

 SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT ENGINEERING & COMPLIANCE DIVISION APPLICATION PROCESSING AND CALCULATIONS	APPL. NO. 572721, 572722, 572723, 572724, 572719, 572852, 572720, 572747, 572718, 568560	DATE 3/3/15	PAGE 1 of 38
	PROCESSED BY J. West	CHECKED BY	

PERMIT TO CONSTRUCT

The objective of this permit action is to issue a Permit to Construct for connecting 20 existing atmospheric pressure relief valves (PRVs) on 12 devices to the vapor recovery/flare system.

COMPANY INFORMATION

Company Name: Phillips 66 Company, Los Angeles Refinery, Carson Plant
 Facility ID No.: 171109
 Mailing Address: 1520 E. Sepulveda Blvd., Carson, CA 90745
 Equipment Location: 1520 E. Sepulveda Blvd., Carson, CA 90745
 Contact Person: John Matthews, (310) 952-6213

EQUIPMENT DESCRIPTION

Table 1 shows the proposed Section H permit description. Additions to the description are noted in underlines and deletions are noted in ~~strikeouts~~.

Table 1. Permit Equipment Description

SECTION H: PERMIT TO CONSTRUCT AND TEMPORARY PERMIT TO OPERATE

Equipment	ID No.	Connected To	RECLAIM Source Type/ Monitoring Unit	Emissions * And Requirements	Conditions
PROCESS 1 : CRUDE DISTILLATION					P13.2
SYSTEM 1 : CRUDE DISTILLATION UNIT					S13.5, S15.1, S15.3, S15.4, S15.11, S31.4, <u>S31.x</u>
TANK, FLASH, DU-1, SPENT SODA, HEIGHT: 53 FT 6 IN; DIAMETER: 3 FT A/N: <u>535217-572721</u>	D1				
COLUMN, PRIMARY, DU-3, CRUDE OIL, HEIGHT: 112 FT; DIAMETER: 12 FT A/N: <u>535217-572721</u>	D2				
COLUMN, FIRST SIDE CUT STRIPPER, DU-4, HEIGHT: 47 FT; DIAMETER: 5 FT A/N: <u>535217-572721</u>	D3				
COLUMN, SECONDARY, DU-5, CRUDE OIL, HEIGHT: 174 FT 6 IN; DIAMETER: 16 FT A/N: <u>535217-572721</u>	D4				
COLUMN, 2ND & 3RD SIDE CUT STRIPPERS, DU-6, HEIGHT: 40 FT 6 IN; DIAMETER: 5 FT A/N: <u>535217-572721</u>	D5				
ACCUMULATOR, V-2142, PRIMARY COLUMN OVERHEAD, HEIGHT: 23 FT 10 IN; DIAMETER: 5 FT 6 IN A/N: <u>535217-572721</u>	D6				
VESSEL, TREATER, 1ST STAGE SODA, V-2147, PRIMARY COLUMN OVERHEAD, HEIGHT: 29 FT; DIAMETER: 6 FT A/N: <u>535217-572721</u>	D8				



SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT
ENGINEERING & COMPLIANCE DIVISION

APPLICATION PROCESSING AND CALCULATIONS

APPL. NO. 572721,
572722, 572723, 572724,
572719, 572852, 572720,
572747, 572718, 568560

DATE
3/3/15

PAGE
2 of 38

PROCESSED BY
J. West

CHECKED BY

Equipment	ID No.	Connected To	RECLAIM Source Type/ Monitoring Unit	Emissions * And Requirements	Conditions
ACCUMULATOR, V-3043, SECONDARY COLUMN OVERHEAD, HEIGHT: 30 FT;DIAMETER: 9 FT 6 IN A/N: 535217-572721	D9				
VESSEL, SWEETNER, V-2197, PRIMARY COLUMN TOPS, HEIGHT: 19 FT;DIAMETER: 7 FT 6 IN A/N: 535217-572721	D11				
VESSEL, SEPARATOR, SECONDARY COLUMN THIRD STAGE, V-3047, HEIGHT: 6 FT;DIAMETER: 4 FT A/N: 535217-572721	D16				
VESSEL, SEPARATOR, SECONDARY COLUMN SECOND STAGE, V-3046B, HEIGHT: 7 FT;DIAMETER: 4 FT A/N: 535217-572721	D953				
VESSEL, SEPARATOR, SECONDARY COLUMN FIRST STAGE, V-3045B, HEIGHT: 7 FT 9 IN;DIAMETER: 4 FT 6 IN A/N: 535217-572721	D954				
VESSEL, SEPARATOR, SECONDARY COLUMN FIRST STAGE, V-3044B, HEIGHT: 7 FT 9 IN;DIAMETER: 4 FT 6 IN A/N: 535217-572721	D955				
FUGITIVE EMISSIONS, MISCELLANEOUS A/N: 535217-572721	D832			HAP: (10) [40CFR 63 Subpart CC, #5A, 6-20-2013]	H23.22
PROCESS 1 : CRUDE DISTILLATION					P13.2
SYSTEM 4 : VACUUM FLASH UNIT					S13.5, S15.2, S15.3, S15.4, S15.11, S31.3, S31.x
TANK, SURGE, V-2250, SR RESIDUE, WITH NATURAL GAS BLANKETING, HEIGHT: 27 FT 6 IN;DIAMETER: 16 FT 3 IN A/N: 535221-572722	D64				
ACCUMULATOR, V-2251, FLASHER OVERHEAD, HEIGHT: 20 FT;DIAMETER: 9 FT A/N: 535221-572722	D65				H23.10
KNOCK OUT POT, STEAM AIR DECOKING QUENCH, V-2253, HEIGHT: 7 FT 8 IN;DIAMETER: 4 FT A/N: 535221-572722	D66				
COLUMN, FLASHER, FR-1, HEIGHT: 127 FT;DIAMETER: 23 FT 6 IN A/N: 535221-572722	D69				
SCRUBBER, DEA, FR-2, VENT GAS A/N: 535221-572722	D70				
COMPRESSOR, FR-501, VENT GAS A/N: 535221-572722	D77				
FUGITIVE EMISSIONS, MISCELLANEOUS A/N: 535221-572722	D835			HAP: (10) [40CFR 63 Subpart CC, #5A, 6-20-2013]	H23.22
PROCESS 2 : COKING AND RESIDUAL CONDITIONING					P13.2
SYSTEM 1 : DELAYED COKING UNIT					S13.5, S15.3 , S15.4, S15.11 , S31.3, S31.x
FRACTIONATOR, MAIN, CK-1, HEIGHT: 149 FT;DIAMETER: 15 FT 6 IN A/N: 535228-572723	D80				



SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT
ENGINEERING & COMPLIANCE DIVISION

APPLICATION PROCESSING AND CALCULATIONS

APPL. NO. 572721,
572722, 572723, 572724,
572719, 572852, 572720,
572747, 572718, 568560

DATE
3/3/15

PAGE
3 of 38

PROCESSED BY
J. West

CHECKED BY

Equipment	ID No.	Connected To	RECLAIM Source Type/ Monitoring Unit	Emissions * And Requirements	Conditions
COLUMN, STRIPPER, CK-2, EXTRA HEAVY GAS OIL, HEIGHT: 25 FT 6 IN;DIAMETER: 3 FT A/N: 535228 572723	D81				
COLUMN, STRIPPER, CK-3, HEAVY GAS OIL, HEIGHT: 43 FT;DIAMETER: 5 FT A/N: 535228 572723	D82				
COLUMN, STRIPPER, CK-4, LIGHT GAS OIL, HEIGHT: 43 FT;DIAMETER: 4 FT 6 IN A/N: 535228 572723	D83				
ACCUMULATOR, V-2247, MAIN FRACTIONATOR OVERHEAD, HEIGHT: 22 FT;DIAMETER: 12 FT A/N: 535228 572723	D84				
ACCUMULATOR, V-2248, MAIN FRACTIONATOR OVERHEAD, HEIGHT: 20 FT;DIAMETER: 9 FT A/N: 535228 572723	D85				
DRUM, COKE, V-2236, HEIGHT: 75 FT;DIAMETER: 26 FT A/N: 535228 572723	D796			PM: (9) [RULE 405, 2-7-1986]	D323.2
DRUM, COKE, V-2237, HEIGHT: 75 FT;DIAMETER: 26 FT A/N: 535228 572723	D797			PM: (9) [RULE 405, 2-7-1986]	D323.2
DRUM, COKE, V-2238, HEIGHT: 75 FT;DIAMETER: 26 FT A/N: 535228 572723	D798			PM: (9) [RULE 405, 2-7-1986]	D323.2
DRUM, COKE, V-2239, HEIGHT: 75 FT;DIAMETER: 26 FT A/N: 535228 572723	D799			PM: (9) [RULE 405, 2-7-1986]	D323.2
ABSORBER, RECTIFIED, CK-5, HEIGHT: 159 FT 6 IN;DIAMETER: 7 FT A/N: 535228 572723	D95				
COLUMN, SPONGE, CK-6, HEIGHT: 42 FT 6 IN;DIAMETER: 3 FT 6 IN A/N: 535228 572723	D96				
COLUMN, DEBUTANIZER, CK-7, HEIGHT: 136 FT 6 IN;DIAMETER: 8 FT A/N: 535228 572723	D97				
SETTLING TANK, V-2245, DEBUTANIZER OVERHEAD, LENGTH: 7 FT;DIAMETER: 5 FT A/N: 535228 572723	D99				
COMPRESSOR, CK-501, WET GAS A/N: 535228 572723	D103				
KNOCK OUT POT, V-3122, HEIGHT: 8 FT 4 IN;DIAMETER: 3 FT A/N: 535228 572723	D758				
KNOCK OUT POT, V-3172, WET GAS COMPRESSOR DISCHARGE, HEIGHT: 8 FT 6 IN;DIAMETER: 5 FT A/N: 535228 572723	D943				
STORAGE TANK, FIXED ROOF, NO. 2230, AMMONIUM POLYSULFIDE, 20000 GALS;DIAMETER: 15 FT;HEIGHT: 18 FT A/N: 535228 572723	D86				E134.1
FUGITIVE EMISSIONS, MISCELLANEOUS A/N: 535228 572723	D838			HAP: (10) [40CFR 63 Subpart CC, #5A, 6-20-2013]	H23.36



SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT
ENGINEERING & COMPLIANCE DIVISION
 APPLICATION PROCESSING AND CALCULATIONS

APPL. NO. 572721,
 572722, 572723, 572724,
 572719, 572852, 572720,
 572747, 572718, 568560

DATE 3/3/15
 PAGE 4 of 38

PROCESSED BY
 J. West

CHECKED BY

Equipment	ID No.	Connected To	RECLAIM Source Type/ Monitoring Unit	Emissions * And Requirements	Conditions
PROCESS 5 : GAS PRODUCTION					P13.2
SYSTEM 1 : DEBUTANIZER UNIT					S13.5, <u>S15.3</u> , <u>S15.11</u> , <u>S31.x</u>
COLUMN, DEBUTANIZER, DU-2, HEIGHT: 81 FT;DIAMETER: 6 FT 6 IN A/N: <u>535243 572724</u>	D803				
ACCUMULATOR, V-2139, DEBUTANIZER OVERHEAD, HEIGHT: 23 FT;DIAMETER: 5 FT A/N: <u>535243 572724</u>	D211				
FUGITIVE EMISSIONS, MISCELLANEOUS A/N: <u>535243 572724</u>	D848			HAP: (10) [40CFR 63 Subpart CC, #5A, 6-20-2013]	<u>H23.1</u> H23.22
PROCESS 10 : STORAGE TANKS					P13.2
SYSTEM 3 : PRESSURIZED TANKS					S13.2, <u>S31.x</u>
STORAGE TANK, PRESSURIZED, NO. 2222, WITH EMERGENCY PRV VENTED TO FLARE GAS RECOVERY SYSTEM, 8500 BBL;DIAMETER: 45 FT 4 IN A/N: <u>535370 572719</u>	D424	C465 C469 D938 D939			
STORAGE TANK, PRESSURIZED, NO. 2223, WITH EMERGENCY PRV VENTED TO FLARE GAS RECOVERY SYSTEM, 8500 BBL;DIAMETER: 45 FT 4 IN A/N: <u>535412 572852</u>	D425	C465 C469 D938 D939			
FUGITIVE EMISSIONS, MISCELLANEOUS A/N: <u>535412 572852</u>	D872			HAP: (10) [40CFR 63 Subpart CC, #5A, 6-20-2013]	H23.1
PROCESS 10 : STORAGE TANKS					P13.2
SYSTEM 6 : PRESSURIZED STORAGE TANK, INORGANIC					
STORAGE TANK, PRESSURIZED, NO. V-3154, AQUEOUS AMMONIA, 19%, WITH TWO PRV/RUPTURE DISKS VENTED TO ATMOSPHERE FLARE GAS RECOVERY SYSTEM, WITH NITROGEN BLANKET, SUBMERGED FILLING, 11420 GALS;DIAMETER: 9 FT;LENGTH: 21 FT A/N: <u>535480 572720</u>	D917				E71.2, E144.1
PROCESS 14 : AIR POLLUTION CONTROL					P18.1
SYSTEM 1 : EAST FLARE SYSTEM					S31.3, <u>S31.x</u>
FLARE, ELEVATED WITH STEAM INJECTION, SA-4, WITH A JOHN ZINK FLARE TIP AND FOUR CONTINUOUS PILOT BURNERS, HEIGHT: 175 FT;DIAMETER: 3 FT A/N: <u>535498 572747</u>	C465	D422 D423 D424 D425 D449 D466 D753			D12.3, D323.2, E193.4, <u>E193.x</u> , H23.29, <u>H23.xx</u>
VESSEL, WATER SEAL, V-3163, HEIGHT: 19 FT 6 IN;DIAMETER: 12 FT 6 IN A/N: <u>535498 572747</u>	D933				
TANK, HOLDING, V-3164, WATER SEAL OVERFLOW, LENGTH: 10 FT;DIAMETER: 4 FT 6 IN A/N: <u>535498 572747</u>	D937				
KNOCK OUT POT, V-2254 A/N: <u>535498</u>	<u>D466</u>	<u>C465 D938</u> <u>D939</u>			
KNOCK OUT POT, V-2254A, LENGTH: 32 FT; DIAMETER: 14 FT A/N: <u>572747</u>	<u>Dxxx</u>	<u>C465 D938</u> <u>D939</u>			



SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT
ENGINEERING & COMPLIANCE DIVISION
 APPLICATION PROCESSING AND CALCULATIONS

