

## **DRAFT Facility Permit**

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**Catalytic Reforming Heaters (Process 3, System 2)**  
**Catalytic Reforming Selective Catalytic Reduction (Process 3, System 3)**





**FACILITY PERMIT TO OPERATE  
PARAMOUNT PETR COPR (EIS USE)**

**SECTION H: PERMIT TO CONSTRUCT AND TEMPORARY PERMIT TO OPERATE**

The operator shall comply with the terms and conditions set forth below:

Equipment	ID No.	Connected To	RECLAIM Source Type/ Monitoring Unit	Emissions * And Requirements	Conditions
<b>Process 3 : CATALYTIC REFORMING</b>					
<b>System 2: HEATERS</b>					
HEATER, H-303, REFINERY GAS, UNIVERSAL OIL PRODUCTS, REFORMER CHARGE, WITH LOW NOX BURNER, 48 MMBTU/HR WITH A/N: 491590 Permit to Construct Issued: 02/18/09  BURNER, JOHN ZINK, MODEL PSFFG-10M, 24 LOW NOX BURNERS, WITH LOW NOX BURNER	D73	C77	NOX: MAJOR SOURCE**; SOX: MAJOR SOURCE**	CO: 2000 PPMV (5)[RULE 407, 4-2-1982]; PM: 0.1 GRAINS/SCF (5)[RULE 409, 8-7-1981]; PM: (9)[RULE 404, 2-7-1986]	B61.2, C1.35, D90.7, D328.2, H23.4, I1.5
HEATER, H-304, REFINERY GAS, UNIVERSAL OIL PRODUCTS, REFORMER CHARGE, WITH LOW NOX BURNER, 48 MMBTU/HR WITH A/N: 491589 Permit to Construct Issued: 02/18/09  BURNER, JOHN ZINK, MODEL PSFFG-10M, 24 LOW NOX BURNERS, WITH LOW NOX BURNER	D74	C77	NOX: MAJOR SOURCE**; SOX: MAJOR SOURCE**	CO: 2000 PPMV (5)[RULE 407, 4-2-1982]; PM: 0.1 GRAINS/SCF (5)[RULE 409, 8-7-1981]; PM: (9)[RULE 404, 2-7-1986]	B61.2, C1.35, D90.7, D328.2, H23.4, I1.5
HEATER, H-305, REFINERY GAS, UNIVERSAL OIL PRODUCTS, REFORMER REHEAT, WITH LOW NOX BURNER, 38.43 MMBTU/HR WITH A/N: 491588 Permit to Construct Issued: 02/18/09  BURNER, JOHN ZINK, MODEL UOV-4", 18 LOW NOX BURNERS, WITH LOW NOX BURNER	D75	C77	NOX: MAJOR SOURCE**; SOX: MAJOR SOURCE**	CO: 400 PPMV (5A)[RULE 1146, 11-17-2000]; CO: 2000 PPMV (5)[RULE 407, 4-2-1982]; PM: (9)[RULE 404, 2-7-1986] PM: 0.1 GRAINS/SCF (5) [RULE 409, 8-7-1981]	B61.2, D90.7, D328.2, H23.4, I1.5

\* (1)(1A)(1B) Denotes RECLAIM emission factor  
(3) Denotes RECLAIM concentration limit  
(5)(5A)(5B) Denotes command and control emission limit  
(7) Denotes NSR applicability limit  
(9) See App B for Emission Limits  
(2)(2A)(2B) Denotes RECLAIM emission rate  
(4) Denotes BACT emission limit  
(6) Denotes air toxic control rule limit  
(8)(8A)(8B) Denotes 40 CFR limits (e.g. NSPS, NESHAPS, etc.)  
(10) See Section J for NESHAP/MACT requirements

\*\* Refer to Section F and G of this permit to determine the monitoring, recordkeeping and reporting requirements for this device.



## FACILITY PERMIT TO OPERATE PARAMOUNT PETR COPR (EIS USE)

### SECTION H: PERMIT TO CONSTRUCT AND TEMPORARY PERMIT TO OPERATE

The operator shall comply with the terms and conditions set forth below:

Equipment	ID No.	Connected To	RECLAIM Source Type/ Monitoring Unit	Emissions * And Requirements	Conditions
<b>Process 3 : CATALYTIC REFORMING</b>					
HEATER, H-306, REFINERY GAS, UNIVERSAL OIL PRODUCTS, REFORMER NO. 2 REHEAT, WITH LOW NOX BURNER, 27.72 MMBTU/HR WITH A/N: 491587 Permit to Construct Issued: 02/18/09  BURNER, JOHN ZINK, MODEL PSFFG-10m, 12 LOW NOX BURNERS, WITH LOW NOX BURNER	D76	C77	NOX: MAJOR SOURCE**; SOX: MAJOR SOURCE**	CO: 400 PPMV (5A)[RULE 1146, 11-17-2000]; CO: 2000 PPMV (5)[RULE 407, 4-2-1982]; PM: 0.1 GRAINS/SCF (5)[RULE 409, 8-7- 1981]; PM: (9)[RULE 404, 2-7- 1986]	B61.2, C1.36, D90.7, D328.2, H23.4, I1.5
<b>System 3: SELECTIVE CATALYTIC REDUCTION</b>					
SELECTIVE CATALYTIC REDUCTION, VANADIUM OXIDE AND TUNGSTEN OXIDE BASED CATALYST, ENGELHARD CATALYST VOLUME 119.32 CU FT OR HALDOR TOPSOE CATALYST VOLUME 134 CU. FT, WIDTH: 7 FT 8.4IN; HEIGHT: 1 FT 10.8 IN, LENGTH: 10 FT 9.6 IN WITH  A/N: 487936 Permit to Construct Issued: 02/18/09  AMMONIA INJECTOR, AQUEOUS AMMONIA	C77	D73 D74 D75 D76		NH3: 18 PPMV (5) [RULE 1303(A)(1)-BACT,5-10-1996; RULE 1303(A)(1)-BACT, 12-6- 2002]	D28.7, E57.1, E73.1

- (1)(1A)(1B) Denotes RECLAIM emission factor
- (3) Denotes RECLAIM concentration limit
- (5)(5A)(5B) Denotes command and control emission limit
- (7) Denotes NSR applicability limit
- (9) See App B for Emission Limits
- (2)(2A)(2B) Denotes RECLAIM emission rate
- (4) Denotes BACT emission limit
- (6) Denotes air toxic control rule limit
- (8)(8A)(8B) Denotes 40 CFR limits (e.g. NSPS, NESHAPS, etc.)
- (10) See Section J for NESHAP/MACT requirements

\*\* Refer to Section F and G of this permit to determine the monitoring, recordkeeping and reporting requirements for this device.



**FACILITY PERMIT TO OPERATE  
PARAMOUNT PETR CORP (EIS USE)**

SECTION H: PERMIT TO CONSTRUCT AND TEMPORARY PERMIT TO OPERATE  
The operator shall comply with the terms and conditions set forth below:

**DEVICE CONDITIONS**

**B. Material/Fuel Type Limits**

B61.2 The operator shall not use fuel containing the following specified compounds:

Compound	ppm by volume
H2S greater than	160

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

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

[Devices subject to this condition : D27, D29, D30, D31, D44, D45, D46, D73, D74, D75, D76, C175]

**C. Throughput or Operating Parameter Limits**

C1.35 The operator shall limit the firing rate to no more than 48 MM Btu per hour.

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

[Devices subject to this condition : D73, D74]

C1.36 The operator shall limit the firing rate to no more than 27.7 MM Btu per hour.

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

[Devices subject to this condition : D76]



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**FACILITY PERMIT TO OPERATE  
PARAMOUNT PETR CORP (EIS USE)**

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**SECTION H: PERMIT TO CONSTRUCT AND TEMPORARY PERMIT TO OPERATE**  
The operator shall comply with the terms and conditions set forth below:

**D. Monitoring/Testing Requirements**

D28.7 The operator shall conduct source test(s) in accordance with the following specifications:

The test shall be conducted to determine NH<sub>3</sub> emissions at the outlet.

The test shall be conducted at least once every three years.

The test shall be conducted when the equipment being vented by the SCR are operating under normal conditions.

[RULE 1303(a)(1)-BACT, 5-10-1996; RULE 1303(a)(1)-BACT, 12-6-2002;RULE 3004(a)(4)-  
Periodic Monitoring, 12-12-1997]

[Devices subject to this condition: C77]

D90.7 The operator shall continuously monitor the H<sub>2</sub>S concentration in the fuel gases before being burned in this device according to the following specifications:

The operator shall use an NSPS Subpart J approved instrument meeting the requirements of 40CFR 60 Subpart J to monitor the parameter.

