

DOCKETED

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January 28, 2014

VIA E-FILING


El Segundo Energy Center Petition to Amend (00-AFC-14C)
Craig Hoffman, Project Manager
Mary Dyas, Compliance Project Manager
California Energy Commission
1516 Ninth Street, MS-2000
Sacramento, CA 95814-5512

Re: El Segundo Energy Center Petition to Amend (00-AFC-14C)
El Segundo Energy Center LLC Comments Regarding South Coast Air Quality
Management District Preliminary Determination of Compliance

Dear Mr. Hoffman and Ms. Dyas:

On January 27, 2014, El Segundo Energy Center LLC provided the enclosed response to the South Coast Air Quality Management District (the "Air District") in response to the Air District's Preliminary Determination of Compliance for the El Segundo Energy Center, dated December 20, 2013. Please contact me or Tom Andrews at Sierra Research if there are questions.

Locke Lord LLP

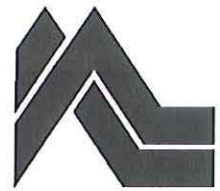
By: 
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JAM:awph

Enclosure

January 27, 2014

Andrew Lee
Engineering and Compliance
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Subject: Proposed El Segundo Power Facility Modification Project – Comments on PDOC

Dear Mr. Lee:

On behalf of El Segundo Power, LLC (Applicant), we offer comments on the Preliminary Determination of Compliance (PDOC) for the El Segundo Power Facility Modification (ESPFM) Project, dated December 20, 2013. We greatly appreciate the effort that the District staff has expended in evaluating the application and preparing the PDOC and Draft Permit.

The comments are offered in the order in which their subjects occur in the PDOC. Suggested revisions to incorporate the comments are included as an attachment to this letter.

Public Notice

The public notice states that EPA is responsible for issuing the PSD permit for GHGs. However, EPA approved the District's GHG PSD rule into the SIP on January 9, 2013. The District has indicated in other permit reviews that it understands that it has authority for issuance of PSD permits for GHG sources and is therefore required to evaluate projects for compliance with the GHG PSD requirements.¹ In fact, later in the public notice, the District confirms that it reviewed ESPFM for compliance with the GHG PSD Requirements contained in District Rule 1714, and found the project to be compliant.

While we believe that the public notice accurately conveys the fact that the District, and not EPA, has reviewed the project for compliance with GHG PSD requirements, we recommend that this be further clarified in the Final Determination of Compliance.

¹ Brian Yeh, *Huntington Beach Energy Project, Request for Additional Clarifying Information* (February 19, 2013).

Equipment Description, Unit 9

PDOC Page 1; Draft Permit Page 2

Equipment Description, Unit 9 Duct Burner

PDOC Page 2; Draft Permit Page 4

A NO_x limit of 30.88 lb/MMSCF Commissioning is listed in both the PDOC and Draft Permit. This value is not an emission limit; it is a derived average emission factor for use in calculating NO_x emissions during the commissioning period for the purpose of determining obligations under the RECLAIM program. Similarly, the 9.88 lb/MMSCF Interim value is not a limit, but an emission factor for calculating RECLAIM emissions during the interim period between commissioning and certification of the NO_x CEMS.

The Equipment Description tables in the Draft Permit include footnotes that clarify the origin and nature of the values in this table (e.g., footnote 1 reads: “(1) (1A) (1 B) Denotes RECLAIM emission factor.”). Our understanding of the conditions in Section H is that the footnotes in the Draft Permit are intended to apply. We request that the footnotes already contained in the Draft Permit be added to the table in the FDOC.

We also request that Conditions A99.12 and A99.13, which refer to these values, be amended to refer to them as emission factors for use in RECLAIM, not as emission limits.

Finally, we believe the facility is not a major facility for HAPS, and contrary to the permit conditions listed on these pages, Unit 9 and its duct burner are not subject to 40 CFR 63 Subpart YYYY. The emission factors used by the District to estimate HAP emissions from the new turbines, and for the existing turbines, are for uncontrolled emissions from a gas turbine.² All of the turbines at the ESP facility are equipped with oxidation catalysts. In the past, El Segundo Power has applied a 50% control efficiency to oxidation catalysts, consistent with the statement in AP-42 that “the performance of these catalyst oxidation systems on combustion turbines results in 90-plus percent control of CO and about 85 to 90 percent control of formaldehyde. Similar emission reductions are expected on other HAP pollutants.”³ We believe that a catalyst control efficiency of at least 50% should continue to be applied to formaldehyde emissions from both the new and existing units and, based on this more representative factor, the facility is not a major source of HAPS, and Unit 9 and its duct burner are not subject to 40 CFR 63 Subpart YYYY.

² AP-42, Table 3.1.3.

³ AP-42, p. 3.1-7.

Equipment Description, Unit 9 SCR Catalyst

PDOC Page 3; Draft Permit Page 5

The dimensions of the SCR catalyst in the PDOC are for a single catalyst module. The SCR for Unit 9 will be constructed using an array of modules 3 wide by 11 high.⁴ The correct dimensions of the catalyst array are approximately:

Height: 70 feet 5 inches

Width: 29 feet 8 inches

Depth: 1 foot 9 inches

In addition, the “Conditions” column in the PDOC lists Condition D29.3 as an applicable condition. There is no Condition D29.3.

Equipment Description, Unit 11

PDOC Page 3-4; Draft Permit Page 6

Equipment Description, Unit 12

PDOC Page 5; Draft Permit Page 8

A NO_x value of 96.58 lb/MMSCF Commissioning is listed in both the PDOC and Draft Permit. This value is not an emission limit—it is a derived average emission factor for use in calculating NO_x emissions during the commissioning period for the purpose of determining obligations under the RECLAIM program. Similarly, the 16.16 lb/MMSCF Interim value is not a limit, but an emission factor for calculating RECLAIM emissions during the interim period between commissioning and certification of the NO_x CEMS.

The Equipment Description tables in the Draft Permit include footnotes that clarify the origin and nature of the values in this table (e.g., footnote 1 reads: “(1) (1A) (1 B) Denotes RECLAIM emission factor.”). Our understanding of the conditions in Section H is that the footnotes in the Draft Permit are intended to apply. We request that the footnotes already contained in the Draft Permit be added to the table in the FDOC.

