

San Joaquin Valley
Air Pollution Control District

AUTHORITY TO CONSTRUCT

ISSUANCE DATE: DRAFT
DRAFT

PERMIT NO: S-1129-48-14

LEGAL OWNER OR OPERATOR: CHEVRON U S A INC
MAILING ADDRESS: PO BOX 1392
BAKERSFIELD, CA 93302

LOCATION: HEAVY OIL WESTERN
CA

SECTION: 18 TOWNSHIP: 30S RANGE: 22E

EQUIPMENT DESCRIPTION:

MODIFICATION OF 3.5 MW GAS TURBINE ENGINE COGENERATION UNIT #2 - MCKITTRICK: INSTALL A SELECTIVE CATALYTIC REDUCTION (SCR) SYSTEM WITH AMMONIA INJECTION TO COMPLY WITH RULE 4703 TIER 3 EMISSION LIMIT OF 5 PPMVD NOX @ 15% O2; INSTALL A CONTINUOUS EMISSIONS MONITORING SYSTEM (CEMS) TO MEASURE NOX, CO AND O2 CONCENTRATIONS; REPLACE STRUTHERS-WELLS HEAT RECOVERY STEAM GENERATOR (HRSG) WITH ANOTHER HRSG (IF NECESSARY); AND REPLACE THE EXISTING 20.0 MMBTU/HR DUCT BURNER WITH A NEW 20.0 MMBTU/HR (NOMINAL RATING) DUCT BURNER (IF NECESSARY)

CONDITIONS

1. {1830} This Authority to Construct serves as a written certificate of conformity with the procedural requirements of 40 CFR 70.7 and 70.8 and with the compliance requirements of 40 CFR 70.6(c). [District NSR Rule] Federally Enforceable Through Title V Permit
2. {1831} Prior to operating with modifications authorized by this Authority to Construct, the facility shall submit an application to modify the Title V permit with an administrative amendment in accordance with District Rule 2520 Section 5.3.4. [District Rule 2520, 5.3.4] Federally Enforceable Through Title V Permit
3. Cogeneration unit includes 48.7 MMBtu/hr Allison (nominal rating), model 501-KB-5, gas fired turbine engine with either pilotless fuel nozzles or conventional fuel nozzles and 20.0 MMBtu/hr (nominal rating) gas fired duct burner. [District NSR Rule] Federally Enforceable Through Title V Permit
4. Cogeneration unit includes Ideal synchronous electrical generator, heat recovery steam generator (HRSG), and an inlet air evaporative cooler. [District NSR Rule] Federally Enforceable Through Title V Permit

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Seyed Sadredin, Executive Director APCO

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DAVID WARNER, Director of Permit Services
S-1129-48-14 : Oct 20 2009 9:15AM - AHMADE : Joint Inspection NOT Required

5. Turbine lube oil tank shall vent only through CECO Model #STTOR-10 fiber bed filter system. [District NSR Rule] Federally Enforceable Through Title V Permit
6. {98} No air contaminant shall be released into the atmosphere which causes a public nuisance. [District Rule 4102]
7. Particulate matter emissions shall not exceed 0.1 grains/dscf in concentration. [District Rule 4201] Federally Enforceable Through Title V Permit
8. The gas turbine system (i.e. gas turbine and duct burner) shall be fired exclusively on PUC-regulated gas or PUC-quality natural gas which has a sulfur content less than or equal to 0.017% by weight. [40 CFR 60.333(a) and District Rule 4801] Federally Enforceable Through Title V Permit
9. The sulfur content in the fuel being combusted shall not exceed 0.71 grains/100 scf, otherwise, the fuel shall be of PUC-regulated quality. [District Rule 2201] Federally Enforceable Through Title V Permit
10. If the gas turbine system is fired on PUC-regulated natural gas, then maintain on file copies of natural gas bills. [District Rule 2520] Federally Enforceable Through Title V Permit
11. If the gas turbine system is not fired on PUC-regulated natural gas, the sulfur content of each fuel source shall be tested weekly except that if compliance with the fuel sulfur content limit has been demonstrated for 8 consecutive weeks for a fuel source, then the testing frequency shall be quarterly. If a test shows noncompliance with the sulfur content requirement, the source must return to weekly testing until eight consecutive weeks show compliance. [40 CFR 60.334(h)(3)] Federally Enforceable Through Title V Permit
12. HHV and LHV of the fuel shall be determined by using ASTM D3588, ASTM 1826, or ASTM 1945. [40 CFR 60.335(b), District Rule 4703] Federally Enforceable Through Title V Permit
13. During an initial shakedown period, the emissions shall not exceed any of the following limits: 30 ppmvd NO_x @ 15% O₂ referenced as NO₂; 29 ppmvd CO @ 15% O₂; 0.61 lb-PM₁₀/hr; 1.65 lb-VOC/hr referenced as methane; and 0.16 lb-SO_x/hr referenced as SO₂. The shakedown period shall not exceed 60 calendar days from the initial startup of the unit under this permit. The shakedown period must be concluded prior to the applicable Rule 4703 compliance deadline selected for this unit. The permittee shall maintain a record of the date of initial operation of this unit, fuel combusted (scf/day) on daily basis, and water-to-fuel ratio or results of NO_x and CO over 3-hour rolling average period from CEMS (if operational). These records shall be made readily available for District inspection upon request. [District Rule 2201] Federally Enforceable Through Title V Permit
14. Upon concluding the initial shakedown period, emissions from the gas turbine system, when startup or shutdown or black start do not occur, shall not exceed any of the following limits: 5 ppmvd NO_x @ 15% O₂ referenced as NO₂; 29 ppmvd CO @ 15% O₂; 0.61 lb-PM₁₀/hr; 1.65 lb-VOC/hr referenced as methane; and 0.16 lb-SO_x/hr referenced as SO₂. NO_x and CO emission limits are based on 3-hour rolling average period. If unit is in either startup, shutdown, or black start mode during any portion of a clock hour, the unit will not be subject to the ppmvd limits for NO_x and CO during that clock hour. [District Rules 2201 and 4703] Federally Enforceable Through Title V Permit
15. Upon concluding the initial shakedown period, emissions from the gas turbine system, on days when startup, shutdown, or black start occurs, shall not exceed any of the following limits: 46.6 lb-NO_x/day referenced as NO₂; 1,394.7 lb-CO/day; 3.8 lb-SO_x/day; 14.6 lb-PM₁₀/day; 109.0 lb-VOC/day referenced as methane; and 46.8 lb-NH₃/day. [District Rule 2201] Federally Enforceable Through Title V Permit
16. Upon concluding the initial shakedown period, the emissions from the gas turbine system shall not exceed any of the following limits: 11,167 lb-NO_x/year; 45,793 lb-CO/year; 1,384 lb-SO_x/year; 5,326 lb-PM₁₀/year; 14,790 lb-VOC/year; 17,099 lb-NH₃/year. All annual emission limits are based on 12 consecutive month rolling emissions totals. [District Rule 2201] Federally Enforceable Through Title V Permit
17. Ammonia (NH₃) emissions shall not exceed 21 ppmvd @ 15% O₂ over a 24-hour average period. [District Rule 2201] Federally Enforceable Through Title V Permit
18. Each three hour rolling average will be compiled from the three most recent one hour periods. Each one hour period shall commence on the hour. Each one hour period in a twenty-four hour average for ammonia slip will commence on the hour. The twenty-four hour average will be calculated starting and ending at twelve-midnight. [District Rule 2201] Federally Enforceable Through Title V Permit

