

FILED

AUG 28 2007

HEARING BOARD
BAY AREA AIR QUALITY
MANAGEMENT DISTRICT

BEFORE THE HEARING BOARD
OF THE
BAY AREA AIR QUALITY MANAGEMENT
STATE OF CALIFORNIA

MARY ROMAIDIS
CLERK
HEARING BOARD
BAY AREA AIR QUALITY
MANAGEMENT DISTRICT

In the Matter of the Application of)	
)	
Los Esteros Critical Energy Facility)	No. 3537
)	
For a Variance from Regulation 2,)	<u>ORDER GRANTING INTERIM VARIANCE</u>
Rule 1, Section 307 (Condition #19610,)	
Parts 12, 17, and 19(b)))	
_____)	

The above-entitled matter is an Application for Interim and Regular Variance from the provisions of Regulation 2, Rule 1, Section 307 filed on July 20, 2007.

Jeffrey Adkins, Esq., and Gary Rubenstein of Sierra Research, together with Barbara McBride and Dan Arellano of Calpine Corporation appeared on behalf of Los Esteros Critical Energy Facility ("Applicant").

Alexander G. Crockett, Esq., Assistant Counsel, appeared for the Air Pollution Control Officer ("APCO").

The Clerk of the Hearing Board provided notice of this hearing on the Application for Interim Variance in accordance with the requirements of the California Health and Safety Code. The Hearing Board heard the request for Interim Variance on August 2, 2007. The Variance application requested Interim and Regular Variance relief for the period July 19, 2007 through July 18, 2008. At the hearing, Interim Variance relief was requested from the application filing date of July 20, 2007, and lasting until September 13, 2007, the date scheduled for the Regular Variance

ARB

1 hearing.

2 The Hearing Board provided the public opportunity to testify at the hearing as required by
3 the California Health and Safety Code, but no one did so. The Hearing Board heard the
4 Applicant's and APCO's evidence and argument. The APCO took no position on the granting of
5 this Interim Variance.

6 The Hearing Board received evidence and argument, and took the matter under submission
7 for decision. After consideration of the evidence, the Hearing Board voted to grant the request for
8 Interim Variance, as set forth in more detail below:

9
10 BACKGROUND

11 Applicant operates a gas turbine power plant located at 1515 Alviso Milpitas Road,
12 San Jose, California, 95134. The power plant includes four General Electric LM6000 simple-cycle
13 gas turbines to produce electricity for sale to the electrical grid. These turbines are fired with
14 pipeline natural gas and utilize water injection and selective catalytic reduction ("SCR") to control
15 oxides of nitrogen ("NOx") emissions. The SCR system injects aqueous ammonia over a high
16 temperature catalyst to initiate a chemical reaction that converts NOx to nitrogen and water. The
17 Applicant's Permit to Operate for these turbines includes a limit of 10 ppmvd at 15% oxygen for
18 the emission rate of unreacted ammonia from the turbine stacks, and a requirement to monitor
19 compliance with this ammonia emission limit using an ammonia to NOx molar ratio method.
20 Applicant measured exceedances of the allowable molar ratio at Unit 4 on May 16 and June 29,
21 2007, and conducted a source test on July 24 and 25, 2007 that showed an exceedance of the 10
22 ppm ammonia emission limit at Unit 4. Applicant applied for this Interim Variance on July 20,
23 2007. Applicant previously applied for Emergency Variance relief in this matter on June 15, 2007,
24 but this relief was denied on June 28, 2007 due to non-operation of Unit 4.

1 DISCUSSION

2 At the start of the hearing, the APCO did not take a position on the Interim Variance
3 pending development and presentation of further evidence, but expressed concerns regarding whether
4 the catalyst problems were beyond the reasonable control of the Applicant, whether the Applicant had
5 acted expeditiously in addressing the catalyst problems to date, and whether the time schedule
6 proposed for future actions under the Regular Variance period is sufficiently expeditious.

7
8 Applicant presented testimony that it cannot continuously comply with the ammonia slip
9 emissions limit at its Unit 4 gas turbine. Applicant hired a catalyst expert who removed and analyzed
10 samples of the SCR catalyst in Unit 4. This analysis concluded that the catalyst had significantly
11 reduced activity due to catalyst poisoning by sodium and potassium compounds. Applicant and its
12 expert are unsure of the cause of this catalyst poisoning, or whether the catalyst poisoning is the sole
13 or principal reason for reduced catalyst activity. Reduced catalyst activity requires that more ammonia
14 be used in order to achieve the permitted NOx emission limit, resulting in excessive stack ammonia
15 emissions. Applicant has requested variance relief while it investigates the cause of the reduced
16 catalyst activity and corrects the ammonia emissions problem.

17 Hearing Board members questioned the Applicant regarding the timeline of events, economic
18 impacts, air quality impacts, and measures taken to reduce excess emissions. In particular, concern
19 was expressed by several Hearing Board members about the slow response to source tests results
20 showing exceedances of the ammonia slip limit starting as early as September and October 2006 as
21 well as the response to later source test results. Applicant testified and APCO entered into evidence
22 letters indicating operator error was a contributing factor in the early exceedances, but testimony
23 showed that other mechanical issues appear to also be a contributing factor. Applicant presented
24 evidence of a complex inconclusive analysis of the SCR to ascertain the cause of the exceedances.

