Bay Area Air Quality Management District

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San Francisco, CA 94109
(415) 771-6000

Permit Evaluation
and
Statement of Basis
For
MINOR REVISION of the

MAJOR FACILITY REVIEW PERMIT

for

Calpine Gilroy Cogen, L. P. and Gilroy Energy Center, LLC
Facility #B1180

Facility Address:
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Gilroy, CA 95020

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June 2007

Application Engineer: Allan Chiu
Site Engineer: Allan Chiu

Application: 12930

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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 Phase II Acid Rain facility as defined by BAAQMD Regulation 2-6-217. It is an Acid Rain facility because it burns fossil fuel, serves a generator that is over 25 MW that is used to generate electricity for sale, and was built after November 15, 1990. It is not a "major facility" as defined by BAAQMD Regulation 2-6-212 because it does not have the "potential to emit," as defined by BAAQMD Regulation 2-6-218, of more than 100 tons per year of a regulated air pollutant.

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 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 B1180.

Current Permit Action

The purpose of this minor permit revision is to change permit conditions that have been revised under NSR application 12918 that was issued on 3/16/06. The proposed permit condition changes include the following:

1. Condition 18102, part 23 (a) and (b). Revise maximum heat input capacity of the LM6000 gas turbines to be 500 MM Btu/hr instead of the nominal rating of 467.6 MM Btu/hr. Under certain operating conditions, the turbines could potentially exceed the 467.6 MM Btu/hr.

2. Revise 0.25 gr/100 scf limit to 1.0 gr/100 scf to be consistent with requirements at other facilities. The gas supplier cannot guarantee the 0.25 gr/100 scf limit. Based on these changes, there will be no change in emission limits as imposed in Table 1 (condition ID #18102, part 22).

3. Condition #18102, part 19.2: Revise the ammonia slip monitoring language to agree with standard language in other Calpine power plant permits. The revised language will allow

the use of a District-approved calculation method to monitor ammonia slip. This is not a relaxation of monitoring, but replaces the original calculation method that was inaccurate. In addition, the basis of the permit condition will be changed from "BACT" to "TRMP", since the ammonia slip limit was based upon the District health risk assessment policies and not the BACT provision of NSR.

4. Condition #18102, part 25. Change the required source test frequency for the gas turbine from annual to every 8000 hours of gas turbine operation or once every 3 years, whichever comes first.

5. Condition #18102, parts 24(e). Revised fuel gas analysis frequency from quarterly to annual basis. This change will reflect the most current/stringent requirements of 40 CFR Parts 60 Subpart GG Standards of Performance for Stationary Gas Turbines.

B. Supplemental Information

I. Standard Conditions

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

Changes in this action

There are no changes proposed for this section.

II. Equipment

This section of the permit lists all permitted or significant sources. Each source is identified with an S and a number (e.g., S4).

Changes in this action

There are no changes proposed for this section.

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

Changes in this action

No changes are proposed for this section.

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 or EPA websites, or in the permit conditions, which are found in Section VI of the permit.

Complex Applicability Determinations

There are no complex applicability determinations associated with the proposed permit condition changes.

Other changes in this action

No other changes are proposed for this section.

V. Schedule of Compliance

A schedule of compliance is required in all Title V permits pursuant to BAAQMD Regulation 2-6-409.10 which provides that a major facility review permit shall contain the following information and provisions:

"409.10 A schedule of compliance containing the following elements:

- 10.1 A statement that the facility shall continue to comply with all applicable requirements with which it is currently in compliance;
- 10.2 A statement that the facility shall meet all applicable requirements on a timely basis as requirements become effective during the permit term; and
- 10.3 If the facility is out of compliance with an applicable requirement at the time of issuance, revision, or reopening, the schedule of compliance shall contain a plan by which the facility will achieve compliance. The plan shall contain deadlines for each item in the plan. The schedule of compliance shall also contain a requirement for submission of progress reports by the facility at least every six months. The progress reports shall contain the dates by which each item in the plan was achieved and an explanation of why any dates in the schedule of compliance were not or will not be met, and any preventive or corrective measures adopted."

Since the District has not determined that the facility is out of compliance with an applicable requirement, the schedule of compliance for this permit contains only sections 2-6-409.10.1 and 2-6-409.10.2.

