

 SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT OFFICE OF ENGINEERING AND COMPLIANCE APPLICATION PROCESSING AND CALCULATIONS	PAGES 68	PAGE 1
	APPL. NO. 493746, etc.	DATE 6/21/13 rev
	PROCESSED BY: Bob Sanford	CHECKED BY:

**Application Nos. 421111, 493746,
493748, 493750, 493753 & 498739**

PERMIT TO OPERATE

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 / INTRODUCTION

In December 2008, Chevron Products Company (Chevron) submitted the subject change of condition applications for the Continuous Catalytic Reforming Unit (CCRU) and the four associated heaters, which are all located at their El Segundo Refinery. Chevron is requesting the following changes to the permits for this equipment:

- For each heater, add a condition which specifies that Chevron shall utilize an EPA alternative monitoring plan (AMP) to comply with 40CFR40 Subpart J H2S monitoring requirements for the process vent gas that is fed to the heaters from process vessels in the CCRU. These process vent streams meet the definition of “fuel gas” under this New Source Performance Standard (NSPS). [Note: Condition D90.37, which specifies that Chevron shall use the AMP to monitor H2S concentrations in the subject process/waste vent gas to the CCRU heaters, is already included in Chevron’s Title V permit. This condition was added during preparation of the Title V permit.]
- For each heater, add “process gas” to the equipment description to clarify that each heater combusts vent gas from process vessels in the CCRU.
- For each heater, add the following devices to the “Connected To” column to denote that each heater receives vent gas from these process vessels:
 - D1954 - No. 2 Vent Gas Surge Tank (Chevron ID 4-V17)
 - D1958 - No. 1 Vent Gas Surge Tank (4-V16)
 - D3335 - No. 1 Vent Drum (4-V11A)
 - D3336 - No. 2 Vent Drum (4-V11B)
 - D3337 - No. 3 Vent Drum (4-V11C)
 - D3338 - No. 4 Vent Drum (4-V11D)
- For the CCRU, add the Device IDs for each of the heaters (D471, D472, D473 and D3031) to the “Connected To” for each of the following devices: D1954, D1958, D3335, D3336, D3337 and D3338.

As discussed in more detail in the *Process Description Section* of this evaluation, the process vent gas from each of these vessels is generated from purging of the subject vessels during the CCRU catalyst regeneration process. The vent streams are combined into a common stream,

 <p>SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT</p> <p>OFFICE OF ENGINEERING AND COMPLIANCE</p> <p>APPLICATION PROCESSING AND CALCULATIONS</p>	PAGES 68	PAGE 2
	APPL. NO. 493746, etc.	DATE 6/21/13 rev
	PROCESSED BY: Bob Sanford	CHECKED BY:

which is distributed evenly to the four CCRU heaters. The connection of the vent gas stream from the process vessels to the CCRU heaters is shown in process drawings that were submitted with permit applications for the construction of the CCRU in 1993 but these connections were never specified in the permit.

The most recent permits to construct (PCs) for the CCRU and CCRU heaters in Section H of Chevrons RECLAIM/Title V permit are currently serving as temporary permits to operate (POs). An evaluation of the conversion of these temporary POs in Section H of the RECLAIM/Title V permit to permanent POs in Section D of the RECLAIM/ Title V permit is also included in this document. The PO evaluation also includes the common SCR (C1967 in P5S2) for the CCRU heaters. The current PCs/temporary POs for the CCRU, CCRU heaters, and associated common SCR were issued in 2004 under A/Ns 421106 – 421111. The following changes in the capacity of the CCRU and CCRU heaters were permitted under this project:

- CCRU – gasoline production capacity increase from 40 MBPD to 49 MBPD through modification of existing equipment and addition of new equipment.
- Heater F-410 – heat input capacity increase from 115.2 MMBtu/hr to 177 MMBtu/hr through addition of 6 burners and installation of new burner tips on existing burners.
- Heater F-420 – heat input capacity increase from 173.1 MMBtu/hr to 199 MMBtu/hr through installation of new burner tips on existing burners.
- Heater F-430 – heat input capacity reduction from 124.9 MMBtu/hr to 123 MMBtu/hr.
- Heater F-440 – heat input capacity increase from 80.5 MMBtu/hr to 88 MMBtu/hr through installation of new burner tips on existing burners.

According to Chevron, the increase in gasoline production from the CCRU was required to offset some of the refinery gasoline production lost due to the conversion from MTBE-containing gasoline to ethanol-containing gasoline under Phase 3 of CARBs Reformulated Gasoline Project. However, this project to increase the capacity of the CCRU was not evaluated and permitted as part of the Chevron’s CARB Reformulated Gasoline Phase 3 Project,

EQUIPMENT DESCRIPTION:

The proposed Section D permit pages are shown below. In these proposed permit pages, new text is indicated by underline and deleted text is indicated by strikeout.

Section D: Facility Description and Equipment Specific Conditions

Description	ID No.	Connected To	RECLAIM Source Type	Emissions and Requirements	Conditions
Process 5: CATALYTIC REFORMING					P13.1
System 1: CCRU					S13.2, S15.7, S15.8 , S15.10, S31.13, S31.16



**SOUTH COAST AIR QUALITY
MANAGEMENT DISTRICT**

OFFICE OF ENGINEERING AND COMPLIANCE

APPLICATION PROCESSING AND CALCULATIONS

PAGES
68

PAGE
3

APPL. NO.
493746, etc.

DATE
6/21/13 rev

PROCESSED BY:
Bob Sanford

CHECKED BY:

Description	ID No.	Connected To	RECLAIM Source Type	Emissions and Requirements	Conditions
REACTOR, R-410, NO. 1 PLATFORMING, HEIGHT: 34 FT; DIAMETER: 7 FT 6 IN A/N: 421106 498739	D1915				
REACTOR, R-420, NO. 2 PLATFORMING, HEIGHT: 29 FT; DIAMETER: 7 FT 6 IN A/N: 421106 498739	D1916				
REACTOR, R-430, NO. 3 PLATFORMING, HEIGHT: 35 FT; DIAMETER: 8 FT 6 IN A/N: 421106 498739	D1917				
REACTOR, R-440, NO. 4 PLATFORMING, HEIGHT: 35 FT; DIAMETER: 10 FT 6 IN A/N: 421106 498739	D1918				
VESSEL, SEPARATOR, V- 400, REACTOR PRODUCT, HEIGHT: 23 FT; DIAMETER: 12 FT 6 IN A/N: 421106 498739	D1919				
COMPRESSOR, K-400, RECYCLE GAS, CENTRIFUGAL, STEAM TURBINE DRIVE, WITH SEAL/LUBE OIL FILTERS A/N: 421106 498739	D1922				
POT, V-904A, SOUR SEAL OIL TRAP (K-905A) A/N: 421106 498739	D1923				
POT, V-904B, SOUR SEAL OIL TRAP (K-905A) A/N: 421106 498739	D1924				
POT, V-905A, SOUR SEAL OIL TRAP (K-905B) A/N: 421106 498739	D1925				
POT, V-905B, SOUR SEAL OIL TRAP (K-905B) A/N: 421106 498739	D1926				
VESSEL, TREATER, V-901A, NET GAS CHLORIDE, HEIGHT: 18 FT; DIAMETER: 9 FT 6 IN A/N: 421106 498739	D1927				
VESSEL, TREATER, V-901B, NET GAS CHLORIDE, HEIGHT: 18 FT; DIAMETER: 9 FT 6 IN A/N: 421106 498739	D1928				



**SOUTH COAST AIR QUALITY
MANAGEMENT DISTRICT**

OFFICE OF ENGINEERING AND COMPLIANCE

APPLICATION PROCESSING AND CALCULATIONS

PAGES
68

PAGE
4

APPL. NO.
493746, etc.

DATE
6/21/13 rev

PROCESSED BY:
Bob Sanford

CHECKED BY:

Description	ID No.	Connected To	RECLAIM Source Type	Emissions and Requirements	Conditions
COMPRESSOR, K-905A, NET GAS, WITH MODIFIED WHEELS, WITH 10,000-HP MOTOR COMMON TO K-905B, LUBE/SEAL OIL FILTER & MOTOR AIR COOLER. A/N: 421106 498739	D1929				H23.19, K171.17
COMPRESSOR, K-905B, NET GAS, WITH MODIFIED WHEELS, WITH 10,000-HP MOTOR COMMON TO K-905A, LUBE/SEAL OIL FILTER & MOTOR AIR COOLER A/N: 421106 498739	D1930				H23.19, K171.17
DRUM, FIRST STAGE RECONTACT, V-906, HEIGHT: 21 FT; DIAMETER: 10 FT A/N: 421106 498739	D1931				
DRUM, SECOND STAGE RECONTACT, V-907, HEIGHT: 21 FT; DIAMETER: 10 FT A/N: 421106 498739	D1932				
ACCUMULATOR, V-450, DEBUTANIZER OVERHEAD, HEIGHT: 16 FT 6 IN; DIAMETER: 5 FT 6 IN A/N: 421106 498739	D1937				
COLUMN, DEHEXANIZER, C-460, HEIGHT: 108 FT; DIAMETER: 12 FT A/N: 421106 498739	D1942				
ACCUMULATOR, V-460, DEHEXANIZER OVERHEAD, HEIGHT: 22 FT 6 IN; DIAMETER: 7 FT 6 IN A/N: 421106 498739	D1944				
HOPPER, NO.2 LOCK, 4-V7 A/N: 421106 498739	D1951				
CONVEYOR, PNEUMATIC, LIFT ENGAGER NO.2, 4-V8. A/N: 421106 498739	D1952				
CONVEYOR, LIFT ENGAGER NO.3, 4-V15. A/N: 421106 498739	D1953				



**SOUTH COAST AIR QUALITY
MANAGEMENT DISTRICT**

OFFICE OF ENGINEERING AND COMPLIANCE

APPLICATION PROCESSING AND CALCULATIONS

PAGES
68

PAGE
5

APPL. NO.
493746, etc.

DATE
6/21/13 rev

PROCESSED BY:
Bob Sanford

CHECKED BY:

Description	ID No.	Connected To	RECLAIM Source Type	Emissions and Requirements	Conditions
TANK, SURGE, 4-V17, NO.2 VENT GAS, HEIGHT: 4 FT 6 IN; DIAMETER: 2 FT 6 IN A/N: 421106 498739	D1954	D471 D472 D473 D3031			
VESSEL, COALESCER, 4-ME9, BOOSTER GAS A/N: 421106 498739	D1955				
VESSEL, COALESCER, 4-ME8, RECYCLE GAS A/N: 421106 498739	D1956				
HOPPER, NO.1 LOCK, 4-V2. A/N: 421106 498739	D1957			HAP: (10) [40CFR 63 SUBPART UUU, #1, 2-9-2005]	
TANK, SURGE, 4-V16, NO.1 VENT GAS, HEIGHT: 6 FT; DIAMETER: 3 FT 6 IN A/N: 421106 498739	D1958	D471 D472 D473 D3031		HAP: (10) [40CFR 63 SUBPART UUU, #1, 2-9-2005]	
CONVEYOR, PNEUMATIC, LIFT ENGAGER NO.1, 4-V3. A/N: 421106 498739	D1959				
VESSEL, COLLECTOR, 4-ME10, CATALYST PARTICLE, WITH AN EXHAUST BLOWER, 4-C5. A/N: 421106 498739	D1960			PM: (9) [RULE 405,2-7-1986]	D381.1
FILTER, J-410A, FUEL GAS A/N: 421106 498739	D1961				
FILTER, J-410B, FUEL GAS A/N: 421106 498739	D1962				
FILTER, J-491, CHEMICAL INJECTION A/N: 421106 498739	D1963				
TOWER, VENT GAS WASH, 4V-12, HEIGHT: 25 FT; DIAMETER: 2 FT 6 IN A/N: 421106 498739	D1964				C8.12, C8.13
DRUM, V-491, CHLORIDE, HEIGHT: 4 FT; DIAMETER: 2 FT A/N: 421106 498739	D3027				
KNOCK OUT POT, V-911, SEPARATOR, HYDROGEN/ CAUSTIC, HEIGHT: 22 FT 6 IN; DIAMETER: 5 FT A/N: 421106 498739	D3120				
BLOWER, REGENERATION AIR, 4-C1, CENTRIFUGAL A/N: 421106 498739	D3327				
BLOWER, CHLORINATION AIR, 4-C2, CENTRIFUGAL A/N: 421106 498739	D3328				



**SOUTH COAST AIR QUALITY
MANAGEMENT DISTRICT**

OFFICE OF ENGINEERING AND COMPLIANCE

APPLICATION PROCESSING AND CALCULATIONS

PAGES
68

PAGE
6

APPL. NO.
493746, etc.

DATE
6/21/13 rev

PROCESSED BY:
Bob Sanford

CHECKED BY:

Description	ID No.	Connected To	RECLAIM Source Type	Emissions and Requirements	Conditions
BLOWER, LIFT GAS, 4-C4, CENTRIFUGAL A/N: 421106 498739	D3329				
SCRUBBER, VENTURI, 4-ME13 A/N: 421106 498739	D3330				
FILTER, 4-ME16, RECYCLE GAS A/N: 421106 498739	D3331				
FILTER, 4-ME5, RECYCLE GAS A/N: 421106 498739	D3332				
TOWER, REGENERATION, 4-VI, HEIGHT: 46 FT; DIAMETER: 7 FT 6 IN A/N: 421106 498739	D3333			HAP: (10) [40CFR 63 SUBPART UUU, #1, 2-9-2005]	
HOPPER, LOCK, 4-V10, CATALYST ADDITION, DIAMETER: 2 FT; HEIGHT: 2 FT A/N: 421106 498739	D3334				
DRUM, VENT, NO. 1, 4-V11A, HEIGHT: 3 FT 6 IN; DIAMETER: 1 FT A/N: 421106 498739	D3335	<u>D471</u> <u>D472</u> <u>D473</u> <u>D3031</u>			
DRUM, VENT, NO. 2, 4-V11B, HEIGHT: 3 FT 6 IN; DIAMETER: 1 FT A/N: 421106 498739	D3336	<u>D471</u> <u>D472</u> <u>D473</u> <u>D3031</u>			
DRUM, VENT, NO. 3, 4-V11C, HEIGHT: 3 FT 6 IN; DIAMETER: 1 FT A/N: 421106 498739	D3337	<u>D471</u> <u>D472</u> <u>D473</u> <u>D3031</u>		HAP: (10) [40CFR 63 SUBPART UUU, #1, 2-9-2005]	
DRUM, VENT, NO. 4, 4-V11D, HEIGHT: 3 FT 6 IN; DIAMETER: 1 FT A/N: 421106 498739	D3338	<u>D471</u> <u>D472</u> <u>D473</u> <u>D3031</u>		HAP: (10) [40CFR 63 SUBPART UUU, #1, 2-9-2005]	
HOPPER, DISENGAGING, 4-V4, DIAMETER: 6FT; HEIGHT: 8 FT A/N: 421106 498739	D3339			PM: (9) [RULE 405,2-7-1986]	
HOPPER, SURGE, 4-V6, DIAMETER: 9 FT; HEIGHT: 14 FT A/N: 421106 498739	D3340			PM: (9) [RULE 405,2-7-1986]	
HOPPER, FLOW CONTROL, 4-V5, DIAMETER: 10 IN; HEIGHT: 9 IN A/N: 421106 498739	D3341				



**SOUTH COAST AIR QUALITY
MANAGEMENT DISTRICT**

OFFICE OF ENGINEERING AND COMPLIANCE

APPLICATION PROCESSING AND CALCULATIONS

PAGES
68

PAGE
7

APPL. NO.
493746, etc.

