



<b>SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT</b>  <i>ENGINEERING DIVISION</i>  <b>APPLICATION PROCESSING AND CALCULATIONS</b>	<b>PAGES</b> 8	<b>PAGE</b> 2
	<b>APPL. NO.</b> 528832	<b>DATE</b> Rev. 8/29/2013
	<b>PROCESSED BY</b> KEN COATS	<b>CHECKED BY</b>

<p>WITH A/N: 372264</p> <p>AMMONIA INJECTION, GRID WITH 150 INJECTION NOZZLES</p>					
<p>SELECTIVE CATALYTIC REDUCTION, SERVING BOILER NO. 3, SOUTH DUCT, MITSUBISHI HEAVY INDUSTRIES, TITANIUM VANADIUM, 2029 CU FT; WIDTH: 6 FT 4 IN; HEIGHT: 15 FT 8 IN; LENGTH: 31 FT 1.5 IN;</p> <p>WITH A/N: 372265</p> <p>AMMONIA INJECTION, GRID WITH 150 INJECTION NOZZLES</p>	C41	D11		<p>NH3: 10 PPMV (4) RULE 1303(a)(1) BACT</p>	<p>A195, D12.3, D12.4, D12.5, D12.6, D28.3, E73.1, E179.2 E179.3 E193.1</p>
<p>BOILER, UNIT NO. 4, FUEL OIL, NATURAL GAS, REFINERY GAS, COMBUSTION ENGINEERING, WITH 24 COMBUSTION ENGINEERING BURNERS, 3,350 MMBTU/HR WITH A/N: 528832</p> <p>STEAM TURBINE GENERATOR, 335 MW</p>	D13	C31	<p>NOX: MAJOR SOURCE</p>	<p>CO: 250 PPMV FUEL OIL (5) [RULE 1303(b)(2) – OFFSET]; CO: 300 PPMV REFINERY GAS, NATURAL GAS (5) [RULE 1303(b)(2) – OFFSET]; CO: 2,000 PPMV (5A) [RULE 407];</p> <p>NOX: 7 PPMV (5B) [RULE 2009]; NOX: 10.75 LBS/1,000 GAL FUEL OIL (1) [RULE 2012]</p> <p>PM: 0.1 GRAINS/DSCF (5) [RULE 409]</p> <p>SO2: (9) [40 CFR 72 – Acid Rain Provisions]</p> <p>SOX: 500 PPMV FUEL OIL (5) [RULE 407]</p>	<p>A195.7 B61.1, C1.2 D28.2 D90.1 D371.1</p>
<p>RULE 219 EXEMPT EQUIPMENT, COATING EQUIPMENT, PORTABLE, ARCHITECTURAL COATINGS</p>	E38			<p>ROG: (9) [RULE 1113]</p>	<p>K67.2</p>

<b>SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT</b>  <i>ENGINEERING DIVISION</i>  <b>APPLICATION PROCESSING AND CALCULATIONS</b>	PAGES 8	PAGE 3
	APPL. NO. 528832	DATE Rev. 8/29/2013
	PROCESSED BY KEN COATS	CHECKED BY

## **BACKGROUND**

El Segundo Power, LLC currently operates an independent electrical generation facility located in the City of El Segundo. The facility was issued a license from the California Energy Commission on February 2, 2005 and has been issued Permits to Construct on July 13, 2010 from AQMD for a 573 MW combined cycle natural gas fired electrical generation facility which consists of two Siemens-Westinghouse rapid response-combined cycle gas turbines and two SCR/CO Catalyst systems, and a 20,000 gallon aqueous ammonia storage tank. On June 21, 2011, El Segundo Power, LLC requested an extension for the Permits to Construct and AQMD granted the extension on July 15, 2011 with a new P/C expiration date of July 13, 2012. On June 25, 2012, El Segundo Power requested and received a second extension of the P/Cs to July 13, 2013. Construction has commenced and is proceeding as scheduled.

A/Ns 528832 and 528833 were submitted by El Segundo Power for a minor modification to their RECLAIM/Title V Permit by the removal of several permit conditions which are no longer applicable to the operations at the facility. A summary of the conditions requested for removal is shown below:

Condition No.	Reason for Removal	Affected Devices
B61.1	These conditions are related to the usage of refinery gas. The Chevron Refinery gas system is no longer supplying refinery gas to El Segundo.	D13 (Boiler No. 4)
C1.2		
D90.1		

In addition to the above request, El Segundo Power, LLC is requesting the removal of Device D38 (Rule 219 Exempt Equipment, Architectural Coatings) and the associated condition K67.2. However, Title V current practice is to place architectural coating conditions on all Title V permits. As such Device D38 and associated condition K67.2 will remain on the Title V Permit. El Segundo Power submitted the following applications for the change of conditions.