VI. Permit Conditions

The regulatory basis is listed following each condition. The regulatory basis may be a rule or regulation. The District is also using the following terms for regulatory basis:

- BACT: This term is used for a condition imposed by the Air Pollution Control Officer (APCO) to ensure compliance with the Best Available Control Technology in Regulation 2-2-301.
- Cumulative Increase: This term is used for a condition imposed by the APCO which limits a source's operation to the operation described in the permit application pursuant to BAAQMD Regulation 2-1-403.
- Offsets: This term is used for a condition imposed by the APCO to ensure compliance with the use of offsets for the permitting of a source or with the banking of emissions from a source pursuant to Regulation 2, Rules 2 and 4.
- PSD: This term is used for a condition imposed by the APCO to ensure compliance with a Prevention of Significant Deterioration permit issued pursuant to Regulation 2, Rule 2.
- TRMP: This term is used for a condition imposed by the APCO to ensure compliance with limits that arise from the District's Toxic Risk Management Policy.

All changes to existing permit conditions are clearly shown in "strike-out/underline" format in the proposed permit. When the permit is issued, all 'strike-out" language will be deleted and all "underline" language will be retained, subject to consideration of comments received.

Additional monitoring has been added, where appropriate, to assure compliance with the applicable requirements.

Changes in this action

The following permit condition changes are proposed:

1. Condition 18102, part 23 (a) and (b). Revise maximum heat input capacity of the LM6000 gas turbines to be 500 MM Btu/hr instead of the nominal rating of 467.6 MM Btu/hr. Under certain operating conditions, the turbines could potentially exceed the 467.6 MM Btu/hr.

2. Revise 0.25 gr/100 scf limit to 1.0 gr/100 gr/100 scf to be consistent with requirements at other facilities. The gas supplier cannot guarantee the 0.25 gr/100 scf limit. Based on these changes, there will be no change in emission limits as imposed in Table 1 (condition ID #18102, part 22).

3. Condition #18102, part 19.2: Revise the ammonia slip monitoring language to agree with standard language in other Calpine power plant permits. The revised language will allow the use of a District-approved calculation method to monitor ammonia slip. This is not a relaxation of monitoring, but replaces the original calculation method that was inaccurate. In addition, the basis of the permit condition will be changed from "BACT" to "TRMP", since the ammonia slip limit was based upon the District health risk assessment policies and not the BACT provision of NSR.

4. Condition #18102, part 25 Change the required source test frequency for the gas turbine from annual to every 8000 hours of gas turbine operation or once every 3 years, whichever comes first. Although this can be considered a relaxation of monitoring, this condition was established under the District permit program and therefore any changes to this condition are not considered a significant revision under regulation 2-6-226.3.

5. Condition #18102, parts 24(e). Revised quarterly fuel gas analysis to annual basis. This change will reflect the most current/stringent requirements of 40 CFR Parts 60 Subpart GG Standards of Performance for Stationary Gas Turbines.

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 District has reviewed all monitoring and has determined that the existing monitoring is adequate.

Changes in this action

The source test frequency for the gas turbine will be changed from annual to once every 8000 firing hours or once every 3 years, whichever comes first. This reduction in monitoring frequency will not increase the potential for the gas turbine emissions to exceed any applicable mass emission limits or emission concentration limits.

The is permit condition modification has been reviewed and approved under District permit application 12918.

All references to the source test requirement of condition #18102, part 25 in Table VII-A will be updated to reflect the new source test frequency of 8,000 hours or 3 years.

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 on going testing, the requirement will also appear in Section IV of the permit.

Changes in this action

There are no changes proposed for this section.

IX. Permit Shield:

The District rules allow two types of permit shields. The permit shield types are defined as follows: (1) A provision in a major facility review permit explaining that specific federally enforceable regulations and standards do not apply to a source or group of sources, or (2) A provision in a major facility review permit explaining that specific federally enforceable applicable requirements for monitoring, recordkeeping and/or reporting are subsumed because other applicable requirements for monitoring, recordkeeping, and reporting in the permit will assure compliance with all emission limits.