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19. Daily emissions shall be compiled for a twenty-four hour period starting and ending at twelve-midnight. Each calendar month in a twelve consecutive month rolling emissions total shall commence at the beginning of the first day of the month. The twelve consecutive month rolling emissions totals used to determine compliance with annual emission limits shall be compiled from the twelve most recent calendar months. [District Rule 2201] Federally Enforceable Through Title V Permit
20. The exhaust stack shall be equipped with permanent provisions to allow collection of stack gas samples consistent with EPA test methods and shall be equipped with safe permanent provisions to sample stack gases with a portable NO_x, CO, and O₂ analyzer during District inspections. The sampling ports shall be located in accordance with the CARB regulation titled California Air Resources Board Air Monitoring Quality Assurance Volume VI, Standard Operating Procedures for Stationary Emission Monitoring and Testing. [District Rule 1081] Federally Enforceable Through Title V Permit
21. Source testing shall be conducted using the methods and procedures approved by the District. The District must be notified at least 30 days prior to any compliance source test, and a source test plan must be submitted for approval at least 15 days prior to testing. [District Rule 1081] Federally Enforceable Through Title V Permit
22. Source testing shall be witnessed or authorized by District personnel and samples shall be collected by a California Air Resources Board (CARB) certified testing laboratory or a CARB certified source testing firm. [District Rule 1081] Federally Enforceable Through Title V Permit
23. Source testing to measure start-up mass emission rates of NO_x, CO, and VOC shall be conducted for one of the gas turbine engines (S-1129-47, -48, -49) within 60-days of initial startup under this permit and at least once every seven years thereafter. CEMS relative accuracy shall be determined during source testing in accordance with the procedure listed in 40 CFR Part 60, Appendix F with any necessary changes approved by the District. [District Rule 1081] Federally Enforceable Through Title V Permit
24. Source testing to determine compliance with the NO_x, CO and NH₃ emission rates (ppmvd @ 15% O₂) during normal operation shall be conducted within 60 days of initial startup under this permit and annually thereafter. [District Rules 2201 and 4703, CFR 60.335(a)] Federally Enforceable Through Title V Permit
25. For the purpose of determining compliance with the emissions limits (ppmvd @ 15% O₂) during normal operation in this permit, the arithmetic mean of three test runs shall apply, unless two of the three results are above an applicable limit. If two of three runs are above the applicable limit the test cannot be used to demonstrate compliance with an applicable limit. [District Rule 1081] Federally Enforceable Through Title V Permit
26. The following test methods shall be used: NO_x - EPA Method 7E or 20 or CARB Method 100; CO - EPA Method 10 or 10B or CARB Method 100; VOC - EPA Method 18 or 25; PM₁₀ - EPA Method 5 (front half and back half) or 201 and 202a; ammonia - BAAQMD ST-1B; and O₂ - EPA Method 3, 3A, or 20 or CARB Method 100. EPA approved alternative test methods as approved by the District may also be used to address the source testing requirements of this permit. [District Rules 1081 and 4703, 40 CFR 60.335(a), and 40 CFR 60.335(b)(1)] Federally Enforceable Through Title V Permit
27. The results of each source test shall be submitted to the District within 60 days thereafter. [District Rule 1081] Federally Enforceable Through Title V Permit
28. The owner or operator shall install, certify, maintain, operate, and quality-assure a continuous emission monitor system (CEMS) which continuously measures and records the exhaust gas NO_x, CO, and O₂ concentrations. Continuous emissions monitors shall be capable of monitoring emissions during normal operating conditions and during startups and shutdowns, provided that CEMS passes the relative accuracy requirements of 40 CFR Part 60, Appendix B, Performance Specification 2 (PS-2) and District approved protocol for startups. If relative accuracy of CEMS cannot be demonstrated during the startup, CEMS results during startup and shutdown events shall be replaced with startup emission rates obtained from the source test conducted by the facility to determine compliance with emission limits contained in this document. [District Rules 1080, 2201 and 4703, 40 CFR 60.334(b)(1)] Federally Enforceable Through Title V Permit
29. The CEMS shall complete a minimum of one cycle of operation (sampling, analyzing, and data recording) for each 15-minute quadrant of the hour or shall meet equivalent specifications established by mutual agreement of the District, the ARB and the EPA. [District Rule 1080 and 40 CFR 60.334(b)(2)] Federally Enforceable Through Title V Permit

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30. The NO_x, CO and O₂ CEMS shall meet the requirements in 40 CFR 60, Appendix F Procedure 1 and Part 60, Appendix B Performance Specification 2 (PS 2), or shall meet equivalent specifications established by mutual agreement of the District, the ARB, and the EPA. [District Rule 1080 and 40 CFR 60.334(b)(1)] Federally Enforceable Through Title V Permit
31. In accordance with 40 CFR Part 60, Appendix F, 5.1, the CEMS must be audited at least once each calendar quarter. The District shall be notified prior to completion of the audits. Audit reports shall be submitted along with quarterly compliance reports to the District. [District Rule 1080] Federally Enforceable Through Title V Permit
32. The requirements in 40 CFR 60, Appendix F, shall be met through the following EPA and District approved modified procedures: 1) annual RATA testing of at least one gas turbine engine (S-1129-47, -48, -49), and rotate the unit tested so that all three units are tested over three years, 2) annual RAA testing for the two gas turbine engines for which the annual RATA testing is not performed, 3) if any of the gas turbine engines fail the RAA testing, they must have a RATA test within 60 days, and 4) for every quarter that RATA or RAA testing is not performed, a CGA is to be performed for each gas turbine engine. [District Rule 1080] Federally Enforceable Through Title V Permit
33. APCO or an authorized representative shall be allowed to inspect, as determined to be necessary, the required monitoring devices to ensure that such devices are functioning properly. [District Rule 1080] Federally Enforceable Through Title V Permit
34. The CEMS data shall be reduced to hourly averages as specified in 40 CFR 60.13(h), or by other methods deemed equivalent by mutual agreement with the District, the ARB, and the EPA. [District Rule 1080 and 40 CFR 60.334(b)(3)] Federally Enforceable Through Title V Permit
35. Upon written notice from the District, the owner or operator shall provide a summary of the data obtained from the CEMS. This summary shall be in the form and the manner prescribed by the District. [District Rule 1080] Federally Enforceable Through Title V Permit
36. The facility shall install and maintain equipment, facilities, and systems compatible with the District's CEMS data polling software system and shall make CEMS data available to the District's automated polling system on a daily basis. Upon notice by the District that the facility's CEMS is not providing polling data, the facility may continue to operate without providing automated data for a maximum of 30 days per calendar year provided the CEMS data is sent to the District by a District-approved alternative method. [District Rule 1080] Federally Enforceable Through Title V Permit
37. The permittee shall maintain the following records: the date, time and duration of any malfunction of the continuous monitoring equipment; dates of performance testing; dates of evaluations, calibrations, checks, and adjustments of the continuous monitoring equipment; date and time period which a continuous monitoring system or monitoring device was inoperative. [District Rules 1080 and 2201 and 40 CFR 60.8(d)] Federally Enforceable Through Title V Permit
38. The owner or operator shall submit a written report of CEM operations for each calendar quarter to the District. The report is due on the 30th day following the end of the calendar quarter and shall include the following: Time intervals, data and magnitude of excess NO_x emissions, nature and the cause of excess (if known), corrective actions taken and preventive measures adopted; Averaging period used for data reporting corresponding to the averaging period specified in the emission test period used to determine compliance with an emission standard; Applicable 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; A negative declaration when no excess emissions occurred. [District Rule 1080 and 40 CFR 60.334(j)(5)] Federally Enforceable Through Title V Permit
39. Monitor downtime for NO_x shall be any unit operating hour in which sufficient data are not obtained to validate the hour for either NO_x concentration or diluent O₂ (or both). [40 CFR 60.334(j)(1)(iii)(B)] Federally Enforceable Through Title V Permit
40. If the gas turbine system is not fired on PUC-regulated or FERC-regulated natural gas, then a fuel sample shall be collected during the source test to determine sulfur content of the fuel combusted in the turbine. The fuel sample shall be analyzed for the total sulfur content using ASTM D1072; D3246; D4084; D4468; D6228; or D6667; or double GC for H₂S and mercaptans. The applicable ranges of some ASTM methods are not adequate to measure the levels of sulfur in some fuel gases. Dilution of samples before analysis (with verification of dilution ratio) may be used after getting a prior approval from the District. [40 CFR 60.335(b)(10)] Federally Enforceable Through Title V Permit

