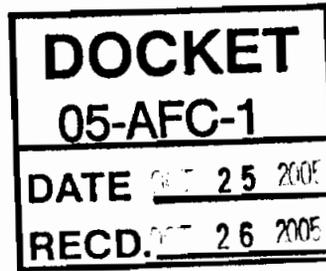


October 25, 2005



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Dave Warner
Director of Permit Services
San Joaquin Valley Air Pollution Control District
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Fresno, CA 93726-0244

RE: Comments on Preliminary Determination of Compliance for
Pastoria Energy Facility Expansion Project (Project No. S1052027)

Dear Mr. Warner:

We have reviewed the September 29, 2005, letter from the staff of the California Energy Commission and the October 5, 2005, letter from EPA Region 9 providing comments on the Preliminary Determination of Compliance issued by the District for the Pastoria Energy Facility Expansion project. Our responses to these comments are provided below.

CEC Staff Comments on the PDOC

Combustor Tuning: Daily Emissions Compliance and Single Event Limitation

In their comment letter, the CEC staff indicates that staff would not object if Applicant proposes to remove the once per year limitation on combustor tuning periods in Condition AQ-34. Applicant would like to remove that restriction. The CEC Staff also pointed out an inconsistency between the NO_x, CO and VOC limits during combustor tuning in Condition AQ-35 and the daily emissions limits in Condition AQ-38.

The following revisions to Conditions 34 and 38 are proposed to address both of the CEC staff's comments. Applicant is also proposing to make the definition of combustor tuning activities more detailed as well as consistent with the definitions included in the conditions adopted by the BAAQMD and the CEC for the Delta and Los Medanos Energy Centers. The daily emissions limits for NO_x, VOC and CO in Condition 38 are based on one combustor tuning period and 22 hours of baseload operation.

34. Compliance with NO_x, CO and VOC emissions limitations specified in condition 31 shall not be required during ~~excursions for combustor tuning activities~~. Combustor tuning activities are excursion-is defined as any testing, adjustment, tuning, or calibration activities necessary to insure safe and reliable steady-state operation of the gas turbine following replacement of the combustor components, during seasonal tuning events, when recommended by the turbine manufacturer, or as necessary to maintain low emissions performance. This includes, but is not limited to, adjusting the amount of fuel distributed between the combustion turbine's staged fuel systems to simultaneously minimize NO_x and CO production while minimizing combustor dynamics and ensuring combustor stability. that period following the replacement of a combustor that is required for testing, tuning

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~~and calibration as recommended by the manufacturer to insure safe and reliable steady state operation of the GTE. Excursions~~ This exemption for combustor tuning activities shall be limited to ~~one continuous~~ 6 hours period per calendar year.

38. On any day when a startup or shutdown occurs, emission rates from GTE shall not exceed any of the following: PM₁₀ 216 lb/day; SO_x (as SO₂) 84 lb/day; NO_x (as NO₂) 450 lb/day; VOC 96.9 lb/day; or CO 2,113 lb/day. On any day when combustor tuning occurs, emission rates from GTE shall not exceed any of the following: PM₁₀ 216 lb/day; SO_x (as SO₂) 84 lb/day; NO_x (as NO₂) 957.5 lb/day; VOC 160.9 lb/day; or CO 3,036.5 lb/day.

Interpollutant Offset Ratio Calculations

The CEC staff's comments on the PDOC include concerns regarding the Chemical Mass Balance (CMB) methodology approved by the District for calculating the appropriate interpollutant offset ratio to be used in determining the amount of NO_x emission reductions needed to offset the PM₁₀ emissions from the project. The CEC staff suggests that the CMB method approved by the District addresses only a single worst-case occurrence of elevated PM₁₀ concentrations and does not address a longer-term average case. CEC staff propose that the District provide a CMB method calculation that is based on the annual average input values for all CMB method parameters.

Applicant disagrees with the CEC staff's recommendation for several reasons. First, the CMB method used by Applicant to calculate the NO_x to PM₁₀ interpollutant offset ratio is consistent with the methodology used for other projects that have come before and been permitted by the District and approved by the Commission, including the original Pastoria combined cycle CTGs and the San Joaquin Valley Energy Center projects. The CEC Staff recommended approval of this methodology most recently in its November 4, 2004, Staff Analysis of Proposed Modifications to Emission Reduction Credit Offsets for the Pastoria Energy Facility.

