Heater SCR

1. Delete condition D12.20, which specifies a continuous monitoring system and recorder for the ammonia-to-emitted NOx mole ratio

This requirement was included in the permit to collect data for informational purposes only since the permit does not include a limit on ammonia-to-emitted NOx. This information is of very limited value since the stack is equipped with both ammonia and NOx CEMS. Recommend removing this condition.

2. Delete the following language in recordkeeping condition K67.24: “ammonia injected to emitted NOx mole ratio” and “calibration data on the NH3 to NOx injection ratio continuous monitoring systems”.

Also recommend removing the subject recordkeeping requirements for the ammonia-to-emitted NOx monitoring system.

3. Replace monitoring condition D12.3 for SCR differential pressure with D12.40 and D12.19 for SCR inlet temperature with D12.42. These replacement monitoring and recording conditions include the following language that mirrors the failure, calibration, routine maintenance and repair period allowances specified for CEMS in District Rule 218(f)(3).
 - The operator shall notify the Executive Officer within 24 hours or the next working day, in the event of a system failure or shutdown, which exceeds 24 hours. Zero and calibration checks and routine maintenance do not require reporting.
 - In the case of a CMD failure or shutdown, compliance with permit requirements to monitor and record data is waived for a period not to exceed 96 consecutive hours.
 - Continuous parameter monitoring and recording requirements shall not apply during calibration checks, routine maintenance and repairs lasting 60 minutes or less.

CEMS is defined in Rule 218 as the total combined equipment and systems required to continuously determine air contaminants and diluent gas concentrations and/or mass emission rate of a source effluent. Mass emission monitoring systems normally utilize fuel flow monitors or stack flow monitors, which, in turn, usually utilize temperature, pressure, and differential pressure monitoring systems for continuous measurement of fuel or stack gas properties. The CEMS also includes a data acquisition system to continuously record contaminant concentration and parameter monitoring data. All of the monitoring and recording equipment in the CEMS are subject to the failure, calibration, routine maintenance and repair period allowances specified for CEMS in District Rule 218(f)(3).

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It is judged that the Rule 218(f)(3) failure, calibration, routine maintenance and repair period allowances are also appropriate for the SCR differential pressure and temperature monitoring and recording systems specified in conditions D12.3 and D12.19, respectively. The subject monitoring systems are utilized for informational purposes only since the permit does not include limits on SCR differential pressure and temperature. Additionally, the F-4531 Heater is equipped with a NOx CEMS to demonstrate compliance with the NOx concentration limit.

Conditions D12.3 and D12.19 will be replaced by conditions D12.40 and D12.42, respectively. These conditions include the Rule 218(f)(3) failure, calibration, routine maintenance and repair period allowances. Inclusion of appropriate maintenance, repair and calibration periods in these conditions is not considered to be a weakening of these BACT conditions and is not expected to materially impact operation or emissions of the F-4531 Heater and SCR.

RULE COMPLIANCE REVIEW:

CALIFORNIA ENVIRONMENTAL QUALITY ACT (CEQA)

The California Environmental Quality Act (CEQA), Public Resources Code Section 21000 et seq., requires that the environmental impacts of proposed “projects” be evaluated and that feasible methods to reduce, avoid or eliminate significant adverse impacts of these projects be identified and implemented. According to the District’s CEQA Guidelines, the net emission increase thresholds for significant effect are:

VOC: 55 lb/day
 PM10: 150 lb/day
 CO: 274 lb/day

PC A/N 289724 was issued as part of Chevron’s project to comply with Phase 2 of the CARB Clean Fuels Project. CEQA requirements were addressed through an environmental impact report (EIR) with the AQMD as the lead agency. The final EIR was certified by the AQMD on May 9, 1995. PC A/Ns 380597, 380610 and 380611 were issued as part of Chevron’s project to comply with Phase 3 of the CARB Clean Fuels Project. The final EIR for this project was certified by the AQMD on November 30, 2001. There are no ongoing requirements related to these EIRs.

The proposed permit condition changes in A/Ns 405765 and 405767 do not cause an increase in the emission of any air pollutants and there are no other significant environmental impacts. On the 400-CEQA form, Chevron marked “No” to all of the additional criterion that may trigger CEQA. For these reasons, CEQA does not apply for the proposed permit condition changes.

REGULATION II: PERMITS

Rule 212: Standards for Approving Permits

Public notice was required for all PCs, including A/Ns 289724, 380597, 380610 and 380611, issued under Chevron’s projects for compliance with Phase 2 and 3 of the CARB Clean Fuels Projects since emission increases for some of the criteria pollutants exceeded Rule 212(g)

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thresholds. As discussed below, public notice is not required for the condition changes proposed under A/Ns 405267 and 405269.

212(c)(1): Public notice is required for a project if any of the modified permit units are located within 1000 feet of a school. Public notice is not required for the proposed permit condition changes since there are no schools located within a 1000 feet of the heater and SCR.

212(c)(2): Public notice is required for any “new or modified facility”, which has on-site emission increases exceeding any of the daily maximums specified in subdivision (g) of Rule 212. Public notice is not required under this clause since the proposed condition changes do not cause an increase in the emission of any pollutants.

212(c)(3): Public notice is required for any new or modified permit units that have an increase in toxic air contaminants that results in an increase of maximum individual cancer risk (MICR) of more than one in a million (1×10^{-6}) during a lifetime (70 years).

Public notice is not required under this clause since the proposed condition changes do not cause an increase in the emission of any toxic air contaminants.

212(g): 212(g) specifies that any new or modified sources subject to Regulation XIII which undergo construction or modifications resulting in an emissions increase exceeding any of the daily maximum emission thresholds (listed in the table above) will require notification. From Regulation XIII (Rule 1302), the definition of “Source” is any permitted individual unit, piece of equipment, article, machine, process, contrivance, or combination thereof, which may emit or control an air contaminant. This includes any permit unit at any non-RECLAIM facility and any device at a RECLAIM facility.

Public notice is not required under this clause since the proposed condition changes do not cause an increase in the emission of any pollutants.

Rule 218 – Continuous Emission Monitoring

The rule sets certification standards and QA/QC procedures for CEMS that are required by permit conditions and/or regulations with the following exceptions:

- CEMS subject to RECLAIM (Regulation XX); Regulation IX - “New Source Performance Standards (NSPS)”, Regulation X - National Emission Standards for Hazardous Air Pollutants (NESHAPS), or Regulation XXXI - "Acid Rain Program".
- CEMS subject to permit conditions where the purpose of the CEMS is to monitor the performance of the basic and/or control equipment and not to determine compliance with any applicable limit or standard.
- CEMS where alternative performance specifications are required by another District rule.

The CO CEMS for the F-4531 Heater is subject to the requirements of this rule. The NOx CEMS and fuel sulfur monitoring system are not subject to this rule since they are subject to RECLAIM.