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

The operator may monitor the H<sub>2</sub>S concentration at a single location for fuel combustion devices, if monitoring at this location accurately represents the concentration of H<sub>2</sub>S in the fuel gas being burned in this device

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

[Devices subject to this condition : D27, D44, D46, D73, D75, D76, C175]



## FACILITY PERMIT TO OPERATE PARAMOUNT PETR CORP (EIS USE)

### SECTION H: PERMIT TO CONSTRUCT AND TEMPORARY PERMIT TO OPERATE

The operator shall comply with the terms and conditions set forth below:

- D328.1 The operator shall determine compliance with the CO emission limit(s) either: (a) conducting a source test at least once every five years using AQMD Method 100.1 or 10.1; or (b) conducting a test at least annually using a portable analyzer and AQMD-approved test method. The test shall be conducted when the equipment is operating under normal conditions to demonstrate compliance with the CO concentration limit(s). The operator shall comply with all general testing, reporting, and recordkeeping requirements in Sections E and K of this permit.

[RULE 1146, 11-17-2000; RULE 3004(a)(4)-Periodic Monitoring, 12-12-1997; RULE 407, 4-2-1982]

[Devices subject to this condition : D27, D31, D75, D76, D374]

- D328.2 The operator shall determine compliance with the CO emission limit(s) either: (a) conducting a source test at least once every five years using AQMD Method 100.1 or 10.1; or (b) conducting a test at least annually using a portable analyzer and AQMD-approved test method. The test shall be conducted when the equipment is operating under normal conditions to demonstrate compliance with the CO concentration limit(s). The operator shall comply with all general testing, reporting, and recordkeeping requirements in Sections E and K of this permit.

[RULE 3004(a)(4)-Periodic Monitoring, 12-12-1997; RULE 407, 4-2-1982]

[Devices subject to this condition : D29, D30, D73, D74, D375, D376]

#### E. Equipment Operation/Construction Requirements

- E57.1 The operator shall vent this equipment to dust control equipment whenever SCR catalyst loading/unloading or handling/transport operations produces catalyst fines.

[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: C77, C794, C814]

- E73.1 Notwithstanding the requirements of Section E conditions, the operator is not required to use ammonia injection if any of the following requirement(s) are met:

The temperature at the inlet to the SCR catalyst bed is below 550 deg F

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

[Devices subject to this condition: C77]



**FACILITY PERMIT TO OPERATE  
PARAMOUNT PETR CORP (EIS USE)**

**SECTION H: PERMIT TO CONSTRUCT AND TEMPORARY PERMIT TO OPERATE**

The operator shall comply with the terms and conditions set forth below:

**H. Applicable Rules**

H23.4 This equipment is subject to the applicable requirements of the following rules or regulations:

Contaminant	Rule	Rule/Subpart
H2S	40CFR60, SUBPART	J

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

[Devices subject to this condition :D27, D29, D30, D31, D44, D45, D46, D73, D74, D75, D76, C175, C531]

**I. Administrative**

11.5 The operator shall comply with all the requirements of the Variance, Case No. 2914-93, dated November 6, 2008, in accordance with the Findings and Decisions of the Hearing Board or as subsequently modified by the Hearing Board. The operator shall submit progress reports at least semi-annually, or more frequently if specified in the Findings and Decisions. The progress reports shall contain dates when such activities, milestones or compliance were achieved; and an explanation of why any dates in the schedule of compliance were not, or will not be met, and any preventative or corrective measures adopted.

[RULE 3004(a)(10)(C), 12-12-1997]

[Devices subject to this condition : D73,D74, D75, D76]

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	PROCESSED BY: Cynthia Carter	CHECKED BY <i>QJ</i> <i>TJ</i>

**MODIFICATION  
PERMIT TO CONSTRUCT**

**APPLICANT'S NAME:** PARAMOUNT PETROLEUM CORPORATION  
(FACILITY ID: 800183)

**MAILING ADDRESS:** 14700 DOWNEY AVENUE  
PARAMOUNT, CA 90723

**EQUIPMENT ADDRESS:** SAME AS MAILING ADDRESS

**EQUIPMENT DESCRIPTION:**

Additions to the equipment description are underlined and **bolded**. New and modified conditions are underlined and **bolded**. Deletions to the equipment description and conditions are noted in ~~strikeouts~~.

**Section H of Paramount's Facility Permit, ID# 800183**

(Note that the following equipment under Process 3, System 2 will be moved from Section D to Section H of the facility permit.)

Equipment	ID No.	Connected To	Source Type/ Monitoring Unit	Emissions And Requirements	Conditions
<b>Process 3: CATALYTIC REFORMING</b>					
<b>System 2: HEATERS</b>					
HEATER, H-303, REFINERY GAS, UNIVERSAL OIL PRODUCTS, REFORMER CHARGE, WITH LOW NOX BURNER, 48 MMBTU/HR WITH A/N: 447310 <u>491590</u> <b><u>PERMIT TO CONSTRUCT</u></b> <b><u>ISSUED: TBD</u></b>  BURNER, JOHN ZINK, MODEL PSFFG-10M, 24 LOW NOX BURNERS, WITH LOW NOX BURNER	D73	C77	NOX: MAJOR SOURCE** ; SOX: MAJOR SOURCE**	CO: 2000 PPMV (5)[RULE 407, 4-2-1982]; PM: 0.1 GRAINS/SCF (5)[RULE 409, 8-7-1981]; PM: (9)[RULE 404, 2-7-1986]	C1.35, <u><b>I30.1</b></u>
HEATER, H-304, REFINERY GAS, UNIVERSAL OIL PRODUCTS, REFORMER CHARGE, WITH LOW NOX BURNER, 48 MMBTU/HR WITH A/N: 447311 <u>491589</u> <b><u>PERMIT TO CONSTRUCT</u></b> <b><u>ISSUED: TBD</u></b>  BURNER, JOHN ZINK, MODEL PSFFG-10M, 24 LOW NOX BURNERS, WITH LOW NOX BURNER	D74	C77	NOX: MAJOR SOURCE** ; SOX: MAJOR SOURCE**	CO: 2000 PPMV (5)[RULE 407, 4-2-1982]; PM: 0.1 GRAINS/SCF (5)[RULE 409, 8-7-1981]; PM: (9)[RULE 404, 2-7-1986]	C1.35, <u><b>I30.1</b></u>

**SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT**

**ENGINEERING & COMPLIANCE**

**APPLICATION PROCESSING AND CALCULATIONS**

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APPL. NO.  
MASTER 487936

DATE  
12/16/2008

PROCESSED BY:  
Cynthia Carter

CHECKED BY

Equipment	ID No.	Connected To	Source Type/ Monitoring Unit	Emissions And Requirements	Conditions
<b>Process 3: CATALYTIC REFORMING</b>					
HEATER, H-305, REFINERY GAS, UNIVERSAL OIL PRODUCTS, REFORMER REHEAT, WITH LOW NOX BURNER, 38.43 MMBTU/HR WITH <u>A/N: 361982 491588</u> <u>PERMIT TO CONSTRUCT</u> <u>ISSUED: TBD</u>  BURNER, JOHN ZINK, MODEL UOV-4", 18 LOW NOX BURNERS, WITH LOW NOX BURNER	D75	C77	NOX: MAJOR SOURCE** ; SOX: MAJOR SOURCE**	CO: 2000 PPMV (5)[RULE 407, 4-2-1982]; PM: 0.1 GRAINS/SCF (5)[RULE 409, 8-7-1981]; PM: (9)[RULE 404, 2-7-1986]	<u>I30.1</u>
HEATER, H-306, REFINERY GAS, UNIVERSAL OIL PRODUCTS, REFORMER NO. 2 REHEAT, WITH LOW NOX BURNER, 27.72 MMBTU/HR WITH <u>A/N: 447343 491587</u> <u>PERMIT TO CONSTRUCT</u> <u>ISSUED: TBD</u>  BURNER, JOHN ZINK, MODEL PSFFG-10M, 12 LOW NOX BURNERS, WITH LOW NOX BURNER	D76	C77	NOX: MAJOR SOURCE** ; SOX: MAJOR SOURCE**	CO: 2000 PPMV (5)[RULE 407, 4-2-1982]; PM: 0.1 GRAINS/SCF (5)[RULE 409, 8-7-1981]; PM: (9)[RULE 404, 2-7-1986]	C1.36, <u>I30.1</u>
<b>Process 3: CATALYTIC REFORMING</b>					
<b>System 3: SELECTIVE CATALYTIC REDUCTION</b>					
SELECTIVE CATALYTIC REDUCTION, <u>VANADIUM OXIDE AND TUNGSTEN OXIDE BASED CATALYST, ENGELHARD OR HALDOR TOPSOE</u> , 119.32 CU.FT. capacity, width: 9ft 7.6 in; height: 12 ft 1.75 in; <u>LENGTH: 10.8 FT;</u> <u>WIDTH: 7.7 FT; HEIGHT: 1.9 FT</u>  <u>A/N: 475175 487936</u> <u>PERMIT TO CONSTRUCT</u> <u>ISSUED: TBD</u>  AMMONIA INJECTOR, AQUEOUS AMMONIA  <u>ENGELHARD CATALYST VOLUME 119.32 CU. FT. OR</u>	C77	<u>D73 D74</u> <u>D75 D76</u>		NH3: 18 PPMV (5) [RULE 1303(A)(1)-BACT, 5-10-1996; RULE 1303(A)(1)-BACT, 12-6-2002]	D28.7, E57.1, E73.1, <u>I30.1</u>

