

**SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT****STATIONARY SOURCE COMPLIANCE DIVISION****APPLICATION PROCESSING AND CALCULATIONS**Pages
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Rafik Beshai

Checked By

PERMIT TO OPERATE

COMPANY NAME: Tesoro Refining & Marketing Co. LLC
 Tesoro Los Angeles Refinery – Carson Operations
 (formerly BP West Coast Products LLC)

FACILITY ID: 174655
 (formerly 131003)

MAILING ADDRESS: P.O. Box 6210
 Carson, CA 90749

EQUIPMENT ADDRESS: 2350 E. 223rd Street
 Carson, CA 90810

Equipment	ID No.	Connected To	RECLAIM Source Type/ Monitoring Unit	Emissions and Requirements	Conditions
Process 3: FLUID CATALYTIC CRACKING					
System 5: AIR POLLUTION CONTROL SYSTEM SERVING FCCU					S42.1
VESSEL, SEPARATOR, RPV 5524, FOURTH STAGE GAS, HEIGHT: 16 FT 6 IN; DIAMETER: 2 FT 6 IN A/N: 450844 552913	D1361				
HOPPER, FOURTH STAGE DISPOSAL, RPV 5520 A/N: 450844 552913	D1362				
ELECTROSTATIC PRECIPITATOR, 110 FT L X 70 FT W X 115 FT H, HARMON RESEARCH-COTRELL, 2 CHAMBERS EACH WITH 10 T/R SETS RATED AT 90 KV, LOCATED DOWNSTREAM OF SCR, 1200 KW WITH AMMONIA INJECTION A/N: 450844 552913	C2769	D234 C2651 S2771		NH3: 10 PPMV (5) [RULE 1105.1, 11-7-2003]	A99.7, A195.7, D29.2, C12.X D90.10, D90.11, D90.12, D90.13, D323.3, E193.15, E193.17, E193.18



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STACK, ESP STACK, HEIGHT: 171 FT ; DIAMETER: 11 FT 6 IN A/N: 450844 552913	S2771	C2769			E193.18
SELECTIVE CATALYTIC REDUCTION, WIDTH: 29 FT 6 IN; HEIGHT: 48 FT 9.5 IN; LENGTH: 28 FT 11.5 IN A/N: 450845 552916	C2651	D234 S2653 C2769		NH3: 10 PPMV (4) [RULE 1303(a)(1)- BACT, 5-10- 1996]	D12.16, D12.17, D12.18, D29.1, D29.4, D90.6, E73.3, K40.2
STACK, HEIGHT: 135 FT; DIAMETER: 12 FT A/N: 450845	S2653	C2651			

BACKGROUND

The purpose of this evaluation is the conversion of Permits to Construct (PCs) issued to BP West Coast Products LLC (BP) under A/Ns 450844 and 450845, into Permits to Operate (POs). This facility underwent change of ownership from BP West Coast Products LLC (Facility ID: 131003) to Tesoro Refining & Marketing Co. LLC, Tesoro Los Angeles Refinery – Carson Operations (Facility ID: 174655) on June 1, 2013. POs will be issued to Tesoro, under the change of ownership applications, A/Ns 552913 and 552916, filed for this equipment. Subsequently, BP applications, A/Ns 450844 and 450845, will be cancelled.

PCs were issued on October 30 and 31, 2006 under A/N 450844 and 450845, respectively, for construction of a new Electrostatic Precipitator (ESP), Device C2769, and for modification of the existing Selective Catalytic Reduction (SCR) System, Device C2651. This equipment is permitted in the facility permit under Process 3, System 5. It is used to control pollutant emissions in the vent from the Fluid Catalytic Cracking Unit (FCCU) regenerator, Device D164. ESP C2769 functionally replaced ESPs C235 and C236. The modification of SCR C2651, involved a change in venting arrangement resulting in the operation of this device upstream of ESP C2769 (previously it operated downstream of ESPs C235 and C236). The purpose of the project is to achieve compliance with District Rule 1105.1 – *Reduction in PM10 and Ammonia Emissions from Fluid Catalytic Cracking Units*, adopted on November 7, 2003. The applicant indicates that construction of the equipment was completed in February, 2008 and it began operating in March/April, 2008. As the equipment has been constructed and has been operating in compliance with all terms and conditions of the PCs, issuance of POs is now recommended. ESPs C235 and C236 are now out-of-service and have been abandoned-in-place and thus have been eliminated from the facility permit.



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The FCCU regenerator and FCCU pollutant control equipment are subject to the following emissions limits:

- NO_x – 20 ppmv (365 day rolling average; 0% O₂, dry); Basis: Consent Decree - Civil Action No. 2:96 CV 095 RL
- NO_x – 60 ppmv (7 day rolling average; 0% O₂, dry); Basis: Consent Decree - Civil Action No. 2:96 CV 095 RL
- CO – 500 ppmv (1 hour average; dry); Basis: Consent Decree - Civil Action No. 2:96 CV 095 RL
- CO – 2000 ppmv; Basis: Rule 407
- SO₂ – 50 ppmv (365 day rolling average; 0% O₂, dry); Basis: Consent Decree - Civil Action No. 2:96 CV 095 RL
- SO₂ – 150 ppmv (7 day rolling average; 0% O₂, dry); Basis: Consent Decree - Civil Action No. 2:96 CV 095 RL
- PM – as specified under Rules 404 and 405
- PM – 0.1 gr/scf; Basis: Rule 409
- NH₃ – 10 ppmv (60 minute average; 3% O₂, dry); Basis: Rule 1105.1 for ESP C2769 and BACT for SCR C2651
- Filterable PM₁₀ – 2.8 lbs/1000 bbl feed; Basis: Rule 1105.1

Vent gas from the FCCU Regenerator (D164) first passes through Boiler No. 41 (D234) then to the FCCU air pollution control system. However, the Boiler No. 41 (D234) at this facility is no longer equipped with burners and thus does not function as a CO control device. Its function is limited to absorption of sensible heat from the FCCU regenerator vent gas, to produce steam and to enhance particulate matter control in the ESP from the lower temperature vent gas.

The project included construction of new ESP C2769, installed downstream of SCR C2651. It also includes a soot blower added to the SCR and a new ammonia injection grid for injecting ammonia just upstream of the ESP. This injection grid is in addition to the previously existing ammonia injection grid, used to inject ammonia for the SCR. Further, the SCR stack has been reconfigured into ductwork leading to ESP C2769 (i.e. it is no longer a stack). Thus, Stack S2653 is eliminated from this permit.

The permit history of equipment in the FCCU air pollution control system is described in the table below.

Application No.	Process No.	System No.	Previous P/O	Date	Permit History
450844	3	5	None		ESP (C2769) and Stack (C2771) are new equipment, and hence were not previously permitted by the District.



