

SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT <i>ENGINEERING AND COMPLIANCE</i> APPLICATION PROCESSING AND CALCULATIONS	PAGES	PAGE
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**PERMIT-TO-OPERATE (S)
(POs) AND
PERMIT-TO-CONSTRUCT (S)
(PCs)**

COMPANY NAME AND ADDRESS

ExxonMobil Corporation
3700 W. 190TH Street
Torrance, CA 90509-2929

Contact : Craig Sakamoto
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EQUIPMENT LOCATION

ExxonMobil Torrance Refinery
3700 W. 190th Street
Torrance, CA 90509-2929

Facility: 800089

SECTION D: EQUIPMENT DESCRIPTION

Equipment	ID No.	Connected To	RECLAIM Source Type/ Monitoring Unit	Emission* And Requirements	Conditions
Process 3: FLUID CATALYTIC CRACKING UNIT					P13.1
System 2: FCCU AIR POLLUTION CONTROL SYSTEM					
CYCLONE, 2C-25, 3RD STAGE SEPARATOR, CATALYST DUST, HEIGHT: 57 FT ; DIAMETER: 26 FT A/N: 428467 512800	C1590	D151 D2404			
CYCLONE, 2C-26-CY, 4TH STAGE SEPARATOR, CATALYST DUST, HEIGHT: 3 FT 3 IN; DIAMETER: 1 FT 9 IN WITH A/N: 428467 512800 HOPPER, 2C-26, CATALYST DUST, DIA: 8 FT, H: 12 FT	C2314	D151			D323.1, E102.2, K67.16
Process 3: FLUID CATALYTIC CRACKING UNIT					P13.1
System 3: CATALYST/SPENT CATALYST HANDLING AND STORAGE					
STORAGE SILO, 2C-1, FRESH CATALYST (BASE), SINOPEC RIPP ZDOS-T, GRACE DAVISON GENESIS-2634, GRACE DAVISON ALCYON-U411 HEIGHT: 37 FT 6 IN; DIAMETER: 15 FT A/N: 431353 510469	D167	C2317		PM: (9) [RULE 404, 2-7-1986; RULE 405, 2-7-1986]	B27.X D323.1, E71.11

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SECTION H: EQUIPMENT DESCRIPTION

Equipment	ID No.	Connected To	RECLAIM Source Type/ Monitoring Unit	Emission* And Requirements	Conditions
Process 3: FLUID CATALYTIC CRACKING UNIT					P13.1
System 1: FCCU, CRACKING SYSTEM					S4.1, S13.2, S15.1, S42.2
REGENERATOR, 2C-3, HEIGHT: 45 FT ; DIAMETER: 37 FT 2 IN WITH A/N: 458743 512799 Permit to Construct Issued: 03/27/07 INJECTOR, FCCU CYCLE OIL/HYDROTREATED GAS OIL INJECTOR, HOPPER, CO PROMOTER CATALYST, 2G-19, D: 2 FT, H: 4 FT 4 IN <u>INJECTOR, CATALYST ADDITIVES (GRACE DAVISON OLEFINSMAX ZSM-5), CO PROMOTER (GRACE DAVISON CP-5), BASE CATALYST (GRACE DAVISON GENESIS-2634), BASE CATALYST (SINOPEC RIPP ZDOS-T), BASE CATALYST (GRACE DAVISON ALCYON-U411)</u>	D151	C164 C165 C166 C1590 C1772 C2283 C2284 C2314	NOX: MAJOR SOURCE**; SOX: MAJOR SOURCE**	CO: 500 PPMV (8) [40CFR 60 Subpart J, 6-24-2008; CONSENT DECREE CIVIL CASE No. 05 C 5809, 12-13-2005]; CO: 2000 PPMV (5) [RULE 407, 4-2-1982]; HAP: (10) [40CFR 63 Subpart UUU, #2, 4-20-2006]; NH3: 10 PPMV (5) [RULE 1105.1, 11-7-2003]; NOX: 20 PPMV (8) [CONSENT DECREE CIVIL CASE No. 05 C 5809, 12-13-2005]; NOX: 40 PPMV (8A) [CONSENT DECREE CIVIL CASE No. 05 C 5809, 12-13-2005]; NOX: 140 PPMV (8B) [CONSENT DECREE CIVIL CASE No. 05 C 5809 12-13-2005]; PM: (9) [RULE 404, 2-7-1986; RULE 405, 2 7-1986]; PM: 0.1 GRAINS/SCF (5) [RULE 409, 8-7-1981]; PM: 1 LB(S)/1000 LBS (8) [40 FR 60 Subpart J, 6-24-2008]; PM10: 0.005 GRAINS/SCF (5) [RULE 1105.1, 11-7-2003]; PM10: 2.8 LBS/1000 BBLS (5A) [RULE 1105.1, 11-7-2003]; PM10: 3.6 LBS/HR (5B) [RULE 1105.1,11-7-2003]; SOX: 25 PPMV (8) [CONSENT DECREE CIVIL CASE No. 05 C 5809, 12-13-2005]; SOX: 50 PPMV (8A) [40CFR 60 Subpart J, 6-24-2008; CONSENT DECREE CIVIL CASE No. 05 C 5809, 12-13-2005]	A63.4, A99.1, A99.2, A99.3, A195.2, A195.3, A195.4, A195.5, A195.6, A195.7, A195.8, D29.3, D82.2, D82.5, D90.4, E193.18, E193.20, E448.2, H23.17, K67.14, K67.15

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Equipment	ID No.	Connected To	RECLAIM Source Type/ Monitoring Unit	Emission* And Requirements	Conditions
Process 3: FLUID CATALYTIC CRACKING UNIT					P13.1
System 2: FCCU AIR POLLUTION CONTROL EQUIPMENT					
ELECTROSTATIC PRECIPITATOR, 2D-2, PLATE-WIRE, DRY, NEGATIVE CORONA, 2 CHAMBERS, 3 FIELDS, 3 T/R SETS, 12 CELLS, BUELL, IN SERIES WITH 2D-1, IDLE MODE, 18 FT L, 57 FT 6 IN W, 30 FT H, 300 KVA WITH A/N: 485909 512801 Permit to Construct Issued: 12/09/08 AMMONIA INJECTION, GRID 1, UPSTREAM OF ESP 2D-1 HOPPER, CATALYST DUST, 8 TOTAL	C166	D151 D2404			C12.1, C12.2, D29.4, D90.8, D90.9, D90.10, D90.11, D323.1, E102.2, E193.10, E193.19, K40.6, K67.10, K67.16
ELECTROSTATIC PRECIPITATOR, 2D-1, PLATE-WIRE, DRY, NEGATIVE CORONA, 2 CHAMBERS, 2 FIELDS, 2 T/R SETS, 12 CELLS, BUELL, IN SERIES WITH 2D-2, IDLE MODE, 18 FT L, 37 FT 6 IN W, 30 FT H, 140 KVA WITH A/N: 485909 512801 Permit to Construct Issued: 12/09/08 AMMONIA INJECTION, GRID 1, UPSTREAM OF ESP 2D-1 HOPPER, CATALYST DUST, 8 TOTAL	C165	D151 D2404			C12.1, C12.2, D29.4, D90.8, D90.9, D90.10, D90.11, D323.1, E102.2, E193.10, E193.19, K40.6, K67.10, K67.16
ELECTROSTATIC RECIPITATOR, 2D-3X 2D-17, PLATE-RDE, DRY, NEGATIVE CORONA, 2 CHAMBERS, 6 FIELDS, 12 T/R SETS, 24 CELLS, HRC, IN PARALLEL WITH 2D-4X 2D-18, 54 FT L, 80 FT W, 36 FT H, 1380 KVA WITH A/N: 485910 512802 Permit to Construct Issued: 12/09/08 AMMONIA INJECTION, GRID 2, UPSTREAM OF ESPS 2D-3X 2D-17 & 2D-4X 2D-18 Continue on the Next Page	C2283	D151 D2404			

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Equipment	ID No.	Connected To	RECLAIM Source Type/ Monitoring Unit	Emission* And Requirements	Conditions
Process 3: FLUID CATALYTIC CRACKING UNIT					P13.1
System 2: FCCU AIR POLLUTION CONTROL EQUIPMENT					
HOPPER, CATALYST DUST, 24 TOTAL	C2283	D151 D2404			C12.2, D29.4, D90.8, D90.9, D90.10, D90.11, D323.1, E102.2, E193.18, E193.19, K67.16
ELECTROSTATIC PRECIPITATOR, 2D-4X 2D-18, PLATE-RDE, DRY, NEGATIVE CORONA, 2 CHAMBERS, 6 FIELDS, 12 T/R SETS, 24 CELLS, HRC, IN PARALLEL WITH 2D-3X 2D-17, 54 FT L, 80 FT W, 36 FT H, 1380 KVA WITH A/N: 485911 512803 Permit to Construct Issued: 12/09/08 AMMONIA INJECTION, GRID 2, UPSTREAM OF ESPS 2D-3X 2D-17 & 2D-4X 2D-18 HOPPER, CATALYST DUST, 24 TOTAL	C2284	D151 D2404			C12.2, D29.4, D90.8, D90.9, D90.10, D90.11, D323.1, E102.2, E193.18, E193.19, K67.16
Process 3: FLUID CATALYTIC CRACKING UNIT					P13.1
System 8: FCCU BASE CATALYST/CATALYST ADDITIVE INJECTING SYSTEM					
BULK MATERIAL LOADING STATION, MULTI-LOADING SYSTEM, CABINET, GRACE DAVISON MODEL MLS-2452-AWC, SERIAL # LL130, WITH AUTOMATIC PROGRAMMABLE LOGIC CONTROLLER, W: 6 FT, L: 10 FT, H: 9 FT WITH A/N: 483504 510467 Permit to Construct Issued: TT/26/08 EDUCTOR, VACUUM PRODUCER, 4 HOSES TO DRAW CATALYST FROM STORAGE BIN TO CATALYST COLLECTOR, WITH 2 DUST FILTERS	D2395	C2397		PM: (9) [RULE 404, 2-7-1986; RULE 405, 2-7-1986]	B27.1, C1.67, E71.13, K171.18
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Equipment	ID No.	Connected To	RECLAIM Source Type/ Monitoring Unit	Emission* And Requirements	Conditions
Process 3: FLUID CATALYTIC CRACKING UNIT					P13.1
System 8: FCCU BASE CATALYST/CATALYST ADDITIVE INJECTING SYSTEM					
SCREEN, DUST/CATALYST COLLECTOR, OPEN/CLOSE VALVE TO DIRECT CATALYST TO TRANSFER POT POT, TRANSFER, PRESSURIZED, PRD SET AT 125 PSIG, 6 CF CAPACITY, WITH 3 CATALYST LOAD CELLS FOR WEIGHT MEASURING & RECORDING, WITH SUPPORT LEGS EJECTOR, PRESSURIZING CATALYST FROM TRANSFER POT TO REGENERATOR VIA A COMMON HOSE					
FILTER, CARTRIDGE TYPE, CATALYST DUST, 2 IN PARALLEL, CLEMTEX, MODEL FA376094, EACH OD:1 FT 2 IN, ID:9 FT 6 IN, H:2 FT 6 IN, WITH AUTOMATIC AIR PULSE CLEANING, 260 SQ.FT. A/N: 483504 510467 Permit to Construct Issued: 11/26/08	C2397	D2395			C6.4, D29.6, D322.3, D323.1, E102.1

BACKGROUND

The ExxonMobil Oil Corporation (ExxonMobil) operates a refinery in the City of Torrance. The South Coast Air Quality Management District (District) currently classifies this facility as a Sulfur Oxides (SOx), Nitrous Oxides (NOx) Regional Clean Air Market Incentives Market (RECLAIM) facility, and a Title V facility.