Second, Applicant notes that the methodology has been approved by the District, which is the agency responsible for air quality planning in the area. Applicant has discussed the Staff's comments with District staff, and we understand that the District uses the worst-case day CMB analysis to establish offset ratios because it is believed that from an air quality perspective it is the days with the highest PM₁₀ concentrations that are of concern. The District has found that the PM₁₀ on these worst-case days typically has high nitrate and sulfate components, and so reducing nitrate concentrations is considered an effective strategy for reducing PM₁₀ under these conditions. District staff also indicate that the methodology used for calculating the interpollutant offset ratio for this project is consistent with that used for other projects.

In our discussion, the District staff also noted that Kern County has an annual PM₁₀ design value of 51 µg/m³, which is only slightly above the federal standard of 50 µg/m³. This suggests that the PM₁₀ air quality problem in Kern County is more severe on a short-term basis than on an annual average basis, and supports the District's approach to PM₁₀ reductions by focusing on reducing high short-term concentrations.

Finally, the calculation methodology has also been reviewed and approved by EPA Region 9 staff, as discussed in the EPA's October 5, 2005, comment letter on the PDOC. In summary, Applicant developed the NO_x to PM₁₀ interpollutant offset ratio using the most current available, area-specific data and a methodology that has been approved by the District and EPA and is consistent with calculation methods that have been accepted by the Commission in previous cases. For these

reasons, Applicant believes that the ratio developed using this approach is appropriate for this project.

EPA Comments on the PDOC

EPA submitted a comment letter on the PDOC to the District on October 5, 2005. Applicant has discussed these comments with EPA staff and believes that most of EPA's issues can be addressed with minor changes to permit conditions and conditions of certification and/or with additional information. These issues and responses are as follows:

1. Interpollutant Trading

The EPA staff agrees with the Applicant and the District staff that the NO_x to PM₁₀ ratio proposed by the Applicant for the project is appropriate. As discussed in more detail above, the Applicant continues to believe that the proposed ratio of 2.72 lb NO_x to 1.0 lb PM₁₀ for ERCs located more than 15 miles from the facility is appropriately conservative for the project.

2. Offset Ratio for PM₁₀

EPA suggests that the District's method of combining the interpollutant offset ratio and the distance ratio is being inappropriately applied. EPA believes that the ratios should be multiplied, rather than added, as is the District's practice.

In Applicant's discussion of this issue with EPA staff, we pointed out that the District has used this approach to calculating offset requirements for projects involving interpollutant trading in numerous previous projects that have been accepted by EPA (including Pastoria Energy Facility, San Joaquin Valley Energy Center, and the Modesto Irrigation District Electric Generation Station (MEGS) Ripon and Woodland II projects). We indicated that we did not believe it was appropriate for EPA to change its position on the District's offset calculation procedures at this point in the review of the project. We suggested that if EPA believes the District's rule is not being appropriately enforced, EPA should work with the District directly to develop a mutual understanding of how to interpret the District's rule in the future.

Since the District's interpretation of its rule in this case is consistent with past practice and has not been objected to in the past, we believe it is appropriate in this case and should not be changed.

3. Permit Conditions Concerning Offsets

The EPA staff proposes a minor change to Condition 43 and a correction to Condition 45. We agree with the proposed correction to the typographical error in Condition 45 (except for the change in calculation methodology, as discussed above in comment 2), but we believe that the way the District has structured Condition 43 is preferable to the change proposed by EPA. The amended language below may address EPA's comments.

43. Prior to initial operation, project owner shall provide emission reduction credits to offset the calendar quarter emissions increases set forth below, at the distance offset ratio specified in Rule 2201 (4/20/05 version) Table 4.2 and the interpollutant offset ratio specified in Condition 45 of this permit, PM₁₀ - Q1: 19,440 lb, Q2: 19,656 lb, Q3: 19,872 lb and Q4: 19,872 lb; SO_x (as SO₂) - Q1: 7,549 lb, Q2: 7,633 lb, Q3: 7,717 lb and Q4: 7,717 lb; NO_x (as NO₂) - Q1: 39,817

lb, Q2: 40,260 lb, Q3: 40,702 lb, and Q4: 40,702 lb; and VOC - Q1: 7,331 lb, Q2: 7,412 lb, Q3: 7,494 lb and Q4: 7,494 lb. [District Rule 2201]

45. NO_x ERCs may be used to offset PM10 emission increases at a ratio of ~~2.42~~ 2.22 lb NO_x : 1 lb PM10 for reductions occurring within 15 miles of this facility, and at 2.72 lb NO_x : 1 lb PM10 for reductions occurring greater than 15 miles from this facility [District Rule 2201]

4. Emission Reduction Credit Analysis

EPA requests additional information regarding the source and calculation procedures for the ERCs that have been granted by the District in the certificates proposed for use in this project. We believe that the District has sufficient information to respond to this request and will provide EPA with the additional information requested.