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450845	3	5	413719/PC 397358/PC	5/8/03 5/1/02	A PC was issued on May 8, 2003 for Change of Condition for SCR (C2651) , under A/N 413719. This Change of Condition application involved replacement of condition E448.1, which specified requirements for bypassing the SCR, with condition E73.3. Previously, a PC was issued for SCR (C2651) on May 1, 2002 under A/N 397358. Under this PC the SCR was constructed and first operated.
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A search of District records indicates that no Notices of Violation (NOV) or Notices to Comply (NC) were issued for the subject equipment over the past three years.

PROCESS DESCRIPTION

A Fluid Catalytic Cracking Unit (FCCU) is a process unit in which petroleum derivative feedstock (gas oil) is fractured into smaller molecules (lighter hydrocarbons), in the presence of a catalyst. The BP (now Tesoro) FCCU processes approximately 90,000 to 105,000 barrels per day of gas oil feed. It produces gasoline blending components and feedstocks for the alkylation and polymerization operations. The cracking process is accomplished by mixing gas oil feed with fluidized catalyst in the reactor risers. The reaction occurs at relatively low pressure and at elevated temperature. In the cracking process, coke is deposited on the catalyst. These deposits cause the catalyst to be unreactive and thus must be removed. The process requires catalyst regeneration, by burning off coke from spent catalyst, to restore catalyst reactivity. The regeneration process requires air from the main air blower. The regenerated catalyst is recycled back to the risers to once again react with feed material. The products of the reaction are fractionated in the main fractionators, compressed and further fractionated in the gas plant to yield gasoline, light ends, light cycle oil, clarified oil and other components. The flue gas from the catalyst regenerator includes small catalyst fines, which are entrained particulates. The flue gas first flows through primary and secondary cyclones to knock out entrained catalyst particles. The flue gas then flows through a waste heat boiler (Boiler No. 41), for recovery of sensible heat, and then through an SCR and ESP for control of NO_x emissions and for recovery/control of catalyst fines, respectively.

Electrostatic Precipitators (ESPs) remove particulate matter in flue gas by first directing the dust laden gas past a discharge electrode, negatively charging the particulates, then collecting the particulates on collecting electrodes using electrostatic attraction in an electric field. Electric power utilized in the EPS is converted by Transformer/Rectifier (T/R) sets to a higher voltage and rectified to Direct Current (DC). The collecting electrodes (plates) are periodically cleaned by application of mechanical rappers or electric vibrators. Dust from these collecting electrodes falls into collection hoppers.

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Important design considerations for an ESP include the spacing and size of the electrodes in relation to the gas flow volume through the chambers. These in turn determine the velocity of the exhaust gas and the time the particulates are exposed to the charging electrodes.

The FCCU exhaust particulate control system includes a 3rd stage separator, 4th stage separator and new ESP C2769. New ESP C2769 is supplied by Harmon Reseach Cottrel. The ESP has two chambers, each of which contains the following:

- 10 Transformer/Rectifier (T/R) Sets, or fields (20 total)
- 10 hoppers with heaters, vibrators, and level detectors (20 total)
- 80 impulse rappers for collecting electrodes (160 total)
- 40 impulse rappers for discharge electrodes (80 total).

Other ESP design parameters are stated below:

- Dimensions: 110 feet x 70 feet x 115 feet
- Transformer/Rectifier (T/R) sets are rated at 90 kV/800 ma
- Maximum total secondary power input is 1200 kW
- Average power consumption is 0.8 watt/square feet plate area
- Maximum power consumption is 3.5 watts/square feet plate area
- Exhaust Flow (scfm): 200,000 – 220,000 scfm
- Exhaust Flow design (acfm): 480,000 acfm
- Exhaust temperature: 620 – 660°F
- Inlet grain loading: 0.18 - 0.19 grains/acf
- Outlet Particulate Emissions: 2.8 lbs/1000 barrels feed
- Calculated Control Efficiency: 97.0%
- Collection Plate Area: 357,408 square feet
- Velocity: 2.5 feet per seconds

In a Selective Catalytic Reduction (SCR) System NO_x in the flue gas is decomposed to N₂ and H₂O, by reaction with ammonia (NH₃), as shown below.



The SCR System is comprised of a reactor housing which holds catalyst, an Ammonia Injection Grid (AIG) which evenly distributes ammonia upstream of the SCR, an ammonia flow control unit, an aqueous ammonia storage tank, and an aqueous ammonia transfer pump which pumps ammonia to the ammonia flow control unit. The ammonia flow control unit is a skid mounted unit that includes a motor driven dilution air blower which provides air to dilute the ammonia to improve distribution at the AIG, and an ammonia heater/vaporizer which vaporizes the aqueous ammonia prior to mixing with the diluent air.



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New ducting has been installed to route flue gas from Waste Heat Boiler No. 41 (D234) to SCR C2651. Flue gas treated in the SCR is then passed to ESP C2769 and then is discharged in Stack S2771. SCR C2651 is equipped with a bypass, to allow change out of catalyst or other maintenance activities, while the FCCU continues in operation and flue gas continues to be treated by ESP C2769. In addition to this equipment, a new ammonia injection grid has been installed just upstream of ESP C2769.

BP (now Tesoro) is required under Rule 1105.1 to monitor several operating parameters to ensure that ESP C2769 is in good working order. The following parameters are monitored and maintained in their optimum operating range:

- Flue gas inlet temperature to the ESP, monitored continuously and recorded hourly. The operating range is 500 to 750°F.
- Flue gas flow rate, monitored continuously and recorded hourly. The operating range is 7 to 30 mmacfh.
- Voltage and current across the ESP (or total power input), monitored continuously and recorded hourly. The operating range is 250 – 800 kW.
- Ammonia injection rate to the ESP, monitored continuously and recorded hourly. The operating range is 0.1 – 0.5 gpm.

(Note: continuous monitoring means monitoring at least once every 15 minutes. Hourly recording means recording of at least one measurement per hour).

EMISSIONS

ESP C2769 reduces emissions of particulate matter from the FCCU regenerator, to achieve compliance with Rule 1105.1. No increase in emissions of any other pollutant from ESP C2769 is expected. Prior to the project, the potential-to-emit for PM₁₀ from the FCCU was calculated to be 26.6 lbs/hr. This emissions rate is reflected in the District NSR database, under A/N 397357. This PM₁₀ emissions rate includes solid and condensable PM₁₀ emissions, minus any ammonium sulfate.

The post-project PM₁₀ emissions rate is based on the Rule 1105.1 limit of 2.8 lbs per 1000 barrels feed. The potential-to-emit of PM₁₀ is calculated below:

$$\begin{aligned}
 \text{Filterable PM}_{10} \text{ emissions (lbs/day)} &= 105,000 \text{ bbl/day throughput} \times \\
 &\quad 2.8 \text{ lbs Filterable PM}_{10}/1000 \text{ bbl feed} \\
 &= 294 \text{ lbs Filterable PM}_{10}/\text{day} \\
 \text{Total PM}_{10} \text{ emissions (lbs/day)} &= 294 \text{ lbs Filterable PM}_{10}/\text{day} / 0.89
 \end{aligned}$$

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= 330 lbs Total PM₁₀/day

Basis: source testing done at the time of Rule 1105.1 development found that in typical FCCU exhaust solid PM₁₀ emissions account for 89% of total PM emissions (not including ammonium sulfate).