We also request that Conditions A99.14 and A99.15, which refer to these values, be amended to refer to them as emission factors for use in RECLAIM, not as emission limits.

Also, the PDOC lists the PM₁₀ limit for Unit 11 as 9.5 lb/hr, while the Draft Permit lists the PM₁₀ limit as 5 lb/hr. The Draft Permit is correct.

Finally, the PDOC lists Subpart KKKK NO_x limit for Unit 11 as 25 ppm, while the Draft Permit lists the NO_x limit as 15 ppm. The PDOC is correct.

⁴ See letter from Elizabeth Govey, Cormetech, dated May 29, 2013.

NOx Limit for Auxiliary Boiler

PDOC Page 6; Draft Permit Page 14

The PDOC and the Draft Permit both list the NOx limit as 5.0 ppmv. The value we proposed, and the value we believe to be appropriate for this unit, is 9 ppmv.⁵

All of the documents submitted by the applicant show a value of 9 ppm.

The following information is provided by Cleaver Brooks⁶ in a letter provided by the vendor at the request of the District:

In addition, the above Cleaver-Brooks system will guarantee the following emissions rates between 25-100% MCR will not be exceeded:

NOx: 0.0109 lbs/MMBtu, 0.4 lbs/hr

CO: 0.0370 lbs/MMBtu, 1.3 lbs/hr

These emission rates correspond to 9 ppmv @ 3% oxygen for NOx and 50 ppmv @ 3% oxygen for CO.

However, page 93 of the PDOC indicates the following:

The auxiliary boiler has the following concentration limits as provided by Cleaver Brooks:

NOx = 5 ppmvd at 3% O₂, dry

CO = 30 ppmvd at 3% O₂, dry

The emission calculations on page 94 of the PDOC use an emission rate for NOx of 0.4 lb/hr, which corresponds to 9 ppmv at full boiler capacity. However, the emissions in Table C-2 are based on 5 ppmv.

Based on discussions with District staff, we understand that the 5 ppm NOx limit is considered by the District to have been achieved by a small boiler for which a permit with a 5 ppm limit was issued in late 2012 or early 2013, which has been in operation for more than six months and which has demonstrated continuous compliance for that period. We also understand that the District has documentation indicating that the vendor has provided a performance guarantee on a similar boiler at 5 ppm NOx. The first example would arguably establish “achieved in practice” BACT, while the second example would arguably support a determination of technological feasibility.

However, the documents relied upon by the District to establish the new BACT level are not in the record for this permit application; we have requested copies of the District permit documents upon which the 5 ppm limit was based. Without those documents, we are unable to confirm that the boiler relied upon by the District for its determination is

⁵ See the permit application, Table 19; District Form 400-E-9a; Appendix K, p. 53-56.

⁶ Letter from Rick Fiorenza (Cleaver Brooks) to Steve Rose (NRG) dated May 20, 2013; provided to the District on May 24, 2013.

capable of operating under the duty cycle anticipated for the ESPFM auxiliary boiler, which includes significant operation at low loads for extended periods of time, and short periods of operation at full load (during startups of the combined cycle unit).

We will work with the District and the vendor to ensure that the best available control technology is included in the project.

Equipment Description, Auxiliary Boiler

PDOC Page 6; Draft Permit Page 14

Listed below are several corrections we believe should be made to the PDOC's list of conditions applicable to D112, the auxiliary boiler.

- Condition A63.4 lists monthly emission limits for Units 11 and 12; these limits are not applicable to the auxiliary boiler.
- Condition D29.4 does not exist.
- Condition D29.13 should apply to the auxiliary boiler.
- Condition E 193.5 requires that the unit be vented to an oxidation catalyst and SCR control system. The auxiliary boiler is not equipped with either.
- Condition K40.1 does not exist.
- Condition K40.5 should apply to the auxiliary boiler.

Ammonia Injection Rate Unit 9

PDOC Page 13; PDOC Page 60; Draft Permit Page 35

In response to questions by District Staff, on July 1, 2013, the Applicant submitted supplemental information about the SCR systems. In that letter, the maximum ammonia injection rate for Unit 9 was revised to 139.8 lb/hr. Table 5 and Condition D12.14 both show 135 lb/hr (from the original application). The most recent values should be used.

Ammonia Injection Rate Units 11 & 12

PDOC Page 14; PDOC Page 61; Draft Permit Page 36-37

In response to questions by District Staff, on July 1, 2013, Applicant submitted supplemental information about the SCR systems. In that letter, the maximum ammonia injection rate for Unit 11 and 12 was revised to 67.8 lb/hr (each). Table 6 and Condition D12.17 both show 47 lb/hr (from the original application). The most recent values should be used.

Retirement of Boilers #3 and #4

PDOC Page 19-20

The Applicant acknowledges that the Permit to Operate for Boiler #3 was surrendered on July 23, 2013, and that it is the policy of the District to require the equipment to be

rendered “permanently inoperable.” However, the Applicant does not concur that each of the “minimum conditions” listed in the PDOC are necessary to render Boiler #3 permanently inoperable. The boiler becomes permanently inoperable when sufficient components are removed and fuel and water feed systems are substantially dismantled. Boiler #3 became legally inoperable with the surrender of permits on July 23, 2013. It became permanently inoperable physically with the disconnection and flanging of the fuel supply, removal of the V-cones, and the disconnection of the supporting transformer. These actions occurred as described in the Applicant’s Retirement Plan for El Segundo Generating Station Unit 3,⁷ dated June 28, 2013. In addition to the completed Unit 3 retirement tasks, we propose to incorporate the following additional steps into our Unit 3 Retirement Plan, in lieu of the ones suggested in the PDOC:

1. Remove each of the 24 gas valves that support each burner and related control equipment, and remove the igniters, fuel regulators, and V-cones (note – these have already been removed).
2. Remove a significant portion of each of the fuel supply lines which supply natural gas to the Unit 3 boiler/burner assembly that are accessible (note – adjoining Unit 4 is operational and all safety considerations will be made to ensure no impact to the continued operation of fuel lines that serve Unit 4). In addition, remaining fuel lines leading to the boiler will be flanged on the boiler side so as to render the lines incapable of accepting fuel.
3. Disconnect the start-up boiler feedwater pump and associated Boiler #3 piping, ensuring that the boiler is not capable of receiving feedwater.