Requirements [218(c)(1)]:

CEMS Certification: An applicant must choose one of the following options for certification, operation, and maintenance of a CEMS:

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- Certify the CEMS according to District Rule 218.1(b) and operate and maintain the CEMS according to Rule 218(b), (e), (f) and (g) and Rule 218.1(b) and (d), or,
- Certify the CEMS according to 40CFR60 (NSPS) Appendix B - "Performance Specifications" and operate and maintain the CEMS according to Rule 218(b), (e), (f) and (g) and 40CFR60 Appendix F - "Quality Assurance Procedures"

Chevron chose to certify, operate, and maintain the subject CO CEMS according to the second (NSPS) option. The subject CO CEMS met all certification requirements and received approval from the District Source Test Group. A copy of the District's approval letter is contained in the [engineering file](#).

Chevron has been performing the QA/QC audits of the CO CEMS required under this rule. A copy of the summary and cover pages for the report of the most recent (2nd quarter 2012) CO CEMS CGA is contained in the [engineering file](#). The CEMS passed this CGA. Compliance with the requirements of this regulation is expected.

REGULATION IV - PROHIBITIONS

Rule 401: Visible Emissions

This rule specifies that a person shall not discharge emissions from a source for a period or periods aggregating more than three minutes in any one hour which are as dark or darker in shade as that designated No. 1 on the Ringelmann Chart or emissions of such opacity that it obscures an observers view to an equal or greater level. This is equivalent to opacity of 20%.

Visible emissions are not normally an issue with natural gas and refinery fuel gas fired process heaters or process units such as the NHT-1. There is no history of visible emissions for either permit unit. Compliance with this rule is expected.

Rule 402: Nuisance

This rule requires that a person not discharge from any source whatsoever such quantities of air contaminants or other material which cause injury, detriment, nuisance, or annoyance to any considerable number of persons or to the public, or which cause, or have a natural tendency to cause injury or damage to business or property.

Nuisance is not normally an issue with natural gas and refinery fuel gas fired process heaters and process units such as the NHT-1. There is no history of nuisance for either of these permit units. Compliance with this rule is expected.

Rule 404: Particulate Matter – Concentration

This rule sets concentration limits for total PM (solid and condensable) emissions. The rule limit varies based on the quantity of exhaust gas (dry basis) discharged from a source.

As seen in the table below, the most recent PM source test of the heater demonstrated compliance with the PM emission limit of this rule. With the large margin of compliance shown by the source test, continued compliance with this regulation is expected.

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Test Date	Measured PM Concentration (gr/dscf)	Measured Stack Flow (dscfm)	Rule 404 Limit (gr/dscf)	Compliance Achieved
9/25/08	0.0022	11,032	0.076	Yes

Rule 405: Solid Particulate Matter – Weight

This rule sets solid PM mass emission limits for the processing of solid materials. It is not applicable to combustion sources such as the F-4531 Heater.

Rule 407: Liquid and Gaseous Air Contaminants

This rule contains the following emission limits:

- Carbon monoxide (CO) - 2,000 ppmv (dry; 15 minute average) [407(a)(1)]
- Sulfur Compounds - 500 ppmv (calculated as SO₂; 15 minute average) [407(a)(2)(B)]

CO Limit

The permit for the F-4531 Heater is conditioned with a CO emission limit of 25 ppmv. A copy of the hourly CO CEMS data for the May through July 2012 is contained in the [engineering file](#). The highest CO concentration measured by the CEMS during this period is 15.9 ppmv (1-hr avg.; 3% O₂). Compliance with the 2000 ppmv CO limit is expected.

Sulfur Compound Limit:

The 500 ppmv sulfur compound limit is subsumed by RECLAIM [Rule 2001(j)].

Rule 409: Combustion Contaminants

This rule contains a limit on combustion contaminants from the combustion of fuel of 0.23 gram per cubic meter (0.1 grain per cubic foot) of flue gas (15 minute avg. at 12% CO₂).

For the August 2008 source test, the measured PM was 0.0024 gr/scf (corrected to 12% CO₂). This result is well below the Rule 409 limit of 0.1 gr/dscf. With this large margin of compliance, continued compliance with this regulation is expected.

Rule 431.1: Sulfur Content of Gaseous Fuels

This rule is subsumed by RECLAIM [Rule 2001(j)] for SO_x RECLAIM facilities such as the Chevron Refinery.

Rule 474: Fuel Burning Equipment – Oxides of Nitrogen

This rule is subsumed by RECLAIM [Rule 2001(j)] for NO_x RECLAIM facilities such as the Chevron Refinery.

REGULATION IX - NEW SOURCE PERFORMANCE STANDARDS (NSPS)

40CFR60 Subpart J- Standards of Performance for Petroleum Refineries

The provisions of this subpart are applicable to fuel gas combustion device which commences construction or modification after June 11, 1973. Fuel gas combustion device is

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defined as “any equipment, such as process heaters, boilers and flares used to combust fuel gas, except facilities in which gases are combusted to produce sulfur or sulfuric acid”. Fuel gas is defined as any gas which is generated at a petroleum refinery and which is combusted. Fuel gas also includes natural gas when the natural gas is combined and combusted in any proportion with a gas generated at a refinery. The F-4531 Heater is subject to this regulation when combusting refinery fuel gas, which meets the definition of “fuel gas”.

This regulation has a limit of 160 ppm H₂S (3-hr avg.) for any fuel gas combusted in a fuel gas combustion device as specified in §60.104(a)(1). Fuel gas from the V-846 fuel drum is routinely well below 160 ppmv. A copy of the V-846 fuel sulfur GC hourly data for May through July 2012 is contained in the [engineering file](#). A review of this data shows that the average and maximum fuel TRS concentration during this time period was 19 ppmv and 29 ppmv, respectively. Continued compliance with the fuel H₂S limit is expected.

It is specified in §60.105(a)(3) and (4), that a fuel gas combustion device must be equipped with an instrument to continuously monitor the SO₂ concentration of the flue gas or, alternatively, an instrument that continuously monitors the H₂S concentration of the fuel gases that are combusted in the combustion device. The refinery fuel gas stream to the F-4531 Heater is supplied from the V-846 fuel mix drum, which is equipped with a fuel sulfur GC based continuous monitoring system for H₂S and total reduced sulfur (TRS).

§60.7(c) requires that “each owner or operator required to install a continuous monitoring device shall submit excess emissions and monitoring systems performance report and/or the summary report form to the administrator semiannually”. A copy of Chevron’s semi-annual report for the first six months of 2012 is contained in [the engineering file](#). The subject summary report contains all of the information specified in §60.7(d). There were no excess emissions reported for the V-846 fuel mix drum and the total CEMS downtime for calibrations, maintenance and malfunctions was 78.6 hours, which is acceptable.

40CFR60 Subpart Ja - Standards of Performance for Petroleum Refineries for Which Construction, Reconstruction or Modification Commenced After May 14, 2007

This NSPS is applicable to the following affected facilities in petroleum refineries which were constructed, reconstructed, or modified after May 14, 2007:

- Fluid Catalytic Cracking Unit Catalyst Regenerators,
- Fluid Coking Units,
- Delayed Coking Units,
- Fuel Gas Combustion Devices, and
- Claus Sulfur Recovery Plants (SRPs)

The F-4531 Heater is not subject to this regulation because it has not been modified after May 17, 2007. The proposed condition changes are not considered to be a modification under this regulation.