Thus, the project results in a reduction in PM₁₀ emissions, as calculated below:

Pre-project Total PM₁₀ emissions = 26.6 lbs/hr x 24 hrs/day = 639 lbs Total PM₁₀/day

Post-project Total PM₁₀ emissions = 330 lbs Total PM₁₀/day

Change in Total PM₁₀ emissions = - 309 lbs Total PM₁₀/day

The project does not result in an increase in ammonia emissions in the FCCU exhaust. Prior to this project, emissions of ammonia were limited by permit condition to 10 ppm. The FCCU pollution control system involves injection of ammonia in two locations, immediately upstream of the SCR catalyst for control of NO_x and upstream of the ESP for enhancement of PM control. Under this project, the ammonia emissions limit of 10 ppm is retained. Emissions of ammonia were estimated in the PC evaluation, as shown below:

Hourly Maximum NH₃ Emissions = 5.9 lbs/hour

Daily Maximum NH₃ Emissions = 141.6 lbs/day

Annual Max NH₃ Emissions = 51,684 lbs/year

Ammonia slip emissions are entered in the NSR database under A/N 450845 (i.e. in the permit for SCR C2651).

BP (now Tesoro) has conducted source testing to demonstrate compliance with permit limits for the FCCU and FCCU air pollution control system. Tests results are shown in tables below.

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Source Test 8/13/2008 (Attachment #1)

Parameter	Result	Limit	Basis of Limit
Filterable PM ₁₀	1.28 lbs PM ₁₀ /1000 bbl feed	2.8 lbs/1000 bbl feed	Rule 1105.1
Solid PM	5.25 lbs/hr	30 lbs/hr	Rule 405
Total PM	0.0038 grains/dscf	0.0276 grains/dscf	Rule 404
Total PM	0.0028 grains/dscf @ 12% O ₂	0.100 grains/dscf @ 12% O ₂	Rule 409
Carbon Monoxide	23.94 ppm @ 0% O ₂	500 ppm @ 0% O ₂	Consent Decree
Ammonia	0.81 ppm @ 3% O ₂	10 ppm @ 3% O ₂	Rule 1105.1
Operating Parameters and Other Emissions Results			
FCCU Feed Rate	3,485 barrels per hour		
Stack Gas Temperature	580.7°F		
Stack Gas Flow Rate (wet actual)	377,709 wacfm		
Stack Gas Flow Rate (dry standard)	165,400 dscfm		
Stack Gas Oxygen Concentration	3.66%, dry		
Stack Gas Carbon Dioxide Concentration	16.30%, dry		
NO _x Concentration	10.3 ppm @ 0% O ₂		
SO _x Concentration at SCR Inlet	29.5 ppm @ 3% O ₂		
VOC Concentration	2.37 ppm @ 3% O ₂		
ESP Opacity	1.55%		
Aqueous Ammonia to ESP Vaporizer	0.00 gpm		
Aqueous Ammonia to SCR Vaporizer	0.41 gpm		
ESP Primary Power	441.66 kW		
ESP Secondary Power	319.95 kW		
Stack Flow Rate, Actual Wet	22.46 mmacfh		
SCR Outlet Temperature	606.03°F		

Notes: In this source test PM₁₀ and Total PM were measured separately. The ratio of Filterable PM₁₀ to Filterable Total PM was determined to be 0.975.

Shaded parameters are obtained from facility monitors

Annual Compliance Test 6/16/2009 (Attachment #2)

Parameter	Result	Limit	Basis of Limit
Filterable PM ₁₀	0.81 lbs PM ₁₀ /1000 bbl feed	2.8 lbs/1000 bbl feed	Rule 1105.1
Solid PM	3.36 lbs/hr	30 lbs/hr	Rule 405
Total PM	0.0024 grains/dscf	0.0281 grains/dscf	Rule 404
Total PM	0.0009 grains/dscf @ 12% O ₂	0.100 grains/dscf @ 12% O ₂	Rule 409
Carbon Monoxide	35.50 ppm @ 0% O ₂	500 ppm @ 0% O ₂	Consent Decree
Ammonia	3.07 ppm @ 3% O ₂	10 ppm @ 3% O ₂	Rule 1105.1
Operating Parameters and Other Emissions Results			
FCCU Feed Rate	3,977 barrels per hour		
Stack Gas Temperature	582.0°F		
Stack Gas Flow Rate (wet actual)	360,489 wacfm		
Stack Gas Flow Rate (dry standard)	161,875 dscfm		
Stack Gas Oxygen Concentration	2.93%, dry		
Stack Gas Carbon Dioxide Concentration	15.87%, dry		
NO _x Concentration	0.12 ppm @ 0% O ₂		

Note: Filterable PM₁₀ results were calculated using the ratio of 0.975 Filterable PM₁₀/Filterable Total PM

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Annual Compliance Test 2/19/2010 (Attachment #3)

Parameter	Result	Limit	Basis of Limit
Filterable PM ₁₀	0.53 lbs PM ₁₀ /1000 bbl feed	2.8 lbs/1000 bbl feed	Rule 1105.1
Solid PM	2.21 lbs/hr	30 lbs/hr	Rule 405
Total PM	0.0016 grains/dscf	0.0267 grains/dscf	Rule 404
Total PM	0.0012 grains/dscf @ 12% O ₂	0.100 grains/dscf @ 12% O ₂	Rule 409
Carbon Monoxide	37.67 ppm @ 0% O ₂	500 ppm @ 0% O ₂	Consent Decree
Ammonia	3.17 ppm @ 3% O ₂	10 ppm @ 3% O ₂	Rule 1105.1
Operating Parameters and Other Emissions Results			
FCCU Feed Rate	4,076 barrels per hour		
Stack Gas Temperature	608.3°F		
Stack Gas Flow Rate (wet actual)	397,697 wacfm		
Stack Gas Flow Rate (dry standard)	174,808 dscfm		
Stack Gas Oxygen Concentration	2.85%, dry		
Stack Gas Carbon Dioxide Concentration	15.44%, dry		
NO _x Concentration	0.28 ppm @ 0% O ₂		
ESP Opacity	0.69%		
Aqueous Ammonia to ESP Vaporizer	0.00 gpm		
Aqueous Ammonia to SCR Vaporizer	0.13 gpm		
ESP Primary Power	414.62 kW		
ESP Secondary Power	291.37 kW		
Stack Flow Rate, Actual Wet	24.79 mmacfh		
SCR Stack Temperature	606.17°F		

Notes: Filterable PM₁₀ results were calculated using the ratio of 0.975 Filterable PM₁₀/Filterable Total PM
Shaded parameters are obtained from facility monitors

RULE EVALUATION**California Environmental Quality Act (CEQA)**

An Environmental Impact Report (EIR) was prepared for a group of projects entitled BP Refinery Safety, Compliance and Optimization Project, which included the construction of a new ESP serving the FCCU. The District was the lead agency under CEQA. The EIR identified significant adverse environmental effects in the following areas: Air Quality, and Hazards and Hazardous Materials. The EIR determined that the proposed project benefits outweigh the unavoidable adverse impacts, such that these impacts are acceptable. Under the CEQA process, the draft EIR underwent a 45 day review and comment period. The public review began on June 20, 2006 and concluded on August 3, 2006. No comments were received. The Final EIR was certified by the District on September 15, 2006. The current permit action, for conversion of PCs into POs, has no impact on pollutant emissions and thus is not subject to CEQA review.

