Bay Area Air Quality Management District

939 Ellis Street
San Francisco, CA 94109
(415) 771-6000

Permit Evaluation
and
Statement of Basis
For
Minor Revision to the

MAJOR FACILITY REVIEW PERMIT

for

Los Medanos Energy Center, LLC
Facility #B1866

Facility Address:
750 East Third Street
Pittsburg, CA 94565

Mailing Address:
P.O. Box 551
Pittsburg, CA 94565

August 2007

Application Engineer: Brian Lusher
Site Engineer: Brian Lusher

Applications: 12281 and 14970

TABLE OF CONTENTS

Title V Statement of Basis

A. Background

This facility is subject to the Operating Permit requirements of Title V of the federal Clean Air Act, Part 70 of Volume 40 of the Code of Federal Regulations (CFR), and BAAQMD Regulation 2, Rule 6, Major Facility Review because it is a major facility as defined by BAAQMD Regulation 2-6-212.

Major Facility Operating permits (Title V permits) must meet specifications contained in 40 CFR Part 70 as contained in BAAQMD Regulation 2, Rule 6. The permits must contain all applicable requirements (as defined in BAAQMD Regulation 2-6-202), monitoring requirements, recordkeeping requirements, and reporting requirements. The permit holders must submit reports of all monitoring at least every six months and compliance certifications at least every year.

In addition, Phase II Acid Rain facilities must meet the requirements of Title IV of the federal Clean Air Act, Acid Rain, and the Acid Rain regulations in Parts 72 through 78 of Volume 40 of the Code of Federal Regulations. These regulations were adopted and incorporated by reference by BAAQMD Regulation 2, Rule 7, Acid Rain. The main provisions of the regulations for natural gas fired acid rain sources, such as the ones at this facility, are the requirement to obtain one SO_2 allowance for each ton of SO_2 that is emitted, stringent monitoring requirements for NOx, CO, CO_2, and SO_2, and stringent recordkeeping and reporting.

In the Bay Area, state and District requirements are also applicable requirements and are included in the permit. These requirements can be federally enforceable or non-federally enforceable. All applicable requirements are contained in Sections I through VI of the permit.

Each facility in the Bay Area is assigned a facility identifier that consists of a letter and a 4-digit number. This identifier is also considered to be the identifier for the permit. The identifier for this facility is B1866.

B. Facility Description

The facility description can be found in the statement of basis that was prepared for the reopening issued on November 9, 2004. It is available on request from the Engineering Division of the District.

C. Permit Content

The legal and factual basis for the permit follows. The permit sections are described in the order presented in the permit.

I. Standard Conditions

This section contains administrative requirements and conditions that apply to all facilities.

The proposed Minor Permit Revision does not change this section of the permit.

II. Equipment

This section of the permit lists all permitted or significant sources. Each source is identified by an S and a number (e.g., S24).

The proposed Minor Permit Revision does not change this section of the permit.

III. Generally Applicable Requirements

This section of the permit lists requirements that generally apply to all sources at a facility including insignificant sources and portable equipment that may not require a District permit

The proposed Minor Permit Revision does not change this section of the permit.

IV. Source-Specific Applicable Requirements

Section IV of the permit contains citations to all of the applicable requirements. The text of the requirements is found in the regulations, which are readily available on the District's or EPA's websites, or in the permit conditions, which are found in Section VI of the permit.

The proposed Minor Permit Revision does not change this section of the permit.

V. Schedule of Compliance

A schedule of compliance is required in all Title V permits pursuant to BAAQMD Regulation 2-6-409.10.

The proposed Minor Permit Revision does not change this section of the permit.

VI. Permit Conditions

The facility has requested revisions to condition 16676 parts 14, 21h, 32, 33 and 41. Part 14 will be revised to require fuel gas sulfur content analysis of once per month instead of the current permit requirement of once every 30 consecutive days. Parts 21h, 32, and 33 will be revised to reflect reduced PM_{10} emission rates based upon source test results and the banking of PM_{10} emission reduction credits. The permit evaluation for the banking of the credits is attached to this SOB and Appendix A. Part 41 will be revised so that source test results must be submitted to the District within 60 of completing the tests instead of the current 30 day deadline.

The proposed revisions to permit condition 16676 are clearly shown below in strikeout/underline format. When the revised permit is issued, all 'strikeout" language will be deleted and all "underline" language will be retained, subject to consideration of comments received.