In the month of May of 2010, ExxonMobil submitted 2 applications to add new catalyst for its fluid catalytic cracker unit (FCCU). The 2 applications were for its catalyst injection system and storage silo. The company did not, however, submit applications for the FCCU, the basic equipment that uses the catalyst, and its associated control devices. Upon discovering the missing applications, the District informed the company to submit the required applications before the District proceeds with their processing.

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In July of 2010, ExxonMobil submitted the required applications. Those applications covered a total of 5 devices, the FCCU regenerator, cyclones, and electrostatic precipitators. Included in the submitted applications, ExxonMobil also requested that an additional new catalyst be included in the permits. Therefore, in addition to the original FCCU catalyst that ExxonMobil submitted applications, the company also included new information on a second new FCCU catalyst that it wants to use in its FCCU process.

All of the permit applications submitted by ExxonMobil are existing devices that have been permitted by the District. Some are operating under existing Permit-to-Operate (s) (POs); some are currently operating under Permit-to-Construct (s) (PCs); And some are, in the case of the FCCU, also operating under a Rule 441 Research Permit. The following table lists the current permits for the devices that ExxonMobil has submitted to the District for permits:

Equipment Type	Current Application No.	Current Purpose of Application	Previous Permit No.	Previous Permit Type	Previous Permit Purpose
FCCU Regenerator	512799	Add two new base catalyst for FCCU process	458743	Permit to Construct	
Cyclone	512800	Add two new base catalyst for FCCU process	428467	Permit to Operate	Application was part of a package submitted to comply with Rule 1105.1. The purpose of the application was to separate the cyclones from the FCCU. The pollution control devices were under the same permit as the FCCU. Under District rules, control devices are to be permitted under their own permits. Therefore, ExxonMobil was required to submit applications for the cyclones
Electrostatic Precipitator (ESP)	512801	Add two new base catalyst for FCCU process	485909	Permit to Construct	Application was submitted to hook-up tp 2 new ESPs that the company built to comply with new Rule1105.1 requirements.
Electrostatic Precipitator (ESP)	512802	Add two new base catalyst for FCCU process	485910	Permit to Construct	Application was submitted to construct new ESP to comply with Rule 1105.1 requirements.

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Equipment Type	Current Application No.	Current Purpose of Application	Previous Permit No.	Previous Permit Type	Previous Permit Purpose
Electrostatic Precipitator (ESP)	512803	Add two new base catalyst for FCCU process	485911	Permit to Construct	Application was submitted to construct new ESP to comply with Rule 1105.1 requirements.
Catalyst Additive System	510467	Add two new base catalyst for FCCU process	483504	Permit to Construct	Application submitted for the construction of a new catalyst injection system.
Catalyst Storage Silo	510469	Add two new base catalyst for FCCU process	431353	Permit to Operate	Application was submitted to incorporate a new condition to allow the use of new catalyst.
Title V	510468	Title V Minor Revision			

As the history of the devices shows that the majority of devices are currently operating under Permit-to-Construct (s) (PCs), with the exception of the catalyst silo, these PCs are issued when District amended its Rule 1105.1 which required ExxonMobil to meet new PM₁₀ limits. Because these PCs are issued to comply with new emission limits, they contained conditions that required testing. ExxonMobil has completed construction and has recently conducted the source test required under its PCs. However, the source test has not been approved by the District's Source Testing. It is still currently under review.

Although ExxonMobil has completed the construction and modification of the devices tied to the District's amended Rule 1105.1 requirements, it is still waiting for District's approval of its source test results. Therefore, the District will not issue POs to the devices currently have PCs. Instead, the District will issue ExxonMobil new PCs for using the new catalysts in its FCCU process if the devices meet all of the District rules and regulations.

FEE ANALYSIS

The following table shows the District's analysis of the required processing fees for the seven applications that ExxonMobil submitted:

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Application No.	Equipment Type	Fee Schedule	Required Fee
510468	RECLAIM Title V Revision-minor		\$1,687.63
512799	FCCU Rgenerator/Change of Condition PC	H	\$14,164.99
512800	Cyclone/Change of Condition PC	B	\$1,037.65
510467	Catalyst Additive System/Injection System/Change of Condition PC	C	\$1,795.84
510469	Catalyst Silo/Alteration	C	\$3,313.05
512801	ESP 2D-1 and 2D-2 Change of Condition PC	H	\$14,164.99
512802	ESP 2D-17 Change of Condition PC & Identical Equipment/2D-18	H	\$14,164.99
512803	ESP 2D-18 Change of Condition PC & Identical Equipment/2D-17	H (50% Discount)	\$7,082.50
Total Required Processing Fee			\$57,411.64
Total Permit Processing Fees Paid			\$58,792.27
Refund (Deficit)			\$1,380.63

The District's fee analysis shows that ExxonMobil is entitled to a refund of \$1,380.63. The refund will be processed once the permits are issued.

COMPLIANCE RECORD REVIEW

The District conducted a search in its Compliance Database to determine whether any of the devices has any open Notice-to-Comply (NTCs) or Notice-of-Violation (NOVs). The results indicate that there are no open NTCs or NOVs for any of the devices that ExxonMobil are requesting permits from the District (See Printout in Appendix).

Although the District's Compliance Database does not show any open NTCs or NOVs for any of the equipment in the applications submitted by the company, ExxonMobil, however, has entered into a consent decree (CD) with the United States Environmental Protection Agency (USEPA), which covers alleged violations from ExxonMobil's operation of its FCCU at the Torrance facility. Under the CD, ExxonMobil must comply with the requirements in the following table as settlements:

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FCCU		
Pollutant	Emission Limit or Monitoring Requirements	Compliance Date
SO2	25 ppmv @ 0% O2 (365-day rolling average)	13 December 2005
SO2	50 ppmv @ 0% O2 (7-day rolling average)	13 December 2005
PM	1 lb of PM per 1000 lb of coke burned	13 December 2005
CO	500 ppmv @ 0% O2 (1-hour average)	13 December 2005
CO	NSR Limit: Long Term-150 ppmv @ 0% O2 (365-day rolling Average) or Short Term-250 ppmv (24-hour Average)	Any time during the term of the CD
CO	CEMS for measuring CO and O2 concentration	13 December 2005
NOx	40 ppmv @ 0% O2 365-day rolling average	31 December 2008
NOx	80 ppmv @ 0% O2 7-day rolling average	31 December 2008
NOx	140 ppmv @ 0% O2 24-hour rolling average (During Boiler Inspection)	31 December 2008
FCCU Catalyst Regenerator		
CO	Requirements of 40CFR60, Subpart A and J	13 December 2005
PM	Requirements of 40CFR60, Subpart A and J	13 December 2005
SO2	Requirements of 40CFR60, Subpart A and J	13 December 2005
Opacity	Requirements of 40CFR60, Subpart A and J	13 December 2005

All of the emission limits under the USEPA's CD has been incorporated as permit conditions in ExxonMobil's permit. Because the compliance dates on some emission limits are in 2005, any violations of those will show up in the District's database. Records indicate that ExxonMobil has not been cited for those emission limits.

