

 <b>SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT</b> <b>ENGINEERING &amp; COMPLIANCE DIVISION</b>  APPLICATION PROCESSING AND CALCULATIONS	APPL. NO. <b>480561 480562</b>	DATE 1/19/11	PAGE 1 of 15
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**PERMIT TO OPERATE**

SUMMARY: PO/no PC Modifications to SRU Unit No. 1 and No. 2 (P7S1 and P7S2) to show existing connections between venting of sulfur pits, and also separation of the SRU permit units from the amine regeneration permit units (P6S4 and P6S5—only administrative changes are proposed for the amine regeneration permit units).

**COMPANY INFORMATION**

Company Name: ConocoPhillips Company, Facility ID No. 800362  
 Mailing Address: 1520 E. Sepulveda Blvd, Carson, CA 90745  
 Equipment Location: 1520 E. Sepulveda Blvd, Carson, CA 90745  
 Contact Person: Marshall G. Waller, (310) 952-6240

**EQUIPMENT DESCRIPTION**

Table 1 shows the proposed Section D permit description for Process 7, Systems 1 and 2, and the existing Section D permit descriptions for Process 6, Systems 4 and 5. Note that no changes are proposed for P6S4 and P6S5, but they will no longer share common application numbers with P7S1 and P7S2. Additions to the description are noted in underlines and deletions are noted in ~~strikeouts~~.

**Table 1. Permit Equipment Description**

**SECTION D: FACILITY DESCRIPTION AND EQUIPMENT SPECIFIC CONDITIONS**

Equipment	ID No.	Connected To	RECLAIM Source Type/ Monitoring Unit	Emissions * And Requirements	Conditions
<b>Process 7 : SULFUR PRODUCTION</b>					P13.1, P13.2
<b>System 1 : SULFUR RECOVERY UNIT NO. 1</b>					S15.3, S15.7, S15.11, S18.2
REACTOR, THERMAL, CL-44, REFINERY GAS, H2S GAS WITH A/N:-392206 480561  <b><u>BLOWER, AIR, CL-809, 1250 HP</u></b>	D242				H23.12
	<b><u>D972</u></b>	<b><u>C252, C282</u></b>			
BURNER, CL-45, AUXILIARY NO. 1, H2S FIRED A/N:-392206 480561	D805				
BURNER, AUXILIARY NO. 2, CL-46, H2S FIRED A/N:-392206 480561	D806				
BURNER, AUXILIARY NO. 3, CL-47, H2S FIRED A/N:-392206 480561	D807				



