

PERMIT TO OPERATE

**SACRAMENTO POWER AUTHORITY
PO BOX 15830
SACRAMENTO, CA 95852-1830**

EQUIPMENT LOCATION: 3215 47TH AVE, SACRAMENTO

PERMIT NO.	EQUIPMENT DESCRIPTION
14072	GAS TURBINE, SIEMENS, V84.2, COMBINED CYCLE, 1410 MMBTU/HR, NATURAL GAS FIRED.
14071	DUCT BURNER HEAT RECOVERY STEAM GENERATOR, 200 MMBTU/HR, NATURAL GAS FIRED.
11458	AIR POLLUTION CONTROL SELECTIVE CATALYTIC REDUCTION SYSTEM SERVING THE TURBINE AND DUCT BURNER.
11459	AIR POLLUTION CONTROL OXIDATION CATALYST SYSTEM SERVING THE TURBINE AND DUCT BURNER.

SUBJECT TO THE FOLLOWING CONDITIONS:

GENERAL

1. THE EQUIPMENT SHALL BE PROPERLY MAINTAINED.
2. THE 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 PERMIT TO OPERATE, AND
 - B. AT REASONABLE TIMES TO HAVE ACCESS TO AND COPY ANY RECORDS REQUIRED TO BE KEPT UNDER THE TERMS AND CONDITIONS OF THIS PERMIT TO OPERATE, AND
 - C. TO INSPECT ANY EQUIPMENT, OPERATION, OR METHOD REQUIRED IN THIS PERMIT TO OPERATE, AND
 - D. TO SAMPLE EMISSIONS FROM THE SOURCE OR REQUIRE SAMPLES TO BE TAKEN.
3. THIS PERMIT 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 AIR QUALITY MANAGEMENT DISTRICT.
4. A LEGIBLE COPY OF THIS PERMIT SHALL BE MAINTAINED ON THE PREMISES WITH THE EQUIPMENT.

NORM COVELL

AIR POLLUTION CONTROL OFFICER

DATE ISSUED: 06-30-2002

DATE EXPIRES: 06-30-2003 (UNLESS RENEWED)

BY: _____

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5. MALFUNCTION - THE AIR POLLUTION CONTROL OFFICER SHALL BE NOTIFIED OF ANY BREAKDOWN OF THE EMISSIONS MONITORING EQUIPMENT, ANY ENGINE EQUIPMENT, OR ANY PROCESS WHICH RESULTS IN AN INCREASE IN EMISSIONS ABOVE THE ALLOWABLE EMISSIONS LIMITS STATED AS A CONDITION OF THIS PERMIT OR ANY APPLICABLE STATE OR FEDERAL REGULATION OR WHICH AFFECTS THE ABILITY FOR THE EMISSIONS TO BE ACCURATELY DETERMINED. SUCH BREAKDOWNS SHALL BE REPORTED TO THE DISTRICT IN ACCORDANCE WITH THE PROCEDURES AND REPORTING TIMES SPECIFIED IN RULE 602 - BREAKDOWN CONDITIONS; EMERGENCY VARIANCE.
6. SEVERABILITY - IF ANY PROVISION, CLAUSE, SENTENCE, PARAGRAPH, SECTION, OR PART OF THESE CONDITIONS FOR ANY REASON IS JUDGED TO BE UNCONSTITUTIONAL OR INVALID, SUCH JUDGEMENT SHALL NOT AFFECT OR INVALIDATE THE REMAINDER OF THESE CONDITIONS

EMISSION LIMITS

7. THE EQUIPMENT SHALL 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, WHICH IS RINGELMANN NO. 1 OR GREATER.
8. EMISSIONS FROM THE FOLLOWING EQUIPMENT SHALL NOT EXCEED THE FOLLOWING LIMITS AVERAGED OVER A THREE HOUR PERIOD, NOT INCLUDING PERIODS CONTAINING START-UPS, SHUT-DOWNS AND SHORT-TERM EXCURSIONS AS DEFINED IN CONDITION 15.

POLLUTANT	MAXIMUM ALLOWABLE EMISSIONS CTG + DUCT BURNER (LB/HOUR)
NO _x	17.76 (A)
CO	10.81 (B)
ROC	9.01 (C)
SO _x	0.97 (D)
PM ₁₀	7.00 (E)

- (A) BASED ON DATA SUBMITTED IN THE APPLICATION AND IS MONITORED BY THE TURBINE'S NO_x CEM SYSTEM.
(B) BASED ON DATA SUBMITTED IN THE APPLICATION AND IS MONITORED BY THE TURBINE'S CO CEM SYSTEM.
(C) BASED ON A TURBINE ROC EMISSION FACTOR OF 0.00228 LB/MMBTU A DUCT BURNER ROC EMISSION FACTOR OF 0.029 LB/MMBTU AND FIRING AT FULL CAPACITY.
(D) BASED ON A TURBINE AND DUCT BURNER 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 A DUCT BURNER PM₁₀ EMISSION FACTOR OF 0.01 AND FIRING AT FULL CAPACITY.