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41. Should the applicant decide to conduct performance evaluation of CEMS with the initial performance test, a minimum of 9 reference method runs, with a minimum time per run of 21 minutes, at a single load level, between 90 and 100 percent of peak (or the highest physically achievable) load shall be performed. The test data obtained during these run can be used to demonstrate compliance with the applicable NOx emission limit and to provide reference method data for the RATA of the CEMS. The requirement to test at three additional load levels is waived under this option. [40 CFR 60.335(b)(6)] Federally Enforceable Through Title V Permit
42. A totalizing mass or volumetric fuel flow computer shall be utilized and maintained to calculate the amount of natural gas combusted based on measured flow meter parameters (fuel pressure and temperature) and gas composition. [District Rule 4703] Federally Enforceable Through Title V Permit
43. Except during black start, start-up shall not exceed 2.0 hours per event. [District Rule 4703] Federally Enforceable Through Title V Permit
44. Shutdown shall not exceed 2.0 hours per event. [District Rule 4703] Federally Enforceable Through Title V Permit
45. The emission control systems shall be in operation and emissions shall be minimized insofar as technologically feasible during startup (black start) and shutdown. [District Rule 4703] Federally Enforceable Through Title V Permit
46. Start-up is defined as the period of time during which a unit is brought from a shutdown status to its operating temperature and pressure, including the time required by the unit's emission control system to reach full operation. [District Rule 4703] Federally Enforceable Through Title V Permit
47. Shutdown is defined as the period of time during which a unit is taken from an operational to a non-operational status by allowing it to cool down from its operating temperature to ambient temperature as the fuel supply to the unit is completely turned off. [District Rule 4703] Federally Enforceable Through Title V Permit
48. Reduced load period is defined as the time during which a gas turbine is operated at less than rated capacity in order to change the position of the exhaust gas diverter gate. Each reduced load period shall not exceed one hour. [District Rule 4703] Federally Enforceable Through Title V Permit
49. A black start event is defined as the startup of a unit while the cogen plant is electrically separated from the utility grid. A black start shall not exceed 4.0 hours per event. [District Rules 2201 and 4703] Federally Enforceable Through Title V Permit
50. The owner or operator shall submit to the District information correlating the NOx control system operating parameters to the associated measured NOx output. The information must be sufficient to allow the District to determine compliance with the NOx emission limits of this permit when the CEMS is not operating properly. [District Rule 4703] Federally Enforceable Through Title V Permit
51. The owner or operator shall maintain a stationary gas turbine system operating log that includes, on a daily basis, the actual local startup and stop time, length and reason for reduced load periods, total hours of operation, the type and quantity of fuel used, duration of each start-up (or black start) and each shutdown time period. [District Rule 4703] Federally Enforceable Through Title V Permit
52. The owner or operator shall maintain all records of required monitoring data and support information for a period of five years from the date of data entry and shall make such records available to the District upon request. [District Rules 2201 and 4703] Federally Enforceable Through Title V Permit
53. NOx emissions shall not exceed 150 ppmvd @ 15% O2 (1-hour average), excluding startup (black start), shutdown and reduced load periods. [40 CFR 60.332(a)(1) & 60.332(a)(2)] Federally Enforceable Through Title V Permit
54. Compliance with permit conditions in the Title V permit shall be deemed compliance with the following subsumed requirements: SJVUAPCD Rule 4703, 6.2.2; 40 CFR 60.332(a) and (b); 60.333(a) and (b); 60.334 (a), (b), and (c)(1); 60.335(a), (b), (c), and (e). A permit shield is granted from these requirements. [District Rule 2520, 13.2] Federally Enforceable Through Title V Permit
55. Compliance with permit conditions in the Title V permit shall be deemed compliance with the following subsumed requirements: Kern County Rule 407; 40 CFR 60.332(c), (d); 60.334(b), and (c)(2); 60.335(d). A permit shield is granted from these requirements. [District Rule 2520, 13.2] Federally Enforceable Through Title V Permit

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23. Source testing to measure start-up mass emission rates of NO_x, CO, and VOC shall be conducted for one of the gas turbine engines (S-1129-47, -48, -49) within 60-days of initial startup under this permit and at least once every seven years thereafter. CEMS relative accuracy shall be determined during source testing in accordance with the procedure listed in 40 CFR Part 60, Appendix F with any necessary changes approved by the District. [District Rule 1081] Federally Enforceable Through Title V Permit
24. Source testing to determine compliance with the NO_x, CO and NH₃ emission rates (ppmvd @ 15% O₂) during normal operation shall be conducted within 60 days of initial startup under this permit and annually thereafter. [District Rules 2201 and 4703, CFR 60.335(a)] Federally Enforceable Through Title V Permit
25. For the purpose of determining compliance with the emissions limits (ppmvd @ 15% O₂) during normal operation in this permit, the arithmetic mean of three test runs shall apply, unless two of the three results are above an applicable limit. If two of three runs are above the applicable limit the test cannot be used to demonstrate compliance with an applicable limit. [District Rule 1081] Federally Enforceable Through Title V Permit
26. The following test methods shall be used: NO_x - EPA Method 7E or 20 or CARB Method 100; CO - EPA Method 10 or 10B or CARB Method 100; VOC - EPA Method 18 or 25; PM₁₀ - EPA Method 5 (front half and back half) or 201 and 202a; ammonia - BAAQMD ST-1B; and O₂ - EPA Method 3, 3A, or 20 or CARB Method 100. EPA approved alternative test methods as approved by the District may also be used to address the source testing requirements of this permit. [District Rules 1081 and 4703, 40 CFR 60.335(a), and 40 CFR 60.335(b)(1)] Federally Enforceable Through Title V Permit
27. The results of each source test shall be submitted to the District within 60 days thereafter. [District Rule 1081] Federally Enforceable Through Title V Permit
28. The owner or operator shall install, certify, maintain, operate, and quality-assure a continuous emission monitor system (CEMS) which continuously measures and records the exhaust gas NO_x, CO, and O₂ concentrations. Continuous emissions monitors shall be capable of monitoring emissions during normal operating conditions and during startups and shutdowns, provided that CEMS passes the relative accuracy requirements of 40 CFR Part 60, Appendix B, Performance Specification 2 (PS-2) and District approved protocol for startups. If relative accuracy of CEMS cannot be demonstrated during the startup, CEMS results during startup and shutdown events shall be replaced with startup emission rates obtained from the source test conducted by the facility to determine compliance with emission limits contained in this document. [District Rules 1080, 2201 and 4703, 40 CFR 60.334(b)(1)] Federally Enforceable Through Title V Permit
29. The CEMS shall complete a minimum of one cycle of operation (sampling, analyzing, and data recording) for each 15-minute quadrant of the hour or shall meet equivalent specifications established by mutual agreement of the District, the ARB and the EPA. [District Rule 1080 and 40 CFR 60.334(b)(2)] Federally Enforceable Through Title V Permit