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Equipment	ID No.	Connected To	RECLAIM Source Type/ Monitoring Unit	Emissions * And Requirements	Conditions
PIT, ACCUMULATOR, UNDERGROUND, S-49, SULFUR, NITROGEN BLANKETS, WIDTH: 20 FT; DEPTH: 13 FT; LENGTH: 35 FT A/N:-392206 480561	D247	C252		H2S: 10 PPMV (5)[ <b>RULE 468, 10-8-1976</b> ]; <b>S COMPOUNDS</b> <b>OX</b> : 500 PPMV (5) [ <b>RULE 407, 4-2-1982</b> ]	
SCRUBBER, V-2587, SULFUR PIT VAPOR, HEIGHT: 9 FT; DIAMETER: 4 FT A/N:-392206 480561	C252	D247 <b>D972</b> <b>D973</b>			<b>E336.1</b>
FUGITIVE EMISSIONS, MISCELLANEOUS A/N:-392206 480561	D855			HAP: (10) [ <b>40CFR63 Subpart CC, #5A, 6-23-2003</b> ]	H23.1, H23.22
CONDENSER, CL-538, NO. 1 A/N:-392206 480561	D888				
CONDENSER, CL-539, NO. 2 A/N:-392206 480561	D889				
CONDENSER, CL-540, NO. 3 A/N:-392206 480561	D890				
CONDENSER, CL-541, NO. 4 A/N:-392206 480561	D891			H2S: 10 PPMV (5)[ <b>RULE 468, 10-8-1976</b> ]; HAP: (10) [ <b>40CFR63 Subpart UUU, #4, 4-20-2006</b> ]; SOX: 250 PPMV (8) [ <b>40CFR60 Subpart J, 6-24-2008</b> ]; <b>S COMPOUNDS OX</b> : 500 PPMV (5) [ <b>RULE 407, 4-2-1982</b> ]	
<b>Process 7 : SULFUR PRODUCTION</b>					P13.1, P13.2
<b>System 2 : SULFUR RECOVERY UNIT NO. 2</b>					S15.3, S15.7, S15.11, S18.2
REACTOR, THERMAL, CU-49, REFINERY GAS, H2S GAS WITH A/N:-392197 480562  <b>BLOWER, AIR, CU-820, 1250 HP</b>	D275	<b>D973</b> <b>C252</b> <b>C282</b>			H23.12
BURNER, CU-50, AUXILIARY NO. 1, H2S FIRED A/N:-392197 480562	D808				
PIT, ACCUMULATOR, UNDERGROUND, S-60, SULFUR, NITROGEN BLANKETED, WIDTH: 20 FT; DEPTH: 13 FT; LENGTH: 35 FT A/N:-392197 480562	D277	C282		H2S: 10 PPMV (5)[ <b>RULE 468, 10-8-1976</b> ]; <b>S COMPOUNDS</b> <b>OX</b> : 500 PPMV (5) [ <b>RULE 407, 4-2-1982</b> ]	
BURNER, CU-51, AUXILIARY NO. 2, H2S FIRED A/N:-392197 480562	D809				
BURNER, CU-52, AUXILIARY NO. 3, H2S FIRED A/N:-392197 480562	D810				
SCRUBBER, V-2610, SULFUR PIT VAPOR, HEIGHT: 9 FT; DIAMETER: 4 FT A/N:-392197 480562	C282	C277 <b>D972</b> <b>D973</b>			<b>E336.2</b>
FUGITIVE EMISSIONS, MISCELLANEOUS A/N:-392197 480562	D856			HAP: (10) [ <b>40CFR63 Subpart CC, #5A, 6-23-2003</b> ]	H23.1, H23.22
CONDENSER, CU 555, NO. 1 A/N:-392197 480562	D892				
CONDENSER, CU 556, NO. 2 A/N:-392197 480562	D893				



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CONDENSER, CU 557, NO. 3 A/N:-392197 480562	D894				
CONDENSER, CU 558, NO. 4 A/N:-392197 480562	D895			<b>H2S:</b> 10 PPMV (5)[ <b>RULE 468, 10-8-1976</b> ]; <b>HAP:</b> (10) [ <b>40CFR63 Subpart UUU, #4, 4-20-2006</b> ]; <b>SOX:</b> 250 PPMV (8) [ <b>40CFR60 Subpart J, 6-24-2008</b> ]; <b>S COMPOUNDS OX:</b> 500 PPMV (5) [ <b>RULE 407, 4-2-1982</b> ]	
<b>Process 6 : GAS AND WATER TREATMENT</b>					P13.2
<b>System 4 : AMINE REGENERATION UNIT NO. 1</b>					S15.3, S15.6, S15.11
TANK, SURGE, TK-1676, LEAN DEA, (COMMON TO <b>SRU NO. 2 DEA REGENERATION UNITS 1 &amp; 2</b> ), 2030 BBL; DIAMETER: 30 FT; HEIGHT: 24 FT A/N: 392206	D244				
TANK, HOLDING, TK-1770, PRECOAT FILTER BACKWASH WATER, ( <b>COMMON TO DEA REGENERATION UNITS 1 &amp; 2</b> ), 81 BBL; DIAMETER: 9 FT 6 IN; HEIGHT: 6 FT 6 IN A/N: 392206	D245				
TANK, HOLDING, TK-2504, PRECOAT MIX, ( <b>COMMON TO DEA REGENERATION UNITS 1 &amp; 2</b> ), 500 GALS; DIAMETER: 5 FT; HEIGHT: 4 FT A/N: 392206	D246				
SUMP, UNDERGROUND, S-56, DEA, WIDTH: 4 FT 10 IN; DEPTH: 5 FT 2 IN; LENGTH: 4 FT 3 IN A/N: 392206	D248				
VESSEL, DEA FLASH AND SKIMMER, V-2570, LENGTH: 24 FT; DIAMETER: 13 FT A/N: 392206	D249				
ACCUMULATOR, V-2571, DEA STRIPPER OVERHEAD, HEIGHT: 11 FT; DIAMETER: 8 FT A/N: 392206	D250				
KNOCK OUT POT, V-2581, SOUR WATER, HEIGHT: 10 FT; DIAMETER: 4 FT A/N: 392206	D251				
FILTER, PRECOAT, V-3018, COMMON TO DEA REGENERATION UNITS 1 & 2 A/N: 392206	D254				
FILTER, PREFILTER, V-3134, DEA, COMMON TO DEA REGENERATION UNITS 1 & 2, LENGTH: 3 FT 7 IN; DIAMETER: 3 FT 6 IN A/N: 392206	D780				
FILTER, CARBON, V-3135, DEA, COMMON TO DEA REGENERATION UNITS 1 & 2, WITH A BASKET STRAINER (6 IN DIA X 18 IN LENGTH), HEIGHT: 10 FT; DIAMETER: 6 FT A/N: 392206	D781				