Permit condition E193.8 requires compliance with all mitigation measures stipulated by the AQMD certified EIR - SCH # 2005111057, dated September 15, 2006. This EIR contained mitigation measures addressing for the following areas: Air Quality, Hazards and Hazardous Materials, Noise, and Transportation and Traffic. These are discussed below:



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- For Air Quality mitigation measures were required to minimize significant air quality impacts associated with the construction phase of the project. However, emissions of certain pollutants during the construction phase were expected to remain significant, even after implementation of mitigation measures. No mitigation measures were required for the operation phase as all emissions during this phase were determined to be less than significant.
- For Hazards and Hazardous Materials the projects were determined to result in significant adverse impacts and the EIR contained mitigation measures to minimize these impacts. These mitigation measures, however, were not expected to reduce adverse impacts to insignificance. For the FCCU, Hazards and Hazardous Materials were associated with a release from a liquid line leaving the extractor. Therefore, the significant adverse impacts are not associated with ESP C2769 and Stack S2771.
- No significant impacts due to Noise were expected during construction or operational phases of the projects. Therefore, no mitigation measures were required.
- The projects were expected to have significant adverse impacts on Transportation and Traffic during the construction phase. Mitigation measures were implemented to reduce Traffic and Transportation impacts to less than significant.

As there are no current mitigation requirements under this EIR for ESP C2769 and Stack S2771, tagging of these devices with this condition is eliminated.

Rule 212 - Standards for Approving Permits and Issuing Public Notice

Public noticing is not be required for this project for the following reasons:

212(c)(1): This section requires public noticing for a new or modified permit unit, if it is within 1000 feet of a school. The subject equipment is not within 1000 feet of a school boundary.

212(c)(2): This section requires public noticing when there is an emission increase exceeding any of the daily maxima specified in §212 (g), as listed below:

Volatile Organic Compounds	30 lbs/day
Nitrogen Dioxide	40 lbs/day
PM10	30 lbs/day
Sulfur Dioxide	60 lbs/day
Carbon Monoxide	220 lbs/day
Lead	3 lbs/day

The subject equipment modification, for construction of new ESP C2769 and modification of the venting arrangement of existing SCR C2651, did not result in an increase in criteria pollutants. Therefore, public notice requirement was not triggered under this section.



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212(c)(3): This section requires public noticing for any new or modified permit unit, if the modification results in an increase in exposure to Toxic Air Contaminants (TACs) such that the Maximum Individual Cancer Risk (MICR) is greater than or equal to 1 in a million (1×10^{-6}) during a lifetime of 70 years. This section also requires public noticing if it is determined that the equipment will result in exposure to substances which pose a potential risk of nuisance. The subject equipment modification, for construction of new ESP C2769 and modification of venting arrangement of existing SCR 2651, did not result in an increase in TAC emissions. Therefore, public notice requirement was not triggered under this section.

212(g): This section describes the scope of dissemination of a public notice, for new or modified units which result in emissions increases exceeding the levels listed above. This includes a District analysis of the effect on air quality to be viewed at one location in the affected area, prominent advertisement in the affected area, and mailing of the notice to the US EPA, the affected state, and local government agencies. Since the subject modification did not result in an emissions increase, this section does not apply.

Therefore, public noticing was not required for this equipment modification. The current permit action, for conversion of PCs into POs, also has no associated change in pollutant emissions and thus is not subject to public notice requirements under this rule.

Rule 401 – Visible Emissions

This rule requires that a source not emit visible emissions with a shade as dark as or darker than that designated as Ringelmann No. 1, by the US Bureau of Mines, for a period exceeding three minutes in any hour. New ESP C2769 controls emissions of particulate matter to very low levels, resulting in continued compliance with the visible emissions limit of this rule.

Rule 402 - Nuisance

With proper operation and maintenance, the FCCU and FCCU air pollution control system are not expected to be a source of public nuisance. This project, for construction of new ESP C2769 and modification of venting arrangement for SCR C2651, is expected to enhance the control of pollutant emissions from the FCCU. Thus, the project has a beneficial impact on the environment. Continued compliance with the requirements of this rule is expected.

Rule 404 – Particulate Matter - Concentration

This rule limits particulate matter concentration in proportion to the stack flow rate. As shown in the Emission section above, source testing has demonstrated that ESP C2769 controls the particulate matter concentration to a level below the limit of this rule. For example, in the source test on August 13, 2008 a stack flow rate of 165,400 dscfm was



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measured. The particulate matter concentration limit corresponding to this stack flow rate is 0.0276 grains/dscf. The source test determined that the particulate matter concentration emitted at the FCCU exhaust stack was 0.0038 grains/dscf. Subsequent annual tests also demonstrated compliance with this rule. Thus, the FCCU and the FCCU air pollution control system continue to operate in compliance with this rule.

Rule 405 – Solid Particulate Matter - Weight

This rule limits solid particulate matter emissions in proportion to the process weight. Based on the FCCU feed rates observed during source testing, the solid particulate matter emissions limit for the FCCU is 30 lbs/hr. As shown above in the Emission section, source tests have demonstrated that ESP C2769 controls solid particulate matter emissions to levels below this limit. For example, source testing on August 13, 2008 showed solid particulate matter emissions were 5.28 lbs/hr. Subsequent annual testing also determined that solid matter emissions are below 30 lbs/hr (3.36 lbs/hr in ‘2009 and 2.21 lbs/hr ‘2010). Thus, the FCCU and the FCCU air pollution control system continue to operate in compliance with this rule.

Rule 407 - Liquid and Gaseous Air Contaminants

This rule states limits emissions of CO to 2000 ppm (by volume on a dry basis averaged over 15 minutes) and SO₂ to 500 ppm (averaged over 15 minutes). However, as stated in Rule 2001(j), the SO_x limitation under Rule 407 is not applicable to sources regulated under the SCAQMD SO_x RECLAIM program. The FCCU regenerator D164 is a Major SO_x Source under RECLAIM. As shown in the Emission section above, source tests have demonstrated that CO emissions are below 2000 ppm. For example, in the source test on August 13, 2008 a CO concentration of 23.94 ppm @ 0% O₂ was measured. Subsequent annual testing also determined that CO concentrations are below 2000 ppm (35.50 ppm @ 0% O₂ in ‘2009 and 37.67 ppm @ 0% O₂ ‘2010). Thus, the FCCU and the FCCU air pollution control system continue to operate in compliance with this rule.