<sup>a</sup> Section H of the facility permit does not show the heaters being connected, correction will now be made.

<b>SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT</b>  <i>ENGINEERING &amp; COMPLIANCE</i>  <b>APPLICATION PROCESSING AND CALCULATIONS</b>	<b>PAGES</b> 15	<b>PAGE</b> 3
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	<b>PROCESSED BY:</b> Cynthia Carter	<b>CHECKED BY</b>

<b>Process 3: CATALYTIC REFORMING</b>					
<u>HALDOR TOPSOE</u> <u>CATALYST VOLUME 134 CU.</u> <u>FT.</u>					

**CONDITIONS:**

The following permit conditions shall apply to the subject equipment in order to comply with all applicable District, State, and Federal standards. Additions and deletions to the conditions are noted in underlines and strikeouts, respectively.

**Facility Conditions**

**F48.1** The operator shall not use at this facility anhydrous ammonia in SCR or any other air pollution control systems after March 31, 2009. Moreover, no anhydrous ammonia shall be transported to and from or stored at this facility after March 31, 2009 except in pressurized containers no greater than 50 gallons in capacity. The operator shall convert all selective catalytic reduction (SCR) systems used at this facility to aqueous ammonia by March 31, 2009.

[CA PRC CEQA, 11-23-1970]

**Device Conditions**

**C. Throughput or Operating Parameter Limits**

**C1.35** The operator shall limit the firing rate to no more than 48 MM Btu per hour.

[~~RULE 1303(b)(2)-Offset, 5-10-1996~~; ~~RULE 1303(b)(2)-Offset, 12-6-2002~~]  
[Devices subject to this condition: D73, D74]

**C1.36** The operator shall limit the firing rate to no more than 27.7 MM Btu per hour.

[~~RULE 1303(b)(2)-Offset, 5-10-1996~~; ~~RULE 1303(b)(2)-Offset, 12-6-2002~~]  
[Devices subject to this condition: D76]

**D. Monitoring/Testing Requirements**

**D28.7** The operator shall conduct source test(s) in accordance with the following specifications:

The test shall be conducted to determine the ROG, CO, PM & NH3 emissions at the outlet.  
The test shall be conducted at least once every three years.  
The test shall be conducted when the equipment being vented by the SCR are operating under normal conditions.

[~~RULE 3004(a)(4)-Periodic Monitoring, 12-12-1997~~]  
[Devices subject to this condition: C77]

<b>SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT</b>  <i>ENGINEERING &amp; COMPLIANCE</i>  <b>APPLICATION PROCESSING AND CALCULATIONS</b>	PAGES 15	PAGE 4
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**E. Equipment Operation/Construction Requirements**

E57.1 The operator shall vent this equipment to dust control equipment whenever SCR catalyst loading/unloading or handling/transport operations produces catalyst fines.

[**RULE 1303(a)(1)-BACT, 5-10-1996; RULE 1303(b)(2)-Offset, 5-10-1996**]  
 [Devices subject to this condition: C77, C794]

E73.1 Notwithstanding the requirements of Section E conditions, the operator ~~shall not~~ **is not required** to use ammonia injection if any of the following requirement(s) are met:

The temperature at the inlet to the SCR catalyst bed is below 550 deg F

[**RULE 1303(a)(1)-BACT, 5-10-1996; RULE 1303(a)(1)-BACT, 12-6-2002**]  
 [Devices subject to this condition: C77]

*Note: This condition's temperature will remain the same for both proposed catalysts. According to the facility, both catalysts have the same chemical base*

**I. Administrative**

I30.1 In accordance with Rule 3002(a)(3), the permit for this equipment is being issued as a non-Title V permit.

The facility permit holder shall file an application for a Title V permit revision for this equipment within 90 days of the issuance of the facility's initial Title V permit.

[**RULE 3002, 11-14-1997**]  
 [Devices subject to this condition : **D73, D74, D75, D76, C77**]

**COMPLIANCE RECORD REVIEW:**

As of November 10, 2008, a check of the AQMD Compliance Database for the past two years showed that this facility was issued 3 Notices of Violations (NOVs) and 2 Notices to Comply (NCs); however, none of the notices are for the subject equipment in this evaluation except for one NOV (P45644). For detailed violation descriptions, refer to Appendix A.

NOV # P45644 was issued for four (4) Reforming Heaters H-303, H-304, H-305, and H-306 that failed to continuously measure emissions. Since Paramount is in the RECLAIM program, they failed to comply with Rule 2012(c)(2)(A). Apparently during start-up, when the SCR breaks down, or any other unforeseen operational malfunctions, the heaters vent to the bypass stacks, which are not equipped with Continuous Emissions Monitoring System (CEMS). The current design of the bypass stacks make it difficult to set up a CEMS. The Hearing Board granted Paramount a variance until January 29, 2009, but it does not solve the compliance issue. A letter dated October 31, 2008, from AQMD's Deputy Executive Officer, Mohsen Nazemi, states that Paramount can only vent to the bypass stacks when Rule 430- Breakdown Provisions, or Rule 2005(i)-Breakdown Provisions apply provided that the fuel supply to the heaters are shut down before opening the bypass stacks.

After having an internal discussion on October 31, 2008 with AQMD's Senior Manager Jay Chen and Senior Engineer Paul Park, Mr. Chen concluded that issuing the PC for the SCR should be OK since the facility is currently not venting to the bypass stacks anymore.

See Attachment I for all relevant documents pertaining to this NOV # P45644.

**BACKGROUND:**

This evaluation covers *one* application for Selective Catalytic Reduction (SCR) system, *four* applications for the heaters, and a facility amendment application, as listed in Table 1. The modifications are as follows:

- Replace SCR Catalyst (Device C77)
- Change equipment description to list two equivalent replacement catalyst

Paramount submitted an application under A/N 487936 to replace their original catalyst (Engelhard) that was installed in 1988. Paramount has requested to list two equivalent manufacturers on the permit: Engelhard and Haldor-Topsoe. During Paramount's next turnaround, they are replacing and adding additional catalyst of Haldor-Topsoe to fit within the existing module to achieve lower NO<sub>x</sub> levels. Apparently when the SCR was first designed, the design gave more room for additional catalyst.

At the District's request, Paramount submitted four (4) applications for the all the heaters the SCR serves. These applications were needed to ensure compliance with the basic equipment (heaters).

**Table 1- Submitted Applications**

A/N	Date Received	Equipment	Device ID	Requested Action	Previous A/N
487936	10/03/2008	Selective Catalytic Reduction System	C77	• Replace catalyst	475175
491587	10/17/2008	Heater H-306	D76	• District's request to submit basic equipment to ensure compliance with new catalyst.	447313
491588	10/17/2008	Heater H-305	D75	• District's request to submit basic equipment to ensure compliance with new catalyst.	361982
491589	10/17/2008	Heater H-304	D74	• District's request to submit basic equipment to ensure compliance with new catalyst.	447311
491590	10/17/2008	Heater H-303	D73	• District's request to submit basic equipment to ensure compliance with new catalyst.	447310
491361	10/17/2008	RECLAIM Facility Permit Amendment	N/A	• Revise RECLAIM Permit	N/A

**PERMIT HISTORY:**

Tables 2 lists the permitting history submitted along with the modifications. An extensive permit history was done because the SCAQMD's Permit Administrative and Application Tracking System does not show the correct history. The history also shows the permit unit to be considered **post-NSR**.

