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		PROCESSED BY: Meredith Hankins	CHECKED BY: BC

PERMIT TO CONSTRUCT/OPERATE (A/N 523950)
AND
CONVERSION OF PERMITS TO CONSTRUCT TO PERMITS TO OPERATE
STEAM NAPHTHA REFORMING HYDROGEN PLANT (SNR)

COMPANY NAME: Chevron Products Co.
COMPANY ID: 800030
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 El Segundo, CA 90245
EQUIPMENT LOCATION: 324 W. El Segundo Blvd
 El Segundo, CA 90245
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PROPOSED CHANGES TO PERMITS:

Proposed deletions are show in ~~strikeouts~~. Proposed additions are in **bold and underlined**.

SECTION D: FACILITY DESCRIPTION AND EQUIPMENT SPECIFIC CONDITIONS (Please note that permits for the following equipment under Process 6, System 4, will be moved from Section H to Section D of the facility permit.)

Equipment	ID No.	Connected To	Source Type/ Monitoring Unit	Emissions And Requirements	Conditions
Process 6 : HYDROGEN GENERATION					P13.1
System 4 : STEAM NAPHTHA REFORMER (SNR)					S2.1, S13.2, S13.4, S15.7, S15.10, S15.20 , S31.12
REACTOR, GUARD, R-1320, HEIGHT: 21 FT 9 IN; DIAMETER: 6 FT A/N: 457257 <u>523950</u>	D588				

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Equipment	ID No.	Connected To	Source Type/ Monitoring Unit	Emissions And Requirements	Conditions
Process 6 : HYDROGEN GENERATION					P13.1
TANK, R-1325A, ZINC OXIDE, HEIGHT: 14 FT 11 IN; DIAMETER: 4 FT 6 IN A/N: 457257 <u>523950</u>	D589				
TANK R-1325B, ZINC OXIDE, HEIGHT: 15 FT 7 IN; DIAMETER: 4 FT 6 IN A/N: 457257 <u>523950</u>	D590				
REACTOR, CONVERTER, R-1350, HIGH TEMPERATURE SHIFT, HEIGHT: 13 FT 6 IN; DIAMETER: 12 FT A/N: 457257 <u>523950</u>	D591				
REACTOR, CONVERTER, R-1360, LOW TEMPERATURE SHIFT, WITH PRESSURE RELIEF VALVE VENTED TO ATMOSPHERE, HEIGHT: 12 FT 8 IN; DIAMETER: 12 FT A/N: 457257 <u>523950</u>	D592				
REACTOR, METHANATOR, R-1390, LENGTH: 18 FT 2 IN; DIAMETER: 8 FT A/N: 457257 <u>523950</u>	D593				
COLUMN, ADSORBER, C-1370, CO2, HEIGHT: 143 FT 11 IN; DIAMETER: 8 FT 6 IN A/N: 457257 <u>523950</u>	D594				
COLUMN, STRIPPER, C-1380, CO2, HEIGHT: 188 FT 2 IN, DIAMETER: 11 FT A/N: 457257 <u>523950</u>	D595				
SCRUBBER, C-1895, CHLORIDE, HEIGHT: 25 FT; DIAMETER: 3 FT A/N: 457257 <u>523950</u>	D596				

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Equipment	ID No.	Connected To	Source Type/ Monitoring Unit	Emissions And Requirements	Conditions
Process 6 : HYDROGEN GENERATION					P13.1
KNOCK OUT POT, V-1365, LOW TEMPERATURE SHIFT REDUCTION, HEIGHT: 8 FT 3 IN; DIAMETER: 3 FT 6 IN A/N: 457257 <u>523950</u>	D597				
KNOCK OUT POT, V-1370, ABSORBER FEED, WITH PERIODIC VENT TO ATMOSPHERE, HEIGHT: 10 FT; DIAMETER: 5 FT 6 IN A/N: 457257 <u>523950</u>	D598				
SUMP, V-1383, POTASSIUM CARBONATE SOLUTION, WITH STEAM COIL, WIDTH: 6 FT; DEPTH: 11 FT 6 IN; LENGTH: 6 FT A/N: 457257 <u>523950</u>	D599				
VESSEL, TREATER, V-1385, ACTIVATED CARBON, HEIGHT: 13 FT; DIAMETER: 4 FT A/N: 457257 <u>523950</u>	D600				
POT, CHEMICAL INJECTION, V-1386, HEIGHT: 1 FT; DIAMETER: 8 IN A/N: 457257 <u>523950</u>	D601				
KNOCK OUT POT, V-1390, METHANATOR FEED, WITH PERIODIC VENT TO ATMOSPHERE, HEIGHT: 4 FT 6 IN; DIAMETER: 3 FT A/N: 457257 <u>523950</u>	D602				
TANK, T-1382, POTASSIUM CARBONATE SOLUTION, WITH STEAM COIL, HEIGHT: 22 FT; DIAMETER: 22 FT A/N: 457257 <u>523950</u>	D608				
COMPRESSOR, RECIPROCATING, K-1910, HYDROGEN BOOSTER, THREE STAGE A/N: 457257 <u>523950</u>	D610				

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Equipment	ID No.	Connected To	Source Type/ Monitoring Unit	Emissions And Requirements	Conditions
Process 6 : HYDROGEN GENERATION					P13.1
COMPRESSOR, RECIPROCATING, K-1920, HYDROGEN BOOSTER, THREE STAGE A/N: 457257 <u>523950</u>	D611				
COMPRESSOR, RECIPROCATING, K-1930, HYDROGEN BOOSTER, THREE STAGE A/N: 457257 <u>523950</u>	D612				
FILTER, LOW TEMPERATURE SHIFT REDUCTION, K-1364 A/N: 457257 <u>523950</u>	D3370				
VESSEL, HIGH PRESSURE DEAERATOR, V-1340, HEIGHT: 25 FT; DIAMETER: 11 FT 10 IN A/N: 457257 <u>523950</u>	D3371			CO: 2000 PPMV (5) [RULE 407, 4-2-1982]	D28.4 D28.24
TANK, FLASH, ATMOSPHERIC CONDENSER, V-1345, WITH PERIODIC VENT TO ATMOSPHERE, HEIGHT: 24 FT; DIAMETER: 6 FT A/N: 457257 <u>523950</u>	D3372				
DRUM, V-1371, PROCESS CONDENSATE, HEIGHT: 17 FT 6 IN; DIAMETER: 5 FT A/N: 457257 <u>523950</u>	D3373				
REACTOR, GUARD BED, R-1320A, HEIGHT: 16 FT; DIAMETER: 7 FT 6 IN A/N: 457257 <u>523950</u>	D3514				
DRUM, R-1325A, ZINC OXIDE, HEIGHT: 20 FT 4 IN; DIAMETER: 8 FT 4 IN A/N: 457257 <u>523950</u>	D3515				
DRUM, R-1325B, ZINC OXIDE, HEIGHT: 20 FT 4 IN; DIAMETER: 8 FT 4 IN A/N: 457257 <u>523950</u>	D3516				