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Equipment	ID No.	Connected To	RECLAIM Source Type/ Monitoring Unit	Emissions * And Requirements	Conditions
COLUMN, STRIPPER, DA-282, DEA, HEIGHT: 90 FT; DIAMETER: 8 FT A/N: 392206	D804				
<b>Process 6 : GAS AND WATER TREATMENT</b>					P13.2
<b>System 5 : AMINE REGENERATION UNIT NO. 2</b>					S15.3, S15.6, S15.11
TANK, SURGE, TK-1676, LEAN DEA, (COMMON TO <b>SRU NO. 2 DEA REGENERATION UNITS 1 &amp; 2</b> ), 2030 BBL; DIAMETER: 30 FT; HEIGHT: 24 FT A/N: 392206	D244				
COLUMN, DEA STRIPPER, DA-283, HEIGHT: 90 FT; DIAMETER: 8 FT A/N: 392197	D276			<b>HAP: (10) [40CFR63 Subpart CC, #2, 10-28-2009]</b>	
SUMP, UNDERGROUND, S-62, DEA, WIDTH: 4 FT 10 IN; DEPTH: 5 FT 2 IN; LENGTH: 4 FT 3 IN A/N: 392197	D278				
VESSEL, DEA FLASH AND SKIMMER, V-2572, LENGTH: 24 FT; DIAMETER: 13 FT A/N: 392197	D279				
ACCUMULATOR, V-2573, DEA STRIPPER OVERHEAD, HEIGHT: 11 FT; DIAMETER: 8 FT A/N: 392197	D280				
KNOCK OUT POT, V-2591, SOUR WATER, HEIGHT: 10 FT; DIAMETER: 4 FT A/N: 392197	D281				
TANK, HOLDING, TK-1770, PRECOAT FILTER BACKWASH WATER, ( <b>COMMON TO DEA REGENERATION UNITS 1 &amp; 2</b> ), 81 BBL; DIAMETER: 9 FT 6 IN; HEIGHT: 6 FT 6 IN A/N: 392206	D245				
TANK, HOLDING, TK-2504, PRECOAT MIX, ( <b>COMMON TO DEA REGENERATION UNITS 1 &amp; 2</b> ), 500 GALS; DIAMETER: 5 FT; HEIGHT: 4 FT A/N: 392206	D246				
FILTER, PRECOAT, V-3018, COMMON TO DEA REGENERATION UNITS 1 & 2 A/N: 392206	D254				
FILTER, PREFILTER, V-3134, DEA, COMMON TO DEA REGENERATION UNITS 1 & 2, LENGTH: 3 FT 7 IN; DIAMETER: 3 FT 6 IN A/N: 392206	D780				
FILTER, CARBON, V-3135, DEA, COMMON TO DEA REGENERATION UNITS 1 & 2, WITH A BASKET STRAINER (6 IN DIA X 18 IN LENGTH), HEIGHT: 10 FT; DIAMETER: 6 FT A/N: 392206	D781				