Table 2- Permit History for SCR

Permit to Construct		Permit to Operate		Description of Modification
A/N	Issue Date	A/N	Issue Date	
225296	5/8/1991	225296	4/20/1993	• Constructed SCR per Rule 1109 compliance
N/A	N/A	321031	7/13/2007	• Change of Condition to lower ammonia injection temperature to 550 degrees F instead of 575 degrees F.
440625	PENDING	N/A	N/A	• Tie in the SCR with the Flare System
450168	CANCELLED	N/A	N/A	• Rejected because Paramount no longer wished to pursue the proposal of retrofitting the existing SCR serving the reformer heaters
475175	7/25/2008	N/A	N/A	• Convert SCR to use aqueous ammonia instead of anhydrous ammonia.

**FEE EVALUATION:**

The fees paid for the applications submitted are as follows:

Table 3-Application Fees Submitted

A/N	Equipment	BCAT/ CCAT	Type	Status	Fee Schedule, FY 08-09	Fee Required, \$	Fees Paid, \$
487936	Selective Catalytic Reduction	81	50	20	C	\$3,244.91	\$3,244.91
	Expedited Permit Processing pursuant to Rule 301(u)	--	--	--	--	\$1,622.46	\$1,622.46
491587	Heater H-306	019604	50	20	D	\$4,478.51	\$4,478.51
491588	Heater H-305	019604	50	20	D	\$2,239.26*	\$2,239.26
491589	Heater H-304	019604	50	20	D	\$2,239.26*	\$2,239.26
491590	Heater H-303	019604	50	20	D	\$2,239.26*	\$2,239.25
491361	RECLAIM Facility Amendment Fee	555010	80	20	--	\$843.80	\$843.80
Total:						\$16,907.46	\$16,907.45
Net Fee Due:						\$0.01	

\* Fee based on Rule 301(c)(1)(F) Identical Equipment, 50% of the applicable permit processing fee for each additional equipment assessed.

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	PROCESSED BY: Cynthia Carter	CHECKED BY

**PROCESS DESCRIPTION:**

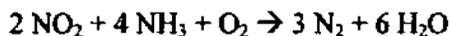
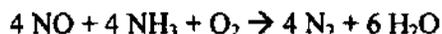
**Overview of the Unit:** Catalytic reforming is a chemical process used to convert naphtha, typically having low octane ratings, into high-octane liquid products called reformates which are components of high-octane gasoline. Basically, the process re-arranges the hydrocarbon molecules in the naphtha feedstock as well as breaking some of the molecules into smaller molecules. The overall effect is that the product reformates contains hydrocarbons with more complex molecular shapes having higher octane values than the hydrocarbons in the naphtha feedstock. The process separates hydrogen atoms from the hydrocarbon molecules and produces significant amounts of byproduct hydrogen gas for use in a number of the other processes involved in a modern petroleum refinery. Other byproducts are small amounts of methane, ethane, propane and butanes.

**Basic Equipment:** The basic equipment is made up of four heaters (H-303, H-304, H-305, and H-306). The heaters are part of the Naphtha Catalytic Reforming Unit. The purpose of the Reformer heaters is to heat the product to certain temperatures (950° F) so the chemical reaction can take place in the reformer reactor. These heaters run on refinery gas with a total heat input of 162.15 MM Btu/hr. All the subject heaters have no NO<sub>x</sub> condition.

**Control Equipment:** Selective catalytic reduction (SCR) is a means of reducing nitrogen oxides (NO<sub>x</sub>) emissions by converting NO<sub>x</sub> with the aid of a catalyst into Nitrogen (N<sub>2</sub>) and water (H<sub>2</sub>O). By March 31, 2009, Paramount will have converted their gaseous reductant, aqueous ammonia from anhydrous ammonia. Hence, aqueous ammonia will be added to a stream of flue/exhaust gas and is absorbed onto a catalyst. Carbon dioxide (CO<sub>2</sub>) is a reaction product when urea is used as the reductant.

The NO<sub>x</sub> reduction reaction takes place as the gases pass through the catalyst chamber. Before entering the catalyst chamber the ammonia is injected and mixed with the gases. The chemical equation for a stoichiometric reaction using aqueous ammonia for a selective catalytic reduction process is as follows:

The conversion of NO<sub>x</sub> follows the reactions below:



Flue gas at temperatures above approximately 500°F will be injected with NH<sub>3</sub> to provide the reactant necessary to perform the destruction of NO<sub>x</sub>. Hot air (as a carrier gas) will be blended with aqueous ammonia at the ammonia skid to produce an air/ammonia stream at about 300°F. This hot air/ammonia stream will be injected into the flue gas by means of a set of spargers designed to uniformly distribute the air/ammonia stream into the flue gas. This mixed stream will pass through the SCR catalyst, where the NO<sub>x</sub> destruction will occur.

SCR catalysts are manufactured from various ceramic materials used as a carrier, such as titanium oxide, and active catalytic components are usually oxides of base metals (such as vanadium and

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tungsten), zeolites, and various precious metals. Zeolite catalysts have the potential to operate at significantly higher temperatures (1200°F) than base metal catalysts. Haldor Topsoe DNX-920 and Engelhard catalysts are vanadium and tungsten based catalysts.

The two most common designs of SCR catalyst geometry used today are honeycomb and plate. Plate type catalysts have lower pressure drops and are less susceptible to plugging and fouling than the honeycomb types, however plate type configuration are significantly larger and more expensive. Honeycomb configurations are significantly smaller than plate types, but have higher pressure drops and plug much more easily. In this replacement, the pressure drops are 4 inches of water for both catalysts.

Paramount plans to replace its Reformer Heater's current Engelhard SCR catalyst with Haldor Topsoe DNX-920. Both catalysts are oxides of base metals that are manufactured by different companies. Chemically, these catalysts are similar. They both have projected service lives of 3 years. Haldor Topsoe DNX- 920 predicts 93.8% NO<sub>x</sub> conversion whereas Engelhard predicts 80% NO<sub>x</sub> conversion.

The following table shows a summary of the catalysts' specifications.

**ENGINEERING REVIEW OF CONTROL EQUIPMENT**

**Table 4- SCR Catalyst Data Summary<sup>b</sup>**

Specification	Engelhard	Haldor Topsoe
Catalyst Manufacturer:	Engelhard	Haldor Topsoe
Catalyst Materials:	vanadium pentoxide/titanium dioxide	Tungsten trioxide, vanadium pentoxide, titanium dioxide
Catalyst Volume:	119.32 cubic feet	134 cubic feet
Catalyst type:	Not specified	DNX-920
Size of each layer/ module:	2' x 2'	Not specified
No. of layers or modules:	20	35
Total weight of modules:	670 lbs	3,500 lbs
Gas flow rate:	138,885 lb/hr	139,147 lb/hr
Catalyst Life (in years):	Three years	Five+ years
SCR Reactor Temperature:	600 to 825°F	463 to 825°F
Max Ammonia Slip:	< 10 ppmvd NH <sub>3</sub>	≤ 5 ppmvd NH <sub>3</sub>
Outlet NO <sub>x</sub> concentration:	16 ppmvd NO <sub>x</sub>	≤ 5 ppmvd NO <sub>x</sub>

<sup>b</sup> Information gathered from Paramount's submitted information

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**EMISSIONS:**

The emissions will not increase as a result of the modification to the SCR. NO<sub>x</sub> emission limits are not determined/imposed since the SCR system is control equipment, not an emission source/point. In addition, the heaters have no NO<sub>x</sub> emission limit, but the new catalyst is expected to reduce NO<sub>x</sub> emissions to about 5ppm.