The second type of permit shield is allowed by EPA's White Paper 2 for Improved Implementation of the Part 70 Operating Permits Program. The District uses the second type of permit shield for all streamlining of monitoring, recordkeeping, and reporting requirements in Title V permits. The District's program does not allow other types of streamlining in Title V permits.

This facility has the first and second types of permit shield.

Changes in this action

There are no changes proposed for this section.

X. Revision History

This section contains the details of issuance and revisions for each permit.

The initial Title V permit for this facility was issued on May 12, 1998.

Application 18872: Significant revision on Dec. 18,1998
Application 445: Minor Revision July 26, 2000
Application 2686: Significant Revision Oct. 23, 2001
Administrative Amendment March 6, 2003 (no application)
Application 6748: Renewal Issuance March 16, 2006
Application 12930: Minor Revision

XI. Glossary

This section contains terms that may be unfamiliar to the general public or EPA.

Changes in this action

There are no changes proposed for this section.

C. Alternate Operating Scenarios:

No alternate operating scenarios have been requested for this facility.

D. Differences between the Application and the Proposed Permit:

There are no differences between the application and the proposed permit.

APPENDIX A

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 underlying authority which allows the District to impose requirements.

CAA
The federal Clean Air Act

CAAQS
California Ambient Air Quality Standards

CAPCOA
California Air Pollution Control Officers Association

CEM
Continuous Emission Monitor

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.

FDOC
Final Determination of Compliance (FDOC), prepared pursuant to District Regulation 2, Rule 3, Power Plants.

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.

HRSG
Heat Recovery Steam Generator

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.

PUC
Public Utilities Commission (California)

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

APPENDIX B

Application 12918 Permit Evaluation

CALPINE GILROY COGEN, L.P. & GILROY ENERGY CENTER, LLC # 11180
APPLICATION # 12918

BACKGROUND

Calpine's Gilroy Energy Center is requesting administrative changes to their existing operating permit conditions to amend the changes that were approved in their NSR application # 12918. The similar administrative permit condition changes were requested for and were approved in Calpine's application #10472, #11005, #11001, and #11003. There is no impact on emissions from these changes. The sources are describe as follows:

S-3 Gas Turbine with water injection, General Electric 500 MMBtu/hour; abated by A-3 Oxidation Catalyst, and A-4 Selective Catalytic Reduction System.

S-4 Gas Turbine with water injection, General Electric LM6000PC, natural gas fired, 45 MW net simple-cycle, maximum heat input rating is 500 MMBtu/hour; abated by A-5 Oxidation Catalyst, and A-6 Selective Catalytic Reduction System.

S-5 Gas Turbine with water injection, General Electric LM6000PC, natural gas fired, 45 MW net simple-cycle, maximum heat input rating is 500 MMBtu/hour; abated by A-7 Oxidation Catalyst, and A-8

EMISSIONS SUMMARY

Requested changes are as follows:

1. Revise maximum heat input capacity of the LM6000 gas turbines to be 500 MM Btu/hr instead of 467.6 MM Btu/hr. Under certain operating conditions, the turbines could potentially exceed the 467.6 MM Btu/hr. Revise 0.25 gr/100 scf limit to 1.0 gr/100 gr/100 scf to be consistent with requirements at other facilities. Gas supplier cannot guarantee the 0.25 gr/100 scf limit. Based on these changes, there will be no change in emission limits as imposed in Table 1 (condition ID #18102, part 22).
   Therefore, Condition #18102, part 23 is changed as follows:
   Operational Limits: In order to comply with the emission limits of this rule, the owner/operator shall comply with the following operational limits

   (a) The heat input to each gas turbine shall not exceed:

Hourly: ~~468~~ 500MMBtu/hr
Daily: ~~11,222~~ 12,000MMBtu/day

The heat input to the three gas turbines shall not exceed:

Annual: 5,494,300 MMBtu/year

   (b) Only PUC Quality natural gas (General Order 58-a) shall be used to fire the gas turbine. The natural gas shall not contain total sulfur in concentrations exceeding ~~0.25~~ 1.0 gr./100 scf.

