AIR QUALITY

MANAGEMENT DISTRICT

PRELIMINARY AUTHORITY TO CONSTRUCT

A/C NO.:	25725	
		ISSUED BY:

DATE ISSUED: MONTH XX, 2018 JORGE DEGUZMAN

DATE EXPIRES: MONTH XX, 2020

ISSUED TO: SACRAMENTO POWER AUTHORITY (SPA)

LOCATION: 3215 47TH AVENUE SACRAMENTO, CA 95824

DESCRIPTION: MODIFICATION TO: P/O NO. 21738 - GAS TURBINE

IALSO 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 COI

1. DUE TO START-UPS, INCREASE MAXIMUM HOURLY, DAILY, QUARTERLY,

AND YEARLY CARBON MONOXIDE (CO) EMISSIONS

2. REDUCE CO HOURLY EMISSION RATE FOR STEADY-STATE OPERATION.

3. INSTALL WET COMPRESSION UPGRADE WHICH INCLUDES:

a. WET COMPRESSION PUMP SKID

b. HR3 BURNERS IN THE TURBINE COMBUSTOR.

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START-UP REQUIREMENTS

S1. After completing the equipment installation authorized under this Authority to Construct (ATC), the permit holder must contact the Sacramento Metropolitan Air Quality Management District (SMAQMD) to arrange a start-up inspection. SMAQMD may be contacted at (916) 874-4800.

[Basis: SMAQMD Rule 201, Section 405]

- S2. This Authority to Construct may serve as a temporary Permit to Operate provided that:
 - A. The permit holder has notified SMAQMD that the equipment installation is complete and the facility is ready for a start-up inspection,
 - B. The equipment installed matches the equipment authorized in this Authority to Construct,
 - C. The equipment is operated in compliance with all conditions in this Authority to Construct, and
 - D. The equipment and its operation complies with SMAQMD, state and federal laws and regulations.

[Basis: SMAQMD Rule 201, Section 303.1, 405]

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S3. This Authority to Construct has been reviewed through an Enhanced New Source Review process in accordance with the procedural requirements of Section 401 through 408 of Rule 207 Title V – Federal Operating Permit Program.

[Basis: SMAQMD Rule 202, Section 404 and Rule 207 Sections 401-408]

S4. The Sacramento Power Authority must submit to the Air Pollution Control Officer an application to modify the Title V permit with an Administrative Title V Permit Amendment prior to commencing construction with modifications authorized by this Authority to Construct.

[Basis: SMAQMD Rule 207, Section 301.5]

GENERAL

1. The equipment must be properly maintained and operated in accordance with the information submitted with the application and the manufacturer's recommendations at all times.

[Basis: SMAQMD Rule 201, Section 405 and Rule 202, Section 408.1]

- 2. The Air Pollution Control Officer and/or authorized representatives must be permitted to do all of the following:
 - A. Enter the source premises or any location at which any records required by this ATC are kept.
 - B. Access and copy any records required by this ATC.
 - C. Inspect or review any equipment, operation, or method required under this ATC.
 - D. Sample emissions from the source or require samples to be taken.

[Basis: SMAQMD Rule 201, Section 405]

3. This ATC 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 SMAQMD Rules and Regulations.

[Basis: SMAQMD Rule 201, Sections 303.1, 405]

4. The facility may not discharge air contaminants or other materials that cause injury, detriment, nuisance or annoyance to any considerable number of persons or to the public, or which endanger the comfort, repose, health or safety of any such persons or the public, or which cause, or have a natural tendency to cause, injury or damage to business or property.

[Basis: SMAQMD Rule 402, Section 301]

5. A legible copy of this ATC must be maintained on the premises with the equipment.

[Basis: SMAQMD Rule 201, Section 401]

EMISSION LIMITATIONS

6. The turbine, ductburner, and APC SCR and Oxidation catalyst must not discharge into the atmosphere any visible air contaminant other than uncombined water vapor for a period or periods aggregating more than three minutes in any one hour if the discharge is as dark or darker than Ringelmann No. 1 or is equal to or greater than 20% opacity.