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9. EMISSIONS OF NO_x, CO, ROC, SO_x, AND PM₁₀ FROM ALL EQUIPMENT AT THE SACRAMENTO POWER AUTHORITY'S FACILITY INCLUDING START-UPS AND SHUT-DOWNS SHALL NOT EXCEED THE FOLLOWING LIMITS.

POLLUTANT	MAXIMUM ALLOWABLE EMISSIONS (LB/DAY)		
	COMBINED CYCLE CTG WITH D.B.	COOLING TOWER	TOTAL
NO _x	384.5		384.5
CO	326.9		326.9
ROC	146.7		146.7
SO _x	21.8		21.8
PM ₁₀	142.1	9.7	151.8

10. EMISSIONS OF NO_x, CO, ROC, SO_x, AND PM₁₀ FROM ALL EQUIPMENT AT THE SACRAMENTO POWER AUTHORITY'S FACILITY INCLUDING START-UPS AND SHUT-DOWNS SHALL NOT EXCEED THE FOLLOWING LIMITS.

POLLUTANT	MAXIMUM ALLOWABLE EMISSIONS				
	QTR 1 (LB/QUARTER)	QTR 2 (LB/QUARTER)	QTR 3 (LB/QUARTER)	QTR 4 (LB/QUARTER)	TOTAL (LB/YEAR)
NO _x	24,209	24,545	26,321	24,725	99,800
CO	21,265	21,601	22,803	21,708	87,377
ROC	8,792	8,898	13,264	8,968	39,922
SO _x	1,814	1,836	1,944	1,853	7,447
PM ₁₀	11,015	10,160	12,294	11,619	45,088

11. THE COMBINED CYCLE COMBUSTION TURBINE AND ITS ASSOCIATED DUCT BURNER HRSG SHALL NOT EMIT MORE THAN 3 PPMVD NO_x AT 15% O₂, AVERAGED OVER ANY CONSECUTIVE THREE HOUR PERIOD, EXCLUDING PERIODS CONTAINING START-UPS, SHUT-DOWNS AND SHORT TERM EXCURSIONS AS DEFINED IN CONDITION 15.
12. THE COMBINED CYCLE COMBUSTION TURBINE AND ITS ASSOCIATED DUCT BURNER HRSG SHALL NOT EMIT MORE THAN 10 PPMVD AMMONIA AT 15% O₂, MEASURED AS NH₃, AVERAGED OVER ANY CONSECUTIVE THREE HOUR PERIOD, EXCLUDING START-UPS AS DEFINED IN CONDITION 15.

EQUIPMENT OPERATION

13. THE DUCT BURNER HRSG SHALL NOT BE OPERATED UNLESS THE COMBINED CYCLE TURBINE IS OPERATING.
14. THE COMBINED CYCLE TURBINE AND/OR THE DUCT BURNER HRSG SHALL NOT BE OPERATED WITHOUT A FUNCTIONING SELECTIVE CATALYTIC REDUCTION AND OXIDIZING CATALYST AIR POLLUTION CONTROL SYSTEM, EXCLUDING PERIODS OF START-UPS AND SHUT DOWNS.
15. THE DURATION OF THE COMBINED CYCLE TURBINE'S START-UP PERIOD SHALL NOT EXCEED 60 MINUTES. START-UPS ARE DEFINED AS TIME PERIODS COMMENCING WITH THE INTRODUCTION OF FUEL TO THE GAS TURBINE, AND ENDING AT THE TIME THAT 15-MINUTE AVERAGE NO_x CONCENTRATIONS DO NOT EXCEED 3 PPMVD, BUT IN NO CASE EXCEEDING 60 CONSECUTIVE MINUTES.

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SHUT-DOWNS ARE DEFINED AS THE 30 MINUTE TIME PERIOD IMMEDIATELY PRECEDING THE TERMINATION OF FUEL TO THE 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 NO_x CONCENTRATION EXCEEDS 3 PPMVD CORRECTED TO 15% O₂. MAXIMUM 3-HOUR AVERAGE NO_x CONCENTRATION FOR PERIODS THAT INCLUDE SHORT-TERM EXCURSIONS SHALL NOT EXCEED 30 PPMVD CORRECTED TO 15% O₂. 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 LIMITS IN CONDITIONS 8 AND 11.