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Equipment	ID No.	Connected To	Source Type/ Monitoring Unit	Emissions And Requirements	Conditions
Process 6 : HYDROGEN GENERATION					P13.1
REACTOR, PREREFORMER, R-1330, HEIGHT: 8 FT 4 IN; DIAMETER: 9 FT 2 IN A/N: 457257 <u>523950</u>	D3517				
KNOCK OUT POT, V-1300, FEED GAS, HEIGHT: 11 FT 6 IN; DIAMETER: 6 FT A/N: 457257 <u>523950</u>	D3519				
KNOCK OUT POT, V-1390, METHANATOR FEED GAS, HEIGHT: 10 FT; DIAMETER: 4 FT 6 IN A/N: 457257 <u>523950</u>	D3520				
COMPRESSOR, K-1300, FEED GAS, WITH DRY GAS SEAL VENTED TO A FUEL GAS SYSTEM, 4000 H.P. A/N: 457257 <u>523950</u>	D3522				H23.19
COMPRESSOR, K-1940, H2 BOOSTER, 4500 H.P. DUAL PACKING RINGS WITH NITROGEN PURGE GSA VENTED TO A FUEL GAS SYSTEM A/N: 457257 <u>523950</u>	D3527				H23.19
FILTER, COALESCER, J-1330, FUEL GAS A/N: 457257 <u>523950</u>	D3528				
FILTER, PREFILTER, J-1331, FUEL GAS A/N: 457257 <u>523950</u>	D3529				
KNOCK OUT POT, V-1386, HEIGHT: 7 FT 8 IN; DIAMETER: 8 FT 6 IN A/N: 457257 <u>523950</u>	D3574				
COLUMN, C-1387, WATER WASH WITH A PACKED SECTION AND A DEMISTER, HEIGHT: 30 FT; DIAMETER: 5 FT 6 IN A/N: 457257 <u>523950</u>	D3839			CO: 2000 PPMV (5) [RULE 407, 4-2-1982]	C6.8, C8.11, D12.23, D28.24

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Equipment	ID No.	Connected To	Source Type/ Monitoring Unit	Emissions And Requirements	Conditions
Process 6 : HYDROGEN GENERATION					P13.1
FILTER, K-1385A, CATAcarb V-1385 PREFILTER, HEIGHT: 5 FT 2 IN; DIAMETER: 1 FT A/N: <u>457257 523950</u>	D3913				
FILTER, K-1385B, CATAcarb V-1385 PREFILTER, HEIGHT: 5 FT 2 IN; DIAMETER: 1 FT A/N: <u>457257 523950</u>	D3914				
COOLER, E-1365, LOW TEMPERATURE SHIFT REDUCTION A/N: <u>457257 523950</u>	D4114	D4115			<u>E336.x</u>
<u>FILTER, COALESCER, J-1390, METHANATOR FEED, LENGTH: 15 FT 8 IN; DIAMETER: 3 FT 6 IN</u> A/N: <u>523950</u>	<u>Dnew</u>				
FUGITIVE EMISSIONS, MISCELLANEOUS A/N: <u>457257 523950</u>	D3622			HAP: (10) [40 CFR 63 Subpart CC, #5A, 6-23-2003]	H23.19

PROCESS CONDITIONS

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

Contaminant	Rule	Rule/Subpart
Benzene	40CFR61, Subpart	FF

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

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

SYSTEM CONDITIONS

S2.1 The operator shall limit emissions from this system as follows

CONTAMINANT	EMISSIONS LIMIT
VOC less than	2.5 lb/mmscf hydrogen produced

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For the purposes of this condition, the emission limit(s) shall become effective on July 1, 2003.

[RULE 1189, 1-21-2000]

[Systems subject to this condition: Process 6, System 4]

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

Contaminant	Rule	Rule/Subpart
VOC	District Rule	1123

[RULE 1123, 12-7-1990]

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

S13.4 All devices under this system are subject to the applicable requirements of the following rules or regulations:

Contaminant	Rule	Rule/Subpart
VOC	District Rule	1189

[RULE 1189, 1-21-2000]

[Systems subject to this condition: Process 6, System 4]

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

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

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

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

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

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

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

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

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

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

~~S15.20 The vent gases from all affected devices of this process/system shall be vented as follows:~~

~~All vent gases from the low temperature shift reduction cooler (Device D4114) during startup and planned shutdown of this process/system shall be directed to a flare system.~~

~~This process/system shall not be operated unless the flare system referred to above is in full use and has a valid permit to receive vent gases from this system.~~

~~**[RULE 407, 4-2-1982]**~~

~~[Systems subject to this condition: Process 6, System 4]~~

**This condition is being removed and replaced with an E336.x series condition for increased clarity, as it only describes the venting procedure for a single device (D4114) and does not address emergency venting procedures for this device.*

S31.12 The following BACT requirements shall apply to VOC service fugitive components associated with the devices that are covered by application number(s) 358451 and 391638:

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

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

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

Valves not commercially available include valves with sizes above 8", special alloys for sizes above 2", and special connections for sizes above 2".

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

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

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

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

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

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

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

[Systems subject to this condition: Process 6, System 4; Process 20, System 31]

DEVICE CONDITIONS

C. Throughput or Operating Parameter Limits

C6.8 The operator shall use this equipment in such a manner that the temperature being monitored, as indicated below, does not exceed 120 Deg F.

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To comply with this condition, the operator shall install and maintain a(n) measuring device to accurately indicate the temperature at the gas inlet to this equipment.

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

The continuous monitoring system shall include visual and audio alarms.

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

[RULE 1189, 1-21-2000; RULE 3004(a)(4)-Periodic Monitoring, 12-12-1997]

[Devices subject to this condition: D3839]

C8.11 The operator shall use this equipment in such a manner that the flow rate being monitored, as indicated below, is not less than 10 gpm.

To comply with this condition, the operator shall install and maintain a(n) flow meter to accurately indicate the flow rate at the inlet of the fresh water supply to the equipment.

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

The continuous monitoring system shall include visual and audio alarms.

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

[RULE 1189, 1-21-2000; RULE 3004(a)(4)-Periodic Monitoring, 12-12-1997]

[Devices subject to this condition: D3839]

D. Monitoring/Testing Requirements

D12.23 The operator shall install and maintain a(n) differential pressure gauge to accurately indicate the differential pressure across the column. The differential pressure measured shall not be more than 15 inches water column at all times.

[RULE 1189, 1-21-2000; RULE 3004(a)(4)-Periodic Monitoring, 12-12-1997]

[Devices subject to this condition: D3839]

~~D28.4 The operator shall conduct source test(s) in accordance with the following specifications:~~

~~The test shall be conducted (initial source test to determine baseline emissions) prior to modification and within 90 days after the date of this permit to construct.~~

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~~The test shall be conducted (performance test after modification) within 90 days after achieving maximum production rate, but not later than 180 days after initial startup.~~

~~Source test shall be conducted when this equipment is operating at 80 percent or greater of the maximum design capacity.~~

~~The test shall be conducted to determine methanol, non-methane hydrocarbons and CO emissions at the outlet of the CO₂ vent and at the outlet of the Deaerator vent.~~

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

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

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

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

~~[Devices subject to this condition: D3371]~~

***Condition D28.4 is being removed, as the baseline and post-modification test results required under this condition have already been submitted.*

D28.24 The operator shall conduct source test(s) in accordance with the following specifications:

~~The test shall be conducted (initial source test after SNR Plant modification) within 90 days after startup of this equipment.~~

The test shall be conducted (after the initial source test above) annually at various life of the LTS catalyst bed in the SNR Plant to determine the minimum inlet fresh water flow rate to this equipment to achieve compliance with the VOC emission limit under Rule 1189. A source test shall also be conducted within 30 days after LTS catalyst bed replacement.

The test shall be conducted to determine methanol, non-methane hydrocarbons and CO emissions at the outlet of this equipment ~~and at the outlet of the Deaerator vent.~~

Source test shall be conducted when this equipment is operating at 80 percent or greater of the maximum design capacity.

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

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

[RULE 1303(b)(2)-Offset, 5-10-1996; RULE 1189, 1-21-2000; RULE 407, 4-2-1982]

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[Devices subject to this condition: D3839, **D3371**]

***Condition D28.24 is being modified to clarify that it applies to both the deaerator and the CO₂ vent and updated to reflect that the "initial source test" currently referenced has already occurred. Rule tagging is being added to clarify the underlying rule basis for this source test condition.*

E. Equipment Operation/Construction Requirements

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

All vent gases generated during startup and planned shutdown shall be directed to the flare (Process 20, System 36).