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## **COMPLIANCE RECORD REVIEW**

A query of the AQMD Compliance Database for the past two years (1/1/09 to 1/5/11) identified 6 NOV's that were issued to the ConocoPhillips Carson Refinery (Facility ID 800362). None of these NOV's or NCs were related to this permit unit; thus the compliance database indicates that the equipment in Process 7, Systems 1 and 2 and Process 6, Systems 4 and 5 are currently in compliance with applicable rules and regulations.

## **FEE EVALUATION**

The BCAT for both P7S1 and P7S2 is 289620 [Sulfur Recovery Plant], Schedule H. The CCAT for both P6S4 (A/N 392206) and P6S5 (A/N 392197) is 90 [Amine (or DEA) Regeneration], Schedule D. As part of this permit action, P7S1 and P7S2 are being established as permit units separate and distinct from the amine regeneration permit units, with appropriate BCAT codes. When the applications were submitted, the 2007-2008 schedule H fee was \$19,076.87. A penalty of 50% was assessed because the modifications were made without a permit, so the fee for the first SRU is \$28,615.31. Since the two SRUs are identical permit units, a discount of 50% was applied to the second SRU, leaving a fee of \$14,037.66. A total of \$42,922.97 was paid for these two permit units. No additional fees are due.

## **PROCESS DESCRIPTION**

The Amine Regeneration Units (#1 and #2) and Sulfur Recovery Units (#1 and #2) are designed to convert H<sub>2</sub>S gas to liquid elemental sulfur. This is done by combusting one-third of the incoming H<sub>2</sub>S to SO<sub>2</sub> and then reacting the SO<sub>2</sub> with the remaining 2/3 of the H<sub>2</sub>S over the alumina catalyst in the sulfur converter vessels to form liquid sulfur.

The Amine Regeneration Units strip H<sub>2</sub>S from the rich DEA streams that come from process units throughout the refinery. The Rich DEA is first flashed, with the vent gas routed to the fuel gas system, and then stripped of its H<sub>2</sub>S in the DEA stripper. This yields H<sub>2</sub>S to be fed to the SRU. The lean DEA is recirculated to the process units.

Sour gas from the sour water strippers in the complex is also fed to the SRU. Sour water gas is combined with the H<sub>2</sub>S from the DEA stripper as feed to the SRU. Also, sour gas from the SCOT unit is recycled to the SRU.

One-third of the acid gas is combusted with air to form SO<sub>2</sub>. The reaction is highly exothermic and the heat released is used to create steam in the thermal reactor waste heat boiler.

The SO<sub>2</sub> and remaining uncombusted H<sub>2</sub>S are then reacted over an alumina catalyst to form liquid sulfur in a series of three sulfur converter vessels. After each converter vessel, liquid elemental sulfur is condensed out, with unreacted SO<sub>2</sub> and H<sub>2</sub>S passed to the next converter for further reaction. Any remaining unreacted H<sub>2</sub>S and SO<sub>2</sub> after the third converter is sent to the SCOT unit for further processing. The heat of sulfur condensation removed in Condenser #1 is used to heat boiler feed water

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for the thermal reactor waste heat boiler. The other sulfur condensers are used for the production of steam.

After condensation, the liquid sulfur is sent to the underground sulfur pit. The sulfur pit is blanketed with 1 cfm nitrogen to ensure that the vent gas is below the lower explosive limit for H<sub>2</sub>S. The sulfur-bearing vapors from the pit are sent to the vapor recovery scrubber where a fine spray of water scrubs the vapors, removing the sulfur particles. The scrubbed air is vented to the inlet of the Claus unit air blower, which discharges into the Claus unit reactors. The Claus air blower operates at -25 in H<sub>2</sub>O vacuum. This suction enables ~10 cfm of sulfur pit vapors to be pulled from the pit through the water scrubber to the blower. The water is sent to the process sewer for further treatment.