2. Amend Condition #18102, part 19.2 as follows:
   Ammonia emissions from the gas turbine shall not exceed 10 ppmvd @ 15% O2 (3-hour rolling average), except during periods of startup and shutdown as defined in this permit. The ammonia

emission concentration shall be verified by a District approved correct ammonia slip calculation ~~the continuous recording of the ratio of the ammonia injection rate to the NOx inlet rate to the SCR control system (molar ratio). The maximum allowable NH3/NOx molar ratio~~ The correction factor shall be determined during any required source test~~., and shall not be exceeded until reestablished through another valid~~

3. Amend Part 25 to reflect the infrequent operation of the peak Gas Turbines as follows:
Source Testing/RATA: The owner/operator shall perform a relative accuracy test audit (RATA) on the CEMS in accordance with 40 CFR Part 60 Appendix B Performance Specifications ~~and a source test~~ on an annual basis. A source test shall be conducted at least 8,000 hours of turbine operation or once every three years , whichever comes first.. Additional source testing may be required at the discretion of the District to address or ascertain compliance with the requirements of this permit. The written test results of the source tests shall be provided to the District within ~~thirty~~ sixty days after testing. A complete test protocol shall be submitted to the District no later than 30 days prior to testing, and notification to the District at least ten days prior to the actual date of testing shall be provided so that a District observer may be present. The source test protocol shall comply with the following: measurements of NOx, CO, POC, and stack gas oxygen content shall be conducted in accordance with ARB Test Method 100; measurements of PM10 shall be conducted in accordance with ARB Test Method ~~5~~ 201A/202; and measurements of ammonia shall be conducted in accordance with Bay Area Air Quality Management District test method ST-1B. Alternative test methods, and source testing scope, may also be used to address the source testing requirements of the permit if approved in advance by the District. The initial and annual source tests shall include those parameters specified in the approved test protocol, and shall at a minimum include the following:

i. NOx (as NOx) - ppmvd at 15% O2 and lb/MMBtu(as NO2);
ii. Ammonia - ppmvd at 15% O2 (Exhaust);
iii. CO - ppmvd at 15% O2 and lb/MMBtu (Exhaust);
iv. POC - ppmvd at 15% O2 and lb/MMBtu (Exhaust);

v. PM10 - lb/hr (Exhaust);
vi. SOx - lb/hr (Exhaust);
vii. Natural gas consumption, fuel High Heating Value (HHV), and total fuel sulfur content;
viii. Turbine load in megawatts;
ix. Stack gas flow rate (SDCFM) calculated according to procedures in U. S. EPA Method 19.
x. Exhaust gas temperature (°F)
xi. Ammonia injection rate (lb/hr or moles/hr)

4. Revise part 24 (e) to reflect the most current/stringent requirements of 40 CFR Parts 60 Subpart GG Standards of Performance for Stationary Gas Turbines.
Monitoring Requirements: The owner/operator shall comply with the following monitoring requirements for each gas turbine:
(e) The total sulfur and hydrogen sulfide content of the fuel gas shall be analyzed on an ~~quarterly~~ annual basis.

PLANT CUMULATIVE INCREASE
There are no net increase associated with the proposed changes. In Condition #18102, Part 22, the daily and annual mass emission limits remain the same.

TOXIC RISK SCREENING ANALYSIS
In the original application #2686, a District Risk Screen was performed yielding a cancer risk of 0.51 in a million and passes the Toxic Risk Screen. The proposed changes in this report will not have a change in the cancer risk. Therefore, another Toxic Risk Screen is not necessary.

STATEMENT OF COMPLIANCE

A CEQA study was conducted by the lead agency (California Energy Commission) in the original application #2686 A Negative Declaration for the project was issued. This project continues to comply with the requirements of Reg.2-1-426.2.

BACT
BACT is not triggered. However, this project will continue to meet BACT 2 Standards (achieve in practice) for NOx, CO, POC, and PM10 by the use of Selective Catalytic Reduction (SCR) as was determined in application #2686.

Offsets
Since there was no change in emissions, offsets were not triggered.