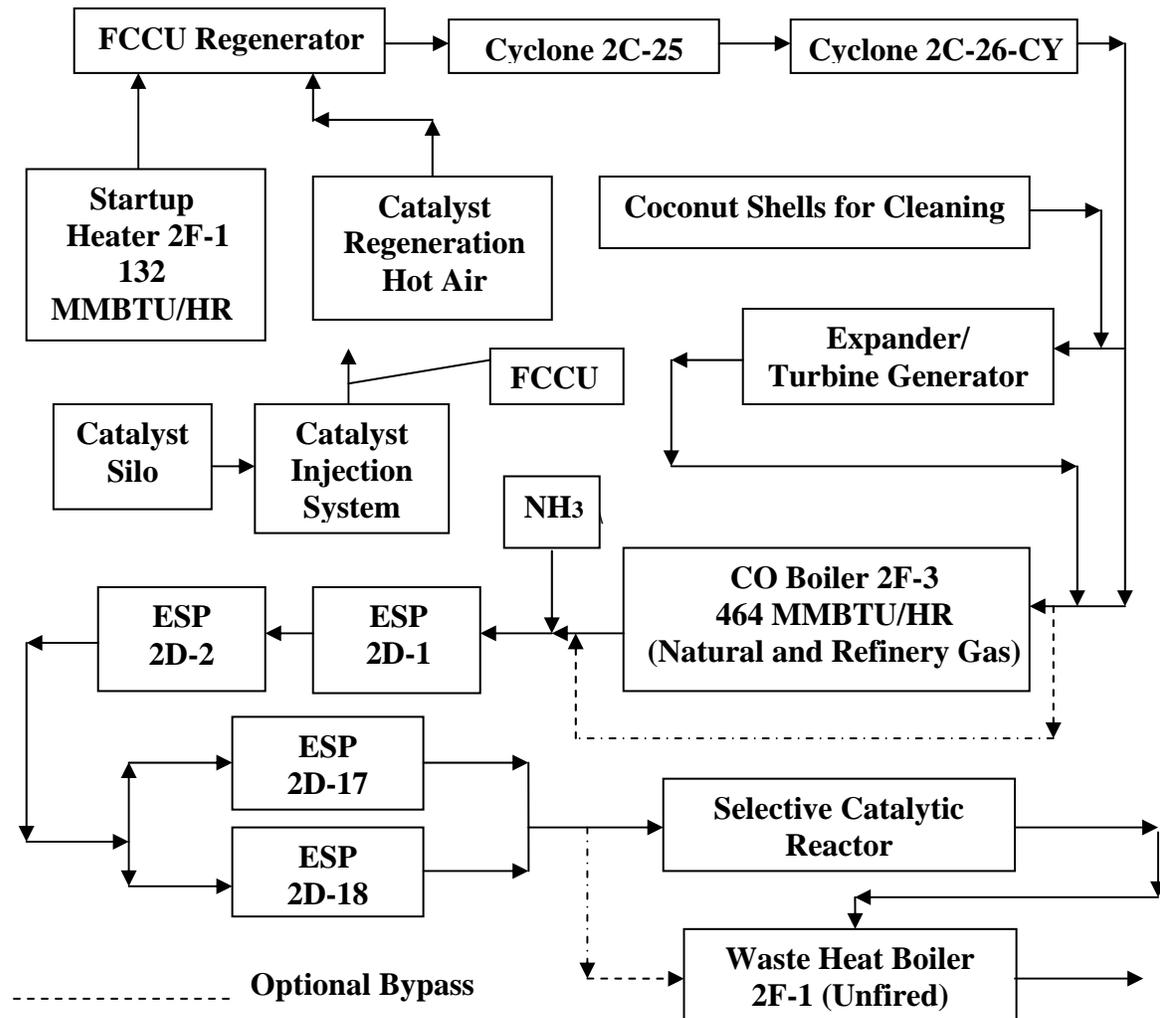
PROCESS DESCRIPTION

The ExxonMobil's FCCU is one of the key process units at its Torrance refinery. The unit takes heavy stock such as vacuum gasoil from the vacuum column as well as light cycle oil and converts these feedstocks into light fractions for further processing to gasoline. The process relies on aluminosilicates as catalyst along with high temperature and pressure to crack the heavy feedstocks. The catalyst are fed through a catalyst injection system that will only operate as recharge for losses in the FCCU regeneration process.

Because the cracking process is performed under severe environmental conditions, the catalyst are coated with carbon, sulfur, and other contaminants as deposits that reduce the activity of the FCCU catalyst which will need to be removed before being recycled back to the reactor, so that yield can be maintained in the FCCU. To perform this removal process, the catalyst is recovered by a stripper section located on top of the reactor. Because some catalyst will be lost, an injection system constantly injects fresh catalyst into the FCCU to maintain yield.

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Once the catalyst is recovered, it flows to the regenerator where hot exhaust gas with excess air from a process heater is used to burn off the contaminants. The exhaust and the burned off deposits which have been combusted to CO₂ and NO_x along with unburned residuals, PMs and products of incomplete combustions are directed to the FCCU's air pollution control system consists of 2 cyclones, a turbine/generator for energy recovery, a CO boiler, 4 ESPs, and a Selective Catalytic Reactor (SCR). The following process flow diagram shows the FCCU's air pollution control system and the table gives the specifications of key units (diagram adapted from ExxonMobil submittal):



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Process Unit	Design Feed or Flow	M.W.	Operating Pressure (psig)	Operating Temperature (°F)	ExxonMobil Drawing No.
FCCU Cracker	102,891 bbl/day	252	35		02A0002E.042
FCCU Regenerator	193.74 scf/min (Air)	28.82	40		02A0002E.042
FCCU Regenerator Flue Gas	198.34 scf/min	29.82	40		02A0002E.042
CO Boiler 2F-3	464 MMBtu/hr		150	1375	02A0114D01

ESP Specifications (Provided by Jacobs Engineering)

	Power (KVA)	Collection Plate Area (sq.ft)	Rapping and Vibrating Mechanism	Designed Gas Flow (kscfm) (Actual Temp is 700 °F)	Designed Inlet Solid Loading (grain/dscf)	Designed Outlet Solid Loading (grain/dscf)
ESP 2D-17	1300	303,264	Mechanical	160	.046	.0025
ESP 2D-18	1300	303,264	Mechanical	160	.046	.0025
ESP 2D-1	140	69,120	Mechanical	80	Not Available	Not Available
ESP 2D-2	300	69,120	Mechanical	80	Not Available	Not Available

Note: The ESP specifications are provided by Jacobs. The company also guaranteed that the ESPs will meet the outlet limits for PM10 under Application No. 458739.

FCCU Selective Catalytic Reactor

	Control Efficiency	Ammonia Slip	Filterable PM10	CO
SCR	92% (2003 Source Test)	12.8 ppm @ 3% O ₂ (2006 Source Test)	78.4 lb/dscf (2006 Source Test)	44.43 ppm @ 0% O ₂ (2004 Source Test)

Note: The results are from running the FCCU between 78.69% to 97.4% capacity. This number is used to establish ammonia and NO_x emissions for the basic equipment, the FCCU regenerator. The inclusion of the SCR is to show how the emission baseline was established for the FCCU regenerator.

With the construction or installation of two new ESPs, ExxonMobil has added the capability to perform maintenance on the ESP system without completely shutting down its PM controls.

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This new capability results from ExxonMobil's intention of using the new ESPs as its primary controls for normal operations while not operating its two existing ESPs. The following table gives the mode of operation when maintenance is required:

Maintenance Objective	ESP 2D-1 Status	ESP 2D-2 Status	ESP 2D-17 Status	ESP 2D-18 Status
CO Boiler Maintenance	Shutdown	Shutdown	Operating	Operating
ESP 2D-17	Operating	Operating	Shutdown	Operating
ESP 2D-18	Operating	Operating	Operating	Shutdown
ExxonMobil's Vendor's Guarantee During Maintenance Mode				
Maintenance Objective	Designed Gas Flow (kscfm)	Designed Inlet Solid Loading (grain/dscf)	Designed Outlet Solid Loading (grain/dscf)	
CO Boiler Maintenance		0.046	0.0025	
ESP 2D-17	160	0.025	0.0025	
ESP 2D-18	160	0.025	0.0025	

The ESPs and the cyclones are intended to control PM₁₀ from its FCCU process. The particulates are primarily from combustion during regeneration process in which carbon deposits on the FCC catalyst are burned off, the carry-over of the catalyst from the hot regeneration air stream, and the break-up of the catalysts into smaller particles. Therefore, the catalyst used in the process will have a bearing in the PM₁₀ emissions. The following table gives the specification of the catalysts that ExxonMobil currently uses and the new proposed catalysts that it requests the District allows it to use and the daily usage rate along with the specifications of the catalyst silo and injection system:

FCCU Base Catalyst Manufacturer	Avg. Bulk Density (g/cubic meter)	Average Particle Size	DI Attrition Index
Grace Atlas 300 EMT (Current Permitted Catalyst)	0.69	66	10
Grace Genesis 2634	0.72	67	8
Sinopec RIPP ZDOS-T	0.72	74	5-6

Note: The DI index is dimensionless number that is used to determine the hardness of the catalyst or its resistance to breaking up into small particles. A lower DI index indicates that the catalyst is more resistant to breaking up. Only base catalysts are in the table because they are the only changes being made to the process.

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Base Catalyst Storage Silo (Fixed Roof)				
Diameter (ft)	Height (ft)		Pollution Control	
15	37		Water Sump	
Base Catalyst Injection System				
Width (ft)	Length (ft)	Height (ft)	Maximum Daily Injection Rate (lb/day)	Maximum Hourly Injection Rate (lb/hr)
6	10	9	24,000	0.02 lb/hr
Base Catalyst Injection Control				
Type		Control Efficiency (%)		
Internal Dust Filter		99.99% for Particle Size of .5 microns or bigger		

Note: The information for the silo and injection system are from previously submitted data contained in Application No. 431353 and Application No. 483504.

EMISSIONS

The emissions from the subject ExxonMobil's applications are from 3 different sources. The FCCU is 1 source. This source is the regenerator, but has controls such as the CO boiler, cyclones, ESPs, and SCR to decrease the emissions. The other 2 sources are the silo during catalyst loading and the catalyst injection system. The following sections show the emissions from these 3 sources:

FCCU EMISSION CALCULATIONS

The ExxonMobil's FCCU's emissions are generated during the catalyst regeneration step of the cracking process. During this step, hot air is injected into the regenerator to burn off the coke deposits from the FCCU catalyst. Pollutant generated during this combustion process are NOx, SOx, PM, and ROG. These pollutants are directed to the FCCU's air pollution control section which consists of cyclones, turbine for energy recovery, CO boiler, ESPs, SCR and to reduce the pollutants to meet District emission limits. The following table lists the applications that are associated with the FCCU, the basic equipment:

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Type of Equipment	Application No.	Pollutants
FCCU Regenerator	512799	Generates PM ₁₀ , CO, and SO _x
Cyclone	512800	Controls PM ₁₀
CO Boiler (Not part of application package)		Controls CO, but also generates PM ₁₀ , SO _x , and NO _x
Electrostatic Precipitator (ESP)	512801	Controls PM ₁₀
Electrostatic Precipitator (ESP)	512802	Controls PM ₁₀
Electrostatic Precipitator (ESP)	512803	Controls PM ₁₀
Selective Catalytic Reactor (SCR) (Not part of application package)		Controls NO _x , but may also emit unreacted ammonia.
Catalyst Additive System	510467	Generates PM ₁₀
Catalyst Storage Silo	510469	Generates PM ₁₀

Since ExxonMobil constructed the FCCU, this process unit has never triggered the District's New Source Review (NSR). The FCCU, however, has undergone several modifications. These modifications were done to reduce emissions because of District rule amendments that require emission reductions. To achieve the emission reductions, ExxonMobil has completed the installation of new controls to decrease emissions from the FCCU.