A/N	Equipment	Processing Fee
528832	Boiler No. 4	\$14,363.30
528833	Boiler No. 3 (Identical)	\$7,181.65
525883	Title V Minor Modification	\$1,747.19

## **REMOVAL OF BOILER #3**

In order to comply with the Rule 1304(a)(2) emission offset exemption requirements for two projects currently in progress at the site, El Segundo Power, LLC is proposing to permanently retire Boiler #3 from service. Therefore, per El Segundo Power's email request dated August 16, 2013, A/N 528833 will be cancelled and the permit for Boiler #3 (P/N G1136) will be inactivated along with the two SCR units (Device Nos. C39 and C41) serving Boiler No. 3.

<b>SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT</b>  <i>ENGINEERING DIVISION</i>  <b>APPLICATION PROCESSING AND CALCULATIONS</b>	PAGES 8	PAGE 4
	APPL. NO. 528832	DATE Rev. 8/29/2013
	PROCESSED BY KEN COATS	CHECKED BY

## **COMPLIANCE REVIEW**

A review of the District compliance database indicates there is no pending compliance activity for El Segundo Power, LLC.

## **EMISSIONS**

No emission increases result from the removal of the conditions and Rule 219.

## **RULE EVALUATION**

### Rule 401 – Visible Emissions

Compliance with this rule is expected under normal operation.

### Rule 402 – Nuisance

Compliance with this rule is expected under normal operation.

### Rule 407-Liquid and Gaseous Air Contaminants

This rule limits CO emissions to 2,000 ppmvd and SO<sub>2</sub> emissions to 500 ppmvd, averaged over 15 minutes. For CO, the CTGs will be required to meet the BACT limit of 2.0 ppmvd at 15% O<sub>2</sub>, 1-hr average, and will be conditioned as such. For SO<sub>2</sub>, equipment which complies with Rule 431.1 is exempt from the SO<sub>2</sub> limit in Rule 407. The applicant will be required to comply with Rule 431.1 and thus the SO<sub>2</sub> limit in Rule 407 will not apply.

### Rule 409 – Combustion Contaminants

This rule restricts the discharge of contaminants from the combustion of fuel to 0.23 grams per cubic meter (0.1 grain per cubic foot) of gas, calculated to 12% CO<sub>2</sub>, averaged over 15 minutes. From the previous evaluation, it was determined that the equipment is expected to meet this limit based on the calculations shown below:

Estimated exhaust gas = 803,493 DSCFM = 48.21 mmscf/hr  
Maximum PM<sub>10</sub> Emissions = 9.5 lb/hr  
Estimated CO<sub>2</sub> in exhaust = 3%

$$\text{Grain Loading} = \frac{(9.5 \text{ lb/hr})(7000 \text{ gr/lb})}{48.21 \times 10^6 \text{ scf/hr}} \times \frac{12}{3} = 0.005517 \text{ gr/dscf} \ll 0.1 \text{ gr/dscf}$$

### Rule 431.1 – Sulfur Content of Gaseous Fuels

El Segundo Power, LLC will use pipeline quality natural gas which will comply with the 16 ppmv sulfur limit. Compliance is expected.

<b>SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT</b>  <i>ENGINEERING DIVISION</i>  <b>APPLICATION PROCESSING AND CALCULATIONS</b>	PAGES 8	PAGE 5
	APPL. NO. 528832	DATE Rev. 8/29/2013
	PROCESSED BY KEN COATS	CHECKED BY

Rule 431.2 – Sulfur Content of Liquid Fuels

El Segundo Power, LLC will use fuel oil with a sulfur content of 15 ppm by weight. Compliance is expected.

Regulation XIII – New Source Review

There is no increase in criteria pollutant emissions due to the proposed permit revisions. Therefore, NSR is not triggered. However, Boiler No. 4 has a PTE of 67 lb/day, each based on a sulfur content of 40 ppmv. The removal of the refinery gas will result in a maximum PTE of SOx emissions of 15 ppmv. The new SOx PTEs are calculated below:

Boiler No 4

$$30DA = 67 \text{ lb/day} (15/40) = 25 \text{ lb/day}$$

$$\text{Annual} = 25 \text{ lb/day} (365 \text{ day/yr}) = 9,125.00 \text{ lb/yr}$$

Rule 1401– New Source Review for Toxic Air Contaminants

There is no increase in emissions of toxic air contaminants due to the proposed permit revisions. Therefore the facility is exempt under Rule 1401(g)(1)(B).

Rule 2005 – NSR for RECLAIM

There is no increase in NOx emissions from the proposed permit revisions. Therefore, NSR is not triggered.

Regulation XXX – Title V

The facility is currently subject to the Title V requirements. The proposed change of conditions is a minor modification because there is a net reduction in SOx emissions from Boilers No. 3 and 4 after the removal of the refinery gas. The facility is subject to a 45-day EPA review.