DATE
6/21/13 rev

PROCESSED BY:
Bob Sanford

CHECKED BY:

Description	ID No.	Connected To	RECLAIM Source Type	Emissions and Requirements	Conditions
COLUMN, DEBUTANIZER, C-450, WITH NEW TRAYS, HEIGHT: 67 FT; DIAMETER: 8 FT A/N: 421106 498739	D3342				K171.17
BLOWER, FINES, C-5 A/N: 421106 498739	D3343				
FILTER, FEED, J-401 A/N: 421106 498739	D3344				
FILTER, ME2 A/N: 421106 498739	D3345				
FILTER, ME3 A/N: 421106 498739	D3346				
FILTER, ME6, OFF V-13 A/N: 421106 498739	D3347				
POT, WATER DRAW, V-401, HEIGHT: 4 FT; DIAMETER: 1 FT A/N: 421106 498739	D3348				
POT, HOLDING, V-404, SOUR OIL, HEIGHT: 2 FT 8 IN; DIAMETER: 1 FT A/N: 421106 498739	D3349				
TANK, J-909, DEGASSING, DIAMETER: 2 FT 3 IN; HEIGHT: 3 FT 6 IN, WITH A 3 KW ELECTRIC HEATER A/N: 421106 498739	D4218				
FILTER, J-410, FUEL GAS A/N: 421106 498739	D3955				K171.17
FUGITIVE EMISSIONS, MISCELLANEOUS A/N: 421106 498739	D3613			HAP: (10) [40CFR 63 Subpart CC, #5A,5-25-2001]	H23.19

Description	ID No.	Connected To	RECLAIM Source Type	Emissions and Requirements	Conditions
Process 5: CATALYTIC REFORMING					P13.1
System 2: CCRU HEATING SYSTEM					
HEATER, CCR FEED, F-410, NATURAL GAS/ REFINERY GAS, VAPORIZED LPG, PROCESS GAS, WITH LOW NOX BURNER, 177 MMBTU/HR WITH BURNER, NATURAL GAS/REFINERY GAS, JOHN ZINK, MODEL	D471	C1967 D1954 D1958 D3335 D3336 D3337 D3338	NOx: MAJOR SOURCE SOx: MAJOR SOURCE	CO: 2000 PPMV REFINERY/ NATURAL GAS (5) [RULE 407,4-2-1982]; CO: 10 PPMV REFINERY/ NATURAL GAS (4) [RULE 1303(a)(1)-BACT, 5-10-1996] NOX: 5 PPMV REFINERY/NATURAL GAS (4) [RULE 2005,4-20-2001; RULE 2005,5-6-2005]; PM: 0.1 GRAINS/SCF REFINERY/ NATURAL GAS (5A) [RULE	A63.17, A99.7, A99.10, A195.4, A195.5, B59.3, B61.6, C1.105, C1.106, C1.107, C1.108, D42.24, D42.25, D42.28, D29.8, D82.5, D82.9, D90.20, D90.37, E54.12, H23.2, H23.50, K171.17



**SOUTH COAST AIR QUALITY
MANAGEMENT DISTRICT**

OFFICE OF ENGINEERING AND COMPLIANCE

APPLICATION PROCESSING AND CALCULATIONS

PAGES
68

PAGE
8

APPL. NO.
493746, etc.

DATE
6/21/13 rev

PROCESSED BY:
Bob Sanford

CHECKED BY:

Description	ID No.	Connected To	RECLAIM Source Type	Emissions and Requirements	Conditions
PSFR-10 (16) AND PSFR-12 (8), WITH LOW NOX BURNER, 177 MMBTU/HR A/N: 421107 493750				409,8-7-1981] PM: (9) [RULE 404,2-7-1986]	
HEATER , CATALYTIC REFORMING, F-430, NATURAL GAS/ REFINERY GAS, VAPORIZED LPG, PROCESS GAS, WITH LOW NOX BURNER, 123 MMBTU/HR WITH BURNER, NATURAL GAS/REFINERY GAS, JOHN ZINK, MODEL PSFR-10 (12) AND PSFR-12 (6), WITH LOW NOX BURNER, 123 MMBTU/HR A/N: 421109 493753	D472	C1967 D1954 D1958 D3335 D3336 D3337 D3338	NOx: MAJOR SOURCE SOx: MAJOR SOURCE	CO: 2000 PPMV REFINERY/ NATURAL GAS (5) [RULE 407,4-2-1982] ; CO: 10 PPMV REFINERY/ NATURAL GAS (4) [RULE 1303(a)(1)-BACT, 5-10-1996] NOX: 5 PPMV REFINERY/NATURAL GAS (4) [RULE 2005,4-20-2001; RULE 2005,5-6-2005]; PM: 0.1 GRAINS/SCF REFINERY/ NATURAL GAS (5A) [RULE 409,8-7-1981] PM: (9) [RULE 404,2-7-1986]	A63.17, A99.7, A99.10, A195.4, A195.5, B59.3, B61.6, C1.105, C1.106, C1.107, C1.110, D12.24, D12.25, D12.28, D29.8, D82.5, D82.9, D90.20, D90.37, E54.12, H23.2, H23.50, K171.17
HEATER , CATALYTIC REFORMING, F-440, NATURAL GAS/ REFINERY GAS, VAPORIZED LPG, PROCESS GAS, WITH LOW NOX BURNER, 88 MMBTU/HR WITH BURNER, NATURAL GAS/REFINERY GAS, JOHN ZINK, MODEL PSFR-10 (12) AND PSFR-12 (6), WITH LOW NOX BURNER, 88 MMBTU/HR A/N: 421110 493746	D473	C1967 D1954 D1958 D3335 D3336 D3337 D3338	NOx: MAJOR SOURCE SOx: MAJOR SOURCE	CO: 2000 PPMV REFINERY/ NATURAL GAS (5) [RULE 407,4-2-1982] ; CO: 10 PPMV REFINERY/ NATURAL GAS (4) [RULE 1303(a)(1)-BACT, 5-10-1996] NOX: 5 PPMV REFINERY/NATURAL GAS (4) [RULE 2005,4-20-2001; RULE 2005,5-6-2005]; PM: 0.1 GRAINS/SCF REFINERY/ NATURAL GAS (5A) [RULE 409,8-7-1981] PM: (9) [RULE 404,2-7-1986]	A63.17, A99.7, A99.10, A195.4, A195.5, B59.3, B61.6, C1.105, C1.106, C1.107, C1.111, D12.24, D12.25, D12.28, D29.8, D82.5, D82.9, D90.20, D90.37, E54.12, H23.2, H23.50, K171.17
HEATER , CATALYTIC REFORMING, F-420, NATURAL GAS/ REFINERY GAS, VAPORIZED LPG, PROCESS GAS, WITH LOW NOX BURNER, 199 MMBTU/HR WITH BURNER, NATURAL GAS/REFINERY GAS, JOHN ZINK, MODEL PSFR-10 (32), WITH LOW NOX BURNER, 199 MMBTU/HR A/N: 421108 493748	D3031	C1967 D1954 D1958 D3335 D3336 D3337 D3338	NOx: MAJOR SOURCE SOx: MAJOR SOURCE	CO: 2000 PPMV REFINERY/ NATURAL GAS (5) [RULE 407,4-2-1982] ; CO: 10 PPMV REFINERY/ NATURAL GAS (4) [RULE 1303(a)(1)-BACT, 5-10-1996] NOX: 5 PPMV REFINERY/NATURAL GAS (4) [RULE 2005,4-20-2001; RULE 2005,5-6-2005]; PM: 0.1 GRAINS/SCF REFINERY/ NATURAL GAS (5A) [RULE 409,8-7-1981] PM: (9) [RULE 404,2-7-1986]	A63.17, A99.7, A99.10, A195.4, A195.5, B59.3, B61.6, C1.105, C1.106, C1.107, C1.109, D12.24, D12.25, D12.28, D29.8, D82.5, D82.9, D90.20, D90.37, E54.12, H23.2, H23.50, K171.17
SELECTIVE CATALYTIC REDUCTION, R-429, HITACHI ZOSEN, WITH CERAMIC MONOLITHIC HONEYCOMB NOXNON 700 CATALYST OR	C1967	D471 D472 D473 S1969 D3031		NH3: 9 PPMV (4) [RULE 1303(a)(1)-BACT,5-10-1996]	A99.6, A195.3, D12.3, D12.11, D12.12, D29.9, D82.5, D82.8, E71.3, E193.5, K171.17

 SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT OFFICE OF ENGINEERING AND COMPLIANCE APPLICATION PROCESSING AND CALCULATIONS	PAGES 68	PAGE 9
	APPL. NO. 493746, etc.	DATE 6/21/13 rev
	PROCESSED BY: Bob Sanford	CHECKED BY:

Description	ID No.	Connected To	RECLAIM Source Type	Emissions and Requirements	Conditions
<u>APPROVED EQUIVALENT CATALYST</u> , 536.7 CU. FT. TOTAL WITH AMMONIA INJECTION, 29% AQUEOUS AMMONIA A/N: 421111					
STACK, HEIGHT: 185 FT.; DIAMETER: 9 FT 2 IN A/N: 421111	S1969	C1967			

PROCESS CONDITIONS:

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

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:

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; Process 20, System 3, 4, 7, 10, 11, 12, 14, 18, 19, 23; Process 21, System 13, 14, 16, 18]

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 a 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.

 <p>SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT</p> <p>OFFICE OF ENGINEERING AND COMPLIANCE</p> <p>APPLICATION PROCESSING AND CALCULATIONS</p>	PAGES 68	PAGE 10
	APPL. NO. 493746, etc.	DATE 6/21/13 rev
	PROCESSED BY: Bob Sanford	CHECKED BY:

This process/system shall not be operated unless the vapor recovery system and/or flare system 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, 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 5, System 1**; Process 7, System 4, 7; Process 9, System 1; Process 10, System 4; Process 21, System 16]

[Note: This condition will be removed since it is redundant with condition S15.7.]

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; Process 21, System 18]

[Note: The vent streams to the CCRU Heaters are not listed as exceptions in this condition since they are specified in the "connect to" columns for each of the subject devices.]

S31.13 The following BACT requirements shall apply to VOC service fugitive components associated with the devices that are covered by application number(s) **308571**, **318507**, and **377967**:

 <p>SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT</p> <p>OFFICE OF ENGINEERING AND COMPLIANCE</p> <p>APPLICATION PROCESSING AND CALCULATIONS</p>	PAGES 68	PAGE 11
	APPL. NO. 493746, etc.	DATE 6/21/13 rev
	PROCESSED BY: Bob Sanford	CHECKED BY:

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 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 3, System 1; [Process 5, System 1](#)]

S31.16 The following BACT requirements shall apply to VOC service fugitive components associated with the devices that are covered by application number(s) 410240, 411356, 411357, 412024, 414153, 414154, 414157, 414158, **421106**, 422682, 427936, 454408 & 456768:

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 and those in heavy liquid service as defined in 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.

 <p>SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT</p> <p>OFFICE OF ENGINEERING AND COMPLIANCE</p> <p>APPLICATION PROCESSING AND CALCULATIONS</p>	PAGES 68	PAGE 12
	APPL. NO. 493746, etc.	DATE 6/21/13 rev
	PROCESSED BY: Bob Sanford	CHECKED BY:

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 Rule 1173, 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 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.

Once 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]

[Systems subject to this condition : Process 3, System 1; **Process 5, System 1**; Process 7, System 4; Process 8, System 10; Process 12, System 2, 9, 11, 26; Process 20, System 31; Process 21, System 13]

DEVICE CONDITIONS

A63.17 The operator shall limit emissions from this equipment as follows:

CONTAMINANT	EMISSIONS LIMIT
CO	Less than or equal to 3550 lbs in any calendar month
ROG VOC	Less than or equal to 2590 lbs in any calendar month
PM10	Less than or equal to 5436 lb in any calendar month

For the purposes of this condition, the limit(s) shall be based on the total combined emissions from equipment D471, D472, D473 and D3031.

 <p style="text-align: center;">SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT</p> <p style="text-align: center;">OFFICE OF ENGINEERING AND COMPLIANCE</p> <p style="text-align: center;">APPLICATION PROCESSING AND CALCULATIONS</p>	PAGES 68	PAGE 13
	APPL. NO. 493746, etc.	DATE 6/21/13 rev
	PROCESSED BY: Bob Sanford	CHECKED BY:

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.

The operator shall calculate the emission limit(s) for purposes of determining compliance with the PM10 emission limit specified above, and to avoid double counting of SO2 emission, the PM10 that may be formed due to the reaction of SO2 with NH3 in the sampling impingers used in such analysis shall be deducted and excluded as PM10 emission. This methodology shall be included in a District-approved test protocol and shall be used to calculate PM10 emissions based on source test results.

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

[Devices subject to this condition: **D471, D472, D473, D3031**]

A99.6 The 9 PPM NH3 emission limit(s) shall not apply during startup and shutdown.

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

[Devices subject to this condition: **C1967, C3696**]

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

[RULE 2005, 4-20-2001]

[Devices subject to this condition: **D471, D472, D473, D3031, C3780**]

A99.10 The 10 PPM CO emission limit(s) shall not apply during refractory dryout, startup or shutdown.

~~**[RULE 2005, 4-20-2001, RULE 1303(a)(1)-BACT, 5-10-1996]**~~

[Devices subject to this condition: **D471, D472, D473, D3031**]

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: **C1967, C3780**]

A195.4 The 5 PPMV NOX emission limit(s) is averaged over 3 consecutive hours @ 3 percent oxygen, dry basis.

[RULE 2005, 4-20-2001]

[Devices subject to this condition: **D471, D472, D473, D3031**]

 <p>SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT</p> <p>OFFICE OF ENGINEERING AND COMPLIANCE</p> <p>APPLICATION PROCESSING AND CALCULATIONS</p>	PAGES 68	PAGE 14
	APPL. NO. 493746, etc.	DATE 6/21/13 rev
	PROCESSED BY: Bob Sanford	CHECKED BY:

A195.5 The 10 PPMV CO 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: **D471, D472, D473, D3031**]

B59.3 The operator shall only use the following material(s) in this device:

Fuel gas. For the purpose of this condition, the term "fuel gas" shall be defined as either refinery gas, or vaporized LPG, or natural gas, or any combination thereof, with a total sulfur content less than 40 ppmv calculated as H2S based on a 4-hr averaging period.

Process gas: For the purpose of this condition, the term "process gas" shall be defined as gas vented from the following devices in the Continuous Catalytic Reforming Unit (Process 5, System 1): D1954, D1958, D3335, D3336, D3337 and D3338.

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

[Devices subject to this condition: **D471, D472, D473, D3031**]

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

Compound	ppm by volume
H2S 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: D20, D453, **D471, D472, D473**, D502, D504, D641, D643, C2158, D2198, D2199, D2207, D2208, D2216, **D3031**, D3054, C3148, C3493, D3530, D3695, D3778, D3973]

C1.105 The operator shall limit the duration of ~~initial and subsequent~~ cold startups to no more than 48 hour(s).

For the purpose of this condition, the beginning of a cold startup shall be defined as the initial firing of the equipment after its refractory dry-out operation has been completed. If refractory dryout is not required, then the beginning of a cold startup shall be the initial firing of the equipment at ambient temperature.

This limit shall be based on the total combined limit for equipment D471, D472, D473 and D3031.

The operator shall be allowed a total of 144 operating hours after initial furnace firing to complete its refractory dryout operations prior to beginning the startup of the plant.

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

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

 <p>SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT</p> <p>OFFICE OF ENGINEERING AND COMPLIANCE</p> <p>APPLICATION PROCESSING AND CALCULATIONS</p>	PAGES 68	PAGE 15
	APPL. NO. 493746, etc.	DATE 6/21/13 rev
	PROCESSED BY: Bob Sanford	CHECKED BY:

[Devices subject to this condition: **D471, D472, D473, D3031**]

C1.106 The operator shall limit the duration of startup to no more than 24 hour(s).

For the purpose of this condition, startup shall be defined as startup other than a cold startup.

This limit shall be based on the total combined limit for equipment D471, D472, D473 and D3031 for each event.

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

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

[Devices subject to this condition: **D471, D472, D473, D3031**]

C1.107 The operator shall limit the duration of shutdown to no more than 6 hour(s).

This limit shall be based on the total combined limit for equipment D471, D472, D473 and D3031 for each event.

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

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

[Devices subject to this condition: **D471, D472, D473, D3031**]

C1.108 The operator shall limit the firing rate to no more than 177 MM Btu per hour.

To comply with this condition, the operator shall install and maintain a(n) a continuous fuel flow meter for both the natural gas and refinery gas streams fed to the duct burner(s). The operator shall install a continuous or semi-continuous HHV analyzer for refinery gas and use the RECLAIM default HHV value for natural gas. Monitoring requirements shall not apply during regular calibration checks of the system, or routine maintenance and repair lasting 60 minutes or less

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.

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. Such waiver is extended beyond 96 consecutive hours only if a petition for an interim variance is filed in accordance with Regulation V and shall terminate at the time the Hearing Board acts upon such variance petition.

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

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

 <p style="text-align: center;">SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT</p> <p style="text-align: center;">OFFICE OF ENGINEERING AND COMPLIANCE</p> <p style="text-align: center;">APPLICATION PROCESSING AND CALCULATIONS</p>	PAGES 68	PAGE 16
	APPL. NO. 493746, etc.	DATE 6/21/13 rev
	PROCESSED BY: Bob Sanford	CHECKED BY:

[Devices subject to this condition: **D471**]

C1.109 The operator shall limit the firing rate to no more than 199 MM Btu per hour.

To comply with this condition, the operator shall install and maintain a(n) a continuous fuel flow meter for both the natural gas and refinery gas streams fed to the duct burner(s). The operator shall install a continuous or semi-continuous HHV analyzer for refinery gas and use the RECLAIM default HHV value for natural gas. Monitoring requirements shall not apply during regular calibration checks of the system, or routine maintenance and repair lasting 60 minutes or less

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.

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. Such waiver is extended beyond 96 consecutive hours only if a petition for an interim variance is filed in accordance with Regulation V and shall terminate at the time the Hearing Board acts upon such variance petition.