**RULES EVALUATION:**

**PART 1 STATE REGULATIONS**

<b>California Environmental Quality Act (CEQA)</b>	
	<p>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.</p> <p>The expected impacts of the project on the environment are not significant, this application is to solely replace the SCR with an equivalent catalyst: therefore a CEQA analysis is not required.</p>

**PART 2 SCAQMD REGULATIONS**

<b>Rule 212</b>	<b>Standards for Approving Permits</b>	<b>November 14, 1997</b>
	<p>This modification meets all criteria in Rule 212 for permit approval. The replacement of the SCR catalyst does not affect the operation of the SCR without emitting air contaminants in violation of Division 26 of the State Health and Safety Code or in violation of AQMD's rules and regulations.</p> <p>Prior to granting a Permit to Construct for a project requiring notification is as follows:</p> <ol style="list-style-type: none"> <li>(1) the modified permit unit are, located within 1000 feet of a school. This subdivision shall <i>not</i> apply to a modification of an existing facility if the Executive Officer determines that the modification will <i>result in a reduction of emissions of air contaminants</i> from the facility and no increase in health risk at any receptor location.</li> <li>(2) the emissions increase does not exceed the daily maximum specified in subdivision (g) of this rule (30 lbs/day); and</li> <li>(3) the modified permit units do not have an increased cancer risk greater than, or equal to, one in a million (1x 10<sup>-6</sup>) during a lifetime of 70 years or pose a risk of nuisance.</li> </ol> <p>Replacing the Reformer's SCR catalyst does not increase emissions; it will actually perform better to reduce NO<sub>x</sub> emissions. Hence, no public notice is needed for this project.</p>	
<b>Rule 401</b>	<b>Visible Emissions</b>	<b>November 9, 2001</b>
<b>(b)(1)</b>	<p>Visible emissions are not expected from the modified SCR. A check of SCAQMD's compliance database shows no reported visibility problems for this SCR. Compliance is expected with proper operation and maintenance.</p>	

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<b>Rule 402</b>	<b>Nuisance</b>	<b>May 7, 1976</b>
	Under normal operation, nuisance is not expected from the SCR. No odor problems associated with the SCR have been reported to the District in the last two years. Compliance with this rule is expected.	

<b>Rule 404</b>	<b>Particulate Matter-Concentration</b>	<b>February 7, 1986</b>
	This rule requires particulate matter discharged into the atmosphere be less than the standard listed in Table 404(a) of this rule. Replacing the Reformer SCR's catalyst does not increase PM emissions. Therefore, continued compliance is expected.	

<b>Rule 405</b>	<b>Particulate Matter- Weight</b>	<b>February 7, 1986</b>
	This rule is for no person to discharge any solid particulate matter into the atmosphere from any source. Replacing the Reformer SCR's catalyst does not increase mass PM emissions. Therefore, continued compliance is expected.	

<b>Regulation XIII</b>	<b>New Source Review (NSR)</b>	<b>December 6, 2002</b>
<b>1301(b)- Applicability</b>	Ammonia is one of the pollutants subject to this regulation. Since the SCR will emit ammonia, it is subject to all applicable requirements of Regulation XIII.	
<b>1303(a)- BACT</b>	BACT does not apply because the modification of the SCR does not result in an emission increase of any nonattainment air contaminant, any ozone depleting compound, or ammonia.  There should actually be a decrease for NO <sub>x</sub> because the Reformer SCR's catalyst is being replaced. Because there are no NO <sub>x</sub> emission limits for the heaters, replacing the Reformer's catalyst does not affect the SCR being able to continue to comply with this regulation.	
<b>1303(b)- Modeling and Offsets:</b>	This subpart of the regulation should not apply to this application because the modification of the SCR does not result in an emission increase of any nonattainment air contaminant, any ozone depleting compound, or ammonia.	

<b>Regulation XIV</b>	<b>New Source Review of Toxic Air Contaminants</b>	<b>March 7, 2008</b>										
	This rule requires permit applicants to assess the cancer risks due to the cumulative emission impacts of new/modified sources in their facility. Requirements- Rule 1401 contains the following requirements:											
	<table style="width: 100%; border: none;"> <tr> <td style="width: 50%;">MICR, without T-BACT:</td> <td style="width: 50%; text-align: right;">≤ 1 in 1 million (1.0 x 10<sup>-6</sup>)</td> </tr> <tr> <td>MICR, with T-BACT:</td> <td style="text-align: right;">≤ 10 in 1 million (1.0 x 10<sup>-5</sup>)</td> </tr> <tr> <td>Cancer Burden:</td> <td style="text-align: right;">≤ 0.5</td> </tr> <tr> <td>Maximum Chronic Hazard Index:</td> <td style="text-align: right;">≤ 1.0</td> </tr> <tr> <td>Maximum Acute Hazard Index:</td> <td style="text-align: right;">≤ 1.0</td> </tr> </table>		MICR, without T-BACT:	≤ 1 in 1 million (1.0 x 10 <sup>-6</sup> )	MICR, with T-BACT:	≤ 10 in 1 million (1.0 x 10 <sup>-5</sup> )	Cancer Burden:	≤ 0.5	Maximum Chronic Hazard Index:	≤ 1.0	Maximum Acute Hazard Index:	≤ 1.0
MICR, without T-BACT:	≤ 1 in 1 million (1.0 x 10 <sup>-6</sup> )											
MICR, with T-BACT:	≤ 10 in 1 million (1.0 x 10 <sup>-5</sup> )											
Cancer Burden:	≤ 0.5											
Maximum Chronic Hazard Index:	≤ 1.0											
Maximum Acute Hazard Index:	≤ 1.0											
	Because there are no toxic emissions increases in this permit action, this regulation does not apply.											

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<b>Regulation XVII</b>	<b>PREVENTION OF SIGNIFICANT DETERIORATION (PSD)</b>
	<p>As of July 25, 2007, the USEPA signed a new Limited PSD Delegation agreement with SCAQMD. SCAQMD now has the PSD responsibility for all new PSD sources and all modifications to existing PSD sources where the applicant is requesting to use SCAQMD's existing Regulation XVII to determine PSD applicability for a modification (and not the recent calculation methodology adopted by EPA as part of the NSR Reform).</p> <p>Since the SCR does not have an increase in emissions of any attained criteria pollutants, a PSD applicability is not required. (The SCR emits ammonia, but ammonia is not considered to be a criteria pollutant<sup>c</sup>.)</p>
<b>Regulation XX</b>	<b>RECLAIM</b> <span style="float: right;"><b>May 6, 2005</b></span>
	<p>Paramount is a RECLAIM facility. Therefore, it is subject to Reg XX. Since this permit action will not result in an emission increase in RECLAIM pollutants, there are no RECLAIM requirements applicable to the SCR.</p>
<b>Regulation XXX</b>	<b>Title V</b>
	<p>Rule 3001 – Applicability, Amended November 14, 1997 3001(a): Having emissions greater than that specified in the table in the rule, Paramount Refinery is considered a Phase One Title V facility and has submitted application number 339643 for their initial Title V permit.</p> <p>Rule 3002 – Requirements, Amended November 14, 1997 3002(a)(3): The permit that will be issued for the SCR will be a non-Title V permit. The Executive Officer may issue a non-Title V permit to existing Phase One or Phase Two facilities that apply for a non-Title V permit prior to the issuance of their initial Title V permit.</p> <p>On September 3, 2008 Paramount's Title V Permit has been proposed. However, the initial Title V permit has not been issued to this facility to date, but Rule 3003(a)(5) allows the issuance of a local permit.</p> <p>A permit condition (<b>130.1</b>) requires continued compliance with this rule. Therefore, issuances for the Permits to Construct for the SCR are in compliance with this rule.</p>

<sup>c</sup> Criteria Pollutants are defined according to EPA's National Ambient Air Quality Standards (40 CFR part 50)

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**PART 3      FEDERAL REGULATIONS**

<b>40CFR Part 60 Subpart J</b>	<b>STANDARDS OF PERFORMANCE FOR PETROLEUM REFINERIES</b>
	This modification to the SCR will not have an emission increase from the heaters; therefore this proposal does not trigger NSPS.

<b>40CFR Part 63 Subpart CC</b>	<b>NATIONAL EMISSION STANDARDS FOR HAZARDOUS AIR POLLUTANTS (NESHAPS)</b>
	<i>National Emissions Standards for Hazardous Air Pollutants for Petroleum Refineries</i> This modification to the SCR will not have an emission increase from the heaters; therefore this proposal does not trigger NESHAPS.