14. The Gas Turbines (S-1 and S-3) and HRSGs (S-2 and S-4) shall be fired exclusively on natural gas with a maximum sulfur content of 1 grain per 100 standard cubic feet. To demonstrate compliance with this limit, the operator of S-1, S-2, S-3, and S-4 shall sample and analyze the gas from each supply source at least once ~~every 30 consecutive days~~ per month to determine the sulfur content of the gas. (BACT for SO_2 and PM_{10})

21. The owner/operator of the Gas Turbines (S-1 and S-3) and HRSGs (S-2 and S-4) shall meet all of the requirements listed in (a) through (h) below, except during a Gas Turbine Start-up, a Gas Turbine Shutdown, a steam turbine cold start-up, or a gas turbine combustor tuning period. (BACT, PSD, and Toxic Risk Management Policy)

(h) Particulate matter (PM_{10}) mass emissions at P-1 and P-2 each shall not exceed ~~16.3~~ 9 pounds per hour or ~~0.0073~~0.0040 lb/MM BTU of natural gas fired. (BACT for PM10)

32. Total combined emissions from the Gas Turbines, HRSGs, and Auxiliary Boiler (S-1, S-2, S-3, S-4, and S-5), including emissions generated during Gas Turbine Start-ups, Gas Turbine Shutdowns, Auxiliary Boiler Start-ups, and Auxiliary Boiler Shutdowns, shall not exceed the following limits during any calendar day:

(a)	1342 pounds of NO_x (as NO_2) per day	(CEQA)
(b)	6445 pounds of CO per day	(PSD)
(c)	271.3 pounds of POC (as CH_4) per day	(CEQA)
(d)	~~742~~ 465 pounds of PM_{10} per day	(PSD)
(e)	282.6 pounds of SO_2 per day	(BACT)

33. Cumulative emissions from the Gas Turbines, HRSGs, and the Auxiliary Boiler combined (S-1, S-2, S-3, S-4, and S-5), including emissions generated during Gas Turbine Start-ups, Gas Turbine Shutdowns, Auxiliary Boiler Start-ups, and Auxiliary Boiler Shutdowns, shall not exceed the following limits during any consecutive twelve-month period:

(a)	175.7 tons of NO_x (as NO_2) per year	(Offsets, PSD)
(b)	506.4 tons of CO per year	(Cumulative Increase)
(c)	33.9 tons of POC (as CH_4) per year	(Offsets)
(d)	~~131.6~~ 69.2tons of PM_{10} per year	(Offsets, PSD)
(e)	47.11 tons of SO_2 per year	(Cumulative Increase)

41. The owner/operator shall obtain approval for all source test procedures from the District's Source Test Section and the CEC CPM prior to conducting any tests. The owner/operator shall comply with all applicable testing requirements for continuous emission monitors as specified in Volume V of the District's Manual of Procedures. The owner/operator shall notify the District's Source Test Section and the CEC CPM in writing of the source test protocols and

projected test dates at least 7 days prior to the testing date(s). As indicated above, the Owner/Operator shall measure the contribution of condensable PM (back half) to the total PM_{10} emissions. However, the Owner/Operator may propose alternative measuring techniques to measure condensable PM such as the use of a dilution tunnel or other appropriate method used to capture semi-volatile organic compounds. Source test results shall be submitted to the District and the CEC CPM within ~~30~~ 60 days of ~~conducting~~ completing the tests. (BACT)

VII. Applicable Limits and Compliance Monitoring Requirements

This section of the permit is a summary of numerical limits and related monitoring requirements for each source. The summary includes a citation for each monitoring requirement, frequency of monitoring, and type of monitoring. The applicable requirements for monitoring are completely contained in Sections IV, Source-Specific Applicable Requirements, and VI, Permit Conditions, of the permit.

The tables below contain only the applicable limits that have been changed due to the updated permit conditions.