40CFR60 Subpart GGG – Standards of Performance for Equipment Leaks of VOCs in Petroleum Refineries

This NSPS is applicable to the following affected facilities in refineries:

- Compressors
- The group of all the equipment within a process unit.

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Equipment is defined as “each valve, pump, pressure relief device, sampling connection system, open-ended valve or line, and flange or other connector in VOC service”. From Subpart VV (as referenced from GGG), the definition of “*in VOC service*” is that “the piece of equipment contains or contacts a process fluid that is at least 10 percent VOC by weight”.

Modification is defined in 40CFR60 Subpart A (§60.2) as “any physical change in, or change in the method of operation of, an existing facility which increases the amount of any air pollutant (to which a standard applies) emitted into the atmosphere by that facility or which results in the emission of any air pollutant (to which a standard applies) into the atmosphere not previously emitted.”

Process unit is defined in §60.590 as “components assembled to produce intermediate or final products from petroleum, unfinished petroleum derivatives, or other intermediates; a process unit can operate independently if supplied with sufficient feed or raw materials and sufficient storage facilities for the product”.

NHT-1 is subject to the requirements of this regulation. “Fugitive emissions, miscellaneous” device no D3585 for the NHT-1 is tagged with condition H 23.19, which specifies that the permit unit is subject to Rule 1173 and 40CFR60 Subpart GGG. NSPS Subpart GGG references the requirements of NSPS Subpart VV - Standards of Performance for Equipment leaks of VOC in the Synthetic Organic Chemicals Manufacturing Industry. In general, the equipment leak inspection and monitoring requirements of Rule 1173 are more stringent than this regulation but pertinent requirements of this regulation have been incorporated into Chevron’s Inspection and Monitoring (I&M) Program for fugitive emissions. It is expected that Chevron will comply with the inspection, maintenance, and record keeping requirements of this rule.

The F-4531 is not subject to this regulation since it is not a process unit as defined in this regulation.

40CFR60 Subpart GGGa – Standards of Performance for Equipment Leaks of VOCs in Petroleum Refineries for Which Construction, Reconstruction or Modification Commenced After November 7, 2006

The NHT-1 is not subject to this regulation. The proposed condition changes are not considered to be a modification under this regulation. No new fugitive components will be installed under the subject change of condition applications.

REGULATION X - NATIONAL EMISSION STANDARD FOR HAZARDOUS AIR POLLUTANTS (NESHAPS)

40CFR63 Subpart CC: National Emission Standards for Hazardous Air Pollutants From Petroleum Refineries

This Subpart applies to petroleum refining sources and related emission sources that are specified in section 63.640 (c)(5) through (c)(7) (e.g. miscellaneous process vents (except for FCCU, SRU, and CRU vents), storage vessels, wastewater stream, equipment leaks, gasoline loading racks, marine vessel loading, etc.) that are located in a major source and emit or have equipment contacting one or more of the hazardous air pollutants (HAPs) listed in Table 1 of this subpart.

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Equipment Leaks: The equipment leak standards for existing sources as specified in 63.648 are applicable to fugitive components that are “in organic hazardous air pollutant service”. In “organic hazardous air pollutant service” is defined as a piece of equipment that either contains or contacts a fluid (liquid or gas) that is at least 5% by weight of total organic HAPs as determined according to 63.180(d).

Some of the fugitive components in the NHT-1 are subject to the requirements of this regulation since the components are “in organic hazardous air pollutant service”. The “fugitive emissions, miscellaneous” device (D3585) is tagged with “HAP: 40CFR 63 Subpart CC, #5A, 6-23-2003” to denote the applicability of this regulation.

The only sources in the F-4531 Heater permit unit that must be evaluated as potential affected sources under this NESHAP are fugitive components in the refinery fuel gas and natural gas supply systems. Natural gas and refinery gas do not contain at least 5% by weight of total organic HAPs. Therefore, none of the fugitive components are subject to this regulation.

This regulation references the fugitive component monitoring requirements of NSPS Subpart VV and NESHAP Subpart H with exceptions that are specifically noted in the regulation. In general, the equipment leak inspection and monitoring requirements of District Rule 1173 are more stringent than this regulation but pertinent requirements of this regulation have been incorporated into Chevron’s Inspection and Monitoring (I&M) Program for fugitive emissions. It is expected that Chevron will comply with the inspection, maintenance, and record keeping requirements of this regulation.

Miscellaneous Process Vents: *Miscellaneous process vent* is defined as “a gas stream containing greater than 20 parts per million by volume organic HAP that is continuously or periodically discharged during normal operation of a petroleum refining process unit. Miscellaneous process vents include gas streams that are discharged directly to the atmosphere, gas streams that are routed to a control device prior to discharge to the atmosphere, or gas streams that are diverted through a product recovery device prior to control or discharge to the atmosphere”.

The definition of a *miscellaneous process vent* at 40CFR63.641 specifies a number of vent streams that are not considered to be *miscellaneous process vents*, which are subject to the requirements of this rule. The following streams are included in this list of exempt streams:

- Gaseous streams routed to a fuel gas system
- Relief valve discharges
- “Episodic or nonroutine releases such as those associated with startup, shutdown, malfunction, maintenance, depressuring, and catalyst transfer operations.

All of the process vents in the NHT-1 are exempt streams. Therefore, none of the process vent streams are subject to the miscellaneous process vent requirements of this regulation.

40CFR63 Subpart DDDDD - National Emission Standards for Hazardous Air Pollutants For Industrial, Commercial and Institutional Boilers and Process Heaters

This maximum achievable control technology (MACT) standard is effective April 1, 2013 with an initial compliance date for existing sources of January 31, 2016. Process heaters at major HAP sources such as the Chevron Refinery are subject to it. Therefore, the F-4531 will be subject to this regulation effective April 1, 2013. However, process heaters that

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combust only natural gas and/or refinery gas are not subject to any emission or operating limits. They are subject to work practice standards including an annual tune-up (§ 63.7540 & Table 3) and a one-time energy assessment (§ 63.7540 & Table 3). Based on past compliance with similar regulations, it is expected that Chevron will comply with the applicable work practice standards of this regulation. Condition H23.50 will be tagged to the F-4531 Heater device (D3778) in the permit to denote applicability of this regulation

REGULATION XI: SOURCE SPECIFIC STANDARDS

Rule 1109: Emission of Oxides of Nitrogen From Boilers and Process heaters in Petroleum Refineries

Chevron is subject to the requirements of Regulation XX (RECLAIM), which supersedes the requirements of Rule 1109 per Rule 2001(j). Therefore, the F-4531 Heater is not subject to the requirements of Rule 1109.

Rule 1146: Emission of Oxides of Nitrogen From Industrial, Institutional and Commercial Boilers, Steam Generators and Process Heaters

This regulation contains NO_x and CO emission limits for certain boilers, steam generators, and process heaters. According to 1146(b), this rule applies to boilers, steam generators, and process heaters of equal to or greater than 5 million Btu per hour rated heat input capacity used in all industrial, institutional, and commercial operations with the exception of:

- (1) boilers used by electric utilities to generate electricity; and
- (2) boilers and process heaters with a rated heat input capacity greater than 40 million Btu per hour that are used in petroleum refineries; and
- (3) sulfur plant reaction boilers.