Because the FCCU is a Pre-NSR device and has never triggered NSR, it does not have an air emission baseline. The FCCU does have limitations on its emissions. These limitations are the emission limits that ExxonMobil must meet to comply with either the District rules or its consent decree with the EPA. These limits, therefore, represent FCCU's maximum allowable emissions, but not the FCCU's NSR baseline. The following section determines what those emissions limits are and must be met by the company and demonstrates that the requested changes by ExxonMobil do not result in any increase in emissions:

OPERATIONAL DATA

Hours Per Day	Days Per Year
24	365

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Pollutant	Current Emission Limit-Current	Previous Emission Limit
CO	500 ppmv @ 0% O ₂ (USEPA Consent Decree)	500 ppmv @ 0% O ₂ (USEPA Consent Decree)
NH₃	10 ppmv @ 3% O ₂ (Rule 1105.1)	10 ppmv @ 3% O ₂ (Rule 1105.1)
PM₁₀	3.6 lb/hr, .005/dscf, or 2.8 lb/1000 bbl (Rule 1105.1)	3.6 lb/hr, .005 lb/dscf, or 2.8 lb/1000 bbl (Rule 1105.1)
SO_x	25 ppmv @ 0% O ₂ -365 day rolling average 50 ppmv @ 0% O ₂ -7 day rolling average (USEPA Consent Decree).	25 ppmv @ 0% O ₂ -365 day rolling average 50 ppmv @ 0% O ₂ -7 day rolling average (USEPA Consent Decree).
NO_x	40 ppmv @ 0% O ₂ 365-day rolling average, 80 ppmv @ 0% O ₂ 7-day rolling	40 ppmv @ 0% O ₂ 365-day rolling average, 80 ppmv @ 0% O ₂ 7-day rolling

The worst-case scenario occurs when the company is operating the FCCU regenerator at full capacity with the two new ESPs running at full capacity. This operating mode is the normal operation of the FCCU system with the 2 new larger ESPs which are rated at maximum combined flow of 320,000 scf/min. The emissions are therefore based on this mode. The following calculations show the worst case in terms of emissions from the FCCU.

CO Emissions:

The CO emissions are generated during the catalyst regeneration process and controlled by the CO boiler. Under the EPA’s consent decree, ExxonMobil is limited to 500 ppmv of CO at 0% O₂. The addition of the catalysts is not expected to have any effect on the CO emission. Furthermore, as required under its previous PCs, ExxonMobil is required under previous permit condition to conduct a source test to demonstrate compliance. The company has already conducted a source test. The completed test is pending Source Testing’s review and approval. Compliance is expected based on the information and data provided by ExxonMobil in its PC application (see Application No. 458743).

Maximum Exhaust Flow After CO Boiler: 320,000 scfm (manufacturer’s maximum design flow)

$$(500 \text{ scf CO}/1000000\text{scf}) \times (320\,000 \text{ scf}/\text{min}) \times 1 \text{ lbmol}/379.82 \text{ scf} \times 60 \text{ min}/\text{hr} \times 28 \text{ lb}/\text{lbmol} = 707.7 \text{ lb}/\text{hr}$$

$$707.7 \text{ lb CO}/\text{hr} \times 24 \text{ hr}/\text{day} = 16,984.80 \text{ lb}/\text{day} = 8.49 \text{ tons}/\text{day}$$

$$16984.80 \text{ lb}/\text{day} \times 365 \text{ day}/\text{yr} = 6,199,452 \text{ lb}/\text{yr} = 3,099.726 \text{ tons}/\text{yr}$$

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$$6,199,452 \text{ lb/yr} \times 1 \text{ yr}/12 \text{ month} \times 1 \text{ month}/30 \text{ day} = \underline{17,220.70 \text{ lb/day (30 day average)}}$$

$$= \underline{8.61 \text{ ton/day (30-day average)}}$$

NH₃ Emissions:

The ammonia emissions is limited by the District’s Rule 1105.1. Under the current District rule the ammonia slip limit is 10 ppmv @ 0% O₂. The addition of the new catalysts is not expected to have any effect on the NH₃ emission. Furthermore, as required under its previous PCs, ExxonMobil is required under its previous permit conditions to conduct a source test to demonstrate compliance with the limit. ExxonMobil has already conducted the required source test. The completed test is pending Source Testing’s review and approval. Compliance is expected based on the information and data provided by the company in its PC application (see Application No. 458743).

Maximum Exhaust Flow After CO Boiler: 320,000 scfm (manufacturer’s maximum design flow)

$$(10 \text{ scf NH}_3/1000000\text{scf}) \times (320 \text{ 000 scf}/\text{min}) \times 1 \text{ lbmol}/379.82 \text{ scf} \times 60 \text{ min}/\text{hr} \times 17 \text{ lb}/\text{lbmol}$$

$$= \underline{8.59 \text{ lb/hr}}$$

$$8.59 \text{ lb NH}_3/\text{hr} \times 24 \text{ hr}/\text{day} = \underline{206.245 \text{ lb/day}}$$

$$206.245 \text{ lb/day} \times 365 \text{ day}/\text{yr} = \underline{75,279.45 \text{ lb/yr}} = \underline{37.64 \text{ tons/yr}}$$

$$75,279.45 \text{ lb/yr} \times 1 \text{ yr}/12 \text{ month} \times 1 \text{ month}/30 \text{ day} = \underline{209.11 \text{ lb/day (30 day average)}}$$

NO_x Emissions (365-day rolling average):

The SO_x emission is generated during the catalyst regeneration process and the CO control process from the CO burner. The addition of the new catalyst is not expected to have any effect on the NO_x emission. The current maximum NO_x limit is 40 ppmv. Furthermore, as required under its previous PC, ExxonMobil is required under previous permit condition to conduct a source test to demonstrate compliance. The company has already conducted a source test. The completed test is pending Source Testing’s review and approval. Compliance is expected based on the information and data provided by ExxonMobil in its PC application (see Application No. 458743).

Maximum Exhaust Flow After CO Boiler: 320,000 scfm (manufacturer’s maximum design flow)

$$(40 \text{ scf NO}_x/1000000\text{scf}) \times (320 \text{ 000 scf}/\text{min}) \times 1 \text{ lbmol}/379.82 \text{ scf} \times 60 \text{ min}/\text{hr} \times 46 \text{ lb}/\text{lbmol}$$

$$= \underline{93.012 \text{ lb/hr}}$$

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$$\begin{aligned}
 93.012 \text{ lb NO}_x/\text{hr} \times 24 \text{ hr/day} &= \underline{2,232.300 \text{ lb/day}} = \underline{1.116 \text{ ton/day}} \\
 2,232.300 \text{ lb/day} \times 365 \text{ day/yr} &= \underline{814,789.321 \text{ lb/yr}} = \underline{407.395 \text{ tons/yr}} \\
 814,789,321 \text{ lb/yr} \times 1 \text{ yr/12 month} \times 1 \text{ month/30 day} &= \underline{2,263.30 \text{ lb/day (30-day average)}} \\
 &= \underline{1.132 \text{ ton/day (30-day average)}}
 \end{aligned}$$

SO_x Emissions (365-day rolling average):

The SO_x emissions are from the regeneration process and the supplemental fuel of the CO boiler. The current SO_x limit is set by EPA's consent decree at 25 ppmv. The addition of the new catalysts is not expected to have any effect on the SO_x emission. Furthermore, as required under its previous PC, ExxonMobil is required under previous permit condition to conduct a source test to demonstrate compliance. The company has already conducted a source test. The completed test is pending Source Testing's review and approval. Compliance is expected based on the information and data provided by ExxonMobil in its PC application (see Application No. 458743).

Maximum Exhaust Flow After CO Boiler: 320,000 scfm (manufacturer's maximum design flow)

$$\begin{aligned}
 (25 \text{ scf SO}_x/1000000\text{scf}) \times (320\,000 \text{ scf/min}) \times 1 \text{ lbmol}/379.82 \text{ scf} \times 60 \text{ min/hr} \times 64.1 \\
 \text{lb/lbmol} &= \underline{81.01 \text{ lb/hr}} \\
 80.01 \text{ lb SO}_x/\text{hr} \times 24 \text{ hr/day} &= \underline{1,944.163 \text{ lb/day}} = \underline{.972 \text{ ton/day}} \\
 1,944.163 \text{ lb/day} \times 365 \text{ day/yr} &= \underline{709,619.504 \text{ lb/yr}} = \underline{354.81 \text{ tons/yr}} \\
 709,619.504 \text{ lb/yr} \times 1 \text{ yr/12 month} \times 1 \text{ month/30 day} &= \underline{1,971.165 \text{ lb/day (30 day average)}} \\
 &= \underline{0.986 \text{ ton/day (30-day average)}}
 \end{aligned}$$

PM₁₀ (lb/dscf):

The PM₁₀ emission is generated from combustion and from the FCCU catalyst regeneration process. The catalyst change is not expected to have any effect on the PM₁₀ emissions since ExxonMobil will not be increasing its throughput rate to the FCCU which would require higher fuel usage.

Although combustion is responsible for a portion of the PM₁₀ emissions and does not change, the FCCU catalysts are also responsible for some PM₁₀ emissions. The amount of emissions depends on catalyst recovery, disintegration of the catalyst (the hardness of the catalyst), its size, and the amount of the catalyst used. ExxonMobil requests no catalyst usage increase. The company only requests that the District allows it to use 2 new catalysts as new substitutes for the current FCCU base catalyst. Therefore, there would be no emission increase from this.

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As for the catalyst property such as particle size and hardness (the attrition index), the data from the manufacture indicates that the new catalyst are actually more resistant to breakdown than the old catalyst and that their particle sizes are actually larger. These properties actually indicates that the cyclone would be more effective in recovering the catalyst and possibly resulting in lower PM₁₀ emissions and lowering the load to the ESPs.

FCCU Catalyst Manufacturer	ABD (g/cubic meter)	Average Particle Size	DI Attrition Index
Grace Atlas 300 EMT (Current Permitted Catalyst)	0.69	66	10
Grace Genesis 2634	0.72	67	8
Sinopec RIPP ZDOS-T	0.72	74	5-6

Note: A lower index number indicates that the catalyst is more resistant to breakdown.

Because there is no catalyst usage increase and that the particle sizes are the same as the currently permitted catalyst, the District expects that ExxonMobil can meet the current limit of 0.005 gr/scf required by Rule 1105.1. This limit also needs to be verified by a source test. ExxonMobil has already completed the source test. The completed test is currently pending Source Test's review and approval. Compliance is expected based on the information and data provided by ExxonMobil in its PC applications (please see Application No. 458743, 485909, 485910, and 485911).