All emergency vent gases may be vented to atmosphere.

[RULE 407, 4-2-1982]

[Devices subject to this condition: D4114]

**This condition is replacing existing condition S15.20 in order to clarify the venting requirements for device D4114.*

H. Applicable Rules

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

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

[RULE 1173, 5-13-1994; RULE 1173, 2-6-2009; 40CFR 60 Subpart GGG, 6-2-2008]

[Devices subject to this condition: D196, D237, D633, D1047, D1048, D1049, D1054, D1929, D1930, D3522, D3527, D3580, D3583, D3585, D3587, D3589, D3613, D3622, D3636, D3638, D3652, D3653, D3675, D3803, D4353]

BACKGROUND:

Chevron submitted the subject application (A/N 523950), along with an application for revision of their Title V permit (A/N 523951), for modification of the Steam Naphtha Reforming (SNR) hydrogen plant by the addition of a filter/coalescer vessel upstream of the Methanator. The new vessel will serve as a knockout pot to remove particulates before they reach E-1390, the Methanator Feed/Effluent Exchanger. Chevron maintains that the proposed modification will increase the reliability of E-1390, which thus increases the reliability of R-1390, the Methanator.

The SNR Plant is currently operating under Permit to Construct / Temporary Permit to Operate in Section H of the Title V facility permit under A/N 457257 (PC issued 3/30/07). Additionally, as

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shown in Table 3 below, there is one more open P/C issued under A/N 407862. This document includes evaluation for the conversion of the P/Cs under A/N 457257/407862 and issuance of a Permit to Construct/Permit to Operate (PC/PO) in Section D of the facility permit under A/N 523590. Issuance of a PC/PO for the new proposed modification will supersede all open PCs issued to this equipment. Therefore, this evaluation will include a determination if the equipment in the permit unit is currently being operated in compliance with all previously issued permits, and with all applicable rules and regulations, before permitting any proposed modifications to such operation. Issuance of a PC/PO will also resolve various system errors in the NSR and Finance programs due to the currently open PCs.

A summary of the new applications included in this evaluation are shown below in Table 1.

Table 1 – AQMD Applications Submitted

A/N	Equipment	Device ID	Type	Status	Date Received	Requested Action
523950	Hydrogen Production Plant	Various	50	20	6/21/11	• Install filter/coalescer J-1390
523951	Title V Minor Revision	Various	85	21	6/21/11	• Amend Chevron's Title V Permit

The fees submitted for these new applications are shown below in Table 2. Note that the subject application was expedited, and thus Chevron paid an additional 50% of the permit processing fee. Also note that Chevron incorrectly submitted the fee for new construction, rather than the lower fee required for modification. *The difference of \$4,384.86 was automatically refunded to Chevron following application pre-screening.*

Table 2 – Fee Summary

A/N	Equipment	Type	Fee Sched.	Fee Due	Fee Paid	Balance Due
523950	Hydrogen Production Plant	50	F	\$10,473.03	\$20,094.40	-\$4,384.86
523951	Title V Minor Revision	85	C	\$1,747.19	\$1,747.19	\$0.00

Relevant permitting history for the subject equipment is shown below in Table 3.

Table 3 – Relevant Permitting History

A/N	Date Received	Application		Permit		Description/Comments
		Status	Type	Status	Number	
A87740	?	31	?	Inactive	M13731	
118372	12/19/1983	31	50	Inactive	M48306	

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A/N	Date Received	Application		Permit		Description/Comments
		Status	Type	Status	Number	
127127	11/08/1984	50	50	--	--	
224182	03/05/1990	31	50	Inactive	D33694 & R-D33694	<p>Installation of new heat exchangers E-1321, E-1322, and E-1323 for compliance with Rule 1146 (increased heat recovery allowed for furnace F-1320 to be taken out of service during normal operation and used only as start-up heater).</p> <p>PO issued November 1990. Note these exchangers were removed during heater replacement project in 1998.</p>
275103	11/18/1992	50	50	--	--	<p>Modification of hydrogen booster compressors K-1910, K-1920, and K-1930 to meet increased hydrogen demand from VRDS unit. Cancelled after issuance of PC and consolidated into subsequent A/N 309470.</p> <p>Installation completed October 1994. Booster compressors remain in service (D610-612).</p>
309470	11/15/1995	52	50	--	--	<p>Tied in atmospheric vents from hydrogen booster compressors K-1910, K-1920, and K-1930 to LSFO Emergency Relief System and added KO pots. Cancelled after issuance of PC and consolidated into subsequent A/N 341363.</p> <p>Construction completed in early 1998.</p>
341363	06/05/1998	52	50	--	--	<p>Installation of new feed gas compressor K-1300 to allow switching from liquid feed of</p>

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A/N	Date Received	Application		Permit		Description/Comments
		Status	Type	Status	Number	
						<p>butane/naphtha to gaseous feed of refinery gas/natural gas and new hydrogen booster K-1940 for increased reliability. Cancelled after issuance of PC and consolidated into subsequent A/N 358451.</p> <p>Construction completed in conjunction with installation of new reformer heater and SCR (under A/N 341340-1). SNR plant has used gaseous RFG/NG feed for past 10+ years. Liquid feed piping has been taken out of service.</p>
358451	08/10/1999	52	50	--	--	<p>Modified plant to send raw CO2 stream to newly constructed BOC CO2 plant (previously vented to atmosphere). Cancelled after issuance of PC and consolidated into subsequent A/N 402836.</p> <p>Construction completed September 2000 and source test completed in June 2001 to quantify emissions from CO2 vent. Further modification was required to bring plant into compliance with Rule 1189. Chevron submitted A/N 402836 for this purpose.</p>
385231	04/11/2001	52	55	--	--	<p>Application submitted to reflect PRVs vented to atmosphere in equipment description for device D3574. Note that this atmospheric PRV does not qualify as a process vent subject to Rules 407 or 1189.</p> <p>Application cancelled as vents to atmosphere already covered by system condition S15.7.</p>

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A/N	Date Received	Application		Permit		Description/Comments
		Status	Type	Status	Number	
385237	04/10/2001	52	63	--	--	<p>Application submitted for addition of atmospheric vents to equipment descriptions of devices D591, D597, D595, D599, D608, D3371, and D3373. Note that per the application files, all of these vents to atmosphere are either emergency PRVs or do not emit criteria pollutants (i.e. they are not process vents subject to Rules 407 or 1189).</p> <p>Application cancelled as vents to atmosphere already covered by system condition S15.7.</p>
389303	07/19/2001	31	63	Active	F57218	<p>Application submitted for addition of atmospheric vents to equipment descriptions of devices D592, D598, D602, and D3372. Also requested removal of devices D591, D597, D598, D602, D610-612 from S15.8.</p> <p>Permit issued as admin PO.</p>
402836	06/13/2002	52	50	--	--	<p>Added condenser and water wash column C-1387 to remove VOC (mainly MeOH) from the CO2 vent in order to comply with Rule 1189. Cancelled after PC issued and consolidated into subsequent A/N 407862.</p> <p>Source tests since modification completed have shown emissions to be in compliance with Rule 1189.</p>
407862	10/16/2002	26	50	--	--	<p>Installation of filters K-1385A/B up- and down-stream of V-1385 carbon adsorber to prevent</p>

