777 12th Street, 3rd Floor SACRAMENTO METROPOLITAN AIR QUALITY MANAGEMENT DISTRICT Sacramento, CA 95814

PROPOSED
02-19-2009

AUTHORITY TO CONSTRUCT

A/C NO.: 21738 **ISSUED BY:** _____
Bruce Nixon, P.E.

DATE ISSUED: February XX, 2009

DATE EXPIRES: February XX, 2010

ISSUED TO: Sacramento Power Authority (SPA)

LOCATION: 3215 47th Avenue Avenue, Sacramento

DESCRIPTION: Modification to: P/O No. 14072 - Gas Turbine
[also being modified but P/O Nos. will not change -
P/O No. 14071 - Duct Burner
P/O No. 11458 - APC SCR NOx
P/O No. 11459 - APC Oxidation CO]

a. Allow an increase in NOx concentration and hourly and daily NOx and CO mass emissions during the commissioning period following the replacement of the facility's master control system.

Authority to Construct Conditions

STARTUP

S1. This Authority to Construct shall serve as a temporary Permit to Operate provided that:

A. The SMAQMD has been notified, in writing, of the date that the commissioning period will begin.

COMMISSIONING PERIOD

CM1. The commissioning period is defined as follows:

"The commissioning period shall commence when all mechanical, electrical and control systems are installed and the gas turbine is first fired. The commissioning period shall terminate when the SPA facility has successfully completed performance testing, tuning and shakedown operations and compliance is demonstrated by continuous emissions monitoring equipment."

CM2. During the commissioning period at the earliest feasible opportunity, in accordance with recommendations of the equipment manufacturers and the construction contractor, the gas turbine combustors shall be tuned to minimize emissions of CO and NOx.

CM3. During the commissioning period, at the earliest feasible opportunity, in accordance with recommendations of the equipment manufacturers and the construction contractor, the gas turbine and duct burner shall operate with the Selective Catalytic Reduction (SCR)

system. The SCR system shall be adjusted and operated to minimize emissions of NOx.

CM4. During the commissioning period, compliance with NOx and CO emission limits for the gas turbine and duct burner shall be demonstrated through the use of properly operated and maintained continuous emission monitoring systems and continuous parameter monitoring systems for the following:

A. Firing hours of the gas turbine and duct burner
B. Fuel flow rates to the gas turbine and duct burner
C. Stack gas NOx emission concentrations
D. Stack gas CO emission concentrations
E. Stack gas O2 concentrations

CM5. During the commissioning period the monitored parameters shall be recorded at least once every 15 minutes (excluding normal calibration periods or when the monitored source is not in operation) for the gas turbine and duct burner. Previously approved methods shall be used to calculate heat input rates, NOx and CO mass emission rates, and NOx and CO emission concentrations, summarized for each clock hour and each calendar day. All records shall be retained on site for at least 5 years from the date of entry and made available to SMAQMD personnel upon request.

CM6. During the commissioning period the continuous emission and parameter monitors shall be installed, calibrated and operational prior to firing of the gas turbine and duct burner with the new master control system. After initial firing of the gas turbine and duct burner, the detection range of these continuous emission monitors shall be adjusted as necessary to accurately measure the resulting range of NOx and CO emission concentrations.

CM7. During the commissioning period the total number of firing hours of the gas turbine and duct burner without control of NOx emissions by the SCR system shall not exceed 100 hours. Such operation of the gas turbine and duct burner shall be limited to discrete commissioning activities that can only be properly executed without the SCR system fully operational.

A. The number of firing hours of the gas turbine and duct burner without control of NOx emissions by the SCR system shall be recorded on an hourly basis during the commissioning period.

CM8. During the commissioning period the total mass emissions of ROC, NOx, SOx, PMI0 and CO that are emitted by the gas turbine and duct burner shall accrue towards the quarterly mass emission limits in Condition No. 8.