### **BACKGROUND/HISTORY**

The ConocoPhillips Carson Refinery is a Title V facility, as well as a NO<sub>x</sub> and SO<sub>x</sub> RECLAIM facility. The sulfur recovery units (#1 and #2) were installed in the late 1970's, with construction complete in 1980. In 1985, PO's were issued for modifications to the SRUs after it was discovered that the scrubbers controlling emissions from the two sulfur pits were not reducing sulfur to levels low enough for atmospheric release. As a result, it was required that the vent streams exiting the sulfur pit scrubbers be routed to the SRU reactors (by way of the reactor blower inlet) rather than emitted to the atmosphere.

In 1989, the two vent streams connecting the two scrubbers to the two blower inlets were interconnected, allowing sulfur pit emissions to be recycled at all times; even when only one SRU reactor was operating. A permit was not obtained for this change; thus, the objective of these permit applications is to document the interconnection of the two vent streams. In addition, in 2002, the amine regeneration unit equipment was separated from the SRU equipment and placed in a different process/system, although it was still deemed the same permit unit. This permit action also will establish the SRU's and amine regeneration units as separate and distinct permit units. A summary of the permitting history for these permit units is provided below.

**Table 2. Permitting History for SRU#1 (P7S1), Including Amine Regeneration Unit #2 (P6S5)**

A/N {permit #}	Facility ID	Type	Status	Pro/ Sys	Permit Issued	Description
480561	800362	50	21	P7S1	-	D247 PO no PC for existing interconnection between vents exiting scrubbers on sulfur accumulator pits D247 and D277 in the SRU (modified in 1989 w/o a permit) Permit split to establish separate permit unit for SRU- linked to 325680; 392206 remains active permit for amine regen P6S4
426431	800362	63	52	P7S1	-	Change of condition for interconnection between vents on sulfur pits (cancelled since PO no PC was needed, see A/N 480561)
392206 {F49704 active}	800362	63	31	P6S4/ P7S1	3/7/02	Administrative changes to equipment descriptions for D248 and D249 (amine regeneration, P6S4)--new P6S4 created to separate amine regen from SRU (still same permit unit)
325680 {F6895}	800362	40	31	P7S1	6/10/97	Change of ownership from Unocal to ConocoPhillips/Tosco

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A/N {permit #}	Facility ID	Type	Status	Pro/ Sys	Permit Issued	Description
active}						
257982 {D45686}	89806 / 88892	40	31	-	12/9/91	Change of ownership from Shell to Unocal
165028 {D03773}	40902	50	31	-	11/30/88	Modification to install SCOT waste heat boiler bypass
129022 {M46992}	40902	10	31	-	12/17/85	Modification to route sulfur pit vent gas exiting water scrubber (V-2610) to Claus unit for Rule 468 compliance. (Hearing Board Case 831-154)
C21515	40902	20	51	-	5/27/80	New construction of Claus Unit No. 1 and SCOT Unit No. 1