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

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

[Devices subject to this condition: **D3031**]

C1.110 The operator shall limit the firing rate to no more than 123 MM Btu per hour.

To comply with this condition, the operator shall install and maintain a(n) a continuous fuel flow meter for both the natural gas and refinery gas streams fed to the duct burner(s). The operator shall install a continuous or semi-continuous HHV analyzer for refinery gas and use the RECLAIM default HHV value for natural gas. Monitoring requirements shall not apply during regular calibration checks of the system, or routine maintenance and repair lasting 60 minutes or less

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.

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. Such waiver is extended beyond 96 consecutive hours only if a petition for an interim variance is filed in accordance with Regulation V and shall terminate at the time the Hearing Board acts upon such variance petition.

 <p>SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT</p> <p>OFFICE OF ENGINEERING AND COMPLIANCE</p> <p>APPLICATION PROCESSING AND CALCULATIONS</p>	PAGES 68	PAGE 17
	APPL. NO. 493746, etc.	DATE 6/21/13 rev
	PROCESSED BY: Bob Sanford	CHECKED BY:

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

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

[Devices subject to this condition: **D472**]

C1.111 The operator shall limit the firing rate to no more than 88 MM Btu per hour.

To comply with this condition, the operator shall install and maintain a(n) a continuous fuel flow meter for both the natural gas and refinery gas streams fed to the duct burner(s). The operator shall install a continuous or semi-continuous HHV analyzer for refinery gas and use the RECLAIM default HHV value for natural gas. Monitoring requirements shall not apply during regular calibration checks of the system, or routine maintenance and repair lasting 60 minutes or less

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.

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. Such waiver is extended beyond 96 consecutive hours only if a petition for an interim variance is filed in accordance with Regulation V and shall terminate at the time the Hearing Board acts upon such variance petition.

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

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

[Devices subject to this condition: **D473**]

C8.12 The operator shall use this equipment in such a manner that the flow rate being monitored, as indicated below, is not less than 35 gpm.

To comply with this condition, the operator shall install and maintain a(n) flow meter to accurately indicate the flow rate of the recirculating caustic solution.

The operator shall determine and record the parameter being monitored once a day.

This condition shall only apply when the catalyst regeneration system (including D3333) is in use.

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

[**RULE 3004(a)(4)-Periodic Monitoring, 12-12-1997; 40CFR 63 Subpart UUU, 4-20-2006**]

[Devices subject to this condition: **D1964**]

 <p>SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT</p> <p>OFFICE OF ENGINEERING AND COMPLIANCE</p> <p>APPLICATION PROCESSING AND CALCULATIONS</p>	PAGES 68	PAGE 18
	APPL. NO. 493746, etc.	DATE 6/21/13 rev
	PROCESSED BY: Bob Sanford	CHECKED BY:

C8.13 The operator shall use this equipment in such a manner that the pH being monitored, as indicated below, is not less than 7.2 of the pH scale.

The operator shall monitor the pH of the recirculating caustic solution once a day except during maintenance and breakdown periods.

The operator shall determine and record the parameter being monitored once a day.

This condition shall only apply when the catalyst regeneration system (including D3333) is in use.

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

[**RULE 3004(a)(4)-Periodic Monitoring, 12-12-1997; 40CFR 63 Subpart UUU, 4-20-2006**]

[Devices subject to this condition: [D1964](#)]

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 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.

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: [C1967](#), C2210, C2213, C3058, C3533, C3696, C3780]

D12.11 The operator shall install and maintain a(n) temperature reading device to accurately indicate the temperature at the inlet 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 +/- 5 percent. It shall be calibrated once every 12 months.

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

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

[Devices subject to this condition: [C1967](#), [C3533](#), [C3696](#), [C4361](#)]

~~**D12.12** The operator shall install and maintain a(n) temperature reading device to accurately indicate the temperature at the inlet to the SCR.~~

 <p style="text-align: center;">SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT</p> <p style="text-align: center;">OFFICE OF ENGINEERING AND COMPLIANCE</p> <p style="text-align: center;">APPLICATION PROCESSING AND CALCULATIONS</p>	PAGES 68	PAGE 19
	APPL. NO. 493746, etc.	DATE 6/21/13 rev
	PROCESSED BY: Bob Sanford	CHECKED BY:

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

~~[Devices subject to this condition: C1967]~~

[Note: This condition will be replaced by condition D12.11.]

~~**D12.24** The operator shall install and maintain a(n) continuous monitoring system to accurately indicate the oxygen concentration at the exhaust stack.~~

~~The continuous monitoring system required under this condition shall be in accordance with RECLAIM requirements.~~

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

~~**RULE 1303(a)(1) BACT, 5-10-1996; RULE 2005, 4-20-2001]**~~

~~[Devices subject to this condition: D471, D472, D473, D3031]~~

[Note: This requirement is included in condition D82.5 that will be tagged to this equipment.]

~~**D12.25** The operator shall install and maintain a(n) continuous monitoring system to accurately indicate the fuel usage being supplied to the fuel supply line.~~

~~The continuous fuel monitoring system required under this condition shall be a non-resettable fuel meter that would accurately indicate the fuel gas usage in the natural gas and refinery gas fuel supply lines per RECLAIM requirements.~~

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

~~[RULE 1303(a)(1) BACT, 5-10-1996; RULE 2005, 4-20-2001]~~

~~[Devices subject to this condition: D471, D472, D473, D3031]~~

~~[Note: These requirements are consolidated into conditions C1.108 – C1.111].~~

~~**D12.28** The operator shall install and maintain a(n) continuous monitoring system to accurately indicate the energy input at the combustion chamber.~~

~~The continuous monitoring system required under this condition shall be in accordance with RECLAIM requirements.~~

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

~~This condition is for the purpose of showing compliance with the heat input limit specified for this equipment.~~

~~[RULE 1303(a)(1) BACT, 5-10-1996; RULE 2005, 4-20-2001]~~

~~[Devices subject to this condition: D471, D472, D473, D3031]~~

[Note: These requirements are consolidated into conditions C1.108 – C1.111].

 SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT OFFICE OF ENGINEERING AND COMPLIANCE APPLICATION PROCESSING AND CALCULATIONS	PAGES 68	PAGE 20
	APPL. NO. 493746, etc.	DATE 6/21/13 rev
	PROCESSED BY: Bob Sanford	CHECKED BY:

D29.8 The operator shall conduct source test(s) for the pollutant(s) identified below.

Pollutant(s) to be tested	Required Test Method(s)	Averaging Time	Test Location
NOX emissions	District method 100.1	District-approved averaging time	Outlet of the SCR serving this equipment
SOX emissions	District Method 100.1 or 6.1	District-approved averaging time	Outlet of the SCR serving this equipment
ROG emissions	District Method 25.1 or 25.3	1 hour	Outlet of the SCR serving this equipment
CO emissions	District Method 100.1 or 10.1	District-approved averaging time	Outlet of the SCR serving this equipment
PM emissions	District Method 5.1, 5.2 or 5.3	District-approved averaging time	Outlet of the SCR serving this equipment
PM10 emissions	EPA Method 201A	District-approved averaging time	Outlet of the SCR serving this equipment
Acetaldehyde	CARB method 430	District-approved averaging time	Outlet of the SCR serving this equipment
Benzene	CARB Method 410A or 410B	District-approved averaging time	Outlet of the SCR serving this equipment
Formaldehyde	CARB method 430	District-approved averaging time	Outlet of the SCR serving this equipment
Toluene	CARB Method 410A or 410B	District-approved averaging time	Outlet of the SCR serving this equipment
Ethyl benzene	CARB Method 410A or 410B	District-approved averaging time	Outlet of the SCR serving this equipment
Xylene	CARB Method 410A or 410B	District-approved averaging time	Outlet of the SCR serving this equipment
Cadmium	CARB Method 424	District-approved averaging time	Outlet of the SCR serving this equipment
Nickel, subsulfide	CARB Method 433, Ni only	District-approved averaging time	Outlet of the SCR serving this equipment

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

At all times, the equipment shall be limited to 115% of the maximum duty at which a source test has been conducted that demonstrates compliance with all applicable limits. After a source test has been conducted that demonstrates compliance with all applicable emission limits at 80 percent or greater of the maximum design capacity, then the limit on the equipment from that time thereafter shall be considered to be maximum design duty.

 <p>SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT</p> <p>OFFICE OF ENGINEERING AND COMPLIANCE</p> <p>APPLICATION PROCESSING AND CALCULATIONS</p>	PAGES 68	PAGE 21
	APPL. NO. 493746, etc.	DATE 6/21/13 rev
	PROCESSED BY: Bob Sanford	CHECKED BY:

The test shall be conducted to demonstrate compliance with the emission limits of 5 ppmv NO_x and 10 ppmv CO, all at 3 percent oxygen, dry basis, three-hour average.

The test shall be conducted at least every three years to determine the concentration and ~~report the~~ mass emission rate in pounds per hour for NO_x, SO_x, ROG, CO, Total PM, and PM₁₀ ~~and the following compounds: Acetaldehyde, Benzene, Formaldehyde, Toluene, Ethyl Benzene, Xylene, Cadmium, and Nickel, subsulfide.~~

The test shall be conducted to determine the oxygen concentration.

~~The test(s) shall be conducted at least every three years after the initial source test for NO_x, SO_x, ROG, CO, PM₁₀, total PM and O₂.~~

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.

~~The test shall be conducted for NO_x, SO_x and CO (for initial and subsequent testing) until their CEMS are RECLAIM certified. Once certified, NO_x, SO_x, and CO 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.

[**RULE 1303(a)(1)-BACT, 5-10-1996; RULE 1303(b)(2)-Offset, 5-10-1996; RULE 1401, 5-2-2003; RULE 2005, 4-20-2001; RULE 3004(a)(4)-Periodic Monitoring, 12-12-1997; RULE 407, 4-2-1982**]

[Devices subject to this condition: **D471, D472, D473, D3031**]

D29.9 The operator shall conduct source test(s) for the pollutant(s) identified below.

Pollutant(s) to be tested	Required Test Method(s)	Averaging Time	Test Location
NH ₃ emissions	Approved District method	District-approved averaging time	Outlet of the SCR

The test shall be conducted when all four heaters vented to this equipment are operating under normal operating conditions.

The test shall be conducted at least annually until the NH₃ CEMS to be provided for the equipment is accepted or certified by the District. Once accepted or certified, source test data may be substituted with CEMS data.

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

[Devices subject to this condition: **C1967**]

 <p style="text-align: center;">SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT</p> <p style="text-align: center;">OFFICE OF ENGINEERING AND COMPLIANCE</p> <p style="text-align: center;">APPLICATION PROCESSING AND CALCULATIONS</p>	PAGES 68	PAGE 22
	APPL. NO. 493746, etc.	DATE 6/21/13 rev
	PROCESSED BY: Bob Sanford	CHECKED BY:

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

NOx concentration in ppmv

NH3 concentration in ppmv

Oxygen concentration in percent volume

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

The CEMS will convert the actual NOx 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: [D471, D472, D473, C1967, D3031, D3778, C3780](#)]

~~**D82.8** The operator shall install and maintain a CEMS to measure the following parameters:~~

~~NH3 concentration in ppmv~~

~~Concentrations shall be corrected to 3 percent oxygen on a dry basis.~~

~~The CEMS shall be installed and maintained to continuously record the parameter being measured.~~

~~The CEMS shall be installed after consultation with the SCAQMD on the appropriate CEMS. The operator shall submit to the SCAQMD at least 60 days prior to the installation of the CEMS, a CEMS application proposal and a Quality Control and Performance Evaluation plan for the operation of the CEMS. The 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]**~~

~~[Devices subject to this condition: [C1967](#)]~~

[Note: This condition will be replaced by condition D82.5.]

~~**D82.9** The operator shall install and maintain a CEMS to measure the following parameters:~~

~~CO concentration in ppmv~~

~~Oxygen concentration in percent volume~~

 <p>SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT</p> <p>OFFICE OF ENGINEERING AND COMPLIANCE</p> <p>APPLICATION PROCESSING AND CALCULATIONS</p>	PAGES 68	PAGE 23
	APPL. NO. 493746, etc.	DATE 6/21/13 rev
	PROCESSED BY: Bob Sanford	CHECKED BY:

~~Concentrations shall be corrected to 3 percent oxygen on a dry basis.~~

~~The CEMS shall be installed prior to initial cold startup and shall be certified within a year of installation.~~

~~Certification test data shall be submitted within 60 days following test completion.~~

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

~~[Devices subject to this condition: [D471](#), [D472](#), [D473](#), [D3031](#)]~~

[*Note: This condition will be replaced by condition D82.5.*]

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: D20, D453, [D471](#), [D472](#), [D473](#), D502, D504, D641, D643, D2198, D2199, D2207, D2208, D2216, [D3031](#), D3054, D3530, D3695, D3778, D3973]

[*Note: Condition D90.20 is only applicable to monitoring of H₂S concentrations of the refinery fuel gas combusted in the heaters. The process/waste gas vented from the CCRU is monitored according to the AMP as specified in Condition D90.37*]

D90.37 The operator shall periodically monitor the H₂S concentration in CCRU process gas before being burned in this device according to the following specifications:

The Alternative Monitoring Plan (AMP) approved by the United States Environmental Protection Agency (USEPA) on September 24, 2003 for the periodic monitoring and reporting of H₂S concentration for the CCRU feed stream and the CCRU process gas vent stream to this heater.

In addition, the operator shall also comply with all other requirements of the AMP issued by the USEPA on September 24, 2003 for this heater.

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

[**40CFR 60 Subpart A, 5-16-2007; 40CFR 60 Subpart J, 6-24-2008**]

[Devices subject to this condition: [D471](#), [D472](#), [D473](#), [D3031](#)]

 <p>SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT</p> <p>OFFICE OF ENGINEERING AND COMPLIANCE</p> <p>APPLICATION PROCESSING AND CALCULATIONS</p>	PAGES 68	PAGE 24
	APPL. NO. 493746, etc.	DATE 6/21/13 rev
	PROCESSED BY: Bob Sanford	CHECKED BY:

D381.1 The operator shall conduct an inspection for visible emissions from all stacks and other emission points of this equipment whenever there is a public complaint of visible emissions, whenever visible emissions are observed, and on an annual basis, at least, unless the equipment did not operate during the entire annual period. The routine annual inspection shall be conducted while the equipment is in operation and during daylight hours. If any visible emissions (not including condensed water vapor) are detected, the operator shall take corrective action(s) that eliminates the visible emissions within 24 hours and report the visible emissions as a potential deviation in accordance with the reporting requirements in Section K of this permit.

The operator shall keep the records in accordance with the recordkeeping requirements in Section K of this permit and the following records:

- 1). Stack or emission point identification;
- 2). Description of any corrective actions taken to abate visible emissions; and
- 3). Date and time visible emission was abated.

[RULE 3004(a)(4)-Periodic Monitoring, 12-12-1997; RULE 401, 3-2-1984]

[Devices subject to this condition: **D1960**]

E54.12 The operator is not required to vent this equipment to the following equipment if all of the requirements listed below are met:

Device ID: C1967 [SELECTIVE CATALYTIC REDUCTION, R-429, ~~HITACHI ZOSEN, WITH HONEYCOMB NOXNON 700 CATALYST, 536.7 CU. FT. TOTAL~~]

Requirement number 1: The equipment is in either startup or shutdown mode

Requirement number 2: The SCR inlet temperature is less than 570 degrees F

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

[Devices subject to this condition: **D471, D472, D473, D3031**]

E71.3 The operator shall only inject aqueous ammonia into this equipment if the flue gas inlet temperature is at least 570 degrees F.

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

[Devices subject to this condition: **C1967**]

E193.5 The operator shall construct, operate, and maintain this equipment according to the following specifications:

The operator shall not install and use an “equivalent” catalyst until approval is received in writing from the District.

To establish equivalency of a catalyst, the operator shall submit the following information for the catalyst to the District permitting engineer: manufacturer, description (type), configuration, dimensions (per block), number of blocks, total volume, space velocity, life, vendor performance guarantee, performance curve (versus temperature), minimum operating temperature, estimated SO₂ to SO₃

 <p>SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT</p> <p>OFFICE OF ENGINEERING AND COMPLIANCE</p> <p>APPLICATION PROCESSING AND CALCULATIONS</p>	PAGES 68	PAGE 25
	APPL. NO. 493746, etc.	DATE 6/21/13 rev
	PROCESSED BY: Bob Sanford	CHECKED BY:

conversion, estimated NO to NO₂ conversion, and concentration of Rule 1401 TACs.