CM9. During the commissioning period the concentration of nitrogen oxides (NOx) emissions from the gas turbine and duct burner shall not exceed the following limit:

Pollutant	Maximum Allowable NOx Concentration Gas Turbine and Duct Burner ppmv at 15% O2, averaged over any consecutive 3 hour period	
	Current Permit Limit	Permit Limit Applicable During the Commissioning Period
NOx	3	No limit

CM10. During the commissioning period hourly mass emissions from the gas turbine and duct burner shall not exceed the following limits:

Pollutant	Maximum Allowable Hourly Emissions Gas Turbine and Duct Burner lb/hour, averaged over any consecutive 3 hour period	
	Current Permit Limits	Permit Limits During the Commissioning Period
ROC	9.01	9.01 (no change)
NOx	17.76	360
SO2	0.97	0.97 (no change)
PM10	7.00	7.00 (no change)
CO	10.81	500

CM11. During the commissioning period daily mass emissions from the gas turbine and duct burner shall not exceed the following limits:

Pollutant	Maximum Allowable Daily Emissions Gas Turbine and Duct Burner lb/day	
	Current Permit Limits	Permit Limits During the Commissioning Period
ROC	146.7	146.7 (no change)
NOx	384.5	1500
SO2	21.8	21.8 (no change)
PM10	142.1	142.1 (no change)
CO	326.9	1875

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GENERAL

1. The equipment shall be properly maintained.

2. The SMAQMD Air Pollution Control Officer and/or authorized representatives, upon the presentation of credentials, shall be permitted:

   A. To enter upon the premises where the source is located or in which any records are required to be kept under the terms and conditions of this Authority to Construct, and
   B. At reasonable times to have access to and copy any records required to be kept under the terms and conditions of this Authority to Construct, and

   C. To inspect any equipment, operation or method required in this Authority to Construct, and

   D. To sample emissions from the source or require samples to be taken.

3. This Authority to Construct does not authorize the emission of air contaminants in excess of those allowed by Division 26, Part 4, Chapter 3, of the California Health and Safety Code or the Rules and Regulations of the SMAQMD.

4. A legible copy of this Authority to Construct shall be maintained on the premises with the equipment.

EMISSION LIMITATION REQUIREMENTS

5. Except as specified in Condition No. CM9, concentrations of nitrogen oxides (NOx) emissions from the gas turbine and duct burner shall not exceed the following limit:

Pollutant	Maximum Allowable NOx Concentration (A) Gas Turbine and Duct Burner ppmv at 15% O2 averaged over any consecutive 3 hour period
NOx	3

(A) Excluding start-ups, shutdowns and short term excursions as defined in Condition Nos. 13, 14 and 15.

6. Except as specified in Condition No. CM10, hourly mass emissions from the gas turbine and duct burner shall not exceed the following limits:

Pollutant	Maximum Allowable Emissions (A) Gas Turbine and Duct Burner lb/hour averaged over any consecutive 3 hour period
ROC	9.01 (B)

Pollutant	Maximum Allowable Emissions (A) Gas Turbine and Duct Burner lb/hour averaged over any consecutive 3 hour period
NOx	17.76 (C)
SO2	0.97 (D)
PM10	7.00 (E)
CO	10.81 (F)

(A) Excluding start-ups, shutdowns and short term excursions as defined in Condition Nos. 13, 14 and 15.
(B) Based on a turbine ROC emission factor of 0.00228 lb/MMBTU, duct burner ROC emission factor of 0.029 lb/MMBTU and firing at full capacity.
(C) Based on data submitted in the permit application and is monitored by the turbine's NOx CEM system.
(D) Based on a turbine and duct burner SO2 emission factor of 0.0006 lb/MMBTU and firing at full capacity.
(E) Based on a turbine PM10 emission factor of 0.003546 lb/MMBTU, duct burner PM10 emission factor of 0.01 lb/MMBTU and firing at full capacity.
(F) Based on data submitted in the permit application and is monitored by the turbine's CO CEM system.

7. Except as specified in Condition No. CM11, daily mass emissions from the following equipment at the facility shall not exceed the following limits:

Pollutant	Maximum Allowable Emissions (A) lb/day		
	Gas Turbine and Duct Burner	Cooling Tower	Total
ROC	146.7	NA	146.7
NOx	384.5	NA	384.5
SO2	21.8	NA	21.8
PM10	142.1	9.7	151.8
CO	326.9	NA	326.9

(A) Including start-ups, shutdowns and short term excursions as defined in Condition Nos. 13, 14 and 15.