EPA points out an apparent error in the quarter 3 and quarter 4 PE2 values shown in the NO_x offsets table on p. 18 of the PDOC. The comment is correct; the PE2 values shown in that table as 40,370 lb/quarter should be corrected to 40,702 lb/quarter. The NO_x ERC requirements shown in PDOC Condition 43 are correct.

5. Short-Term Excursions

The EPA comments request additional information regarding why there is a need for the short-term NO_x emissions excursions that have been proposed for approval by the District and CEC staff. The need for relief from the one-hour average NO_x limits during certain types of activities such as load ramping was discussed extensively with EPA in 1998 and excursion language similar to what is proposed for this project has been included in numerous permits that were issued and/or reviewed and approved by EPA, including Sutter Power Project, Los Medanos Energy Center, San Joaquin Valley Energy Center, East Altamont Energy Center and the Moss Landing Power Plant.

An analysis of NO_x emissions data reported to the EPA's Clean Air Market Programs Acid Rain database shows that for turbines controlled to extremely low NO_x levels, there are short-term, transient conditions that cause NO_x emissions to exceed these low levels for short periods of time. These transient conditions are not related to startups and shutdowns or breakdown conditions, and they persist for less than an hour. However, the data show that the emissions during these transient conditions cause the CTGs to exceed their one-hour average emission limitation.

The data summaries in Attachment 1 show analyses of acid rain NO_x emissions data collected by ANP for Blackstone Units 1 and 2 during 2002. These units are F-class turbines similar to the proposed Pastoria expansion unit. These units have a permitted NO_x emission limit of 2.0 ppmvd @15% O₂ (ppmc). The compliance analysis of the acid rain data submitted for these units for 2002 excludes all hours of operation below 70%, all startup hours (defined as a 4-hour period) and all shutdown hours (defined as a two hour period). During 2002, Unit 1 operated for 4,490 hours (including low loads, startups and shutdowns), while Unit 2 operated for 4,903 hours (including low loads, startups, and shutdowns). During the period, Unit 1 exceeded the 2.0 ppmc limit during 5 hours, while Unit 2 exceeded the 2.0 ppmc limit during 6 hours. If these values are extrapolated to a full year (8760) hours of operation, the expected violation rate for a 2.0 ppmc limit would be 13 to 14 hours. The maximum one-hour average NO_x emission rate during these excursions was measured as 8.38 ppmc.

The excursion condition requested by the applicant would allow up to ten hours per year of excursions, with a maximum 3-hour average NOx emission rate not to exceed 30 ppmc. The number of excursions is slightly lower than the number suggested by the ANP Blackstone data. The average NOx emission rate during the excursions is higher because this project will involve the first-ever application of SCR control technology to a simple-cycle GE Frame 7FA CTG and a lower NOx emission limit than has been required on simple-cycle F-class CTGs in the past. Therefore there is no operating data on which to directly base a determination.

6. Startups, Shutdowns and Operating Hours

EPA proposes to increase the frequency of source testing during startup operations from every 7 years to every 5 years (Condition 49), consistent with Title V requirements. Applicant has no objection to the proposed change.

EPA also proposes to add a condition limiting the total hours of startup activities to 300 hours per year. The applicant does not believe such a condition is necessary because we believe the proposed annual emissions limits are adequate to limit startup hours consistent with the analysis in the AFC. EPA requested an analysis demonstrating that the annual NOx emission limit in the permit was consistent with both the required NOx ERCs and the NOx emission rate used for evaluating ambient annual average NOx impacts from the expansion project. The requested analysis is included as Attachment 2.

7. 40 CFR 60 Subpart GG

The EPA comments request some corrections and updates to the District's discussion of the gas turbine new source performance standards in 40 CFR Subpart GG. Applicant made similar suggestions in our comments on the PDOC.

8. Sulfur Content of the Fuel

The EPA comments point out that although the PDOC proposes a limit of 0.75 grains per 100 scf in the natural gas fuel to limit SO₂ emissions from the power plant, the SO₂ emission limits in the proposed permit reflect a fuel sulfur level that is slightly lower than 0.75 gr/100 scf. After discussion of this issue with EPA, Applicant agrees to propose an additional, annual average sulfur grain loading limit of 0.70 gr/100 scf that will limit SO₂ emissions to 29,704 lb/yr. The AFC and the District's PDOC evaluate annual SO₂ emissions of 30,616 lb/yr, so the proposed annual average grain loading limit of 0.70 gr/100 scf will limit annual SO₂ emissions from the project to less than the proposed annual limit for the project.