NSPS
Regulation 10 (40 CFR60, Subpart(GG) was adopted by reference from the federal New Source Performance Standards (NSPS) for stationary gas turbines. This regulation requires monitoring of fuel, imposes limits on the emissions of NOx, SO2, and PM, requires source testing of the

stack emissions, and process monitoring and data collection with record keeping. All the BACT limits imposed on the combustion turbines are more stringent than the requirements of the NSPS emission limits. The Calpine Gilroy Energy Center will continue to comply with NSPS standards (subpart GG Stationary Gas Turbines) as was determined in application #2686. New gas turbines may be subject to and would be in compliance with the proposed Subpart KKKK when it is finalize by EPA. If Subpart KKKK is adopted and is determined to be applicable to the Gilroy Energy Center gas turbines, Subpart GG of the NSPS would not apply.

NESHAPS and PSD do not apply.

The facility will continue to meet all other District requirements as stated in application #2686 (enclosed).

PERMIT CONDITIONS

Permit Conditions Revised 4/12/02. 6/5/02, 11/3/05, 3/10/06 Gilroy Energy Center LLC,Plant 11180 Definitions:

Clock Hour: Any continuous 60-minute period beginning on the hour.
Calendar Day: Any continuous 24-hour period beginning at 12:00 AM or 0000 hours. Year: Any consecutive twelve-month period of time Heat Input: All heat inputs refer to the heat input at the higher heating value (HHV) of the fuel, in Btu/scf.
Firing Hours: Period of time, during which fuel is flowing to a unit, measured in fifteen-minute increments.
MM Btu: million British thermal units
Gas Turbine Start-up Mode: The time beginning with the introduction of continuous fuel flow to the Gas Turbine until the requirements listed in Condition 19 are met, but not to exceed 60 minutes. Gas Turbine Shutdown Mode: The time from non-compliance with any requirement listed in Condition 19 until termination of fuel flow to the Gas turbine, but not to exceed 30 minutes.
Corrected Concentration: The concentration of any pollutant (generally NOx, CO or NH3) corrected to a standard stack gas oxygen concentration. For an emission point (exhaust of a Gas Turbine) the standard stack gas oxygen concentration is 15% O2 by volume on a dry basis Commissioning Activities: All testing, adjustment, tuning, and calibration activities recommended by the equipment manufacturers and the construction contractor to insure safe and reliable steady state operation of the gas turbines, heat recovery steam generators, steam turbine, and associated electrical delivery systems.
Commissioning Period: The Period shall commence when all mechanical, electrical, and control systems are installed

and individual system start-up has been completed, or when a gas turbine is first fired, whichever occurs first. The period shall terminate when the plant has completed performance testing, is available for commercial operation, and has initiated sales to the power exchange.
Precursor Organic Compounds (POCs): Any compound of carbon,
excluding methane, ethane, carbon monoxide, carbon dioxide, carbonic acid, metallic carbides or carbonates, and ammonium
carbonate
CEC: California Energy Commission EQUIPMENT DESCRIPTION:

This Authority To Construct Is Issued And Is Valid For
This Equipment Only While It Is In The Configuration Set
Forth In The Following Description:

Installation of Three Simple-Cycle Gas Turbine Generators
Consisting Of:

1. Simple Cycle Gas Turbine, General Electric, LM6000PC, Maximum Heat Input 467.6 MMBtu/hr, Nominal Electrical Output 45 MW, Natural Gas-Fired.

2. Selective Catalytic Reduction NOx Control System.
3. Ammonia Injection System.
(including the ammonia storage tank and control system)

4. Oxidation Catalyst System.

5. Continuous emission monitoring system (CEMS) designed to continuously record the measured gaseous concentrations, and calculate and continuously monitor and record the NOx and CO concentrations in ppmvd corrected to 15% oxygen on a dry basis.