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

[Devices subject to this condition: [C1967](#), C2210, C2213, C2217, C3058]

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]

[Devices subject to this condition D20, D453, [D471](#), [D472](#), [D473](#), D502, D504, D641, D643, C1746, C2158, C3012, [D3031](#), C3148, C3493, D3778, D3973, C4116]

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, 6-1-2007; 40CFR 60 Subpart GGG, 6-2-2008]

[Devices subject to this condition : D196, D237, D633, D1047, D1048, D1049, D1054, D1808, D1809, [D1929](#), [D1930](#), D1981, D2042, D2200, D2201, D3522, D3527, D3577, D3579, D3580, D3581, D3583, D3585, D3587, D3589, [D3613](#), D3622, D3634, D3636, D3637, D3638, D3639, D3675, D3676, D3679, D3686, D3726, D3803, D3921, D3969, D3972, D4085, D4107, D4205, D4206, D4264, D4269]

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

<u>Contaminant</u>	<u>Rule</u>	<u>Rule/Subpart</u>
<u>HAP</u>	<u>40CFR63, Subpart</u>	<u>DDDDD</u>

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

[Devices subject to this condition: [D3778](#), [D471](#), [D472](#), [D473](#), [D3031](#)]

K171.17 The operator shall provide to the District the following items:

Final drawings and/or specifications of the equipment installed/constructed/modified, including but not limited to PFD, P&ID and revisions/updates, shall be submitted to the SCAQMD within 60 days after completion of the project.

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

 <p>SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT</p> <p>OFFICE OF ENGINEERING AND COMPLIANCE</p> <p>APPLICATION PROCESSING AND CALCULATIONS</p>	PAGES 68	PAGE 26
	APPL. NO. 493746, etc.	DATE 6/21/13 rev
	PROCESSED BY: Bob Sanford	CHECKED BY:

[Devices subject to this condition: ~~D471, D472, D473~~, D633, ~~D1929, D1930, C1967, D3031, D3342, D3955~~, D3959, D3960, D3961]

[Note: Chevron provided the required drawings and equipment specifications.]

FEE ANALYSIS

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

Table 1 – Summary of Fee Analysis

A/N	Equipment Description	BCAT/ CCAT	Fee Schedul e	Fee Type	Fiscal Year (1)	Fee
498739	Continuous Catalytic Reforming Unit (CCRU)	329708 (BCAT)	E	Change of Condition	08-09	\$ 4,416.74
493746	CCRU Heater F-440 (Heater > 50 MMBtu)	019605 (BCAT)	E	Change of Condition	08-09	\$ 4,416.74
493748	CCRU Heater F-420 (Heater > 50 MMBtu)	019605 (BCAT)	E	Change of Condition (identical equipment)	08-09	\$ 2,208.37
493750	CCRU Heater F-410 (Heater > 50 MMBtu)	019605 (BCAT)	E	Change of Condition (identical equipment)	08-09	\$ 2,208.37
493753	CCRU Heater F-430 (Heater > 50 MMBtu)	019605 (BCAT)	E	Change of Condition (identical equipment)	08-09	\$ 2,208.37
505289 (2)	RECLAIM/Title V Permit	555009 (BCAT)	na.	TV/RECLAIM Facility Permit Amendment	09-10	\$ 1,687.63
Total						\$ 17,146.22
Fees Paid						\$ 17,146.22
Outstanding Balance						\$ 0.00

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

(2) This Title V revision application, which was originally submitted for a project that has subsequently been cancelled, will be used with the appropriate Title V revision application forms for the CCRU/CCRU Heater related applications.

PERMIT HISTORY

The permit histories for the CCRU and the CCRU Heaters are contained in the following tables.

 SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT OFFICE OF ENGINEERING AND COMPLIANCE APPLICATION PROCESSING AND CALCULATIONS	PAGES 68	PAGE 27
	APPL. NO. 493746, etc.	DATE 6/21/13 rev
	PROCESSED BY: Bob Sanford	CHECKED BY:

Permit History for the CCRU (P5S1)

Permit to Construct		Permit to Operate		Description of Modification
No.	Issue Date	No.	Issue Date	
265214	10/93	na.	na.	Original construction of this continuous reformer as part of phase 1 of the CARB Reformulated Fuels Project. Built as a replacement for CRU No. 1, CRU No. 2, and the Aromatics Reforming Unit (ARU), which were all semi-regenerative units. Was constructed at the site of and with some equipment from the Chevron CRU No. 2. Increased the refineries reforming capacity to 40,000 bbl/day. Also increase the efficiency of the reforming process, lowered that benzene content and vapor pressure of gasoline, and increased hydrogen production.
308571	11/95	F10631	12/97	Added a caustic scrubbing system to remove chlorides from the produced hydrogen. Chlorides were causing corrosion due to HCl formation and plugging due to formation of ammonium salts.
421106	5/04	na.	na.	Modified existing equipment and installed new equipment to increase the capacity from 40,000 bbl/day to 49,000 bbl/day.
498739	na.	na.	na.	Include existing vent gas connections from six CCRU process vessel to the CCRU heaters in the permit.

Permit History for CCRU Heater F-410 (D471 in P5S2)

Permit to Construct		Permit to Operate		Description of Modification
No.	Issue Date	No.	Issue Date	
A53053		P39086	7/70	Original construction of this heater.
265213	10/93	F10630	12/97	Modified the firebox and convective sections, replaced the 18 existing burners with low NOx burners, and installed a common SCR for the 4 CCRU heaters. Modifications reduced the rating from 157 MMBtu/hr to 115.2 MMBtu/hr. Heater number changed from F-430 to F-410.
405263	na.	F64375	1/04	Changed the 100 ppmv Fuel H2S limit with a 15 minute average to 40 ppmv with a 4-hr average. Changed the 15 minute averaging period for the 9 ppmv NOx limit to 60 minutes.
421107	5/11/04	na.	na.	Added 6 new burners and replaced the tips of the existing burners to increase the heater rating from 115.2 MMBtu/hr to 177 MMBtu/hr. Lowered the NOx limit for the common SCR to the current BACT of 5 ppmv (3% O2; 3-hr avg.)
493750	na.	na.	na.	Include vent gas connections from six CCRU process vessels in the permit. Also add NSPS Subpart J AMP condition D90.37.

 SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT OFFICE OF ENGINEERING AND COMPLIANCE APPLICATION PROCESSING AND CALCULATIONS	PAGES 68	PAGE 28
	APPL. NO. 493746, etc.	DATE 6/21/13 rev
	PROCESSED BY: Bob Sanford	CHECKED BY:

Permit History for CCRU Heater F-420 (D3031 in P5S2)

Permit to Construct		Permit to Operate		Description of Modification
No.	Issue Date	No.	Issue Date	
265210	10/93	F10627	12/97	Original construction of a 173.1 MMBtu/hr heater.
405260	na.	F64375	1/04	Changed the 100 ppmv Fuel H2S limit with a 15 minute average to 40 ppmv with a 4-hr average. Changed the 15 minute averaging period for the 9 ppmv NOx limit to 60 minutes.
421108	5/11/04	na.	na.	Replaced the burner tips to increase the heater rating from 173.1 MMBtu/hr to 199 MMBtu/hr. Lowered the NOx limit for the common SCR to the current BACT of 5 ppmv (3% O2; 3-hr avg.)
493748	na.	na.	na.	Include vent gas connections from six CCRU process vessels in the permit. Also add NSPS Subpart J AMP condition D90.37.

Permit History for CCRU Heater F-430 (D472 in P5S1)

Permit to Construct		Permit to Operate		Description of Modification
No.	Issue Date	No.	Issue Date	
A53052		P39085	7/70	Original construction of this heater.
265212	10/93	F10629	12/97	Modified the firebox and convective sections, replaced the 18 existing burners with low NOx burners, and installed a common SCR for the 4 CCRU heaters. Modifications reduced the rating from 170 MMBtu/hr to 124.9 MMBtu/hr. Heater number changed from F-420 to F-430.
405262	na.	F64377	1/04	Changed the 100 ppmv Fuel H2S limit with a 15 minute average to 40 ppmv with a 4-hr average. Changed the 15 minute averaging period for the 9 ppmv NOx limit to 60 minutes.
421109	5/11/04	na.	na.	Replaced the burner tips, which reduced the heater rating from 124.9 MMBtu/hr to 123 MMBtu/hr. Lowered the NOx limit for the common SCR to the current BACT of 5 ppmv (3% O2; 3-hr avg.)
493753	na.	na.	na.	Include vent gas connections from six CCRU process vessels in the permit. Also add NSPS Subpart J AMP condition D90.37.

Permit History for CCRU Heater F-440 (D473 in P5S2)

Permit to Construct		Permit to Operate		Description of Modification
No.	Issue Date	No.	Issue Date	
A53651		P39084	7/70	Original construction of this heater.
265211	10/93	F10628	12/97	Modified the firebox and convective sections, replaced the 18 existing burners with low NOx burners, and installed a

 SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT OFFICE OF ENGINEERING AND COMPLIANCE APPLICATION PROCESSING AND CALCULATIONS	PAGES 68	PAGE 29
	APPL. NO. 493746, etc.	DATE 6/21/13 rev
	PROCESSED BY: Bob Sanford	CHECKED BY:

Permit to Construct		Permit to Operate		Description of Modification
No.	Issue Date	No.	Issue Date	
				common SCR for the 4 CCRU heaters. Modifications reduced the rating from 163 MMBtu/hr to 80.5 MMBtu/hr. Heater number changed from F-410 to F-440.
405261	na.	F64378	1/04	Changed the 100 ppmv Fuel H2S limit with a 15 minute average to 40 ppmv with a 4-hr average. Changed the 15 minute averaging period for the 9 ppmv NOx limit to 60 minutes.
421110	5/11/04	na.	na.	Increased the heat rating from 80.5 MMBtu/hr to 88 MMBtu/hr by the use of modified burner tips. Lowered the NOx limit for the common SCR to the current BACT of 5 ppmv (3% O2; 3-hr avg.)
493746	na.	na.	na.	Include vent gas connections from six CCRU process vessels in the permit. Also add NSPS Subpart J AMP condition D90.37.

Permit History for CCRU Heater SCR (C1967 in P5S2)

Permit to Construct		Permit to Operate		Description of Modification
No.	Issue Date	No.	Issue Date	
265215	10/93	F10632	12/97	Installed SCR.
421111	5/11/04	na.	na.	Increased the heat rating of the CCRU heaters by the use of modified burner tips. Lowered the NOx limit to the current BACT of 5 ppmv (3% O2; 3-hr avg.)

COMPLIANCE RECORD REVIEW

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

PROCESS DESCRIPTION:

General Description

The CCRU upgrades low octane gasoline to higher octane reformat that can be used for gasoline blending. The vaporized low octane feed is treated in four reactors over a catalyst in a hydrogen atmosphere. A fraction of the catalyst is continuously recycled for regeneration, which is conducted in a nitrogen rich atmosphere. The regeneration is necessary because the catalyst is deactivated by coke build-up and the presence of certain compounds. A more detailed description of the CCRU and associated heaters follows.

[Note: The following process description was copied from the engineering evaluation for ANs 421106 – 421111]

 <p style="text-align: center;">SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT</p> <p style="text-align: center;">OFFICE OF ENGINEERING AND COMPLIANCE</p> <p style="text-align: center;">APPLICATION PROCESSING AND CALCULATIONS</p>	PAGES 68	PAGE 30
	APPL. NO. 493746, etc.	DATE 6/21/13 rev
	PROCESSED BY: Bob Sanford	CHECKED BY:

1. Reaction Section - Petroleum naphtha is pumped into the reactor section and combined with hydrogen-rich recycle gas. The combined stream is heated and brought to reaction temperature in process heater F-410 before being charged to the reactors. Because the reforming process is endothermic (i.e. more heat is absorbed than released), the reactors are separated into four stages in series. Interheaters are installed between each reactor (F-420, F-430 and F-440) to maintain the required temperature in each reactor.

2. Reactor Effluent Stream - The effluent from the final reactor is cooled, partially condensed and physically separated into vapor and liquid portions. Part of the hydrogen-rich gas is compressed and recycled with the naphtha feed stream. The remaining gas is compressed and recontacted with the reformat product to increase the C5+ liquid recovery and increase hydrogen purity. The liquid product from this section is pumped to the fractionation section. Excess hydrogen is compressed in the refinery's hydrogen booster compressor system and used elsewhere in the refinery.

3. Fractionation - The fractionation system consists of two columns operating in series. The debutanizer separates the feed into a stabilized liquid reformat stream and a light overhead stream. The light overhead stream is partially condensed. Part of the condensed liquid is pumped back as reflux to the column. The rest of the liquid stream is sent, along with the uncondensed light ends, to the Isomax gas-recovery section. The stabilized liquid reformat from the debutanizer is pumped to the dehexanizer. The dehexanizer fractionates the feed into a light C5/C6 liquid overhead product and a heavy C7+ reformat liquid product. The C5/C6 stream is processed in the PenHex Isomerization Unit, while the C7+ is blended into motor gasoline.

4. Catalyst Regeneration - In the catalyst regeneration portion of the reformer, the catalyst leaving the reactors is collected and purged with hydrogen to remove any entrained hydrocarbons. The catalyst then moves to a lock hopper that releases to the lift engager when it contains 500-700 lbs of catalyst. While the catalyst is in the lock hopper, the environment is changed to a nitrogen atmosphere. The catalyst is lifted via nitrogen gas to the disengaging hopper. In the disengaging hopper, catalyst fines are removed and collected in a fines drum. The disengaging hopper then sends the remaining catalyst to the regenerator. In the regenerator, several things happen. In the top portion, the catalyst is burned with 1% oxygen to remove the coke. Burning of coke is exothermic and it is important that the level of coke (normally about 5%) is burned as low as possible (less than 0.2% by weight). In the second section of the regenerator, the catalyst is treated with perchloroethylene in a 20% oxygen environment. Since coke burning generates a temperature increase of about 150° F in the low oxygen environment, it is critical that the coke level be reduced properly before being subjected to the 20% oxygen environment. The chlorine will redisperse the platinum on the catalyst and give the catalyst the proper acidity. At the bottom of the regenerator, the catalyst is dried with air to remove moisture. The catalyst is then collected in the surge hopper, mixed with hydrogen gas and sent to the reactors. Catalyst make-up is relative small, averaging about 300 lb/week.

5. Process Heaters - Four process heaters are required to maintain the proper inlet process temperature into each of the four reactors. The heaters include Low NOx burners to minimize the production of NOx in the fireboxes. Combustion air is forced through an air preheater with a forced draft fan. The flue gas leaving the four process heaters is combined and sent to

 <p style="text-align: center;">SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT</p> <p style="text-align: center;">OFFICE OF ENGINEERING AND COMPLIANCE</p> <p style="text-align: center;">APPLICATION PROCESSING AND CALCULATIONS</p>	PAGES 68	PAGE 31
	APPL. NO. 493746, etc.	DATE 6/21/13 rev
	PROCESSED BY: Bob Sanford	CHECKED BY:

a Selective Catalytic Reduction (SCR) Unit for NO_x emission control. An induced draft fan provides the motive force to move the combined flue gas from the four heaters through the SCR and the air preheater before being sent to the stack.

6. Fans - The heater system has been designed with one 600 H.P. forced draft fan, K-428, and one 1200 HP induced draft fan, K-429. For reliability, each fan is equipped with a spare motor.

7. Selective Catalytic Reduction Unit - The flue gas from the four heaters is combined into a common duct prior to the SCR Unit and a 25-29% aqueous ammonia solution is injected into the flue gas stream to reduce the emissions of NO_x. A slip stream of hot flue gas is used to vaporize the ammonia prior to mixing it with the combined flue gas stream. During startup and shutdown of the SCR, the temperature of the flue gas is not high enough for the SCR to operate properly. Low temperatures would not permit the conversion of ammonia and NO_x to nitrogen and water. The SCR is not used when the gas inlet temperature is less than about 570°F or above approximately 750°F.

8. Stack - After passing through the SCR Unit, the combined flue gas stream from the four heaters is vented through a common stack. The stack height is 185 feet above grade.

CCRU Capacity Increase Project

The modifications made to the CCRU and associated heaters are described in the following sections. Additional detail is provided in the engineering evaluation for the permits to construct.