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30. The NO_x, CO and O₂ CEMS shall meet the requirements in 40 CFR 60, Appendix F Procedure 1 and Part 60, Appendix B Performance Specification 2 (PS 2), or shall meet equivalent specifications established by mutual agreement of the District, the ARB, and the EPA. [District Rule 1080 and 40 CFR 60.334(b)(1)] Federally Enforceable Through Title V Permit
31. In accordance with 40 CFR Part 60, Appendix F, 5.1, the CEMS must be audited at least once each calendar quarter. The District shall be notified prior to completion of the audits. Audit reports shall be submitted along with quarterly compliance reports to the District. [District Rule 1080] Federally Enforceable Through Title V Permit
32. The requirements in 40 CFR 60, Appendix F, shall be met through the following EPA and District approved modified procedures: 1) annual RATA testing of at least one gas turbine engine (S-1129-47, -48, -49), and rotate the unit tested so that all three units are tested over three years, 2) annual RAA testing for the two gas turbine engines for which the annual RATA testing is not performed, 3) if any of the gas turbine engines fail the RAA testing, they must have a RATA test within 60 days, and 4) for every quarter that RATA or RAA testing is not performed, a CGA is to be performed for each gas turbine engine. [District Rule 1080] Federally Enforceable Through Title V Permit
33. APCO or an authorized representative shall be allowed to inspect, as determined to be necessary, the required monitoring devices to ensure that such devices are functioning properly. [District Rule 1080] Federally Enforceable Through Title V Permit
34. The CEMS data shall be reduced to hourly averages as specified in 40 CFR 60.13(h), or by other methods deemed equivalent by mutual agreement with the District, the ARB, and the EPA. [District Rule 1080 and 40 CFR 60.334(b)(3)] Federally Enforceable Through Title V Permit
35. Upon written notice from the District, the owner or operator shall provide a summary of the data obtained from the CEMS. This summary shall be in the form and the manner prescribed by the District. [District Rule 1080] Federally Enforceable Through Title V Permit
36. The facility shall install and maintain equipment, facilities, and systems compatible with the District's CEMS data polling software system and shall make CEMS data available to the District's automated polling system on a daily basis. Upon notice by the District that the facility's CEMS is not providing polling data, the facility may continue to operate without providing automated data for a maximum of 30 days per calendar year provided the CEMS data is sent to the District by a District-approved alternative method. [District Rule 1080] Federally Enforceable Through Title V Permit
37. The permittee shall maintain the following records: the date, time and duration of any malfunction of the continuous monitoring equipment; dates of performance testing; dates of evaluations, calibrations, checks, and adjustments of the continuous monitoring equipment; date and time period which a continuous monitoring system or monitoring device was inoperative. [District Rules 1080 and 2201 and 40 CFR 60.8(d)] Federally Enforceable Through Title V Permit
38. The owner or operator shall submit a written report of CEM operations for each calendar quarter to the District. The report is due on the 30th day following the end of the calendar quarter and shall include the following: Time intervals, data and magnitude of excess NO_x emissions, nature and the cause of excess (if known), corrective actions taken and preventive measures adopted; Averaging period used for data reporting corresponding to the averaging period specified in the emission test period used to determine compliance with an emission standard; Applicable 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; A negative declaration when no excess emissions occurred. [District Rule 1080 and 40 CFR 60.334(j)(5)] Federally Enforceable Through Title V Permit
39. Monitor downtime for NO_x shall be any unit operating hour in which sufficient data are not obtained to validate the hour for either NO_x concentration or diluent O₂ (or both). [40 CFR 60.334(j)(1)(iii)(B)] Federally Enforceable Through Title V Permit
40. If the gas turbine system is not fired on PUC-regulated or FERC-regulated natural gas, then a fuel sample shall be collected during the source test to determine sulfur content of the fuel combusted in the turbine. The fuel sample shall be analyzed for the total sulfur content using ASTM D1072; D3246; D4084; D4468; D6228; or D6667; or double GC for H₂S and mercaptans. The applicable ranges of some ASTM methods are not adequate to measure the levels of sulfur in some fuel gases. Dilution of samples before analysis (with verification of dilution ratio) may be used after getting a prior approval from the District. [40 CFR 60.334(b)(10)] Federally Enforceable Through Title V Permit

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41. Should the applicant decide to conduct performance evaluation of CEMS with the initial performance test, a minimum of 9 reference method runs, with a minimum time per run of 21 minutes, at a single load level, between 90 and 100 percent of peak (or the highest physically achievable) load shall be performed. The test data obtained during these run can be used to demonstrate compliance with the applicable NOx emission limit and to provide reference method data for the RATA of the CEMS. The requirement to test at three additional load levels is waived under this option. [40 CFR 60.335(b)(6)] Federally Enforceable Through Title V Permit
42. A totalizing mass or volumetric fuel flow computer shall be utilized and maintained to calculate the amount of natural gas combusted based on measured flow meter parameters (fuel pressure and temperature) and gas composition. [District Rule 4703] Federally Enforceable Through Title V Permit
43. Except during black start, start-up shall not exceed 2.0 hours per event. [District Rule 4703] Federally Enforceable Through Title V Permit
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45. The emission control systems shall be in operation and emissions shall be minimized insofar as technologically feasible during startup (black start) and shutdown. [District Rule 4703] Federally Enforceable Through Title V Permit
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47. Shutdown is defined as the period of time during which a unit is taken from an operational to a non-operational status by allowing it to cool down from its operating temperature to ambient temperature as the fuel supply to the unit is completely turned off. [District Rule 4703] Federally Enforceable Through Title V Permit
48. Reduced load period is defined as the time during which a gas turbine is operated at less than rated capacity in order to change the position of the exhaust gas diverter gate. Each reduced load period shall not exceed one hour. [District Rule 4703] Federally Enforceable Through Title V Permit
49. A black start event is defined as the startup of a unit while the cogen plant is electrically separated from the utility grid. A black start shall not exceed 4.0 hours per event. [District Rules 2201 and 4703] Federally Enforceable Through Title V Permit
50. The owner or operator shall submit to the District information correlating the NOx control system operating parameters to the associated measured NOx output. The information must be sufficient to allow the District to determine compliance with the NOx emission limits of this permit when the CEMS is not operating properly. [District Rule 4703] Federally Enforceable Through Title V Permit
51. The owner or operator shall maintain a stationary gas turbine system operating log that includes, on a daily basis, the actual local startup and stop time, length and reason for reduced load periods, total hours of operation, the type and quantity of fuel used, duration of each start-up (or black start) and each shutdown time period. [District Rule 4703] Federally Enforceable Through Title V Permit
52. The owner or operator shall maintain all records of required monitoring data and support information for a period of five years from the date of data entry and shall make such records available to the District upon request. [District Rules 2201 and 4703] Federally Enforceable Through Title V Permit
53. NOx emissions shall not exceed 150 ppmvd @ 15% O2 (1-hour average), excluding startup (black start), shutdown and reduced load periods. [40 CFR 60.332(a)(1) & 60.332(a)(2)] Federally Enforceable Through Title V Permit
54. Compliance with permit conditions in the Title V permit shall be deemed compliance with the following subsumed requirements: SJVUAPCD Rule 4703, 6.2.2; 40 CFR 60.332(a) and (b); 60.333(a) and (b); 60.334 (a), (b), and (c)(1); 60.335(a), (b), (c), and (e). A permit shield is granted from these requirements. [District Rule 2520, 13.2] Federally Enforceable Through Title V Permit
55. Compliance with permit conditions in the Title V permit shall be deemed compliance with the following subsumed requirements: Kern County Rule 407; 40 CFR 60.332(c), (d); 60.334(b), and (c)(2); 60.335(d). A permit shield is granted from these requirements. [District Rule 2520, 13.2] Federally Enforceable Through Title V Permit