Maximum Exhaust Flow After CO Boiler: 320,000 scfm
 Maximum Exhaust Flow After CO Boiler: 320,000 scfm (manufacturer's maximum design flow)

$$0.005 \text{ grain/scf} \times 1 \text{ lb/7000 grain} \times 320 \text{ 000 scf/min} \times 60 \text{ min/hr} = \underline{13.71 \text{ lb/hr}}$$

$$13.71 \text{ lb/hr} \times 24 \text{ hr/day} = \underline{329.143 \text{ lb/day}}$$

$$329.143 \text{ lb/day} \times 365 \text{ day/yr} = \underline{120,137.195 \text{ lb/yr}} = \underline{60.069 \text{ ton/yr}}$$

$$120,137.195 \text{ lb/yr} \times 1 \text{ yr/12 month} \times 1 \text{ month/30 day} = \underline{333.714 \text{ lb/day}}$$

ROG (CO Control-Boiler)

The ROG emissions from the FCCU process are tied to the CO boiler which acts as a control for CO emissions. Because ExxonMobil in this application did not propose any changes to the FCCU, or propose to add any new pollution controls for the FCCU, or alter fuel used in its CO boiler, the propose changes do not result in any emission increases. There is currently no ROG limit for the FCCU. However, the potential is as follows:

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$464 \text{ mmBtu/hr} \times \text{mmscf}/1050 \text{ mmbtu} \times 5.5 \text{ lb/mmscf (District Default)} = \underline{2.43 \text{ lb/hr}}$
 $2.43 \text{ lb/hr} \times 24 \text{ hr/day} = \underline{58.33 \text{ lb/day}}$
 $58.33 \text{ lb/day} \times 365 \text{ day/yr} = \underline{21,290.971 \text{ lb/yr}} = \underline{10.645 \text{ ton/yr}}$
 $21,290.971 \text{ lb/yr} \times 1 \text{ yr}/12 \text{ month} \times 1 \text{ month}/30\text{day} = 59.142 \text{ lb/day (30-day average)}$

EMISSIONS FROM CATALYST SILO AND INJECTION SYSTEM

Catalyst Silo (Application No. 510469)

The ExxonMobil’s catalyst silo was an existing storage unit that was granted a Command and Control permit (Appl #258212), but when the District transferred all of the permitted units in to RECLAIM facility permit, the device was not listed. Finally, the District requested ExxonMobil to submit an application to have the catalyst silo listed in its RECLAIM facility permit under Application No. 431353 and a wet scrubber, Application No. 458741, that controls the dust during loading of the catalyst. At the time of the submittal, the District determined that the device was Pre-New Source Review (Pre-NSR).

In this latest application, ExxonMobil does not request an increase in catalyst usage for its FCCU. The company, therefore, will not need to increase the loading of the catalyst into the silo. Consequently, there will be no increases in emissions and will not trigger NSR. No baseline will need to be re-determined. The previous emissions from the previous PC when the silo was first permitted will remain valid. The only emission from the silo is particulates and is summarized by the following table:

Lb PM10 per hour	Lb PM10 per day	Lb PM10 per year	Lb PM10 per day (30-day Average)
0.009	0.22	80.3	0.22

Catalyst Injection System (Application No. 510467)

The ExxonMobil’s new catalyst injection/handling system is a new device that ExxonMobil constructed under previous Application No. 483504. As a new equipment, it was subject to the District’s NSR requirements. Under NSR, ExxonMobil was limited to a maximum injection rate of 24,000 lb/day of catalyst. In the current application, the company does not request any increase in the catalyst usage for its FCCU process. Therefore, the new catalysts causes no emission increase and the baseline will remain the same as the previous application. The following table summarizes the emissions from the injection system which is from the previous PC:

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Maximum Loading Rate = 24,000 lb/day

Filter Cartridge Control Efficiency = 99.99% (manufacturer's specifications)

20% of loading will be airborne and control by filter (manufacturer's specifications)

Lb PM10 per hour	Lb PM10 per day	Lb PM10 per year	Lb PM10 per day (30-day Average)
0.02	0.48	175.20	0.49

RULES AND REGULATORY ANALYSIS

California Environmental Quality Act (CEQA):

Complies. CEQA applies to all applicants who apply with the District for permits for their planned projects that may have significant environmental impacts. If these significant impacts arise, CEQA requires project proponents to perform formal analyses to identify the impacts, propose mitigation measures to minimize them, and formalize the results as a CEQA document for the public to review and comment.

To facilitate this process, applicants may use the District's 400-CEQA form to prescreen for CEQA applicability. Based on the ExxonMobil's submitted CEQA form for the subject applications, the District concludes that the company does not need to prepare a formal CEQA document for the project.

Regulation II: Permits

Rule 212: Standards for Approving Permits

The District's Rule 212 specifies the conditions under which the District can issue a requested permit to an applicant's new or modified equipment. These conditions are set in terms of the amount of air emission increase, the source's proximity to a public school, and the level of health risk increases that arise from a toxic emission increase. These requirements are specified in Rule 212, Subdivision (c).

When the applicant's new or modified source meets triggers any of the conditions in Rule 212, Subdivision (c), the applicant's proposed new or modified emission source must undergo public notification and review for a period of 30 days in advance of the District's final action on the requested permit as stated in Subdivision (d) of Rule 212. These specific

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requirements of Subdivision (c) and the District’s analysis of compliance for ExxonMobil’s applications are as follows:

Rule 212 (a): Denial of Permit-to-Construct (PC) and Permit-to-Operate (PO) Requirement

An equipment that requires a Permit-to-Construct (PC) or a Permit-to-Operate (PO) must demonstrate that it can operate in compliance with all applicable District rules, and Division 26 of the State Health Safety Code. If an applicant can not demonstrate that his equipment can operate in compliance, the District needs to deny the requested permit. The rules and regulatory analysis section in this evaluation report determines whether ExxonMobil complies with the Rule 212, Subdivision (a), requirements. The conclusion on the District’s regulatory analysis appears in the Recommendation section of this evaluation report.

Rule 212 (b) (1): Conversion of PCs to POs

Not applicable. None of ExxonMobil’s applications is a PC to PO conversion.

Rule 212 (c) (1): Minimum Distance to a Public School Requirement, and Rule 212 (c) (3): Increases in Toxic Air Contaminants Requirements

No Public Notification Is Required. Any new or modified source with an emission increase that requires a District permit may need to go through public notification before the District grants the requested permit, if the source is located within 1000 feet from the outer perimeters of any public schools.

This notification requirement only applies to new or modified sources that result in an emission increase, and/or increase in health risks. Since ExxonMobil’s requested changes do not result in any increases in emissions of criteria pollutants or air toxics, which translate to no health risk increases, no public notification is required.

Rule 212 (c) (2): Emission Increase

No Public Notification Is Required. The Paragraph (c) (2) of Rule 212 establishes the emission thresholds of Rule 212, the net increases in emissions that would trigger public notification requirements in Subdivision (d). The following table, which is from Rule 212 (g), gives the amount of emission increase for each criteria pollutant that would require public notification before the District could issue an applicant’s

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requested permit, and this table includes the net emissions from ExxonMobil's FCCU and controls, catalyst silo, and catalyst injection system:

Air Pollutant	Daily Maximum (lb/day)	Net Emissions Increase from Proposed Changes (lb/day)
VOC	30	0
NOx	40	0
PM ₁₀	30	0
SOx	60	0
CO	220	0
Lead	3	0

The ExxonMobil proposed changes do not increase emissions from any of the devices covered by its submitted applications (see Emission Calculation section for details). No public notification is therefore required.

Regulation IV: Prohibitions

Rule 401: Visible Emissions

Expect to Comply. Paragraph (b) (1) sets the opacity standards for emission sources. The current standard is a shade that is equal or greater than No.1 on the Ringelmann Chart, or any emission that causes the same degree of opacity as that of shade No.1 for more than three minutes in any one hour. If ExxonMobil properly operates and maintains its FCCU and its associated pollution controls and follows the requirements of its manufacturers' recommendations, the District expects ExxonMobil to comply with the requirements of Rule 401.

Rule 402: Nuisance

Expect to Comply. The District's Rule 402 requirements prohibits emission source from discharging pollutants that may cause injury or damage to persons or property, and public nuisance. If ExxonMobil properly operates and maintains the devices covered by its submitted applications, the District expects the company to comply with the requirements of Rule 402.

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Rule 404: Particulate Matter (PM)-Concentration

Expect to comply. The District’s Rule 404 establishes limits on PM emissions. These PM limits depend on the exhaust flow rate of the equipment and are listed in Table 404 (a). Those limits are based on 15-minute averages. With a maximum exhaust flow of 320,000 scf/min, the PM limit is 0.01 grains/scf.

ExxonMobil has recently constructed 2 new ESPs and has completed construction. As required under conditions in its PCs, the company has completed a source test which includes the testing of PM to demonstrate compliance. This test is currently under Source Testing’s review and approval and is expect to show that it complies with Rule 404 based on the information provided by ExxonMobil when the District issued the PCs for the ESPs (manufacturer submitted a letter of guarantee for compliance).

Rule 407: Liquid and Gaseous Contaminants

Expect to Comply. The District’s Rule 407 establishes the maximum limits for Carbon Monoxide (CO) and Sulfur Oxides (SOx) for any equipment that discharges air pollutants in the District’s jurisdiction. The following table gives the emission limits that currently apply to any equipment:

CO (ppmv)	SOx (ppmv)
2000 ppm (dry basis, 3% O2) at 15 minute average	500 ppm (dry basis, 3% O2) at 15 minute average

Because ExxonMobil is a RECLAIM facility for both NOx and SOx, the company only has to comply with the CO concentration limit as it is exempt by Rule 2001 (j)(2) for NOx and SOx. Therefore, the District has only imposed a emission limit of 2000 ppm CO on the FCCU and associated controls.

If ExxonMobil properly operates and maintains FCCU and associated controls, the District expects the company to comply with the CO limit. In addition, under its PCs after its construction of its new ESPs, ExxonMobil has conducted a source test which includes CO emissions. This source test is pending District’s review and approval and is expected to demonstrate compliance. Compliance is expected based on the information and data provided by ExxonMobil in its PC application (see Application No. 458743).