[Basis: SMAQMD Rule 401, Section 301]

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7. The turbine and duct burner must meet the following BACT standards:

[Basis: SMAQMD Rule 202, Section 408.2.a]

Pollutant	Emission Standard and Work Practice
NOx	5 ppmvd corrected to 15% oxygen, 3 hour average (A)
VOC	The use of an oxidation catalyst (B)
СО	2.0 ppmvd corrected to 15% oxygen, 1 hour average (B)
SOx	Use of natural gas (C)
PM10	Use of natural gas and inlet air filtration (C)

- (A) Based on SMAQMD BACT standard during the original permitting in 1994. The NOx BACT concentration is for reference only, the applicable regulatory NOx concentration can be found in Condition No. 8
- (B) Based on SMAQMD BACT standard (BACT Determination 203)
- (C) Based on SMAQMD BACT standard during the original permitting in 1994.
- 8. Concentrations of nitrogen oxides (NOx), carbon monoxide (CO) and ammonia from the gas turbine and duct burner must not exceed the following limit:

[Basis: SMAQMD Rule 202 and Rule 413, Section 302.1(d), and 40 CFR Part 60. 332]

Pollutant	Maximum Allowable Concentration Gas Turbine and Duct Burner
NOx	3 ppmvd corrected to 15% O2, averaged over any consecutive 3 hour period (A)
СО	2.0 ppmvd corrected to 15% O2, averaged over any consecutive 1 hour period (B)
NH3	10 ppmvd corrected to 15% O2, averaged over an consecutive 3 hour period (B)

- (A) Excluding start-ups, shutdowns and short term excursions as defined in Condition Nos. 15, 16 and 17.
- (B) Excluding start-ups and shutdowns as defined in Condition Nos. 15 and 16.
- 9. Emissions from the following equipment must not exceed the following limits.

[Basis: SMAQMD Rule 202]

Pollutant	Maximum Allowable Emissions Gas Turbine and Duct Burner lb/hour
VOC	9.01 (A)
NOx	17.76 (B)
SOx	0.97 (C)

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Pollutant	Maximum Allowable Emissions Gas Turbine and Duct Burner Ib/hour
PM10	7.00 (D)
PM2.5	6.99 (E)
CO (Normal Steady-State Operation)	7.22 (F)
CO (Worst Case Startup)	550.0 (G)

- (A) Averaged over a three hour period, not including periods containing start-ups, shut-downs, and short-term excursions as defined in Condition Nos. 15, 16, and 17. Based on a turbine VOC emission factor of 0.00228 lb/MMBTU, duct burner VOC emission factor of 0.029 lb/MMBTU and firing at full capacity.
- (B) Averaged over a three hour period, not including periods containing start-ups, shut-downs, and short-term excursions as defined in Condition Nos. 15, 16, and 17. Based on data submitted in the application and is monitored by the turbine's NOx CEM system.
- (C) Averaged over a three hour period, not including periods containing start-ups, shut-downs, and short-term excursions as defined in Condition Nos. 15, 16, and 17. Based on a turbine and duct burner emission factor of 0.0006 lb/mmbtu and firing at full capacity.
- (D) Averaged over a three hour period, not including periods containing start-ups, shut-downs, and short-term excursions as defined in Condition Nos. 15, 16, and 17. 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.
- (E) Averaged over a three hour period, not including periods containing start-ups, shut-downs, and short-term excursions as defined in Condition Nos. 15, 16, and 17. PM2.5 emissions are based on a 0.998 PM2.5 to PM10 fraction.
- (F) Averaged over a one hour period, not including periods containing start-ups, shut-downs, and short-term excursions as defined in Condition Nos. 15, 16, and 17. Based on data submitted in the application and is monitored by the turbine's CO CEM system
- (G) Including periods containing start-ups as defined in Condition No. 15. Based on data submitted in the application and is monitored by the turbine's CO CEM system
- 10. Emissions from the following equipment must not exceed the following limits, including periods containing start-ups, shutdowns and short term excursions as defined in Condition Nos. 15, 16, and 17.

[Basis: SMAQMD Rule 202]

	Maximum Allowable Emissions			
Pollutant	Gas Turbine and Duct Burner Lb/day	Cooling Tower Lb/day	Total Lb/day	
VOC	146.7	0.5	147.2	
NOx	384.5	NA	384.5	

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SOx	21.8	NA	21.8
PM10	142.1	9.7	151.8
PM2.5	141.8	9.7	151.5
СО	1,258.8	NA	1,258.8

11. Emissions from the following equipment must not exceed the following limits, including periods containing start-ups, shutdowns and short term excursions as defined in Condition Nos. 15, 16, and 17.