APPL. NO. 572721,
 572722, 572723, 572724,
 572719, 572852, 572720,
 572747, 572718, 568560

DATE
 3/3/15

PAGE
 5 of 38

PROCESSED BY
 J. West

CHECKED BY

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KNOCK OUT POT, LOW POINT DRAIN, V-3203, LENGTH: 14 FT; DIAMETER: 5 FT A/N: 572747	Dyyy				
KNOCK OUT POT, V-3052 A/N: 535498 572747	D467				
KNOCK OUT POT, V-3053 A/N: 535498 572747	D468				
KNOCK OUT POT, F-307, HEIGHT: 17 FT;DIAMETER: 6 FT 6 IN A/N: 535498 572747	D753	C465 D938 D939			
FUGITIVE EMISSIONS, MISCELLANEOUS A/N: 535498 572747	D876			HAP: (10) [40CFR 63 Subpart CC, #5A, 6-20-2013]	H23.1
PROCESS 14 : AIR POLLUTION CONTROL					P18.1
SYSTEM 2 : WEST FLARE SYSTEM					S31.3
FLARE, SA-6, WITH A JOHN ZINK FLARE TIP, THREE AUTOMATIC STEAM SUPPLY CONTROLS, HEIGHT: 175 FT;DIAMETER: 2 FT 6 IN A/N: 535499 572718	C469	D422 D423 D424 D425 D449 D470 D754 D755 D756			D12.3, D323.2, E193.4, E193.x, H23.29, H23.xx
KNOCK OUT POT, V-2540 A/N: 535499 572718	D470	C469			
KNOCK OUT POT, 120-V-22, HEIGHT: 20 FT;DIAMETER: 12 FT A/N: 535499 572718	D754	C469 D938 D939			
VESSEL, WATER SEAL, 120-V-32, HEIGHT: 18 FT;DIAMETER: 11 FT 11 IN A/N: 535499 572718	D755	C469			
TANK, HOLDING, 120-V-34, WATER SEAL OVERFLOW, 4800 GALS;DIAMETER: 4 FT 6 IN;LENGTH: 10 FT A/N: 535499 572718	D756	C469			
FUGITIVE EMISSIONS, MISCELLANEOUS A/N: 535499 572718	D877			HAP: (10) [40CFR 63 Subpart CC, #5A, 6-20-2013]	H23.1
PROCESS 14 : AIR POLLUTION CONTROL					P18.1
SYSTEM 3 : FLARE GAS RECOVERY SYSTEM					S15.12, S15.13, S31.3
COMPRESSOR, C-3016, LIQUID RING, DUAL SEALS WITH BARRIER FLUID SYSTEM, 900 CU.FT./MIN A/N: 535500 568560	D938	D422 D423 D424 D425 D449 D466 D753 D754			E73.3, H23.36
COMPRESSOR, C-3017, LIQUID RING, DUAL SEALS WITH BARRIER FLUID SYSTEM, 900 CU.FT./MIN A/N: 535500 568560	D939	D422 D423 D424 D425 D449 D466 D753 D754			E73.3, H23.36
KNOCK OUT POT, V-3166, COMPRESSOR DISCHARGE, LENGTH: 18 FT;DIAMETER: 6 FT 6 IN A/N: 535500 568560	D940				
KNOCK OUT POT, V-3168, SCRUBBER INLET, HEIGHT: 7 FT;DIAMETER: 2 FT A/N: 535500 568560	D941				
FUGITIVE EMISSIONS, MISCELLANEOUS A/N: 535500 568560	D942			HAP: (10) [40CFR 63 Subpart CC, #5A, 6-20-2013]	H23.36

 SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT ENGINEERING & COMPLIANCE DIVISION APPLICATION PROCESSING AND CALCULATIONS	APPL. NO. 572721, 572722, 572723, 572724, 572719, 572852, 572720, 572747, 572718, 568560	DATE 3/3/15	PAGE 6 of 38
	PROCESSED BY J. West	CHECKED BY	

COMPLIANCE RECORD REVIEW

A query of the SCAQMD Compliance Database for the past two years (3/1/13 to 3/3/15) identified 4 NOV's that were issued to the Phillips 66 Carson Refinery (Facility ID 171109). None of these NOV's were related to the subject equipment. The compliance database indicates that the equipment in the P1S1 Crude Unit, P1S4 Vacuum Distillation Unit, P2S1 Delayed Coking Unit, P5S1 Debutanizer Unit, P10S3 Tank D424, P10S3 Tank 425, and P10S6 Tank 917, P14S1 West Flare System, P14S2 East Flare System, and P14S3 Flare Gas Recovery System are currently in compliance with applicable rules and regulations.

FEE EVALUATION

These applications are for modifications. The fees for all of these applications were paid when the applications were submitted. Equipment subject to Schedule F fees require additional fees if the evaluation time exceeds 99 hours, but this is not the case for the two Schedule F flare applications. No additional fees are due.

A/N 572721 P1S1 (BCAT 000517 Crude Oil distillation unit, Schedule E)

A/N 572722 P1S4 (BCAT 000507 Vacuum distillation unit, Schedule E)

A/N 572723 P2S1 (BCAT 351245 Delayed coking (heavy cut), Schedule E)

A/N 572724 P5S1 (BCAT 248300 Gasoline Fractionation Unit, Schedule F)

A/N 572719 P10S3, D424 (BCAT Storage Tank hydrocarbons misc, Schedule A)

A/N 572852 P10S3, D425 (BCAT Storage Tank hydrocarbons misc, Schedule A)

A/N 572720 P10S6, D917 (BCAT 000520 Aqueous ammonia storage & transfer sys, Schedule C)

A/N 572747 P14S1 (CCAT 92; Flare system, refinery; Schedule F)

A/N 572718 P14S2 (CCAT 92; Flare system, refinery; Schedule F)

A/N 568560 P14S3 (CCAT 59; Vapor recovery serving refinery unit; Schedule E)

PERMIT UNIT HISTORIES

A summary of the permitting history for each of the permit units that are part of this proposed project (P1S1 Crude Unit, P1S4 Vacuum Distillation Unit, P2S1 Delayed Coking Unit, P5S1 Debutanizer Unit, P10S3 Tank D424, P10S3 Tank 425, and P10S6 Tank 917, P14S1 West Flare System, P14S2 East Flare System, and P14S3 Flare Gas Recovery System) is provided below in **Tables 2 - 11**.

Table 2. Permitting History for Crude Unit (P1S1)

A/N	Permit #	Facility ID	Description	A/N Type	A/N Status	Permit Date
572721	-	171109	Modification to connect atmospheric PRVs to VRS/Flare	50	20	TBD
535217	G17708	171109	Change of operator from ConocoPhillips to Phillips 66	40	31	6/12/12



SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT
ENGINEERING & COMPLIANCE DIVISION

APPLICATION PROCESSING AND CALCULATIONS

APPL. NO. 572721,
572722, 572723, 572724,
572719, 572852, 572720,
572747, 572718, 568560

DATE
3/3/15

PAGE
7 of 38

PROCESSED BY
J. West

CHECKED BY

A/N	Permit #	Facility ID	Description	A/N Type	A/N Status	Permit Date
471540	-	800362	Modification to replace three vessels with new vessels, remove D58, and also to specify that D1 vents to atm (Condition S15.3). Permit unit split to create new desalter unit (P1S8, see A/N 486779)	50	26	12/4/07
471585	-	800362	Change of condition to remove pumps from permit (application cancelled and incorporated in 471540)	63	52	-
472816	-	800362	Change of condition to remove D58 from permit (application cancelled and incorporated in 471540)	63	52	-
417660	F62410	800362	Change of condition to correct vessel dimensions	63	31	8/1/03
393103	F49705	800362	Change of condition for removal of D7, due to changed commodity (commercial grade caustic) that meets Rule 219 exemption criteria	63	31	3/7/02
338062	-	800362	Modification for the addition of 2nd stage desalter vessels; permit unit split; new permit unit created [separate system (P1S8) later created for desalter equipment during processing of A/N 471540]	50	26	5/14/98
325616	F6856	800362	Change of ownership from Unocal to Tosco	40	31	4/25/97
302070	D90155	89780	Modification to add one new pump, include 4 existing pumps, and remove 2 pumps	20	31	4/24/95
264885	D52809	89780	Modification to replace two exchangers and install 1 new exchanger (PO no PC) (transferred from facility ID 88892 to 89780)	50	31	5/4/92 7/8/92
257925	D45732	89780	Change of ownership from Shell to Unocal (transferred from facility ID 88892 to 89780)	40	31	12/9/91
138226	RM-57783	6035	Modification to replace vessels, heat exchanger and pumps; venting to allow H2S removal (response to NOV Z18635)	10	31	12/9/87
121299	-	6956	Modification of permit unit to prevent high sulfur in fuel gas	30	51	
C14671	-	6035	Modification to change primary column sweetener from solid to liquid Merox	50	51	
C21491	-	6035	Modification for refinery modernization; increased capacity, added third desalter, replaced 4 heaters with one heater	50	51	5/27/80
C03250	M01644	6035	Modification to add Merox pot, add pumps, and connect devices to flare system	0	31	11/21/77
A59719	P49044		Modification to add second desalter, add pumps, remove spent soda tank 75, and use coker water for desalting (see A/N A63583)			5/27/70
A46628	P28290		Modification to install scraper blades on desalter and increase rating from 200 kVA to 300 kVA			11/6/67
A21392	P9141	6035	Modification to replace primary column, heat exchanger; add pumps and compressor	0	31	6/4/64
A17559	-		Modification to install heat exchangers, condenser and pumps			5/8/63

 SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT ENGINEERING & COMPLIANCE DIVISION APPLICATION PROCESSING AND CALCULATIONS	APPL. NO. 572721, 572722, 572723, 572724, 572719, 572852, 572720, 572747, 572718, 568560	DATE 3/3/15	PAGE 8 of 38
	PROCESSED BY J. West	CHECKED BY	

A/N	Permit #	Facility ID	Description	A/N Type	A/N Status	Permit Date
A9011	-		Modification to install booster pump for No. 1 stripper column			8/1/60
A6207	A7290		Modification; Debutanizer section altered and made a separate permit unit			
A8434	-		Modified two-stage air-soda treating units to allow treatment of primary and secondary column tops			5/13/60
A2734	A1600		Modification to add 2nd stage soda treater to primary column tops			3/26/58
A2603	A1739		Modification to add desalter			
23460	34751		Modification to add absorption column #7			
6192	9667		Original construction of crude unit			12/22/52

Table 3. Permitting History of Vacuum Flash Unit (P1S4)

A/N	Permit #	Facility ID	Description	A/N Type	A/N Status	Permit Date
572722		171109	Modification to connect atmospheric PRVs to VRS/Flare	50	20	TBD
535221	G17712	171109	Change of operator from ConocoPhillips to Phillips 66	40	31	6/12/12
472815	G8390	800362	Inactivate D68 (V-2256, skim oil pot)	63	26	12/5/07
467378	-	800362	Use water from Vacuum Flasher overhead drum to supply new liquid ring FGRS compressors, and use existing scrubber (D70, FR-2) to treat FGRS gases	50	26	6/7/07
348538	F19940	800362	Remove vent gas connection to heaters	50	31	3/16/99
325619	F6859	800362	Change of ownership from Unocal to Tosco	40	31	6/10/97
257947	D45725	89796	Change of ownership from Shell to Unocal, also corrected typographical error	40	31	12/9/91
138227	M57786	6754	Operate at higher temp for greater efficiency; add 1 vessel, 2 pumps and 8 exchangers	50	31	7/21/87
128357	M46019	6754	Route vent gases from flasher overhead accumulator V-2251 to blowdown facility rather than to flare for Rule 431.1 compliance	50	31	9/20/85
C21492		6754	Modify heat exchangers; integrate heat requirements of crude unit and vacuum flasher	50	52	5/27/80
A56194	P46171	6754	New construction of vacuum flash unit	0	31	9/29/71

 SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT ENGINEERING & COMPLIANCE DIVISION APPLICATION PROCESSING AND CALCULATIONS	APPL. NO. 572721, 572722, 572723, 572724, 572719, 572852, 572720, 572747, 572718, 568560	DATE 3/3/15	PAGE 9 of 38
	PROCESSED BY J. West	CHECKED BY	

Table 4. Permitting History for Delayed Coking Permit Unit (P2S1)

A/N	Permit #	Facility ID	Description	A/N Type	A/N Status	Permit Date
572723		171109	Modification to connect atmospheric PRVs to VRS/Flare	50	20	TBD
535228	G17769	171109	Change of operator from ConocoPhillips to Phillips 66	40	31	6/12/12
464152	G7598	800362	Modification to add new knockout pot, correct dimensions on two vessels, remove pumps and heat exchanger from permit, and make internal modifications to existing devices	50	26	7/18/07
325723	-	800362	Modification to add two new pumps and a heat exchanger/waste heat boiler; (same as A/N 323186) (not completed)	50	52	4/10/97
325622	F6862	800362	Change of owner from Unocal to Tesoro	40	31	4/25/97
323186	-	89814	Modification to add two new pumps D788 D789 and heat exchanger/waste heat boiler D790 (not completed)	20	52	2/6/97
310340	-	88892	Modification to add new pump CK-13 D778 and heat exchanger C-3315 D779 (not completed)	30	51	6/18/96
294067	D89313	88892	Modification to add fuel gas KO vessel (D758, V3122)	50	31	3/21/95
286466	D78460	88892	Modification to replace pump Ck-249 with a larger pump	50	31	11/18/93
266028	D52913	88892	Modification to add two new heat exchangers	30	31	5/6/92
257939	D45727	89797	Change of owner from Shell to Unocal	40	31	11/15/91
153011	D39882	1186	Modification to add 2 new pumps and increase hp rating of two other pumps	30	31	7/25/91
119772	M52712	1186	Modification to add 6 heat exchangers, a waste heat boiler and an ammonium polysulfide tank	50	31	10/3/86
113654	-	1186	Modification to add ten pieces of equipment	30	51	-
C37362	-	5545	Modification to increase hp of two pumps and one compressor	51	50	1/18/82
C21493	-	6035	Modification to add new column and rearrange equipment for capacity increase	50	51	5/27/80
A56195	P47297	1186	Original construction	0	31	12/3/71

 SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT ENGINEERING & COMPLIANCE DIVISION APPLICATION PROCESSING AND CALCULATIONS	APPL. NO. 572721, 572722, 572723, 572724, 572719, 572852, 572720, 572747, 572718, 568560	DATE 3/3/15	PAGE 10 of 38
	PROCESSED BY J. West	CHECKED BY	