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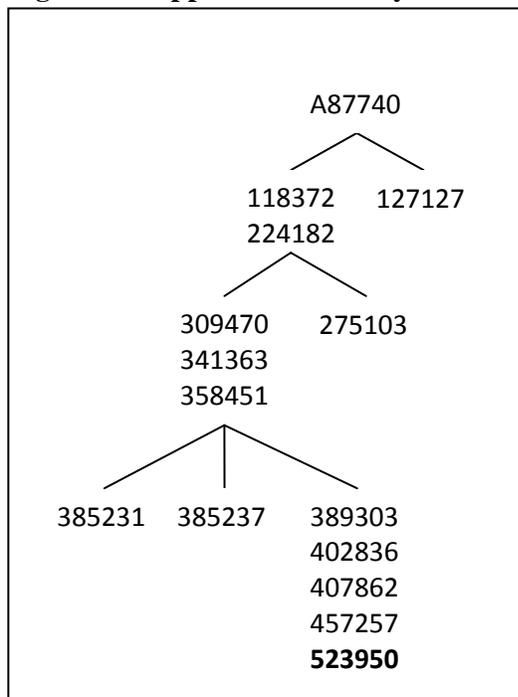
A/N	Date Received	Application		Permit		Description/Comments
		Status	Type	Status	Number	
						particulate plugging and carbon deactivation. Filters have been installed. Ready for P/O.
457257	05/23/2006	26	50	--	--	Added vent connection from device D4114 (hydrogen product vent) to new ground flare for use during startups and planned shutdowns for Rule 407 compliance. Construction of new flare was completed in June 2007. Source test of the flare during the first startup following construction demonstrated CO emissions from the hydrogen product vent were controlled to below the Rule 407 limit. Ready for P/O.
523950	06/21/2011	20	50	--	--	Current application - propose to add filter/coalescer J-1390 upstream of Methanator.

Note that due to various Finance and NSR issues, the application history as it is linked in the system is not entirely accurate. Refer to Figure 1 below for true application history for this equipment.

Also note that previous open PCs issued under A/N 407862 and 457257 will be issued POs and then inactivated following the issuance of a PC/PO for A/N 523950.

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Figure 1 – Application History



PROCESS DESCRIPTION:

In brief, the SNR hydrogen plant produces up to 72 MMSCFD of hydrogen through reforming a gaseous hydrocarbon feed of refinery fuel/natural gas in the presence of steam. Note that this plant was originally designed to process a liquid feed of naphtha/butane (hence, the name SNR, Steam Naphtha Reforming). In 1998, A/N 341363 was submitted for modifications to allow alternate processing of a gaseous feed of RFG and NG. According to Chevron, the SNR plant has processed only the gaseous feed for the past 10+ years (see 7/8/11 email from Mély Escalante-Henricks). The piping for the naphtha/butane feed has either been taken out of service or demolished. There are no plans to switch back to the liquid feed in the future.

The hydrogen production process as summarized below involves the following steps: feed desulfurization, hydrogen production, and purification (for further details on each of the process, please see previous P/C evaluations).

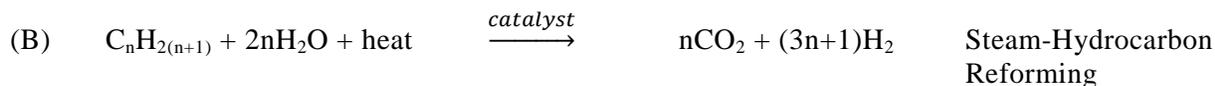
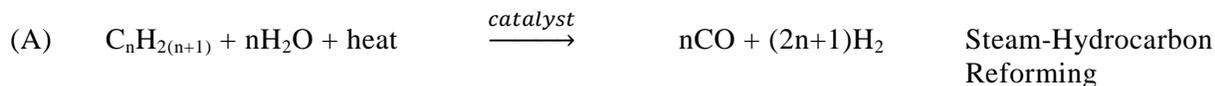
Desulfurization

Before reaching the SNR plant, the SNR feed is treated for sulfur in the #4, #5, and #6 H₂S plants at the Refinery.

Hydrogen Production

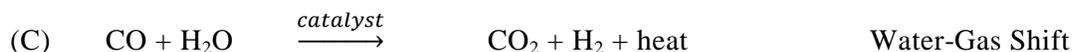
Superheated steam is mixed with the desulfurized SNR feed in the pre-reforming section to initiate the reforming reaction and produce a stream consisting of methane and lighter hydrocarbons. This stream is then directed to the reformer reactor/heater, where the lighter hydrocarbons and steam are converted to H₂, CO, and CO₂ inside catalyst filled tubes. The reforming reactions proceed according to endothermic reactions A and B below.

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The heat of reaction is provided by combustion of refinery fuel gas (pre-treated for sulfur in the #5 H₂S plant) in the reformer heater. Note that the reformer heater is permitted separately in P6/S5 of Chevron's Title V permit and its operation is not covered by this evaluation.

The stream exiting the reformer reactor is then reacted with more steam to produce CO₂ and additional hydrogen from the CO in the shift conversion reactors (high temperature and low temperature, HTS and LTS, respectively). The exothermic shift reactions proceed according to Reaction C below.



Purification

CO₂ is removed from the stream exiting the shift reactors by the Catacarb process, where CO₂ is absorbed into a circulating solution of hot potassium carbonate and later stripped back out of solution with stripping steam. The remaining CO and CO₂ are hydrogenated to methane in the methanation section. The product hydrogen is then cooled and compressed to the operating pressure of other units at the Refinery for use in the hydrotreating process (including Naphtha Hydrotreating No. 2 & 3, Vacuum Gas Oil, and the VRDS).

Proposed Modification

Chevron is proposing to add a filter/coalescer upstream of the Methanator. Methanator feed would enter the proposed vessel through a nozzle near the bottom and flow up through filter elements. As can be seen in Table 4, the main component in the Methanator feed gas entering the proposed equipment would be hydrogen. Entrained liquids would drop to the bottom of the vessel and particulates would be captured in the filter media. The vessel would have one 2" vent controlled by a manual valve on the top, which would be opened for maintenance purposes only while the equipment was not in operation. Fugitive components installed as a result of this modification will not be subject to Rule 1173, as the Methanator feed does not contain VOCs (other than methane, which is specifically exempted from the definition of VOC in District Rule 102, and other inorganic compounds). No VOC emissions to the atmosphere during normal operation are expected.

Table 4 – Methanator Feed Gas Composition

Component	Composition (mole %)	Composition (wt %)
H ₂	96.176	70.307
CO ₂	0.372	5.983
N ₂	0.539	5.516
CH ₄	2.649	15.492
CO	0.264	2.702

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Sources of Emissions

Process Vents

There are two atmospheric process vents at the plant currently source tested annually for compliance with District Rule 1189.

The first is the CO₂ vent C-1387 (D3839). As described above in the Purification section, CO₂ is absorbed into the Catacarb circulating solution and then stripped out in Column C-1380. The CO₂ removed from the column stripper is then directed to a condenser, where up to 80% of the residual VOC (mainly methanol, MeOH) is removed through cooling and condensation. The noncondensable CO₂ stream is then directed to Water Wash Column C-1387, where any remaining MeOH is removed. This leaves a raw CO₂ stream, which is partially recovered (~65%) by the CO₂ plant operated by BOC and located on Chevron Refinery property (see PO #F42182 for BOC). CO₂ produced by the SNR plant above the capacity of the BOC CO₂ plant is directed to atmosphere from C-1387. Note that this entire stream, including the portion directed to the BOC plant, is subject to Rule 1189 per subparagraph 1189(e)(3). Chevron performs an annual source test upstream of the split between the BOC plant and the atmospheric vent in order to account for emissions potentially generated downstream at the BOC plant.. Note that the condensation cooler and Water Wash Column C-1387 were installed solely for Rule 1189 compliance in order to reduce the VOC concentration of this CO₂ stream directed to atmosphere. Chevron maintains that C-1387 is only required to operate at maximum levels (scrubbing water flow of 20 gpm) during the first year of the LTS catalyst life. As the LTS catalyst ages, less MeOH is produced in the reactor and scrubbing water flow rate of only 8 gpm is required to reduce VOC emissions from C-1387 to below Rule 1189 limits. Chevron uses a minimum of 10 gpm in order to comply with permit condition C8.11, which limits scrubbing water flow in C-1387 to greater than 10 gpm to ensure efficient scrubbing. Permit condition C6.8 limits the temperature in the condenser to a maximum of 120°F to ensure effective condensation.