25
26 Applicant estimated financial losses due to the shutdown of the Unit 4 gas turbine to be as

1 high as \$5 million. Excess emissions during the Interim Variance will not exceed 95 lb/day of
2 ammonia. Air quality impacts due to the ammonia exceedances would principally affect PM levels
3 but not lead to localized rises in PM counts. Moreover, PM levels in the District peak in Winter while
4 the period of the variance spans Summer. Hence, the additional PM levels are not a health concern.
5 Applicant testified that it has instituted a policy of turning Unit 4 on last and turning it off first in an
6 effort to reduce excess emissions.

7
8 Discussion by the Hearing Board highlighted the public benefit use of the Applicant's facility
9 and the minimal air quality impact. The Hearing Board developed several proposed conditions which
10 are presented in further detail below. The conditions were designed to preserve the public benefit use
11 of the Unit 4 gas turbine while minimizing excess emissions by restricting its operation to periods of
12 high congestion in the electrical network during the variance period. Conditions were also included to
13 indicate what data the Hearing Board would like to see by the time of the Regular Variance Hearing.

14 15 16 SPECIFIC FINDINGS

17 The Hearing Board finds pursuant to Health and Safety Code Section 42351 that good
18 cause exists to issue this Interim Variance, including the following:

19 1. The Applicant has hired an expert to remove and analyze catalyst samples from Unit 4,
20 and this expert has determined that catalyst poisoning is the main cause of the loss of catalyst activity
21 and consequential increase in ammonia emissions;

22 2. The Applicant operates with a high temperature catalyst on its simple cycle turbine
23 units that may be more susceptible to poisoning and loss of activity;

24 3. The Applicant has trained its operators in methods to minimize ammonia emissions
25 from its turbine units;

26 4. The Applicant has minimized excess emissions from Unit 4 by operating this unit

1 as the "last on and first off" of its four gas turbine units at the site; and

2 5. If Unit 4 were to be shutdown, it could interfere with the efficient delivery of
3 electricity and could have a detrimental effect on the residents of the District.
4

5 THEREFORE, THE HEARING BOARD ORDERS:

6 An Interim Variance from the ammonia slip emissions limitations of Major Facility
7 Review Permit Conditions 12, 17 and 19(b), and Permit to Operate Condition ID #19610,
8 Conditions 12, 17, and 19(b), is hereby granted for Source S-4 (Unit #4) at Facility #B3289 (the
9 Los Esteros Critical Energy Facility) from July 20, 2007, to and including September 13, 2007,
10 subject to the following conditions:
11

12 1. Applicant shall preferentially operate Units 1, 2 and 3 during the Interim Variance
13 period. Operation of Unit # 4 shall be limited to address congestion-related issues in the South Bay
14 area and not for economic dispatch or for the convenience of the Applicant. The Applicant shall
15 provide further revisions to this Condition on this issue at the Regular Variance hearing. Further, the
16 Applicant shall provide a report, in writing, to the Hearing Board and the District, detailing the
17 reasons for each operation of Unit #4 and the number of hours operated, within 15 days of the end of
18 the Interim Variance period.
19

20 2. Excess emissions shall not exceed 95 pounds per day of ammonia during the Interim
21 Variance period. Applicant shall pay excess emission fees for 95 pounds per day for the entire
22 Interim Variance period, pursuant to the District Regulation 3, Schedule A.
23

24 3. Applicant shall calculate excess ammonia emissions for each day of operation of Unit
25 #4, and shall provide these calculations to the District staff and the Hearing Board, in writing, at the
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1 end of the Interim Variance period.

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3 4. The Applicant shall enter into a contract with Environex and provide copies of the
4 contract, no later than August 10, 2007, to the Hearing Board and the District, for their review, for
5 catalyst Units 1, 2 and 3 in a parallel fashion, with the intent of trying to have the data available as
6 quickly as possible for the Regular Variance hearing on September 13, 2007.

7

8 5. The data shall be tabulated for the molar ratios for the past three years for each of the
9 units, showing averages by month and by day of operation, as well as any exceedances, and shall
10 include an analysis of the molar ratio of NOx and Ammonia.

11

12 6. The hours of operations for the years 2006 and 2007 shall be provided for each unit by
13 day.

14

15 7. All of the results of the source tests from the year 2003 to the present date shall be
16 tabulated in trends, and an analysis shall be provided to the Hearing Board and the District, in writing,
17 including results from the most current source test.

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19 8. An analysis of all the starts and stops and thermal cycles of each of the units shall be
20 completed and provided to the Hearing Board and District, in writing.

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22 9. A thorough schedule of increments of progress, if a Regular Variance were to be

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1 granted by the Hearing Board, shall be prepared, showing actions and milestones that Applicant
2 would take to achieve compliance during that Regular Variance period, or to achieve the point of
3 deciding that it is not economically feasible or viable to effect repairs or make modifications, and,
4 therefore, the Applicant shall discontinue unit operation.

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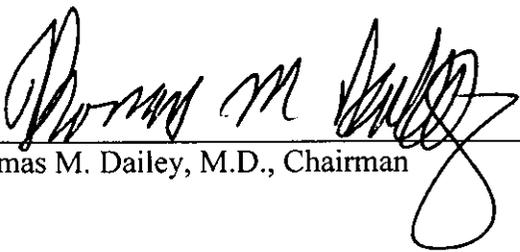
Moved by: Christian Colline, P.E.

Seconded by: Valerie Armento, Esq.

AYES: Valerie Armento, Esq., Christian Colline, P.E., Richard Grundy, Julio
Magalhães, Ph.D., Thomas M. Dailey, M.D.

NOES: None.

Absent: None.



Thomas M. Dailey, M.D., Chairman

8-18-07
Date