Table 5. Permitting History of Debutanizer Unit (P5S1)

A/N	Permit #	Facility ID	Description	A/N Type	A/N Status	Permit Date
572724		171109	Modification to connect atmospheric PRVs to VRS/Flare	50	20	TBD
535243	G17782	171109	Change of operator from ConocoPhillips to Phillips 66	40	31	6/12/12
325659	F6872	800362	Change of ownership from Unocal to Tosco	40	31	6/10/97
257930	D45737	89785/ 88892	Change of ownership from Shell to Unocal	40	31	12/9/91
139946	M57785	21205 Shell	Modification to add two pumps (formerly in crude unit)	10	31	12/9/87R 7/20/87 10/27/86 PC
139179	M49034	21205	Modification to replace column tops pumps (see crude AN 138226)	50	31	4/8/86
121297	M38281	6035	Modification to replace two pumps with larger hp pumps. (See also crude unit AN 121299)	50	31	7/19/84
C03252	P67624	6035	(file lost)		31	
A21399			Modification to feed of debutanizer and crude unit (A21392) for installation of Horton spheres (Tanks 2222 and 2223)			
A6207	A7290		Debutanizer separated from crude unit (A8434) and established as separate permit unit			
A8434			see crude unit (P1S1) history in Table 2			

Table 6. Permitting History of Tank No. 2222 (D424) (P10S3)

A/N	Permit #	Facility ID	Description	A/N Type	A/N Status	Permit Date
572719		171109	Modification to connect atmospheric PRVs to VRS/Flare	50	20	TBD
535370	G17743	171109	Change of operator from ConocoPhillips to Phillips 66	40	31	6/12/2012
325702	F6769	800362	Change of ownership from Unocal to Tosco	40	31	6/10/1997
257997	D45662	89793	Change of ownership from Shell to Unocal	40	31	12/9/1991
A21409	P15572	12111 (Shell)	Original construction of Hortonsphere Tank No. 2222		31	7/29/1966

Table 7. Permitting History of Tank No. 2223 (D425) (P10S3)

A/N	Permit #	Facility ID	Description	A/N Type	A/N Status	Permit Date
572852		171109	Modification to connect atmospheric PRVs to VRS/Flare	50	20	TBD
535412	G17744	171109	Change of operator from ConocoPhillips to Phillips 66	40	31	6/12/2012
325703	F6770	800362	Change of ownership from Unocal to Tosco	40	31	6/10/1997
257990	D45663	89793	Change of ownership from Shell to Unocal	40	31	12/9/1991
A21410	P15571	12111 (Shell)	Original construction of Hortonsphere Tank No. 2222		31	7/29/1966

 SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT ENGINEERING & COMPLIANCE DIVISION APPLICATION PROCESSING AND CALCULATIONS	APPL. NO. 572721, 572722, 572723, 572724, 572719, 572852, 572720, 572747, 572718, 568560	DATE 3/3/15	PAGE 11 of 38
	PROCESSED BY J. West	CHECKED BY	

Table 8. Permitting History of Tank No. V-3154 (D917) (P10S6)

A/N	Permit #	Facility ID	Description	A/N Type	A/N Status	Permit Date
572720		171109	Modification to connect atmospheric PRVs to VRS/Flare	50	20	TBD
535480	G17749	171109	Change of operator from ConocoPhillips to Phillips 66	40	31	6/12/12
426497	F91585	800362	Original construction of new aqueous ammonia storage tank V-3154	10	31	9/2/04 PC 8/31/07 PO

Table 9. Permitting History of East Flare (P14S1)

A/N	Permit #	Facility ID	Description	A/N Type	A/N Status	Permit Date
572747		171109	Modification to connect atmospheric PRVs to VRS/Flare	50	20	TBD
549208		171109	Change of condition (Rule 1118)	60	21	
535498	G17764	171109	Change of operator from ConocoPhillips to Phillips 66	40	31	6/12/12
504706		800362	Change of condition (Rule 1118) (Cancelled)	60	52	-
458382	G8391	800362	Connect East/Coker Flare to FGRS and connect two flares to common header	50	31	5/11/10
325738	F6571	800362	Change of ownership from Unocal to Tosco (PO)	40	31	6/10/97
325717		800362	Change of ownership from Unocal to Tosco (PC)	40	26	6/10/97
318330		88892	Remove sealless pumps from permit	20	51	8/21/96
311333		89814	Vent crude oil tank car unloading system to flares	10	51	2/14/96
295586		89813	Add connection to blowdown system from HDS Unit 120 (KO pot, pumps, water seal, water seal overflow tank) and disconnect tanks 1148, 1149, 1170, 1375 and 1376	50	50	12/14/94
257984	D45683	89813 88892	Change of ownership from Shell to Unocal	40	31	12/9/91
143054	D04738	41955	Replace flare tip and add vessels V3052 & V3053	50	31	1/9/89
118258	M45530	41955	Add vents from H2 plant, fuel oil hydrotreater, and SRUs	31	50	8/30/85
136444		41955	Add vent from Tk 2502	50	52	12/18/85
C08387	P69539	14627	Add spare pump for KO drum	0	31	11/10/76
A80164	P60329		Add vents from sour water oxidizer, debutanizer, crude unit no. 5 and various pump discharge lines			
A56199	P47044		New construction of flare for delayed coking complex			11/1/71

 SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT ENGINEERING & COMPLIANCE DIVISION APPLICATION PROCESSING AND CALCULATIONS	APPL. NO. 572721, 572722, 572723, 572724, 572719, 572852, 572720, 572747, 572718, 568560	DATE 3/3/15	PAGE 12 of 38
	PROCESSED BY J. West	CHECKED BY	

Table 10. Permitting History of West Flare (P14S2)

A/N	Permit #	Facility ID	Description	A/N Type	A/N Status	Permit Date
572718		171109	Modification to connect atmospheric PRVs to VRS/Flare	50	20	TBD
549206		171109	Change of condition (Rule 1118)	60	21	
535499	G17765	171109	Change of operator from ConocoPhillips to Phillips 66	40	31	6/12/12
504708		800362	Change of condition (Rule 1118) (Cancelled)	60	52	-
458383	G8387	800362	Connect West Flare to FGRS and connect two flares to common header	50	31	5/11/10
325740	F6572	800362	Change of ownership from Unocal to Tosco (PO)	40	31	6/10/97
325722		800362	Change of ownership from Unocal to Tosco (PC)	40	26	6/10/97
338499		800362	TV permit shield for West Flare from 40CFR60 Subpart GGG for D754 knockout pot(Cancelled)	60	53	-
311334		89814	Vent crude oil tank car unloading system to flares	20	51	2/14/96
295585		89813	Add molecular vapor seal and connection to blowdown system from HDS Unit 120 (KO pot, pumps, water seal, water seal overflow tank)	50	50	12/14/94
258007	D45647	89813	Change of ownership from Shell to Unocal Followed by A/N 325740 (PO) and 325722 (PC) (after PC's 295585, 311334, and 338499)	40	31	12/9/91
136445	M57701	41955	Add vent from Tk 2502	50	31	7/6/87
C42271	M45529	14627	New construction of backup flare (Variance 1018-87 - Rule 431.1)	20	31	8/30/85

Table 11. Permitting History of Vapor Recovery System (P14S3)

A/N	Permit #	Facility ID	Description	A/N Type	A/N Status	Permit Date
568560		171109	Modification to connect atmospheric PRVs to VRS/Flare	50	20	TBD
549207		171109	Change of condition (Rule 1118)	60	21	
535500	G17766	171109	Change of operator from ConocoPhillips to Phillips 66	40	31	6/12/12
504707		800362	Change of condition (Rule 1118) (Cancelled)	60	52	-
458384	G8388	800362	Install new FGRS and connect two flares to common header	10	31	5/11/10

PROJECT DESCRIPTION

Atmospheric Pressure Relief Valves

The objective of the proposed project is to connect 20 existing atmospheric pressure relief valves (PRV) to the P14S3 Flare Gas Recovery System, which is connected to the P14S1 East Flare and the P14S2

 <p>SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT ENGINEERING & COMPLIANCE DIVISION APPLICATION PROCESSING AND CALCULATIONS</p>	APPL. NO. 572721, 572722, 572723, 572724, 572719, 572852, 572720, 572747, 572718, 568560	DATE 3/3/15	PAGE 13 of 38
	PROCESSED BY J. West	CHECKED BY	

West Flare. These 20 PRDs are on twelve devices in seven permit units: P1S1 Crude Unit (D1, D2, D4), P1S4 Vacuum Distillation Unit (D65, D69), P2S1 Delayed Coking Unit (D95, D96, D97), P5S1 Debutanizer Unit (D803), P10S3 Tank D424, P10S3 Tank 425, and P10S6 Tank 917.

The project also includes the replacement of an existing knockout pot (V2254, D466) with a larger knockout pot (V2254A, Dxxx), and the installation of an additional knockout pot (V-3203, Dyyy) to serve as a low-point drain on the flare header. The drain line from the 24" flare header enters the side of V-3203. Water is drawn off the bottom to the Flare Drum Condensate Pumps FR-25 and FR-25B. The vent from V-3203 returns to the same 24" flare header line upstream of the low point drain connection.

The operation and monitoring of atmospheric PRDs is governed by Rule 1173: Control of Volatile Organic Compound Leaks and Releases from Components at Petroleum Facilities and Chemical Plants. The 11/21/02 staff report for Rule 1173 repeatedly mentions that the alternative to atmospheric PRDs is venting them to a vapor recovery and/or control device. Rule 1173 requires that after any 2,000 lb release, the facility will be required to connect the PRD to a vapor recovery or flare system that has been issued a valid permit to operate from the SCAQMD (unless they pay a \$350,000 mitigation fee). The staff report also mentions a control efficiency of at least 95% is anticipated.

The connection of atmospheric PRVs is required for P5S1 and P1S1 due to recent releases that invoked the Rule 1173 requirement to either connect to a vapor recovery/flare system or pay a fine. The facility opted to connect to the vapor recovery/flare system during the next turnaround, which is part of this project.

The facility is connecting additional atmospheric PRVs because of a company policy that will eliminate atmospheric relief valves after 2016. The facility stated that "the intent of this project is to protect human health and the environment from uncontrolled emissions during reasonably foreseeable emergency events to the maximum extent that is feasible."

Process devices that currently vent to the atmosphere are listed in Condition S15.3, with the strikeout showing which devices will be removed from this condition as part of this permit action:

S15.3 All emergency vent gases shall be directed to a blowdown flare system or flare gas recovery system except Devices IDs ~~D1, D2, D4, D65, D69, D95-D97~~, D175, D176, D178, D179, D180, D186, D187, D188, D194, D201, D202, D479, ~~D803~~, D816, D896, and C989 that vent to the atmosphere.

The remaining atmospheric release devices in Condition S15.3 are described as follows. Condition S15.11 notes that D176, D178, D179, D180, D194, D201, D202, D896, and C989 are devices in the P4S1 Hydrogen Plant that are allowed to vent to atmosphere under normal conditions. These devices have low VOC emissions, as monitored by Rule 1189 source testing and low sulfur emissions. D175, D186, D187, D188 are emergency vents in the P4S1 Hydrogen Plant that are likely to have low VOC and sulfur emissions. D479 is a material dropout vessel common the LPG distillation and Coker LPG Merox Units (P5S3 and P5S4) that is connected to a carbon adsorber (C484). D816 is a gravity-draining holding tank/sump in FCC Feed (Gas Oil) Hydrodesulfurization Unit 120 (P3S3) that is connected to a carbon adsorber (D816).

 <p style="text-align: center;">SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT ENGINEERING & COMPLIANCE DIVISION</p> <p style="text-align: center;">APPLICATION PROCESSING AND CALCULATIONS</p>	APPL. NO. 572721, 572722, 572723, 572724, 572719, 572852, 572720, 572747, 572718, 568560	DATE 3/3/15	PAGE 14 of 38
	PROCESSED BY J. West	CHECKED BY	

Tank D917 is not listed in S15.3 because it is a pressurized storage tank. This tank is in aqueous ammonia service, and has a nitrogen blanket. As part of this proposed project, the equipment description will be modified to reference the emergency vent to the Flare Gas Recovery System.

Tanks D424, and D425 are not listed in S15.3 because they are pressurized storage tanks. D424 and D425 are pressurized storage tanks in P10S3. The primary pressure relief vents for pressurized storage tanks in P10S3 (D422-D425) are currently connected to the flares, as listed in the “connected to” column of the permit equipment description. The proposed project will connect additional emergency PRVs on D424 and D425 to the flare gas recovery system. These tanks are being connected to the FGRS because they may contain sour gas. Notably, the facility’s other two pressurized storage tanks (D422 and D423) are not having their emergency vents connected to the FGRS because they are used only to store butane products without any significant sulfur content. As part of this proposed project, the equipment descriptions for D424 and D425 will be modified to reference the emergency vent to the Flare Gas Recovery System.

Flare Studies

As part of this project, the facility conducted a study to review the Flare System design to ensure that the system can safely handle the proposed atmospheric relief valves. The study is entitled “ConocoPhillips Los Angeles Refinery Carson Plant Flare QRA Report”, dated October 2012 and was conducted by Smith & Burgess LLC, Process Safety Consulting. The system was modeled using the facility’s approved Flare Quantitative Risk Analysis flare probability loading study. The study objectives were to ensure that 1) backpressures do not impede system relief devices 2) flare knockout drums adequately remove liquids from the vapor stream and provide adequate retention/storage time, and 3) flare stack and tip exit velocities are within the manufacturer’s specification and the thermal radiation potential is within the industry standards. The study was provided for review, but is considered business confidential, so only a summary of results is provided here.

The study findings showed that the West Flare knockout drum (V2254, D466) was undersized. Thus, as part of this project, Dxxx in P14S1 is a proposed larger knockout pot that will replace existing West Flare knockout pot V-2254 (D466). Additionally, a new knockout pot will act as a low-point drain on the flare header. These changes will include additional fugitive component counts, as will be discussed in the Emissions section of this evaluation.

Another study finding was that procedural modifications were needed to eliminate heat input to the crude unit and debutanizer unit upon high system pressure. The facility had previously planned to modify the shutdown procedure for the C3/C4 depropanizer tower and increase the set pressure of a PSD on a hydrotreating unit vessel. These mitigation measures and modifications were all included in the flare analysis.

Existing conditions 2 and 3 in the permit’s *Section E: Administrative Conditions* require that the operator ensure proper operation of all equipment and comply with Division 26 of the California Health and Safety Code. These conditions obligate the facility to implement the mitigation measures and modifications as needed to prevent the emission of air contaminants in excess of those allowed by the CA Health and Safety Code, and to maintain all equipment, such as the flares, in a manner that ensures their proper operation.