The F-4531 Heater is not subject to this regulation since it is used in a refinery and has a rated heat input capacity greater than 40 MMBtu/hr. Also, the NO_x related requirements of this rule have been subsumed by RECLAIM per 2001(j) for RECLAIM facilities.

Rule 1173: Control of Volatile Organic Compound Leaks From Components of Petroleum Facilities and Chemical Plants

This rule is intended to control volatile organic compound (VOC) leaks from fugitive components at refineries, chemical plants, oil and gas production fields, natural gas processing plants, and pipeline transfer stations. It contains identification requirements, leak standards, inspection requirements, maintenance and repair requirements, and recordkeeping and reporting requirements for fugitive components.

Chevron has an existing fugitive emission component inspection and monitoring (I&M) program for compliance with the requirements of this rule. Chevron has integrated the VOC service fugitive components associated with the NHT-1 and F-4531 Heater into this I&M program. Compliance with the requirements of this regulation is expected.

REGULATION XIII - NEW SOURCE REVIEW

As specified in Rule 1301, Regulation XIII, sets forth pre-construction review requirements for new, modified, or relocated facilities, to ensure that the operation of such facilities does not interfere with progress in attainment of the national ambient air quality standards (NAAQS), and that future economic growth within the South Coast Air Quality Management

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District (District) is not unnecessarily restricted. The specific air quality goal of this regulation is to achieve no net increases from new or modified permitted sources of nonattainment air contaminants or their precursors.

The South Coast Air Basin (SOCAB) is designated in attainment of the NAAQSs for CO, NO_x and SO_x. It should be noted that the SOCAB was not in attainment of the CO NAAQS when the F-4531 Heater was permit under PC A/N 380611 in 2002. The following are currently considered nonattainment air contaminants that are subject to new source review (NSR): NO_x, SO_x, PM_{2.5}, PM₁₀, and VOC. NO_x and VOC are included since they are precursors for ozone. NO_x, SO_x and VOC are included as PM_{2.5} and PM₁₀ precursors.

NSR requirements for these nonattainment pollutants are specified in the following rules:

- Rule 1303 – PM10 and VOC (all facilities); NO_x and SO_x (non-RECLAIM facilities)
- Rule 1325 – PM2.5
- Rule 2005 – NO_x and SO_x (RECLAIM facilities)

Since Chevron is a RECLAIM facility, it is subject to the NSR requirements for NO_x and SO_x specified in Rule 2005 of the RECLAIM regulation (Regulation XX). Sources that emit ammonia, CO, and Ozone Depleting Compounds (ODCs) are subject to only the BACT requirements of Rule 1303 for these pollutants.

Rule 1303: Requirements

This rule requires the Executive Officer to deny a Permit to Construct for any new, modified or relocated source which results in an emission increase of CO, PM10, VOC, any ozone depleting compound, or ammonia, unless BACT is used. This rule also requires modeling for a net increase in PM10 and offset (among other requirements) for a net increase in PM10 or VOC emissions for any new or modified source.

A/Ns 405265 and 405267 are not subject to any requirements under this rule since the proposed condition changes do not cause an increase in the emission of any air pollutants. The following previous PCs were not subject to any Rule 1303 requirements since they did not cause an increase in the emission of any air pollutants: 289724, 416188, and 419215. Compliance of PC A/Ns 380597, 380610 and 380611 with the requirements of this rule are discussed below.

1303(a)(1): Best Available Control Technology (BACT): Any new or modified source which results in an emission increase of any nonattainment air contaminant, any ozone depleting compound, or ammonia, must employ BACT for the new or relocated source or for the actual modification to an existing source. BACT is required for any increase in emissions that exceeds 1.0 lb per day on a maximum daily basis.

Fugitive Components: The engineering evaluation for PC A/N 289724 indicates that BACT was triggered for fugitive components in the NHT-1. However, there was an estimated reduction in VOC emissions of about 30 lb/day. Therefore, it does not appear that BACT was triggered. BACT was triggered for the NHT-1 and F-4531 Heater under PC A/Ns 380597 and 380611, respectively. The following BACT was applied to new fugitive components:

- Valves: Bellow-sealed valves are required with the following exemptions.

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1. Heavy liquid service (i.e., streams with a vapor pressure <0.1 psia @ 100 °F (kerosene) based on the most volatile class present > 20% by volume)
2. Control valve
3. Instrument tubing application
4. Applications requiring torsional valve stem motion
5. Applications where valve failure could pose safety hazard (e.g., drain valves with valve stem in horizontal position)
6. Retrofit/special applications with space limitation (special applications such as skid mounted standard packaged systems)
7. Valves not commercially available

For PC A/Ns 380597 and 380611, permit condition S31.15 was added to the NHT-1 and F-4531 Heater permit units in the RECLAIM permit. This condition specifies the requirement to install bellow-sealed (leakless) valves except for the exempt applications listed above. This condition also specifies that Chevron must submit, within 60-days following initial startup, a listing of all new non-bellows seal valves categorized by tag no., size, type, operating temperature, operating pressure, body material, application, and reasons why bellows seal valves were not used. Mr. Rafi Ahmed of Chevron provided the required list of non-leakless valves on April 8, 2003. All of the valves qualify for one of the exemptions listed above. Mr. Ahmed provided as-built piping and instrumentation drawings required by conditions K171.1 and K171.2 on May 20, 2003.

- Relief Valves: No new PRVs were installed under this project.
- Process Drain: No new process drains were installed under this project.
- Pumps: No new pumps were installed under this project.
- Flanges: BACT for new flanges was compliance with ANSI/API standards and inclusion in an approved I&M program.
- Compressors: No new compressors were installed under this project.

Process Heater F-4531: For original construction of the F-4531 Heater in 2002, BACT was triggered for all criteria pollutants. Although BACT for NOx and SOx are specified in Rule 2005, the evaluation of NOx and SOx BACT is included in this section with the discussion of BACT for CO, VOC and PM10.

The following BACT was required and was implemented by Chevron during original construction of the F-4531 Heater under permit to construct A/N 380611:

- NOx: Use of Low-NOx burner and SCR and compliance with a NOx emission limit of 5 ppmv (3-hr avg. @ 3% O2).
- PM10/SOx: Use of natural gas and/or treated refinery fuel gas with a TRS concentration limit of 40 ppmv (4-hr avg.)
- CO & VOC: Use of gaseous fuel, properly designed burner, and good combustion practice. Compliance with a 25 ppmv CO emission limit (1-hr avg. @ 3% O2).
- Ammonia: Compliance with an ammonia slip concentration limit of 9 ppmvd (1-hr avg. @ 3% O2). The averaging period for this limit was changed to 3 hours under PC A/N 419215.

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The heater is equipped with certified CO and NO_x CEMs to show continuous compliance with the stack gas CO and NO_x concentration limits. The V-846 fuel mix drum, which supplies refinery fuel gas to the F-4531 Heater is equipped with a certified fuel sulfur gas chromatograph based continuous emission monitoring system to monitor TRS concentration. The heater is also equipped with a continuous ammonia CEMS. However, it can't be utilized for compliance purposes since the District has not developed a procedure for certification of the CEMS.