**CONCLUSION:**

Based on the above evaluation Paramount is in compliance with all required rules and regulations and is expected to continue to comply. Paramount is also in accord with the permit equipment and conditions. (See Attachment II for their approval) Therefore, it is recommended that a Permit to Construct be issued for the following applications:

A/N	Recommendation
487936 MASTER APPLICATION	Issue Permit to Construct with conditions listed in the Conditions Section
491587	Issue Permit to Construct with conditions listed in the Conditions Section
491588	Issue Permit to Construct with conditions listed in the Conditions Section
491589	Issue Permit to Construct with conditions listed in the Conditions Section
491590	Issue Permit to Construct with conditions listed in the Conditions Section
491361	Issue RECLAIM Facility Permit Revision

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**APPENDICES:**

A. Compliance Status for NOV/NCs

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**APPENDIX A: COMPLIANCE STATUS FOR NOVS/NCS**

NOTICE NO.	NOTICE TYPE	VIOLATION DATE	FOLLOW UP STATUS	VIOLATION
D01671	NC	6/3/2008	INCOMP	PLEASE PROVIDE A WRITTEN RESPONSE TO THE INFORMATION REQUESTED IN THE THOMAS ROONEY EMAIL ENTITLED "NTC FOR SCR BYPASSES WITHOUT CEMS" - SEE ATTACHMENT.
D01680	NC	9/1/2007	pending	ENSURE NOX AND SOX PROCESS EMISSIONS ARE SUBMITTED ELECTRONICALLY IN A TIMELY MANNER.
P39614	NOV	3/12/2008	INCOMP	1) DISTRICT INSPECTORS OBSERVED OPEN ENDED LINES. 2) COVER MATERIAL WAS NOT FREE FROM HOLES. 3) GAUGING OR SAMPLING OPENING(S) ON SEPARATOR WAS NOT COVERED. 4) FAILURE TO PREVENT GAPS OR MAINTAIN VAPOR TIGHT SEAL.
P45644	NOV	1/19/2007	pending	FACILITY FAILED CONTINUOUSLY MEASURE EMISSIONS FROM THEIR REFORMING HEATERS H-303, H-304, H-305 AND H-306.
P48447	NOV	8/8/2007	INCOMP	DISTRICT INSPECTION DETECTED OPEN ENDED LINES. WASTEWATER SEPARATOR NOT PROVIDED WITH COVER OR OTHER ALTERNATIVE CONTROL MEASURE. TANK WAS FOUND IN NON-VAPOR TIGHT CONDITION.

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**ATTACHMENTS:**

- I. NOV # P45644 Relevant Documents
- II. Paramount's Agreement to Permit Equipment and Conditions (December 16, 2008)

## ATTACHMENT I:

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NOV # P45644 Relevant Documents

Tran, Kheng, Paul



# South Coast Air Quality Management District

21865 Copley Drive, Diamond Bar, CA 91765-4178  
(909) 396-2000 • www.aqmd.gov

October 31, 2008

Ms. June Christman, Managing Director of Environmental Affairs  
Paramount Petroleum  
14700 Downey Avenue  
Paramount, CA 91765

NOV 2008  
JAY CHEN  
GR. MANAGER

**Subject: Use of Bypass Stacks at the 300-Series Reformer Heaters**

Dear Ms. Christman:

I am writing in response to your October 6, 2008, letter regarding the H-303, H-304, H-305, and H-306 heaters and proposed options for emissions monitoring submitted for review by Paramount Petroleum (Paramount). This letter was prepared following recent meetings wherein South Coast Air Quality Management District (AQMD) staff discussed your proposal in which you have requested from AQMD to allow the opening of the bypass stacks for the four operating scenarios presented in your letter. Presently, the bypass route is not configured in such a way that it can be monitored by a Continuous Emissions Monitoring System (CEMS). Further, in your October 15, 2008 letter to the AQMD, you also noted your intentions to shut down the refinery in late October 2008 for an extended turnaround, at which time you would source test the reformer heaters to acquire data for use in missing data calculations when the by-pass stacks are in use.

AQMD Rule 2012 – Requirements for Monitoring, Reporting, and Recordkeeping for Oxides of Nitrogen (NO<sub>x</sub>) Emissions, Section (c)(2)(A), states in part, "The Facility Permit holder of a major NO<sub>x</sub> source shall install, maintain and operate a direct monitoring device for each major NO<sub>x</sub> source to continuously measure the concentration of NO<sub>x</sub> emissions." Since the bypass stack is not continuously monitored to determine the amount of emissions passing through it, the above-mentioned heaters are not in compliance with the requirement of Rule 2012(c)(2)(A). I understand that Paramount received a variance from the Hearing Board on October 23, 2008, which provides Paramount variance coverage through your upcoming turnaround period until January 29, 2009. The variance, while valid, relieves you of the obligation to install, maintain and operate a monitoring device for the bypass stacks. The variance does not, however, provide a permanent solution to the compliance issue.

AQMD has evaluated the various scenarios proposed in your October 6, 2008, letter that could result in opening of the bypass stacks, and subsequent bypass of the CEMS installed at the main stack. For the incidents you cited involving tube rupture or other heater failure, or other instances when the bypass stacks are used to avoid a catastrophic failure, Paramount must meet all criteria in Rule 430 – Breakdown Provisions, or Rule 2005(f) – Breakdown Provisions, which is verified by AQMD staff,

*Continuing to improve the environment*

provided that the fuel supply to the heater is shut down before the opening of the bypass stack. Please be advised that this is the only circumstance which relieves you of the obligation to equip the bypass stacks with a CEMS. Otherwise, Paramount must maintain and operate a CEMS at the heater bypass stacks. Use of the bypass stacks in any other circumstances, including but not limited to operating the heater while the SCR is not in service or heater/unit startup and shutdown maintenance and inspection activities, will be a violation of Rule 2012 (c)(2)(a).

The AQMD has reviewed your proposal to verify NO<sub>x</sub> concentrations by source testing of combustion gases in the ducting routed to the SCR and has determined that this methodology will yield data that is representative of emissions while the SCR is not in service, but not for emissions during startup and shutdown. Instead, we would propose the use of Missing Data Procedures. These procedures apply to the quantification of emissions from these heaters any time they fail to comply with the applicable monitoring requirements of Rule 2012. When calculating Missing Data Emissions during bypass events for a heater device operated with refinery gas (1,150 mmBTU/mmscf), applicable Emission Factor from Rule 2012, Appendix A, Chapter 3, Table 3D (161 lbs. NO<sub>x</sub>/mmscf) and maximum BTU rating of the equipment shall be used. In the case of Paramount Petroleum Reformer Heaters and the language within its facility permit, the total BTU rating for heaters H-303, H-304, H-305, and H306 combined is 162.5 mmBTU/hr. The formula for calculation for missing data is:

Total NO<sub>x</sub> lbs. of missing data per hour of unmonitored emissions =

$$(162.5 \text{ mmBTU/hr}) / (1/1150 \text{ mmBTU/mmscf}) (161 \text{ lbs/mmscf}) = 22.75 \text{ lbs NO}_x/\text{hr}$$

Please contact Mr. Edwin L. Pupka, Sr. Enforcement Manager, Refinery/Energy & Toxics and Waste Management Team, at 909.396.3332 should you have questions or require additional information.

Sincerely,



Mohsen Nazami, P.E.  
Deputy Executive Officer  
Engineering and Compliance

cc: Jay Chen  
Edwin Pupka  
Danny Luong  
Melesio Hernandez

MN:EP:cd

**MINUTE ORDER**

**PARAMOUNT PETROLEUM CORPORATION**  
14700 Downey Avenue  
Paramount, California 90723

Case No. 2914-93  
Facility I.D. 800183

*Hearing Date:* 10/23/2008

*Hearing Type:* Short

**HEARING BOARD ACTION**

*Action:* Granted

*Starting Date:* 10/31/08

*Ending Date:* 01/29/09

**RULES**

203(b){from Conditions I A 1, 3 & 4 in Section F of Facility P/O No 800183}  
2004(f)(1){from Conditions I A 1, 3 & 4 in Section F of Facility P/O No 800183}  
2012(c)(2)(A)

**EQUIPMENT DESCRIPTION      DEVICE/APPLICATION/PERMIT**

Reformer Heater H-303	D73
Reformer Heater H-304	D74
Reformer Heater H-305	D75
Reformer Heater H-306	D76

**CONDITIONS**

- 1 During the variance period, petitioner shall not open the by-pass stacks while fuel is being fed through the heaters except during a 2-hour window during startup of the heaters and refinery following turnaround. A maximum of three attempts at startup of the Reformer heaters may occur.
- 2 Paramount shall provide the District with NO<sub>x</sub> emissions estimates based on missing data for the 2-hour startup window(s) referenced in Condition 1, above and shall use this information in its RECLAIM reporting.
- 3 During the variance period while there is no fuel being combusted in the heaters and the by-pass stacks are open, Paramount shall continuously monitor data from the fuel flow meter, fuel pressure indicator, and in-stack temperature indicator and shall provide this information to the District on a monthly basis.
- 4 Paramount shall continuously monitor the damper valve position and provide data to the District on a monthly basis.
- 5 Petitioner shall notify the Clerk of the Board in writing when final compliance is achieved.