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San Joaquin Valley
Air Pollution Control District

AUTHORITY TO CONSTRUCT

ISSUANCE DATE: DRAFT
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PERMIT NO: S-1129-53-13

LEGAL OWNER OR OPERATOR: CHEVRON U S A INC
MAILING ADDRESS: PO BOX 1392
BAKERSFIELD, CA 93302

LOCATION: HEAVY OIL WESTERN
CA

SECTION: 34 TOWNSHIP: 30S RANGE: 22E

EQUIPMENT DESCRIPTION:

MODIFICATION OF 3.5 MW COMBINED CYCLE GAS TURBINE TOPPING CYCLE COGENERATION NORTH MIDWAY UNIT #7: INSTALL A SELECTIVE CATALYTIC REDUCTION (SCR) SYSTEM WITH AMMONIA INJECTION TO COMPLY WITH RULE 4703 TIER 3 EMISSION LIMIT OF 5 PPMVD NOX @ 15% O2; INSTALL A CONTINUOUS EMISSIONS MONITORING SYSTEM (CEMS) TO MEASURE NOX, CO AND O2 CONCENTRATIONS; AND REPLACE STRUTHERS-WELLS HEAT RECOVERY STEAM GENERATOR (HRSG) WITH ANOTHER HRSG (IF NECESSARY)

CONDITIONS

1. {1830} This Authority to Construct serves as a written certificate of conformity with the procedural requirements of 40 CFR 70.7 and 70.8 and with the compliance requirements of 40 CFR 70.6(c). [District NSR Rule] Federally Enforceable Through Title V Permit
2. {1831} Prior to operating with modifications authorized by this Authority to Construct, the facility shall submit an application to modify the Title V permit with an administrative amendment in accordance with District Rule 2520 Section 5.3.4. [District Rule 2520, 5.3.4] Federally Enforceable Through Title V Permit
3. Cogeneration unit shall include 48.7 MMBtu/hr (nominal rating) Allison, model 501-KB-5, gas-fired turbine engine with pilotless fuel nozzles or conventional fuel nozzles, Ideal Synchronous electrical generator, unfired 22.5 MMBtu/hr steam generator and an inlet air evaporative cooler. [District NSR Rule] Federally Enforceable Through Title V Permit
4. Turbine lube oil tank shall vent only through CECO Model #STTOR-10 fiber bed filter system. [District NSR Rule] Federally Enforceable Through Title V Permit

CONDITIONS CONTINUE ON NEXT PAGE

YOU MUST NOTIFY THE DISTRICT COMPLIANCE DIVISION AT (661) 392-5500 WHEN CONSTRUCTION IS COMPLETED AND PRIOR TO OPERATING THE EQUIPMENT OR MODIFICATIONS AUTHORIZED BY THIS AUTHORITY TO CONSTRUCT. This is NOT a PERMIT TO OPERATE. Approval or denial of a PERMIT TO OPERATE will be made after an inspection to verify that the equipment has been constructed in accordance with the approved plans, specifications and conditions of this Authority to Construct, and to determine if the equipment can be operated in compliance with all Rules and Regulations of the San Joaquin Valley Unified Air Pollution Control District. Unless construction has commenced pursuant to Rule 2050, this Authority to Construct shall expire and application shall be cancelled two years from the date of issuance. The applicant is responsible for complying with all laws, ordinances and regulations of all other governmental agencies which may pertain to the above equipment.

Seyed Sadredin, Executive Director APCO

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DAVID WARNER, Director of Permit Services
S-1129-53-13 Oct 20 2009 9:15AM - AHMADS : Joint Inspection NOT Required