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Rule 409: Combustion Contaminants

Expect to comply. The District’s Rule 409 imposes an overall pollutant limit of 0.10 grain per cubic foot of combustion contaminants from a combustion source at 12% CO₂ (0 % O₂). ExxonMobil is expected to comply. It has already conducted the required source tests which include the pollutant covered under Rule 409. This source test is pending District’s review and approval and is expected to demonstrate compliance. Compliance is expected based on the information and data provided by ExxonMobil in its PC application (see Application No. 458743).

Regulation IX: Standards of Performance for New Stationary Sources (NSPS) 40CFR60, Subpart J: Standards of Performance for Petroleum Refineries

Comply and Expect to Continue. ExxonMobil’s FCCU catalyst regenerator is subject to requirement of Subpart J. As an affected source, the regenerator must comply with the CO, PM, and SO_x emissions limits of Subpart J. Because ExxonMobil is subject to more stringent requirements contained in its consent decree, the District expects ExxonMobil to comply with Subpart J. Furthermore, previous source tests indicate that ExxonMobil complies with Subpart J requirements. In addition, ExxonMobil has recently completed a source test required under its PCs which includes the pollutants in Regulation IX. This source test is currently pending the District’s review and approval and is expected to demonstrate compliance. The following table compares the limits between the consent decree and Subpart J:

Pollutant	Subpart J	Consent Decree
CO	500 ppmv @ 0% O ₂	500 ppmv @ 0% O ₂
SO _x	50 ppmv (7-day)	25 ppmv (7-day)
PM	1 PM lb/1000 lb coke burned off catalyst	1 PM lb/1000lb coke burned off catalyst

Note: These limits are already imposed in the previous permit and will be retained.

Regulation X: National Emission Standards for Hazardous Air Pollutants

40CFR63, Subpart CC: National Emission Standards for Hazardous Air Pollutants from Petroleum Refineries

Not Applicable. The ExxonMobil’s refinery is subject to Subpart CC. However, there are no requirements covering any of the subject devices.

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40CFR63, Subpart UUU – Standards for Hazardous Air Pollutants (HAPs) from Petroleum Refineries - Catalytic Cracking Units, Reforming Units, and Sulfur Recovery Units:

Expect to Comply. ExxonMobil is subject to Subpart UUU. Its regenerator must comply with the emission limits for PM and opacity and CO. Because these limits overlap with other emission limits such as Subpart J and the consent decree (please see discussions in above sections), the District expects ExxonMobil to comply. Under the requirements of its previous PCs, ExxonMobil has completed a source test for PM and CO. This source test is currently pending District’s review and approval. Compliance is expected based on the information and data provided by ExxonMobil in its PC application (see Application No. 458743).

The following table gives a comparison of the emission limits:

Pollutant	Subpart UUU	Subpart J
PM	1 lb PM/1000 lb coke burned-off	1 lb PM/1000 lb coke burned-off
CO	500 ppmv @ 0% O ₂	500 ppmv @ 0% O ₂
Opacity	30%	30%

Regulation XI: Source Specific Standards

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

Expect to Comply. The District’s Rule 1150.1 sets new requirements for PM that facility who operates FCCU must meet. The new emission requirements are for PM₁₀ and ammonia (NH₃) emissions. For PM₁₀, the rule allows ExxonMobil to choose which limits it wants to meet. The limits that ExxonMobil selected under Application No. 458739, which the company did not request to change, are as follows:

PM₁₀	NH₃
0.005 grain/dscf	10 ppmv @ 3% O ₂ (60 minute average)

The two selected limits have been incorporated as emission limits in the regenerator permit and will remain in the permit. The District expects ExxonMobil to comply with the PM₁₀ emission limit as the ESPs’ contractor for ExxonMobil has guaranteed that the PM₁₀ limit will not exceed 0.0025 grains/dscf for all modes of regenerator operations. In addition,

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when the District issued the PCs for the new ESPs, the District imposed a condition requiring ExxonMobil to conduct a source test to demonstrate compliance with Rule 1105.1 limit. ExxonMobil has completed the required source test. This test is currently pending District review and approval. Compliance is expected based on the information and data provided by ExxonMobil in its PC application (see Application No. 458743).

Regulation XIII: New Source Review (NSR)-Emission Offsets, Modeling, and Best Available Control Technology (BACT)

Not Applicable. The District’s NSR requirements only apply to sources with an increase in emissions. The requested changes do not result in any increases in emissions. Therefore, NSR is not triggered.

Regulation XIV: Toxic Air Contaminants

Rule 1401: New Source Review of Toxic Air Contaminants

Comply. The District’s Regulation XIV sets health risk standards for sources with toxic pollutant increases. If a toxic source causes an increase in health risks associated with its operations above Rule 1401’s thresholds. The toxic source will have to be outfitted with Toxic-BACT before the District can issue a PC or PO.

The ExxonMobil’s applications did not result in any increases in toxic emissions, or any new toxics compounds emitted. The health risks therefore do not change with the usage of the new catalysts. In fact, the catalysts that ExxonMobil uses do not contain any toxics listed in the District’s Rule 1401 list. The following table gives the formulations of the catalyst provided by ExxonMobil and the catalysts’ manufacturers:

Compound	Grace Genesis 2634	Sinopec RIPP ZDOS-T	Toxic List
SiO2 (Amorphous)		X	No
SiO2 (Fused)	X		No
Zeolite-Crystalline	X	X	No
Zeolite-Natural	X	X	No
Cerium IV Oxide		X	No
Lanthanium Oxide	X	X	No
Neodymium Oxide		X	No
Aluminum Oxide	X	X	No

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As a result of no toxic compounds in the FCCU catalysts, no further health risk analysis is required. To ensure compliance with Rule 1401, the District will also impose a permit condition prohibiting the use of base catalyst that contains any toxics listed in Rule 1401.

Regulation XVII: Prevention of Significant Deterioration (PSD)-Standard Prepared Statement by the District

Limited Authority/Partial Delegation. On 15 August 2007, EPA granted the District limited delegation for CO, NOx, and SOx. Because there are no increases in CO, NOx, and SOx emissions from the ExxonMobil’s devices, there are no requirements that are applicable.

PSD for GHG

No Applicable Requirements. A recent EPA Endangerment Finding for green house gases (GHG) and the promulgation of the Tailoring Rule means that GHG emissions need to be evaluated under PSD for permits issued between January 2nd, 2011 and June 30th, 2011 for projects at existing PSD or Title V sources in South Coast in according to the phased-in applicability time frame of the Tailoring Rule.

Under the Tailoring Rule, if a project triggers any PSD pollutants, it must also include GHG in the PSD analysis. Because there are no increases in PSD pollutants including GHG from any of the subject ExxonMobil’s applications that would require a PSD analysis, a PSD analysis for GHG is therefore not required.

Regulation XX: Regional Clean Air Incentive Market (RECLAIM)

Expect to Comply. The ExxonMobil’s requested changes do not result in any increases in RECLAIM pollutants.

Regulation XXVII: ClimateChange

Not Applicable. In June of 2010, the District implemented a GHG program. This program allows companies to voluntarily reduce GHG and exchange for reduction credits. ExxonMobil does not produce any reductions in GHG in its applications and therefore does not qualify or has applied for GHG reduction credits.

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Regulation XXX: Title V Permits

Applicable and Comply. Because ExxonMobil has received its final Title V permit, it has to comply with the requirements for facilities that have been issued final facility Title V permits. Under Regulation XXX, there are classifications for revisions to Title V permits. For ExxonMobil, the following revision applies:

- Applicable and Comply. Minor Permit Revision: This type revision is for changes that do not result in any emission increases regulated by Regulation XXX, and hazardous air pollutants and rules, federal and local, and is not for modification or reconstruction. Because ExxonMobil’s applications are for existing sources that are not not being modified and have no increase of pollutants, the changes are, therefore, considered a minor revision of its Title V permit. A final copy of the permit will, therefore, be sent to the USEPA for a 45-day review as required by Rule 3005 (2)(B)(ii).

RECOMMENDATIONS

The ExxonMobil’s applications comply with all applicable District rules and regulations. The District, therefore, recommends that ExxonMobil receives its requested PCs with following conditions:

PROPOSED CONDITIONS FOR SECTION D

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

Contaminant	Rule	Rule/Subpart
HAPs	40CFR61, SUBPART	FF

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

[Processes subject to this condition : 1, 2, 3, 4, 5, 7, 8, 9, 11, 12, 13, 14, 15, 20, 22, 23]

B27.xThe operator shall not use materials containing any toxic air contaminants (TACs) identified in the SCAQMD Rule 1401, as amended 06-05-2009.

[RULE 1401, 6-5-2009]

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[Devices subject to this condition : ..D167..]

D323.1 The operator shall conduct an inspection for visible emissions from all stacks and other emission points of this equipment whenever there is a public complaint of visible emissions, whenever visible emissions are observed, and on a semi-annual basis, at least, unless the equipment did not operate during the entire semi-annual period. The routine semi-annual inspection shall be conducted while the equipment is in operation and during daylight hours.

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

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

In accordance with the reporting requirements in Section K of this permit, 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**]

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[Devices subject to this condition : D129, D130, D167, D168, D919, C1558, D2291, D2292, D2293, D2294, D2295, D2296, D2297, D2298, D2299, D2300, D2301, D2302, D2303, C2314, D2316, C2317, D2331, D2332, D2333, D2334, D2335, D2384, D2385, D2386, D2388, D2389]

E71.11 The operator shall only vent this equipment to the water sump whenever it is being filled. The operator shall not fill this silo unless the air/steam ejector is utilized and the vent gas is sparged at least 6 inches below the water surface of the sump.

[**RULE 404, 2-7-1986; RULE 405, 2-7-1986**]

[Devices subject to this condition : D167, D168, D2316]

E102.2 The operator shall discharge dust collected in this equipment only into closed containers.

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

[Devices subject to this condition : C165, C166, C2314]

K67.16The operator shall keep records, in a manner approved by the District, for the following parameter(s) or item(s):

Truck outhauls of the hopper.

[**RULE 1105.1, 11-7-2003**]

[Devices subject to this condition : C2314]

PROPOSED CONDITIONS FOR SECTION H

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

Contaminant	Rule	Rule/Subpart
HAPs	40CFR61, SUBPART	FF

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

[Processes subject to this condition : 1, 2, 3, 4, 5, 7, 8, 9, 11, 12, 13, 14, 15, 20, 22, 23]

A63.4 The operator shall limit emissions from this equipment as follows:

CONTAMINANT	EMISSIONS LIMIT
Visible emissions	Less than or equal to 30 Percent opacity

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

[Devices subject to this condition : D151, D2404]

A99.1 The 2.8 lb/1000 bbl fresh feed PM10 emission limit(s) shall only apply when the fresh feed to the FCCU is 105 thousand barrels per day or less.