[Basis: SMAQMD Rule 202]

Pollutant	Maximum Allowable Emissions Gas Turbine and Duct Burner				
Foliutarit	Quarter 1 lb/quarter	Quarter 2 lb/quarter	Quarter 3 lb/quarter	Quarter 4 lb/quarter	Total lb/year
VOC	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	10,183	9,319	11,444	10,769	41,715
PM2.5	10,163	9,300	11,421	10,747	41,631
СО	47,599	47,599	47,599	47,599	190,396

Pollutant	Maximum Allowable Emissions Gas Turbine, Duct Burner and Cooling Tower				
Pollutarit	Quarter 1 lb/quarter	Quarter 2 lb/quarter	Quarter 3 lb/quarter	Quarter 4 lb/quarter	Total lb/year
VOC	8,836	8,943	13,309	9,013	40,101
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
PM2.5	10,995	10,141	12,271	11,597	45,004
СО	47,599	47,599	47,599	47,599	190,396

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12. HAP mass emissions from the facility must not exceed the following limits:

[Basis: SMAQMD Rule 202]

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

13. The duct burner must not be operated unless the gas turbine is operating.

[Basis: SMAQMD Rule 201 Section 405]

14. The gas turbine and/or duct burner must not be operated without fully functioning selective catalytic reduction and oxidizing catalyst air pollution control systems, excluding periods of start-ups and shutdowns as defined in Condition Nos. 15 and 16.

[Basis: SMAQMD Rule 201 Section 405]

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

[Basis: SMAQMD Rule 201 Section 405]

- A. Gas turbine start-ups are defined as the time periods commencing with the introduction of fuel to the gas turbine and ending immediately prior to the time that 15-minute average NOx concentrations do not exceed 3 ppmvd corrected to 15% O2, but in no case exceeding 60 consecutive minutes.
- 16. Gas turbine shutdowns are defined as the 30-minute time period immediately preceding the termination of fuel to the gas turbine.

[Basis: SMAQMD Rule 201 Section 405]

- 17. Gas turbine short-term excursions are defined as 15-minute periods designated by the Permittee 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 corrected to 15% O2.
 - A. Maximum 3-hour average NOx concentration for periods that include short-term excursions must not exceed 30 ppmvd corrected to 15% O2.
 - B. Short-term excursion periods that total in excess of 10 hours per rolling 12-month period must not be excluded from evaluations for compliance with emission limits in **Condition Nos. 8 and 9**.

[Basis: SMAQMD Rule 201 Section 405]

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18. The gas turbine and duct burner must only combust natural gas fuel.

[Basis: SMAQMD Rule 201 Section 405]

MONITORING REQUIREMENTS

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

[Basis: SMAQMD Rule 201 Section 405]

- A. The continuous emission monitoring (CEM) system must monitor and record nitrogen oxides, carbon monoxide and oxygen.
- B. For NOx and O2, the CEM system must comply with U.S. EPA Performance Specifications in 40 CFR 75 Appendix A.
- C. For CO, the CEM system must comply with U.S. EPA Performance Specifications in 40 CFR 60 Appendix B Performance Specification 4 or 4A.
- 20. The permittee must 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: [Basis: SMAQMD Rule 201, Rule 202 Rule 413, Section 303.3 and 40 CFR Part 60.334(i)(2)(i)]

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

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

[Basis: SMAQMD Rules 201 and 202, and 40 CFR Part 60.334 (j)(1)(iii)(B), 60.334(j)(2)(iii), Part 60.334 (h)(1), Part 60.334(i)(3), Part 60.335(b)(10), 40 CFR Part 75.66(c), and Part 75 Appendix D]

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. 8 during each short-term

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Frequency	Information to be recorded							
	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. 8. 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. 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 corrected to 15% O2). L. VOC, 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 must be from the CEM system required pursuant to Condition No. 19. ii. For those pollutants that are not directly monitored (VOC, SOx and PM10), the hourly emissions must be calculated based on SMAQMD approved emission factors contained in the footnotes to Condition No. 9. 							
Daily	 M. VOC, NOx, SOx, PM10 and CO daily mass emissions from all equipment separately and combined 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. VOC, NOx, SOx, PM10 and CO quarterly mass emissions from all equipment combined at the facility (lb/quarter). i. gas turbine and duct burner. ii. cooling tower. 							