**EXCESS EMISSIONS**

None

Failure to comply in full with any and all conditions and increments of progress may result in modification or revocation of this order by the Hearing Board, and/or enforcement actions by the SCAQMD.

**REMINDER**

In the event petitioner will be unable to comply with the final compliance date, a petition requesting a modification and extension of the variance may be filed. To meet notice requirements, the petition must be filed no later than December 16, 2008. In the event the hearing is not needed and taken off calendar, petitioner may request a refund of 50% of the filing fee, however, petitioner will be responsible for the publication fee.

**Present:** Edward Camarena, Chair  
Laurine E Tuleja, Vice Chair  
Jack Carsel, M D  
Barry Read

**Absent:** Marti L. Klein

**Representing (the) Petitioner:** Catherine Mitchell Wieman, Attorney at Law

**Representing (the) Respondent:** Nancy S. Feldman, Senior Deputy District Prosecutor

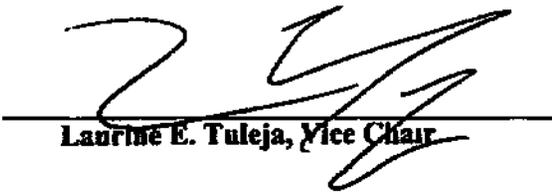
**Witness for (the) Petitioner:** June Christman, Managing Director of Environmental Affairs

**Witness for (the) Respondent:** Rodolfo Chacon, AQMD Inspector II

**Petitioner's Exhibits:**  
#1 - Proposed Variance Conditions  
#2 - Diagram of Reformer Heaters at the facility  
#3 - Notice to Comply No. D01671 & e-mail from Thomas Rooney dated 6/3/08 to Rodolfo Chacon  
#4 - Notice of Violation No. P45644 dated 8/7/08

**Motion** Tuleja/Read 4-0

Board  
Review/Approval

  
Laurine E. Tuleja, Vice Chair

Prepared by Peggy White

# ENGINEERING & COMPLIANCE...MEMORANDUM

TO	file	FROM	Cynthia Carter	DATE	10/31/08
REFERENCE	SCR Catalyst Replacement			PERMIT APPL. NO.	487936
SUBJECT	Paramount's NOV # 45644				

After having a discussion w/ Jay Chen and Paul Park regarding Paramount's NOV, Jay concluded that issuing the PC for the SCR would be OK since the facility is currently not venting to the by pass anymore.

Jay will check with Ed Pipka to see if we have finalized a letter to send to Paramount.

See attached for letters from Paramount.



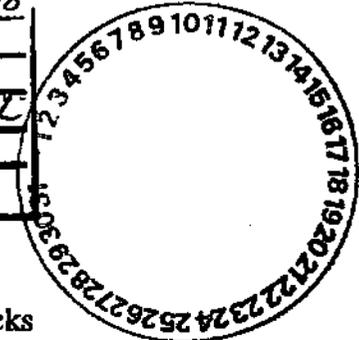
a subsidiary of  
**ALON USA**

14700 Downey Avenue  
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October 6, 2008

Mohsen Nazemi  
South Coast Air Quality Management District  
21865 E. Copley Drive  
Diamond Bar, CA 91765

From: Mohsen Nazemi	Date: 10/14/08
To: <i>Ed</i>	
Cy: <i>Day</i>	
For your action by: 10/21/08	For your info: handling
Signature, etc: <i>MN</i>	
R&C Assignment:	



RE: Paramount Petroleum Corporation Reformer Heater By-pass Stacks

Dear Mohsen:

Thank you and your staff for meeting with us earlier this week. We appreciate you spending time to discuss Paramount's need to use the by-pass stacks, which are not monitored with continuous emissions monitoring systems (CEMS), on its Reformer heaters in very limited scenarios as described below. Paramount requests that the District accept our proposal to continue to operate this equipment with the existing monitoring equipment and to use the by-pass stacks on a planned basis while the heaters are operating in only one scenario; for the purpose of unit startup, not to exceed two hours. In the other scenarios in which the by-pass stacks would be used, the heaters would be shut down or a breakdown situation would exist.

**Heater/Unit Startup**

The reason that Paramount needs to use by-pass stacks on the Reformer heaters is for the safety of its personnel, the surrounding community and to protect its equipment. As discussed at our meeting the Reformer heaters were originally designed as natural draft heaters. An induced draft fan was added as part of a retrofit project in the early 1990s when the four heaters were tied together for NOx control with an SCR. The single planned scenario where the by-pass stacks must be opened when fuel is being fed to the heaters is during startup. Operators need to verify air flow through and a stable atmosphere in the heaters prior to lighting the burners. They must stabilize the burner flame and heat up the firebox prior to turning on the SCR induced fan and switching over to the SCR stack where the CEMS is located. Paramount is confident that these startup activities can be ~~limited to two hours~~ and that we can develop ~~missing data calculations~~ acceptable to the District that would be used during these infrequent startups.

During the two-hour startup period NOx levels will be slightly higher than normal operation of the Reformer heaters with the SCR (40 ppm versus typical 25 – 30 ppm). The reformer heaters are equipped with low NOx burners, so that even without the SCR system operating, NOx emissions are relatively low. Also, the by-pass damper valve position is continuously monitored on each heater. This monitoring data will document that Paramount meets the requirement of accomplishing the flame stabilization startup activities within the proposed two hours.

### **Shutdown Maintenance and Inspection Activities**

The other planned activity where Paramount needs to open the by-pass stacks is during maintenance and/or inspection activities when the heaters are shut down, there is no fuel being fed to the heaters and there are no emissions from the heaters. Again, this is for safety reasons; the heater fireboxes need to be ventilated when workers are in the heaters conducting turnaround activities. Without proper ventilation or draft through the heater, there is the potential of an oxygen deficiency or for an ammonia or fuel leak to cause an unsafe or explosive atmosphere in the heater firebox. In this scenario, there are numerous ways for District personnel to verify that there is no fuel being fed to the heaters. Each heater has a fuel flow meter, a fuel pressure indicator and an in-stack temperature indicator that will all provide data that can be used to verify that the heaters are out of service. Fuel flow and pressure and stack temperature data is continuously recorded and available for inspection by District staff at any time. There is also a block valve that can be observed and will be closed when the heaters are shut down.

### **Induced Draft Fan or Other SCR Failure**

The third scenario that could occur and would require that the by-pass stacks be used is a blower trip/SCR failure breakdown situation. If the induced draft fan on the SCR system trips, the combustion gases from the heaters do not have sufficient pressure to flow through the SCR catalyst beds. The by-pass stacks must be opened to ensure safe operation of the heaters. This scenario qualifies as a valid breakdown and Paramount will comply with the requirements of Rule 430 to qualify for breakdown coverage. As discussed during our meeting, the Reformer is Paramount's source of hydrogen which is necessary for other refinery process units to continue operating. In order to avoid the shut down of other refinery process units and associated shut down emissions, the Reformer needs to continue operating. In most cases, Paramount will be able to repair the SCR fan within the 24 hours allowed by Rule 430. In rare situations, such as blower shaft damage, repair within 24 hours may not be possible. In such case, Paramount would seek variance coverage and abide by the Hearing Board's decision whether or not to grant additional relief and allow continued operation through the by-pass stacks.

### **Tube Rupture or Other Heater Failure**

The fourth scenario that could occur is an emergency response due to failure of the heater that is a valid breakdown requiring shut down of the unit. A heater failure could be caused by a tube rupture, a power failure, loss of refinery instrument air or any situation requiring heater shut down. In this situation, for safety considerations, either the heater trips or Paramount must shut down the heater immediately and open the by-pass stacks. The emergency shutdown procedure will specify that removing fuel from the firebox is the first response to a tube rupture or heater failure; then the by-pass stacks will be opened. In this scenario, there would be breakdown relief from monitoring requirements and the heaters will be shut down. Fuel will be removed from the firebox and can be verified by District staff as discussed above.