With the modifications recommended, the study found that the Carson Plant Flare System will meet all

 SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT ENGINEERING & COMPLIANCE DIVISION APPLICATION PROCESSING AND CALCULATIONS	APPL. NO. 572721, 572722, 572723, 572724, 572719, 572852, 572720, 572747, 572718, 568560	DATE 3/3/15	PAGE 15 of 38
	PROCESSED BY J. West	CHECKED BY	

industry requirements, and that the estimated total flow to the flare system during the ‘design scenario’ was below the calculated flare capacity. The overall project includes the modifications and mitigation measures necessary to ensure that the operator can ensure proper operation of the flares. After review of the QRA report, the facility identified a revision to the QRA report recommendations, and has revised one of the mitigation measures proposed. One of the initial recommendations was to prevent auto-restart of the crude feed pump DU-8. Based on process engineering judgment, it was deemed preferable in a DU-255 heater shutdown to continue to feed unheated crude through charge pump DU-8 to quench the hot crude to reduce coking in the heater and bottom of the primary column. The cooling effect of the quenching will also help reduce the temperature and pressure in the column during an emergency shutdown. This revision to the QRA mitigation measures has been documented in both the facility’s and the SCAQMD’s files.

The objective of these permit applications is to seek approval for the physical modifications to the facility: connection of the PRDs to vapor recovery lines (including new fugitive components), replacement of one knockout pot with a larger knockout pot, and installation of a new knockout pot. Other mitigation measures identified are related to fail-safe logic programming and other procedures. These will be implemented by the facility to ensure proper operation of all equipment, as required by new condition E193.x. Operation of the flare within its rated capacity is necessary to achieve 95% control efficiency, which is the intent of Rule 1173.

EMISSIONS

Emissions from fugitive components associated with the modifications to connect PRVs to the flare gas recovery system were calculated using the EPA Correlation Equations and Factors for Refineries, as described in **Tables 12 and 13**. Note that Table 12 does not include fugitive component counts for D917 (P10S6), an ammonia storage tank which is not in VOC service. These calculations are based on pre-construction estimated fugitive counts provided by the facility. **Table 12** summarizes the total project emissions, while **Table 13** lists the component count changes for each permit unit individually.

Table 12. Total Project: VOC Fugitive Component Counts and Emissions Calculations for modifications to connect atmospheric PRVs into Flare Gas Recovery System

Source Unit		Service	<i>Emission Factor (lb/yr / # of components)</i>	# Added	# Re-moved	Total #	Emissions (lb/yr)
Valves	Sealed bellows	All	0	98		94	0
	SCAQMD approved I&M Program	Gas/Vapor	4.55				
		Light Liquid	4.55				
	Heavy Liquid	4.55					
Pumps	Sealless type	Light Liquid	0				
	Double mechanical seals or equivalent	Light Liquid	46.73				
	Single mechanical seals	Heavy Liquid	46.73				
Flanges (ANSI 16.5-1988)		All	7.04	147		141	1035
Connectors		All	2.86				

 SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT ENGINEERING & COMPLIANCE DIVISION APPLICATION PROCESSING AND CALCULATIONS	APPL. NO. 572721, 572722, 572723, 572724, 572719, 572852, 572720, 572747, 572718, 568560	DATE 3/3/15	PAGE 16 of 38
	PROCESSED BY J. West	CHECKED BY	

Source Unit	Service	Emission Factor (lb/yr / # of components)	# Added	# Re-moved	Total #	Emissions (lb/yr)
Compressors	Gas/Vapor	9.07*				
Pressure Relief Valves	All					
Process Drains with P-trap or seal pot	All					
Other (incl. fittings, hatches, sight-glasses, & meters)	All					
Emissions (lb/yr)						993
Emissions (lb/day)						2.72
Emissions (lb/hr)						0.11

* Emission Factors from "CAPCOA-Revised 1995 EPA Correlation Equations and Factors for Refineries and Marketing Terminals" California Implementation Guidelines for Estimating Mass Emissions of Fugitive Hydrocarbon Leaks at Petroleum Facilities, CAPCOA/ARB, February 1999. (Table IV-3a from SCAQMD Guidelines for Fugitive Emissions Calculations, June 2003) using a screening value, corrected for background, of 500 ppm.

As described in **Table 13**, the total project increase of 2.72 lbs/day requires VOC offsets at a ratio of 1.2:1 (2.72 * 1.2 = 3.3). Thus, 3 lbs of VOC offsets are required for this project. The offsets will be assigned to the three permit units with the largest increases: P1S1, P1S4, and P14S1. Details on the pre-project and post-project component counts, as well as fugitive emission calculations for P1S1, P1S4, P2S1, P14S1, P14S2 and P14S3 are provided in Attachment A. There are no emission increases to the West Flare (P14S2) or Flare Gas Recovery System (P14S3). The emission increases in P2S1, P5S1, D424 (P13S3), D425 (P10S3), and D917 (P10S6) do not require changes to the current emissions listed for the equipment.

Table 13. Fugitive Emission Increases by Permit Unit

Permit Unit	# New Flanges	# New Valves	Fugitive Emission Increase*		
			(lb/yr)	lb/day	lb/hr
P1S1	34	23	239.36	0.66**	0.027
P1S4	18	12	126.72	0.35**	0.014
P2S1	16	11	112.64	0.31	0.013
P5S1	7	5	49.28	0.14	0.006
D424 (P10S3)	9	6	63.36	0.17	0.007
D425 (P10S3)	9	6	63.36	0.17	0.007
P14S1	48	31	337.92	0.93**	0.039
P14S2	0	0	0	0	0
P14S3	0	0	0	0	0
			992.64	2.72	0.11

D917 (P10S6)*** 6 4 42.24 0.12 0.005

ROG offsets = total increase * 1.2 = 3 lb/day VOC offsets

*Emission Factor = 7.04 lb/yr/# for flanges, EF = 0 lb/yr/# for new valves (sealed bellows)

** The required 3 lb/day of VOC offsets will be assigned to P1S1, P1S4, and P14S1.

*** D917 (P10S6) is a pressurized aqueous ammonia storage tank, and is not in VOC service, but may have fugitive ammonia emissions.

 SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT ENGINEERING & COMPLIANCE DIVISION APPLICATION PROCESSING AND CALCULATIONS	APPL. NO. 572721, 572722, 572723, 572724, 572719, 572852, 572720, 572747, 572718, 568560	DATE 3/3/15	PAGE 17 of 38
	PROCESSED BY J. West	CHECKED BY	

Toxic emissions for the total project were calculated using the SCAQMD Tier 1 methodology, based on fugitive emissions and a worst-case speciation profile for crude oil, as well as estimated fugitive ammonia emissions. The toxics speciation profile is based on a compilation of crude oil analyses, with the highest measured toxics concentration for each TAC from a variety of types of crude oil used at the refinery. See AN 544857 evaluation for details. The speciation profile is based on the wt% of each TAC in liquid crude oil. As a conservative estimate, the screening was done for the estimated fugitive emissions increase for the entire project, and assuming the liquid wt% applies to the fugitive emissions directly. Note that emissions of ammonia from D917, the P10S6 pressurized aqueous ammonia tank, were added to the toxics profile. Ammonia emissions for the 6 new flanges (and 4 new seal bellows valves) were estimated using fugitive emission factors to be 42 lb/yr. This emission level was added to the worst-case crude speciation toxics profile for purposes of screening.

Table 14 shows that using a Tier 1 analysis with a 100 meter receptor distance, the proposed total project emissions passed the Tier 1 screening with a cancer/chronic pollutant screening index of 3.33×10^{-1} and an acute pollutant screening index of 6.31×10^{-4} (both values are less than the screening threshold of 1.0). The **Table 14** screening results demonstrate that the chronic and acute hazard indices will not exceed 1.0 at any receptor location [1401(d)(2), (3)] and that the risk per year shall not exceed $1/70^{\text{th}}$ of the maximum allowable chronic risk [1401(d)(4)] for the entire project, and thus also for each individual permit unit.

Table 14. Tier 1 Screening Risk Assessment Report for Proposed Project Emission Increases

Code	Compound	Average Annual Emission Rate (lbs/yr)	Max Hourly Emission Rate (lbs/hr)	Cancer / Chronic Pollutant Screening Level (lbs/yr)	Acute Pollutant Screening Level (lbs/hr)	Cancer / Chronic Pollutant Screening Index (PSI)	Acute Pollutant Screening Index (PSI)
B1	Benzene (including benzene from gasoline)	1.46E+00	1.67E-04	8.92E+00	3.96E+00	1.64E-01	4.22E-05
P15	Chrysene	2.06E-02	2.36E-06	7.69E-01		2.69E-02	
C30	Cresol mixtures	5.89E-03	6.74E-07	1.55E+05		3.80E-08	
E4	Ethyl benzene	1.54E+00	1.76E-04	1.02E+02		1.51E-02	
H8	Hexane (n-)	9.91E+00	1.13E-03	1.81E+06		5.48E-06	
P30	Naphthalene	9.44E-01	1.08E-04	7.44E+00		1.27E-01	
P3	Phenol	2.36E-03	2.70E-07	5.17E+04	1.55E+01	4.56E-08	1.74E-08
T3	Toluene (methyl benzene)	5.96E+00	6.82E-04	7.75E+04	9.91E+01	7.69E-05	6.88E-06
X1	Xylenes (isomers and mixtures)	9.75E+00	1.12E-03	1.81E+05	5.89E+01	5.39E-05	1.89E-05
A9	Ammonia	4.21E+01	4.82E-03	5.17E+04	8.57E+00	8.15E-04	5.63E-04
TOTAL (APPLICATION SCREENING INDEX)						3.33E-01	6.31E-04

Tier 1 Results	
Cancer/Chronic ASI 3.33E-01 PASSED	Acute ASI 6.31E-04 PASSED

 <p>SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT ENGINEERING & COMPLIANCE DIVISION APPLICATION PROCESSING AND CALCULATIONS</p>	APPL. NO. 572721, 572722, 572723, 572724, 572719, 572852, 572720, 572747, 572718, 568560	DATE 3/3/15	PAGE 18 of 38
	PROCESSED BY J. West	CHECKED BY	

RULES EVALUATION

PART 1: SCAQMD REGULATIONS

Rule 212 Standards for Approving Permits And Issuing Public Notice (Amended 11/14/97)

Rule 212 requires public notice for any new or modified permit unit, RECLAIM source or Title V equipment that increases emissions of toxic air contaminants and increases health risk as specified in 212(c)(1) - (c)(3). The proposed new equipment will not be located within 1000 feet of a school, so public notice is not required per 212(c)(1).

E&C Policy No. E2006-01, "Rule Implementation Guidance, Rule 212 Public Notices" provides guidance on assessing the Rule 212(g) applicability for projects that consist of multiple applications. This policy specifies that for multiple application projects (1) the total emissions from all the project's applications shall be used to determine if the emission increases at the facility exceed any of the daily maximums in subdivision (g); and (2) the total emissions shall include emissions reductions resulting from the modification of existing pieces of equipment in determining if the emission thresholds exceed that specified in subdivision (g). Ten applications are included in this project. The total emissions increase from the project is 3 lb/day VOC and 0.12 lb/day ammonia.

The daily maximum specified in Rule 212(g) for VOC emissions is 30 lb/day. The combined emissions from the entire project are 3 lb/day. Thus, the project is below the daily maximum and public notice is not required per 212(c)(2). The proposed project is not expected to cause a maximum individual cancer risk greater than 1 in a million at this facility, or expose persons to any substances that pose a potential risk of nuisance; thus, public notice is not required per Rule 212(c)(3). No Rule 212 public notice is required for this project, and compliance with this rule is expected.

Rule 401 Visible Emissions (Amended 11/09/01)

Some atmospheric releases from PRVs may have the potential to cause visible emissions. The objective of the proposed project is to connect atmospheric PRVs to the Flare Gas Recovery/Flare System. Releases from PRVs are generally considered to be emergency situations; however, there are no exemptions for emergencies in Rule 401. Operation of the East and West Flares (C465, C469) has the potential to cause visible emissions. However, Condition D323.2 requires regular and complaint-driven monitoring for visible emissions, as well as corrective actions when visible emissions are present. The facility is currently in compliance with this rule and is expected to continue to operate in compliance with this rule.

Rule 402 Nuisance (Adopted 05/07/76)

Rule 402 restricts the discharge of any air contaminants that would cause injury, detriment, nuisance, or annoyance, or which endanger the comfort, repose, health or safety of any persons or the public, or which may cause injury or damage to business or property. Atmospheric releases from PRVs are likely to cause a public nuisance. The objective of the proposed project is to connect atmospheric PRVs to the Flare Gas Recovery/Flare System. This will eliminate atmospheric releases and their potential to cause a public nuisance. Although operation of the East and West Flares (C465, C469) also has the potential to result in a public nuisance, any nuisance

 <p style="text-align: center;">SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT ENGINEERING & COMPLIANCE DIVISION</p> <p style="text-align: center;">APPLICATION PROCESSING AND CALCULATIONS</p>	APPL. NO. 572721, 572722, 572723, 572724, 572719, 572852, 572720, 572747, 572718, 568560	DATE 3/3/15	PAGE 19 of 38
	PROCESSED BY J. West	CHECKED BY	

from flare operation is likely to be less severe and less impactful than from atmospheric releases, and more easily and quickly corrected. Safeguards are in place, such as Condition D323.2, to investigate public complaints in a timely manner and ensure that equipment, such as the flares, is operated properly. The facility is currently in compliance with this rule and is expected to continue to operate in compliance with this rule.

Rule 404 Particulate Matter – Concentration (Amended 02/07/86)

This rule sets forth particulate matter emission standards based on the gas discharge rate. Equipment fired with gaseous fuel, such as the East and West Flares (C465, C469), can typically meet these standards. The facility is currently in compliance with this rule and is expected to continue to operate in compliance with this rule.

Rule 405 Solid Particulate Matter – Weight (Amended 02/07/86)

The coke drums (D796-D799) have the potential to emit PM. They are subject to Rule 405 emission limits as listed in the “Emissions and Requirements” column of the equipment description. The facility is currently in compliance with this rule and is expected to continue to operate in compliance with this rule.