The second atmospheric process vent is from the deaerator V-1340 (D3371). Condensate removed from cooled gas exiting the LTS reactor is directed to the deaerator for purification. The deaerator contacts the condensate with steam to degasify the stream and remove any impurities. The clean effluent water is used as boiler feed water, while the exhaust gas (steam along with any impurities) is directed to atmosphere. This vent is not controlled, as Chevron remains under the Rule 1189 limit even at maximum emission levels because emissions from the other process vent are controlled.

Emissions from these two vents are source tested annually. See Table 5 below.

Note that, as discussed in the Rule 1189 evaluation below, it was discovered during the processing of this application that a vessel in the boiler feed water system periodically vents steam to atmosphere. Chevron will be required to source test this vent in future Rule 1189 tests.

Startup/Shutdown

The product hydrogen stream was originally designed to vent to atmosphere during startups and shutdowns. However, following Chevron's experience with the Air Liquide hydrogen plant (ID 148236, see A/N 440494), it was discovered that the CO concentration in this stream could exceed the Rule 407 limit of 2,000 ppm CO. Therefore, a ground flare was constructed to control emissions from the product hydrogen vent during planned startups and shutdowns.

The ground flare is permitted separately in P20/S36 of Chevron's Title V permit and its operation is not covered by this evaluation.

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EMISSIONS CALCULATIONS:

Emissions are generated from two sources in the subject permit unit: from the atmospheric process vents discussed above in the Process Description section and from fugitive components.

Process Vents

The modification proposed under A/N 523950 will not affect emissions from the process vents. No emission increase will occur as a result of the proposed modification.

The total emissions from the process vents is limited to 2.5 lb VOC/MMSCF H₂ produced under District Rule 1189 and permit condition S2.1. At maximum production level of 74 MMSCF H₂/day, total process vent emissions are calculated as shown below:

$$\frac{2.5 \text{ lb VOC}}{\text{MMSCF H}_2} \times \frac{74 \text{ MMSCF H}_2}{\text{day}} = 185 \text{ lb/day}$$

As shown below in Table 5, process vent emissions as reported during annual Rule 1189 compliance testing have been consistently below 185 lb/day (and 2.5 lb / MMSCF).

Table 5 – Summary of Rule 1189 Annual Test Results (VOC)

Year	Deaerator (D3371)		CO ₂ Vent (D3839)		Total			Rule Limit
	ppmvd	lb/hr	ppmvd	lb/hr	lb/hr	lb/day	lb/MMSCF	lb/MMSCF
2010	55,606	3.10	44.7	2.50	5.60	134.4	2.04	2.5
2009	56,778	1.31	20.2	1.39	2.70	64.80	0.99	2.5
2008	68,967	0.61	35.6	2.09	2.70	64.90	1.08	2.5
2007*	19,239	1.04	11.9	0.71	1.75	42.00	0.71	2.5
2006*	22,454	0.26	19.7	1.29	1.56	37.32	0.61	2.5

**The District's STE Department found calculation errors in the source test reports submitted in 2006 and 2007 and the results presented here are the District's corrected values.*

Fugitives

There will be no increase in fugitive emissions from the proposed modification under A/N 523950. As can be seen in Table 4 above, the gas to be processed by this equipment does not contain VOC.

See Attachment C for fugitive component counts and emission calculations for the permit unit, along with relevant post-modification fugitive component counts from prior modifications to the plant.

Total Emissions

The NSR Update function will be used to correct the P/C emissions for previous A/N 457257 in order to ensure the NSR Database correctly reflects the maximum permitted emissions (see Memo to File dated 6/30/11 in Attachment B for further details).

Table 8 below summarizes the fugitive and process vent emissions from the SNR plant permit unit.

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Table 8 – Summary of ROG Emissions for SNR Plant

Source of Emissions	Fugitives	Process Vents	Total
ROG (lb/day)	185	127	312

Table 9 shows the total emissions to be entered into the NSR database for the subject A/N 523950.

Table 9 – NSR Emissions for A/N 523950

Pollutant	R1 (lb/hr)			R2 (lb/hr)			30DA (lb/day)			Yearly (lb/yr)		
	Pre-Mod	Post-Mod	Δ	Pre-Mod	Post-Mod	Δ	Pre-Mod	Post-Mod	Δ	Pre-Mod	Post-Mod	Δ
ROG	12.82	12.82	0	12.82	12.82	0	312	312	0	112,012.27	112,012.27	0

COMPLIANCE HISTORY:

Chevron was issued NOV #P48124 on 3/6/08 for failing to vent gases to the ground flare during a startup on 2/21/08. This violation occurred because a high temperature alarm in the flare triggered an automatic isolation of the flare and the hydrogen vent gas from the SNR plant was automatically directed to atmosphere. This violation is now closed. There is no record of any other compliance issues relating to the SNR plant in the past 5 years.

Chevron El Segundo Refinery is currently operating in compliance.

See Attachment A for facility Compliance History.

PERMIT CONDITION COMPLIANCE CHECK:

- S2.1 As verified by annual Rule 1189 Source Test Reports, emissions from process vents at the SNR plant remain under the applicable Rule 1189 emission limit of 2.5 lb VOC / MMSCF. See Table 5 above. The proposed modification will not affect compliance with this condition.
- S13.2 The new vessel proposed to be installed will not be opened to atmosphere unless it is out of service and has been cleaned, isolated, and emptied in accordance with Rule 1123.
- S13.4 As verified by annual Rule 1189 Source Test Reports, emissions from process vents at the SNR plant remain under the applicable Rule 1189 emission limit of 2.5 lb VOC / MMSCF. See Table 5 above. The proposed modification will not affect compliance with this condition.
- S15.7 This condition specifies the emergency venting procedure for the system. With the exception of the devices listed in this condition which go to atmosphere, emergency vent gases from P6/S4 are permitted to go to the FCCU (P20/S3), LSFO (P20/S7), or Alky (P20/S23) flares per condition S18.7. The proposed modification will not affect compliance with this condition.
- S15.10 This condition specifies the normal venting procedure for the system. With the exception of the devices listed in this condition which go to atmosphere, normal vent gases from P6/S4 are permitted to go to the Coker Blowdown (P2/S5) or Refinery Blowdown Gas Recovery

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(P20/S10) systems per condition S18.12. The proposed modification will not affect compliance with this condition.

S15.20 This condition is being removed and replaced with an E336.x series condition to clarify the venting requirements for device D4114 (the only device subject to this condition).

S31.12 Chevron is in compliance with the BACT requirements for fugitive components. Chevron submitted a final fugitive count with reasons why bellow seal valves were not used, where applicable, following the most recent physical modification to the plant under A/N 358451 (P6/S4 – subject permit unit) and 371111 (P6/S5 – SNR Heater permit unit). Because the fugitive component counts submitted for the modifications covered under 358451 and 371111 did not distinguish between the plant and heater permit units, a new component count was requested in order to establish a baseline for the subject permit unit. The proposed modification will not affect compliance with this condition (no new fugitive components subject to Rule 1173).