AN421106 – CCRU

The proposed modification to the CCRU involved the modification/construction of the following existing/new equipment:

<u>Equipt ID</u>	<u>Dev. ID</u>	<u>Equipment</u>	<u>Change</u>
C-450	D3342	Debutanizer	New Trays
K-905A	D1929	Net Gas Compressor	Modified Wheels
K-905B	D1930	Net Gas Compressor	Modified Wheels
J-410	Dxxxx	Fuel Gas Filter	Replaced J-410A/B
E-402	(existing)	Reactor Products Condenser	<i>New Fans</i>
E-905	(existing)	Spillback Cooler	9 MM Btu/hr
E-906A/B	(existing)	1 st Stage Recontact Cooler	<i>New Bundle</i>
E-907A/B	(existing)	2 nd Stage Recontact Cooler	<i>New Bundle</i>
E-920A/B	(new)	Reformer H ₂ After-Cooler	9 MM Btu/hr
E-930A/B	(new)	Reformer H ₂ After-Cooler	6 MM Btu/hr
P-457/A	(existing)	Debutanizer Reboiler Pumps	<i>New Impeller</i>
P-495/A	(existing)	Steam Gen. Circulation Pumps	New Impeller/100HP
P-953/A	(existing)	Debutanizer Feed Pump	30 gpm - <i>Smaller</i>
P-4555/A	(existing)	Prefractionator Bottoms Pump	New Impeller

 SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT OFFICE OF ENGINEERING AND COMPLIANCE APPLICATION PROCESSING AND CALCULATIONS	PAGES 68	PAGE 32
	APPL. NO. 493746, etc.	DATE 6/21/13 rev
	PROCESSED BY: Bob Sanford	CHECKED BY:

AN421107 – CCRU Charge Heater F-410

The modification to the Charge Heater F-410 included addition of a total of 6 new burners, and the tips of the existing burners were replaced, thereby allowing the fired duty to increase by about 62 MM Btu/hr.

Heater F-410	Number of Burners		Total Heat Rating, MM Btu/hr
	John Zink PSFR-10	John Zink PSFR-12	
Before Modification	12	6	115.2
After Modification	16	8	177
Change in Heat Rating, MM Btu/hr			+ 61.8

AN421108 –CCRU Inter-Heater No. 1, F-420, Modification

The modification to the Process Heater F-420 included replacement of the tips of the existing burners to allow the fired duty to increase by about 26 MM Btu/hr.

Heater F-420	Number of Burners		Total Heat Rating, MM Btu/hr
	John Zink PSFR-10	John Zink PSFR-12	
Before Modification	32	-	173.1
After Modification	32	-	199
Change in Heat Rating, MM Btu/hr			+ 25.9

AN421109 – CCRU Inter-Heater No. 2, F-430

The modification to the Process Heater F-430 included replacement of the tips of the existing burners to reduce the fired duty rating by about 2 MM Btu/hr.

Heater F-430	Number of Burners		Total Heat Rating, MM Btu/hr
	John Zink PSFR-10	John Zink PSFR-12	
Before Modification	12	6	124.9
After Modification	12	6	123
Change in Heat Rating, MM Btu/hr			- 1.9

AN421110 – CCRU Inter-Heater No. 3, F-440

The modification to the Process Heater F-440 included replacement of the tips of the existing burners to allow the fired duty to increase by about 8 MM Btu/hr.

 SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT OFFICE OF ENGINEERING AND COMPLIANCE APPLICATION PROCESSING AND CALCULATIONS	PAGES 68	PAGE 33
	APPL. NO. 493746, etc.	DATE 6/21/13 rev
	PROCESSED BY: Bob Sanford	CHECKED BY:

Heater F-440	Number of Burners		Total Heat Rating, MM Btu/hr
	John Zink PSFR-10	John Zink PSFR-12	
Before Modification	12	6	80.5
After Modification	12	6	88
Change in Heat Rating, MM Btu/hr			+ 7.5

AN421111 – Selective Catalytic Reduction (SCR)

A more efficient catalyst was installed to meet the BACT requirement of 5 ppmv NO_x @ 3 % O₂, dry basis, 3-hr ave. This change in the catalyst type resulted in a reduction of catalyst volume from 618 cu ft to 536.7 cu ft. To allow for less pressure drop with increase in exhaust gas flow, the overall dimensions of the SCR were changed from 12.5 ft long by 9.5 ft wide to 13 ft long by 16 ft wide with depth of the catalyst bed to be reduced from about 5 ft. to 3.3 ft.

CCRU Vent Gas Streams

The CCRU is designed to allow continual transfer of the reforming catalyst from the reactors to the regenerator and back to the reactors. The waste gas that is combusted in the CCRU heaters is generated from the catalyst transfer activities. The waste gas stream comes from four vent drums (4-V11A/B/C/D), two surge drums (4-V16 and 4-V17), and two lock hoppers (4-V2 and 4-V7) in the CCRU. The waste gas streams are vented intermittently from each of these devices during different stages of the CCRU cycle. The vent gas stream to the CCRU heaters consists primarily of nitrogen, which is used in the system for conveyance of the catalyst. It also contains some feed gas (Hydrocarbons and H₂), which is entrained in the regenerated catalyst stream, water vapor and carbon dioxide. The table below is included for reference in understanding the vent streams that are fed to the CCRU heaters.

CCRU Equipment

Equipment Name	Chevron ID	Permit ID	Note
Regeneration Tower	4-V1	D3333	
Lock Hopper No. 1	4-V2	D1957	Initially vents to 4-V16 then vents directly to heaters
Lift Engager No. 1	4-V3	D1959	
Disengaging Hopper	4-V4	D3339	
Flow Control Hopper	4-V5	D3341	
Surge Hopper	4-V6	D3340	
Lock Hopper No. 2	4-V7	D1951	Initially vents to 4-V17 then vents directly to heaters
Lift Engager No. 2	4-V8	D1952	
Catalyst Addition Lock Hopper	4-V10	D3334	
Vent Drum No. 1	4-V11A	D3335	Vents to heaters.
Vent Drum No. 2	4-V11B	D3336	Vents to heaters.

 SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT OFFICE OF ENGINEERING AND COMPLIANCE APPLICATION PROCESSING AND CALCULATIONS	PAGES 68	PAGE 34
	APPL. NO. 493746, etc.	DATE 6/21/13 rev
	PROCESSED BY: Bob Sanford	CHECKED BY:

Vent Drum no. 3	4-V11C	D3337	Vents to heaters
Vent Drum No. 4	4-V11D	D3338	Vents to heaters
Lift Engager No. 3	4-V15	D1953	
Vent Gas Surge Drum No. 1	4-V16	D1958	Vents to heaters
Vent Gas Surge Drum No. 2	4-V17	D1954	Vents to heaters.
Heater	F-410	D471	
Heater	F-420	D3031	
Heater	F-430	D472	
Heater	F-440	D473	
Reactor No. 1	R-410	D1915	
Reactor No. 2	R-420	D1916	
Reactor No. 3	R-430	D1917	
Reactor No. 4	R-440	D1918	

The flow rate for each of these intermittent vent streams is shown in the table below.

Vent Stream Flow Rates

Equipment	Flow Rate (1) (scfh)		Note
Reactor Outlet/Lock Hopper No. 1			
Lock Hopper No. 1 (4-V2)	200 (2)		Both vent streams originate in the lock hopper so they are accounted for as one stream with an avg. flow of 230 scfh.
Vent Gas Surge Drum No. 1 (4-V16)	260 (2)		
Vent Drum No. 3 (4-V11C)	49 (3)		
Vent Drum No. 4 (4-V11D)	210 (3)		
Regenerator/Lock Hopper No. 2			
Lock Hopper No. 2 (4-V7)	400 (2)		Both vent streams originate in the lock hopper so they are accounted for as one stream with an avg. flow of 510 scfh.
Vent Gas Surge Drum No. 2 (4-V17)	620 (2)		
Vent Drum No. 1 (4-V11A)	9 (3)		
Vent Drum No. 2 (4-V11B)	610 (3)		

- (1) Average flow rate during each vent period.
 (2) Estimated
 (3) Measured

 SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT OFFICE OF ENGINEERING AND COMPLIANCE APPLICATION PROCESSING AND CALCULATIONS	PAGES 68	PAGE 35
	APPL. NO. 493746, etc.	DATE 6/21/13 rev
	PROCESSED BY: Bob Sanford	CHECKED BY:

CALCULATIONS

The criteria air pollutant (CO, NO_x, PM₁₀, SO₂, and VOC) and toxic air contaminant emissions for each of the new and modified permit units are contained in this section. These estimates include emissions for non-emergency operating conditions. Emissions from emergency events are not included since they cannot be accurately anticipated and estimated.

Criteria Air Pollutants

CCRU

The CCRU contains fugitive components (valves, connectors, flanges, pumps, compressors, etc.). Fugitive components that handle gases or liquids that contain VOCs may periodically leak VOC and inorganic/organic toxic air contaminant (TAC) containing gas or liquid to the atmosphere. VOC emissions for these fugitive components are estimated by multiplying the total number of each fugitive component type by an appropriate emission factor.

There are no fugitive components being installed and/or removed under A/N 498739, which is for inclusion of existing vent streams in the permit, so there is no change in fugitive VOC emissions. In the engineering evaluation for PC, it was estimated that fugitive VOC emissions would be reduced by 2.2 lb/day. This emission estimate utilized fugitive emission factors developed for the CARB Reformulated Fuels Projects performed by the refineries.

For the permit to operate, the fugitive VOC emission change must be recalculated based on the actual number of fugitive components that were installed and/or removed. A detailed estimate of the net change in VOC emissions for PC A/N 421106 is contained in [Appendix A](#) of this evaluation. The fugitive VOC emission estimates are summarized in the table below.

Summary of Estimated VOC Emission Change for Modifications Under A/N 421106

Permit Unit	Estimated VOC Emissions (lb/day)(1)		Change in VOC Emissions	
	Pre-Mod	Post-Mod	(lb/day)(1)	(lb/year)
CCRU (pre-construction)	156.5	154.3 (2)	-2.2 (2)	-803 (2)
CCRU (post-construction)	156.5	157.6 (3)	+1.1 (3)	+386 (3)

(1) 30 day average = annual VOC emissions / 360

(2) Based on an estimate of the number of components that were expected to be installed and/or removed.

(3) Based on the number of fugitive components that were actually installed and/or removed.

Subsequent to the issuance permit to construct A/N 421106, the District switched to the use of emission factors based on the correlation equations from the following document: *California Implementation Guidelines for Estimating Mass Emissions of Fugitive Hydrocarbon Leaks at Petroleum Facilities* (CARB/CAPCOA - 1999). A VOC concentration of 500 ppmv is utilized in the correlation equations. As seen in [Appendix B](#), the current fugitive VOC emissions are estimated to be 133.3 lb/day using these new emission factors. This estimate

 <p style="text-align: center;">SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT</p> <p style="text-align: center;">OFFICE OF ENGINEERING AND COMPLIANCE</p> <p style="text-align: center;">APPLICATION PROCESSING AND CALCULATIONS</p>	PAGES 68	PAGE 36
	APPL. NO. 493746, etc.	DATE 6/21/13 rev
	PROCESSED BY: Bob Sanford	CHECKED BY:

includes process drains. These drains are not new but were erroneously left out of the pre-construction emission estimate. The District's NSR database will be updated with this revised VOC emission estimate.

CCRU Heaters

The heaters emit CO, NO_x, PM₁₀, SO_x and VOC from the combustion of natural gas, vaporized LPG, refinery fuel gas and process/waste gas vented from the CCRU. Listing of the existing vent streams in the permit does not significantly impact the estimate of combustion emissions for these heaters. As seen below, criteria pollutant emissions from the combustion of the subject process/waste gas from the CCRU are insignificant relative to combustion of the primary fuel.

Each heater also has associated fugitive components that emit VOC due to leakage. The emission estimation methodologies utilized below for combustion emissions and the resulting CO, NO_x, PM₁₀, SO_x and VOC emission estimates are substantially the same as contained in the PC engineering evaluation. Minor differences are noted. However, previous engineering evaluations have not included an estimate of fugitive VOC emissions for components associated with each heater. Therefore, the total estimated VOC emissions have been understated in previous evaluations. The baseline VOC emission estimate for each heater in the District's NSR database will be updated to include the fugitive VOC emissions. Note that there was no change in fugitive component counts and fugitive VOC emissions for the heaters under PC A/Ns 421107 - 421110.

Combustion Emissions – Primary Fuel

The NO_x emissions during normal operation are based on the following formula and assumptions:

$$\text{NO}_x \text{ EF (lb/MMBTU)} = \left(\frac{\text{ppmvd}}{1,000,000} \right) \times \text{MW} \times \left(\frac{1}{\text{MV}} \right) \left(\frac{20.9}{17.9} \right) \times F_d = 0.00616 \text{ lb/MMBtu}$$

where,

- ppmvd = Pollutant concentration limit at stack outlet at 3% O₂, dry basis
(NO_x limit = 5 ppmvd)
- MW = Molecular weight, lb/lb-mol (NO_x = 46 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

The SO_x emissions during normal operation are based on the following formula and assumptions:

$$\text{SO}_2 \text{ EF (lb/MMBTU)} = \left[\left(\frac{1}{\text{HHV}} \right) \times (\text{ppmvd}) \times \text{MW} \times \left(\frac{1}{\text{MV}} \right) \right] = 0.00591 \text{ lb/MMBtu}$$

where,

 SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT OFFICE OF ENGINEERING AND COMPLIANCE APPLICATION PROCESSING AND CALCULATIONS	PAGES 68	PAGE 37
	APPL. NO. 493746, etc.	DATE 6/21/13 rev
	PROCESSED BY: Bob Sanford	CHECKED BY:

HHV = High heating value of fuel (Use average HHV of 1142 Btu/scf for natural and refinery fuel gas)
ppmvd = Total sulfur concentration limit for fuel gas (= 40 ppmvd)
MW = Molecular weight of SO₂ (64 lb/lb-mol)
MV = Molar volume at 60°F = 379.5 dscf/lb-mol

VOC emissions are calculated based on the District's AER emission factor for external natural gas combustion (other) of 7.0 lb/mmcf for VOC, which equates to 0.0061 lb/MMBtu using an average refinery fuel gas/natural gas high heating value (HHV) of 1142 Btu/scf. The CO and PM10 emission estimates are based on the combined CO and PM10 emission limits of 3550 and 5436 lb/calendar month, respectively. These monthly limits are based on previous daily emission limits of 117.6 lb/day and 181.2 lb/day for CO and PM10, respectively. Using the sum of the four individual heat input limits of 587 MMBtu/hr (177 + 199 + 123 + 88), these mass emission limits convert to emission factors of 0.00835 and 0.01286 lb/MMBtu/hr.

Maximum potential criteria pollutant emissions are contained in the following tables for each of the heaters. The maximum daily emission estimate in the tables below are slightly higher than the post-modification daily emissions estimated under A/Ns 421107 – 421110 because the emissions below are 30-day average emissions, which are calculated through multiplication of the maximum daily emissions by 365/360. Also, a NO_x emission factor of 0.00616 lb/MMBtu is utilized in the current calculations versus an emission factor of 0.0060 lb/MMBtu for the previous calculations.

CCRU Heater No. F-410: Estimated Maximum Potential Emissions (A/N 493750)

Pollutant	Max. Heat Input (MMBtu/hr)	Emission Factor (lb/MMBtu)	Maximum Potential Emissions		
			(lb/hr)	(lb/day)(1)	(ton/year)
CO	177	0.00835	1.478	36.0	6.5
NO _x	177	0.00616	1.090	26.5	4.8
PM10	177	0.01286	2.276	55.4	10.0
SO _x	177	0.00591	1.046	25.5	4.6
VOC	177	0.0061	1.080	26.3	4.7

(1) 30-day average emissions

CCRU Heater No. F-420: Estimated Maximum Potential Emissions (A/N 493748)

Pollutant	Max. Heat Input (MMBtu/hr)	Emission Factor (lb/MMBtu)	Maximum Potential Emissions		
			(lb/hr)	(lb/day)(1)	(ton/year)
CO	199	0.00835	1.662	40.4	7.3
NO _x	199	0.00616	1.226	29.8	5.4

 SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT OFFICE OF ENGINEERING AND COMPLIANCE APPLICATION PROCESSING AND CALCULATIONS	PAGES 68	PAGE 38
	APPL. NO. 493746, etc.	DATE 6/21/13 rev
	PROCESSED BY: Bob Sanford	CHECKED BY:

Pollutant	Max. Heat Input (MMBtu/hr)	Emission Factor (lb/MMBtu)	Maximum Potential Emissions		
			(lb/hr)	(lb/day)(1)	(ton/year)
PM10	199	0.01286	2.559	62.3	11.2
SOx	199	0.00591	1.176	28.6	5.2
VOC	199	0.0061	1.214	29.5	5.3

(1) 30-day average emissions

CCRU Heater No. F-430: Estimated Maximum Potential Emissions (A/N 493753)

Pollutant	Max. Heat Input (MMBtu/hr)	Emission Factor (lb/MMBtu)	Maximum Potential Emissions		
			(lb/hr)	(lb/day)(1)	(ton/year)
CO	123	0.00835	1.027	25.0	4.5
NOx	123	0.00616	0.758	18.4	3.3
PM10	123	0.01286	1.582	38.5	6.9
SOx	123	0.00591	0.727	17.7	3.2
VOC	123	0.0061	0.750	18.3	3.3

(1) 30-day average emissions

CCRU Heater No. F-440: Estimated Maximum Potential Emissions (A/N 493746)

Pollutant	Max. Heat Input (MMBtu/hr)	Emission Factor (lb/MMBtu)	Maximum Potential Emissions		
			(lb/hr)	(lb/day)(1)	(ton/year)
CO	88	0.00835	0.735	17.9	3.2
NOx	88	0.00616	0.542	13.2	2.4
PM10	88	0.01286	1.132	27.5	5.0
SOx	88	0.00591	0.520	12.7	2.3
VOC	88	0.0061	0.537	13.1	2.4

(1) 30-day average emissions

The table below contains a summary of the emission changes that were calculated in the engineering evaluation of the modifications performed under A/Ns 421107 (F-410), 421108 (F-420), 421109 (F-430) and 421110 (F-440).

 SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT OFFICE OF ENGINEERING AND COMPLIANCE APPLICATION PROCESSING AND CALCULATIONS	PAGES 68	PAGE 39
	APPL. NO. 493746, etc.	DATE 6/21/13 rev
	PROCESSED BY: Bob Sanford	CHECKED BY:

Summary of Emission Changes for A/Ns 421107 – 421110

Heater No.	Change in Emission Rate Due to Modifications Made Under A/Ns 421107-421110									
	CO		NO _x		PM ₁₀		SO _x		VOC	
	lb/hr	lb/day	lb/hr	lb/day	lb/hr	lb/day	lb/hr	lb/day	lb/hr	lb/day
F-410	-0.24	-5.8	-0.09	-2.2	+0.51	+12.3	+0.37	+8.8	+0.49	+11.8
F-420	-0.93	-22.2	-0.53	-12.9	-0.09	-2.2	+0.15	+3.7	+0.33	+7.9
F-430	-0.84	-20.2	-0.51	-12.3	-0.33	-7.9	-0.01	-0.3	+0.11	+2.7
F-440	-0.47	-11.2	-0.28	-6.6	-0.10	-2.4	+0.04	+1.1	+0.13	+3.0
Total	-2.47	-59.4	-1.42	-34.0	-0.01	-0.3	+0.55	+13.2	+1.06	+25.5

Combustion Emissions – CCRU Process/Waste Gas Streams

Criteria pollutant emission calculations are performed below to assess the maximum potential emissions from combustion of the subject process/waste gas streams relative to the maximum potential from combustion of the primary fuel. The same combustion emission factors are utilized in these estimates. It is very conservatively assumed that these intermittent vent streams are flowing 50% of the time. As seen in the second table, the criteria pollutant emissions from the vent streams are insignificant relative to the emissions from combustion of the refinery fuel gas/natural gas. It should also be noted that the subject vent streams have been part of the CCRU since original construction in 1993-1994. Therefore, listing of the vent streams in the permit has no impact on maximum potential emissions for the heaters.

Total Heat Input from Waste Gas Streams Vented to CCRU Heaters

Vent Stream	Average Flow Rate (scfh)(1)	High Heating Value (Btu/scf)	Heat Input (Btu/hr)
Lock Hopper No. 1 (4-V2) / No. 1 Vent Gas Surge Tank (D1958; 4-V16)	115	600	69000
Lock Hopper No. 2 (4-V7) / No. 2 Vent Gas Surge Tank (D1954; 4-V17)	255	565	144100
No. 1 Vent Drum (D3335; 4-V11A)	4.5	565	2500
No. 2 Vent Drum (D3336; 4-V11B)	305	565	172300
No. 3 Vent Drum (D3337; 4-V11C)	25	600	15000
No. 4 Vent Drum (D3338; 4-V11D)	105	600	63000
Total			466,000

(1) Assume vent gas flow occurs 50% of the time.

 SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT OFFICE OF ENGINEERING AND COMPLIANCE APPLICATION PROCESSING AND CALCULATIONS	PAGES 68	PAGE 40
	APPL. NO. 493746, etc.	DATE 6/21/13 rev
	PROCESSED BY: Bob Sanford	CHECKED BY:

Estimated Criteria Pollutant Emissions for Each Heater From Combustion of the CCRU Waste Gas Streams

CAP Type	Vent Gas Heat Input (MMBTU/hr)(1)	Emission Factor (lb/MMBtu)	Emissions		
			lb/hr	lb/day (2)	ton/yr
CO	0.117	0.00835	0.0010	0.024	0.004
NOx	0.117	0.00616	0.0007	0.017	0.003
PM10	0.117	0.01286	0.0015	0.037	0.007
SOx	0.117	0.00591(3)	0.0007	0.017	0.003
VOC	0.117	0.0061	0.0007	0.017	0.003

- (1) Assumes vent gas flow is split even between the four heaters (.466 MMBtu/hr / 4 = 0.117 MMBtu/hr)
- (2) 30-day average emissions
- (3) The emission factor for SOx, which is based on the sulfur content of refinery fuel gas, substantially overstates the emissions from these low sulfur vent streams.

Fugitive Emissions

Fugitive component counts and fugitive VOC emission estimates for each heater are included in [Appendix C](#) of this evaluation. The fugitive VOC emission estimates utilize the emission factors developed from correlation equations from the *California Implementation Guidelines for Estimating Mass Emissions of Fugitive Hydrocarbon Leaks at Petroleum Facilities* (CARB/CAPCOA - 1999). Estimated VOC emissions for fugitive components and the total estimated VOC emissions for each heater are included in the table below.

Total VOC Emissions for CCRU Heaters (A/Ns 421107 – 421110)

Heater No.	Fugitive VOC Emissions		Combustion VOC Emissions		Total VOC Emissions	
	lb/day (1)	lb/yr	lb/day (1)	lb/yr	lb/day (1)	lb/yr
F-410	12.9	4659	26.3	9461	39.2	14120
F-420	16.9	6100	29.5	10635	46.5	16735
F-430	10.1	3651	18.3	6570	28.4	10221
F-440	10.5	3793	13.1	4704	23.6	8497

- (1) 30-day average

SCR

Ammonia emissions are calculated with the methodology and assumptions shown below.

$$\text{NH}_3 \text{ EF (lb/MMBTU)} = \left(\frac{\text{ppmvd}}{1,000,000} \right) \times \text{MW} \times \left(\frac{1}{\text{MV}} \right) \left(\frac{20.9}{17.9} \right) \times \text{Fd} = 0.00410 \text{ lb/MMBtu}$$

where,

 <p>SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT</p> <p>OFFICE OF ENGINEERING AND COMPLIANCE</p> <p>APPLICATION PROCESSING AND CALCULATIONS</p>	PAGES 68	PAGE 41
	APPL. NO. 493746, etc.	DATE 6/21/13 rev
	PROCESSED BY: Bob Sanford	CHECKED BY:

ppmvd = Pollutant concentration limit at stack outlet at 3% O₂, dry basis
(NH₃ limit = 9 ppmvd)

MW = Molecular weight, lb/lb-mol (NH₃ = 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

Total Heater Capacity = 177 MMBtu/hr + 199 MMBtu/hr + 123 MMBtu/hr + 88 MMBtu/hr
= 587 MMBtu/hr

Maximum Potential NH₃ Emissions = (587 MMBtu/hr)(0.0041 lb/MMBTU)
= 2.41 lb/hr = 58.6 lb/day (30-day avg.)

RULE COMPLIANCE REVIEW:

California Environmental Quality Act (CEQA)

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

CEQA analysis is not required for the proposed addition of the existing vent streams to the permit since there is no increase in the emissions of any of these criteria 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.

The CCRU Capacity Increase Project permitted under PC A/Ns 421106 - 421110 was also exempt from CEQA analysis because the increase in VOC emissions was below the CEQA thresholds and there were no other significant environmental impacts. On the 400-CEQA form, Chevron marked "No" to all of the additional criterion that may trigger CEQA.

Rule 212: Standards for Approving Permits (November 14, 1997)

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 unless the modification will result in a reduction of emissions of air contaminants from the facility and no increase in health risk at any receptor location or the modification will have no potential to affect emissions.

Public notice is not required under this clause since the nearest school is located over 3500 feet from the CCRU and associated heaters.

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.

 <p style="text-align: center;">SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT</p> <p style="text-align: center;">OFFICE OF ENGINEERING AND COMPLIANCE</p> <p style="text-align: center;">APPLICATION PROCESSING AND CALCULATIONS</p>	PAGES 68	PAGE 42
	APPL. NO. 493746, etc.	DATE 6/21/13 rev
	PROCESSED BY: Bob Sanford	CHECKED BY:

CO: 220 lb/day
NOx: 40 lb/day
Pb: 3 lb/day
ROG: 30 lb/day
PM10: 60 lb/day
SOx: 30 lb/day

Public notice is not required under this clause since the addition of the existing vent streams to the permit does not cause an increase in the emission of any of the subject air pollutant emissions. Public notice was not required for the CCRU Capacity Increase Project since the project caused a decrease in the emission of CO, NOx and PM10 and the increase in SOx and VOC (ROG) was less than the 212(g) thresholds

212(c)(3): Public notice is required for any new or modified permit units that have an increase in toxic air contaminants (TACs) 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 there is no change in cancer risk caused by the addition of the existing vent stream to the permit. Public notice was not required for the PC A/Ns 421106 - 421110 since the increase in cancer risk was less than one in a million.

212(g): This clause 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 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 addition of the existing vent streams to the permit does not cause an increase in the emission of any of the subject air pollutant emissions. Public notice was not required for the PC A/Ns 421106 - 421110 since none of the individual permit units had an increase in CO, NOx, PM10, SOx or VOC (ROG) that exceeded the 212(g) thresholds.

Regulation IV - PROHIBITIONS

Rule 401: Visible Emissions (November 9, 2001)

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%.

The CCRU heaters burn natural gas and/or low sulfur (<40 ppmv) refinery fuel gas. Gaseous fuel fired process heaters are not prone to visible emissions. The CCRU heaters do not have a history of visible emissions. Compliance with this regulation is expected.

 <p style="text-align: center;">SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT</p> <p style="text-align: center;">OFFICE OF ENGINEERING AND COMPLIANCE</p> <p style="text-align: center;">APPLICATION PROCESSING AND CALCULATIONS</p>	PAGES 68	PAGE 43
	APPL. NO. 493746, etc.	DATE 6/21/13 rev
	PROCESSED BY: Bob Sanford	CHECKED BY:

Rule 402: Nuisance (May 7, 1976)

There is no history of nuisance problems from the gaseous fuel fired CCRU heaters or associated SCR. Compliance with this regulation is expected.

Rule 404: Particulate Matter – Concentration (February 7, 1986)

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. The total PM concentration measured during the most recent (March 20, 2008) source test is 0.003 grains/dscf. The average stack gas flow rate during test was 86,184 dscfm. From Table 404(a) in Rule 404, the PM limit for this gas flow is 0.035 gr/dscf. The measured PM concentration is well below this limit. Compliance with this rule is expected.

Rule 405: Solid Particulate Matter – Weight (February 7, 1986)

This rule sets solid PM mass emission limits for the processing of solid materials. It is not applicable to combustion sources such as the subject process heaters.

Rule 407: Liquid and Gaseous Air Contaminants (April 2, 1982)

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 common stack for the CCRU heaters is equipped with a CO CEMS to show compliance with the 2000 ppmv CO limit of this rule as well as the BACT limit of 10 ppmv CO. The CO emissions of these gas fuel fired heaters are well below the 2000 ppmv limit of this regulation. Continued compliance is expected

Sulfur Compound Limit:

The 500 ppmv sulfur compound limit is subsumed by RECLAIM [Rule 2001(j)] since each of the heaters are major SO_x sources under RECLAIM. A certified SO_x CEMS, which is composed of a fuel sulfur GC and fuel flow meters for each heater, is utilized to comply with RECLAIM monitoring requirements.

Rule 409: Combustion Contaminants (August 7, 1981)

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). In Rule 102, combustion contaminants are defined as “are particulate matter discharged into the atmosphere from the burning of any kind of material containing carbon in a free or combined state”.

As shown in the evaluation of Rule 404, the measured PM emissions during the most recent source test was 0.003 gr/dscf @ 12% CO₂, which is well below the limit of this rule. Compliance with the requirements of this rule is expected.

 <p style="text-align: center;">SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT</p> <p style="text-align: center;">OFFICE OF ENGINEERING AND COMPLIANCE</p> <p style="text-align: center;">APPLICATION PROCESSING AND CALCULATIONS</p>	PAGES 68	PAGE 44
	APPL. NO. 493746, etc.	DATE 6/21/13 rev
	PROCESSED BY: Bob Sanford	CHECKED BY:

Regulation IX - NEW SOURCE PERFORMANCE STANDARDS (NSPS)

Subpart J -- Standards of Performance for Petroleum Refineries

This NSPS is applicable to the following affected facilities in petroleum refineries which were constructed, reconstructed, or modified after June 11, 1973 and before May 15, 2007:

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

Fuel gas combustion device is 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 CCRU Heaters are subject to this regulation as *fuel gas combustion devices* since they combust refinery fuel gas, which meets the definition of *fuel gas* under this regulation. The process/waste gas streams from the CCRU are also considered to be fuel gas that is subject to the emission limits and monitoring requirements of this regulation. As specified at §60.104(a)(1), this regulation has a limit of 160 ppm H₂S on a 3-hour rolling average basis for any *fuel gas* combusted in a *fuel gas combustion device*. Alternatively, as specified at §60.105(a)(3)(iii), the operator may limit the stack gas SO₂ concentration to less than 20 ppmv on a 3-hour rolling average basis (0% O₂).

For the refinery fuel gas, Chevron has chosen to comply with the 160 ppm H₂S limit. For a fuel gas combustion device complying the 160 ppmv fuel gas H₂S limit the operator shall install, calibrate, maintain and operator an instrument for continuously monitoring and recording the concentration (dry basis) of H₂S in fuel gases before being burned in the fuel gas combustion device [§60.105(a)(4)]. Refinery fuel gas is supplied to each of the heaters from the V-846 fuel mix drum, which is equipped with a fuel sulfur GC/FPD for measurement of the concentration of H₂S in the refinery fuel gas for compliance with this regulation and measurement of the refinery fuel gas total reduced sulfur (TRS) concentration for compliance with RECLAIM.

A review of the hourly TRS data for October 2010 confirmed that fuel TRS concentrations are routinely well below the 40 ppmv limit. The average fuel TRS concentration during the month was 14.5 ppmv. For the refinery fuel gas, compliance with the 160 ppmv H₂S concentration limit and H₂S monitoring requirements of this regulation is expected.

It is specified in 60.13(i) that the administrator (EPA) may approve alternative monitoring procedures to any monitoring procedures specified in 40CFR part 60. For the process/waste gas streams from the CCRU, Chevron utilizes an Alternative Monitoring Plan (AMP) approved by EPA on September 24, 2003 for the periodic monitoring and reporting of H₂S concentration. The approved AMP requires Chevron to measure H₂S concentration of the process/waste gas stream twice per year with a colorimetric tube. If the measured H₂S concentration is greater than 2.0 ppmv, Chevron must monitor daily with a colorimetric tube until the H₂S concentration falls to 0.5 ppmv or less. Compliance with this monitoring requirement is expected.

 <p style="text-align: center;">SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT</p> <p style="text-align: center;">OFFICE OF ENGINEERING AND COMPLIANCE</p> <p style="text-align: center;">APPLICATION PROCESSING AND CALCULATIONS</p>	PAGES 68	PAGE 45
	APPL. NO. 493746, etc.	DATE 6/21/13 rev
	PROCESSED BY: Bob Sanford	CHECKED BY:

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 (except flares), and
- Claus Sulfur Recovery Plants (SRPs)

The CCRU heaters are not subject to this regulation since they have not been modified or reconstructed since May 14, 2007.

Regulation IX - NEW SOURCE PERFORMANCE STANDARDS (NSPS)

Subpart GGG—Standards of Performance for Equipment Leaks of VOC in Petroleum Refineries for which Construction, Reconstruction, or Modification Commenced After January 4, 1983 and On or Before November 7, 2006

Applicability: This NSPS is applicable to affected facilities in refineries that begin construction, reconstruction, or modification after January 4, 1983. The following are affected facilities under this subpart:

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

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”. The subject coalescer and associated fugitive components are considered to be “*in VOC service*” since the refinery fuel gas contains more than 10% VOCs.

The fugitive components (*equipment*) and two of the compressors (K-905 A/B) in the CCRU are subject to this regulation. The “fugitive emissions, miscellaneous” device (D3613) and two compressors (D1929 & D1930) are tagged with condition H23.19 to denote applicability of this regulation. “Subpart GGG references to the requirements of Subpart VV - Standards of Performance for Equipment leaks of VOC in the Synthetic Organic Chemicals Manufacturing Industry. The standards and monitoring requirements are specified in Sections 60.82-1 through 60.482-10 for pumps, compressors, valves, pressure relief devices, closed vent system, etc. 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 Leak Detection and Repair (LDAR) Program for fugitive emissions. It is expected that Chevron will comply with the inspection, maintenance, and record keeping requirements of this rule.