PERMIT CONDITIONS:

1 to 8 Deleted

9. (Deleted under BAAQMD Application # 13479)

10 to 11 Deleted

12. Consistency with Analyses: Operation of this equipment shall be conducted in accordance with all information submitted with the application (and supplements thereof) and the analyses under which this permit is issued unless otherwise noted below. (2-1-403)

13. Conflicts Between Conditions: In the event that any condition herein is determined to be in conflict with any other condition contained herein, then, if principles of law do not provide to the contrary, the condition most protective of air quality and public health and safety shall prevail to the extent feasible. (1-102)

14. Reimbursement of Costs: All reasonable expenses, as set forth in the District's rules or regulations, incurred by the District for all activities that follow the issuance of this permit, including but not limited to permit condition implementation, compliance verification and emergency response, directly and necessarily related to enforcement of the permit shall be reimbursed by the owner/operator as required by the District's rules or regulations. (2-1-303)

15. Access to Records and Facilities: As to any condition that requires for its effective enforcement the inspection of records or facilities by representatives of the District, the Air Resources Board (ARB), the U.S. Environmental Protection Agency (U.S. EPA), or the California Energy Commission (CEC), the owner/operator shall make such records available or provide access to such facilities upon notice from representatives of the District, ARB, U.S. EPA, or CEC. Access shall mean access consistent with California Health and Safety Code Section 41510 and Clean Air Act Section 114A. (1-440, 1-441)

16. (Deleted under BAAQMD Application # 13479)

17. Operations: The gas turbine, emissions controls, CEMS and associated equipment shall be properly maintained and kept in good operating condition at all times when the equipment is in operation. (2-1-307)

18. Visible Emissions: No air contaminant shall be discharged into the atmosphere for a period or periods aggregating more than three minutes in any one hour which is as dark or darker than Ringelmann 1 or equivalent 20% opacity. (6-301)

19. Emissions Limits:

A 1-hour rolling average is any continuous 60-minute period beginning on the hour.

19.1 Oxides of nitrogen (NOx) emissions from the gas turbine shall not exceed 5 ppmvd @ 15% O2 (1-hour rolling average), except during periods of startup and shutdown as defined in this permit. The NOx emission concentration shall be verified by a District-approved continuous emission monitoring system (CEMS) and during any required source test. (basis: BACT)

19.2 Ammonia emissions from the gas turbine shall not exceed 10 ppmvd @ 15% O2 (3-hour rolling average), except during periods of startup and shutdown as defined in this permit. The ammonia emission concentration shall be verified by a District approved correct ammonia slip calculation ~~the continuous recording of the ratio of the ammonia injection rate to the NOx inlet rate to the SCR control system (molar ratio). The maximum allowable NH3/NOx molar ratio~~ The correction factor shall be determined during any required source test~~., and shall not be exceeded until reestablished through another valid source test~~. (basis: ~~BACT~~ TRMP)

19.3 Carbon monoxide (CO) emissions from the gas turbine shall not exceed 6 ppmvd @ 15 % O2 (3-hour rolling average), except during periods of startup and shutdown as defined in this permit. The CO emission concentration shall be verified by a District-approved CEMS and during any required source test. (basis: BACT)

19.4 Precursor organic compound (POC) emissions from the gas turbine shall not exceed 2 ppmvd @ 15% O2 (3-hour rolling average), except during periods of startup and shutdown as defined in this permit.

The POC emission concentration shall be verified during any required source test. (basis: BACT)

19.5 Particulate matter emissions less than ten microns in diameter (PM10) from the gas turbine shall not exceed 2.5 pounds per hour, except during periods of startup and shutdown as defined in this permit. The PM10 mass emission rate shall be verified during any required source test. (basis: BACT & cumulative increase)

19.6 Oxides of sulfur emissions (SOx) from the gas turbine shall not exceed 0.33 pounds per hour. The SOx emission rate shall be verified during any required source test. (basis: BACT & cumulative increase)

20. Turbine Startup: Startup of the gas turbine shall not exceed a time period of 60 minutes each per occurrance, or another time period based on good engineering practice and approved in advance by the District. The startup clock begins with the turbine's initial firing and continues until the unit meets the emission concentration limits. (Basis: Cumulative increase)

21. Turbine Shutdown: Shutdown of the gas turbine shall not exceed a time period of 30 minutes each per occurrence, or another time period based on good engineering practice and approved in advance by the District. Shutdown begins with initiation of the turbine shutdown sequence and ends with the cessation of turbine firing. (Basis: Cumulative increase)

22. Mass Emission Limits: Total mass emissions from the three gas turbines shall not exceed the daily, and annual mass emission limits listed in Table 1 below.