Applicability of NESHAPS Subpart YYYY

PDOC Page 27

As discussed above, the HAP emission calculations are based on uncontrolled (i.e., no oxidation catalyst) emission factors for both the existing and new units. This assumption results in a conservative estimate which is acceptable for the health risk assessment. All of the turbines at the ESP facility are equipped with oxidation catalysts. In the past, El Segundo Power has applied a 50% control efficiency to oxidation catalysts, consistent with the statement in AP-42 that “the performance of these catalyst oxidation systems on combustion turbines results in 90-plus percent control of CO and about 85 to 90 percent control of formaldehyde. Similar emission reductions are expected on other HAP pollutants.”⁸ We believe that a catalyst control efficiency of at least 50% should continue to be applied to formaldehyde emissions from both the new and existing units and, based on this more representative factor, the facility is not a major source of HAPS, and Unit 9 and its duct burner are not subject to 40 CFR 63 Subpart YYYY.

⁷ Letter from George Piantke to Kenneth Coates, *Retirement Plan for El Segundo Generating Station Unit 3* (June 28, 2013)

⁸ AP-42, p. 3.1-7.

CAM requirements for VOC for Unit 9

PDOC Page 28

Compliance with the VOC limit is achieved through combustion control. The effect of the oxidation catalyst on VOC concentration is not quantified, and is assumed to be zero for the purposes of calculating emissions from and demonstrating compliance for the unit. Because compliance is achieved without the use of control equipment, CAM does not apply.

Offsets

PDOC Page 34

The discussion of the applicability of Rule 1304(a)(2) to the Trent 60 units does not include the design features that qualify them as advanced combustion sources.⁹ Instead, the District relies on the definition of approved advanced combustion sources in SCAQMD Rule 1135 to reach its conclusion that the Trent units qualify for the Rule 1304(a)(2) exemption. While we agree with the District's conclusion, we point out that the numerical benchmark contained in Rule 1135 is not part of the definition in Rule 1304. Furthermore, even though the Trent turbines meet the benchmark efficiency, the reason that they qualify as advanced combustion sources is because of their design features which make them efficient, not the actual efficiency achieved. We request that the PDOC be revised to include this clarification of the basis for the exemption.

GHG PSD Applicability

PDOC Page 41

The PSD applicability criteria for GHG emissions presented on this page in the PDOC are outdated. The major facility threshold for GHGs is 100,000 tons per year, and the Major Modification significance threshold is 75,000 tons per year. The District's analysis reflects the current, appropriate criteria, but the discussion on this page should be corrected.

SOx Limits and Emission Factors for Unit 9

PDOC Page 55; Draft Permit Page 21

SOx Limits and Emission Factors for Units 11 & 12

PDOC Page 56; Draft Permit Page 22

The emission factor for SOx emissions (Conditions A63.3 and A63.4) should be 0.71 lb/MMSCF, not 0.6 lb/MMSCF. Monthly emissions limit for SOx should be 1,118 lb.

$$\begin{aligned} & (0.25 \text{ grains}/100 \text{ SCF}) * (10^4 \text{ 100 SCF/MMSCF}) * (1 \text{ lb}/7000 \text{ grains}) * (2 \text{ lb SO}_2/\text{lb S}) \\ & = 0.71 \text{ lb SO}_2/\text{MMSCF} \end{aligned}$$

⁹ See the June 27, 2013 letter from Tom Andrews to Ken Coats for more details about these features.

Everywhere in the PDOC that a SOx emission factor of 0.60 lb/MMSCF is used, a SOx emission factor of 0.71 lb/MMSCF should be used instead.

Startup Limitations for Unit 9

PDOC Page 57; Draft Permit Page 27-28

PDOC Page 59; Draft Permit Page 331-32

There are two kinds of startups for Unit 9: traditional starts and fast starts. Emissions of all pollutants from a traditional startup are higher than those for a fast startup. The permit includes conditions limiting the number of starts. The purpose of the limits is to ensure that the assumptions used to calculate emissions for various time periods are not exceeded. For this reason, the conditions should limit the number of traditional starts as well as the number of total starts. There is no reason to limit the number of fast starts, because using a fast start instead of a traditional start will result in lower emissions.

In the permit application, monthly emissions were calculated assuming 16 days with 2 fast starts, and 15 days with 1 fast start and 1 traditional start, for a total of 47 fast starts and 15 traditional starts. Daily maximum emissions were calculated using the higher-emission scenario of one fast and one traditional startup.

Permit Condition A195.12 imposes annual limits related to startups. It limits fast starts to 150 and traditional starts to 50. Instead, we believe it should limit total starts to 200 and traditional starts to 50, since that would limit the maximum annual emissions attributed to startups.

Permit Conditions A195.13 and A195.14 repeat the same limitations on startups. We believe the same change should be made to these conditions as well.

Permit Condition C1.7 imposes monthly limits related to startups. It limits the total number of startups to 62 per month, the number of fast startups to 47 per month, and the number of traditional startups to 15 per month. It also limits the number of fast startups to 1 per day, which is not consistent with the monthly limit of 47.

We request that the limits on the number of fast startups be deleted, leaving only the limits on total startups and traditional startups. We also request clarification that startups during the commissioning period are not limited, nor counted toward annual limits.

We also request the addition of language addressing the situation where a startup is interrupted, then immediately restarted. The proposed language is similar to language in other permits issued by the District.¹⁰

¹⁰ See, for example, the permit for Facility 152707, CPV Sentinel.

SCR Temperature Limits for Unit 9

PDOC Page 60; Draft Permit Page 36

SCR Temperature Limits for Units 11 & 12

PDOC Page 61; Draft Permit Page 37

Permit Condition D12.15 requires that the inlet temperature of the SCR reactor be maintained between 300°F and 650°F. Permit Condition D12.18 requires that the inlet temperature of the SCR reactor be maintained between 600°F and 1,125°F.