CEMS emissions for the most recent three-month are summarized in the table below. As seen in the table below, CO and NO_x emissions and fuel TRS concentrations were below applicable limits during the period.

Pollutant	Stack Gas Concentration Limit	Average Stack Gas Conc. (1)	Maximum Stack Gas Conc. (1)
CO	25 ppmv (1 hr. avg., 3% O ₂)	2.2	15.9
NO _x	5 ppmv (3 hr. avg., 3% O ₂)	1.9	3.5
NH ₃	9 ppmv (3 hr. avg., 3% O ₂)	2.6	8.2

(2) Based on CEMS data for May through July 2012.

1303(b) – The following requirements apply to any new or modified source which results in a net emission increase of any nonattainment air contaminant. The proposed condition changes do not cause an increase in the emission of any pollutants. This section contains a review of the requirements for the previous PCs.

1303(b)(1): Modeling - The applicant must substantiate with modeling that the new facility or modification will not cause a violation, or make significantly worse an existing violation of any state or national ambient air quality standards at any receptor location in the District. The modeling procedures are discussed in Appendix A to Rule 1303. It is specified in Appendix A, that modeling is not required for VOC. Therefore modeling was not required for modification of the NHT-1 under PC A/N 380597.

For original construction of the F-4531 Heater under PC A/N 380611, modeling had to be evaluated for CO and PM₁₀. According to Appendix A of both Rule 1303 and Rule 2005, an applicant must either (1) provide an analysis approved by the Executive Officer or designee, or (2) show by using the Screening Analysis in Appendix A, that a significant change (increase) in air quality concentration will not occur at any receptor location for which the state or national ambient air quality standard for CO or PM₁₀ is exceeded.

The CO and PM₁₀ screening thresholds in Table A-1 of Appendix A for combustion sources up to 40 MMBtu/hr are 72.1 lb/hr and 7.9 lb/hr, respectively. Although this table only contains thresholds for combustion source up to 40 MMBtu/hr, it is specified in an SCAQMD *Policies and Procedures* memo that it can be assumed that a source rated at greater than 40 MMBtu/hr with emissions less than or equal to the allowable emissions levels specified in Table A-1 for a 40 MMBtu/hr source “will not cause a significant increase in an air quality concentration and no further modeling is required”. As seen in the *Calculation Section*, the maximum estimated hourly CO and PM₁₀ emissions for the

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F-4531 Heater are 1.5 lb/hr [35.6 lb/day/24] and 0.8 lb/hr [18.7 lb/day/24], respectively. CO and PM10 passed the Appendix A screening since the maximum potential emissions were below the Table A-1 thresholds. Compliance with the modeling requirements of Rules 1303 was achieved.

1303(b)(2): Offsets – Unless exempt from offsets requirements pursuant to Rule 1304, emission increases shall be offset by either Emission Reduction Credits approved pursuant to Rule 1309, or by allocations from the Priority Reserve.

PC A/Ns 380597, 380610 and 380611 were issued as part of Phase 3 of Chevron’s CARB Clean Fuels Projects. Per agreement between the District and the refineries, all emissions increases associated with the CARB Clean Fuels Projects were exempted from offset per Rule 1304(e)(4), regulatory compliance, provided that there was no net increase in refining capacity. These PCs qualified for this exemption since the Chevron refinery did not have an increase in refining capacity.

1303(b)(3) - Sensitive Zone Requirements: This section pertains to Emission Reduction Credits (ERCs) for facilities in the South Coast Air Basin (SOCAB). Except for credits that are obtained from the Priority Reserve, facilities are subject to the Sensitive Zone requirements (H&SC Section 40410.5) for ERCs. A facility in zone 1 may obtain ERCs originated in zone 1 only, and a facility in zone 2A may obtain ERCs from either zone 1 or zone 2A.

This requirement was not applicable since no ERCs were required.

1303(b)(4) - Facility Compliance: The facility must be in compliance with all applicable rules and regulations of the District.

This facility is currently in compliance with all applicable rules and regulations. There are no outstanding NOV’s and no known violations. For the previous PCs, no non-compliance issues were noted in the engineering evaluations.

1303(b)(5) - Major Polluting Facilities: Any new major polluting facility or major modification at an existing major polluting facility must comply with the requirements summarized below. A major modification is defined in 1302(r) as any modification at an existing major source that will cause

- an increase of one pound per day or more, of the facility's potential to emit (PTE) for NOx or VOC if the facility is located in the SOCAB, or
- an increase of 40 tons per year or more, of the facility's PTE for SOx, or
- an increase of 15 tons per year or more, of the facility's PTE for PM₁₀; or,
- an increase of 50 tons per year or more, of the facility's PTE for CO.

Modification of the NHT-1 under PC A/N 380597 and construction of the F-4531 Heater and SCR under A/Ns 380610 and 380611 were major modifications subject to the requirements of 1303(b)(5).

(A) Alternative Analysis – Applicant must conduct an analysis of alternative sites, sizes, production processes, and environmental control techniques for such proposed source and demonstrate that the benefits of the proposed project outweigh the environmental and social costs associated with that project.

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As specified at 1303(b)(5)(D)(iii), the requirements for an alternative analysis under this subparagraph may be met through compliance with the California Environmental Quality Act if the proposed project has been analyzed by an environmental impact report pursuant to Public Resources Code Section 21002.1 and Title 14 California Code of Regulations Section 15080 et seq. PC A/Ns 380597, 380610 and 380611 were issued as part of Chevron’s project to comply with Phase 3 of the CARB Clean Fuels Project. The final EIR for this project was certified by the AQMD on November 30, 2001. No additional analysis was required under this clause.

(B) Statewide Compliance: The applicant must demonstrate that all major stationary sources, as defined in the jurisdiction where the facilities are located, that are owned or operated by the applicant in the State of California are subject to emission limitations and are in compliance or on a schedule for compliance with all applicable emission limitations and standards under the Clean Air Act.

No non-compliance issues were noted in the PC engineering evaluations.

(C) Protection of Visibility - A modeling analysis for plume visibility is required if the net emission increase exceeds 15 tons/yr of PM10 or 40 tons/yr of NOx and the location of the source, relative to the closest boundary of a specified Federal Class I area, is within the distance specified in the table below.

Federal Class I Area	Threshold Distance	Distance from Chevron Refinery
Agua Tibia	28 km (17.4 miles)	135 km
Cucamonga	28 km (17.4 miles)	71 km
Joshua Tree	29 km (18.0 miles)	178 km
San Gabriel	29 km (18.0 miles)	50.5 km
San Gorgonio	32 km (19.9 miles)	133 km
San Jacinto	28 km (17.4 miles)	135 km

A plume visibility analysis was not required since none of the Federal Class I Areas are closer to the refinery than the distances specified in the table. Additionally, the PM10 and NOx increase for construction of the F-4531 heater were well below the thresholds.

(D) Compliance through California Environmental Quality Act- As discussed previously, CEQA requirements were fulfilled for the subject PCs (See CEQA Evaluation).