Rule 409 – Combustion Contaminants

This rule limits particulate matter emissions from combustion sources to 0.1 grains per cubic foot (calculated at 12% CO₂ and averaged over 15 minutes). As shown in the Emission section above, source tests have demonstrated that ESP C2769 controls particulate matter to levels below this limit. For example, in the source test on August 13, 2008 the Total Particulate Matter concentration was measured to be 0.0028 grains/dscf @ 12% O₂. Subsequent annual testing also determined that the Total Particulate Matter concentrations are below 0.100 grains/dscf @ 12% O₂ (0.0009 grains/dscf @ 12% O₂ in ‘2009 and 0.0012 grains/dscf @ 12% O₂ ‘2010). Thus, the FCCU and the FCCU air pollution control system continue to operate in compliance with this rule.



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

FCCU regenerators which have undergone construction, reconstruction, or modification after June 11, 1973 and on or before May 14, 2007 are affected facilities under this regulation. This regulation limits emissions of particulate matter from FCCU regenerators to no more than 1.0 kg/Mg (2 lbs/ton) of coke burn-off in the catalyst regenerator. It also limits opacity from the FCCU regenerator to 30%, except for one six minute average opacity reading in any one hour. Emissions of CO are limited to 500 ppmv (dry basis). The PC evaluation determined that this subpart is not applicable to the FCCU regenerator at BP (now Tesoro) as it has not been modified since 1973, such that there was an emissions increase of a pollutant regulated under this subpart. Thus, the requirements of this regulation are not applicable to the BP (now Tesoro) FCCU regenerator.

Rule 1105.1 – Reduction of PM₁₀ and Ammonia Emissions from Fluid Catalytic Cracking Units

This rule establishes limits for emissions of PM₁₀ and ammonia from FCCUs. §1105(d)(1) establishes a limit of Filterable PM₁₀ emissions at one of the following: 3.6 lbs/hr, 0.005 grains/scf corrected to 3% O₂ day, or 2.8 lbs per 1000 barrels of fresh feed. Emissions of ammonia slip are limited to 10 ppmv corrected to 3% O₂ dry, averaged over 60 consecutive minutes. For these limitations a compliance deadline of December 31, 2006 is stated. The operator is required to select one of these PM₁₀ emissions limits. For the BP (now Tesoro) FCCU a permit condition limits emissions of PM₁₀ to 2.8 lbs per 1000 barrels of fresh feed. Permit terms also limit emissions of ammonia to 10 ppmv (60 minute average, @ 3% O₂). §1105(d)(2) allows an extension of the compliance date to December 31, 2008, for the purpose of synchronizing the installation of PM₁₀ control equipment with an FCCU turnaround.

§1105(e)(1)(D) specifies the use of SCAQMD Method 5.2 (modified to use an in-stack PM₁₀ cut cyclone and operated at a constant sampling rate as specified in US EPA Source Test Method 201A – *Determination of PM₁₀ Emissions Constant Sampling Rate Procedures*) for measurement of PM₁₀ emissions. This section also allows the determination of the ratio of filterable PM₁₀ to filterable PM emissions, for use with subsequent source test results. This ratio can then be applied to results of filterable PM emissions from subsequent annual source tests. Annual compliance testing for PM₁₀ and ammonia emissions is required. Periodic monitoring and recording of FCCU control equipment parameters (e.g. for wet or dry EPSs - flue gas inlet temperature to the ESP, flue gas flow rate, voltage and current across the ESP or total power input, ammonia injection rate, or other alternate approved parameters) is required.

Source testing results indicate that the BP (now Tesoro) FCCU and FCCU air pollution control equipment are operating in compliance with the requirements of this rule. The following rates of Filterable PM₁₀ emissions were measured/calculated: 1.28 lbs



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PM₁₀/1000 bbl feed ('2008), 0.81 lbs PM₁₀/1000 bbl feed ('2009), and 0.53 lbs PM₁₀/1000 bbl feed ('2010). All are within the limit of 2.8 lbs Filterable PM₁₀/1000 barrels feed. The following levels of ammonia slip have been measured: 0.81 ppm @ 3% O₂ ('2008), 3.07 ppm @ 3% O₂ ('2009), and 3.17 ppm @ 3% O₂ ('2010). All are within the limit of 10 ppm @ 3% O₂ established under this rule. Source testing reports include facility monitoring data required under this rule, as follows: ESP secondary power, ammonia flow rate to ESP, stack flow rate, and SCR Outlet temperature. Thus, confirming that the facility conducts the parameter monitoring required under this rule.

Reg. XIII - New Source Review:

This rule states requirements including that a project meet standards considered Best Available Control Technology (BACT), that emissions offsets be provided for increases in non-attainment air contaminants, and that air quality modeling be performed to assess the impacts of the project on ambient air quality. This project, for installation of ESP C2769 and modification of the venting arrangement for SCR C2651, did not result in an increase in criteria pollutant emissions. Thus, the project was determined to be exempt from the requirements of this regulation.

Rule 1401 – New Source Review of Carcinogenic Air Contaminants

This rule states requirements including that the TAC emissions from a project not result in an increase in Maximum Individual Cancer Risk (MICR) exceeding 1x10⁻⁶ at any receptor location if T-BACT is not used, or 10x10⁻⁶ at any receptor location if T-BACT is employed, that Acute and Chronic Hazard Indices (HI) not exceed 1.0 for any target organ system at any receptor location, and that the cancer burden not exceed 0.5. This project, for construction of new ESP C2769 and modification of the venting arrangement for SCR 2651, does no result in an increase in TAC emissions. Per 1401(g)(1)(B), any project which causes no increase in cancer burden, MICR and acute/chronic HI at any receptor location is exempt from the requirements of this regulation. Thus, this project is exempt from the requirements of Rule 1401.

Reg XVII – Prevention of Significant Deterioration

This rule applies to emissions of pollutants for which attainment with ambient air quality standards has been achieved in the South Coast Air Basin (NO₂, SO_x, and CO). The subject permit action, for construction of new ESP C2769 and modification of the venting arrangement for existing SCR C2651, did not result in an increase in emissions of these pollutants. Therefore, Reg XVII requirements do not apply to this project.

Reg. XXX - TV Operating Permits

This facility is subject to Reg. XXX and the initial Title V Permit was issued to BP West Coast Products LLC on September 1, 2009. Upon the change of ownership on June 1, 2013, the initial Title V permit was issued to Tesoro on July 12, 2013. As defined in Rule 3000, the issuance of a Permit to Operate for equipment which had



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been previously been issued a Title V Permit to Construct, with elimination of terms or conditions which are no longer applicable, involves an Administrative Revision of the Title V permit. However, as this permit action involves addition of new monitoring requirements, this permit action will be processed as a Minor Revision of the Tesoro Title V permit. As a Minor Revision, the proposed permit must undergo EPA review (45 day review and comment period), but is not subject public noticing requirements under Rule 3006.