These permit conditions do not include an exemption for startups and shutdowns, which are routine, anticipated operating modes where temperatures will be outside the specified range. We believe that language excluding periods of startup and shutdown should be added to these conditions.

Miscellaneous Corrections

On Page 15 of the PDOC, the units of space velocity in Tables 7 and 8 are given as ft^{-1} . The correct units are hr^{-1} . Also, each table contains an extra row that should be deleted (7th row, "Stack Outlet VOC"). VOCs from the project are controlled by combustion design. Although the oxidation catalyst is expected to reduce VOC emissions, the actual reduction cannot be predicted, and is not being relied upon for compliance.

On page 7 of the Draft Permit, the description of Stack S105 has a typo. The height and diameter are both listed twice, and the second listing of the diameter is incorrect. On Page 4 of the PDOC, the diameter of S105 should be corrected to 11.1 feet.

On page 55 of the Draft Permit, Condition E193.3 has a typo. The list of devices subject to the condition includes D106 (Unit 12). This unit should not be subject to Condition E193.3.

Respectfully,



Tom Andrews

cc: George Piantka, NRG Energy
Ken Riesz, El Segundo Power, LLC
Robert Mason, CH2M Hill
John McKinsey, Locke Lord

Proposed Revisions to PDOC
January 27, 2014

PDOC Page 1:

Equipment	ID No.	Connected To	Source Type/ Monitoring Unit	Emissions	Conditions
<p>TURBINE, UNIT NO. 9, NATURAL GAS, GENERAL ELECTRIC, MODEL 7FA.05, FAST-START, COMBINED CYCLE, WITH DRY LOW-NOX BURNERS, 2,168 MMBTU/HR HHV @ 41°F, WITH:</p> <p>A/N: 548594</p> <p>HEAT RECOVERY STEAM GENERATOR (HRSG)</p> <p>GENERATOR, SERVING UNIT NO. 9, 222 GROSS MW @ 41°F</p> <p>STEAM TURBINE, GENERAL ELECTRIC, MODEL SC</p> <p>GENERATOR, SERVING STEAM TURBINE, 112 GROSS MW @ 41°F.</p>	D90	D95, C96	NOx: MAJOR SOURCE	<p>NOx: 2.0 PPMV (4) [RULE 2005, RULE 1703-PSD-BACT]; NOx: 30.88 LB/MMSCF COMMISSIONING (1) [RULE 2012]; NOx: 9.42 LB/MMSCF INTERIM (1) [RULE 2012]; NOx: 15 PPMV (8) NATURAL GAS [40CFR60 SUBPART KKKK]; CO: 2.0 PPMV (4) [RULE 1703 PSD-BACT]; CO: 2,000 PPMV (5) [RULE 407];</p> <p>VOC: 2.0 PPMV (4) [RULE 1303-BACT];</p> <p>PM10: 9.5 LB/HR (4) [RULE 1303]; PM: 0.1 GR/SCF (5) [RULE 409]; PM: 11 LBS/HR (5) [RULE 475]; PM: 0.01 GR/SCF (5A) [RULE 475]; SO2: 0.06 lb/MMBTU (8)[40CFR 60 SUBPART KKKK]; SO2: (9)[40CFR 72 – ACID RAIN];</p> <p>CH2O: 0.091 PPMV (8) 40 CFR 63 SUBPART YYY</p>	<p>A63.3, A99.12, A99.13, A195.12, A195.13, A195.14, A327.1, B61.2, C1.7, D29.10, D29.11, D29.12, D82.6, D82.7, E193.2, E193.5, E193.6, I297.3, K40.5, K67.6</p>

Add footnotes 1-10 from Facility Permit to all Equipment Description tables.

DRAFT PERMIT: Delete CH2O limit at top of page 2.

PDOC Page 2:

Equipment	ID No.	Connected To	Source Type/ Monitoring Unit	Emissions	Conditions
BURNER, DUCT, NATURAL GAS, 268 MMBTU/HR HHV @ 41°F, LOCATED IN THE HRSG OF GAS TURBINE NO. 9 WITH A/N 548594	D95	D90	NOX: MAJOR SOURCE	<p>NOx: 2.0 PPMV (4) [RULE 2005, RULE 1703-PSD-BACT]; NOx: 30.88 LB/MMSCF COMMISSIONING (1) [RULE 2012]; NOx: 9.42 LB/MMSCF INTERIM (1) [RULE 2012]; NOx: 15 PPMV (8) NATURAL GAS [40CFR60 SUBPART KKKK];</p> <p>CO: 2.0 PPMV (4) [RULE 1703 PSD-BACT]; CO: 2,000 PPMV (5) [RULE 407];</p> <p>VOC: 2.0 PPMV (4) [RULE 1303-BACT];</p> <p>PM10: 9.5 LB/HR (5) [RULE 1303]; PM: 0.1 GR/SCF (5A) [RULE 409];</p> <p>PM: 11 LBS/HR (5B) [RULE 475]; PM: 0.01 GR/SCF (5C) [RULE 475];</p> <p>SO₂: 0.06 lb/MMBTU (8)[40CFR 60 SUBPART KKKK];</p> <p>SO₂: (9)[40CFR 72 – ACID RAIN];</p> <p>CH₂O: 0.091 PPMV (8) 40 CFR 63 SUBPART YYY</p>	<p>A99.12, A99.13, A195.12, A195.13, A195.14, A327.1, B61.2, C1.7, D29.10, D29.11, D29.12, D82.6, D82.7, E193.2, E193.5, I297.3, K40.5, K67.6</p>

Add footnotes 1-10 from Facility Permit

DRAFT PERMIT: Delete CH₂O limit at top of page 4.