For the purposes of this condition, PM10 emissions shall be defined as filterable PM10 collected on the cyclone exit, probe and filters of the applicable test methods referenced in the Rule.

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

[RULE 1105.1, 11-7-2003]

[Devices subject to this condition : D151, D2404]

A99.2 The 0.005 gr/dscf PM10 emission limit(s) shall only apply when the flow rate is 320,000 dscfm or less.

For the purposes of this condition, PM10 emissions shall be defined as filterable PM10 collected on the cyclone exit, probe and filters of the applicable test methods referenced in the Rule.

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

[RULE 1105.1, 11-7-2003]

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[Devices subject to this condition : D151, D2404]

A99.3The 3.6 Lbs/hr PM10 emission limit(s) shall only apply when the fresh feed exceeds 105 thousand barrels per day and the flow rate exceeds 320,000 dscfm.

For the purposes of this condition, PM10 emissions shall be defined as filterable PM10 collected on the cyclone exit, probe and filters of the applicable test methods referenced in the Rule.

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

[**RULE 1105.1, 11-7-2003**]

[Devices subject to this condition : D151, D2404]

A195.2The 10 PPMV NH3 emission limit(s) is averaged over consecutive 60 minutes at 3% oxygen, dry basis.

[**RULE 1105.1, 11-7-2003**]

[Devices subject to this condition : D151, C1772, D2404]

A195.3The 20 PPMV NOX emission limit(s) is averaged over 365-day rolling and at 0% oxygen.

For the purposes of this condition, this limit is a long term limit which applies at all times.

[**CONSENT DECREE CIVIL CASE No. 05 C 5809, 12-13-2005**]

[Devices subject to this condition : D151, D2404]

A195.4The 40 PPMV NOX emission limit(s) is averaged over 7-day rolling and at 0% oxygen.

For the purposes of this condition, this limit is a short term limit which applies at all times except during startup, shutdown, or malfunction.

[**CONSENT DECREE CIVIL CASE No. 05 C 5809, 12-13-2005**]

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[Devices subject to this condition : D151, D2404]

A195.5 The 140 PPMV NOX emission limit(s) is averaged over 24-hour rolling and at 0% oxygen.

For the purposes of this condition, this limit is not to exceed 14 days per occurrence, when the SCR is shutdown because the waste heat boiler 2F-7 is shutdown for inspection per California Code of Regulations, Title 8, Section 770(b).

[CONSENT DECREE CIVIL CASE No. 05 C 5809, 12-13-2005]

[Devices subject to this condition : D151, D2404]

A195.6 The 25 PPMV SOX emission limit(s) is averaged over 365-day rolling and at 0% oxygen.

For the purposes of this condition, this limit is a long term limit which applies at all times.

[CONSENT DECREE CIVIL CASE No. 05 C 5809, 12-13-2005]

[Devices subject to this condition : D151, D2404]

A195.7 The 50 PPMV SOX emission limit(s) is averaged over 7-day rolling and at 0% oxygen.

For the purposes of this condition, this limit is a short term limit which applies at all times except during startup, shutdown, or malfunction.

[CONSENT DECREE CIVIL CASE No. 05 C 5809, 12-13-2005]

[Devices subject to this condition : D151, D2404]

A195.8 The 500 PPMV CO emission limit(s) is averaged over hourly rolling and at 0% oxygen.

For the purposes of this condition, this limit is a short term limit which applies at all all times except during startup, shutdown, or malfunction.

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[CONSENT DECREE CIVIL CASE No. 05 C 5809, 12-13-2005]

[Devices subject to this condition : D151, D2404]

B27.1 The operator shall not use materials containing any toxic air contaminants (TACs) identified in the SCAQMD Rule 1401, as amended 06-05-2009.

[RULE 1401, 6-5-2009]

[Devices subject to this condition : .. D2395..]

C1.67 The operator shall limit the loading rate to no more than 24000 lb(s) in any one day.

For the purpose of this condition, loading rate shall be defined as the total loading of of base catalyst (GRACE Davison Genesis-2634), base catalyst (Sinopec Ripp ZDOS-T), base catalyst (GRACE ALCYON-U411), catalyst additives (GRACE Davison Olefinsmax ZSM-5), CO promoter (GRACE Davison CP-5), and SO_x reducing catalyst (GRACE Davison Super DESOX).

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

[Devices subject to this condition : D2395]

C6.4 The operator shall use this equipment in such a manner that the differential pressure being monitored, as indicated below, does not exceed 4 inches HG.

To comply with this condition, the operator shall install and maintain a(n) differential pressure gauge to accurately indicate the differential pressure across the filter.

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

[Devices subject to this condition : C2397]

C12.1 The operator shall use this equipment in such a manner that the daily average secondary voltage and current (or total power input) and total primary current being monitored as indicated below are greater than or equal to the values in the most recent source test which demonstrated compliance with the emission limits.

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

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1. primary and secondary current.
2. primary and secondary voltage.
3. spark rate.

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

If the daily average ESP total power input falls below the level measured in the most recent source test which demonstrated compliance with the emission limit, a source test shall be performed within 90 days at the new minimum daily average ESP total power level. The source test shall be performed for the FCCU regenerator (Device D151) according to the requirements specified in Permit Condition D29.3.

[RULE 3004(a)(4)-Periodic Monitoring, 12-12-1997; RULE 401, 3-2-1984; RULE 401, 11-9-2001; RULE 404, 2-7-1986; RULE 405, 2-7-1986; RULE 409, 8-7-1981]

[Devices subject to this condition : C165, C166]

C12.2The 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 which 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. Total flue gas inlet temperature to ESPs.
2. Total flue gas flow rate.
3. Current across each ESP.
4. Voltage across each ESP.

at each ESP field, in accordance with the approved plan. In addition, the operator shall keep records, in a manner approved by the District, for each of these parameter.

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If the daily average ESP total power input falls below the level measured in the most recent source test which demonstrated compliance with the emission limit, a source test shall be performed within 90 days at the new minimum daily average ESP total power level. The source test shall be performed for the FCCU regenerator (Device D151) according to the requirements specified in Permit Condition D29.4.

[RULE 1105.1, 11-7-2003]

[Devices subject to this condition : C165, C166, C2283, C2284]

D29.3 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
PM emissions	Approved District method	1 hour	Outlet of the SCR

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

The test shall be conducted when the equipment is operating under normal conditions.

Source test result shall be submitted to the District no later than 60 days after the source test was conducted.

Source test results shall include the following parameters: FCCU feed rate; catalyst recirculation rate; coke burn rate; oxygen content of exhaust gases; exhaust flow rate; exhaust gas moisture content; the flue gas temperature at the outlet of the ESP; and the average current, voltage, and spark rate at each of the ESP fields.

[RULE 3004(a)(4)-Periodic Monitoring, 12-12-1997; RULE 404, 2-7-1986; RULE 405, 2-7-1986; RULE 409, 8-7-1981]

[Devices subject to this condition : D151, D2404]

D29.4 The operator shall conduct source test(s) for the pollutant(s) identified below. Pollutant (s) to be tested

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Pollutant (s) to be tested	Required Test Method(s)	Averaging Time	Test Location
PM10 emissions	District Method 5.2(filterables compliance, condensables information)	District-approved averaging time District-approved averaging time	Outlet
PM10 emissions	District Method 5.2 Modified with EPA Method 201A Cyclor (filterables compliance, condensables information)	District-approved averaging time District-approved averaging time	Outlet
PM10 emissions	District Method 5.2 with Previously Determined PM10 to PM Ratio Applied (filterables compliance, condensables information)	District-approved averaging time	Outlet
PM10 emissions	EPA Method 5 (filterables compliance) and District Method 5.2 (condensables information)	District-approved averaging time	Outlet
NH3 emissions	District method 207.1	1 hour	Outlet
NOX emissions	District method 100.1	1 hour	Outlet
SOX emissions	District method 100.	1 hour	Outlet
CO Emissions	District Method 100. or 10.1	1 hour	Outlet
VOC emissions	District Method 25.1 or 25.3	1 hour	Outlet

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The operator shall choose any of the PM10 test methods as indicated above to comply with Rule 1105.1 requirements and the test results of any of the selected test methods shall be used to determine compliance with Rules 404 and 405.

The test shall be conducted after AQMD approval of the source test protocol, but no later than 180 days after initial startup of the new ESP's. The AQMD engineer shall be notified in writing of the date and time of the test at least 10 days prior to the test.

The test shall be conducted in accordance with AQMD approved source test protocol. The protocol shall be submitted to the AQMD no later than 45 days before the proposed test date and shall be approved by the AQMD before test commences.

The test shall be conducted with the following operating modes of the ESPs:

1. Two new ESPs C2283 & C2284 are in full operating mode (two old ESPs C165 & C166 in idle mode).
2. One new ESP in full operating mode & two old ESPs in full operating mode with 1/2 flue gas flow rate @ 160,000 dscfm.
3. One new ESP in full operating mode and two old ESPs in idle mode with 1/2 flue gas flow rate @ 160,000 dscfm.

The test shall be conducted when the FCCU is operating with at least 80 percent of total FCCU feed rate (or 84 thousand barrels per day of total FCCU feed) with two ESPs in full operating mode.

The test shall be conducted when the FCCU is operating with at least 40 percent of total FCCU feed rate (or 42 thousand barrels per day of total FCCU feed) with one new ESP in full operating mode.

The test shall be conducted at least every year with three different operating modes after initial source test.

The operator shall provide the sampling port(s) at the inlet of the ESPs (C2283 & C2284) in accordance with AQMD Method 1.1 - "Sample and Velocity Traverses for Stationary Source" and shall obtain a final approval from the AQMD for this

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sampling port(s) installation and operation, which should be included in the source test protocol.

The test shall be conducted to determine the control efficiency of the ESPs in each mode.