### **Missing Data Provisions**

As discussed during our meeting, all four Reformer heaters have low NOx burners capable of achieving 40 PPM NOx. Paramount proposes to verify the NOx

~~concentration(s) by some testing~~ combustion gases in the ducting routed to the SCR. Missing data can then be calculated using the actual fuel flow rates continuously monitored or the maximum rated duty of the heaters. Paramount will work with District staff to develop acceptable missing data provisions for calculating emissions when the heaters continue to operate and the by-pass stacks are used.

Please let me know if there is any additional information you need to evaluate our proposal for continuing to operate this equipment with the existing monitoring equipment. Paramount would be happy to meet with you again to further discuss and to resolve this issue. Please feel free to contact me with any questions you may have at (562) 748 4704.

Sincerely,

  
June Christman  
Managing Director of Environmental Affairs

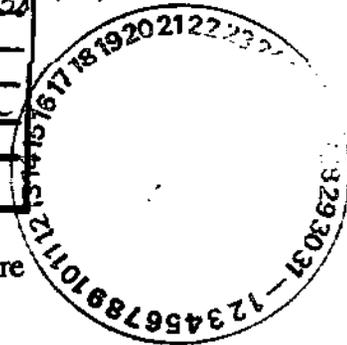


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Mohsen Nazemi  
South Coast Air Quality Management District  
21865 E. Copley Dr  
Diamond Bar, CA 91765

From: Mohsen Nazemi	October 15, 2008	10/22/08
To: Ed [Signature]		
Cy: Iran		
For your action by: _____	For your info: _____	handling: _____
Draft response for: _____ signature, or _____		
E&C Assignment#: _____		



RE: Proposed Reformer Heater By-pass Stack Missing Data Procedure

Dear Mohsen:

At our meeting on September 30, 2008 on the above-referenced subject, Paramount agreed to make a proposal to the District on performing source testing to establish an appropriate NOx concentration to use in missing data calculations. Missing data will be used whenever Paramount needs to use the Reformer heater by-pass stacks and gas is being combusted in the heaters. The scenarios during which Paramount needs to use the by-pass stacks were summarized in my October 6, 2008 letter to you, which is included as Attachment 1, for reference.

As discussed briefly with you and your staff last week, Paramount plans to shut down its refinery in late October and to perform an extended refinery turnaround over the next few months due to poor market conditions. Because the refinery will be shut down soon, Paramount decided to source test the reformer heaters, as described in more detail below. This was done to make certain that we have data for use in missing data calculations for the Reformer heaters when the by-pass stacks are used and the heaters are in service. If the District wants to witness source testing of the heaters or has significant comments on the testing that was done, Paramount will be happy to address these issues. However, please keep in mind that time is very short to collect any additional data in 2008 due to the upcoming turnaround.

**Reformer SCR (C77) inlet NOx concentration**

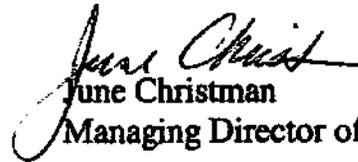
Please refer to Attachment 2, a drawing showing the layout of the heaters, the SCR and the CEMS to monitor these sources. Paramount conducted a source test to establish a baseline for SCR inlet NOx concentration (ppmv) on October 9, 2009. The SCR inlet NOx is representative of the NOx emissions out the by-pass stacks when the heaters are operating. Paramount proposes that this baseline NOx concentration be used for data substitution whenever the bypass stacks are used and the heaters are combusting fuel gas. This will occur specifically during the first two hours while heaters H-301, 302, 303 & 304 (D73, D74, D75, D76) are going through start up and in the other scenarios presented in my October 6 letter to you when the heaters are combusting fuel gas and emissions are passing through the by-pass stacks.

The SCR inlet NOx source test was conducted by a 3<sup>rd</sup> party, Total Air Analysis, Inc. (Total Air). Total Air used SCAQMD approved method 100.1 to analyze the Reformer

heaters SCR inlet NOx concentration; the results are summarized in Attachment 3. Testing consisted of three runs; each fifteen minutes long. Paramount proposes to use the average of the three runs, 53.87 PPM (corrected to 3% O2), as the baseline NOx value to be used for missing data calculations. Paramount proposes to use this NOx value in the RECALIM DAHS engine to calculate data substitution whenever the heater by-pass stacks are open and the heaters are combusting fuel gas.

Please feel free to contact me with any questions or comments you may have.

Sincerely,



June Christman

Managing Director of Environmental Affairs

Cc: Jay Chen  
Tran Vo  
Ed Pupka  
Melesio Hernandez  
Danny Luong

## **ATTACHMENT II:**

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### **Paramount's Agreement to Permit Equipment and Conditions (December 16, 2008)**

**Cynthia Carter**

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**From:** Edward Nguyen [ENguyen@ppcla.com]  
**Sent:** Tuesday, December 16, 2008 9:44 AM  
**To:** Cynthia Carter  
**Subject:** RE: DRAFT PERMIT SCR Catalyst Replacement A/N 487936

Good Morning Cynthia,

The draft permit is ok. Thanks

Edward Nguyen

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**From:** Cynthia Carter [mailto:ccarter@aqmd.gov]  
**Sent:** Wednesday, December 10, 2008 2:28 PM  
**To:** Edward Nguyen  
**Subject:** RE: DRAFT PERMIT SCR Catalyst Replacement A/N 487936

Hello Edward,

I want to clarify if Paramount is OK with the draft permit. I know Paramount has an issue with the listing the catalyst type. Does Paramount still have issues after my explanation from the email below?

Please let me know.

Thank you,  
Cynthia

-----Original Message-----

**From:** Cynthia Carter  
**Sent:** Wednesday, December 03, 2008 10:01 AM  
**To:** 'Edward Nguyen'  
**Subject:** RE: DRAFT PERMIT SCR Catalyst Replacement A/N 487936

Great catch. As for the type of catalyst, this is part of the permit's equipment description. This makes the equipment description more complete. This is similar for the heaters. The Heaters have the manufacturer's name (John Zink) and material type (in this case it is the fuel type: Refinery Gas). You can find more details in Chapter 4, Section 4.2 on permit wording from the following permit manual (<http://www.aqmd.gov/cpp/pdf/cppmanual.pdf>)

If Paramount has issues with this please let me know ASAP. I will wait for your response before submitting my evaluation for approval.

-Cynthia

-----Original Message-----

**From:** Edward Nguyen [mailto:ENguyen@ppcla.com]  
**Sent:** Wednesday, December 03, 2008 9:06 AM  
**To:** Cynthia Carter  
**Subject:** RE: DRAFT PERMIT SCR Catalyst Replacement A/N 487936

12/16/2008

Good Morning Cynthia,

The draft permit for SCR Catalyst Replacement seems to be ok. However, the catalyst volumes for Engelhard and Haldor Topsoe are reversed (see attachment). Furthermore, the purpose of put in catalyst type (Vanadium Oxide and Tungsten Oxide Based Catalyst) is to avoid calling out specific manufacture names. Since the manufacture names must be called out, the catalyst type should be removed.

Regards,

Edward Nguyen  
(562) 748-4706

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**From:** Cynthia Carter [mailto:ccarter@aqmd.gov]  
**Sent:** Tuesday, December 02, 2008 1:22 PM  
**To:** Edward Nguyen  
**Subject:** RE: DRAFT PERMIT SCR Catalyst Replacement A/N 487936

Edward,  
I just wanted to follow up with you on the draft permit. Have you had a chance to review it?

-Cynthia

-----Original Message-----

**From:** Cynthia Carter  
**Sent:** Friday, November 14, 2008 10:52 AM  
**To:** 'Edward Nguyen'  
**Subject:** DRAFT PERMIT SCR Catalyst Replacement A/N 487936

Thanks Edward for confirming Condition E73.1 will be the same.

I've attached Paramount's DRAFT Permit in this email for the SCR Catalyst Replacement.

Could you please carefully review and comment? If the permit and conditions are acceptable, then indicate so.

Once I receive Paramount's approval on the permit conditions, I will proceed to get approval from my supervisors and wait for the H-402 Project applications before issuing the permit. Is this still Paramount's direction, to issue the SCR permit along with the H-402 Project?

Regards,  
Cynthia

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**Cynthia Carter**  
**Air Quality Engineer**  
Refinery and Waste Management Permitting  
South Coast Air Quality Management District  
21865 Copley Drive  
Diamond Bar, CA 91765  
(909)396-2431  
[ccarter@aqmd.gov](mailto:ccarter@aqmd.gov)

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## End of Evaluation

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