PDOC Page 3

Equipment	ID No.	Connected To	Source Type/ Monitoring Unit	Emissions	Conditions
SELECTIVE CATALYTIC REDUCTION, UNIT NO. 9, CORMETECH, CATALYST VOLUME: 2,050 FT ³ ; WIDTH (APPROXIMATELY): 9-29 FT 10-8 IN; HEIGHT: 6-70 FT 4-5 IN; LENGTH: 1 FT 9 IN; WITH: AMMONIA INJECTION, AQUEOUS AMMONIA A/N: 548591	C97	C96, S99		NH ₃ : 5 PPMV (4) [RULE 1303-BACT]	D12.14, 12.15, D12.16, 29-3 , E179.7, E179.8, E193.2, E193.7

Add footnotes 1-10 from Facility Permit

DRAFT PERMIT: Same changes to equipment dimensions on page 5.

PDOC Page 3-4

Equipment	ID No.	Connected To	Source Type/ Monitoring Unit	Emissions	Conditions
GAS TURBINE, UNIT NO. 11, NATURAL GAS, ROLLS ROYCE, MODEL: TRENT 60, SIMPLE CYCLE, WITH WATER INJECTION, 516 MMBTU/HR @ 78°F, WITH: A/N: 548589 GENERATOR, 57.4 GROSS MW @ 78°F	D100	C106	NOX: MAJOR SOURCE	NOx: 2.5 PPMV (4) [RULE 2005, RULE 1703-PSD-BACT]; NOx: 96.58 LB/MMSCF COMMISSIONING (1) [RULE 2012]; NOx: 16.16 LB/MMSCF INTERIM (1) [RULE 2012]; NOx: 25 PPMV (8) NATURAL GAS [40CFR60 SUBPART KKKK]; CO: 4.0 PPMV (4) [RULE 1703 PSD-BACT]; CO: 2,000 PPMV (5) [RULE 407]; VOC: 2.0 PPMV (4) [RULE 1303-BACT]; PM10: 9.55 LB/HR (5) [RULE 1303]; PM: 0.1 GR/SCF (5A [RULE 409]; PM: 11 LBS/HR (5B) [RULE 475]; PM: 0.01 GR/SCF (5C) [RULE 475]; SO2: 0.06 lb/MMBTU (8)[40CFR 60 SUBPART KKKK]; SO2: (9)[40CFR 72 – ACID RAIN]; CH2O: 0.091 PPMV (8)-40 CFR-63 SUBPART YYY	A63.4, A99.14, A99.15, A195.15, A195.16, A195.17, A327.1, B61.2, C1.8, D29.10, D29.11, D29.12, D82.6, D82.7, E193.2, E193.5, E193.8, I297.4, K40.5, K67.6

Add footnotes 1-10 from Facility Permit

DRAFT PERMIT: Delete CH2O limit at top of page 6. Correct PM10 limit from 5 lbs/hr to 9.5 lbs/hr at bottom of page 6. Correct KKKK NOx limit from 15 ppm to 25 ppm in middle of page 6.

DRAFT PERMIT: Delete duplicate stack dimensions for S105 at bottom of Page 7.

PDOC Page 5

Equipment	ID No.	Connected To	Source Type/ Monitoring Unit	Emissions	Conditions
GAS TURBINE, UNIT NO. 12, NATURAL GAS, ROLLS ROYCE , MODEL: TRENT 60, SIMPLE CYCLE, WITH WATER INJECTION, 516 MMBTU/HR @ 78°F, WITH: A/N: 548589 GENERATOR, 57.4 GROSS MW @ 78°F	D106	C108	NOX: MAJOR SOURCE	<p>NOx: 2.5 PPMV (4) [RULE 2005, RULE 1703-PSD-BACT]; NOx: 96.58 LB/MMSCF COMMISSIONING (1) [RULE 2012]; NOx: 16.16 LB/MMSCF INTERIM (1) [RULE 2012]; NOx: 25 PPMV (8) NATURAL GAS [40CFR60 SUBPART KKKK]; CO: 4.0 PPMV (4) [RULE 1703 PSD-BACT]; CO: 2,000 PPMV (5) [RULE 407]; VOC: 2.0 PPMV (4) [RULE 1303-BACT]; PM10: 9.5 LB/HR (5) [RULE 1303]; PM: 0.1 GR/SCF (5A [RULE 409]; PM: 11 LBS/HR (5B) [RULE 475]; PM: 0.01 GR/SCF (5C) [RULE 475]; SO2: 0.06 lb/MMBTU (8)[40CFR 60 SUBPART KKKK]; SO2: (9)[40CFR 72 – ACID RAIN];</p> <p>CH2O: 0.091 PPMV (8) 40 CFR 63 SUBPART YYY</p>	A63.4, A99.14, A99.15, A195.15, A195.16, A195.17, A327.1, B61.2, C1.8, D29.10, D29.11, D29.12, D82.6, D82.7, E193.2, E193.5, E193.8, I297.4, K40.5, K67.6

Add footnotes 1-10 from Facility Permit

DRAFT PERMIT: Delete CH2O limit at top of page 8. Correct PM10 limit from 5 lbs/hr to 9.5 lbs/hr at bottom of page 8.

PDOC Page 6

Equipment	ID No.	Connected To	Source Type/ Monitoring Unit	Emissions	Conditions
BOILER, AUXILIARY, CLEAVER BROOKS, MODEL NB-100D-40, WATERTUBE, NATURAL GAS, 36 MMBTU/HR WITH LOW NOX BURNER WITH A/N: 548593 BURNER, 36 MMBTU/HR, NATURAL GAS, WITH LOW NOX BURNER	D112		NOX: LARGE SOURCE	NOx: 59.0 PPMV (4) [RULE 2005, RULE 1703-PSD-BACT]; CO: 50 PPMV(5) [RULE 1703-PSD BACT]; CO: 2000 PPMV (5A) [RULE 407]; PM: 0.1 GRAINS/SCF (5) [RULE 409]	A63.4 B61.2, C1.9, D29.4 , D29.13 , E193.2, E193.5 , I297.6, K40.1 , K40.5

Add footnotes 1-10 from Facility Permit

DRAFT PERMIT: Revise the NOx limit from 5 ppmv to 9 ppmv at the top of page 14.

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Table 5 – CCGS SCR Catalyst Data Summary

PARAMETERS

Catalyst Manufacturer

Catalyst Description

Catalyst Volume

Space Velocity

Ammonia Injection Rate

Ammonia Slip

Catalyst Life

Maximum Operating Temperature

Stack Outlet NOx

SPECIFICATIONS

Cormetech, Inc.