PM10 Sources

S# & Description	Emission Limit Citation	Federally Enforceable Emission Limit	Monitoring
S-1 Turbine, **S-2** Heat Recovery Steam Generator, **S-3** Turbine, **S-4** Heat Recovery Steam Generator	BAAQMD condition #16676, part 21h	~~16.3~~ 9 lb/hr, for turbine and HRSG combined	Source test at maximum and minimum load
S-1 Turbine, **S-2** Heat Recovery Steam Generator, **S-3** Turbine, **S-4** Heat Recovery Steam Generator	BAAQMD condition #16676, part 21h	~~0.0073~~ 0.0040 lb/MM BTU, for turbine and HRSG combined	Source test at maximum and minimum load
S-1 Turbine, **S-2** Heat Recovery Steam Generator, **S-3** Turbine, **S-4** Heat Recovery Steam Generator, **S-5** Auxiliary Boiler	BAAQMD condition #16676, part 32d	~~742~~ 465 lb/day for turbines, HRSGs, and boiler combined	Records, calculations

PM10 Sources

S# & Description	Emission Limit Citation	Federally Enforceable Emission Limit	Monitoring
S-1 Turbine, **S-2** Heat Recovery Steam Generator, **S-3** Turbine, **S-4** Heat Recovery Steam Generator, **S-5** Auxiliary Boiler	BAAQMD condition #16676, part 33d	~~131.6~~ 69.2 ton/yr for turbines, HRSGs, and boiler combined (includes emissions from commissioning period)	Records, calculations

VIII. Test Methods

This section of the permit lists test methods that are associated with standards in District or other rules. It is included only for reference. In most cases, the test methods in the rules are source test methods that can be used to determine compliance but are not required on an ongoing basis. They are not applicable requirements.

If a rule or permit condition requires ongoing testing, the requirement will also appear in Section IV of the permit.

The proposed Minor Permit Revision does not change this section of the permit.

IX. Permit Shield

The proposed Minor Permit Revision does not change this section of the permit.

D. Alternate Operating Scenarios

No alternate operating scenario has been requested for this facility.

E. Compliance Status

The proposed Minor Permit Revision does not change this section of the permit.

APPENDIX A – Engineering Evaluation for Application 14971

Engineering Evaluation Report
Calpine Los Medanos Energy Center
Plant Number 11866
Application Number 14971

Background
This application was submitted by Calpine as a banking application to claim credit for PM_{10} emission reductions, relative to the emissions levels that were originally permitted and fully offset as part of applications 18595 and 1272.

The sources involved in this application are:

S-1 Gas Turbine
S-2 Heat Recovery Steam Generator
S-3 Gas Turbine
S-4 Heat Recovery Steam Generator

The existing PM_{10} limit is 131.6 tons per year (TPY). Calpine wishes to reduce this limit to 69.2 TPY and bank the difference of 62.4 TPY. Based on PM_{10} emission testing and annual fuel records, PM_{10} emissions from this plant have never exceeded the proposed limit of 69.2 TPY. Therefore, **this application is being treated as a simple refund of offsets, in accordance with Regulation 2, Rule 2, Section 422, as opposed to a formal banking application.** This is because the emission reduction credits (ERCs) are the result of overestimating the PM_{10} emissions when the facility was originally permitted, rather than reducing emissions from an actual achieved level of emissions. Since this is not a banking application, it does not trigger public notice (Reg. 2-4-405), even though the amount of ERCs to be refunded exceeds 40 tons/yr.

Calpine originally requested that all 131.6 TPY of PM_{10} offsets be refunded because the new level of 69.2 TPY is below the 100 TPY PM_{10} offset threshold. Calpine's rationale is that since actual emissions never exceeded the 100 TPY offset threshold, they shouldn't have triggered PM_{10} offsets in the first place. The District does not agree. The need to provide offsets is based on the permitted level of emissions. This facility was originally permitted at 131.2 TPY of PM_{10}, thereby triggering offsets. The fact that the facility never actually emitted more than 100 TPY does not un-trigger the original offset requirement. While there is a provision in District regulations for refunding excess offsets (Reg. 2-2-422), there is nothing in the regulations that requires the District to treat the project as if offsets were never triggered at all. Therefore, the District is only refunding the difference between the original and new permitted level, and not the entire amount of offsets that were provided. In support of the District's decision, the California Energy Commission has requested the District to not refund 100% of the offsets because they considered the District's PM_{10} offsets as mitigation in their environment review process for the project.

Refund Summary

The District will refund 62.4 TPY of the offsets originally provided for PM_{10}. However, not all of the ERCs provided were PM_{10} ERCs. Calpine also used SO_2 ERCs as PM_{10} offsets, at a ratio of 4 tons SO_2 to 1 ton PM_{10}. The following is the breakdown of the total 131.6 TPY of PM_{10} offsets that were surrendered:

PM_{10} ERCs: 98.13 TPY
SO_2 ERCs: 133.88 TPY (to provide 33.47 TPY PM_{10} offsets)

Calpine has requested that the District refund the ERCs as PM_{10} ERCs. However, the California Energy Commission (Mr. Twan Lo, 916-654-3852) has requested that the District refund the SO_2 ERCs first, and then any remaining balance of PM_{10} ERCs.