40 CFR 64 - Compliance Assurance Monitoring

This regulation applies to major stationary sources required to obtain a Title V permit, which use control equipment to achieve compliance with specified emissions limits. Under this regulation the BP (now Tesoro) FCCU is a major source with respect to all five criteria pollutants (VOC, NO_x, SO_x, CO and PM₁₀). The regulation is intended to provide “reasonable assurance” that control equipment is operating properly to maintain compliance with emissions limits. Applicability and compliance with CAM requirements for each pollutant are discussed below:

- NO_x: The FCCU is subject to NO_x limits of 20 ppmv (365 day rolling average) and 60 ppmv (7 day rolling average), which are associated with the Consent Decree. NO_x emissions from the FCCU are controlled by the SCR System and a DeNO_x catalyst. The FCCU is a Major NO_x Source under the District’s RECLAIM program and thus is required to be equipped with a NO_x Continuous Emissions Monitoring System (CEMS). The use of a continuous monitoring system to demonstrate compliance with an NO_x limit exempts the FCCU from CAM requirements for NO_x (per §64.2(b)(vi)).
- SO_x: The FCCU is subject to SO_x limits of 50 ppmv (365 day rolling average) and 150 ppmv (7 day rolling average), which are associated with the Consent Decree. SO_x emissions from the FCCU are controlled by a DeSO_x catalyst. The FCCU is a Major SO_x Source under the District’s RECLAIM and thus is required to be equipped with a SO_x Continuous Emissions Monitoring System (CEMS). The use of a continuous monitoring system to demonstrate compliance with a SO_x limit exempts the FCCU from CAM requirements for SO_x (per §64.2(b)(vi)).
- CO: The FCCU is subject to CO limits of 500 ppmv (Consent Decree) and 2000 ppmv (Rule 409). However, the FCCU is not equipped with a control device for CO. Since there is no specific control device for CO emissions, there are no applicable CAM requirements.
- PM₁₀: The FCCU is subject to PM₁₀ limit of 2.8 lbs Filterable PM₁₀/1000 barrels feed (Rule 1105.1). PM₁₀ emissions from the FCCU are controlled by an ESP. Rule 1105.1 requires that several operating parameters of the ESP be monitored and recorded. These include the flue gas inlet temperature to the ESP, flue gas flow rate, voltage and current across the ESP (or total power input), and the ammonia injection rate to the ESP. The operating ranges of these parameters were determined through testing or



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during evaluation of ESP design considerations. Maintaining these operating parameters within the specified ranges assures proper ESP operation.

Therefore, the project is in compliance with applicable requirements of this regulation.

40 CFR 63 Subpart UUU – National Emissions Standards for Hazardous Air Pollutants for Petroleum Refineries: Catalytic Cracking Units, Catalytic Reforming Units, and Sulfur Recovery Units

The BP (now Tesoro) refinery is subject to this regulation as it is a major source of HAPs, which is defined as a source emitting a single HAP at a rate of 10 tons/yr or more, or emitting a combination of HAPs at a rate of 25 tons/yr or more. An affected source under this regulation is the process vent or group of process vents from the regeneration of FCCU catalyst (i.e. catalyst regeneration flue gas vent). For an existing source the facility is required to demonstrate compliance with emissions and work practice standards by April 11, 2005. The following emissions limits apply:

- Subject to NSPS for PM: PM emissions must not exceed 1.0 kg/1000 kg of coke burn-off in the catalyst regenerator. The opacity of emissions must not exceed 30%, except for one 6-minute average opacity reading in any 1-hour period.
- Not subject to NSPS for PM (Option 1): PM emissions must not exceed 1.0 kg/1000 kg of coke burn-off in the catalyst regenerator. The opacity of emissions must not exceed 30%, except for one 6-minute average opacity reading in any 1-hour period.
- Not subject to NSPS for PM (Option 2): PM emissions must not exceed 1.0 kg/1000 kg of coke burn-off in the catalyst regenerator.
- Not subject to NSPS for PM (Option 3): Nickel (Ni) emissions must not exceed 13,000 mg/hr (0.029 lbs/hr).
- Not subject to NSPS for PM (Option 4): Nickel (Ni) emissions must not exceed 1.0 mg/kg of coke burn-off in the catalyst regenerator.
- Subject to NSPS for CO: CO emissions must not exceed 500 ppmv (dry basis).
- Not subject to NSPS for CO: CO emissions must not exceed 500 ppmv (dry basis). If a flare is used to meet the CO limit, the flare must meet the control requirements under §63.11: visible emissions must not exceed a total of 5 minutes during any 2 consecutive hours.

The following requirements also apply:

- A performance test is required within 150 days of the compliance date.
- Installation, operation, and maintenance of a continuous opacity monitoring system to measure and record the opacity of emissions from each catalyst regenerator vent.
- Depending on the emissions limit option selected, a continuous parameter monitoring system to measure and record the gas flow entering and exiting the control device may also be required.



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- Installation, operation, and maintenance of a continuous emissions monitoring system to measure and record the concentration by volume (dry basis) of CO from each catalyst regenerator vent.
- The operator is required to demonstrate continuous compliance by determining and recording each day the average coke burn-off rate (thousands of kilograms per hour) using Equation 1 in §63.1564 and the hours of operation of each catalyst regenerator. As applicable, the operator is required to maintain the PM emissions rate below 1.0 kg/1000 kg of coke burn-off, maintain Ni emissions below 13,000 mg/hr, or maintain Ni emissions below 1.0 mg/kg of coke burn-off in the catalyst regenerator.

According to the PC evaluation, BP has performed the required testing and is in compliance with the monitoring and recordkeeping requirements of this regulation.

RECOMMENDATION:

Issue a Permit to Operate with the following conditions:

S42.1 The operator shall not operate the FCCU unless the operator complies with the emission limits of the following rules:

Contaminant	Rule	Rule Subpart
PM10	District Rule	1105.1
NH3	District Rule	1105.1

[RULE 1105.1, 11-7-2003]

[Systems subject to this condition: Process 3, System 5]

A99.7 The 10 PPM NH3 emission limit(s) shall not apply during FCC Unit startup and shutdown. Each startup or shutdown event shall not exceed 120 hours. The District shall be notified within 48 hours of any startup or shutdown event.

[RULE 1105.1, 11-7-2003; RULE 1303(a)(1)-BACT, 5-10-1996]

[Devices subject to this condition: C2769]

A195.7 The 10 PPMV NH3 emission limit(s) is averaged over 60 minutes at 3 percent O2 dry.

[RULE 1105.1, 11-7-2003]

[Devices subject to this condition: C2769]



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C12.X The operator shall use this equipment in such a manner that the ESP daily average voltage and secondary current (or total power input) being monitored as indicated below are greater than or equal to the average value in the most recent source test at the outlet of the FCCU Regenerator exhaust stack that demonstrated compliance with the emission limits.