ALL EMISSIONS DURING START-UPS AND SHORT-TERM EXCURSIONS SHALL BE INCLUDED IN ALL CALCULATIONS OF DAILY, QUARTERLY AND ANNUAL MASS EMISSIONS REQUIRED BY THIS PERMIT.

MONITORING SYSTEMS

16. THE SACRAMENTO POWER AUTHORITY SHALL OPERATE A CONTINUOUS EMISSION MONITORING SYSTEM THAT HAS BEEN APPROVED BY THE AIR POLLUTION CONTROL OFFICER FOR THE COMBINED CYCLE TURBINE AND DUCT BURNER'S EMISSIONS.
- A. THE CONTINUOUS EMISSION MONITORING (CEM) SYSTEM SHALL MONITOR AND RECORD NITROGEN OXIDES, CARBON MONOXIDE, AND OXYGEN.
 - B. THE CEM SYSTEM SHALL COMPLY WITH THE EPA PERFORMANCE SPECIFICATIONS (TITLE 40, CODE OF FEDERAL REGULATIONS, PART 60, APPENDIX B, PERFORMANCE SPECIFICATIONS 2, 3, AND 4).
17. THE SACRAMENTO POWER AUTHORITY SHALL OPERATE A CONTINUOUS MONITORING SYSTEM THAT HAS BEEN APPROVED BY THE AIR POLLUTION CONTROL OFFICER THAT EITHER MEASURES OR CALCULATES AND RECORDS THE FOLLOWING.

PARAMETER TO BE MONITORED	UNITS
FUEL CONSUMPTION OF THE COMBINED CYCLE TURBINE	MMBTU/HR OF NATURAL GAS
FUEL CONSUMPTION OF THE DUCT BURNER	MMBTU/HR OF NATURAL GAS
EXHAUST GAS FLOW RATE OF TURBINE AND DUCT BURNER.	KSCFH OR LB/HR

RECORDKEEPING

18. THE FOLLOWING RECORD SHALL BE CONTINUOUSLY MAINTAINED ON SITE FOR THE MOST RECENT FIVE YEAR PERIOD AND SHALL BE MADE AVAILABLE TO THE AIR POLLUTION CONTROL OFFICER UPON REQUEST. QUARTERLY AND YEARLY RECORDS SHALL BE MADE AVAILABLE FOR INSPECTION WITHIN 30 DAYS OF THE END OF THE PREVIOUS QUARTER OR YEAR RESPECTIVELY.

FREQUENCY	INFORMATION TO BE RECORDED
GENERAL	<ul style="list-style-type: none">A. RECORD OF THE OCCURRENCE AND DURATION OF ANY START-UP, SHORT-TERM EXCURSION, OR SHUTDOWN.B. MALFUNCTION IN OPERATION OF THE TURBINE.C. MEASUREMENTS FROM THE CONTINUOUS MONITORING SYSTEM.D. MONITORING DEVICE AND PERFORMANCE TESTING MEASUREMENTS.E. ALL CONTINUOUS MONITORING SYSTEM PERFORMANCE EVALUATIONS.F. ALL CONTINUOUS MONITORING SYSTEM OR MONITORING DEVICE CALIBRATION CHECKSG. ALL CONTINUOUS MONITORING SYSTEM ADJUSTMENTS AND MAINTENANCE.
HOURLY	<ul style="list-style-type: none">A. COMBINED CYCLE TURBINE NATURAL GAS FUEL CONSUMPTION (MMBTU/HR).B. DUCT BURNER NATURAL GAS FUEL CONSUMPTION (MMBTU/HR).C. INDICATE WHEN COMBINED CYCLE TURBINE START-UP OCCURRED.

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	<p>D. COMBINED CYCLE TURBINE AND DUCT BURNER NO_x, CO, ROC, SO_x AND PM10 HOURLY EMISSIONS. FOR THOSE POLLUTANTS DIRECTLY MONITORED (NO_x AND CO), THE HOURLY EMISSIONS WILL BE FROM THE CEM SYSTEM REQUIRED PURSUANT TO CONDITION 16. FOR THOSE POLLUTANTS THAT ARE NOT DIRECTLY MONITORED (ROC, SO_x, AND PM10), THE HOURLY EMISSIONS SHALL BE CALCULATED BASED ON DISTRICT APPROVED EMISSION FACTORS CONTAINED IN FOOTNOTES TO CONDITION 8.</p> <p>E. COMBINED CYCLE TURBINE AND DUCT BURNER NO_x CONCENTRATION MEASURED IN PPMVD AT 15% O₂.</p>
DAILY	TOTAL DAILY EMISSIONS FROM ALL EQUIPMENT AT THE SACRAMENTO POWER AUTHORITY FACILITY
QUARTERLY	TOTAL FACILITY NO _x , CO, ROC, SO _x , AND PM10 QUARTERLY MASS EMISSIONS.