District regulations do not include any sort of preference for PM_{10} versus SO_2 for PM_{10} offsets. Since there is no regulatory basis for the District to refund SO_2 ERCs preferentially, we will refund the ERCs in the manner requested by the applicant.

The District will refund 62.4 TPY of PM_{10} ERCs.

Condition Changes
Permit Condition ID# 16676, Parts 21h, 32 and 33 will be amended to reflect the reduced hourly, daily and annual PM_{10} emission limits. All other Parts remain unchanged.

Condition ID# 16676

21. The owner/operator of the Gas Turbines (S-1 and S-3) and HRSGs (S-2 and S-4) shall meet all of the Requirements listed in (a) through (h) below, except during a Gas Turbine Start-up, a Gas Turbine Shutdown, a steam turbine cold start-up, or a gas turbine combustor tuning period. (BACT, PSD, and Toxic Risk Management Policy)

    h. Particulate matter (PM10) mass emissions at P-1 and P-2 each shall not exceed ~~16.3~~ 9 pounds per hour or ~~0.0073~~ 0.0040 lb/MM BTU of natural gas fired. (BACT for PM10)

32. Total combined emissions from the Gas Turbines, HRSGs, and Auxiliary Boiler (S-1, S-2, S-3, S-4, and S-5), including emissions generated during Gas Turbine Start-ups, Gas Turbine Shutdowns, Auxiliary Boiler Start-ups, and Auxiliary Boiler Shutdowns, shall not exceed the following limits during any calendar day:
    a. 1342 pounds of NOx (as NO2) per day CEQA)
    b. 6445 pounds of CO per day (PSD)
    c. 271.3 pounds of P OC (as CH4) per day (CEQA)
    d. ~~742~~ 465 pounds of PM10 per day (PSD)
    e. 282.6 pounds of SO2 per day (BACT)

33. Cumulative emissions from the Gas Turbines, HRSGs, And the Auxiliary Boiler combined (S-1, S-2, S-3, S-4, and S-5), including emissions generated during Gas Turbine Start-ups, Gas Turbine Shutdowns, Auxiliary Boiler

```
Start-ups, and Auxiliary Boiler Shutdowns, shall not
exceed the following limits during any consecutive
twelve-month period:
a.  175.7 tons of NOx (as NO2) per year (Offsets, PSD)
b.  506.4 tons of CO per year (Cumulative Increase)
c.   33.9 tons of POC (as CH4) per year (Offsets)
d.  ~~131.6~~ 69.2 tons of PM10 per year (Offsets, PSD)
e.   47.11 tons of SO2 per year (Cumulative Increase)
```

Recommendation
Staff recommends that the District refund the following ERCs:

62.4 TPY PM_{10}

and issue a *Change of Condition* letter to Calpine indicating the permit condition changes discussed above.

By: Greg Stone
Supervising Air Quality Engineer

January 16, 2007

APPENDIX B - Glossary

ACT
Federal Clean Air Act

APCO
Air Pollution Control Officer

ARB
Air Resources Board

BAAQMD
Bay Area Air Quality Management District

BACT
Best Available Control Technology

Basis
The rule or regulation that gives the District authority to impose requirements

CAA
The federal Clean Air Act

CAAQS
California Ambient Air Quality Standards

CAPCOA
California Air Pollution Control Officers Association

CEQA
California Environmental Quality Act

CFR
The Code of Federal Regulations. 40 CFR contains the implementing regulations for federal environmental statutes such as the Clean Air Act. Parts 50-99 of 40 CFR contain the requirements for air pollution programs.

CO
Carbon Monoxide

Cumulative Increase
The sum of permitted emissions from each new or modified source since a specified date pursuant to BAAQMD Rule 2-1-403, Permit Conditions (as amended by the District Board on 7/17/91) and SIP Rule 2-1-403, Permit Conditions (as approved by EPA on 6/23/95). Cumulative increase is used to determine whether threshold-based requirements are triggered.

District
The Bay Area Air Quality Management District

dscf
Dry Standard Cubic Feet

EPA
The federal Environmental Protection Agency.