Table 1 - Mass Emission Limits (Including Startups and Shutdowns)

Pollutant	Daily (lb)	Annual (tons)
NOx (as NO2)	604.8	39.5
POC	84	6.9
CO	446.1	36.0
SOx (as SO2)	23.8	1.9

PM10	180	14.7

The daily and annual mass limits are on a calendar basis. Compliance shall be based on calendar average one-hour readings through the use of process monitors (e.g., fuel use meters), CEMS, and source test results; and the monitoring, recordkeeping and reporting conditions of this permit. (Basis: Cumulative increase)

23. Operational Limits: In order to comply with the emission limits of this rule, the owner/operator shall comply with the following operational limits:

a. The heat input to each gas turbine shall not exceed:

Hourly: ~~468~~ 500 MMBtu/hr
Daily: ~~11,222~~ 12,000MMBtu/day

The heat input to the three gas turbines shall not exceed:

Annual: 5,494,300 MMBtu/year

b. Only PUC Quality natural gas (General Order 58-a) shall be used to fire the gas turbine. The natural gas shall not contain total sulfur in concentrations exceeding 1.0 gr ~~0.25~~ gr./100 scf.

(c)The owner/operator of the gas turbine shall comply with the daily and annual emission limits listed in Table 1 by keeping running totals based on CEM data. (Basis: Cumulative increase)

24. Monitoring Requirements: The owner/operator shall comply with the following monitoring requirements for each gas turbine:

(a) The gas turbine exhaust stack shall be equipped with permanent provisions to allow collection of stack gas samples consistent with EPA test methods.

(b) The ammonia injection system shall be equipped with an operational ammonia flowmeter and injection pressure indicator accurate to plus or minus five percent at full scale and calibrated once every twelve months.

(c) The gas turbine exhaust shall be equipped with continuously recording emissions monitor(s) for NOx, CO and O2. Continuous emissions monitors shall comply with the requirements of 40 CFR Part 60, Appendices B and F, and 40 CFR Part 75, and shall be capable of monitoring concentrations and mass emissions during normal operating conditions and during startups and shutdowns.

(d) The fuel heat input rate shall be continuously recorded using District-approved fuel flow meters along with quarterly fuel compositional analyses for the fuel's higher heating value (wet basis).

(e) The total sulfur and hydrogen sulfide content of the fuel gas shall be analyzed on an ~~quarterly~~ annual basis.

(Basis: Cumulative Increase, BACT, 40 CFR 75, 40 CFR 60)

25. Source Testing/RATA: The owner/operator shall perform a relative accuracy test audit (RATA) on the CEMS in accordance with 40 CFR Part 60 Appendix B Performance Specifications ~~and a source test~~ on an annual basis. A source test shall be conducted at least 8,000 hours of turbine operation or once every three years , whichever comes first.. Additional source testing may be required at the discretion of the District to address or ascertain compliance with the requirements of this permit. The written test results of the source tests shall be provided to the District within ~~thirty~~ sixty days after testing. A complete test protocol shall be submitted to the District no later than 30 days prior to testing, and notification to the District at least ten days prior to the actual date of testing shall be provided so that a District observer may be present. The source test protocol shall comply with the following: measurements of NOx, CO, POC, and stack gas oxygen content shall be conducted in accordance with ARB Test Method 100; measurements of PM10 shall be conducted in accordance with ARB Test Method ~~5~~ 201A/202; and measurements of ammonia shall be conducted in accordance with Bay Area Air Quality Management District test method ST-1B. Alternative test methods, and source testing scope, may also be used to address the source testing requirements of the permit if

approved in advance by the District. The initial and annual source tests shall include those parameters specified in the approved test protocol, and shall at a minimum include the following:

i. NOx (as NOx) - ppmvd at 15% O2 and lb/MMBtu(as NO2);
ii. Ammonia - ppmvd at 15% O2 (Exhaust);
iii. CO - ppmvd at 15% O2 and lb/MMBtu (Exhaust);
iv. POC - ppmvd at 15% O2 and lb/MMBtu (Exhaust);
v. PM10 - lb/hr (Exhaust);
vi. SOx - lb/hr (Exhaust);
vii. Natural gas consumption, fuel High Heating Value (HHV), and total fuel sulfur content;
viii. Turbine load in megawatts;
ix. Stack gas flow rate (SDCFM) calculated according to procedures in U. S. EPA Method 19.
x. Exhaust gas temperature (°F)
xi. Ammonia injection rate (lb/hr or moles/hr)