**RECOMMENDATION**

Issue a revised RECLAIM/Title V Permit with the following permit conditions removed:

<b>SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT</b>  <i>ENGINEERING DIVISION</i>  <b>APPLICATION PROCESSING AND CALCULATIONS</b>	PAGES 8	PAGE 6
	APPL. NO. 528832	DATE Rev. 8/29/2013
	PROCESSED BY KEN COATS	CHECKED BY

**CONDITIONS**

~~B61.1 The operator shall not use refinery gas containing the following specified compounds:~~

Compound	ppmv by volume
<del>Sulfur compounds calculated as hydrogen sulfide greater than</del>	40

~~The 40 ppmv limit is averaged over 4 hours  
[Rule 431.1]~~

~~C1.2 The operator shall limit the refinery gas fuel usage to no more than 34 MM cubic feet per day~~

~~— The limit shall be based n the total combined limit for equipment D11 and D13  
[Rule 1303(b)(2) Offset]~~

~~D90.1 The operator shall sample and analyze the sulfur content of the blended refinery natural gas according to the following specifications:~~

~~The operator shall sample once per month or once per batch when burning blended refinery natural gas. The draw time for the sample shall be at least 15 minutes. The analysis shall be conducted using District Method 307.91  
[40CFR72 Acid Rain Provisions]~~

~~A195.1 The 10 PPMV NH3 emisison limit is averaged over 60 minutes at 3% oxygen, dry. This limit shall be determined and measured in the combined exhaust from the North and South ducts.~~

~~D12.3 The operator shall install and maintain a(n) flow meter to accurately indicate the flow rate of the total hourly throughput of injected ammonia.~~

<b>SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT</b>  <i>ENGINEERING DIVISION</i>  <b>APPLICATION PROCESSING AND CALCULATIONS</b>	PAGES 8	PAGE 7
	APPL. NO. 528832	DATE Rev. 8/29/2013
	PROCESSED BY KEN COATS	CHECKED BY

~~D12.4 The operator shall install and maintain a(n) continuous monitoring system to accurately indicate the ammonia to emitted NOx mole ratio applied to the SCR reactor.~~

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

~~————— The measuring device or gauge shall be accurate to within plus or minus 5 percent. It shall be calibrated once every 12 months.~~

~~D12.5 The operator shall install and maintain a(n) pressure gauge to accurately indicate the pressure across the SCR catalyst bed in inches of water column.~~

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

~~————— The measuring device or gauge shall be accurate to within plus or minus 5 percent. It shall be calibrated once every 12 months.~~

~~D12.6 The operator shall install and maintain a(n) temperature gauge to accurately indicate the temperature of the boiler exhaust at the inlet of the SCR reactor.~~

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

~~————— The measuring device or gauge shall be accurate to within plus or minus 5 percent. It shall be calibrated once every 12 months.~~

~~D28.3 The operator shall conduct source tests in accordance with the following specifications:~~

~~————— The test shall be conducted to determine the NH3 emissions using District Methods 207.1 and 5.3 or EPA Method 17 measured over 60 minute averaging time period. The NOx concentration, as determined by reading the CEMS, shall be simultaneously recorded during the 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 averaging time period.~~

~~————— The District shall be notified of the date and time of the test at least 7 days prior to the test.~~

~~————— The test shall be conducted to demonstrate compliance with the Rule 1303 concentration limit.~~

<b>SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT</b>  <i>ENGINEERING DIVISION</i>  <b>APPLICATION PROCESSING AND CALCULATIONS</b>	PAGES 8	PAGE 8
	APPL. NO. 528832	DATE Rev. 8/29/2013
	PROCESSED BY KEN COATS	CHECKED BY

~~\_\_\_\_\_ The test shall be conducted and the results submitted to the District within 45 days after the test date.~~

~~\_\_\_\_\_ The test shall be conducted annually.~~

~~E73.1 Notwithstanding the requirements of Section E conditions, the operator may at his discretion, choose not to use ammonia injection if any of the following requirements are met:~~

~~\_\_\_\_\_ The inlet exhaust temperature to the SCR reactor is below 500 degrees F~~

~~E179.2 For the purpose of the following condition numbers, continuously record shall be defined as recording at least once every hour and shall be calculated upon the average of the continuous monitoring for that hour:~~

~~\_\_\_\_\_ Condition Number 12.3~~

~~\_\_\_\_\_ Condition Number 12.4~~

~~\_\_\_\_\_ Condition Number 12.6~~

~~E 179.3 For the purpose of the following condition numbers, continuously record shall be defined as recording at least once every month and shall be calculated upon the average of the continuous monitoring for that month:~~

~~\_\_\_\_\_ Condition Number 12.5~~

~~E193.1 The operator shall construct, operate, and maintain this equipment according to the following specifications:~~

~~In compliance with all mitigation measures as stipulated by the "Statement of Findings, Statements of Overriding Considerations, and Mitigation Monitoring Plan" final subsequent Environmental Impact report dated January 1994 (SCH No. 88032315) for the El Segundo Generating Station ammonia storage and selective catalytic reduction project.~~