8. Combined mass emissions from the following equipment at the facility shall not exceed the following limits:

Pollutant	Maximum Allowable Emissions (A) Combined Emissions from: Gas Turbine and Duct Burner and Cooling Tower				
	Quarter 1 lb/quarter	Quarter 2 lb/quarter	Quarter 3 lb/quarter	Quarter 4 lb/quarter	Total lb/year
ROC	8,792	8,898	13,264	8,968	39,922
NOx	24,209	24,545	26,321	24,725	99,800
SOx	1,814	1,836	1,944	1,853	7,447
PM10	11,015	10,160	12,294	11,619	45,088
CO	21,265	21,601	22,803	21,708	87,377

(A) Including start-ups, shutdowns and short term excursions as defined in Condition Nos. 13, 14 and 15.

9. Concentrations of ammonia (NH3) emissions from the gas turbine and duct burner shall not exceed the following limit.

Pollutant	Maximum Allowable Ammonia Concentration ppmv at 15% O2 (measured as NH3) averaged over any consecutive 3 hour
Ammonia (NH3)	10

(A) Excluding start-ups, shutdowns and short term excursions as defined in Condition Nos. 13, 14 and 15.

10. HAP mass emissions from the facility shall not exceed the following limits:

Equipment	Maximum Allowable HAP Emissions (A) tons/year	
	Single HAP	Combination of HAPs
Total facility	9.4	24.4

(A) The purpose of this limitation is to qualify the gas turbines for the non-applicability of 40 CFR 63 Subpart YYYY - National Emission Standards for Hazardous Air Pollutants for Stationary Gas Turbines.

EQUIPMENT OPERATION REQUIREMENTS

11. The duct burner shall not be operated unless the gas turbine is operating.

12. Except as specified in Condition No. CM3 for the selective catalytic reduction system, the gas turbine and duct burner shall not be operated without fully functioning selective catalytic reduction and oxidizing catalyst air pollution control systems, excluding periods of start-ups and shutdowns.

13. The duration of the gas turbine's start-up period shall not exceed 60 minutes.

    A. Gas turbine start-ups are defined as the time periods commencing with the introduction of fuel to the gas turbine and ending at the time that 15-minute average NOx concentrations do not exceed 3 ppmvd at 15% O2, but in no case exceeding 60 consecutive minutes.

14. Gas turbine shutdowns are defined as the 30-minute time period immediately preceding the termination of fuel to the gas turbine.

15. Gas turbine short-term excursions are defined as 15-minute periods designated by the applicant that are a direct result of a diffusion mode switchover, not to exceed four consecutive 15-minute periods, when the 15-minute average NOx concentration exceeds 3 ppmvd at 15% O2.

    A. Maximum 3-hour average NOx concentration for periods that include short-term excursions shall not exceed 30 ppmvd at 15% O2.

    B. Short-term excursion periods that total in excess of 10 hours per rolling 12-month period shall not be excluded from evaluations for compliance with emission limits in Condition Nos. 5 and 6.

16. The gas turbine and duct burner shall only combust natural gas fuel.

MONITORING REQUIREMENTS

17. The permittee shall operate a continuous emission monitoring system that has been approved by the SMAQMD Air Pollution Control Officer for the gas turbine and duct burner.

    A. The continuous emission monitoring (CEM) system shall monitor and record nitrogen oxides, carbon monoxide and oxygen.

    B. For NOx and O2, the CEM system shall comply with U.S. EPA Performance Specifications in 40 CFR 75 Appendix A.

    C. For CO, the CEM system shall comply with U.S. EPA Performance Specifications in 40 CFR 60 Appendix B Performance Specification 4.

18. The permittee shall operate a continuous parameter monitoring system that has been approved by the SMAQMD Air Pollution Control Officer that either measures or calculates and records the following:

Parameter to be Monitored	Units
A. Fuel consumption of the combined cycle gas turbine	MMBTU/hour of natural gas
B. Fuel consumption of the duct burner	MMBTU/hour of natural gas
C. Exhaust gas flow rate of the combined cycle gas turbine and the duct burner.	kscfh or lb/hr

RECORDKEEPING AND REPORTING REQUIREMENTS

19. The permittee shall continuously maintain onsite the following records for the most recent five year period and shall make such records available to the SMAQMD Air Pollution Control Officer upon request. Quarterly records as specified in the table below shall be made available for inspection within 30 days of the end of the quarter.