The operator shall install and maintain a continuous monitoring and recording system to accurately measure and record the

1. voltage
2. current

at each ESP field. In addition, the operator shall keep records, in a manner approved by the District, for this parameter.

If the daily average ESP total power input falls below the level measured in the most recent source test at the outlet of the FCCU Regenerator exhaust stack that demonstrated compliance with the emission limit, a source test at the FCCU Regenerator stack shall be performed within 90 days at the new minimum daily average ESP total power level. The source test shall be performed according to the requirements specified in Permit Condition D29.11

[RULE 3004(a)(4)-Periodic Monitoring, 12-12-1997; RULE 401, 3-2-1984; RULE 404, 2-7-1986; RULE 405, 2-7-1986]

[Devices subject to this condition: C2769]

D12.16 The operator shall install and maintain a(n) flow meter to accurately indicate the flow rate of the total hourly throughput of injected ammonia. The operator shall continuously record the flow rate with a measuring device or gauge accurate to within +/- 5 percent, calibrated once every 12 months. Continuously record shall be defined as recording every minute and shall be calculated based upon the average of the continuous monitoring for that hour.

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

[Devices subject to this condition: C2651]

D12.17 The operator shall install and maintain a(n) temperature gauge to accurately indicate the temperature of the exhaust gas at the inlet to the SCR reactor. The operator shall continuously record the temperature with a measuring device or gauge accurate to within



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+/- 5 percent, calibrated once every 12 months. Continuously record shall be defined as recording every minute and shall be calculated based upon the average of the continuous monitoring for that hour.

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

[Devices subject to this condition: C2651]

D12.18 The operator shall install and maintain a(n) pressure gauge to accurately indicate the differential pressure across the SCR catalyst bed in inches of water column. The operator shall record the pressure once a month with a measuring device or gauge accurate to within +/- 5 percent, calibrated once every 12 months.

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

[Devices subject to this condition: C2651]

~~D29.1 The operator shall conduct source test(s) for the pollutant(s) identified below.~~

Pollutant(s) to be tested	Required Test Method(s)	Averaging Time	Test Location
CO emissions	District method 100.1	1 hour	Outlet of the SCR
NOX emissions	District method 100.1	1 hour	Outlet of the SCR
PM emissions	Approved District method averaging time	District approved	Outlet of the SCR
NH3 emissions	District method 207.1 and 5.3 or EPA method	1 hour	Outlet of the SCR

~~The test shall be conducted after AQMD approval of the source test protocol, but no later than 180 days after initial start up of the equipment. The AQMD shall be notified of the date and time of the test at least 7 days prior to the test.~~

~~The test(s) shall be conducted at least annually.~~

~~The test shall be conducted to determine the oxygen levels in the exhaust. In addition, the test shall measure the flue gas flow rate (CFH).~~

~~The test shall be conducted in accordance with an AQMD approved source test protocol. The protocol shall be submitted to the AQMD engineer no later than 45 days before the proposed test date and shall be approved by the AQMD before test commences. The test protocol shall include the proposed operating conditions of the SCR during the test, the identity of the testing lab, a statement from the testing lab certifying that it meets the criteria of Rule 304, and a description of all sampling and analytical procedures.~~



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

~~[Devices subject to this condition: C2651]~~

~~D29.2 The operator shall conduct source test(s) for the pollutant(s) identified below.~~

Pollutant(s) to be tested	Required Test Method(s)	Averaging Time	Test Location
NH3 emissions	District method 207.1 and 5.3 or EPA method 17	1 hour	Outlet of the ESP

~~The test shall be conducted at least annually to demonstrate compliance with the Rule 1105.1 concentration limit and the BACT concentration limit when the equipment is operating at least 80 percent of the permitted maximum capacity or within a capacity range approved by the District. The NOx concentration, as determined by the CEMS, shall be simultaneously recorded during the ammonia slip test. If the CEMS is inoperable, a test shall be conducted to determine the NOx emissions using District Method 100.1, measured over a 60 minute ave.~~

~~The test shall be conducted and the results submitted to the AQMD within 45 days after the test date. The AQMD shall be notified of the date and time of the test at least 7 days prior to the test.~~

~~[RULE 1105.1, 11-7-2003; RULE 1303(a)(1)-BACT, 5-10-1996]~~

~~[Devices subject to this condition: C2769]~~

~~D29.4 The operator shall conduct source test(s) for the pollutant(s) identified below.~~

Pollutant(s) to be tested	Required Test Method(s)	Averaging Time	Test Location
NH3 emissions	District method 207.1 and 5.3 or EPA method 17	1 hour	Outlet of the ESP

~~The test shall be conducted at current operating condition, i.e., before the SCR installation to establish baseline for the ammonia slip. The ammonia slip shall be reported as ppm and lbs/hr. The operator shall record the NH3 injection rate during the test. In addition, the operator shall submit to the District the NH3 usage at the ESP for the last two years of operation prior to SCR installation.~~



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~~The test shall be conducted in accordance with an AQMD approved source test protocol. The protocol shall be submitted to the AQMD engineer no later than 45 days before the proposed test date and shall be approved by the AQMD before test commences. The test protocol shall include the proposed operating conditions of the ESP during the test, the identity of the testing lab, a statement from the testing lab certifying that it meets the criteria of R-304, and a description of all sampling and analytical procedures.~~

~~The test shall be conducted and the results submitted to the AQMD within 45 days after the test date. The AQMD shall be notified of the date and time of the test at least 7 days prior to the test.~~

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

~~[Devices subject to this condition: C2651]~~

D90.X The operator shall continuously monitor the opacity at the stack according to the following specifications:

The operator shall maintain and operate the opacity meter and record the readings as required pursuant to 40CFR63, Subpart UUU at all times except during periods of required maintenance and malfunction of the opacity meter.

~~[RULE 3004(a)(4)-Periodic Monitoring, 12-12-1997; RULE 401, 3-2-1984; 40CFR 63 Subpart UUU, 4-20-2006]~~

~~[Devices subject to this condition: D164]~~

~~D90.6 The operator shall sample and analyze the SO₂ concentration at the SCR inlet and outlet simultaneously, once every five years according to the following specifications:~~

~~The operator shall analyze and measure the SO₂ concentration using District Method 6.1.~~

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

~~[Devices subject to this condition: C2651]~~

D90.10 The operator shall continuously monitor the temperature in degrees F of the flue gas at the inlet to the ESP according to the following specifications:

The operator shall monitor once every 15 minutes.



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The operator shall automatically record electronically the above parameter at least one measurement every hour. These records shall be maintained for at least five years and made available to AQMD personnel upon request

The continuous monitor shall be installed and operated whenever the ESP is operating.

Monitoring and recording of this parameter shall not be required during periods of routine maintenance or malfunction of the monitoring and recording device.