Rule 407 Liquid and Gaseous Air Contaminants (Amended 04/02/82)

Rule 407 includes emission limits for CO (2000 ppm) and sulfur compounds (500 ppmv SO₂) from any equipment. However, Rule 407(b)(3) states that Rule 407 requirements do not apply to emissions from emergency venting due to equipment failure or process upsets. This project is primarily concerned with the handling of emergency vent gases resulting from equipment failures or process upsets. The facility is currently in compliance with this rule and is expected to continue to operate in compliance with this rule.

Rule 409 Combustion Contaminants (Amended 08/07/81)

Rule 409 limits atmospheric discharge of combustion contaminants, which are defined as particulate matter discharged into the atmosphere from the burning of any kind of material containing carbon in a free or combined state. The limit is 0.1 grain per cu ft of gas calculated to 12 percent of carbon dioxide at standard conditions averaged over a minimum of 15 consecutive minutes. Equipment fired on gaseous fuel, such as the East and West Flares (C465, C469), can typically meet these limits. The facility is currently in compliance with this rule and is expected to continue to operate in compliance with this rule.

Rule 463 Organic Liquid Storage (Amended 11/04/11)

The 8500 bbl pressurized storage tanks No. 2222 and 2223 (D424 and D425) in P10S3 are subject to the requirements of Rule 463 per System Condition S13.2. Rule 463 applies to above-ground stationary tanks with capacities of 19,815 gallons (472 bbl) or greater. Rule 463 has tank roof requirements that apply unless the “tank is a pressure tank maintaining working pressures sufficient at all times to prevent organic vapor loss to the atmosphere.” [463(c)] Thus, D424 and D425 are not subject to tank roof requirements. Applicable reporting and recordkeeping requirements specified in 1173(f)(2) and (f)(3) include providing all upset emissions information and keeping records of all liquids stored in such containers. The facility is currently in compliance with this rule and is expected to continue to operate in compliance with this rule.

Rule 465 Refinery Vacuum-Producing Devices or Systems (Amended 08/13/99)

 <p style="text-align: center;">SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT ENGINEERING & COMPLIANCE DIVISION</p> <p style="text-align: center;">APPLICATION PROCESSING AND CALCULATIONS</p>	APPL. NO. 572721, 572722, 572723, 572724, 572719, 572852, 572720, 572747, 572718, 568560	DATE 3/3/15	PAGE 20 of 38
	PROCESSED BY J. West	CHECKED BY	

Rule 465 limits VOC and sulfur compound emissions from vacuum-producing equipment at refineries. The flasher overhead accumulator V-2251 (D65) in the Vacuum Flash Unit (P1S4) is subject to the requirements of Rule 465 per Condition H23.10. These requirements include the use of covers on hot wells and accumulators; and continuously collecting and routing exhaust gases to a permitted fuel gas system or combustion device. The facility is currently in compliance with this rule and is expected to continue to operate in compliance with this rule.

Rule 466 Pumps and Compressors (Amended 10/07/83)

Rule 1173(l)(3) specifies that the provisions of Rules 466, 466.1, and 467 shall not apply to facilities subject to Rule 1173. Thus, no requirements apply to this facility.

Rule 466.1 Valves and Flanges (Amended 03/16/84)

Rule 1173(l)(3) specifies that the provisions of Rules 466, 466.1, and 467 shall not apply to facilities subject to Rule 1173. Thus, no requirements apply to this facility.

Rule 467 Pressure Relief Devices (Amended 03/05/82)

Rule 1173(l)(3) specifies that the provisions of Rules 466, 466.1, and 467 shall not apply to facilities subject to Rule 1173. Thus, no requirements apply to this facility.

Rule 474 Fuel Burning Equipment – Oxides of Nitrogen (Amended 12/04/81)

Rule 474 limits NO_x emissions from fuel-burning equipment. However, since the facility is a NO_x and SO_x RECLAIM facility, Rule 474 is not applicable per Rule 2001, Table 1. Thus, no requirements apply to this facility.

Rule 1118 Control of Emissions from Refinery Flares (Amended 11/04/05)

Rule 1118(c)(4) requires that all flares be operated in such a manner that minimizes all flaring and that no vent gas is combusted except during emergencies, shutdowns, startups, turnarounds or essential operational needs. The facility installed a new Flare Gas Recovery System in 2008 to comply with this requirement. The proposed project's connection of atmospheric PRVs to the Flare Gas Recovery/Flare system may result in flaring of vent gases during emergency situations. However, "an emergency situation in the process operation resulting from the vessel operating pressure rising above pressure relief devices' set points, or maximum vessel operating temperature set point" is defined as an essential operational need [1118(b)(4)(F)], and is thus in compliance with Rule 1118.

Rule 1118(d) establishes performance targets for SO₂ emissions from flares. The Phillips 66 Company's Carson Refinery and Wilmington Refinery have a single combined performance target. The combined facility target was exceeded in 2012 and again in 2014, but the facility has or is expected to timely submit all required Flare Minimization Plan documents and mitigation fees.

Rule 1118 requires monitoring of flare gas composition and flow rate as well as submission of quarterly reports detailing flare events, relative causes, flare emissions, and monitoring system downtime. The facility has timely submitted all required reports and notifications. The facility is currently in compliance with Rule 1118 and is expected to continue to operate in compliance with this rule.

 <p style="text-align: center;">SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT ENGINEERING & COMPLIANCE DIVISION</p> <p style="text-align: center;">APPLICATION PROCESSING AND CALCULATIONS</p>	APPL. NO. 572721, 572722, 572723, 572724, 572719, 572852, 572720, 572747, 572718, 568560	DATE 3/3/15	PAGE 21 of 38
	PROCESSED BY J. West	CHECKED BY	

Rule 1123 Refinery Process Turnarounds (Amended 12/07/90)

Per Condition S13.5, the equipment in the Crude Unit (P1S1), Vacuum Flash Unit (P1S4), Delayed Coking Unit (P2S1), and the Debutanizer Unit (P5S1) are subject to the requirements of Rule 1123. This rule requires that during refinery process turnarounds, the vapors released from process vessels are collected and contained for disposal until the vessel pressure is below 5 psig (or within 10% above the minimum gauge pressure of vapor collection, whichever is lower).

If inert gas displacement or vacuum eduction is used for the process turnaround, a plan is required to be submitted to the Executive Officer describing the procedure, disposition of displaced or educed gases, and the identifiable criteria for the stage of the procedure where the disposition is changed from a control facility to atmospheric venting. The facility is currently in compliance with this rule and is expected to continue to operate in compliance with this rule.

Rule 1149 Storage Tank and Pipeline Cleaning and Degassing (Amended 05/02/08)

Pressurized tanks No. 2222 and 2223 (D424 and D425) are subject to the requirements of Rule 1149 per System Condition S13.2. Rule 1149 requires that the tanks not be opened to the atmosphere unless liquid balancing or other control techniques are employed such that the gaseous VOC concentration within the tank is reduced to less than 5,000 ppmv for at least one hour after degassing operations have ceased. The VOC concentration in the exhaust of any control device shall be less than 500 ppmv, measured as methane, per 1149(c)(8). The rule also requires prior notification at least 2 hours before the start of tank degassing as well as follow-up notification within 3 business days after the degassing activity. The facility is currently in compliance with this rule and is expected to continue to operate in compliance with this rule.

Rule 1173 Control of Volatile Organic Compound Leaks and Releases from Components at Petroleum Facilities and Chemical Plants (Amended 02/06/09)

The project modifications include adding valves and flanges to the existing permit units. Changes to fugitive component counts for each permit unit were listed previously in the “Emissions” section of this evaluation. The facility is installing only sealed bellows valves to comply with BACT. The facility has an approved Inspection and Maintenance (I&M) Program, and will include each new fugitive component in this I&M program.

Miscellaneous fugitives are subject to Rule 1173 per Condition H23.1, H23.22 and H23.36. All three conditions require Rule 1173 compliance; they differ only in the additional requirements: 40CFR60 Subpart GGG, 40CFR60 Subpart GGGa, or none. Miscellaneous fugitive devices tagged with each condition are listed below.

H23.1 (1173 only): D872 (P10S3), D876 (P14S1), D877 (P14S2), D848* (P5S1)

H23.22 (1173 and GGG): D832 (P1S1), D835 (P1S4), D848 (P5S1)

H23.36 (1173 and GGGa): D838 (P2S1), D942 (P14S3)

*D848 is currently tagged with both H23.1 and H23.22. As part of this permit action, redundant Condition H23.1 will be removed from D848.

P14S3 Flare gas recovery compressors D938 and D939 are also tagged with Condition H23.36.

 <p>SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT ENGINEERING & COMPLIANCE DIVISION</p> <p>APPLICATION PROCESSING AND CALCULATIONS</p>	APPL. NO. 572721, 572722, 572723, 572724, 572719, 572852, 572720, 572747, 572718, 568560	DATE 3/3/15	PAGE 22 of 38
	PROCESSED BY J. West	CHECKED BY	

Note that pressurized aqueous ammonia tank D917 (P10S6) is not subject to Rule 1173 because it is not in VOC service. Rule 1173 applies to components in VOC service, and Rule 1173 defines VOCs as in Rule 102: “VOC is any volatile compound of carbon, excluding methane, carbon monoxide, carbon dioxide, carbonic acid, metallic carbides or carbonates, ammonium carbonate, and exempt compounds.”

Atmospheric Process PRDs are subject to the Rule 1173(h) requirements. The objective of this project is to connect existing atmospheric PRDs to the Flare Gas Recovery System so that they no longer vent to the atmosphere. Rule 1173(h)(6)(B) requires that PRDs be connected to a vapor recovery system following any release in excess of 2,000 lbs of VOC in a continuous 24-hour period. The facility reported a PRV release from valve #3242 in the debutanizer (P5S1) unit with emissions in excess of 2000 lbs on 11/13/13. The facility committed in a 12/12/13 report that the PRV would be connected to vapor recovery at the next major turnaround. The facility also had a release at the crude unit on 10/7/14 that involved two PRVs on the same equipment (SV01216 and SV02795). Each PRD release was over 1000 lbs, so the total for the event was over 2000 lbs. (or two releases more than 500 lbs within 5 years). Thus, PRVs on the debutanizer (P5S1) and crude unit (P1S1) are required to be connected to the flare gas recovery system, but the other devices are being connected due to a new company policy to eliminate atmospheric releases from PRVs after 2016.

Rule 1173 specifies that, as an alternative to atmospheric venting, PRDs be connected to a vapor recovery and/or control system. The 11/21/02 staff report for Rule 1173 anticipates a control efficiency of at least 95% for atmospheric PRDs connected to vapor recovery/control systems. The flare study described previously noted that the facility would be able to operate within the design limits of the existing flare systems if the mitigation methods proposed were implemented. Condition E193.x requires the facility to implement the mitigation measures identified in the October 2012 report, or any subsequent revisions, to ensure that any vent gases from the emergency PRVs are sufficiently controlled.

The facility is currently in compliance with this rule and is expected to continue to operate in compliance with this rule.

Rule 1178 Control of Volatile Organic Compound Leaks and Releases from Components at Petroleum Facilities and Chemical Plants (Amended 02/06/09)

Rule 1178 requirements “shall not apply to pressurized storage tanks designed to operate in excess of 15 psig without any emissions to the atmosphere except under emergency conditions.” [1178(j)(1)] Tanks D424, D425 and D917 are each pressurized tanks (and D917 is not in VOC service). Thus, there are no applicable requirements for this project.

Reg XIII New Source Review

Rule 1303 Requirements (Amended 12/6/02) New Source Review requirements apply to new, modified or relocated sources. According to Table 1 of Rule 2001(j), RECLAIM facilities are exempt from the requirements of Regulation XIII with regard to NOx and SOx emissions (they are instead subject to the requirements of Rule 2005 (New Source Review for RECLAIM) for NOx and SOx emissions). RECLAIM facilities are subject to Reg XIII requirements for other (non-RECLAIM) pollutants.

 <p>SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT ENGINEERING & COMPLIANCE DIVISION APPLICATION PROCESSING AND CALCULATIONS</p>	APPL. NO. 572721, 572722, 572723, 572724, 572719, 572852, 572720, 572747, 572718, 568560	DATE 3/3/15	PAGE 23 of 38
	PROCESSED BY J. West	CHECKED BY	

New Source Review generally requires that new sources or modified sources which result in an emission increase do the following: make use of BACT [1303(a)], conduct modeling [1303(b)(1)], and provide Emission Offsets [1303(b)(2)]. In addition, the facility must comply with all applicable rules and regulations of the District before a new permit can be issued [1303(b)(4)], as well as demonstrate statewide compliance [1303(b)(5)(B)].

The west flare and flare gas recovery system (P14S2 and P14S3) are not subject to BACT requirements because they each have no emission increase. Condition S31.x requires that new VOC service fugitive components in P1S1, P1S4, P2S1, P5S1, P10S1, and P14S1 meet BACT requirements for new components. Fugitive BACT is not required for D917 (P10S6) because it is not in VOC service. Appropriate offsets will be provided for 3 lb/day of VOC, as described in the “Emissions” section of this evaluation. Modeling is not required for VOC emissions. No additional requirements apply. The facility is currently in compliance with this rule and is expected to continue to operate in compliance with this rule.

Rule 1325 Federal PM2.5 New Source Review Program (Adopted 06/03/11)

Rule 1325 defines a major modification as a physical change that would result in a significant emission increase and a significant net emissions increase of a regulated NSR pollutant from a major polluting facility [Rule 1325(4)(A)]. A significant increase is defined in 1325(b)(13) as an increase equal to or greater than 40 tons/yr nitrogen oxides; 40 tons/yr sulfur dioxide, or 10 tons/yr PM_{2.5}. The proposed project will not result in a significant emission increase, or a significant net emissions increase of any of these pollutants. Thus, this permit action is not a major modification, and the requirements of Rule 1325 do not apply [Rule 1325(a)].

Reg XIV Toxics and Other Non-Criteria Pollutants

Rule 1401: New Source Review of Toxic Air Contaminants (Amended 06/05/09) Rule 1401 applies to new, modified or relocated permit units that emit Toxic Air Contaminants (TAC). The modifications required to connect existing atmospheric PRVs to the vapor recovery system will result in increases in emissions of TACs, so the proposed project is subject to Rule 1401 requirements. Fugitive emissions include TACs, so a Rule 1401 Tier 1 evaluation was performed to assess the health risks associated with these permit actions. Results of the Tier 1 screening were provided previously in the “Emissions” section of this evaluation. The **Table 14** screening results demonstrated that the chronic and acute hazard indices will not exceed 1.0 at any receptor location [1401(d)(2), (3)] and that the risk per year shall not exceed 1/70th of the maximum allowable chronic risk [1401(d)(4)]. The facility is expected to operate in compliance with this rule

Reg XVII Prevention of Significant Deterioration

Rule 1701: General (Amended 08/13/99)

Prevention of Significant Deterioration (PSD) requirements apply to new sources with an increase in PTE of 100 or 250 tons/yr of attainment air contaminants, or existing sources with a significant emission increase, or any net emission increase at a source located within 10 km of a Class I area. The proposed project will not emit attainment air contaminants. Thus, the requirements of this rule do not apply to this proposed permit action.