**Table 3. Permitting History for SRU#2 (P7S2), Including Amine Regeneration Unit #2 (P6S5)**

A/N {permit #}	Facility ID	Type	Status	Pro/ Sys	Permit Issued	Description
480562	800362	50	21	P7S2	-	PO no PC for existing interconnection between vents exiting scrubbers on sulfur accumulator pits D247 and D277 in the SRU (modified in 1989 w/o a permit) Permit unit split to establish separate permit unit for SRU (linked to 325682); 392197 remains active permit for amine regeneration P6S5
426432	800362	63	52	P7S2	-	Change of condition for interconnection between vents on sulfur pits (cancelled since PO no PC was needed, see A/N 480562)
392197 {F49702 active}	800362	63	31	P6S5/ P7S2	3/7/02	Administrative changes to equipment descriptions for D276, D278, D780, and D781. (amine regeneration P6S5)--new P6S5 created to separate SRU from amine regen (still same permit unit)
325682 {F6896 active}	800362	40	31	P7S2	6/10/97	Change of ownership from Unocal to ConocoPhillips/Tosco
257978 {D45687}	89806 / 88892	40	31	-	6/29/92	Change of ownership from Shell to Unocal
129021 {M46991}	40902	10	31	-	12/17/85	Modification to route sulfur pit vent gas exiting water scrubber to Claus unit for Rule 468 compliance (Hearing Board Case 831-154)
C21517	40902	20	51	-	5/27/80	New construction of Claus Unit No. 2 and SCOT Unit No. 2

Changes made to the permit as part of this permit action include listing Air Blowers D972 and D973 as child devices of their respective thermal reactors, allowing them to be identified as “connected to” the two sulfur pits (C252 and C282). Conditions E336.1 and E336.2, which require the sulfur pits to be connected to the air blowers, are being removed and replaced with the equivalent “connected to” designation. The objective of this permit action was to reflect the interconnection of the sulfur pit exhausts to either air blower; this is made more clear through the use of “connected to”.

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In addition the Rule 407 SO<sub>x</sub> limits in the Emissions and Requirements column have been replaced with corresponding “sulfur compounds” limits, which is consistent with the Rule 407 exemption of SO<sub>x</sub> compounds for RECLAIM facilities (which does not exempt sulfur compounds).

The description of Surge Tank D244 is being corrected to show that it is common to DEA regeneration Units 1 & 2 (not SRU No. 2, as previously in the permit). The facility verified that D244 is a surge tank common to DEA regeneration units 1 & 2. D244 is also being listed as a device in P6S5. For consistency, the D245 and D246 descriptions are being updated to add “Common to DEA Regeneration Unit 1 & 2”, since these devices already appear in both P6S4 and P6S5.

## **EMISSIONS**

During normal operation, all emissions from this equipment are routed to the tail gas treating unit. Thus, this equipment has no emissions to the atmosphere. The modifications made to this permit unit have no impact on emissions, other than to ensure that all vent streams in the process are recycled rather than vented to the atmosphere even when one of the SRU units is not operating.

## **RULES EVALUATION**

### **PART 1: SCAQMD REGULATIONS**

- Rule 212 Standards for Approving 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 permit actions described in this evaluation do not include any increases in emissions or health risk; thus, public notice is not required.
- Rule 401 Visible Emissions (Amended 11/09/01)**  
 Operation of these permit units is not expected to result in visible emissions. 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)**  
 Operation of these permit units is not expected to result in a public nuisance. 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)**  
 This rule imposes a limit of 500 ppmv on emissions of sulfur compounds as SO<sub>2</sub>. This emission limit is referenced in the Emissions and Requirements column of the facility permit for the sulfur accumulation pits (D247 and D277) and also for the fourth (last) condensers (D891 and D895). It may be noted that the condensers are also subject to the more stringent limit of 250 ppmv SO<sub>x</sub>, per NSPS Subpart J. The permit has been

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

**Rule 468 Sulfur Recovery Units (Amended 10/08/76)**  
This rule limits the atmospheric discharge of sulfur compounds and H<sub>2</sub>S from sulfur recovery units. The final condensers (D891, D895) and the sulfur pits (D247, D277) in Sulfur Recovery Units 1 and 2 are tagged with the 10 ppm H<sub>2</sub>S limit [468(b)] in the Emissions and Requirements section of the permit description. The facility is currently in compliance with this rule and is expected to continue to comply with this rule.

**Reg XIII New Source Review**  
**Rule 1303 Requirements (Amended 12/6/02)** New Source Review requirements apply to new, modified or relocated sources. The permit units in this evaluation are post-NSR equipment. The potential to emit for this equipment is unchanged as a result of this permit action. The changes requested in this application are for an existing source and do not cause or allow an increase in emissions. The facility is currently in compliance with this rule and is expected to continue to operate in compliance with this rule.