$$0.70 \text{ grains}/100 \text{ scf} * 1 \text{ lb}/7000 \text{ grains} * 64 \text{ lb SO}_2/32 \text{ lb S} * 1\text{E}6 \text{ scf}/\text{MMscf} \\ = 2.0 \text{ lb}/\text{MMscf}$$

$$\text{annual fuel use (from Table A-3 of the AFC)} = 14,852 \text{ MMscf}/\text{yr}$$

$$\text{annual SO}_2 = 2.0 \text{ lb}/\text{MMscf} * 14,852 \text{ MMscf}/\text{yr} = 29,704 \text{ lb}/\text{yr}$$

Applicant proposes the following addition to Condition 38:

38. GTE shall be fired exclusively on natural gas consisting primarily of methane and ethane, with a sulfur content of no greater than 0.75 grains of sulfur compounds (as S) per 100 dry scf of natural gas on a per sample basis and no

greater than 0.70 grains of sulfur (as S) per 100 dry scf of natural gas on a 12-month rolling average basis based on monthly samples and analyses.

9. Acid Rain Provisions

EPA comments that Condition 66 should be revised to be consistent with acid rain program requirements, and the applicant has no objection to such revisions.

10. Other Minor Comments

Applicant agrees with EPA's request to correct a typographical error on page 20 of the PDOC.

We appreciate the opportunity to provide this additional information in response to the comments filed by the CEC staff and EPA Region 9. If you have any questions regarding these issues, or any other aspect of the application, please do not hesitate to call.

Sincerely,


Gary Rubenstein

- cc: Andrew Whittome, Calpine
- Rick Tetzloff, Calpine
- Barbara McBride, Calpine
- Gregg Wheatland, Ellison Schneider & Harris
- Jennifer Scholl, URS
- Dr. James Reede, CEC
- Keith Golden, CEC
- Will Walters, Aspen Environmental
- Gerardo Rios, EPA Region 9
- Laura Yannayon, EPA Region 9

Attachment 1

ANP Blackstone Unit 1
Summary Prepared by Sierra Research
From: 1/1/2002 to 12/31/2002

Plant Statistics	
Total Hours in Review Period	8,760
Number of Operating Hours	4,490
Number of Operating Hours Above Min Load	3,477
Number of Turbine Starts	140
Mean Emission Rate	1.66 ppmc
Maximum 1-hr Average (valid data periods)	8.38 ppmc
Maximum 3-hr Average (valid data periods)	6.16 ppmc

Valid Data Periods (Excludes Startup/Shutdown, Low Load Operation)				
NOx Limit (ppm) ->	3.0	2.5	2.0	1.5
Averaging Period				
1 hour	3,462	3,462	3,462	3,462
3 hour	3,482	3,482	3,482	3,482

Exceedance Periods (Excludes Startup/Shutdown, Low Load Operation)				
NOx Limit (ppm) ->	3.0	2.5	2.0	1.5
Averaging Period				
1 hour	4	4	5	3,390
3 hour	7	8	9	3,389

Exceedance Frequency (Percent of Valid Data Periods)				
NOx Limit (ppm) ->	3.0	2.5	2.0	1.5
Averaging Period				
1 hour	0.12%	0.12%	0.14%	97.92%
3 hour	0.20%	0.23%	0.26%	97.33%

Expected Exceedance Rate Based on 8760 Hours/Year				
NOx Limit (ppm) ->	3.0	2.5	2.0	1.5
Averaging Period				
1 hour	10	10	13	8,578
3 hour	18	20	23	8,526

ANP Blackstone Unit 2
Summary Prepared by Sierra Research
From: 1/1/2002 to 12/31/2002

Plant Statistics	
Total Hours in Review Period	8,760
Number of Operating Hours	4,903
Number of Operating Hours Above Min Load	3,798
Number of Turbine Starts	125
Mean Emission Rate	1.66 ppmc
Maximum 1-hr Average (valid data periods)	4.03 ppmc
Maximum 3-hr Average (valid data periods)	2.76 ppmc

Valid Data Periods (Excludes Startup/Shutdown, Low Load Operation)				
NOx Limit (ppm) ->	3.0	2.5	2.0	1.5
Averaging Period				
1 hour	3,786	3,786	3,786	3,786
3 hour	3,822	3,822	3,822	3,822

Exceedance Periods (Excludes Startup/Shutdown, Low Load Operation)				
NOx Limit (ppm) ->	3.0	2.5	2.0	1.5
Averaging Period				
1 hour	3	4	6	3,743
3 hour	-	3	9	3,769