 <p style="text-align: center;">SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT</p> <p style="text-align: center;">OFFICE OF ENGINEERING AND COMPLIANCE</p> <p style="text-align: center;">APPLICATION PROCESSING AND CALCULATIONS</p>	PAGES 68	PAGE 46
	APPL. NO. 493746, etc.	DATE 6/21/13 rev
	PROCESSED BY: Bob Sanford	CHECKED BY:

Subpart GGGa—Standards of Performance for Equipment Leaks of VOC in Petroleum Refineries for which Construction, Reconstruction, or Modification Commenced After November 7, 2006

This NSPS is applicable to affected facilities in refineries that begin construction after November 7, 2006. The following are affected facilities under this subpart:

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

The CCRU has not been subject to reconstruction or a modification that caused an increase in VOC emissions after November 7, 2006. Therefore, it is not subject to the requirements of this regulation.

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. This subpart took effect on August 18, 1998 and was last amended on June 30, 2010.

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 CCRU are subject to the requirements of this regulation since the components are “in organic hazardous air pollutant service”. The “fugitive emissions, miscellaneous” device (D3613) is tagged with “HAP: 40CFR 63 Subpart CC, 5-25-2001” to denote the applicability of this regulation.

This regulation refers to 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 Leak Detection and Repair (LDAR) 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

 <p style="text-align: center;">SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT</p> <p style="text-align: center;">OFFICE OF ENGINEERING AND COMPLIANCE</p> <p style="text-align: center;">APPLICATION PROCESSING AND CALCULATIONS</p>	PAGES 68	PAGE 47
	APPL. NO. 493746, etc.	DATE 6/21/13 rev
	PROCESSED BY: Bob Sanford	CHECKED BY:

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.
- Catalytic reformer regeneration vents;

All of the process vents in the CCRU are exempt streams. The vents that are being added to the permit are catalytic reformer regeneration vents so they are exempt vents.

40CFR63 - Subpart UUU: National Emission Standards for Hazardous Air Pollutants from Petroleum Refineries; Catalytic Cracking Units, Catalytic Reforming Units, and Sulfur Recovery Units

40CFR63 Subpart CC addresses the emissions of air toxics from miscellaneous process vents in petroleum refineries. However, as discussed above, catalytic reforming regeneration vents are not miscellaneous process vents as defined in §63.641. To address air toxics emissions from regeneration vents in CCRUs and FCCUs and sulfur plant vents, EPA adopted 40CFR63 Subpart UUU.

This Maximum Achievable Control Technology (MACT) Standard contains emission limits and monitoring requirements for inorganic and organic HAPs. The emission limits and requirements of this regulation are specified in Section J of Chevron’s RECLAIM/Title V permit.

Inorganic HAPs

The CRU inorganic HAP emission limitations apply to emissions from CRU process vents associated with the coke burn-off and catalyst rejuvenation operations during coke burn-off and catalyst regeneration. Catalyst regeneration occurs in Regeneration Tower 4-V1 (D3333). This device is tagged with Subpart UUU since the vent gas from this equipment is subject to the Subpart UUU emission limit.

As specified in Table 22 of Subpart UUU, the operator has the option to either reduce the HCl concentration of this vent stream by 97 percent or control the HCl concentration to 10 ppmvd at 3% O₂. Chevron currently chooses the 10 ppmvd HCl compliance option. Chevron utilizes a caustic scrubber (4V-12: D1964) to comply with the HCl standard. As specified in §63.1567(b), the operator must conduct a performance test to show initial compliance with the HCl limit. This performance test is utilized to establish site-specific operating as specified in Table 23 of the regulation. According to Table 23, for a wet

 <p style="text-align: center;">SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT</p> <p style="text-align: center;">OFFICE OF ENGINEERING AND COMPLIANCE</p> <p style="text-align: center;">APPLICATION PROCESSING AND CALCULATIONS</p>	PAGES 68	PAGE 48
	APPL. NO. 493746, etc.	DATE 6/21/13 rev
	PROCESSED BY: Bob Sanford	CHECKED BY:

scrubber, operating limits must be established for scrubbing liquid pH and liquid-to-gas (L/G) ratio for the scrubber.

The CCRU regenerator normally operates in the white burn mode. However, when carbon deposits on the catalyst are low, such as after a plant start-up, the regenerator operates in black burn mode. Chevron performed performance tests in the white and black burn modes on February 24, 2006 and August 11, 2005, respectively. The HCl concentration measured for the white and black modes is 4.89 ppmv and 0.34 ppmv at 3% O₂, respectively. For the white burn mode, the pH limit established in the performance test is 7.1 and the L/G limit is 0.08. For the black burn mode, the pH limit is 7.33 and the L/G limit is 0.10.

For demonstration of continuous compliance, the operator is required to install, operate and maintain a continuous monitoring system for pH and liquid-to-gas ratio. The operator must utilize the monitoring system to demonstrate that the daily average pH and L/G ratio do not fall below the level established in the performance test. Chevron has installed the required monitoring system. The October 2010 monitoring data was reviewed. The CCRU operated in the white burn mode for the entire month and was in compliance with the white burn mode limits during the entire month. The lowest daily average pH and liquid-to-gas ratio measured during the month was 7.79 and 0.13, respectively.

Organic HAPs

The CCRU organic HAP emission limitations, which are specified in Table 15 of the regulation, apply to emissions from CCRU process vents associated with initial catalyst depressuring and catalyst purging operations that occur prior to the coke burn-off cycle. With the continuous CCRU design, the catalyst is transferred from the final reactor (R-440, D1918) to Lock Hopper No. 1 where the depressurization occurs. The reactor is not depressurized. The following equipment is tagged with Subpart UUU since they have process vents that are associated with the catalyst depressuring and purging operations: Lock Hopper No. 1 (4-V2, D1957), Vent Gas Surge Drum No. 1 (4-V16, D1958), Vent Drum No. 3 (4-V11C, D3337), and Vent Drum No. 4 (4-V11D, D3338).

Chevron complies with the Subpart UUU organic HAP emission limit by venting the subject process vent streams into the flame zone of the CCRU heaters (D471, D472, D473, and D3031).

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 CCRU Heaters will be subject to this regulation effective April 1, 2013. However, process heaters that 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

 <p style="text-align: center;">SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT</p> <p style="text-align: center;">OFFICE OF ENGINEERING AND COMPLIANCE</p> <p style="text-align: center;">APPLICATION PROCESSING AND CALCULATIONS</p>	PAGES 68	PAGE 49
	APPL. NO. 493746, etc.	DATE 6/21/13 rev
	PROCESSED BY: Bob Sanford	CHECKED BY:

practice standards of this regulation. Condition H23.50 will be tagged to the CCRU Heaters (devices D471, D472, D473, and D3031) in the permit to denote applicability of this regulation

Regulation XI: SOURCE SPECIFIC STANDARDS

Rule 1173: Control of Volatile Organic Compound Leaks and Releases from Components at 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.

According to 1173(l)(1)(C) and 1173(l)(1)(D) respectively, fugitive components that handle commercial natural gas and components that exclusively handle fluids with a VOC content of less than 10% are exempt from the requirements of this regulation. No new components are being installed under the subject change of condition applications. New components were installed in the CCRU under PC A/N 421106. The majority of these new components are subject to this regulation. A few of the new components, which are in hydrogen service, are not subject to this regulation.

Chevron has an existing fugitive emission component leak detection and repair (LDAR) program for compliance with the requirements of this rule. Where applicable, new components installed under PC A/N 421106 were integrated into this LDAR program. Compliance with the requirements of this rule is expected.

Rule 1176: Sumps and Wastewater Separators

The purpose of this rule is to limit VOC emissions from wastewater systems located at petroleum refineries, on-shore oil production fields, off-shore oil production platforms, chemical plants, and industrial facilities. The rule specifies requirements for wastewater sumps, separators, sewer lines, process drains, junction boxes, and air pollution control equipment.

Chevron did not add, remove or modify any wastewater handling or processing equipment under PC A/Ns 421106 - 421110 and will not add any under the subject change of condition applications. Compliance with this rule is not impacted.

Regulation XIII - NEW SOURCE REVIEW

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 District (District) is not unnecessarily restricted. The specific air quality goal of this

 <p>SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT</p> <p>OFFICE OF ENGINEERING AND COMPLIANCE</p> <p>APPLICATION PROCESSING AND CALCULATIONS</p>	PAGES 68	PAGE 50
	APPL. NO. 493746, etc.	DATE 6/21/13 rev
	PROCESSED BY: Bob Sanford	CHECKED BY:

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, NOx and SOx. The following are currently considered nonattainment air contaminants that are subject to new source review (NSR): NOx, SOx, PM_{2.5}, PM₁₀, and VOC. NOx and VOC are included since they are precursors for ozone. NOx, SOx and VOC are included as PM_{2.5} and PM₁₀ precursors.

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

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

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

Rule 1303: Requirements

This rule allows 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 and offset (among other requirements) if there is a net increase in PM10 or VOC emissions for any new or modified source. The definition of “Source” in Rule 1302(ao) 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.”

None of the requirements of this regulation are triggered by the addition of the existing waste gas vent streams to the permit since there is not any increase in the emission of CO, PM10 or VOC. PC A/Ns 421106 – 421110 were subject to the requirements of this rule. The estimated change in emissions for PC A/Ns 421106 – 421111 are summarized in the table below. Note that these emission estimates include BACT where applicable.

Source	Estimated Change in Emissions (lb/day)		
	CO	PM10	VOC
CCRU	0	0	-2.2
F-410	-5.8	+12.3	+11.8
F-420	-22.2	-2.2	+7.9
F-430	-20.2	-7.9	+2.7
F-440	-11.2	-2.4	+3.0
Total Project	-59.4	-0.2	+23.2

 <p style="text-align: center;">SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT</p> <p style="text-align: center;">OFFICE OF ENGINEERING AND COMPLIANCE</p> <p style="text-align: center;">APPLICATION PROCESSING AND CALCULATIONS</p>	PAGES 68	PAGE 51
	APPL. NO. 493746, etc.	DATE 6/21/13 rev
	PROCESSED BY: Bob Sanford	CHECKED BY:

As discussed in the calculation section, the project led to an increase in fugitive VOC emissions of 1.1 lb/day instead of the 2.2 lb/day reduction. Therefore, the total VOC emission increase was 26.5 lb/day.

1303(a)(1): Best Available Control Technology (BACT): Any new or modified source which results in an emission increase of CO, PM10, VOC, any ozone depleting compound, or ammonia, must employ BACT for the new or relocated source or for the actual modification to an existing source. Per District policy, BACT is required for any increase in emissions that exceeds 1.0 lb per day on a maximum daily basis.

BACT is not applicable for the proposed addition of the existing vent streams to the permit since there is no increase in the emission of any criteria pollutants. For PC A/Ns 421106 - 42110, BACT was triggered for the CO, PM10 and VOC for the F-410, F-420 and F-440 Heaters and for VOC for the F-410 and F-420 Heaters. In the engineering evaluation for the CCRU permit to construct, a 2.2 lb/day reduction in fugitive VOC emissions was estimated. Based on this estimated reduction, BACT was not triggered. However, Chevron agreed to accept BACT.

Fugitive Components:

The CCRU permit was conditioned with S31.16, which specifies BACT requirements for the new fugitive components in the CCRU. The primary requirement is the use of bellows seal valves for all non-exempt applications. As required by condition S31.16, Chevron provided a revised fugitive component count/VOC emission estimate and a list of all non-bellows seal valves that were installed along with the reason a bellows seal valve was not installed. Based on the list, it is determined that bellows seal valves were installed in all non-exempt applications as required.

Heaters:

CO - The permits for the heaters were conditioned with a 10 ppmvd CO limit, which was BACT at the time that the permits to construct were issued. CEMS data for October 2010 was reviewed. The average and maximum CO concentrations were 0.4 ppmv and 2.4 ppmv (3% O₂), respectively. Compliance with the mass and concentration limits is expected.

PM10 – The use of low sulfur gaseous fuel was considered to be BACT for PM10. Therefore, the heaters were permitted to combust only natural gas and/or refinery fuel gas with a 40 ppmv limit for fuel sulfur concentration. Chevron also retained the 5436 lb/month PM10 emission limit despite the increase in maximum permitted capacity of 93 MMBtu/hr. Mass PM10 emissions during the March 2008 source test were 2.0 lb/hr, which equates to 1488 lb/month for a 31 day month. Compliance with the mass emission limit is expected.

VOC - Good combustion practice and the use of low sulfur gaseous fuel was considered to be BACT for VOC. Therefore, the heaters were permitted to combust only natural gas and/or refinery fuel gas with a 40 ppmv limit for fuel sulfur concentration. The VOC mass emission limit for the heaters is 2590 lb/month. Mass VOC emissions during the March 2008 source test were 0.55 lb/hr, which equates to 409 lb/month for a 31 day month. Compliance with the VOC mass emission limit is expected.

 SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT OFFICE OF ENGINEERING AND COMPLIANCE APPLICATION PROCESSING AND CALCULATIONS	PAGES 68	PAGE 52
	APPL. NO. 493746, etc.	DATE 6/21/13 rev
	PROCESSED BY: Bob Sanford	CHECKED BY:

SCR:

Ammonia - The permit for the SCR was conditioned with a 9 ppmvd ammonia limit, which was BACT at the time that the permits to construct were issued. Chevron has been performing the annual ammonia source test specified in condition D29.9. The ammonia concentration measured during the last two annual source tests is 1.8 ppmv and 4.3 ppmv (3% O₂), respectively.

1303(b) – The requirements of 1303(b)(1) thru 1303(b)(4) apply to any new or modified source which results in a net emission increase of any nonattainment air contaminants. The requirements of this section are not applicable to the proposed addition of the existing vent streams to the permit since there is no increase in CO, PM₁₀ or VOC emissions. For PC A/Ns 421106 - 421110, the requirements of this section are not applicable for CO and PM₁₀ since the project had a net reduction in these pollutants. The requirements of this section are applicable to VOC.

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. According to 1306(b), the new total emissions for modified sources shall be calculated on a pound per day basis for determination of BACT and modeling applicability.

As specified in Appendix A of this rule, modeling is not required for VOC.

Rule 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. The project to increase the capacity of the CCRU under PC A/Ns 421106 – 421110 did not qualify for the regulatory compliance offset exemption specified in 1304(c)(4) because it was not part of Chevron’s CARB Reformulated Fuels Phase 3 Project. ERCs were not required for CO and PM₁₀ since the project caused a net reduction in the emission of these pollutants. A summary of VOC ERCs provided for the project is contained in the table below.

Source	Application No.	Estimated VOC Emission Change (lb/day)	ERCs Provided (lb/day)	ERC Certificate No.
CCRU	421106	-2.2	0	na.
F-410	421107	+11.8	14	AQ004939
F-420	421108	+7.9	10	AQ005351
F-430	421109	+2.7	0	na.
F-440	421110	+3.0	4	AQ005353
Total Project	na.	+23.2	28	na.

 <p style="text-align: center;">SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT</p> <p style="text-align: center;">OFFICE OF ENGINEERING AND COMPLIANCE</p> <p style="text-align: center;">APPLICATION PROCESSING AND CALCULATIONS</p>	PAGES 68	PAGE 53
	APPL. NO. 493746, etc.	DATE 6/21/13 rev
	PROCESSED BY: Bob Sanford	CHECKED BY:

The correct number of VOC ERCs was provided at an offset ratio of 1.2 based on the pre-construction estimate of the project wide increase in VOC emissions [23.2 lb/day x 1.2 = 27.8 = 28 lb/day]. However, as described in the calculation section, the VOC emission change for the CCRU is higher than estimated in the pre-construction engineering evaluation. Based on the actual number of fugitive components installed and removed, the CCRU had a VOC emission increase of 1.1 lb/day instead of a reduction of 2.2 lb/day. Therefore, the post-construction estimated change in VOC emissions for the project is 26.5 lb/day. Therefore, a total of 32 lb/day of ERCs is required. The following additional ERCs will be collected upon issuance of a PO: CCRU – 1 lb/day (A/N 421106) and F-430 – 3 lb/day (A/N 421109).

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.

All ERCs provided for A/Ns 421107, 421108 and 421110 were generated in Zone 1. The new ERCs collected for PC A/Ns 421106 and 421109 will also be from Zone 1.

1303(b)(4) - Facility Compliance: The facility must be in compliance with all applicable rules and regulations of the District. No non-compliance issues were noted in the engineering evaluation for PC A/Ns 421106 – 421110.

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 NO_x 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 SO_x, 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.

The requirements of 1303(b)(5) are not applicable for the proposed addition of the existing vent streams to the permit since there is no increase in the estimated emission of PM₁₀ or VOC. The project to increase the capacity of the CCRU was a major modification that triggered these requirements since the project caused an increase of greater than one (1) lb/day of VOC.

(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.