5. Generator gearbox lube oil tank shall vent only through CECO Model #STTOR-10 fiber bed filter system. [District NSR Rule] Federally Enforceable Through Title V Permit
6. {98} No air contaminant shall be released into the atmosphere which causes a public nuisance. [District Rule 4102]
7. Particulate matter emissions shall not exceed 0.1 grains/dscf in concentration. [District Rule 4201] Federally Enforceable Through Title V Permit
8. The gas turbine shall be fired exclusively on PUC-regulated gas or PUC-quality natural gas which has a sulfur content less than or equal to 0.017% by weight. [40 CFR 60.333(a) and District Rule 4801] Federally Enforceable Through Title V Permit
9. The sulfur content in the fuel being combusted shall not exceed 1.0 grains/100 scf, otherwise, the fuel shall be of PUC-regulated quality. [District Rule 2201] Federally Enforceable Through Title V Permit
10. If the gas turbine system is fired on PUC-regulated natural gas, then maintain on file copies of natural gas bills. [District Rule 2520] Federally Enforceable Through Title V Permit
11. If the gas turbine system is not fired on PUC-regulated natural gas, the sulfur content of each fuel source shall be tested weekly except that if compliance with the fuel sulfur content limit has been demonstrated for 8 consecutive weeks for a fuel source, then the testing frequency shall be quarterly. If a test shows noncompliance with the sulfur content requirement, the source must return to weekly testing until eight consecutive weeks show compliance. [40 CFR 60.334(h)(3)] Federally Enforceable Through Title V Permit
12. HHV and LHV of the fuel shall be determined by using ASTM D3588, ASTM 1826, or ASTM 1945. [40 CFR 60.335(b), District Rule 4703] Federally Enforceable Through Title V Permit
13. During an initial shakedown period, the emissions shall not exceed any of the following limits: 30 ppmvd NO_x @ 15% O₂ referenced as NO₂; 41 ppmvd CO @ 15% O₂; 0.61 lb-PM₁₀/hr; 1.65 lb-VOC/hr referenced as methane; and 0.16 lb-SO_x/hr referenced as SO₂. The shakedown period shall not exceed 60 calendar days from the initial startup of the unit under this permit. The shakedown period must be concluded prior to the applicable Rule 4703 compliance deadline selected for this unit. The permittee shall maintain a record of the date of initial operation of this unit, fuel combusted (scf/day) on daily basis, and water-to-fuel ratio or results of NO_x and CO over 3-hour rolling average period from CEMS (if operational). These records shall be made readily available for District inspection upon request. [District Rule 2201] Federally Enforceable Through Title V Permit
14. Upon concluding the initial shakedown period, emissions from the gas turbine system, when startup or shutdown or black start do not occur, shall not exceed any of the following limits: 5 ppmvd NO_x @ 15% O₂ referenced as NO₂; 41 ppmvd CO @ 15% O₂; 0.61 lb-PM₁₀/hr; 1.65 lb-VOC/hr referenced as methane; and 0.16 lb-SO_x/hr referenced as SO₂. NO_x and CO emission limits are based on 3-hour rolling average period. If unit is in either startup, shutdown, or black start mode during any portion of a clock hour, the unit will not be subject to the ppmvd limits for NO_x and CO during that clock hour. [District Rules 2201 and 4703] Federally Enforceable Through Title V Permit
15. Upon concluding the initial shakedown period, emissions from the gas turbine system, on days when startup, shutdown, or black start occurs, shall not exceed any of the following limits: 39.4 lb-NO_x/day referenced as NO₂; 1,394.7 lb-CO/day; 3.3 lb-SO_x/day; 14.6 lb-PM₁₀/day; 109.0 lb-VOC/day referenced as methane; and 33.2 lb-NH₃/day. [District Rule 2201] Federally Enforceable Through Title V Permit
16. Upon concluding the initial shakedown period, the emissions from the gas turbine system shall not exceed any of the following limits: 7,948 lb-NO_x/year; 45,768 lb-CO/year; 1,195 lb-SO_x/year; 5,333 lb-PM₁₀/year; 14,809 lb-VOC/year; 12,121 lb-NH₃/year. All annual emission limits are based on 12 consecutive month rolling emissions totals. [District Rule 2201] Federally Enforceable Through Title V Permit
17. Ammonia (NH₃) emissions shall not exceed 21 ppmvd @ 15% O₂ over a 24-hour average period. [District Rule 2201] Federally Enforceable Through Title V Permit
18. Each three hour rolling average will be compiled from the three most recent one hour periods. Each one hour period shall commence on the hour. Each one hour period in a twenty-four hour average for ammonia slip will commence on the hour. The twenty-four hour average will be calculated starting and ending at twelve-midnight. [District Rule 2201] Federally Enforceable Through Title V Permit

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19. Daily emissions shall be compiled for a twenty-four hour period starting and ending at twelve-midnight. Each calendar month in a twelve consecutive month rolling emissions total shall commence at the beginning of the first day of the month. The twelve consecutive month rolling emissions totals used to determine compliance with annual emission limits shall be compiled from the twelve most recent calendar months. [District Rule 2201] Federally Enforceable Through Title V Permit
20. The exhaust stack shall be equipped with permanent provisions to allow collection of stack gas samples consistent with EPA test methods and shall be equipped with safe permanent provisions to sample stack gases with a portable NO_x, CO, and O₂ analyzer during District inspections. The sampling ports shall be located in accordance with the CARB regulation titled California Air Resources Board Air Monitoring Quality Assurance Volume VI, Standard Operating Procedures for Stationary Emission Monitoring and Testing. [District Rule 1081] Federally Enforceable Through Title V Permit
21. Source testing shall be conducted using the methods and procedures approved by the District. The District must be notified at least 30 days prior to any compliance source test, and a source test plan must be submitted for approval at least 15 days prior to testing. [District Rule 1081] Federally Enforceable Through Title V Permit
22. Source testing shall be witnessed or authorized by District personnel and samples shall be collected by a California Air Resources Board (CARB) certified testing laboratory or a CARB certified source testing firm. [District Rule 1081] Federally Enforceable Through Title V Permit
23. Source testing to measure start-up mass emission rates of NO_x, CO, and VOC shall be conducted for one of the gas turbine engines (S-1129-53, -54, -55) within 60-days of initial startup under this permit and at least once every seven years thereafter. CEMS relative accuracy shall be determined during source testing in accordance with the procedure listed in 40 CFR Part 60, Appendix F with any necessary changes approved by the District. [District Rule 1081] Federally Enforceable Through Title V Permit
24. Source testing to determine compliance with the NO_x, CO and NH₃ emission rates (ppmvd @ 15% O₂) during normal operation shall be conducted within 60 days of initial startup under this permit and annually thereafter. [District Rules 2201 and 4703, CFR 60.335(a)] Federally Enforceable Through Title V Permit
25. For the purpose of determining compliance with the emissions limits (ppmvd @ 15% O₂) during normal operation in this permit, the arithmetic mean of three test runs shall apply, unless two of the three results are above an applicable limit. If two of three runs are above the applicable limit the test cannot be used to demonstrate compliance with an applicable limit. [District Rule 1081] Federally Enforceable Through Title V Permit
26. The following test methods shall be used: NO_x - EPA Method 7E or 20 or CARB Method 100; CO - EPA Method 10 or 10B or CARB Method 100; VOC - EPA Method 18 or 25; PM₁₀ - EPA Method 5 (front half and back half) or 201 and 202a; ammonia - BAAQMD ST-1B; and O₂ - EPA Method 3, 3A, or 20 or CARB Method 100. EPA approved alternative test methods as approved by the District may also be used to address the source testing requirements of this permit. [District Rules 1081 and 4703, 40 CFR 60.335(a), and 40 CFR 60.335(b)(1)] Federally Enforceable Through Title V Permit
27. The results of each source test shall be submitted to the District within 60 days thereafter. [District Rule 1081] Federally Enforceable Through Title V Permit
28. The owner or operator shall install, certify, maintain, operate, and quality-assure a continuous emission monitor system (CEMS) which continuously measures and records the exhaust gas NO_x, CO, and O₂ concentrations. Continuous emissions monitors shall be capable of monitoring emissions during normal operating conditions and during startups and shutdowns, provided that CEMS passes the relative accuracy requirements of 40 CFR Part 60, Appendix B, Performance Specification 2 (PS-2) and District approved protocol for startups. If relative accuracy of CEMS cannot be demonstrated during the startup, CEMS results during startup and shutdown events shall be replaced with startup emission rates obtained from the source test conducted by the facility to determine compliance with emission limits contained in this document. [District Rules 1080, 2201 and 4703, 40 CFR 60.334(b)(1)] Federally Enforceable Through Title V Permit
29. The CEMS shall complete a minimum of one cycle of operation (sampling, analyzing, and data recording) for each 15-minute quadrant of the hour or shall meet equivalent specifications established by mutual agreement of the District, the ARB and the EPA. [District Rule 1080 and 40 CFR 60.334(b)(2)] Federally Enforceable Through Title V Permit