Rule 1325: Federal PM2.5 New Source Review Program

This NSR rule, which addresses the emission of PM2.5 and its precursors NOx and SO2, was adopted by the District’s Governing Board on June 3, 2011. PCs issued for A/Ns 289724, 380597, 380610, 380611, 416188 and 419512 were all issued prior to adoption of this rule. Revision of the subject permit conditions does not trigger any requirements of this rule since it will not cause an increase in the emission of PM2.5, NOx or SO2.

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Regulation XIV - TOXICS AND OTHER NON-CRITERIA POLLUTANTS

Rule 1401: New Source Review of Carcinogenic Air Contaminants

Requirements – Rule 1401 contains the following requirements:

- 1) *(d)(1) MICR and Cancer Burden* - The cumulative increase in MICR which is the sum of the calculated MICR values for all toxic air contaminants emitted from the new, relocated or modified permit unit will not result in any of the following:
 - (A) an increased MICR greater than one in one million (1.0×10^{-6}) at any receptor location, if the permit unit is constructed without T-BACT;
 - (B) an increased MICR greater than ten in one million (1.0×10^{-5}) at any receptor location, if the permit unit is constructed with T-BACT;
 - (C) a cancer burden greater than 0.5.
- 2) *(d)(2) Chronic Hazard Index* - The cumulative increase in total chronic HI for any target organ system due to total emissions from the new, relocated or modified permit unit will not exceed 1.0 at any receptor location.
- 3) *(d)(3) Acute Hazard Index* - The cumulative increase in total acute HI for any target organ system due to total emissions from the new, relocated or modified permit unit will not exceed 1.0 at any receptor location.

Analysis –

There is no increase in health risk for the condition changes proposed in A/Ns 405265 and 405267 since they will not cause an increase in the emission of any TACs. There was also no increase in TAC emissions for PC A/Ns 289724, 416188 and 419215. For PC A/Ns 380597, 380610 and 380611, Chevron performed separate Tier 4 health risk assessments (HRAs) for the fugitive TAC emissions and the F-4531 Heater combustion TAC emissions. The HRA results are summarized in the table below.

Parameter	HRA Results		Rule 1401 Requirements	Comply (Y/N)
	Fugitive Emissions	Combustion Emissions		
MICR	1.6E-08	7.0E-09	<1.0E-06 (no TBACT)	Yes
HIA	0.0001	0.0006	<1.0	Yes
HIC	0.0001	0.0006	<1.0	Yes

Compliance with the requirements of this regulation is achieved.

REGULATION XVII - PREVENTION OF SIGNIFICANT DETERIORATION (PSD)

The PSD program is the federal New Source Review (NSR) program for pollutants for which an area is in attainment with or unclassified with respect to a National Ambient Air Quality Standard (NAAQS) and for Greenhouse Gases (GHGs).

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Rule 1703 – PSD Analysis (& Associated Rules 1701, 1702, 1704, 1706, 1710 & 1713)

These rules contain the PSD requirements for attainment pollutants and selected unclassified pollutants. As discussed earlier, SOCAB is currently designated as attainment with NAAQSs for SO₂, NO₂, CO, and Lead. On March 3, 2003, AQMD’s PSD delegation was rescinded by EPA. AQMD and EPA signed a “Partial PSD Delegation Agreement” effective July 11, 2007. According to a memo from Mr. Mohsen Nazemi, who is the Deputy Executive Officer of the AQMD Engineering and Compliance Division, this Partial Delegation Agreement is “intended to delegate the authority and responsibility to AQMD for issuance of initial PSD permits and for PSD permit modifications where the applicant does not seek to use the emissions calculation methodologies promulgated in 40 CFR 52.21 (NSR Reform) but not set forth in AQMD Regulation XVII.”

The NHT-1 is not subject to any requirements under this regulation since it does not emit CO, NO_x, SO_x or lead. The SOCAB was not in attainment for CO in 2002 when the PC was issued for construction of the F-4531 Heater so no analysis was required. The project was evaluated for NO_x and SO_x. As seen in the PC evaluation for PC A/N 380611, it was determined that the project did not trigger any PSD requirements.

The permit condition changes proposed in A/Ns 405265 and 405267 do not trigger any requirements since they do not cause an increase in the emission of any air pollutants.

Rule 1714: Prevention of Serious Deterioration for Greenhouse Gases

This rule, which sets forth preconstruction review requirements for greenhouse gases (GHG), was adopted by the AQMD governing board on November 5, 2010. GHG is defined as an aggregate group of six GHGs: carbon dioxide, nitrous oxide, methane, hydrofluorocarbons, perfluorocarbons, and sulfur hexafluoride.

PCs issued for A/Ns 289724, 380597, 380610, 380611, 416188 and 419512 were all issued prior to adoption of this rule. The proposed permit condition revisions do not trigger any requirements of this rule since they will not cause an increase in the emission of GHG.

REGULATION XX - REGIONAL CLEAN AIR INCENTIVES MARKET (RECLAIM)

RECLAIM is a market incentive program designed to allow facilities flexibility in achieving emission reduction requirements for Oxides of Nitrogen (NO_x), and Oxides of Sulfur (SO_x). The Chevron Refinery (ID 800030) is a Cycle II RECLAIM facility. The F-4531 Heater is subject to the NO_x and SO_x requirements of this regulation.

Rule 2005: New Source Review for RECLAIM

Sources that are subject to RECLAIM must comply with the New Source Review requirements of Rule 2005 instead of Regulation XIII.

2005 (c): Requirements for Existing Facilities

According to this section, a permit to construct (RECLAIM Facility Permit Amendment) cannot be approved for installation of a new source or modification of an existing source that results in an emission increase of NO_x or SO_x at an existing RECLAIM unless the following requirements are met:

- 1.) Best Available Control Technology is applied to the source [2005(c)(1)(A)]

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- 2.) The operation of the source will not result in a significant increase in the air quality concentration for NO₂ as specified in Appendix A [2005(c)(1)(B)], and
- 3.) The applicant demonstrates that the facility holds sufficient RECLAIM Trading Credits (RTCs) to offset the annual emission increase for the first year of operation at a 1-to-1 ratio [2005(c)(2)].

According to 2005(d), “An increase in emissions occurs if a source's maximum hourly potential to emit immediately prior to the proposed modification is less than the source's post-modification maximum hourly potential to emit. The amount of emission increase will be determined by comparing pre-modification and post-modification emissions on an annual basis by using: (1) an operating schedule of 24 hours per day, 365 days per year; or (2) a permit condition limiting mass emissions.”

The proposed permit condition changes do not result in an increase of NO_x or SO_x emissions so the requirements of Rule 2005 are not applicable. For original construction of the new F-4531 Heater in 2002, BACT was triggered for both NO_x and SO_x. Compliance with BACT was discussed in the evaluation for Rule 1303. Modeling was not required since the maximum potential NO_x emissions of 0.49 lb/hr (11.7 lb/day) was less than the allowable emission of 1.31 lb/hr specified in Table A-1 of Rule 2005 Appendix A. Chevron had sufficient RTCs to offset the annual NO_x and SO₂ emissions for the heater.