Rule 1714: Prevention of Significant Deterioration for Greenhouse Gases (Adopted 11/05/10)

 <p>SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT ENGINEERING & COMPLIANCE DIVISION APPLICATION PROCESSING AND CALCULATIONS</p>	APPL. NO. 572721, 572722, 572723, 572724, 572719, 572852, 572720, 572747, 572718, 568560	DATE 3/3/15	PAGE 24 of 38
	PROCESSED BY J. West	CHECKED BY	

The requirements of Rule 1714 apply to preconstruction reviews for greenhouse gases. This rule incorporates by reference several sections of 40CFR Part 52.21. This rule requires that a PSD permit be obtained prior to beginning construction of a new stationary source or a major modification to an existing major source. An emission increase of greenhouse gas (GHG), as defined in §52.21(b)(49)(v), is both a significant emissions increase and a significant net emissions increase. Since the proposed project is not a significant emissions increase or a significant net emissions increase, this project is not subject to PSD requirements for GHG.

Reg XXX Title V Permits

Rule 3002 Requirements (Amended 11/14/97) These applications are classified as a significant permit revision as defined in 3000(b)(31), since it includes modification of equipment subject to additional New Source Performance Standard (NSPS) requirements. Significant permit revisions require public participation per 3006(a)(1), and are required to be submitted to the EPA for review per 3003(j)(1)(A).

PART II: STATE REGULATIONS

CEQA California Environmental Quality Act (Amended 01/01/05)

CEQA requires that the environmental impacts of proposed projects be evaluated and that feasible methods to reduce, avoid or eliminate identified significant adverse impacts of these projects be considered. The facility's CEQA screening checklist did not identify any potential to generate significant adverse environmental impacts.

PART III: FEDERAL REGULATIONS

40 CFR 60 Standards of Performance for New Stationary Sources

40 CFR 60 Subpart A: General Provisions (Amended 02/27/14)

Subpart A includes general provisions for all of the NSPS regulations with regard to notification, monitoring, recordkeeping, reporting and testing requirements; definitions; and control device requirements for flares. Condition E193.4 requires that the flares comply with applicable requirements in Section §60.18 of 40CFR60 Subpart A, which include visible emission limits, a requirement to maintain a flame at all times, design requirements for tip velocity and exit velocity, and a heating value threshold for flared gases. Condition D12.3 requires that the flares (C465, C469) install and maintain a thermocouple to indicate the continuous presence of a pilot light. The facility is currently in compliance with this regulation and is expected to continue to operate in compliance with this regulation.

40 CFR 60 Subpart J: Standards of Performance for Petroleum Refineries

Subpart J includes requirements for fuel gas combustion devices such as process heaters, boilers, and flares. The primary requirement for fuel gas combustion devices is to limit the H₂S content in fuel gases. However, the combustion in a flare of process upset gases or gases released to the flare as a result of emergency malfunctions is exempt from this requirement. [§60.104(a)(1)]. The pilot gas for flares is also exempt from the continuous monitoring requirements per §60.105(a)(4)(iv)(A). According to SCAQMD records, the facility's flares were not modified (per the existing modification definition) between 1973 and 2008 (see applicability definition below),

 <p style="text-align: center;">SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT <i>ENGINEERING & COMPLIANCE DIVISION</i></p> <p style="text-align: center;">APPLICATION PROCESSING AND CALCULATIONS</p>	APPL. NO. 572721, 572722, 572723, 572724, 572719, 572852, 572720, 572747, 572718, 568560	DATE 3/3/15	PAGE 25 of 38
	PROCESSED BY J. West	CHECKED BY	

so the flares were not previously subject to Subpart J requirements.

§60.100 Applicability, designation of affected facility, and reconstruction
 §60.100(b) ... any fuel gas combustion device under paragraph (a) of this section that is also a flare which commences construction, reconstruction or modification after June 11, 1973, and on or before June 24, 2008, ... is subject to the requirements of this subpart except as provided under paragraphs (c) through (e) of this section

The facility is not subject to this regulation for the P14S1 and P14S2 flares.

40 CFR 60 Subpart Ja: Standards of Performance for Petroleum Refineries for which Construction, Reconstruction or Modification Commenced After May 14, 2007 (Amended 12/19/13)

Subpart Ja applies to affected facilities modified after May 14, 2007. For a time, the Subpart Ja requirements for flares were stayed. However, the facility submitted a “Notification of Initial Startup” for “Affected Sources Subject to 40CFR Section 60.107a” to the EPA on 12/19/12 stating that two flares (P14S1 and P14S2) at the facility became affected facilities under the new Subpart Ja standards on 9/12/12. The facility selected as a compliance method the use of SCAQMD Rule 1118 per 40CFR 103a(f) and 107a(g).

Section §60.100a(c) (see below) specifies what constitutes a modification under Subpart Ja. It is not clear what modifications the facility made at the time they submitted their Notification of Initial Startup, but they did not submit any permit applications for either the modifications or to accept Subpart Ja applicability. The proposed project meets the definition of modification under §60.100a(c)(1) since new piping from the existing PRVs will be physically connected to the flare for direct emergency relief (via the flare gas recovery system).

§60.100a(c) For all affected facilities other than flares, the provisions in §60.14 regarding modification apply. As provided in §60.14(f), the special provisions set forth under this subpart shall supersede the provisions in §60.14 with respect to flares. For the purposes of this subpart, a modification to a flare occurs as provided in paragraphs (c)(1) or (2) of this section.

(1) Any new piping from a refinery process unit, including ancillary equipment, or a fuel gas system is physically connected to the flare (e.g., for direct emergency relief or some form of continuous or intermittent venting). However, the connections described in paragraphs (c)(1)(i) through (vii) of this section are not considered modifications of a flare.

(i) Connections made to install monitoring systems to the flare.

(ii) Connections made to install a flare gas recovery system or connections made to upgrade or enhance components of a flare gas recovery system (e.g., addition of compressors or recycle lines).

(iii) Connections made to replace or upgrade existing pressure relief or safety valves, provided the new pressure relief or safety valve has a set point opening pressure no lower and an internal diameter no greater than the existing equipment being replaced or upgraded.

(iv) Connections made for flare gas sulfur removal.

(v) Connections made to install back-up (redundant) equipment associated with the flare (such as a back-up compressor) that does not increase the capacity of the flare.

(vi) Replacing piping or moving an existing connection from a refinery process unit to a new location in the same flare, provided the new pipe diameter is less than or equal to the diameter of the pipe/connection being replaced/moved.

(vii) Connections that interconnect two or more flares.

(2) A flare is physically altered to increase the flow capacity of the flare.

 <p style="text-align: center;">SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT ENGINEERING & COMPLIANCE DIVISION</p> <p style="text-align: center;">APPLICATION PROCESSING AND CALCULATIONS</p>	APPL. NO. 572721, 572722, 572723, 572724, 572719, 572852, 572720, 572747, 572718, 568560	DATE 3/3/15	PAGE 26 of 38
	PROCESSED BY J. West	CHECKED BY	

As described above, the requirements of Subpart Ja can be met through compliance with SCAQMD Rule 1118 as described below.

§60.103a (f) Modified flares shall comply with the requirements of paragraphs (c) through (e) of this section by November 11, 2015 or at startup of the modified flare, whichever is later. ...

§60.103a (g) ... An affected flare subject to this subpart located in the South Coast Air Quality Management District (SCAQMD) may elect to comply with SCAQMD Rule 1118 as an alternative to complying with the requirements of paragraphs (a) through (e) of this section. The owner or operator of an affected flare must notify the Administrator that the flare is in compliance with ... SCAQMD Rule 1118. ...

The facility is required to comply with §60.103a (h) (below), which imposes a 162 ppmv H2S limit on the facility (except during emergencies or upsets or relief valve leakage).

§60.103a (h) Each owner or operator shall not burn in any affected flare any fuel gas that contains H2S in excess of 162 ppmv determined hourly on a 3-hour rolling average basis. The combustion in a flare of process upset gases or fuel gas that is released to the flare as a result of relief valve leakage or other emergency malfunctions is exempt from this limit.

H2S monitoring requirements are listed in §60.107a (e)(2). However, §60.107a (h) allows alternative monitoring for flares located in the SCAQMD; the facilities may use total sulfur analyzers in lieu of H2S analyzers.

§60.107a(h) Alternative monitoring for flares located in the BAAQMD or SCAQMD. ... An affected flare subject to this subpart located in the SCAQMD may elect to comply with the monitoring requirements in SCAQMD Rule 1118 as an alternative to complying with the requirements of paragraphs (e) and (f) of this section.

The facility confirmed that, as in § 60.107a (a)(2)(v), they consider the total sulfur ppmv measurement to be numerically the same as the H2S concentration, which is not measured. Thus, the total sulfur measurement must comply with the 162 ppmv limit.

§ 60.107a (a)(2)(v) The owner or operator of a flare subject to §60.103a(c) through (e) may use the instrument required in paragraph (e)(1) of this section to demonstrate compliance with the H2S concentration requirement in §60.103a(h) if the owner or operator complies with the requirements of paragraph (e)(1)(i) through (iv) and if the instrument has a span (or dual span, if necessary) capable of 00 - 0accurately measuring concentrations between 20 and 300 ppmv. **If the instrument required in paragraph (e)(1) of this section is used to demonstrate compliance with the H2S concentration requirement, the concentration directly measured by the instrument must meet the numeric concentration in §60.103a(h).**

The facility is currently in compliance with Rule 1118 and submitted the required notification and Rule 1118 flare management plan to the EPA as part of their Notification of Initial Startup. The two flares (C465 and C469) will be tagged with new Condition H23.xx to specify that they are subject to applicable requirements of Subpart Ja. The facility is expected to comply with this regulation.

40 CFR 60 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 (Amended 06/02/08)

 <p>SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT ENGINEERING & COMPLIANCE DIVISION APPLICATION PROCESSING AND CALCULATIONS</p>	APPL. NO. 572721, 572722, 572723, 572724, 572719, 572852, 572720, 572747, 572718, 568560	DATE 3/3/15	PAGE 27 of 38
	PROCESSED BY J. West	CHECKED BY	

The miscellaneous fugitive components in the Crude Distillation Unit [P1S1] (D832); Vacuum Flash Unit [P1S4] (D835); and Debutanizer Unit [P5S1] (D848), are subject to 40CFR60 Subpart GGG requirements, as stated in Condition H23.22.

40CFR60 Subpart GGG primarily refers to Subpart VV for specific requirements. These permit units contain valves, pumps, compressors, flanges, pressure relief valves, process drains, and other fugitive components. Rule requirements apply to each of these categories, and vary from requirements on the specifications of the equipment to monthly monitoring for leaks and timely leak repair. The facility has implemented an LDAR program to monitor and repair leaks in fugitive components. The facility is currently in compliance with this regulation and is expected to continue to operate in compliance with this regulation.

40 CFR 60 Subpart GGGa Standards of Performance for Equipment Leaks of VOC in Petroleum Refineries for which Construction, Reconstruction, or Modification Commenced after November 7, 2006 (Amended 06/02/08)

Miscellaneous fugitive devices in the P2S1 Delayed Coking Unit (D838) and P14S3 FGRS (D942), as well as P14S3 compressors D938 and D939 are subject to Subpart GGGa per Condition H23.36.

§60.590a(d) notes that facilities subject to Subpart GGG are exempt from Subpart GGGa. The P14S1 East Flare and P14S2 West Flare are not subject to Subpart GGG or Subpart GGGa, and the proposed project does not include any physical modifications within these permit units that would invoke Subpart GGGa applicability.

40CFR60 Subpart GGGa primarily refers to Subpart VVa for specific requirements. The FGRS contains valves, pumps, compressors, flanges, pressure relief valves, and other fugitive components. Rule requirements apply to each of these categories, and vary from requirements on the specifications of the equipment to monthly monitoring for leaks and timely leak repair. The facility has implemented an LDAR program to monitor and repair leaks in fugitive components. The facility is currently in compliance with this regulation and is expected to continue to operate in compliance with this regulation.

40 CFR Part 61 National Emission Standards for Hazardous Air Pollutants

40CFR61 Subpart FF National Emission Standard for Benzene Waste Operations (Amended 12/4/03)

Process condition P13.2 specifies that the P1S1 Crude Unit, P1S4 Vacuum Distillation Unit, P2S1 Delayed Coking Unit, P5S1 Debutanizer Unit, P10S3 Tank D424, P10S3 Tank 425, and P10S6 Tank 917 are subject to the requirements of Subpart FF.

The facility is required to identify benzene-containing streams and limit the amount of uncontrolled benzene emitted. The Consent Decree (Section H, Paragraph 212) requires that the facility sample End-of-Line streams and other streams with significant contributions to total annual benzene (TAB) in accordance with the “Benzene Waste Operations Revised Sampling Plan (6BQ Compliance Option)” dated 8/19/2014. Sampling results were provided in the Consent Decree Semiannual Progress Report (July 2014). The quarterly BWON report for the second quarter of 2014, dated 7/9/14, indicates that with Q2 benzene emissions of 0.3 Mg/yr (and Q1

 SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT ENGINEERING & COMPLIANCE DIVISION APPLICATION PROCESSING AND CALCULATIONS	APPL. NO. 572721, 572722, 572723, 572724, 572719, 572852, 572720, 572747, 572718, 568560	DATE 3/3/15	PAGE 28 of 38
	PROCESSED BY J. West	CHECKED BY	

2014 benzene emissions of 0.53 Mg/yr), the facility is projected to emit less than the 6 Mg/yr limit of uncontrolled benzene.

The facility is currently in compliance with this regulation and is expected to continue to operate in compliance with this regulation.

40 CFR Part 63 National Emission Standards for Hazardous Air Pollutants for Source Categories

40 CFR 63 Subpart CC National Emission Standards for Hazardous Air Pollutants from Petroleum Refineries (Amended 10/28/09)

Petroleum refining process units with equipment leaks containing HAPs are subject to Subpart CC requirements per §63.640(c)(4). Equipment leak standards are included in §63.648, which refers to the requirements of 40CFR60 Subpart VV.