Titanium/Vanadium/Tungsten (Ti-V-W)

2,050 ft³

23,000 hr⁻¹

~~135-139.8~~ lb/hr of 29% aqueous NH₃ at full load

5 ppmvd NH₃ at 15% O₂ 1 hour average

5 Years

750°F

2.0 ppmvd NOx at 15% O₂ 1 hour average

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Table 6 – SCGS SCR Catalyst Data Summary

PARAMETERS	SPECIFICATIONS
Catalyst Manufacturer	Peerless
Catalyst Description	Titanium/Vanadium/Tungsten (Ti-V-W) with homogeneous honeycomb structure
Catalyst Volume	1,272 ft ³
Space Velocity	23,580 hr ⁻¹
Ammonia Injection Rate	47-67.8 lb/hr of 29% aqueous NH ₃ at full load
Ammonia Slip	5 ppmvd NH ₃ at 15% O ₂ 1 hour average
Catalyst Life	5 Years
Maximum Operating Temperature	1,125°F
Stack Outlet NO _x	2.5 ppmvd NO _x at 15% O ₂ 1 hour average

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As part of the offset package for the ESPR Project in which Gas Turbine Combined Cycle Units #5 and #7 (Devices D67 and D68) were issued Permits to Construct under A/Ns 470652 and 470656, El Segundo Power, LLC is required by Facility Permit Condition E193.3 to surrender the Permit to Operate (P/N F14448) for Boiler Unit #3 within 90 days of the initial start-up Gas Turbine Combined Cycle Units 5 and 7. The initial start-up date for Gas Turbine Unit #5 was April 24, 2013. The initial start-up date for Gas Turbine Unit #7 was April 9, 2013. El Segundo Power, LLC has permanently retired Boiler Unit #3 from service. The Permit to Operate for Boiler #3 was surrendered to the SCAQMD on July 23, 2013. SCAQMD policy requires that retirement of utility boilers must result in the equipment being permanently inoperable and therefore must consist of the following minimum conditions:

1. ~~Each Sufficient components must be removed from each~~ of the burners currently attached to the boiler ~~as to render it incapable of operation must be removed from the boiler in their entirety.~~ This ~~not only~~ includes ~~the main burner assembly, but also all~~ of the associated igniters, electronic or other ignition devices (if applicable), fuel ~~nozzles regulators,~~ V-cones and ~~gas valves and their control well as any other~~ devices ~~related to the burner structure or operation.~~
2. A significant portion of each of the fuel supply lines which supply natural gas to the boiler/burner assembly must be disconnected from the boiler/burner assembly, including all fuel lines which are accessible. ~~In addition, each of these fuel lines remaining sections must be filled with a suitable amount of concrete to prevent delivery of fuel.~~ In addition, all remaining fuel lines sections leading to the boiler must be flanged so as to render the lines incapable of accepting fuel.
3. The boiler feedwater pump ~~and associated piping~~ must be disconnected and removed from the system so as to ensure that the boiler is not capable of receiving feedwater.

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40CFR Part 63 Subpart YYYYY – NESHAP for Gas Turbines

EPA has promulgated the National Emission Standards for Hazardous Air Pollutant (NESHAP) for various types of operation. NESHAP applies to facilities that are major sources of hazardous air pollutants. A major source facility is defined as having a single HAP emissions greater than 10 tons/year, or total HAP emissions greater than 25 tons/year. Based on the calculation of Appendix D-4, with the installation of the new power generating system the facility total HAP emissions will be ~~approximately 26.55 tons per year less than 25 tons/year~~. Thus, El Segundo Power, LLC is not a major source facility, and is not subject to the requirements of this subpart. ~~§63.6100 of 40CFR Part 63 Subpart YYYYY requires gas turbines to comply with a formaldehyde emission limit in Table 1 of 91 ppbvd measured at 15% O₂. In addition, §63.6100 of 40CFR 63 Subpart YYYYY requires an operating limitation in Table 2 such that the operator of the equipment maintain the 4-hour rolling average of the catalyst inlet temperature within the range suggested by the catalyst manufacturer. The applicable equipment will be conditioned to comply with these requirements.~~

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This subpart ~~also does not applies apply~~ to the VOC emissions because the VOC BACT limit is achieved through good combustion design, and does not rely on with the help of the oxidation catalyst. Although VOC may be reduced by the oxidation catalyst, it is expected that compliance will be achieved through good combustion. Emission calculations are based on the assumption of no VOC reduction by the oxidation catalyst. The oxidation catalyst is effective when operating temperature is between 300°F and 750°F for the CCGS, and between 600°F and 1,125°F for the SCGS. The catalyst effectiveness is dependent upon the catalyst temperature. There will be a temperature gauge that monitors exhaust temperature continuously and records on the hourly basis. In addition, the operator will conduct periodic source testing. Compliance is expected.

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40CFR Part 72 – Acid Rain

El Segundo Power, LLC currently has SO₂ allocations under the acid rain program, allocated to their Boilers 1 through 4 in Facility Permit Condition F18.1. The acid rain program is similar to RECLAIM in that facilities are required to cover SO₂ emissions with —SO₂ Allowances (similar to RTCs), or purchase of SO₂ on the open market. The facility is also required to monitor SO₂ emissions through use of fuel gas meters and gas constituent analysis (use of emission factors is also acceptable in certain cases) or with the use of exhaust gas CEMS. The ~~Scattergood~~ El Segundo facility will comply with the monitoring requirements of the acid rain provisions with the use of gas meters in conjunction with natural gas default sulfur data as allowed by the Acid Rain regulations (Appendix D to 40 CFR Part 75). If additional SO₂ credits are needed, El Segundo

Power, LLC will obtain the credits from the SO₂ trading market. Based on the above, compliance with this rule is expected.