As specified at 1303(b)(5)(D)(iii), the requirements for an alternative analysis under this subparagraph are not applicable if the proposed project is exempt from California

 <p style="text-align: center;">SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT</p> <p style="text-align: center;">OFFICE OF ENGINEERING AND COMPLIANCE</p> <p style="text-align: center;">APPLICATION PROCESSING AND CALCULATIONS</p>	PAGES 68	PAGE 54
	APPL. NO. 493746, etc.	DATE 6/21/13 rev
	PROCESSED BY: Bob Sanford	CHECKED BY:

Environmental Quality Act analysis pursuant to a statutory or categorical exemption pursuant to Title 14, California Code of Regulations Sections 15260 to 15329. As discussed previously, the project to increase the capacity of the CCRU was exempt from CEQA analysis. Therefore, an alternative analysis was not required.

(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 engineering evaluation for PC A/Ns 421106 - 421110.

(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.

A PM10 modeling analysis was not required for the project to increase the capacity of the CCRU since there was a reduction in estimated PM emissions.

(D) Compliance through California Environmental Quality Act – As discussed previously, the project to increase the capacity of the CCRU was exempt from CEQA Analysis.

Rule 1325: Federal PM2.5 New Source Review Program

This NSR rule for PM2.5 was adopted by the District’s Governing Board on June 3, 2011. The requirements of this rule are not applicable to the proposed listing of the existing vent streams in the permit since there will be an increase in estimated PM2.5 emissions. The project to increase the capacity of the CCRU was not subject to this rule since it was not adopted until June of 2011.

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.

 <p style="text-align: center;">SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT</p> <p style="text-align: center;">OFFICE OF ENGINEERING AND COMPLIANCE</p> <p style="text-align: center;">APPLICATION PROCESSING AND CALCULATIONS</p>	PAGES 68	PAGE 55
	APPL. NO. 493746, etc.	DATE 6/21/13 rev
	PROCESSED BY: Bob Sanford	CHECKED BY:

- 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 – The requirements of this regulation are not applicable for the listing of the subject vent streams in the permit because there is no increase in Toxic Air Contaminants emissions. Under PC A/Ns 421107 – 421110, the combined total TAC emissions for the four CCRU heaters passed a Tier 1 health risk screen. Compliance with this rule 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). As discussed earlier, SOCAB is currently designated as attainment with NAAQs for SO₂, NO₂, CO, and Lead. On March 3, 2003, AQMD’s PSD delegation was rescinded by EPA. Therefore, EPA performed the PSD applicability determination for the project to increase the capacity of the CCRU that was permitted in 2004. In a January 27, 2004 letter from Mr. Gerardo Rios of EPA Region IX, EPA specified that the “proposed projects are not PSD major modifications and thus are not subject to PSD permitting requirements”.

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.”

There is no increase in emissions for the addition of the existing vent streams to the permit for the CCRU and associated heaters. Therefore, PSD permitting requirements are not applicable.

Rule 1714 – Prevention of Significant Deterioration for Greenhouse Gases

This rule sets forth preconstruction review requirements for greenhouse gases (GHG), which is defined as an aggregate group of six GHGs: carbon dioxide, nitrous oxide, methane, hydrofluorocarbons, perfluorocarbons, and sulfur hexafluoride. This rule was adopted on November 5, 2010, therefore, it did not exist during the permitting of PC A/Ns 421106 - 421110.

For the proposed change of condition applications, the pollutant GHG is subject to requirements under this regulation if either of the following apply:

- A stationary source, which is an existing major stationary source for a regulated non-GHG NSR pollutant, has an emissions increase of at least 75,000 tpy CO₂e and also an emissions increase of a regulated NSR pollutant.
- A stationary source, which is an existing major stationary source that emits or has the potential to emit 100,000 tpy CO₂e, undertakes a physical change or change in the method of operation that will result in an emissions increase of 75,000 tpy CO₂e or more.

 <p style="text-align: center;">SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT</p> <p style="text-align: center;">OFFICE OF ENGINEERING AND COMPLIANCE</p> <p style="text-align: center;">APPLICATION PROCESSING AND CALCULATIONS</p>	PAGES 68	PAGE 56
	APPL. NO. 493746, etc.	DATE 6/21/13 rev
	PROCESSED BY: Bob Sanford	CHECKED BY:

The requirements of this rule are not applicable to the proposed inclusion of the subject vent streams in the permit since there will not be an increase in GHG emissions.

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 (NOx), and Oxides of Sulfur (SOx). The Chevron Refinery (ID 800030) is a Cycle II RECLAIM facility. Each of the subject process heaters are subject to this regulation as Major NOx and SOx sources.

Rule 2005: New Source Review for RECLAIM (Amended 5/06/05)

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 NOx or SOx at an existing RECLAIM unless the following requirements are met:

- 1.) Best Available Control Technology is applied to the source [2005(c)(1)(A)]
- 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 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 requirements of this rule are not triggered for the subject change of condition applications since there is no increase in NOx or SOx emissions. As discussed below, the PC A/Ns 421107 – 421110 for increase in the capacity of the CCRU Heaters were subject to the requirements of this rule.

BACT [2005(c)(1)(A)]: The Executive Officer shall not approve an application for a Facility Permit Amendment to authorize the installation of a new source or modification of an existing source which results in an emission increase as defined in subdivision (d), unless the applicant demonstrates that Best Available Control Technology (BACT) will be applied to the source.

 <p style="text-align: center;">SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT</p> <p style="text-align: center;">OFFICE OF ENGINEERING AND COMPLIANCE</p> <p style="text-align: center;">APPLICATION PROCESSING AND CALCULATIONS</p>	PAGES 68	PAGE 57
	APPL. NO. 493746, etc.	DATE 6/21/13 rev
	PROCESSED BY: Bob Sanford	CHECKED BY:

As discussed previously, the permitted capacity of the CCRU was increased from 40,000 bbl/day to 49,000 bbl/day under PC A/N 421106. To handle this increase in processing capacity, the permitted heat input was increased for three of the four CCRU heaters. This increase in heat input capacity triggered BACT. The heaters were already equipped with a common SCR for NOx control and a NOx emission limit of 9 ppmv. As BACT in 2004, the NOx limit was lowered to 5 ppmv. The existing fuel sulfur limit of 40 ppmv (as H2S) was BACT in 2004. A review of CEMS data for February and March 2010 confirmed Chevron's ability to comply with these BACT limits.

Modeling [2005(c)(1)(B)]: The Executive Officer shall not approve an application for a Facility Permit Amendment to authorize the installation of a new source or modification of an existing source which results in an emission increase as defined in subdivision (d), unless the applicant demonstrates that the operation of the source will not result in a significant increase in the air quality concentration for NO2 as specified in Appendix A. The applicant shall use the modeling procedures specified in Appendix A to the rule.

NO2 modeling was not required for the increase in heater capacities since there was a net reduction in NOx emissions due to the reduction in the NOx emission limit from 9 ppmv to 5 ppmv.

Reclaim Trading Credits [2005(c)(2)]: The applicant is required to demonstrate that they hold sufficient RTCs to offset the annual emission increase for the first year of operation using a 1-to-1 offset ratio.

Chevron had sufficient RTCs to offset the increase in SOx emissions for the increase in CCRU Heater capacities..

Additional Federal Requirements for Major Stationary Sources [2005(g)]: The Executive Officer shall not approve the application for a Facility Permit or an Amendment to a Facility Permit for a new, relocated or modified major stationary source, as defined in the Clean Air Act, 42 U.S.C. Section 7511a(e), unless the applicant complies with the requirements contained under this clause.

(1) *Statewide Compliance:* The applicant must certify that all other major stationary sources in the state which are controlled by the applicant are in compliance or on a schedule for compliance with all applicable federal emission limitations or standards (42 U.S.C. Section 7503(a)(3)).

There were no statewide non-compliance issues noted in the engineering evaluation for PC A/Ns 421106 - 421110.

(2) *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 significantly outweigh the environmental and social costs associated imposed as a result of its location, construction, or modification (42 U.S.C. Section 7503(a)(5)).

 <p style="text-align: center;">SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT</p> <p style="text-align: center;">OFFICE OF ENGINEERING AND COMPLIANCE</p> <p style="text-align: center;">APPLICATION PROCESSING AND CALCULATIONS</p>	PAGES 68	PAGE 58
	APPL. NO. 493746, etc.	DATE 6/21/13 rev
	PROCESSED BY: Bob Sanford	CHECKED BY:

It is specified at 2005(g)(3)(A), an alternative analysis is not required “if the proposed project is exempt from California Environmental Quality Act analysis pursuant to a statutory or categorical exemption pursuant to Title 14, California Code of Regulations, Sections 15260 to 15329”. An alternative analysis was not required for PC A/Ns 421106 - 421110 because the project was exempt from CEQA.

(4)(A): *Protection of Visibility* – the applicant shall conduct a modeling analysis for plume visibility in accordance with the procedures specified in Appendix B if the net emission increase from the new or modified source exceeds 40 tons/year of NO_x; and the location of the source, relative to the closest boundary of a specified Federal Class I area, is within the distance specified in Table 4-1 of this rule.

This modeling analysis was not required since there was a net reduction in NO_x emissions for PC A/Ns 421106 - 421110.

Public Notice [2005(h)]: - The applicant shall provide public notice, if required, pursuant to Rule 212 - Standards for Approving Permits.

A public notice was not required under Rule 212 for PC A/Ns 421106 – 421110 since the VOC emission increases did not exceed any of the Rule 212(g) thresholds and the CCRU/CCRU Heaters are not within 1000 feet of a school.

Rule 1401 [2005(i)]: All new or modified sources shall comply with the requirements of Rule 1401 - New Source Review of Carcinogenic Air Contaminants, if applicable.

Chevron complied with Rule 1401 for PC A/Ns 421106 – 421110.

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

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. Each of the CCRU heaters are Major SO_x sources since they are permitted to burn refinery fuel gas.

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

Refinery fuel gas is supplied to each of the heaters from the V-846 fuel mix drum, which is equipped with a fuel sulfur GC/FPD for measurement of the concentration of total reduced sulfur (TRS) in the refinery fuel gas supplied from the mix drum. The refinery fuel gas flow to each of the heaters is also measured. The fuel sulfur GC/FPD and fuel flow monitors comprise the SO_x SCEMS for each of the heaters. These SCEMS have received a

 <p style="text-align: center;">SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT</p> <p style="text-align: center;">OFFICE OF ENGINEERING AND COMPLIANCE</p> <p style="text-align: center;">APPLICATION PROCESSING AND CALCULATIONS</p>	PAGES 68	PAGE 59
	APPL. NO. 493746, etc.	DATE 6/21/13 rev
	PROCESSED BY: Bob Sanford	CHECKED BY:

provisional certification from the District. Final certification is pending District review of the certification test report.

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 routinely reviews the reports for these CGAs/RATAs. Compliance with the QA/QC requirements of this rule is expected.

Rule 2012: Requirements for Monitoring, Reporting and Recordkeeping for Oxides of Nitrogen (NO_x)

This rule establishes the monitoring, reporting and recordkeeping requirements (MRR) for NO_x emissions under the RECLAIM program. Each of the CCRU Heaters is classified as a Major NO_x 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 NO_x 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 CCRU Heaters are equipped with a common CEMS since the exhaust gases vent to a common stack. This NO_x CEMS utilizes heat input and oxygen concentration to calculate stack flow. The approved NO_x analyzer range is 0-10 ppmv. The CEMS has received provisional certification from the District. Final certification is pending District review of the certification test report.

RECLAIM NO_x 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 NO_x CEMS. As mentioned above, the District's Source Test group routinely reviews the reports for these semi-annual RATAs.

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

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

 SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT OFFICE OF ENGINEERING AND COMPLIANCE APPLICATION PROCESSING AND CALCULATIONS	PAGES 68	PAGE 60
	APPL. NO. 493746, etc.	DATE 6/21/13 rev
	PROCESSED BY: Bob Sanford	CHECKED BY:

Regulation XXX – TITLE V PERMITS

The initial Title V permit for the refinery was issued on October 12, 2009. The subject permits 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.

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.

 <p style="text-align: center;">SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT</p> <p style="text-align: center;">OFFICE OF ENGINEERING AND COMPLIANCE</p> <p style="text-align: center;">APPLICATION PROCESSING AND CALCULATIONS</p>	PAGES 68	PAGE 61
	APPL. NO. 493746, etc.	DATE 6/21/13 rev
	PROCESSED BY: Bob Sanford	CHECKED BY:

The addition of the existing vent steams to the permit does not cause an increase in the emission of any criteria or hazardous air pollutant. Therefore, this Title V permit revision is a minor revision since it meets all of the requirements above. This Title V permit revision, which will be issued under Title V revision application no. 505289, will be sent to EPA for a 45-day review. 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:

- (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 CCRU Heaters is the SCR for NO_x control. However, the heaters are not subject to CAM requirements for the NO_x limit because a NO_x CEMS, which is a continuous compliance determination method, is specified in Condition D82.5. Therefore, the NO_x limit is an exempt limit per §64.2(b)(1)(vi).

 <p>SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT</p> <p>OFFICE OF ENGINEERING AND COMPLIANCE</p> <p>APPLICATION PROCESSING AND CALCULATIONS</p>	<p>PAGES 68</p>	<p>PAGE 62</p>
	<p>APPL. NO. 493746, etc.</p>	<p>DATE 6/21/13 rev</p>
	<p>PROCESSED BY: Bob Sanford</p>	<p>CHECKED BY:</p>

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, Section D of the facility permit, be issued for the proposed changes to permit conditions for the subject permit units.

 SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT OFFICE OF ENGINEERING AND COMPLIANCE APPLICATION PROCESSING AND CALCULATIONS	PAGES 68	PAGE 66
	APPL. NO. 493746, etc.	DATE 6/21/13 rev
	PROCESSED BY: Bob Sanford	CHECKED BY:

**Appendix C: CCRU Heater F-420 (A/N 493748)
VOC Emission Estimate for Fugitive Components**

Equipment Type	Service	No. of Sources	VOC Emission Factors lbs/yr*	Annual VOC Emission lb/yr
Valves - Sealed Bellow	Gas/Vapor	46	0.00	0.0
	Light Liquid	11	0.00	0.0
Valves - Low emission ? 500 ppmv, or Live loaded w/ dual seal system	Gas/Vapor	40	4.55	182.0
	Light Liquid	5	4.55	22.8
	Heavy Liquid	0	4.55	0.0
Flanges	Light Liquid/Vapor	167	6.99	1167.3
	Heavy Liquid	0	6.99	0.0
Connectors	Light Liquid/Vapor	1653	2.86	4727.6
	Heavy Liquid	0	2.86	0.0
Pumps	Light Liquid (double seal)	0	46.83	0.0
	Light Liquid (sealless type)	0	0.00	0.0
	Heavy Liquid (single seal)	0	17.21	0.0
Compressors	Gas/Vapor	0	9.09	0.0
PRV's	All (To Atmosphere)	0	9.09	0.0
	All (Closed Vent)	0	0	0.0
Drains (with p-trap)		0	9.09	0.0

Total Count: 1,922 Emissions (lb/yr) 6,100

(lbs/day) 16.9

(30-day avg.)

(1) Current fugitive count provided by Mr. Pete Allen in June 20, 2013 email.

(2) 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)

 SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT OFFICE OF ENGINEERING AND COMPLIANCE APPLICATION PROCESSING AND CALCULATIONS	PAGES 68	PAGE 68
	APPL. NO. 493746, etc.	DATE 6/21/13 rev
	PROCESSED BY: Bob Sanford	CHECKED BY:

**Appendix C: CCRU Heater F-440 (A/N 493746)
VOC Emission Estimate for Fugitive Components**

Equipment Type	Service	No. of Sources	VOC Emission Factors lbs/yr*	Annual VOC Emission lb/yr
Valves - Sealed Bellow	Gas/Vapor	35	0.00	0.0
	Light Liquid	1	0.00	0.0
Valves - Low emission ? 500 ppmv, or Live loaded w/ dual seal system	Gas/Vapor	33	4.55	150.2
	Light Liquid	0	4.55	0.0
	Heavy Liquid	0	4.55	0.0
Flanges	Light Liquid/Vapor	125	6.99	873.8
	Heavy Liquid	0	6.99	0.0
Connectors	Light Liquid/Vapor	965	2.86	2759.9
	Heavy Liquid	0	2.86	0.0
Pumps	Light Liquid (double seal)	0	46.83	0.0
	Light Liquid (sealless type)	0	0.00	0.0
	Heavy Liquid (single seal)	0	17.21	0.0
Compressors	Gas/Vapor	0	9.09	0.0
PRV's	All (To Atmosphere)	0	9.09	0.0
	All (Closed Vent)	0	0	0.0
Drains (with p-trap)		1	9.09	9.1

Total Count: 1,160 Emissions (lb/yr) **3,793**
(lbs/day) **10.5**
(30-day avg.)

- (1) Current fugitive count provided by Mr. Pete Allen in June 20, 2013 email.
(2) 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)