Source test results shall include the following parameters in each mode: FCCU feed rate in KBD; catalyst recirculation rate in TPM; fresh catalyst (make-up & additive rate in TPD; coke burn rate in lb/hr; oxygen & moisture content of exhaust gases; exhaust gas flow rate in dscfm; flue gas temperature at the inlet of the ESP; ammonia injection rate (at ESPs inlet & SCR inlet); and the average current in amps, voltage in volts & spark rate at each ESP field in use.

A source test report shall be submitted to the AQMD no later than 60 days after the source test was completed.

[RULE 1105.1, 11-7-2003; RULE 3004(a)(4)-Periodic Monitoring, 12-12-1997; RULE 404, 2-7-1986; RULE 405, 2-7-1986; RULE 407, 4-2-1982; RULE 409, 8-7-1981; 40CFR60 Subpart J, 6-24-2008; CONSENT DECREE CIVIL CASE No. 05 C 5809, 12-13-2005]

[Devices subject to this condition : C165, C166, C1772, C2283, C2284]

D29.6 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
PM emissions	Approved District method	1 hour	Outlet of the filter
PM10 emissions	Approved District method	1 hour	Outlet of the filter

The initial test(s) shall be conducted within 120 days after achieving maximum production rate, but no later than 180 days after initial start-up.

The test(s) shall be conducted at least annually if the equipment is utilized more than 30 days in a calendar year.

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The test shall be conducted when this equipment is operating at least 80 percent of the maximum allowable capacity.

Report of the test and operating condition of the equipment shall be submitted to the District within 60 days after the test.

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

The operator shall submit a test protocol to the District at least 60 days prior to the initial testing. The initial and annual tests shall be conducted according to the approved test protocol or any subsequent approved revisions.

[RULE 1303(a)(1)-BACT, 5-10-1996; RULE 1303(b)(2)-Offset, 5-10-1996; RULE 3004(a) (4)-Periodic Monitoring, 12-12-1997]

[Devices subject to this condition : C2397]

D82.2 The operator shall install and maintain a CEMS to measure the following parameters:
CO concentration in ppmv Oxygen concentration in percent volume.

[40CFR 60 Subpart J, 6-24-2008; CONSENT DECREE CIVIL CASE No. 05 C 5809, 12-13-2005]

[Devices subject to this condition : D151, C164, D2404]

D82.5 The operator shall install and maintain a CEMS to measure the following parameters:

NOX concentration in ppmv.

SOX concentration in ppmv.

Oxygen concentration in percent volume.

The NO_x and SO_x CEMS shall be certified prior to the startup of the new ESPs with a range covering the emission limits.

[RULE 2004, 5-11-2001; RULE 2011, 5-6-2005; RULE 2012, 5-6-2005; CONSENT DECREE CIVIL CASE No. 05 C 5809, 12-13-2005]

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[Devices subject to this condition : D151, D2404]

D90.4 The operator shall continuously monitor the opacity at stack according to the following specifications:

The operator shall use opacity meter to monitor the parameter.

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

[40CFR 60 Subpart J, 6-24-2008; CONSENT DECREE CIVIL CASE No. 05 C 5809, 12-13-2005]

[Devices subject to this condition : D151, D2404]

D90.8 The operator shall continuously monitor the temperature in degree F of the flue gas at the inlet to the ESP according to the following specifications:

The operator shall monitor once every 15 minutes.

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 in accordance with the monitoring plan as approved by the AQMD.

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

The temperature monitor shall have a minimum range from 500 to 800 degrees F and be accurate to within plus or minus 5 percent and shall be inspected for replacement, if needed, at least once every 12 months.

[RULE 1105.1, 11-7-2003]

[Devices subject to this condition : C165, C166, C2283, C2284]

D90.9 The operator shall continuously monitor the flow rate in scfm (wet) of the flue gas at the inlet to the ESP according to the following specifications:

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The monitoring shall be conducted in accordance with the monitoring plan as approved by the AQMD.

[RULE 1105.1, 11-7-2003]

[Devices subject to this condition : C165, C166, C2283, C2284]

D90.10 The operator shall continuously monitor the ESP total power input across the ESP according to the following specifications:

The operator shall monitor once every 15 minutes.

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 in accordance with the monitoring plan as approved by the AQMD. Monitoring and recording of this parameter shall not be required during periods of routine maintenance or malfunction of the monitoring and recording devices.

The power monitor shall have a range from 0 to 1500 mA and 0 to 100 KV per transformer/rectifier set, which shall 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 : C165, C166, C2283, C2284]

D90.11 The operator shall continuously monitor the NH₃ injection rate in lb/hr at the inlet to the ESP according to the following specifications:

The monitoring shall be conducted in accordance with the monitoring plan as approved by the AQMD.

[RULE 1105.1, 11-7-2003]

[Devices subject to this condition : C165, C166, C2283, C2284]

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D323.1 The operator shall conduct an inspection for visible emissions from all stacks and other other emission points of this equipment whenever there is a public complaint of visible emissions, whenever visible emissions are observed, and on a semi-annual basis, at least, unless the equipment did not operate during the entire semi-annual period. The routine semi-annual inspection shall be conducted while the equipment is in operation and during daylight hours.

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

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

in accordance with the reporting requirements in Section K of this permit

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**]

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[Devices subject to this condition : C165, C166, C2283, C2284, C2397]

E71.13 The operator shall not operate this equipment if the existing Catalyst Loading System is in operation.

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

[Devices subject to this condition : D2395]

E102.1 The operator shall discharge dust collected in this equipment only into closed containers.

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

[Devices subject to this condition : C2397]

E102.2 The operator shall discharge dust collected in this equipment only into closed containers.

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

[Devices subject to this condition : C165, C166, C2283, C2284]

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 Final Environmental Impact Report dated March 23, 2007 [CA PRC CEQA, 11-23-1970].

[Devices subject to this condition : D151, C2283, C2284, D2404]

E193.19 The operator shall operate and maintain this equipment as follows:

Whenever the ESP system (Devices C165, C166, C2283, and C2284) is in operation and venting the FCCU Regenerator catalyst dust exhaust, the operator shall maintain in operation the following modes.

1. Two ESPs C2283 & C2284 in full operating mode (two ESPs C165 & C166 in

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idle mode), or

2. One ESP (C2283 or C2284) in full operating mode and two ESPs C165 & C166 in full operating mode with 1/2 flue gas flow rate @ 160,000 dscfm, or
3. One ESP (C2283 or C2284) in full operating mode, and two ESPs C165 & C166 in idle mode with 1/2 flue gas flow rate @ 160,000 dscfm.

The operator shall not operate the FCCU if emissions from the FCCU to the atmosphere exceed the following limits for filterable PM10: 0.005 gr/dscf or 2.8 lb per 1000 bbl fresh feed.

The operator shall not operate any of the modes, if the source test results of Condition D29.4 show the PM10 and/or NH3 emissions exceed the rule limits, after May 30, 2009.

[RULE 1105.1, 11-7-2003]

[Devices subject to this condition : C165, C166, C2283, C2284]

E193.20 The operator shall operate and maintain this equipment according to the following specifications:

All vent gases under normal operating conditions shall be vented to one of the devices identified in the "connected to" column in the order described in this facility permit.

To comply with this condition, the operator shall replace two emergency bypass stacks (2F-3 East and West) with an enclosed ducting connecting the ESPs C2283 & C2284 to the 2F-7 stack as for emergency venting.

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

[Devices subject to this condition : D151, D2404]

E448.2 The operator shall comply with the following requirements:
The operator shall maintain in operation the following modes:

1. CO boiler C164 in maintenance mode: The emissions from the regenerator/cyclones may be vented directly to ESPs system and bypass CO boiler C164 during required maintenance of the CO boiler.

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2. CO boiler C164 in unfired mode: When ESP C2283 or C2284 is in maintenance mode, the emissions from the regenerator/cyclones shall be vented to the CO boiler C164, which may be operated in the unfired or waste heat boiler mode.

The above modes shall not be in operation when the expander cleaning system (walnut shells injection period) is in operation.

The District shall be notified 24 hours in advance of any scheduled maintenance and unfired mode of the CO boiler.

The District shall be notified within 24 hours after any unscheduled maintenance and unfired mode of the CO boiler.

An annual report shall be submitted to the District which includes a summary of the number of hours the CO boiler was operated in each mode, a description of maintenance, all scheduled and unscheduled work performed for each mode, CO concentration in PPM and hourly CO emissions calculated based on 40CFR 60 Subpart J monitoring data during each mode. The report shall be submitted within 90 days from the end of the calendar year.

The operator shall not operate the FCCU if the CO emissions from the FCCU to the atmosphere exceed the 500 ppmv limits set forth in 40CFR60 Subpart J and Consent Decree.

[RULE 1303(a)(1)-BACT, 5-10-1996; RULE 1303(b)(2)-Offset, 5-10-1996; 40CFR 60 Subpart J, 6-24-2008]

[Devices subject to this condition : D151, C164, D2404]

H23.17 This equipment is subject to the applicable requirements of the following rules or regulations:

Contaminant	Rule	Rule/Subpart
CO	40CFR60, SUBPART	J
PM	40CFR60, SUBPART	J
Visible Emissions	40CFR60, SUBPART	J
SOX	40CFR60, SUBPART	J

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

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[Devices subject to this condition : D151, D2404]

K67.14 The operator shall keep records, in a manner approved by the District, for the following parameter(s) or item(s):

Required maintenance of the CO boiler.

Duration of the maintenance and unfired mode of the CO boiler.

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

[Devices subject to this condition : D151, C164, D2404]

K67.15 The operator shall keep records, in a manner approved by the District, for the following parameter(s) or item(s):

Duration of the planned startup and shutdown of the FCCU.

[RULE 1105.1, 11-7-2003]

[Devices subject to this condition : D151, D2404]

K67.16 The operator shall keep records, in a manner approved by the District, for the following parameter(s) or item(s):

Truck outhauls of the hopper.

[RULE 1105.1, 11-7-2003]

[Devices subject to this condition : C165, C166, C2283, C2284]

K171.18 The operator shall provide to the District the following items:

Update and complete P&ID drawings of the loading equipment shall be submitted to the District within 60 days after permit issuance date.

Designate one hose, out of four hoses, to draw the SO_x reducing catalyst (GRACE Davison Super DESOX) in the loading system. This designated hose shall be expired once the Rule 441 Research Operations Permit is cancelled.

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Records shall be kept when using all four filling hoses and records when using the existing catalyst loading system.

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

[Devices subject to this condition : D2395]