Excluded
Not subject to any District regulations.

Federally Enforceable, FE
All limitations and conditions which are enforceable by the Administrator of the EPA including those requirements developed pursuant to 40 CFR Part 51, subpart I (NSR), Part 52.21 (PSD), Part 60 (NSPS), Part 61 (NESHAPs), Part 63 (MACT), and Part 72 (Permits Regulation, Acid Rain), including limitations and conditions contained in operating permits issued under an EPA-approved program that has been incorporated into the SIP.

FP
Filterable Particulate as measured by BAAQMD Method ST-15, Particulate.

HAP
Hazardous Air Pollutant. Any pollutant listed pursuant to Section 112(b) of the Act. Also refers to the program mandated by Title I, Section 112, of the Act and implemented by 40 CFR Part 63.

Major Facility
A facility with potential emissions of: (1) at least 100 tons per year of regulated air pollutants, (2) at least 10 tons per year of any single hazardous air pollutant, and/or (3) at least 25 tons per year of any combination of hazardous air pollutants, or such lesser quantity of hazardous air pollutants as determined by the EPA administrator.

MFR
Major Facility Review. The District's term for the federal operating permit program mandated by Title V of the Federal Clean Air Act and implemented by District Regulation 2, Rule 6.

MOP
The District's Manual of Procedures.

NAAQS
National Ambient Air Quality Standards

NESHAPS
National Emission Standards for Hazardous Air Pollutants. See in 40 CFR Parts 61 and 63.

NMHC
Non-methane Hydrocarbons (Same as NMOC)

NMOC
Non-methane Organic Compounds (Same as NMHC)

NOx
Oxides of nitrogen.

NSPS
Standards of Performance for New Stationary Sources. Federal standards for emissions from

new stationary sources. Mandated by Title I, Section 111 of the Federal Clean Air Act, and implemented by 40 CFR Part 60 and District Regulation 10.

NSR
New Source Review. A federal program for pre-construction review and permitting of new and modified sources of pollutants for which criteria have been established in accordance with Section 108 of the Federal Clean Air Act. Mandated by Title I of the Federal Clean Air Act and implemented by 40 CFR Parts 51 and 52 and District Regulation 2, Rule 2. (Note: There are additional NSR requirements mandated by the California Clean Air Act.)

Offset Requirement
A New Source Review requirement to provide federally enforceable emission offsets for the emissions from a new or modified source. Applies to emissions of POC, NOx, PM10, and SO2.

Phase II Acid Rain Facility
A facility that generates electricity for sale through fossil-fuel combustion and is not exempted by 40 CFR 72 from Titles IV and V of the Clean Air Act.

POC
Precursor Organic Compounds

PM
Particulate Matter

PM10
Particulate matter with aerodynamic equivalent diameter of less than or equal to 10 microns

PSD
Prevention of Significant Deterioration. A federal program for permitting new and modified sources of those air pollutants for which the District is classified "attainment" of the National Air Ambient Quality Standards. Mandated by Title I of the Act and implemented by both 40 CFR Part 52 and District Regulation 2, Rule 2.

SIP
State Implementation Plan. State and District programs and regulations approved by EPA and developed in order to attain the National Air Ambient Quality Standards. Mandated by Title I of the Act.

SO2
Sulfur dioxide

THC
Total Hydrocarbons (NMHC + Methane)

Title V
Title V of the federal Clean Air Act. Requires a federally enforceable operating permit program for major and certain other facilities.

TOC
Total Organic Compounds (NMOC + Methane, Same as THC)

TPH
Total Petroleum Hydrocarbons

TRMP
Toxic Risk Management Plan

TSP
Total Suspended Particulate

VOC
Volatile Organic Compounds

Units of Measure:

bhp	=	brake-horsepower
btu	=	British Thermal Unit
cfm	=	cubic feet per minute
g	=	grams
gal	=	gallon
gpm	=	gallons per minute
hp	=	horsepower
hr	=	hour
lb	=	pound
in	=	inches
max	=	maximum
m^2	=	square meter
min	=	minute
mm	=	million
MMbtu	=	million btu
MMcf	=	million cubic feet
ppmv	=	parts per million, by volume
ppmw	=	parts per million, by weight
psia	=	pounds per square inch, absolute
psig	=	pounds per square inch, gauge
scfm	=	standard cubic feet per minute
yr	=	year