**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 changes requested in this application do not cause or allow an increase in emissions. The facility is currently in compliance with this rule and is expected to continue to operate in compliance with this rule.

**Reg XXX Title V Permits**  
**Rule 3002 Requirements (Amended 11/14/97)**  
These applications are classified as minor permit revisions as defined in 3000(b)(12)(A). Minor permit revisions are exempt from public participation per 3006(b) but are required to be submitted to the EPA per 3003(j)(1)(A).

**PART II: STATE REGULATIONS**

**CEQA California Environmental Quality Act (Amended 01/01/05)**  
These applications do not trigger CEQA and are exempt from further CEQA action since they do not have the potential to generate significant adverse environmental impacts. No additional requirements apply.

**PART III: FEDERAL REGULATIONS**

**40CFR60 Subpart J Standards of Performance for Petroleum Refineries (Amended 06/24/2008)**

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The requirements of Subpart J apply to Claus sulfur recovery plants with a design capacity for sulfur feed of more than 20 long tons per day at petroleum refineries. Each ConocoPhillips Carson Claus sulfur recovery plant was designed for a capacity of 200 long tons of sulfur per day; thus, the SRU is subject to Subpart J requirements.

Condition P13.1 requires compliance with the applicable NSPS J SO<sub>x</sub> limit. This limit is specified in the Emissions and Requirements column of the permit description: a SO<sub>x</sub> limit of 250 ppmv--the limit on reduction control systems followed by incineration from § 60.104(a)(2)(i) (dry basis, measured at zero percent excess air, measured on a daily basis with a seven-day rolling average).

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

**40CFR60 Subpart Ja Standards of Performance for Petroleum Refineries for Which Construction, Reconstruction, or Modification Commenced After May 14, 2007(Adopted 12/22/2008)**

The requirements of this regulation apply only to SRU units that were constructed, reconstructed or modified after 7/14/07. These SRU's have not been modified or reconstructed since 7/14/07 and were originally constructed in the 1970's. Therefore, the equipment referenced in this application is not subject to Subpart Ja.

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

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 2/26/09. Sampling results were provided in the Consent Decree Semiannual Progress Report (July 2010).

The Benzene NESHAP Annual Report - 2009, dated 3/29/2010, indicates that the facility had a total annual benzene quantity (TAB) of 21.39 Mg/yr. Since the TAB is  $\geq$  10 Mg/yr, the facility has chosen to comply with the requirements of 61.342(e), (the 6BQ option) which includes a limit for benzene in aqueous (>10 vol% water) waste streams of  $\leq$  6.0 Mg/yr [61.342(e)(2)(i)]. The Annual Report for 2009 noted that 3.06 Mg/yr is the portion of the TAB that applies to the 6.0 Mg/yr limit (described as "uncontrolled" benzene in the Annual Report).

The recent quarterly BWON report, dated 7/16/10, indicates that the facility is projected to emit less than the 6 Mg/yr limit of uncontrolled benzene in 2010 and will comply with the 6BQ option. Thus, the facility is currently in compliance with this regulation and is expected to continue to operate in compliance with this regulation.

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**40CFR63 Subpart CC National Emission Standards for Hazardous Air Pollutants from Petroleum Refineries (Amended 06/23/03)**

The miscellaneous fugitive emissions (equipment leaks) of SRU#1 and SRU#2 (D855 and D856) and the DEA stripper column vent (D276) in amine regeneration unit #2 are subject to the requirements of 40CFR63 Subpart CC. Specific requirements are referenced in Section J of the permit per the reference in the Emissions and Requirements section of the permit description.

Miscellaneous process vents in sulfur plants and control devices on sulfur plant vents are exempt from Subpart CC requirements per the § 63.641 definition of “miscellaneous process vents”. The facility is currently in compliance with this regulation and is expected to continue to operate in compliance with this regulation.