Exceedance Frequency (Percent of Valid Data Periods)				
NOx Limit (ppm) ->	3.0	2.5	2.0	1.5
Averaging Period				
1 hour	0.08%	0.11%	0.16%	98.86%
3 hour	0.00%	0.08%	0.24%	98.61%

Expected Exceedance Rate Based on 8760 Hours/Year				
NOx Limit (ppm) ->	3.0	2.5	2.0	1.5
Averaging Period				
1 hour	7	9	14	8,661
3 hour	-	7	21	8,639

Attachment 2
Startups, Shutdowns and Operating Hours: Annual NOx Emissions

Annual NOx emissions from the Pastoria Expansion project were calculated assuming that the CTG would operate at base load for 8460 hours per year and would operate in startup or shutdown mode for 300 hours per year. This analysis is conservative because it assumes that the CTG is always operating. That is, the minute the engine shuts down, it is restarted again. The proposed baseload emission limit of 16.25 lb/hr and the proposed startup emission limit of 80 lb/hr were used to calculate maximum allowable annual NOx emissions from the project, as follows:

$$(8460 \text{ hrs} * 16.25 \text{ lb/hr}) + (300 \text{ hrs} * 80 \text{ lb/hr}) = 161,480 \text{ lb/yr}$$

(see Table A-2, rev. 6/05)

Since the permit conditions include limits on maximum hourly NOx emissions during both normal operation and startup/shutdown operation and on total annual NOx emissions, a separate limit on the number of startups per year is not needed to ensure compliance with the annual NOx emissions on which the evaluation of the project was based.

The NOx ERCs required for the project were calculated based on this annual NOx emission limit (see Table F-1, rev. 6/05). The NOx emissions from the CTG will be monitored continuously using a certified CEM that must be able to accurately monitor emissions during startup and shutdown as well as during normal operation. Therefore, compliance with this annual NOx limit will be continuous.

This maximum annual allowable NOx emission rate was used to evaluate annual average NO2 impacts from the proposed project. The emission rate used for modeling annual average emissions was derived as follows:

161,480 lb	453.6 g	1 yr	1 hr	= 2.323 g/s
yr	lb	8760 hr	3600 sec	

(see Table B-3)

If the expansion CTG were to start up more than 300 hours per year, hourly emissions from the CTG may have to be lower than permitted levels to avoid exceeding the annual permit limit, depending on the number of hours of non-operation that preceded each start. As noted above, the applicant has assumed continuous operation in addition to 300 hours per year. If there was only one hour of non-operation prior to each startup applicant has overestimated emissions (and provided excess offsets) in the amount of 4,875 lbs/year., The applicant expects that NOx emissions during startup and shutdown will actually be lower than 80 lb/hr in most cases, because the CTG will not always require a full hour to come into compliance with its permitted hourly NOx limit.

However, even if each startup did require a full hour at the maximum NOx emission limit of 80 lb/hr, the CTG could undergo more than 300 startups if (1) the baseload emission rate was lower than 16.25 lb/hr; or (2) the CTG operated less than 8760 hours per year.

BEFORE THE ENERGY RESOURCES CONSERVATION AND DEVELOPMENT COMMISSION
OF THE STATE OF CALIFORNIA

IN THE MATTER OF:

APPLICATION FOR CERTIFICATION FOR THE
PASTORIA ENERGY FACILITY (PEF)
160 MW EXPANSION
BY CALPINE CORPORATION

DOCKET No. 05-AFC-1
PROOF OF SERVICE LIST
[ESTABLISHED 9/13/05]

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1516 Ninth Street
Sacramento, CA 95814-5512
docket@energy.state.ca.us

Also send a printed or electronic copy of all documents to each of the following:

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No Intervenors to date.

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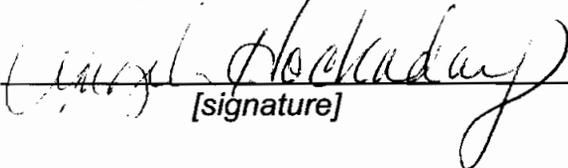
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DECLARATION OF SERVICE

I **Angela Hockaday** declare that on **October 26, 2005**, I deposited copies of the attached **Pastoria Letter from Gary Rubenstein/Sierra Research to Dave Warner/SJVAPCD dated October 25, 2005 regarding Comments on PDOC (05-AFC-1)** in the United States mail at **Sacramento, CA** with first class postage thereon fully prepaid and addressed to those identified on the Proof of Service list above. Transmission via electronic mail was consistent with the requirements of California Code of Regulations, title 20, sections 1209, 1209.5, and 1210.

I declare under penalty of perjury that the foregoing is true and correct.


[signature]

* * * *

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