§63.641 *Equipment leak* means emissions of organic hazardous air pollutants from a pump, compressor, pressure relief device, sampling connection system, open-ended valve or line, valve, or instrumentation system “in organic hazardous air pollutant service” as defined in this section. Vents from wastewater collection and conveyance systems (including, but not limited to wastewater drains, sewer vents, and sump drains), tank mixers, and sample valves on storage tanks are not equipment leaks.

The miscellaneous fugitive emissions (equipment leaks) of the P1S1 Crude Unit (D832), P1S4 Vacuum Flash Unit (D835), P2S1 Delayed Coking Unit (D848), P10S3 Pressurized Tanks (D872), P14S1 East Flare System (D876), P14S2 West Flare System (D877) and P14S3 Flare Gas Recovery System (D942) are each subject to the requirements of 40CFR63 Subpart CC. Each device is tagged with “40CFR63 Subpart CC, #5A” in the Emissions and Requirements section of the permit’s equipment description. Specific requirements are referenced in Section J of the permit. The facility is currently in compliance with Subpart CC and is expected to continue to operate in compliance with this regulation.

RECOMMENDATIONS

Based on the above evaluation it is recommended that a Permit to Construct be issued with the following conditions.

CONDITIONS

PROCESS CONDITIONS

P13.2 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

 SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT ENGINEERING & COMPLIANCE DIVISION APPLICATION PROCESSING AND CALCULATIONS	APPL. NO. 572721, 572722, 572723, 572724, 572719, 572852, 572720, 572747, 572718, 568560	DATE 3/3/15	PAGE 29 of 38
	PROCESSED BY J. West	CHECKED BY	

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

[Processes subject to this condition: 1, 2, 3, 4, 5, 6, 7, 8, 9, 10]

P18.1 All affected devices listed under this process/system shall be used only to receive, recover and/or dispose of vent gases routed from the system(s) or process(es) listed below, in addition to specific devices identified in the “connected to” column:

Crude Distillation Unit (Process: 1, System: 1)

Vacuum Flash Unit (Process: 1, System: 4)

Brine Flash Stripper (Benzene Stripper) (Process: 1, System: 7)

Crude Unit Feed Desalter (Process: 1, System: 8)

Delayed Coking Unit (Process: 2, System: 1)

Coker Blowdown (Process: 2, System: 3)

FCC Feed (Gas Oil) Hydrodesulfurization Unit DHT-3 (Process: 3, System: 1)

FCC Feed (Gas Oil) Hydrodesulfurization Unit 120 (Process: 3, System: 3)

Hydrogen Plant (Process: 4, System: 1)

Gas Production (Process: 5, System: 1, 2, 3, and 4)

Gas and Water Treatment (Process: 6, System: 1, 2, 3, 4, and 5)

Sulfur Recovery Unit No. 1 (Process: 7, System: 1)

Sulfur Recovery Unit No. 2 (Process: 7, System: 2)

Tail Gas (SCOT) Unit 2 (Process: 7, System: 4)

Tail Gas (SCOT) Unit No. 1 (Process: 7, System: 5)

Crude Oil Tank Car Unloading System (Process: 8, System: 1)

LPG Tank Car Loading and Unloading System (Process: 8, System: 3)

[RULE 1303(a)(1)-BACT, 5-10-1996; RULE 1303(a)(1)-BACT, 12-6-2002; RULE 1303(b)(2)-Offset, 5-10-1996; RULE 1303(b)(2)-Offset, 12-6-2002]

[Processes subject to this condition : 14]

Note: Process 1, Systems 7 and 8 are being added to Condition P18.1 for consistency with Conditions S15.3 and S15.11.

SYSTEM CONDITIONS

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

 SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT ENGINEERING & COMPLIANCE DIVISION APPLICATION PROCESSING AND CALCULATIONS	APPL. NO. 572721, 572722, 572723, 572724, 572719, 572852, 572720, 572747, 572718, 568560	DATE 3/3/15	PAGE 30 of 38
	PROCESSED BY J. West	CHECKED BY	

Contaminant	Rule	Rule/Subpart
VOC	District Rule	463
VOC	District Rule	1149

[RULE 1149, 5-2-2008; RULE 463, 11-4-2011]

[Systems subject to this condition: Process 10, System 3]

S13.5 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 1 , 4 , 8; Process 2, System 1 , 3; Process 3, System 1 , 3; Process 4, System 1; Process 5, System 1 , 2 , 3 , 4; Process 6, System 1 , 2 , 3; Process 7, System 4 , 5]

S15.1 The vent gases from all affected devices of this process/system shall be vented as follows:

All sour gases under normal operating conditions shall be directed to the sour gas treating unit(s) located in the Vacuum Flash Unit (Process 1, System 4).

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

[RULE 1303(a)(1)-BACT, 5-10-1996; RULE 1303(a)(1)-BACT, 12-6-2002; RULE 1303(b)(2)-Offset, 5-10-1996; RULE 1303(b)(2)-Offset, 12-6-2002]

[Systems subject to this condition: Process 1, System 1 , 7 , 8]

S15.2 The vent gases from all affected devices of this process/system shall be vented as follows:

All sour gases under normal operating conditions shall be directed to the sour gas treating unit located in this system.

This process/system shall not be operated unless the sour gas treating unit 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(a)(1)-BACT, 12-6-2002; RULE 1303(b)(2)-Offset, 5-10-1996; RULE 1303(b)(2)-Offset, 12-6-2002]

[Systems subject to this condition: Process 1, System 4; Process 3, System 3; Process 4, System 1]

 <p>SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT ENGINEERING & COMPLIANCE DIVISION APPLICATION PROCESSING AND CALCULATIONS</p>	APPL. NO. 572721, 572722, 572723, 572724, 572719, 572852, 572720, 572747, 572718, 568560	DATE 3/3/15	PAGE 31 of 38
	PROCESSED BY J. West	CHECKED BY	

S15.3 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 blowdown flare system or flare gas recovery system except Devices IDs ~~D1, D2, D4, D65, D69, D95-D97~~, D175, D176, D178, D179, D180, D186, D187, D188, D194, D201, D202, D479, ~~D803~~, D816, D896, and C989 that vent to the atmosphere.

This process/system shall not be operated unless the above air pollution control equipment 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(a)(1)-BACT, 12-6-2002; RULE 1303(b)(2)-Offset, 5-10-1996; RULE 1303(b)(2)-Offset, 12-6-2002]

[Systems subject to this condition : Process 1, System 1, 4, 7, 8; Process 2, System 1, 3; Process 3, System 1, 3; Process 4, System 1; Process 5, System 1, 2, 3, 4; Process 6, System 1, 2, 3, 4, 5; Process 7, System 1, 2, 4, 5; Process 8, System 1, 3]

Note: S15.3 and S15.11 are being tagged to P2S1 and P5S1 for consistency with Condition P18.1

S15.4 The vent gases from all affected devices of this process/system shall be vented as follows:

All sour gases under normal operating conditions shall be directed to the sour gas treating unit(s).

This process/system shall not be operated unless the above air pollution control equipment 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(a)(1)-BACT, 12-6-2002; RULE 1303(b)(2)-Offset, 5-10-1996; RULE 1303(b)(2)-Offset, 12-6-2002]

[Systems subject to this condition: Process 1, System 1, 4, 8; Process 2, System 1, 3; Process 3, System 1]

S15.11 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 a flare gas recovery system except device ID's D176, D178, D179, D180, D201, and D896 that vent to atmosphere, D194 that vents to atmosphere or the off-site CO2 plant, and D987 that vents to APC equipment. T

This process/system shall not be operated unless the above air pollution control equipment (consisting of two compressors operating independently or concurrently at any given time) 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(a)(1)-BACT, 12-6-2002; RULE 1303(b)(2)-Offset, 5-10-1996; RULE 1303(b)(2)-Offset, 12-6-2002]

 <p>SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT ENGINEERING & COMPLIANCE DIVISION APPLICATION PROCESSING AND CALCULATIONS</p>	APPL. NO. 572721, 572722, 572723, 572724, 572719, 572852, 572720, 572747, 572718, 568560	DATE 3/3/15	PAGE 32 of 38
	PROCESSED BY J. West	CHECKED BY	

[Systems subject to this condition : Process 1, System 1, 4, 7, 8; Process 2, System 1, 3; Process 3, System 1, 3; Process 4, System 1; Process 5, System 1, 2, 3, 4; Process 6, System 1, 2, 3, 4, 5; Process 7, System 1, 2, 4, 5; Process 8, System 1, 3]

Note: S15.3 and S15.11 are being tagged to P2S1 and P5S1 for consistency with Condition P18.1

S15.12 The vent gases from all affected devices of this process/system shall be vented as follows:

All sour gases during normal operation shall be directed to the sour gas treating unit located in either the Vacuum Flasher Unit (Process 1, System 4), or the Hydrodesulfurization Unit (Process 3, System 3).

[RULE 1303(a)(1)-BACT, 5-10-1996; RULE 1303(a)(1)-BACT, 12-6-2002]

[Systems subject to this condition : Process 14, System 3]

S15.13 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 flare system.

This process/system shall not be operated unless the above air pollution control equipment 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(a)(1)-BACT, 12-6-2002]

[Systems subject to this condition : Process 14, System 3]

S31.3 The following BACT requirements shall apply to VOC service fugitive components associated with the devices that are covered by application number(s) 458382, 458383, 458384, 472815, 467377 and 464152:

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, and retrofits/special applications with space limitations, and valves not commercially available.

All new valves and major components in VOC service as defined by Rule 1173, except those specifically exempted by Rule 1173 and those in heavy liquid service as defined in 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.

 <p style="text-align: center;">SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT ENGINEERING & COMPLIANCE DIVISION</p> <p style="text-align: center;">APPLICATION PROCESSING AND CALCULATIONS</p>	APPL. NO. 572721, 572722, 572723, 572724, 572719, 572852, 572720, 572747, 572718, 568560	DATE 3/3/15	PAGE 33 of 38
	PROCESSED BY J. West	CHECKED BY	

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, 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.

All open-ended valves shall be equipped with cap, blind flange, plug, or a second valve.

All pressure relief valves shall be connected to a closed vent system.

All new light liquid pumps shall utilize double seals and be connected to a closed vent system.

All compressors shall be equipped with a seal system with a higher pressure barrier fluid.

[**RULE 1303(a)(1)-BACT, 5-10-1996; RULE 1303(a)(1)-BACT, 12-6-2002**]

[Systems subject to this condition : Process 1, System 4; Process 2, System 1; Process 3, System 3; Process 14, System 1, 2,3]

S31.x The following BACT requirements shall apply to VOC service fugitive components associated with the devices that are covered by application number(s) 572721, 572722, 572723, 572724, 572719, 572852, 572720, 568560:

The operator shall provide to the District, no later than 90 days after initial startup, a recalculation of the fugitive emissions based on the actual components installed and removed from service. The operator shall also submit a complete, as built, piping and instrumentation diagram(s) and copies of requisition data sheets for all non-leakless type valves with a listing of tag numbers and reasons why leakless 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, and retrofits/special applications with space limitations, and

 <p>SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT ENGINEERING & COMPLIANCE DIVISION APPLICATION PROCESSING AND CALCULATIONS</p>	APPL. NO. 572721, 572722, 572723, 572724, 572719, 572852, 572720, 572747, 572718, 568560	DATE 3/3/15	PAGE 34 of 38
	PROCESSED BY J. West	CHECKED BY	

valves not commercially available.

All new valves and major components in VOC service as defined by Rule 1173, except those specifically exempted by Rule 1173 and those in heavy liquid service as defined in 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, 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.

All open-ended valves shall be equipped with cap, blind flange, plug, or a second valve.

All pressure relief valves shall be connected to a closed vent system.

[RULE 1303(a)(1)-BACT, 5-10-1996; RULE 1303(a)(1)-BACT, 12-6-2002; RULE 1303(b)(2)-Offset, 5-10-1996; RULE 1303(b)(2)-Offset, 12-6-2002]

[Systems subject to this condition : Process 1, System 1, 4; Process 2, System 1; Process 5, System 1; Process 10, System 3; Process 14, System 1]

DEVICE CONDITIONS

D12.3 The operator shall install and maintain a(n) thermocouple to accurately indicate the presence of a flame at the pilot light:

[RULE 3004(a)(4)-Periodic Monitoring, 12-12-1997; 40CFR60 Subpart A, 5-16-2007]

 <p>SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT ENGINEERING & COMPLIANCE DIVISION APPLICATION PROCESSING AND CALCULATIONS</p>	APPL. NO. 572721, 572722, 572723, 572724, 572719, 572852, 572720, 572747, 572718, 568560	DATE 3/3/15	PAGE 35 of 38
	PROCESSED BY J. West	CHECKED BY	

[Devices subject to this condition : C465, C469]

D323.2 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 a semiannual basis, at least, unless the equipment did not operate during the entire semiannual 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 that last more than three minutes in any one hour, the operator shall verify and certify within 24 hours that the equipment causing the emission and any associated air pollution control equipment are operating normally according to their design and standard procedures and under the same conditions under which compliance was achieved in the past, and either:

- 1). 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; or
- 2). Have a CARB-certified smoke reader determine compliance with the opacity standard, using EPA Method 9 or the procedures in the CARB manual "Visible Emission Evaluation", within three business days and report any deviations to AQMD.

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;
- 3). Date and time visible emission was abated; and
- 4). All visible emission observation records by operator or a certified smoke reader.

[**RULE 3004(a)(4)-Periodic Monitoring, 12-12-1997; RULE 401, 3-2-1984; RULE 401, 11-9-2001**]

[Devices subject to this condition : C465, C469, D796, D798, D799]

E71.2 The operator shall not use this equipment to store aqueous ammonia unless the pressure relief valves are set at 50 psig or higher and the rupture disks are set at 45 psig or higher.

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

[Devices subject to this condition: D917]

E73.3 Notwithstanding the requirements of Section E conditions, the operator is not required to use both

 <p>SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT ENGINEERING & COMPLIANCE DIVISION</p> <p>APPLICATION PROCESSING AND CALCULATIONS</p>	<p>APPL. NO. 572721, 572722, 572723, 572724, 572719, 572852, 572720, 572747, 572718, 568560</p>	<p>DATE 3/3/15</p>	<p>PAGE 36 of 38</p>
	<p>PROCESSED BY J. West</p>	<p>CHECKED BY</p>	

of the flare gas recovery compressors concurrently if:

The load on the flare gas recovery system is not sufficient to require both compressors to be online.