C6.8 This condition limits the temperature of the water wash column to less than 120°F in order to ensure efficient condensation and thus removal of methanol-laden condensate. As verified by records submitted in a 6/29/11 email from Mély Escalante-Henricks, Chevron continuously monitors this temperature and maintains it to be less than 120°F (max 82°F in past 30 days). The proposed modification will not affect compliance with this condition.

C8.11 This condition requires the water circulation flow rate through the water wash column be greater than 10 gpm in order to ensure efficient removal of entrained VOCs from the CO₂ stream. As verified by records submitted in 7/8/11 and 7/14/11 emails from Mély Escalante-Henricks, Chevron continuously monitors this flow rate and maintains it above 10 gpm (>12.9 gpm in past 30 days, >10.45 gpm in the 30 days prior to LTS catalyst change out when the unit was not shut down and >12.9 gpm following LTS catalyst change out).

D12.23 This condition limits the differential pressure across the water wash column to be no more than 15" H₂O. As verified by records submitted in a 6/29/11 email from Mély Escalante-Henricks, Chevron continuously monitors the pressure drop across the column and maintains it below 15" (max 5.3" in past 30 days).

D28.4 This condition is being removed, as the initial baseline and post-modification source tests required have already been performed and source test report submitted (see STID R03460).

D28.24 This condition is being modified to more clearly reflect that it requires an annual test for both the CO₂ vent (D3839) and the Deaerator (D3371) for Rule 1189 compliance. Chevron has submitted annual source test reports for VOC emissions from these vents, as required by this condition and under Rule 1189 (see Attachment D). Chevron submitted results from CO testing of these vents upon request. The test results show compliance with all relevant permit limits (see Table 6 and Rule 407 eval below). The proposed modification will not affect compliance with this condition.

E336.x This is a new condition being added to clarify the venting requirements for device D4114.

H23.19 This condition subjects the permit unit to Rule 1173 and NSPS Subpart GGG for VOC emissions from fugitive components. It is tagged to the fugitive emissions miscellaneous device, as well as the feed gas and hydrogen product compressors. Chevron remains in

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compliance with Rule 1173 and Subpart GGG (see Rule Evaluation section below). The proposed modification will not affect the applicability determination for Rule 1173 or Subpart GGG vs. GGGa. The proposed modification will not affect compliance with this condition (no new fugitive components subject to Rule 1173 or Subpart GGG).

RULE EVALUATION:

PART 1: SCAQMD REGULATIONS

REG II: PERMITS

Rule 212: Standards for Approving Permits

11/14/97

Rule 212 requires public notice if any of the following subparts are applicable

- (c)(1): The source is located within 1000 feet of a school
- (c)(2): The source has emission increases exceeding the following thresholds from 212(g), all in lbs/day:

CO: 220	ROG: 30	PM10: 60
NOx: 40	Pb: 3	
- (c)(3): The source generates emissions of toxic air contaminants for which the MICR is above one in a million for the subject equipment or for which MICR is above ten in a million for the facility.

The proposed modification does not result in an emission increase and the subject equipment is not located within 1,000 feet of a school. No public notice is required.

REG IV: PROHIBITIONS

Rule 401: Visible Emissions

11/9/01

This rule prohibits the discharge of emissions with greater opacity than Ringelmann No. 1, with some exemptions. The only potential sources of emissions at the SNR plant are the reformer heater and the ground flare, both of which are permitted separately from the subject hydrogen production equipment. The proposed modification is not expected to have emissions to the atmosphere during normal operation. Therefore, no visible emissions are expected. Continued compliance is expected.

Rule 402: Nuisance

5/7/76

This rule prohibits the discharge of air contaminants that cause injury, detriment, nuisance, or annoyance to a considerable number of persons; endanger the comfort, health, or safety of any person; or cause injury to property. The only potential sources of nuisance emissions at the SNR plant are the reformer heater and the ground flare, both of which are permitted separately from the subject hydrogen production equipment. The proposed modification is not expected to have emissions to the atmosphere during normal operation. Therefore, no nuisance emissions are expected. Continued compliance is expected.

Rule 403: Fugitive Dust

6/3/05

This rule limits the release of particulate matter emitted as a result of anthropogenic fugitive dust sources.

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According to Chevron, the proposed project will not create fugitive dust emissions, because construction of J-1390 will only involve the installation of piping and piping components in an operating area covered with asphalt and concrete.

Fugitive dust emissions are not expected during normal operation of the hydrogen production equipment. Continued compliance is expected.

Rule 404:
2/7/86

Particulate Matter – Concentration

This rule prohibits the discharge of particulate matter in excess of the concentrations listed in Table 404(a).

The only potential sources of PM emissions at the SNR plant are the reformer heater and the ground flare, both of which are permitted separately from the subject hydrogen production equipment.

Rule 407:
4/2/82

Liquid and Gaseous Air Contaminants

This rule limits atmospheric emissions of equipment.

(a)(1): CO Emissions

This subpart prohibits the discharge of CO emissions into the atmosphere greater than 2,000 ppmv averaged over 15 minutes. Emissions during emergencies are exempted from this rule, but emissions during planned startups and shutdowns are required to be in compliance with this limit.

During startups and shutdowns, product hydrogen is vented to the atmosphere for quality control purposes from device D4114 (downstream of the LTS). The CO content in this stream may exceed the Rule 407 limit at these times. These emissions are controlled by venting this stream to the ground flare F-2510 (C4116) at the plant during startups and planned shutdowns, which ensures greater than 98% control of CO emissions.

Chevron was required to perform a source test on the ground flare during the first startup following installation of the flare to ensure compliance with Rule 407. CO emissions of 2.65 ppmv were measured from the flare stack on 7/25/07, demonstrating compliance with the 2,000 ppmv emission limit.

The deaerator and CO₂ atmospheric process vents also have the potential for CO emissions. Chevron is required by permit condition D28.24 to test these vents annually for CO emissions. Previous test results show emissions from both of these vents to be consistently less than the rule limit of 2,000 ppmv (see 7/8/11 email from Mély Escalante-Henricks of Chevron).

Additional vents to atmosphere were identified during the processing of this application as potentially subject to Rule 407 (devices D598, D602, and D3372). According to Chevron's 7/14/11 email, devices D598 and D602 only vent to atmosphere during emergency situations. Therefore, CO emissions from these vents are not subject to Rule 407. However, the vent from D3372 is part of the boiler feed water and periodically vents steam during normal operation. Chevron maintains that D3372 is not expected to vent CO during normal operation. CO emissions could

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potentially occur if there was a leak in the heat exchanger system, but this would be a result of equipment failure and thus would not be subject to Rule 407.

Continued compliance with the emission limit of this rule is expected.

(a)(2)(A): Sulfur Emissions

This subpart limits the sulfur emissions, measured as SO₂, to less than 500 ppmv in the South Coast Air Basin.

As a SO_x RECLAIM source, Chevron is not subject to the SO_x requirements of Rule 407 per District Rule 2001(j) – Rule Applicability. This subpart exempts SO_x RECLAIM sources from the SO_x emissions provisions of the existing District Rules listed in Table 2 of Rule 2001. Rule 407 is listed in Table 2, thus, the refinery is not subject to the sulfur emissions requirements of this rule.

Rule 409
8/7/81

Combustion Contaminants

The purpose of this rule is to limit PM emissions from combustion equipment to less than 0.1 gr/scf calculated at 12% CO₂.

The only combustion sources at the SNR plant are the reformer heater and the flare, both permitted separately from the subject hydrogen production equipment.

REG XI: SOURCE SPECIFIC STANDARDS

Rule 1123:
10/7/90

Refinery Process Turnarounds

The purpose of this rule is to limit the atmospheric emissions during refinery process turnarounds.