The temperature monitor shall have a minimum range of 450- 750 deg F and be accurate to within plus or minus 5 percent and shall be calibrated at least once every 12 months

[RULE 1105.1, 11-7-2003]

[Devices subject to this condition: C2769]

D90.11 The operator shall continuously monitor the flow rate in acfh of the flue gas at the outlet of the ESP according to the following specifications:

The operator shall monitor once every 15 minutes.

The operator shall automatically record electronically the above parameter, one measurement every hour. These records shall be maintained for at least five years and made available to AQMD personnel upon request

The continuous monitor shall be installed and operated whenever the ESP is operation

Monitoring and recording of this parameter shall not be required during periods of routine maintenance, or malfunction of the monitoring and recording device

The flow rate monitor shall have a minimum range of 0-40 mmacfh and be accurate to within plus or minus 5 percent and shall be calibrated at least once every 12 months

[RULE 1105.1, 11-7-2003]

[Devices subject to this condition: C2769]

D90.12 The operator shall continuously monitor the average voltage, secondary current, and total secondary power (in kilowatts) to the ESP according to the following specifications:

The operator shall monitor once every 15 minutes.



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The operator shall automatically record electronically the above parameter, one measurement every hour. These records shall be maintained for at least five years and made available to AQMD personnel upon request

The continuous monitor shall be installed and operated whenever the ESP is operating

Monitoring and recording of this parameter shall not be required during periods of routine maintenance or malfunction of the monitoring and recording device

The power monitor shall have a minimum range of 0-1200 kw and be accurate to within plus or minus 5 percent and shall be calibrated at least once every unit turnaround, with a minimum frequency of once every 6 years

[RULE 1105.1, 11-7-2003]

[Devices subject to this condition: C2769]

D90.13 The operator shall continuously monitor the NH3 injection rate in gpm at the ESP inlet according to the following specifications:

The operator shall monitor once every 15 minutes.

The operator shall automatically record electronically the above parameter, one measurement every hour. These records shall be maintained for at least five years and made available to AQMD personnel upon request

The continuous monitor shall be installed and operated whenever the ESP is operating

Monitoring and recording of this parameter shall not be required during periods to routine maintenance or malfunction of the monitoring and recording device

The NH3 injection rate monitor shall have a minimum range of 0-1 gpm and be accurate to within plus or minus 5 percent and shall be calibrated at least once every unit turnaround, with a minimum frequency of once every 6 years

[RULE 1105.1, 11-7-2003]

[Devices subject to this condition: C2769]

D323.3 The operator shall conduct an inspection for visible emissions from all stacks and other emission points of this equipment whenever there is a public complaint of visible



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emissions, whenever visible emissions are observed, and on a weekly basis, at least, unless the equipment did not operate during the entire weekly period. The routine weekly inspection shall be conducted while the equipment is in operation and during daylight hours.

If any visible emissions (not including condensed water vapor) are detected that last more than three minutes in any one hour, the operator shall verify and certify within 24 hours that the equipment causing the emission and any associated air pollution control equipment are operating normally according to their design and standard procedures and under the same conditions under which compliance was achieved in the past, and either:

- 1). Take corrective action(s) that eliminates the visible emissions within 24 hours and report the visible emissions as a potential deviation in accordance with the reporting requirements in Section K of this permit; or
- 2). Have a CARB-certified smoke reader determine compliance with the opacity standard, using EPA Method 9 or the procedures in the CARB manual "Visible Emission Evaluation", within three business days and report any deviations to AQMD.

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

- 1). Stack or emission point identification;
- 2). Description of any corrective actions taken to abate visible emissions;
- 3). Date and time visible emission was abated; and
- 4). All visible emission observation records by operator or a certified smoke reader.

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

[Devices subject to this condition: C2769]

E73.3 Notwithstanding the requirements of Section E conditions, the operator may, at his discretion, choose not to use the FCC Unit SCR if all of the following requirement(s) are met:

The District shall be notified 24 hours in advance of any scheduled bypass of the FCC Unit SCR.



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The District shall be notified one hour after any unscheduled bypass of the FCC Unit SCR.

Bypass The ESP stack CEMS is fully operational with daily calibration checks to measure NOx, SOx, O2 and CO.

An annual report shall be submitted to the District which includes a summary of the number of hours the SCR was bypassed, a description of maintenance and all scheduled and unscheduled work performed for each bypass event.

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

[Devices subject to this condition: C2651]

E193.15 The operator shall operate and maintain this equipment as follows: The operator shall discharge dust collected in the ESP only into hoppers or closed container bins. The dust from these hoppers or bins shall be loaded into vacuum trucks

[RULE 1105.1, 11-7-2003]

[Devices subject to this condition: C2769]

E193.17 The operator shall operate and maintain this equipment as follows:

Whenever the FCCU is in operation the regenerator exhaust shall vent to the ESP (C2769) which shall be maintained in operation with a minimum of 36 of 40 bus sections energized. Only one bus section in each of the four gas paths may be deenergized at any one time, except during the time required to isolate a bus section in an adjacent path, not to exceed 8 hours per event

The operator shall install and maintain a monitoring and recording system to indicate the on/off operating status of each bus section (40 total). When an alarm indicates any TR (20 total) has been deenergized or reenergized, the operator shall prepare a record to document the status of the bus sections on that TR. These records shall be kept for a minimum of 5 years.

The operator shall not operate the FCCU if emissions from the FCCU to the atmosphere exceed the following limit for filterable PM10: 2.8 lbs/1000 bbls of fresh feed

[RULE 1105.1, 11-7-2003]

[Devices subject to this condition: C2769]



SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT

STATIONARY SOURCE COMPLIANCE DIVISION

APPLICATION PROCESSING AND CALCULATIONS

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E193.18 The operator shall construct, operate, and maintain this equipment according to the following specifications:

The operator shall comply with all mitigation measures stipulated by the AQMD Certified EIR SCH # 2005111057 dated 9/15/06

[CA PRC CEQA, 11-23-1970]

[Devices subject to this condition: ~~E2769~~, ~~S2771~~]

K40.2 The operator shall provide to the District a source test report in accordance with the following specifications:

Source test results shall be submitted to the District no later than ~~45~~ **60** days after the source test was conducted.

Emission data shall be expressed in terms of concentration (ppmv) corrected to 3 percent oxygen (dry basis); ~~and mass rate (lbs/hr), and lbs/MM Cubic Feet.~~ In addition, solid PM emissions, if required to be tested, shall also be reported in terms of grains per DSCF.

~~The PM10 emissions shall also be expressed as pounds per 1000 barrels of fresh feed.~~

~~The PM10 emissions shall also be expressed as pounds per 1000 lbs of coke burn-off.~~

All exhaust flow rate shall be expressed in terms of dry standard cubic feet per minute (DSCFM) and ~~dry~~ actual cubic feet per minute (DACFM).

~~All moisture concentration shall be expressed in terms of percent corrected to 3 percent oxygen.~~

Source test results shall also include the oxygen levels in the exhaust and the flue gas flow rate under which the test was conducted.

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

[Devices subject to this condition: ~~E2651~~, **D164**]