Frequency	Information to be recorded
Upon occurrence	A. Record of the occurrence and duration of any start-up, shutdown or short term excursion. i. The number of consecutive 15-minute periods when the 15-minute average NOx concentration exceeded the limits of Condition No. 5 during each short-term excursion. ii. The qualified condition(s) under which each short-term excursion occurred, pursuant to SMAQMD Rule No. 413 Section 114. iii. The maximum 6-hour average NOx concentration during the period that includes each short-term excursion. iv. The cumulative total, per calendar year, of all 15-minute periods when the 15-minute average NOx concentration exceeded the limits of Condition No. 5. B. Malfunction in operation of the gas turbine. C. Measurements from the continuous emission and parameter monitoring systems. D. Monitoring device and performance testing measurements. E. All continuous monitoring system performance evaluations. F. All continuous monitoring system or monitoring device calibration checks.

Frequency	Information to be recorded
	G. All continuous monitoring system adjustments and maintenance.
Hourly	H. Gas turbine natural gas fuel consumption (MMBTU/hr). I. Duct burner natural gas fuel consumption (MMBTU/hr). J. Indicate when gas turbine start-up occurred. K. NOx emission concentration from the gas turbine and duct burner (ppmvd at 15% O2). L. ROC, NOx, SOx, PM10 and CO hourly emissions (lb/hour) from the gas turbine and duct burner (combined emissions). i. For those pollutants directly monitored (NOx and CO), the hourly emissions shall be from the CEM system required pursuant to Condition No. 17. ii. For those pollutants that are not directly monitored (ROC, SOx and PM10), the hourly emissions shall be calculated based on SMAQMD approved emission factors contained in the footnotes to Condition No. 6.
Daily	M. ROC, NOx, SOx, PM10 and CO daily mass emissions from all equipment <u>separately</u> and <u>combined</u> at the facility (lb/day): i. gas turbine and duct burner (for separate reporting the gas turbine and duct burner emission are combined). ii. cooling tower.
Quarterly	N. ROC, NOx, SOx, PM10 and CO quarterly mass emissions from all equipment <u>combined</u> at the facility (lb/quarter). i. gas turbine and duct burner. ii. cooling tower.

20. Submit to the SMAQMD Air Pollution Control Officer a written report which contains the following information.

Frequency	Information to be Reported
Quarterly Submitted by: Jan 30 Apr 30 Jul 30 Oct 30 for the previous calendar quarter	A. Whenever the continuous emissions monitoring system is inoperative except for zero and span checks: i. Date and time of non-operation of the continuous emission monitoring system. ii. Nature of the continuous emission monitoring system repairs or adjustments. B. Whenever an emission occurs as measured by the required continuous emissions monitoring system that is in excess of any emission limitation: i. Magnitude of the emission which has been determined to be in excess. ii. Date and time of the commencement and completion of each period of excess emissions. iii. Periods of excess emissions due to startup, shutdown and malfunction shall be specifically identified. iv. The nature and cause of any malfunction (if known). v. The corrective action taken or preventive measures adopted. C. If there are no excess emissions or the continuous monitoring system has not been inoperative, repaired or adjusted for a calendar quarter, a report shall be submitted stating such information.

EMISSION REDUCTION CREDIT (ERC) REQUIREMENTS

21. The permittee shall surrender (and has surrendered - See Condition Nos. 22, 23 and 24) ERCs to the SMAQMD Air Pollution Control Officer to offset the following amount of emissions:

Equipment - Gas Turbine Duct Burner Cooling Tower	Amount of Emission Offsets for which ERCs are to be Surrendered lb/quarter			
	Quarter 1	Quarter 2	Quarter 3	Quarter 4
ROC	1,292	1,398	5,764	1,468

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Equipment - Gas Turbine Duct Burner Cooling Tower	Amount of Emission Offsets for which ERCs are to be Surrendered lb/quarter			
	Quarter 1	Quarter 2	Quarter 3	Quarter 4
NOx	24,209	24,545	26,321	24,725
PM10	11,015	10,160	12,294	11,619

22. The following ERCs have been surrendered to the SMAQMD Air Pollution Control Officer to comply with the ROC emission offset requirements as stated in Condition No. 21:

ERC Certificate No.	Face Value of Emission Reduction Credit Certificates lb/quarter				IPTR (A)	Offset Ratio	Value Applied to ROC Emission Liability lb/quarter			
	Qtr 1	Qtr 2	Qtr 3	Qtr 4			Qtr 1	Qtr 2	Qtr 3	Qtr 4
SMAQMD 00-00652 Swansons	1,550	1,678	6,917	1,762	NA	1.2	1,292	1,398	5,764	1,468
Total ROC Emission Offsets							1,292	1,398	5,764	1,468

(A) IPTR = interpollutant trading ratio

23. The following ERCs have been surrendered to the SMAQMD Air Pollution Control Officer to comply with the NOx emission offset requirements as stated in Condition No. 21:

ERC Certificate No.	Face Value of Emission Reduction Credit Certificates lb/quarter				IPTR (A)	Offset Ratio	Value Applied to NOx Emission Liability lb/quarter			
	Qtr 1	Qtr 2	Qtr 3	Qtr 4			Qtr 1	Qtr 2	Qtr 3	Qtr 4
SMAQMD 97-00437 Campbell	23,622	13,491	31,585	20,983	NA	1.2:1	19,685	11,243	26,321	17,486
PCAQMD 98-00002 Formica (ROC)	18,096	53,208	0	28,956	2:1	2:1	4,524	13,302	0	7,239
Total NOx Emission Offsets							24,209	24,545	26,321	24,725

(A) IPTR = interpollutant trading ratio

24. The following ERCs have been surrendered to the SMAQMD Air Pollution Control Officer to comply with the PM10 emission offset requirements as stated in Condition No. 21:

Offset Source	Face Value of Emission Reduction credit Certificates lb/quarter				IPTR (A)	Offset Ratio	Value Applied to PM10 Emission Liability lb/quarter			
	Qtr 1	Qtr 2	Qtr 3	Qtr 4			Qtr 1	Qtr 2	Qtr 3	Qtr 4
PCAPCD 99-00003 Sierra Pine	16,523	15,240	18,441	17,429	NA	1.5	11,015	10,160	12,294	11,619
Total PM10 Emission Offsets							11,015	10,160	12,294	11,619

(A) IPTR = interpollutant trading ratio

EMISSION TESTING REQUIREMENTS

25. The permittee shall perform an ROC, NOx, PM10, CO and ammonia (NH3) source test and CEM accuracy (RATA) test of the gas turbine and duct burner once each calendar year.

A. Submit a source test plan to the SMAQMD Air Pollution Control Officer for approval at least 30 days before the source test is to be performed. The source test plan shall indicate that U.S. EPA approved test methods are used for NOx and CO.

B. Notify the SMAQMD Air Pollution Control Officer at least 7 days prior to the source testing date.

C. During the source test(s), the gas turbine and duct burner shall be operated at the maximum firing capacity, defined as $\geq$ 90% of the heat input capacity achievable at the time of the source test, based on then current ambient conditions.

D. Submit the source test results to the SMAQMD Air Pollution Control Officer within 60 days after the completion of the source test(s).

E. The SMAQMD Air Pollution Control Officer may waive the ROC and PM10 annual source test requirement every other year if the prior annual source test result indicates that the respective hourly emissions are less than or equal to 75% of the respective hourly emission limit.

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Your application for this air quality Authority to Construct was evaluated for compliance with Sacramento Metropolitan Air Quality Management District (SMAQMD), state and federal air quality rules. The following rules are those that are most applicable to the operation of your equipment. Other rules may also be applicable.

SMAQMD Rule No.	Rule Title
201	General Permit Requirements
202	New Source Review
301	Permit Fees - Stationary Source
401	Ringelmann Chart
402	Nuisance
406	Specific Contaminants
413	Stationary Gas Turbines
420	Sulfur Content of Fuels
801	40 CFR 60 Subpart GG [begin at 60.330] - Standards of Performance for Stationary Gas Turbines

In addition, the conditions on this Authority to Construct may reflect some, but not all, requirements of these rules. There may be other conditions that are applicable to the operation of your equipment. Future changes in prohibitory rules may establish more stringent requirements which may supersede the conditions listed here.

For further information please consult your SMAQMD Rulebook or contact the SMAQMD for assistance.