Turnarounds conducted at the SNR plant are subject to the atmospheric venting conditions of this rule. New vessel J-1390 will not be opened to atmosphere unless it is out of service and has first been cleaned, isolated, and emptied in accordance with this rule, as verified by 7/8/11 email from Chevron.

Rule 1173:
6/1/07

Control of Volatile Organic Compound Leaks and Releases from Components at Petroleum Facilities and Chemical Plants

The purpose of this rule is to control VOC leaks from components and releases from atmospheric process pressure relief devices. It applies to components at refineries, chemical plants, lubricating oil and grease re-finers, marine terminals, oil and gas production fields, natural gas processing plants, and pipeline transfer stations.

The proposed installation of the new filter/coalescer J-1390 will not increase fugitive emissions, because the new components being installed will handle a stream with less than 10% by weight VOC (as verified by process data submitted in an email from Mély Escalante-Henricks of Chevron on 6/23/11, see Table 4 above). Rule 1173(l)(1)(D) contains an exemption for components handling fluids with VOC content below 10% by weight (note that although methane is present in the stream at ~15% by weight, District Rule 102 specifically exempts methane from the definition of VOC).

Chevron submitted a new fugitive component count for the hydrogen production

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permit unit in order to establish a baseline for the permit unit. This baseline can be found in Attachment C.

Chevron demonstrates ongoing compliance with Rule 1173 through an approved Inspection & Monitoring (I&M) program. Continued compliance with the requirements of this rule is expected.

Rule 1176: VOC Emissions from Wastewater Systems

9/13/96

The purpose of this rule is to limit VOC emissions from wastewater systems located at petroleum refineries, on-shore oil production fields, off-shore oil production platforms, chemical plants, and industrial facilities.

The liquid collected in the proposed filter/coalescer will be recycled back to the CO₂ stripper (C-1380). No new drains will be installed and no existing drains will be abandoned. Compliance with this rule is not expected to be impacted by the proposed project.

Rule 1189: Emissions from Hydrogen Plant Process Vents

1/21/00

This rule limits VOC emissions from hydrogen plant process vents. It applies to all hydrogen plants that produce any hydrogen for use in petroleum refining operations.

(c)(2)(3): Requirements for Existing Hydrogen Plants Constructed On or After January 1, 2003

This subpart limits existing hydrogen plants from emitting no more than 2.5 lbs VOC per MMSCF hydrogen produced.

As confirmed by the results from 5 years of compliance tests, emissions from process vents at the SNR plant remain below this limit. See results in Table 5 above and source test reports and associated District evaluations in Attachment D. The proposed modification will not result in the addition of any process vents subject to this rule. Emissions from the existing vents will not change as a result of the proposed modification.

Note that it was discovered during the processing of this application that there were three periodic vents to atmosphere potentially subject to Rule 1189. According to Chevron's 7/14/11 email, two of these vents (D598 and D602) only go to atmosphere during emergencies. Because these vents do not have atmospheric emissions during normal operation, they are not subject to Rule 1189. However, the third vent (D3372) is a steam vent that periodically vents to atmosphere during normal operation. Although emissions from this vent are not anticipated to be significant, Rule 1189 contains no de minimis exemptions and requires source testing of all continuous and periodic vents at hydrogen plants where VOC emissions are possible. Therefore, Chevron will be informed they must source test the emissions from D3372 during their next annual Rule 1189 test.

Continued compliance with the emission limit is expected. The addition of emissions from D3372 are not expected to significantly impact the total plant emissions, as low VOC emissions are anticipated and the vent only periodically opens to atmosphere.

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(e)(1-5): Monitoring, Reporting, and Recordkeeping Requirements

These subparts lay out the requirements to demonstrate compliance with the limits in this rule. Chevron currently conducts source tests on two process vents at the plant subject to Rule 1189 (deaerator and CO₂ vent) and submits annual source test reports in compliance with this subpart. See Attachment D for copies of source test reports and the District's associated evaluations.

As explained above, the atmospheric process vent from device D3372 will be required to be tested in future Rule 1189 tests.

Continued compliance with the requirements of this rule is expected.

REG XIII: NEW SOURCE REVIEW (NSR)

This regulation applies to new, modified, or relocated sources that increase emissions of any nonattainment air contaminants, ammonia, or ozone-depleting compounds. The South Coast Air Basin is currently in attainment for NO₂, SO₂, CO, and lead and nonattainment for ozone and PM₁₀. VOC and NO_x are precursors for ozone, while VOC, NO_x, and SO_x are precursors for PM₁₀. Therefore, emissions of NO_x, SO_x, PM₁₀ and VOC are evaluated for compliance with NSR.

Note that Chevron is subject to RECLAIM for both NO_x and SO_x, and thus emissions of those pollutants are evaluated under RECLAIM.

Rule 1303: Requirements

12/6/02

(a)(1): Best Available Control Technology

VOC – Process Vents

The proposed modification will not increase emissions from process vents at the SNR plant, and thus no additional BACT requirements are triggered for process vent emissions.

BACT for the existing process vents at the plant is compliance with District Rule 1189. As demonstrated above in Table 5, emissions from the SNR plant remain below the applicable rule limit of 2.5 lb VOC per MMSCF H₂ produced and Chevron demonstrates ongoing compliance through annual source tests.

VOC – Fugitives

The proposed modification will not generate VOC fugitive emissions and thus BACT is not triggered for any new fugitive components installed.

BACT for the existing fugitive components in the permit unit is compliance with District Rule 1173. The facility is currently in compliance with all leak detecting and reporting (LDAR) requirements of Rule 1173 through participation in a District-approved I&M program. Chevron has installed bellows seal valves in the hydrogen production permit unit when possible, and documented why bellows seal valves were not installed when not possible (see previous P/C folders and Attachment C). The facility is also subject to the LDAR requirement of 40 CFR 60 Subpart GGG. Permit conditions S31.12 and H23.19 ensure continued compliance with Rule 1173

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and Subpart GGG.

(b)(1): Modeling

The proposed project does not result in any emission increase.

(b)(2): Offsets

ERCs are not required, as the proposed modification does not result in an emission increase.

(b)(3): Sensitive Zone Requirements

N/A. No ERCs required.

(b)(4) Facility Compliance

As explained in the Compliance History section above, and based on a review of the Compliance database for the facility, Chevron El Segundo Refinery is currently operating in compliance.

(b)(5) Major Polluting Facilities

Chevron meets the definition of a major polluting facility. However, because the proposed modification will not result in an emission increase, it is not considered a Major Modification. Therefore, the requirements of this section do not apply.

Continued compliance with the NSR requirements of Rule 1303 is expected.

REG XIV: TOXIC AIR CONTAMINANTS

Rule 1401: New Source Review of Toxic Air Contaminants

9/10/10

This rule specifies limits for MICR, cancer burden, and noncancer acute/chronic hazard index for new permit units, relocations, or modifications to existing permit units which emit toxic air contaminants listed in Table I of this rule. This application is subject to the Rule 1401 version dated 9/10/10 (the current version at the time the subject application was deemed complete).

(d) Requirements

This subdivision limits the calculated health risk resulting from increased toxic emissions to a MICR of less than 1 in a million, cancer burden less than 0.5, and acute and chronic health indices less than 1.0.

(g)(1)(B) Modification with No Increase in Risk

This subparagraph exempts projects which cause a reduction or no increase in calculated health risk from the requirements of subpart (d). The proposed modification will not result in an increase in toxic emissions and is therefore exempt from the requirements of subdivision (d).