**40CFR63 Subpart UUU National Emission Standards for Hazardous Air Pollutants Petroleum Refineries: Catalytic Cracking Units, Catalytic Reforming Units, and Sulfur Recovery Units (Amended 04/20/06)**

Subpart UUU applies to miscellaneous process vents in sulfur recovery units, catalytic cracking units, and catalytic reforming units, which were exempt from Subpart CC requirements. The fourth condensers in SRU #1 and SRU #2 (D891 and D895) are subject to the requirements of 40CFR63 Subpart UUU. Section § 63.1568(a)(1) specifies that equipment subject to the 250 ppmv NSPS J limits for sulfur oxides (§ 60.104) must comply with that limit (see also Table 29 of Subpart UUU).

The facility must also prepare an operation, maintenance and monitoring plan (OMMP) and operate at all times according to the procedures in the plan. Each plan must include the information below, per § 63.1574(f)(2).

- (i) Process and control device parameters to be monitored for each affected source, along with established operating limits.
- (ii) Procedures for monitoring emissions and process and control device operating parameters for each affected source.
- (viii) Monitoring schedule, including when you will monitor and when you will not monitor an affected source (e.g., during the coke burn-off, regeneration process).
- (ix) Quality control plan for each continuous opacity monitoring system and continuous emission monitoring system you use to meet an emission limit in this subpart. This plan must include procedures you will use for calibrations, accuracy audits, and adjustments to the system needed to meet applicable requirements for the system.
- (x) Maintenance schedule for each monitoring system and control device for each affected source that is generally consistent with the manufacturer's instructions for routine and long-term maintenance.

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The facility submitted OMMP application A/N 448934 on 9/21/05 as part of their Notification of Compliance Status submittal to the EPA. This plan is still under review and has not yet been approved.

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

### **RECOMMENDATIONS**

Based on the above evaluation, it is recommended that the permit to construct be converted to a permit to operate. It is recommended that a Permit to Operate be issued with the following conditions.

### **CONDITIONS**

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

Contaminant	Rule	Rule/Subpart
SOX	40CFR60, SUBPART	J

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

[Processes subject to this condition : 7]

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

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

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

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, D816, D175, D188, D202, D803, D479, D896 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**

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

S15.6 The vent gases from all affected devices of this process/system shall be vented as follows:

All acid gases under normal operating conditions shall be directed to the sulfur recovery 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 6, System 1, 4, 5]

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

All vent gases under normal operating conditions shall be directed to the tail gas treating (SCOT) unit.

This process/system shall not be operated unless the tail gas treating (SCOT) 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 7, System 1, 2]

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 D175, D188, D202, and D896 that vent to atmosphere.

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]**

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

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S18.2 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:

Sour Water Stripping Unit (Process: 6, System: 1)

Amine Regeneration Units (Process: 6, System: 4 and 5)

[~~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 7, System 1, 2]

## DEVICE CONDITIONS

~~E336.1 The operator shall vent the vent gases from this equipment as follows:~~

~~All vent gases shall be vented to the air blower for the thermal reactor (D242).~~

~~[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]~~

~~[Devices subject to this condition: C252]~~

~~E336.2 The operator shall vent the vent gases from this equipment as follows:~~

~~All vent gases shall be vented to the air blower for the thermal reactor (D275).~~

~~[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]~~

~~[Devices subject to this condition: C282]~~

*Conditions E336.1 and E336.2 are being removed because the air blowers have been listed as child devices of their respective thermal reactors, and the ‘connected to’ column has been updated to reflect the connection of the scrubbers to the air blowers.*

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, 5-13-1994; 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, D873, D875, D876, D877, D944,

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D945, D946, D947, D948]

H23.12 This equipment is subject to the applicable requirements of the following rules or regulations:

Contaminant	Rule	Rule/Subpart
VOC	40CFR61, SUBPART	FF

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

[Devices subject to this condition : D222, D223, D242, D275, D380, D407, D408, D411, D412]

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, 5-13-1994; RULE 1173, 2-6-2009; 40CFR60 Subpart GGG, 6-2-2008]**

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