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DETERMINE GHG PSD APPLICABILITY

EPA has developed the PSD and Title V Permitting Guidance Document for Greenhouse Gases (March 2011). For permits issued on or after July 1, 2011 PSD applies to GHGs if:

- The ~~source-facility is otherwise subject to PSD (for another regulated NSR pollutant)~~ emits or has the potential to emit 100,000 TPY CO₂e, and
- The ~~source has a GHG PTE~~ project results in a net emissions increase equal to or greater than 75,000 TPY CO₂e

El Segundo Power, LLC ~~has the potential to emit more than 100,000 TPY CO₂e-is an existing PSD major source because of its NO_x and CO emissions.~~ The new power system ~~will have more than~~ has the potential to result in a net emissions increase of more than 75,000 tons per year CO₂e emissions, as calculated in Appendix E. Therefore, the project is subject to the GHG PSD analysis.

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C. Thermal Efficiency

Power generation through fossil fuel combustion is a chemical reaction process. The thermal efficiency is defined as the ratio of the net power produced and the heating values of the fuel. The plant efficiency varies from 30% to over 60%, depending on many factors. The heat rate, measured in Btu/kWh, is generally used as a thermal efficiency indicator. ~~The thermal efficiency is at the highest when the reaction is at stoichiometric, and at the time when CO₂ emissions are the highest.~~

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A63.3 The operator shall limit emissions from this equipment as follows:

CONTAMINANT	EMISSIONS LIMIT
CO	39,191 LBS IN ANY 1 CALENDAR MONTH
VOC	7,546 LBS IN ANY 1 CALENDAR MONTH
PM10	8,222 LBS IN ANY 1 CALENDAR MONTH
SOx	945-1,118 LBS IN ANY 1 CALENDAR MONTH

The above limits apply after the equipment is commissioned.

The operator shall calculate the emission limit(s) by using calendar monthly fuel use data and the following emission factors: VOC: 2.92 lbs/mmscf, PM10: 4.51 lbs/mmscf, SOx: ~~0.600~~ 0.71 lbs/mmscf.

The operator shall calculate the emission limits for CO after the CO CEMS certification based upon readings from the SCAQMD certified CEMS. In the event the CO CEMS is not operating or the emissions exceed the valid upper range of the analyzer, the emissions shall be calculated by using monthly fuel use data and the following factors: natural gas commissioning: 22.52 lbs/mmcf, normal operation: 13.86 lbs/mmcf.

[Rule 1303, Rule 1703 – PSD]

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

The above limits apply after the equipment is commissioned. The above limits apply to each turbine individually.

CONTAMINANT	EMISSIONS LIMIT
CO	10,663 LBS IN ANY 1 CALENDAR MONTH
VOC	1,203 LBS IN ANY 1 CALENDAR MONTH
PM10	2,200 LBS IN ANY 1 CALENDAR MONTH
SOx	130 154 LBS IN ANY 1 CALENDAR MONTH

The operator shall calculate the emission limit(s) by using calendar monthly fuel use data and the following emission factors: VOC: 2.66 lbs/mmcf, PM10: 9.98 lbs/mmcf, SOx: ~~0.60~~ 71 lbs/mmcf.

The operator shall calculate the emission limits for CO after the CO CEMS certification based upon readings from the SCAQMD certified CEMS. In the event the CO CEMS is not operating or the emissions exceed the valid upper range of the analyzer, the emissions shall be calculated by using monthly fuel use data and the following factors: natural gas commissioning: 258.44 lbs/mmcf, normal operation: 9.30 lbs/mmcf.

[Rule 1303, Rule 1703 – PSD]

| A99.12 The 30.88 lbs/mmcf NOx emission ~~limit(s)~~ factor shall only apply during the turbine commissioning period to report RECLAIM emissions.

[Rule 2012]

| A99.13 The 9.42 lbs/mmcf NOx emission ~~limit(s)~~ factor shall only apply during the interim period after commissioning to report RECLAIM emissions.

[Rule 2012]

| A99.14 The 96.58 lbs/mmcf NOx emission ~~limit(s)~~ factor shall only apply during the turbine commissioning period to report RECLAIM emissions.

[Rule 2012]

A99.15 The 16.16 lbs/mmscf NOx emission ~~limit(s)~~factor shall only apply during the interim period after commissioning to report RECLAIM emissions.
[Rule 2012]

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A195.12 The 2.0 PPMV NOx emission limit is averaged over 1 hour, dry basis at 15 percent oxygen. This limit shall not apply to turbine commissioning, fast start-ups, traditional startups, and shutdown periods. The commissioning period shall not exceed 800 hours. Following the commissioning period, a fast start-up shall not exceed 30 minutes. Following the commissioning period, a Traditional start-up shall not exceed 60 minutes. Following the commissioning period, Sshutdown time shall not exceed 30 minutes. The turbine shall be limited to a maximum of 150 fast-200 start-ups per calendar year, and a maximum of 50 traditional start-ups per calendar year; startups during the commissioning period shall not be counted towards these limits. If during start-up the process is aborted and the start-up is restarted, then the start-up and restart will count as one start-up. In this case the start-up time shall not exceed 60 minutes.

Written records of commissioning, fast-start-ups, traditional start-ups, and shutdowns shall be maintained and made available upon request from the Executive Officer.
[Rule 2005 – BACT, Rule XVII – PSD]

A195.13 The 2.0 PPMV CO emission limit is averaged over 1 hour, dry basis at 15 percent oxygen. This limit shall not apply to turbine commissioning, fast start-ups, traditional start-ups, and shutdown periods. The commissioning period shall not exceed 800 hours. Following the commissioning period, a fast start-up shall not exceed 30 minutes. Following the commissioning period, a Traditional start-up shall not exceed 60 minutes. Following the commissioning period, Sshutdown time shall not exceed 30 minutes. The turbine shall be limited to a maximum of 150 fast-200 start-ups per calendar year, and a maximum of 50 traditional start-ups per calendar year; startups during the commissioning period shall not be counted towards these limits. If during start-up the process is aborted and the start-up is restarted, then the start-up and restart will count as one start-up. In this case the start-up time shall not exceed 60 minutes. Written records of commissioning, fast-start-ups, traditional start-ups, and shutdowns shall be maintained and made available upon request from the Executive Officer.
[Rule XVII – PSD]

A195.14 The 2.0 PPMV VOC emission limit is averaged over 1 hour, dry basis at 15 percent oxygen. This limit shall not apply to turbine commissioning, fast start-ups, traditional startups, and shutdown periods. The commissioning period shall not exceed 800 hours. Following the commissioning period, a fast start-up shall not exceed 30 minutes. Following the commissioning period, a Traditional start-up shall not exceed 60 minutes. Following the commissioning period, Sshutdown time shall not exceed 30 minutes. The turbine shall be limited to a maximum of 150 fast-200 start-ups per calendar year, and a maximum of 50 traditional start-ups per calendar year; startups during the

commissioning period shall not be counted towards these limits. If during start-up the process is aborted and the start-up is restarted, then the start-up and restart will count as one start-up. In this case the start-up time shall not exceed 60 minutes. Written records of commissioning, fast-start-ups, traditional start-ups, and shutdowns shall be maintained and made available upon request from the Executive Officer.