Although Chevron had originally submitted calculations for an increase in fugitive toxic emissions, this was conservatively based on the toxic compounds found in the feed gas to the SNR plant. Updated stream data for the Methanator Feed (see Table 4 and Chevron's 6/29/11 email) shows that no toxic compounds are expected to remain in the gas contacted by the new filter/coalescer, which is considerably downstream of the initial feed to the plant. It should be noted that even the original, conservative

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calculations done by Chevron resulted in an increase in risk far lower than the applicable limits in Rule 1401. These calculations may be found in the Technical Support document submitted by Chevron.

The proposed modification will be in compliance with all requirements of Rule 1401. Note that previous modifications to the subject permit unit have not resulted in any increase in toxic emissions. See P/C folders for more detailed Rule 1401 evaluation.

REG XVII: PREVENTION OF SIGNIFICANT DETERIORATION (PSD)

The goal of PSD is to ensure that air quality in clean areas does not significantly deteriorate while maintaining a margin for future industrial growth. It applies to net emission increases of criteria air pollutants that are currently in attainment. The District has Limited PSD Delegation from EPA (effective July 26, 2007) that gives the District limited responsibility for PSD. The South Coast Air Basin is currently in attainment for NO₂, SO₂, CO, and lead.

A recent EPA Endangerment Finding for greenhouse gases (GHG) means that emissions of GHG need to be evaluated under PSD. Note that ambient air quality standards have not yet been released for GHG. Therefore, as the South Coast Air Basin is *not* in *nonattainment*, GHG emissions are also subject to PSD in South Coast.

The recently promulgated Tailoring Rule specifies that GHG emissions must be evaluated under PSD for permits issued after January 2nd, 2011 for projects at existing PSD or Title V sources in South Coast according to a phased-in applicability time frame. The subject equipment is located at a Title V facility. Note that because this modification is expected to take place after July 1, 2011, the Tailoring Rule Step 2 would apply. This means that a significant emission increase of GHGs can itself trigger PSD for modifications (rather than only being evaluated as a part of "anyway" modifications that trigger PSD due to increases in other regulated pollutants).

As a conservative estimate, the entire 1.12 lb/day fugitive emissions previously estimated by Chevron for the proposed modification (prior to discovering the stream contained less than 10% VOC) may be assumed to be CH₄, which is a GHG.

Mass based emission: 1.12 lb/day = 0.2 tpy CH₄
 CO₂e emissions: (0.2 tpy) x (GWP of 21) = 4.2 tpy CO₂e

As 4.2 tpy CO₂e is far below the Significance Threshold of 75,000 tpy CO₂e, PSD is not triggered and no further analysis is required.

REG XX: REGIONAL CLEAN AIR INCENTIVE MARKET (RECLAIM)

RECLAIM is a market incentive program designed to allow facilities flexibility in achieving emission reduction requirements for NO_x and SO_x. Chevron is currently subject to RECLAIM requirements for both NO_x and SO_x as a Cycle 2 facility.

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The subject hydrogen production equipment does not generate emissions of either NO_x or SO_x and is therefore not subject to any RECLAIM requirements. The reformer heater at the SNR plant is subject to RECLAIM requirements, but is permitted separately from the subject equipment.

REG XXX: TITLE V PERMITS

The Title V Permit system is the air pollution control permit system required to implement the federal Operating Permit Program as required by Title V of the federal Clean Air Act as amended in 1990. This regulation defines permit application and issuance procedures as well as compliance requirements associated with the program. Chevron was issued an initial Title V permit effective 9/1/09.

Because the proposed modification does not result in an increase in emissions, but also does not meet any of the criteria for an Administrative Revision in District Rule 3000(b)(1), this application qualifies as a Title V **Minor Revision** per Rule 3000(b)(15). This means that EPA review of the draft permit is required, per Rule 3003(j)(1)(A). Public review is not required, per 3006(b). A copy of the final permit will also be submitted to the EPA within 5 working days of its issuance, per Rule 3003(j)(1)(E).

PART II: STATE REGULATIONS

CEQA: CALIFORNIA ENVIRONMENTAL QUALITY ACT

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. CEQA defines "significant" by the following net emission increase thresholds (all in lb/day):

ROG: 55 PM₁₀: 150 CO: 274

The proposed modification will not result in a significant emission increase. As verified by the 400-CEQA screening checklist submitted by Chevron, the proposed modification does not trigger further CEQA analysis.

PART III: FEDERAL REGULATIONS

40CFR: PROTECTION OF ENVIRONMENT

Part 60: Standards of Performance for New Stationary Sources (NSPS)

Subpart J: Standards of Performance for Petroleum Refineries

The subject hydrogen production equipment does not contain any combustion equipment subject to this regulation. This regulation is potentially applicable to the reformer heater and ground flare at the SNR plant but they are permitted separately and their operation is not evaluated here.

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

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Subpart GGG applies to all compressors and equipment in VOC service, which is defined as equipment which contacts “process fluid that is at least 10 percent VOC by weight.” The components at the SNR plant that contact streams with greater than 10% VOC are subject to Subpart GGG. The Fugitive Emissions, Miscellaneous device and the feed gas and product hydrogen compressors are tagged with permit condition H23.19, which subjects these components to Subpart GGG.

The proposed modification does not affect the applicability determination for GGG / GGGa, as the new components will not be in VOC service.

Part 61: National Emissions Standards for Hazardous Air Pollutants (NESHAPS)

Subpart FF: National Emission Standards for Benzene Waste Operations

Chevron is subject to the control requirements of this regulation since the Total Annual Benzene (TAB) for the refinery is above the 10 Mg/yr threshold. This regulation contains standards for storage tanks, surface impoundments, containers, individual drain systems, oil-water separators, treatment processes, and closed vent systems/control devices.

Compliance with the requirements of this regulation will not be impacted by this project since the SNR plant does not handle, create, or process any benzene waste.

Part 63: National Emissions Standards for Hazardous Air Pollutants (NESHAPS)

Subpart CC: National Emissions Standards for Hazardous Air Pollutants from Petroleum Refineries

This subpart applies to petroleum refining sources and related emission sources that are specified in §§63.640(c)(5)-(c)(7) that are located in a major source and emit or have equipment contacting one or more of the hazardous air pollutants (HAPs) listed in Table 1 of this subpart. The following exemptions are included in the definition of miscellaneous process vents in §63.641:

Miscellaneous process vent means a gas stream containing greater than 20 parts per million by volume organic HAP... Miscellaneous process vents do not include:

(4) Episodic or nonroutine releases such as those associated with startup, shutdown, malfunction, maintenance, depressuring, and catalyst transfer operations;

(14) Hydrogen production plant vents through which carbon dioxide is removed from process streams or through which steam condensate produced or treated within the hydrogen plant is degassed or deaerated.

This means that none of the process vents in the subject hydrogen production permit unit qualify as miscellaneous process vents and thus are all exempt from the requirements of this subpart: venting during startup and shutdown is exempted under §63.641(4), and venting from the deaerator and CO₂ vents is exempted under §63.641(14). No other streams in the hydrogen production permit unit meet the definition of other emissions sources listed in §§63.640(c)(1)-(c)(8) and are therefore not subject to the requirements of this subpart. The proposed modification does not affect this applicability determination.

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The equipment leak standards specified in Subpart CC also do not apply to the subject permit unit, as the equipment does not handle streams with HAP greater than 5% by weight.

Continued compliance is expected.

RECOMMENDATION:

The subject equipment is currently in compliance with and the proposed modification is expected to comply with all applicable District, State, and Federal rules and regulations. Permit to Construct and Operate under A/N 523950 is recommended with the conditions listed in the Conditions section above. Additionally, conversion of previous PCs issued under A/N 457257 and 407863 to POs is also recommended. Because issuance of PC/PO to A/N 523950 will supersede all previous open PCs and POs, A/N 457257 and 407863 will be automatically inactivated in the system.