(Basis: 40 CFR 60, BAAQMD Manual of Procedures Volume IV)

26. A written quality assurance program, for the CEM, must be established in accordance with 40 CFR Part 75, Appendix B and 40 CFR Part 60 Appendix F. (Basis: 40 CFR Part 75, Appendix B and 40 CFR Part 60, Appendix F)

27. The owner/operator shall comply with the applicable requirements of 40 CFR Part 60 Subpart GG. (Basis: NSPS)

28. The owner/operator shall notify the District of any breakdown condition consistent with the District's breakdown regulations. (Basis: Regulation 1-208)

29. The District shall be notified in writing in a timeframe consistent with the District's breakdown regulations following the correction of any breakdown condition. The breakdown condition shall include a description of the equipment malfunction or failure, the date and cause of the initial failure, the estimated emissions in excess of those allowed, and the actions taken to restore normal operations. (Basis:

Regulation 1-208)

30. Recordkeeping: The owner/operator shall maintain the following records:

a. hourly, daily, quarterly and annual quantity of fuel used and corresponding heat input rates (cumulative increase);
b. the date and time of each occurrence, duration, and type of any startup, shutdown, or malfunction along with the resulting mass emissions during such time period (BACT, cumulative increase);
c. emission measurements from all source testing, RATAs and fuel analyses (Cumulative Increase, BACT, 40 CFR 75, 40 CFR 60);
d. daily, quarterly and annual hours of operation (Cumulative Increase);
e. hourly records of NOx and CO, emission concentrations and hourly ammonia injection rates and ammonia/NOx ratio (BACT);
f. for the continuous emissions monitoring system; performance testing, evaluations, calibrations, checks, maintenance, adjustments, and any period of non-operation of any continuous emissions monitor (1-522).

31. All records required to be maintained by this permit shall be retained by the permittee for a period of five years and shall be made readily available for District inspection upon request. (Basis: BAAQMD 2-6-501)

32. Reporting: The owner/operator shall submit to the District a written report for each calendar quarter, within 30 days of the end of the quarter, which shall include:

(a) Daily and quarterly fuel use and corresponding heat input rates (Cumulative Increase);
(b) Daily and quarterly mass emission rates for all criteria pollutants during normal operations and during other periods (startup/shutdown, breakdowns) (BACT, cumulative increase);
(c) Time intervals, date, and magnitude of excess emissions (BACT, cumulative increase);
(d) Nature and cause of the excess emission, and corrective actions taken (BACT, cumulative

increase);

(e) Time and date of each period during which the CEM was inoperative, except for zero and span checks, and the nature of system repairs and adjustments (1-522);

(f) A negative declaration when no excess emissions occurred (BACT, cumulative increase); and

(g) Results of quarterly fuel analyses for HHV and total sulfur/hydrogen sulfide content (Cumulative increase, 40 CFR 75).

33. (Deleted under BAAQMD Application # 13479)

34. District Operating Permit: The owner/operator shall apply for and obtain all required operating permits from the District according to the requirements of the District's rules and regulations. (Basis: Regulations 2-2 & 2-6)

35. (Deleted under BAAQMD Application # 13479)

RECOMMENDATION

Issue a change in Permit Condition for the following sources:

S-3 Gas Turbine with water injection, General Electric 500 MMBtu/hour; abated by A-3 Oxidation Catalyst, and A-4 Selective Catalytic Reduction System.

S-4 Gas Turbine with water injection, General Electric LM6000PC, natural gas fired, 45 MW net simple-cycle, maximum heat input rating is 500 MMBtu/hour; abated by A-5 Oxidation Catalyst, and A-6 Selective Catalytic Reduction System.

S-5 Gas Turbine with water injection, General Electric LM6000PC, natural gas fired, 45 MW net simple-cycle, maximum heat input rating is 500 MMBtu/hour; abated by A-7 Oxidation Catalyst, and A-8

By: Allan Chiu 3/10/06
AQ Engineer II Date