[**RULE 1303(a)(1)-BACT, 5-10-1996**; **RULE 1303(a)(1)-BACT, 12-6-2002**]

[Devices subject to this condition : D938, D939]

E134.1 The operator shall maintain a layer of diesel oil at least 12" high on top of the ammonium polysulfide in this equipment.

[**RULE 1301(b)(1), 12-7-1995**]

[Devices subject to this condition: D86]

E144.1 The operator shall vent this equipment, during filling, only to the vessel from which it is being filled.

[**RULE 1303(a)(1)-BACT, 12-6-2002**]

[Devices subject to this condition: D917]

E193.4 The operator shall operate and maintain this equipment according to the following specifications:

The operator shall comply with all applicable requirements specified in Section 60.18 of the 40CFR60 Subpart A.

[**40CFR60 Subpart A, 9-13-2010**]

[Devices subject to this condition : C465, C469]

E193.x The operator shall operate and maintain this equipment as follows:

The operator shall implement mitigation measures identified in the document entitled "ConocoPhillips Los Angeles Refinery Carson Plant Flare Quantitative Risk Assessment (QRA) Report" dated October 2012, or subsequent revisions, for the purposes of keeping flow to the flare system within its design capacity. The mitigation measures shall include, but are not limited to:

The operator shall implement shut down of the fuel supply to the Crude Unit Heater (D59) when the pressure of the Secondary Column (DU-5, D4) exceeds 45 psig.

The operator shall implement shut off procedures for the heat source for the Debutanizer Column (D97) when the column pressure exceeds 185 psig.

[**RULE 1173, 02-06-2009**]

 SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT ENGINEERING & COMPLIANCE DIVISION APPLICATION PROCESSING AND CALCULATIONS	APPL. NO. 572721, 572722, 572723, 572724, 572719, 572852, 572720, 572747, 572718, 568560	DATE 3/3/15	PAGE 37 of 38
	PROCESSED BY J. West	CHECKED BY	

[Devices subject to this condition : C465, C469]

H23.1 This equipment is subject to the applicable requirements of the following rules or regulations:

Contaminant	Rule	Rule/Subpart
VOC	District Rule	1173

[RULE 1173, 2-6-2009]

[Devices subject to this condition : D841, D846, **D848**, D849, D852, D854, D855, D856, D857, D858, D861, D862, D868, D869, D870, D871, D872, D875, D876, D877, D944, D945, D946, D947, D948]

H23.10 This equipment is subject to the applicable requirements of the following rules or regulations:

Contaminant	Rule	Rule/Subpart
VOC	District Rule	465
Sulfur compounds	District Rule	465

[RULE 465, 8-13-1999]

[Devices subject to this condition: D65]

H23.22 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, 2-6-2009; 40CFR 60 Subpart GGG, 6-2-2008]

[Devices subject to this condition: D472, D738, D740, D748, D749, D832, D834, D835, D841, D842, D844, D848, D851, D852, D854, D855, D856, D857, D858, D957]

H23.29 This equipment is subject to the applicable requirements of the following rules or regulations:

Contaminant	Rule	Rule/Subpart
SOX	District Rule	1118

[RULE 1118, 11-4-2005]

[Devices subject to this condition : C465, C469]

 <p>SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT ENGINEERING & COMPLIANCE DIVISION APPLICATION PROCESSING AND CALCULATIONS</p>	APPL. NO. 572721, 572722, 572723, 572724, 572719, 572852, 572720, 572747, 572718, 568560	DATE 3/3/15	PAGE 38 of 38
	PROCESSED BY J. West	CHECKED BY	

H23.36 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	GGa

[RULE 1173, 2-6-2009; 40CFR 60 Subpart GGa, 6-2-2008]

[Devices subject to this condition : D838, D938, D939, D942]

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

Contaminant	Rule	Rule/Subpart
H2S	40CFR60, SUBPART	Ja

[40CFR 60 Subpart Ja, 6-2-2008]

[Devices subject to this condition : C465, C469]

Attachment A: Details on pre and post- project fugitive emission counts

Table A-1. P1S1 Crude Unit Pre and Post-Project Fugitive Component Counts and Emissions Calculations

Source Unit		Service	<i>Emission Factor (lb/yr / # of components)</i>	# Existing Components	Pre-Project Emissions	# Added	Total #	Post-Project Emissions (lb/yr)
Valves	Sealed bellows	All	0	145	0	23	168	0
	SCAQMD approved I&M Program	Gas/Vapor	4.55	801	3645		801	3645
		Light Liquid	4.55	1400	6370		1400	6370
	Heavy Liquid	4.55						
Pumps	Sealless type	Light Liquid	0					
	Double mechanical seals or equivalent	Heavy Liquid	46.73	20	935		20	935
	Single mechanical seals	Heavy Liquid	46.73	18	841		18	841
Flanges (ANSI 16.5-1988)		All	7.04	2382	16769	34	2416	17009
Connectors		All	2.86					
Compressors		Gas/Vapor	9.07*					
Pressure Relief Valves		All		29	263		29	263
Process Drains with P-trap or seal pot		All		161	1460		161	1460
Other (incl. fittings, hatches, sight-glasses, & meters)		All		4646	42139		4646	42139
					Emissions (lb/yr)	72422	Emissions (lb/yr)	72661
					Emissions (lb/day)	198.42	Emissions (lb/day)	199.07
					Emissions (lb/hr)	8.267	Emissions (lb/hr)	8.295

* Emission Factors from "CAPCOA-Revised 1995 EPA Correlation Equations and Factors for Refineries and Marketing Terminals" California Implementation Guidelines for Estimating Mass Emissions of Fugitive Hydrocarbon Leaks at Petroleum Facilities, CAPCOA/ARB, February 1999. (Table IV-3a from SCAQMD Guidelines for Fugitive Emissions Calculations, June 2003) using a screening value, corrected for background, of 500 ppm.

Table A-2. P1S4 Vacuum Flash Unit Pre and Post-Project Fugitive Component Counts and Emissions Calculations

Source Unit		Service	Emission Factor (lb/yr / # of components)	# Existing Components	Pre-Project Emissions	# Added	Total #	Post-Project Emissions (lb/yr)
Valves	Sealed bellows	All	0	32	0	12	44	0
	SCAQMD approved I&M Program	Gas/Vapor	4.55	1039	4727		1039	4727
		Light Liquid	4.55	162	737		162	737
		Heavy Liquid	4.55					
Pumps	Sealless type	Light Liquid	0					
	Double mechanical seals or equivalent	Heavy Liquid	46.73	6	280		6	280
	Single mechanical seals	Heavy Liquid	46.73	13	607		13	607
Flanges (ANSI 16.5-1988)		All	7.04	642	4520	18	660	4646
Connectors		All	2.86					
Compressors		Gas/Vapor	9.07*	1	9		1	9
Pressure Relief Valves		All		8	73		8	73
Process Drains with P-trap or seal pot		All						
Other (incl. fittings, hatches, sight-glasses, & meters)		All		5722	51899		5722	51899
					Emissions (lb/yr)	62852	Emissions (lb/yr)	62979
					Emissions (lb/day)	172.20	Emissions (lb/day)	172.55
					Emissions (lb/hr)	7.17	Emissions (lb/hr)	7.189

* Emission Factors from "CAPCOA-Revised 1995 EPA Correlation Equations and Factors for Refineries and Marketing Terminals" California Implementation Guidelines for Estimating Mass Emissions of Fugitive Hydrocarbon Leaks at Petroleum Facilities, CAPCOA/ARB, February 1999. (Table IV-3a from SCAQMD Guidelines for Fugitive Emissions Calculations, June 2003) using a screening value, corrected for background, of 500 ppm.

Table A-3. P2S1 Delayed Coking Unit Pre and Post-Project Fugitive Component Counts and Emissions Calculations

Source Unit		Service	Emission Factor (lb/yr / # of components)	# Existing Components	Pre-Project Emissions	# Added	Total #	Post-Project Emissions (lb/yr)
Valves	Sealed bellows	All	0	113	0	11	124	0
	SCAQMD approved I&M Program	Gas/Vapor	4.55	2122	9655		2122	9655
		Light Liquid	4.55	616	2803		616	2803
	Heavy Liquid	4.55	158	719		158	719	
Pumps	Sealless type	Light Liquid	0					
	Double mechanical seals or equivalent	Heavy Liquid	46.73	13	607		13	607
	Single mechanical seals	Heavy Liquid	46.73	15	701		15	701
Flanges (ANSI 16.5-1988)		All	7.04	2129	14988	16	2145	15101
Connectors		All	2.86					
Compressors		Gas/Vapor	9.07*	1	9.07		1	9
Pressure Relief Valves		All		25	226.75		25	227
Process Drains with P-trap or seal pot		All		231	2095.17		231	2095
Other (incl. fittings, hatches, sight-glasses, & meters)		All		5104	46293.28		5104	46293
					Emissions (lb/yr)	78,098	Emissions (lb/yr)	78,210
					Emissions (lb/day)	213.97	Emissions (lb/day)	214.27
					Emissions (lb/hr)	8.92	Emissions (lb/hr)	8.93

* Emission Factors from "CAPCOA-Revised 1995 EPA Correlation Equations and Factors for Refineries and Marketing Terminals" California Implementation Guidelines for Estimating Mass Emissions of Fugitive Hydrocarbon Leaks at Petroleum Facilities, CAPCOA/ARB, February 1999. (Table IV-3a from SCAQMD Guidelines for Fugitive Emissions Calculations, June 2003) using a screening value, corrected for background, of 500 ppm.

Table A-4. P14S1 East Flare Pre and Post-Project Fugitive Component Counts and Emissions Calculations

Source Unit		Service	Emission Factor (lb/yr / # of components)	# Existing Components	Pre-Project Emissions	# Added	Total #	Post-Project Emissions (lb/yr)
Valves	Sealed bellows	All	0	40	0	31	71	0
	SCAQMD approved I&M Program	Gas/Vapor	4.55	360	1638		360	1638
		Light Liquid	4.55	21	96		21	96
		Heavy Liquid	4.55					
Pumps	Sealless type	Light Liquid	0					
	Double mechanical seals or equivalent	Heavy Liquid	46.73	4	187		4	187
	Single mechanical seals	Heavy Liquid	46.73					
Flanges (ANSI 16.5-1988)		All	7.04	213	1500	48	261	1837
Connectors		All	2.86					
Compressors		Gas/Vapor	9.07*					
Pressure Relief Valves		All		1	9.07		1	9
Process Drains with P-trap or seal pot		All						
Other (incl. fittings, hatches, sight-glasses, & meters)		All		643	5832		643	5832
					Emissions (lb/yr)	9,261	Emissions (lb/yr)	9,599
					Emissions (lb/day)	25.37	Emissions (lb/day)	26.30
					Emissions (lb/hr)	1.06	Emissions (lb/hr)	1.10

* Emission Factors from "CAPCOA-Revised 1995 EPA Correlation Equations and Factors for Refineries and Marketing Terminals" California Implementation Guidelines for Estimating Mass Emissions of Fugitive Hydrocarbon Leaks at Petroleum Facilities, CAPCOA/ARB, February 1999. (Table IV-3a from SCAQMD Guidelines for Fugitive Emissions Calculations, June 2003) using a screening value, corrected for background, of 500 ppm.

Table A-5. P14S2 West Flare Pre and Post-Project Fugitive Component Counts and Emissions Calculations

Source Unit		Service	Emission Factor (lb/yr / # of components)	# Existing Components	Pre-Project Emissions	# Added	Total #	Post-Project Emissions (lb/yr)
Valves	Sealed bellows	All	0	16	0		16	0
	SCAQMD approved I&M Program	Gas/Vapor	4.55	183	833		183	833
		Light Liquid	4.55	8	36		8	36
		Heavy Liquid	4.55					
Pumps	Sealless type	Light Liquid	0					
	Double mechanical seals or equivalent	Heavy Liquid	46.73	2	93		2	93
	Single mechanical seals	Heavy Liquid	46.73					
Flanges (ANSI 16.5-1988)		All	7.04	87	612		87	612
Connectors		All	2.86					
Compressors		Gas/Vapor	9.07*					
Pressure Relief Valves		All						
Process Drains with P-trap or seal pot		All						
Other (incl. fittings, hatches, sight-glasses, & meters)		All		534	4843		534	4843
					Emissions (lb/yr)	6,418	Emissions (lb/yr)	6,418
					Emissions (lb/day)	17.58	Emissions (lb/day)	17.58
					Emissions (lb/hr)	0.73	Emissions (lb/hr)	0.73

* Emission Factors from "CAPCOA-Revised 1995 EPA Correlation Equations and Factors for Refineries and Marketing Terminals" California Implementation Guidelines for Estimating Mass Emissions of Fugitive Hydrocarbon Leaks at Petroleum Facilities, CAPCOA/ARB, February 1999. (Table IV-3a from SCAQMD Guidelines for Fugitive Emissions Calculations, June 2003) using a screening value, corrected for background, of 500 ppm.

Table A-6. P14S3 Flare Gas Recovery System Pre and Post-Project Fugitive Component Counts and Emissions Calculations

Source Unit		Service	Emission Factor (lb/yr / # of components)	# Existing Components	Pre-Project Emissions	# Added	Total #	Post-Project Emissions (lb/yr)
Valves	Sealed bellows	All	0	44	0		44	0
	SCAQMD approved I&M Program	Gas/Vapor	4.55	100	455		100	455
		Light Liquid	4.55					
		Heavy Liquid	4.55					
Pumps	Sealless type	Light Liquid	0					
	Double mechanical seals or equivalent	Heavy Liquid	46.73					
	Single mechanical seals	Heavy Liquid	46.73					
Flanges (ANSI 16.5-1988)		All	7.04	183	1288		183	1288
Connectors		All	2.86					
Compressors		Gas/Vapor	9.07*	2	18		2	18
Pressure Relief Valves		All		2	18		2	18
Process Drains with P-trap or seal pot		All		2	18		2	18
Other (incl. fittings, hatches, sight-glasses, & meters)		All		90	816		90	816
					Emissions (lb/yr)	2,614	Emissions (lb/yr)	2,614
					Emissions (lb/day)	7.16	Emissions (lb/day)	7.16
					Emissions (lb/hr)	0.30	Emissions (lb/hr)	0.30

* Emission Factors from "CAPCOA-Revised 1995 EPA Correlation Equations and Factors for Refineries and Marketing Terminals" California Implementation Guidelines for Estimating Mass Emissions of Fugitive Hydrocarbon Leaks at Petroleum Facilities, CAPCOA/ARB, February 1999. (Table IV-3a from SCAQMD Guidelines for Fugitive Emissions Calculations, June 2003) using a screening value, corrected for background, of 500 ppm.