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30. The NO_x, CO and O₂ CEMS shall meet the requirements in 40 CFR 60, Appendix F Procedure 1 and Part 60, Appendix B Performance Specification 2 (PS 2), or shall meet equivalent specifications established by mutual agreement of the District, the ARB, and the EPA. [District Rule 1080 and 40 CFR 60.334(b)(1)] Federally Enforceable Through Title V Permit
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39. Monitor downtime for NO_x shall be any unit operating hour in which sufficient data are not obtained to validate the hour for either NO_x concentration or diluent O₂ (or both). [40 CFR 60.334(j)(1)(iii)(B)] Federally Enforceable Through Title V Permit
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47. Shutdown is defined as the period of time during which a unit is taken from an operational to a non-operational status by allowing it to cool down from its operating temperature to ambient temperature as the fuel supply to the unit is completely turned off. [District Rule 4703] Federally Enforceable Through Title V Permit
48. Reduced load period is defined as the time during which a gas turbine is operated at less than rated capacity in order to change the position of the exhaust gas diverter gate. Each reduced load period shall not exceed one hour. [District Rule 4703] Federally Enforceable Through Title V Permit
49. A black start event is defined as the startup of a unit while the cogen plant is electrically separated from the utility grid. A black start shall not exceed 4.0 hours per event. [District Rules 2201 and 4703] Federally Enforceable Through Title V Permit
50. The owner or operator shall submit to the District information correlating the NOx control system operating parameters to the associated measured NOx output. The information must be sufficient to allow the District to determine compliance with the NOx emission limits of this permit when the CEMS is not operating properly. [District Rule 4703] Federally Enforceable Through Title V Permit
51. The owner or operator shall maintain a stationary gas turbine system operating log that includes, on a daily basis, the actual local startup and stop time, length and reason for reduced load periods, total hours of operation, the type and quantity of fuel used, duration of each start-up (or black start) and each shutdown time period. [District Rule 4703] Federally Enforceable Through Title V Permit
52. The owner or operator shall maintain all records of required monitoring data and support information for a period of five years from the date of data entry and shall make such records available to the District upon request. [District Rules 2201 and 4703] Federally Enforceable Through Title V Permit
53. NOx emissions shall not exceed 150 ppmvd @ 15% O2 (1-hour average), excluding startup (black start), shutdown and reduced load periods. [40 CFR 60.332(a)(1) & 60.332(a)(2)] Federally Enforceable Through Title V Permit
54. Compliance with permit conditions in the Title V permit shall be deemed compliance with the following subsumed requirements: SJVUAPCD Rule 4703, 6.2.2; 40 CFR 60.332(a) and (b); 60.333(a) and (b); 60.334 (a), (b), and (c)(1); 60.335(a), (b), (c), and (e). A permit shield is granted from these requirements. [District Rule 2520, 13.2] Federally Enforceable Through Title V Permit
55. Compliance with permit conditions in the Title V permit shall be deemed compliance with the following subsumed requirements: Kern County Rule 407; 40 CFR 60.332(c), (d); 60.334(b), and (c)(2); 60.335(d). A permit shield is granted from these requirements. [District Rule 2520, 13.2] Federally Enforceable Through Title V Permit

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San Joaquin Valley
Air Pollution Control District

AUTHORITY TO CONSTRUCT

ISSUANCE DATE: DRAFT
DRAFT

PERMIT NO: S-1129-54-14

LEGAL OWNER OR OPERATOR: CHEVRON U S A INC
MAILING ADDRESS: PO BOX 1392
BAKERSFIELD, CA 93302

LOCATION: HEAVY OIL WESTERN
CA

SECTION: 34 TOWNSHIP: 30S RANGE: 22E

EQUIPMENT DESCRIPTION:

MODIFICATION OF 3.5 MW COMBINED CYCLE GAS TURBINE TOPPING CYCLE COGENERATION NORTH MIDWAY UNIT #8: INSTALL A SELECTIVE CATALYTIC REDUCTION (SCR) SYSTEM WITH AMMONIA INJECTION TO COMPLY WITH RULE 4703 TIER 3 EMISSION LIMIT OF 5 PPMVD NOX @ 15% O2; INSTALL A CONTINUOUS EMISSIONS MONITORING SYSTEM (CEMS) TO MEASURE NOX, CO AND O2 CONCENTRATIONS; AND REPLACE STRUTHERS-WELLS HEAT RECOVERY STEAM GENERATOR (HRSG) WITH ANOTHER HRSG (IF NECESSARY)

CONDITIONS

1. {1830} This Authority to Construct serves as a written certificate of conformity with the procedural requirements of 40 CFR 70.7 and 70.8 and with the compliance requirements of 40 CFR 70.6(c). [District NSR Rule] Federally Enforceable Through Title V Permit
2. {1831} Prior to operating with modifications authorized by this Authority to Construct, the facility shall submit an application to modify the Title V permit with an administrative amendment in accordance with District Rule 2520 Section 5.3.4. [District Rule 2520, 5.3.4] Federally Enforceable Through Title V Permit
3. Cogeneration unit shall include 48.7 MMBtu/hr (nominal rating) Allison, model 501-KB-5, gas-fired turbine engine with pilotless fuel nozzles or conventional fuel nozzles, Ideal Synchronous electrical generator, unfired 22.5 MMBtu/hr steam generator and an inlet air evaporative cooler. [District NSR Rule] Federally Enforceable Through Title V Permit
4. Turbine lube oil tank shall vent only through CECO Model #STTOR-10 fiber bed filter system. [District NSR Rule] Federally Enforceable Through Title V Permit

CONDITIONS CONTINUE ON NEXT PAGE

YOU **MUST NOTIFY THE DISTRICT COMPLIANCE DIVISION AT (661) 392-5500 WHEN CONSTRUCTION IS COMPLETED AND PRIOR TO OPERATING THE EQUIPMENT OR MODIFICATIONS AUTHORIZED BY THIS AUTHORITY TO CONSTRUCT.** This is NOT a PERMIT TO OPERATE. Approval or denial of a PERMIT TO OPERATE will be made after an inspection to verify that the equipment has been constructed in accordance with the approved plans, specifications and conditions of this Authority to Construct, and to determine if the equipment can be operated in compliance with all Rules and Regulations of the San Joaquin Valley Unified Air Pollution Control District. Unless construction has commenced pursuant to Rule 2050, this Authority to Construct shall expire and application shall be cancelled two years from the date of issuance. The applicant is responsible for complying with all laws, ordinances and regulations of all other governmental agencies which may pertain to the above equipment.

Seyed Sadredin, Executive Director APCO

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DAVID WARNER, Director of Permit Services
S-1129-54-14 : Oct 20 2009 9:16AM - AHMADS : Joint Inspection NOT Required