REPORTING

19. FOR EACH CALENDAR QUARTER SUBMIT TO THE AIR POLLUTION CONTROL OFFICER A WRITTEN REPORT WHICH CONTAINS THE FOLLOWING. EACH QUARTERLY REPORT IS DUE BY THE 30TH DAY FOLLOWING THE END OF THE CALENDAR QUARTER.

FREQUENCY	INFORMATION TO BE SUBMITTED
WHENEVER THE CONTINUOUS EMISSIONS MONITORING SYSTEM IS INOPERATIVE EXCEPT FOR ZERO AND SPAN CHECKS.	<p>A. DATE AND TIME OF NON OPERATION OF THE CONTINUOUS EMISSION MONITORING SYSTEM</p> <p>B. NATURE OF THE CONTINUOUS EMISSION MONITORING SYSTEM REPAIRS OR ADJUSTMENTS.</p>
WHENEVER AN EMISSION OCCURS AS MEASURED BY THE REQUIRED CONTINUOUS MONITORING EQUIPMENT THAT IS IN EXCESS OF ANY EMISSION LIMITATION	<p>A. MAGNITUDE OF THE EMISSION WHICH HAS BEEN DETERMINED TO BE IN EXCESS.</p> <p>B. DATE AND TIME OF THE COMMENCEMENT AND COMPLETION OF EACH PERIOD OF EXCESS EMISSIONS</p> <p>C. PERIODS OF EXCESS EMISSIONS DUE TO START-UP, SHUTDOWN, SHORT-TERM EXCURSION, AND MALFUNCTION SHALL BE SPECIFICALLY IDENTIFIED.</p> <p>D. THE NATURE AND CAUSE OF ANY MALFUNCTION (IF KNOWN)</p> <p>E. THE CORRECTIVE ACTION TAKEN OR PREVENTIVE MEASURES ADOPTED.</p>
IF THERE WERE NO EXCESS EMISSIONS FOR A QUARTER	A REPORT SHALL BE SUBMITTED INDICATING THAT THERE WERE NO EXCESS EMISSIONS

COMPLIANCE TESTING REQUIREMENTS

20. A NO_x, ROC, CO, PM10, AMMONIA, AND CEM ACCURACY SOURCE TEST OF THE COMBINED CYCLE TURBINE AND DUCT BURNER SHALL BE PERFORMED ONCE EVERY CALENDAR YEAR. THE AIR POLLUTION CONTROL OFFICER MAY WAIVE THE ANNUAL PM10 AND/OR ROC SOURCE TEST REQUIREMENT IF, IN THE AIR POLLUTION CONTROL OFFICER'S SOLE JUDGEMENT, PRIOR TEST RESULTS INDICATE AN ADEQUATE COMPLIANCE MARGIN HAS BEEN MAINTAINED.
- SUBMIT A TEST PLAN TO THE AIR POLLUTION CONTROL OFFICER FOR APPROVAL AT LEAST 30 DAYS BEFORE THE SOURCE TEST IS TO BE PERFORMED.
 - THE AIR POLLUTION CONTROL OFFICER SHALL BE NOTIFIED AT LEAST 7 DAYS PRIOR TO THE EMISSION TESTING DATE.
 - DURING THE TEST(S), THE TURBINE AND DUCT BURNER ARE TO BE OPERATED AT THEIR MAXIMUM TOTAL FIRING CAPACITY.
 - THE SOURCE TEST RESULTS SHALL BE SUBMITTED TO THE AIR POLLUTION CONTROL OFFICER WITHIN 60 DAYS FROM THE COMPLETION OF THE SOURCE TEST(S).

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YOUR APPLICATION FOR THIS AIR QUALITY PERMIT TO OPERATE WAS EVALUATED FOR COMPLIANCE WITH SACRAMENTO AIR QUALITY MANAGEMENT DISTRICT(AQMD), STATE AND FEDERAL AIR QUALITY RULES. THE FOLLOWING LISTED RULES ARE THOSE THAT ARE MOST APPLICABLE TO THE OPERATION OF YOUR EQUIPMENT. OTHER RULES MAY ALSO BE APPLICABLE.

<u>AQMD RULE NUMBER</u>	<u>RULE TITLE</u>
201	GENERAL PERMIT REQUIREMENTS
202	NEW SOURCE REVIEW
401	RINGELMANN CHART
406	SPECIFIC CONTAMINANTS
420	SULFUR CONTENT OF FUELS

<u>NSPS</u>	<u>SUBPART TITLE</u>
SUBPART GG	GAS TURBINES

IN ADDITION, THE CONDITIONS ON THIS PERMIT TO OPERATE 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 AQMD RULEBOOK OR CONTACT THE AQMD FOR ASSISTANCE.