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22. Submit to the SMAQMD Air Pollution Control Officer a written report which contains the following information. [Basis: SMAQMD Rules 201 and 202, and 40 CFR Part 60.334 (j)(5)]

Frequency	Information to be Reported
Quarterly	Whenever the continuous emissions monitoring system is inoperative except for zero and span checks:
Submitted by:	i. Date and time of non-operation of the continuous emission monitoring system. ii. Nature of the continuous emission monitoring system repairs or adjustments.
Jan 30	B. Whenever an emission occurs as measured by the required continuous
Apr 30	emissions monitoring system that is in excess of any emission limitation:
Jul 30	i. Magnitude of the emission which has been determined to be in excess.
Oct 30	ii. Date and time of the commencement and completion of each period of excess emissions.
for the previous calendar quarter	iii. Periods of excess emissions due to startup, shutdown and malfunction must 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 must be submitted stating such information.

EMISSION REDUCTION CREDIT (ERC) REQUIREMENTS

23. The permittee must surrender (and has surrendered - See **Condition Nos. 24, 25 and 26**) ERCs to the SMAQMD Air Pollution Control Officer to offset the following amount of emissions:

[Basis: SMAQMD Rules 202 Section 302]

Equipment - Gas Turbine, Duct Burner, and Cooling Tower	Amount of Emission Offsets for which ERCs are to be Surrendered lb/quarter						
	Quarter 1	Quarter 2	Quarter 3	Quarter 4			
VOC	1,292	1,398	5,764	1,468			
NOx	24,209	24,545	26,321	24,725			
PM10	11,015	10,160	12,294	11,619			

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

[Basis: SMAQMD Rules 202 Section 302]

ERC Certificate No.	Emis	alue of duction (icates	Credit	PTR (A)	Offset Ratio	Value Applied to ROC Emission Liability lb/quarter				
	Qtr 1	Qtr 2	Qtr 3	Qtr 4	_	Ŏ	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
	otal VO	1,292	1,398	5,764	1,468					

⁽A) IPTR = interpollutant trading ratio

25. 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. 23:

[Basis: SMAQMD Rules 202 Section 302]

ERC Certificate No.	Face Value of Emission Reduction Credit Certificates Ib/quarter					Offset Ratio	Value Applied to NOx Emission Liability lb/quarter			
	Qtr 1	Qtr 2	Qtr 3	Qtr 4	IPTR	ð	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 (VOC)	18,096	53,208	0	28,956	2:1	2:1	4,524	13,302	0	7,239
	otal NO	fsets	24,209	24,545	26,321	24,725				

(A) IPTR = interpollutant trading ratio

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26. 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. 23:

[Basis: SMAQMD Rules 202 Section 302]

Busis: Olitariib Ruics 202 Occitori 302										
Offset Source	Face Value of Emission Reduction credit Certificates Ib/quarter					Offset Ratio	Value Applied to PM10 Emission Liability lb/quarter			
	Qtr 1	Qtr 2	Qtr 3	Qtr 4	IPTR	Ď	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
	To	otal PM1	11,015	10,160	12,294	11,619				

⁽A) IPTR = interpollutant trading ratio

EMISSION TESTING REQUIREMENTS

- 27. The permittee must perform a VOC, 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 must 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 if the date has changed from that approved in the Source Test Plan.
 - C. During the source test(s), the gas turbine and duct burner must be operated at the maximum firing capacity, defined as ≥ 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 Report 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 VOC 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.

[Basis: SMAQMD Rule 201, Section 405]

HOT SPOTS PROGRAM REQUIREMENTS

28. The permittee must, upon determination of applicability and written notification by the District, comply with all applicable requirements of the Air Toxics "Hot Spots" Information and Assessment Act (California Health and Safety Code Section 44300 et seq.)

[Basis: SMAQMD Rule 201, Section 303.1]

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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 list identifies the rules that most commonly apply to the operation of your equipment. Other rules may also be applicable.

SMAQMD RULE NO.	RULE TITLE
201	GENERAL PERMIT REQUIREMENTS (8-24-06)
202	NEW SOURCE REVIEW (8-23-12)
217	PUBLIC NOTICE REQUIREMENTS FOR PERMITS (8-23-12)
401	RINGELMANN CHART (4-19-83)
402	NUISANCE (8-3-77)
406	SPECIFIC CONTAMINANTS (12-6-78)
420	SULFUR CONTENT OF FUELS (8-13-81)
<u>FEDERAL</u>	REGULATION TITLE
40 CFR 60 Subpart GG	NSPS for Stationary Gas Turbines

The conditions on this Authority to Construct reflect some, but not all, of the requirements of these rules. Because other rule requirements may apply to the operation, the permit holder should be familiar with all of the rules and related requirements. In addition, because future changes in prohibitory rules may establish more stringent requirements that may supersede the conditions listed here, the permit holder should monitor proposed rules and rule adoption actions at SMAQMD.

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