Rule 2011: Requirements for Monitoring, Reporting, and Recordkeeping for Oxides of Sulfur (SO_x) Emissions

This rule establishes the monitoring, reporting and recordkeeping requirements (MRR) for SO_x emissions under the RECLAIM program. According to 2011(c)(1)(D), any equipment that burns refinery, landfill or sewage digester gaseous fuel, except gas flares are Major SO_x sources. The F-4531 Heater, which is permitted to burn natural gas and/or refinery fuel gas, is a major SO_x source that is subject to the maintenance, recordkeeping and reporting (MRR) requirements of this rule.

This rule requires that each major source be equipped with a CEMs or SCEMS (semi-continuous) that measures one of the following:

- Stack SO_x concentration and exhaust gas flow rate, or
- SO_x concentration, stack O₂ concentration, and fuel flow rate, or
- Fuel sulfur content and fuel flow rate

For the F-4531 Heater, Chevron utilizes a SO_x SCEMS consisting of a fuel sulfur GC, which measures the total reduced sulfur (TRS) concentration of the refinery fuel gas from the V-846 Fuel Mix Drum and a fuel flow rate monitor, which measures the flow rate of refinery fuel gas from the V-846 to the heater.

RECLAIM SO_x CEMS certification and QA/QC requirements are contained in Rule 2011, Appendix A, Chapter 2 and Attachment C. Quality Control requirements of this rule include semi-annual Relative Accuracy Test Audits (RATA). For the fuel sulfur GCs RATAs, Chevron performs semi-annual Cylinder Gas Audits as specified in Attachment C of the Rule 2011 Protocol, which is Appendix A to Rule 2011. The relative accuracy of the fuel flow meters is determined by semi-annual stack RATA. The District’s Source Test group

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routinely reviews the reports for these CGAs/RATAs. A copy of the summary results pages for the most recent RATA of the fuel sulfur GC is contained in the [engineering file](#). The fuel sulfur GC passed this RATA. Compliance with the QA/QC requirements of this rule is expected.

Rule 2012: Requirements for Monitoring, Reporting, and Recordkeeping for Oxides of Sulfur (NOx) Emission

This rule establishes the monitoring, reporting and recordkeeping requirements (MRR) for NOx emissions under the RECLAIM program. The F-4531 Heater is classified as Major NOx source that is subject to the MRR requirements of this rule. It is specified at Appendix A, Chapter 2.A.1. that the Facility Permit holder of each major NOx equipment shall install, calibrate, maintain, and operate an approved CEMS to measure and record the following:

- Nitrogen oxide concentrations in the gases discharged to the atmosphere
- Oxygen concentrations if required for calculation of the stack gas flow rate
- Stack gas volumetric flow rate

This section also specifies that calculation of stack gas volumetric flow rate using one of the following alternative methods is acceptable: heat input, oxygen mass balance, or nitrogen mass balance. The CEMS on the F-4531 Heater utilizes heat input and oxygen concentration to calculate NOx mass emissions. The approved NOx analyzer range is 0-10 ppmv. A copy of the SCAQMD CEMS approval is contained in the [engineering file](#).

RECLAIM NOx CEMS certification and QA/QC requirements are contained in Rule 2012, Appendix A, Chapter 2 and Attachment C. The primary independent quality control assessment is a semi-annual RATA performed by an independent source test company. Chevron has been performing the required RATAs for the NOx CEMS on the F-4531 Heater. As mentioned above, the District’s Source Test group routinely reviews the reports for these semi-annual RATAs. A copy of the most recent RATA is contained in the [engineering file](#). The CEMS passed the RATA.

It is also specified at 2011(c)(3)(A) and 2012(c)(3)(A) that a Facility Permit holder of a major SOx and NOx source shall install, maintain and operate a reporting device to electronically report total daily mass emissions of SOx and NOx and daily status codes to the District Central SOx and NOx Stations by 5:00 p.m. of the following day. Chevron currently performs this daily reporting for the F-4531 Heater.

Based on Chevron’s record of compliance with RECLAIM monitoring, recordkeeping and reporting requirements, compliance with the requirements of this regulation is expected.

Regulation XXX – TITLE V PERMITS

The initial Title V permit for the refinery was sent to Chevron on September 29, 2009 with an effective date of October 12, 2009. The permits issued for this project will be issued as a revision of the Title V permit. Permit revisions are categorized into the following four types: *administrative, minor, de minimis significant and significant*. The review and distribution requirements for each revision type are summarized in the following table.

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Title V Permit Revisions: Review and Distribution Requirements

Revision Type	Permit Review and Distribution Requirements		
	EPA Review (45-day)	Public Notice (30-day)	Send Final Permit to EPA
Administrative	No	No	Yes
Minor	Yes	No	Yes
De Minimis Significant	Yes	No	Yes
Significant	Yes	Yes	Yes

As defined in Rule 3000, a minor Title V permit revision is any revision that:

- (1) does not require or change a case-by-case evaluation of: reasonably available control technology (RACT) pursuant to Title I of the federal Clean Air Act; or maximum achievable control technology (MACT) pursuant to 40 CFR Part 63, Subpart B;
- (2) does not violate a regulatory requirement;
- (3) does not require any significant change in monitoring terms or conditions in the permit;
- (4) does not require relaxation of any recordkeeping, or reporting requirement, or term, or condition in the permit;
- (5) does not result in an emission increase of RECLAIM pollutants over the facility starting Allocation plus nontradeable Allocations, or higher Allocation amount which has previously undergone a significant permit revision process;
- (6) does not result in an increase in emissions of a pollutant subject to Regulation XIII - New Source Review or a hazardous air pollutant;
- (7) does not establish or change a permit condition that the facility has assumed to avoid an applicable requirement;
- (8) is not an installation of a new permit unit subject to a New Source Performance Standard (NSPS) pursuant to 40 CFR Part 60, or a National Emission Standard for Hazardous Air Pollutants (NESHAP) pursuant to 40 CFR Part 61 or 40 CFR Part 63; and,
- (9) is not a modification or reconstruction of an existing permit unit, resulting in new or additional NSPS requirements pursuant to 40 CFR Part 60, or new or additional NESHAP requirements pursuant to 40 CFR Part 61 or 40 CFR Part 63; or,
- (10) incorporates an existing general permit, as defined in subdivision (e) of Rule 3004, and its associated requirements, into another Title V permit.

This proposed revision meets all the requirements above so it is a minor revision. As discussed below, the proposed condition changes are not considered to be a significant change in monitoring terms or conditions of the title V permit nor a relaxation of any recordkeeping, or reporting requirement, or term, or condition of the permit.

Averaging period for CO concentration limit - The imposition of a 1-hour averaging period for the exhaust gas CO concentration limit is a clarification of the emission limit since the averaging period was not originally specified. A 1-hour averaging period is routinely assumed for process heaters.

Maintenance, repair and calibration periods - All monitoring systems are subject to downtime for calibrations, routine maintenance and malfunctions. Inclusion of

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appropriate maintenance, repair and calibration periods and allowances in the SCR differential pressure and temperature monitoring conditions is not considered to be a significant change to the SCR differential pressure and temperature monitoring requirements.

1. *Removal of ammonia-to-emitted NOX monitoring requirement* – The F-4531 is one of a very limited number of process heaters in the country that is equipped with both an ammonia and NOx CEMS. These CEMS provide all the information required to evaluate SCR performance and ammonia slip. Additionally, an ammonia source test is required every five years. The ammonia-to-emitted NOx monitoring system is a less effective tool for evaluating SCR performance and ammonia slip. Removal of this condition is not a significant change to heater/SCR monitoring.