[Rule 1303 – BACT]

A195.15 The 2.5 PPMV CO emission limit is averaged over 1 hour, dry basis at 15 percent oxygen. This limit shall not apply to turbine commissioning, startup and shutdown periods. This limit shall not apply to turbine commissioning, startup and shutdown periods. The commissioning period shall not exceed 206 hours. Following the commissioning period, Sstart-up shall not exceed 30 minutes. Following the commissioning period, Sshutdown time shall not exceed 20 minutes. The turbine shall be limited to a maximum of 480 start-ups per calendar year; startups during the commissioning period shall not be counted towards these limits. If during start-up the process is aborted and the start-up is restarted, then the start-up and restart will count as one start-up. In this case the start-up time shall not exceed 60 minutes. Written records of commissioning, fast-start-ups, traditional start-ups, and shutdowns shall be maintained and made available upon request from the Executive Officer.

A195.16 The 4.0 PPMV CO emission limit is averaged over 1 hour, dry basis at 15 percent oxygen. This limit shall not apply to turbine commissioning, startup and shutdown periods. This limit shall not apply to turbine commissioning, startup and shutdown periods. The commissioning period shall not exceed 206 hours. Following the commissioning period, Sstart-up shall not exceed 30 minutes. Following the commissioning period, Sshutdown time shall not exceed 20 minutes. The turbine shall be limited to a maximum of 480 start-ups per calendar year; startups during the commissioning period shall not be counted towards these limits. If during start-up the process is aborted and the start-up is restarted, then the start-up and restart will count as one start-up. In this case the start-up time shall not exceed 60 minutes. Written records of commissioning, fast-start-ups, traditional start-ups, and shutdowns shall be maintained and made available upon request from the Executive Officer.

A195.17 The 2.0 PPMV VOC emission limit is averaged over 1 hour, dry basis at 15 percent oxygen. This limit shall not apply to turbine commissioning, startup and shutdown periods. This limit shall not apply to turbine commissioning, startup and shutdown periods. The commissioning period shall not exceed 206 hours. Following the commissioning period, Sstart-up shall not exceed 30 minutes. Following the commissioning period, Sshutdown time shall not exceed 20 minutes. The turbine shall be limited to a maximum of 480 start-ups per calendar year; startups during the commissioning period shall not be counted towards these limits. If during start-up the process is aborted and the start-up is restarted, then the start-up and restart will count as one start-up. In this case the start-up time shall not exceed 60 minutes. Written records of commissioning, fast-start-ups, traditional start-ups, and shutdowns shall be maintained and made available upon request from the Executive Officer.

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C1.7 The operator shall limit the number of startups to no more than 62 in any one calendar month.

~~The number of fast start-ups shall not exceed 47 per month.~~ The number of traditional start-ups shall not exceed 15 per calendar month.

The number of ~~fast~~ start-ups shall not exceed ~~+2~~ per day. The number of traditional start-ups shall not exceed 1 per day.

The NOx emissions during a fast start-up shall not exceed 36 lbs. NOx emissions during a traditional start-up shall not exceed 62 lbs.

The beginning of startup occurs at initial fire in the combustor and the end of startup occurs when the BACT levels are achieved. If during startup the process is aborted the process will count as one startup. If during start-up the process is aborted and the start-up is restarted, then the start-up and restart will count as one start-up. In this case the start-up time shall not exceed 60 minutes.

The above limits apply after the equipment is commissioned.

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

[Rule 1303, Rule 1703 – PSD, Rule 2005]

C1.8 The operator shall limit the number of startups to less than 60 in any one calendar month.

The number of startups shall not exceed 4 per day.

The NOx emissions from a startup shall not exceed 28 lbs. The beginning of startup occurs at initial fire in the combustor and the end of startup occurs when the BACT levels are achieved. If during startup the process is aborted the process will count as one startup. If during start-up the process is aborted and the start-up is restarted, then the start-up and restart will count as one start-up. In this case the start-up time shall not exceed 60 minutes.

The above limits apply after the equipment is commissioned.

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

[Rule 1703 – PSD, Rule 2005– Offset]

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D12.14 The operator shall install and maintain a(n) flow meter to accurately indicate the flow rate of the total hourly throughput of injected ammonia (NH₃).

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 twelve months.

| The ammonia injection rate shall not exceed ~~435~~-139.8 lb/hr
[Rule 2005– BACT, Rule 1703- PSD]

D12.15 The operator shall install and maintain a(n) temperature gauge to accurately indicate the temperature in the exhaust at the inlet 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 twelve months. The temperature shall be between 300°F and 650°F, except during startup and shutdown.

| The above limits apply after the equipment is commissioned.

[Rule 2005– BACT, Rule 1703- PSD]

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D12.17 The operator shall install and maintain a(n) flow meter to accurately indicate the flow rate of the total hourly throughput of injected ammonia (NH₃).

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 twelve months.

| The ammonia injection rate shall not exceed ~~47~~-67.8 lb/hr
[Rule 2005– BACT, Rule 1703- PSD]

D12.18 The operator shall install and maintain a(n) temperature gauge to accurately indicate the temperature in the exhaust at the inlet 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 twelve months. The temperature shall be between 600°F and 1,125°F, except during startup and shutdown.

The above limits apply after the equipment is commissioned.

[Rule 2005– BACT, Rule 1703- PSD]