Removal of recordkeeping conditions K67.24 and K67.26 - As discussion in the *Conditions* section of this evaluation, all of these recordkeeping requirements are included elsewhere in the permit or are being moved to other permit conditions. Removal of these redundant conditions is not a relaxation of any recordkeeping requirement.

Bypassing of the SCR during SU and SD – Permit condition E71.19 specifies that the operator shall only inject ammonia into this equipment if the flue gas inlet temperature is at least 450 degrees F. This condition minimizes ammonia slip since the efficiency of the SCR falls off below 450°F. Without ammonia injection, the SCR does not remove NOx. Therefore, bypass of the SCR when the inlet temperature is less than 450°F has no impact on NOx emissions.

This minor revision will be sent to EPA for a 45-day review period. Public notice is not required.

ADDITIONAL FEDERAL REGULATIONS

40CFR Part 64 Compliance Assurance Monitoring

This regulation applies to stationary sources that utilize control equipment to comply with a criteria pollutant emission limit. The purpose is to ensure that the stationary source complies with the emission limit(s) by monitoring the operation and maintenance of the control equipment.

As specified at §64.2(a), the requirements of this regulation apply to a stationary source at a major source that is required to obtain a part 70 or 71 permit and satisfies all of the following criteria:

- (1) The source is subject to an emission limit or standard for an air pollutant (or a surrogate thereof) except for an emission limit that is exempt under §64.2(b)(1);
- (2) The source uses a control device to achieve compliance with the emission limit or standard; and
- (3) The potential pre-control emissions of the pollutant are greater than or equal to the major source threshold for the pollutant.

The exemptions at §64.2(b)(1) include:

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- (i) Emission limits or standards for NSPSs or NESHAPs that were proposed after 11-15-90;
- (ii) Stratospheric ozone protection requirements under Title VI of the CAA;
- (iii) Acid rain requirements under 40CFR72;
- (iv) Emission limitations or standards that apply solely under an emissions trading program;
- (v) An emission cap that meets the requirements in §70.4(b)(12);
- (vi) Emission limits for which a part 70 (Title V) permit specifies a continuous compliance determination method.

Control device is defined as equipment, other than inherent process equipment, that is used to destroy or remove air pollutant(s) prior to discharge to the atmosphere. For purposes of this regulation, a control device does not include passive control measures that act to prevent pollutants from forming, such as the use of seals, lids, or roofs to prevent the release of pollutants, use of low-polluting fuel or feedstocks, or the use of combustion or other process design features or characteristics.

The only control device utilized by the F-4531 Heater is the SCR for NOx control. However, the heater is not subject to CAM requirements for the NOx limit because a NOx CEMS, which is a continuous compliance determination method, is specified in Condition D82.15. Therefore, the NOx limit is an exempt limit per §64.2(b)(1)(vi).

CONCLUSION / RECOMMENDATION:

Based on the foregoing evaluation, it is expected that the subject applications will comply with all applicable District Rules and Regulations. It is recommended that permits to operate be issued to the Naphtha Hydrotreater No. 1 (Plant No. 45), Naphtha Hydrotreater No. 1 Reactor Charge Heater (F-4531) and associated SCR.

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Appendix A: Comparison of Estimated Fugitive VOC Emissions for the Naphtha Hydrotreater No. 1 Reactor Charge Heater (F-4531) Using the Original and New Emission Factors

Equipment Type	Service	F-4531 Fugitive Count (1)	Original Emission Factors (lb/comp./yr) (2)	New Emission Factors (lb/comp./yr) (3)	Fugitive VOC Estimate (Original EFs) (lb/yr)	Fugitive VOC Estimate (New EFs) (lb/yr)
Valves - Sealed Bellow	All	33	0	0	0	0
Valves - SCAQMD Approved I & M Program	Gas/Vapor	39	23	4.55	897	177
	Light Liquid	0	19	4.55	0	0
	Heavy Liquid	0	3	4.55	0	0
Flanges	Light Liquid/Vapor	199	1.5	6.99	299	1391
Connectors	Light Liquid/Vapor	289	1.5	2.86	434	827
Pumps	Light Liquid (sealless type)	0	0	0	0	0
	Light Liquid (double seal)	0	104	46.83	0	0
	Heavy Liquid (single seal)	0	80	17.21	0	0
Compressors	Gas/Vapor	0	514	9.09	0	0
PRV's	All (To Atmosphere)	0	1135	9.09	0	0
	All (Closed Vent)	0	0	0	0	0
Drains (with p-trap)	All	0	80	9.09	0	0
TOTAL				lb/yr	1629	2395
				lb/day (4)	4.53	6.65

- (1) Current fugitive component count. (Sara Chung on 8-07-12)
- (2) Fugitive emission factors developed and utilized for the CARB Reformulated Fuels Projects at the refineries.
- (3) Fugitive emission factors based on correlation equations from the *California Implementation Guidelines for Estimating Mass Emissions of Fugitive Hydrocarbon Leaks at Petroleum Facilities* (CARB/CAPCOA - 1999)
- (4) 30-day average emissions based on annual emissions divided by 360.

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Appendix B: Comparison of Estimated Fugitive VOC Emissions for the Naphtha Hydrotreater No. 1 Using the Original and New Emission Factors

Equipment Type	Service	NHT-1 Fugitive Count (1)	Original Emission Factors (lb/comp./yr) (2)	New Emission Factors (lb/comp./yr) (3)	Fugitive VOC Estimate (Original EFs) (lb/yr)	Fugitive VOC Estimate (New EFs) (lb/yr)
Valves - Sealed Bellow	All	731	0	0	0	0
Valves - SCAQMD Approved I & M Program	Gas/Vapor	121	23	4.55	2783	551
	Light Liquid	402	19	4.55	7638	1829
	Heavy Liquid	0	3	4.55	0	0
Flanges	Light Liquid/Vapor	2525	1.5	6.99	3788	17650
Connectors	Light Liquid/Vapor	2847	1.5	2.86	4271	8142
Pumps	Light Liquid (sealless type)	0	0	0	0	0
	Light Liquid (double seal)	14	104	46.83	1456	656
	Heavy Liquid (single seal)	0	80	17.21	0	0
Compressors	Gas/Vapor	0	514	9.09	0	0
PRV's	All (To Atmosphere)	1	1135	9.09	1135	9
	All (Closed Vent)	31	0	0	0	0
Drains (with p-trap)	All	56	80	9.09	4480	509
TOTAL				lb/yr	25550	29346
				lb/day (4)	70.97	81.52

- (1) Current fugitive component count. (Sara Chung on 8-07-12)
- (2) Fugitive emission factors developed and utilized for the CARB Reformulated Fuels Projects at the refineries.
- (3) Fugitive emission factors based on correlation equations from the *California Implementation Guidelines for Estimating Mass Emissions of Fugitive Hydrocarbon Leaks at Petroleum Facilities* (CARB/CAPCOA - 1999)
- (4) 30-day average emissions based on annual emissions divided by 360.