5. Generator gearbox lube oil tank shall vent only through CECO Model #STTOR-10 fiber bed filter system. [District NSR Rule] Federally Enforceable Through Title V Permit
6. {98} No air contaminant shall be released into the atmosphere which causes a public nuisance. [District Rule 4102]
7. Particulate matter emissions shall not exceed 0.1 grains/dscf in concentration. [District Rule 4201] Federally Enforceable Through Title V Permit
8. The gas turbine shall be fired exclusively on PUC-regulated gas or PUC-quality natural gas which has a sulfur content less than or equal to 0.017% by weight. [40 CFR 60.333(a) and District Rule 4801] Federally Enforceable Through Title V Permit
9. The sulfur content in the fuel being combusted shall not exceed 1.0 grains/100 scf, otherwise, the fuel shall be of PUC-regulated quality. [District Rule 2201] Federally Enforceable Through Title V Permit
10. If the gas turbine system is fired on PUC-regulated natural gas, then maintain on file copies of natural gas bills. [District Rule 2520] Federally Enforceable Through Title V Permit
11. If the gas turbine system is not fired on PUC-regulated natural gas, the sulfur content of each fuel source shall be tested weekly except that if compliance with the fuel sulfur content limit has been demonstrated for 8 consecutive weeks for a fuel source, then the testing frequency shall be quarterly. If a test shows noncompliance with the sulfur content requirement, the source must return to weekly testing until eight consecutive weeks show compliance. [40 CFR 60.334(h)(3)] Federally Enforceable Through Title V Permit
12. HHV and LHV of the fuel shall be determined by using ASTM D3588, ASTM 1826, or ASTM 1945. [40 CFR 60.335(b), District Rule 4703] Federally Enforceable Through Title V Permit
13. During an initial shakedown period, the emissions shall not exceed any of the following limits: 30 ppmvd NO_x @ 15% O₂ referenced as NO₂; 41 ppmvd CO @ 15% O₂; 0.61 lb-PM₁₀/hr; 1.65 lb-VOC/hr referenced as methane; and 0.16 lb-SO_x/hr referenced as SO₂. The shakedown period shall not exceed 60 calendar days from the initial startup of the unit under this permit. The shakedown period must be concluded prior to the applicable Rule 4703 compliance deadline selected for this unit. The permittee shall maintain a record of the date of initial operation of this unit, fuel combusted (scf/day) on daily basis, and water-to-fuel ratio or results of NO_x and CO over 3-hour rolling average period from CEMS (if operational). These records shall be made readily available for District inspection upon request. [District Rule 2201] Federally Enforceable Through Title V Permit
14. Upon concluding the initial shakedown period, emissions from the gas turbine system, when startup or shutdown or black start do not occur, shall not exceed any of the following limits: 5 ppmvd NO_x @ 15% O₂ referenced as NO₂; 41 ppmvd CO @ 15% O₂; 0.61 lb-PM₁₀/hr; 1.65 lb-VOC/hr referenced as methane; and 0.16 lb-SO_x/hr referenced as SO₂. NO_x and CO emission limits are based on 3-hour rolling average period. If unit is in either startup, shutdown, or black start mode during any portion of a clock hour, the unit will not be subject to the ppmvd limits for NO_x and CO during that clock hour. [District Rules 2201 and 4703] Federally Enforceable Through Title V Permit
15. Upon concluding the initial shakedown period, emissions from the gas turbine system, on days when startup, shutdown, or black start occurs, shall not exceed any of the following limits: 39.4 lb-NO_x/day referenced as NO₂; 1,394.7 lb-CO/day; 3.3 lb-SO_x/day; 14.6 lb-PM₁₀/day; 109.0 lb-VOC/day referenced as methane; and 33.2 lb-NH₃/day. [District Rule 2201] Federally Enforceable Through Title V Permit
16. Upon concluding the initial shakedown period, the emissions from the gas turbine system shall not exceed any of the following limits: 7,948 lb-NO_x/year; 45,768 lb-CO/year; 1,195 lb-SO_x/year; 5,333 lb-PM₁₀/year; 14,809 lb-VOC/year; 12,121 lb-NH₃/year. All annual emission limits are based on 12 consecutive month rolling emissions totals. [District Rule 2201] Federally Enforceable Through Title V Permit
17. Ammonia (NH₃) emissions shall not exceed 21 ppmvd @ 15% O₂ over a 24-hour average period. [District Rule 2201] Federally Enforceable Through Title V Permit
18. Each three hour rolling average will be compiled from the three most recent one hour periods. Each one hour period shall commence on the hour. Each one hour period in a twenty-four hour average for ammonia slip will commence on the hour. The twenty-four hour average will be calculated starting and ending at twelve-midnight. [District Rule 2201] Federally Enforceable Through Title V Permit

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CONDITIONS CONTINUE ON NEXT PAGE

19. Daily emissions shall be compiled for a twenty-four hour period starting and ending at twelve-midnight. Each calendar month in a twelve consecutive month rolling emissions total shall commence at the beginning of the first day of the month. The twelve consecutive month rolling emissions totals used to determine compliance with annual emission limits shall be compiled from the twelve most recent calendar months. [District Rule 2201] Federally Enforceable Through Title V Permit
20. The exhaust stack shall be equipped with permanent provisions to allow collection of stack gas samples consistent with EPA test methods and shall be equipped with safe permanent provisions to sample stack gases with a portable NO_x, CO, and O₂ analyzer during District inspections. The sampling ports shall be located in accordance with the CARB regulation titled California Air Resources Board Air Monitoring Quality Assurance Volume VI, Standard Operating Procedures for Stationary Emission Monitoring and Testing. [District Rule 1081] Federally Enforceable Through Title V Permit
21. Source testing shall be conducted using the methods and procedures approved by the District. The District must be notified at least 30 days prior to any compliance source test, and a source test plan must be submitted for approval at least 15 days prior to testing. [District Rule 1081] Federally Enforceable Through Title V Permit
22. Source testing shall be witnessed or authorized by District personnel and samples shall be collected by a California Air Resources Board (CARB) certified testing laboratory or a CARB certified source testing firm. [District Rule 1081] Federally Enforceable Through Title V Permit
23. Source testing to measure start-up mass emission rates of NO_x, CO, and VOC shall be conducted for one of the gas turbine engines (S-1129-53, -54, -55) within 60-days of initial startup under this permit and at least once every seven years thereafter. CEMS relative accuracy shall be determined during source testing in accordance with the procedure listed in 40 CFR Part 60, Appendix F with any necessary changes approved by the District. [District Rule 1081] Federally Enforceable Through Title V Permit
24. Source testing to determine compliance with the NO_x, CO and NH₃ emission rates (ppmvd @ 15% O₂) during normal operation shall be conducted within 60 days of initial startup under this permit and annually thereafter. [District Rules 2201 and 4703, CFR 60.335(a)] Federally Enforceable Through Title V Permit
25. For the purpose of determining compliance with the emissions limits (ppmvd @ 15% O₂) during normal operation in this permit, the arithmetic mean of three test runs shall apply, unless two of the three results are above an applicable limit. If two of three runs are above the applicable limit the test cannot be used to demonstrate compliance with an applicable limit. [District Rule 1081] Federally Enforceable Through Title V Permit
26. The following test methods shall be used: NO_x - EPA Method 7E or 20 or CARB Method 100; CO - EPA Method 10 or 10B or CARB Method 100; VOC - EPA Method 18 or 25; PM₁₀ - EPA Method 5 (front half and back half) or 201 and 202a; ammonia - BAAQMD ST-1B; and O₂ - EPA Method 3, 3A, or 20 or CARB Method 100. EPA approved alternative test methods as approved by the District may also be used to address the source testing requirements of this permit. [District Rules 1081 and 4703, 40 CFR 60.335(a), and 40 CFR 60.335(b)(1)] Federally Enforceable Through Title V Permit
27. The results of each source test shall be submitted to the District within 60 days thereafter. [District Rule 1081] Federally Enforceable Through Title V Permit
28. The owner or operator shall install, certify, maintain, operate, and quality-assure a continuous emission monitor system (CEMS) which continuously measures and records the exhaust gas NO_x, CO, and O₂ concentrations. Continuous emissions monitors shall be capable of monitoring emissions during normal operating conditions and during startups and shutdowns, provided that CEMS passes the relative accuracy requirements of 40 CFR Part 60, Appendix B, Performance Specification 2 (PS-2) and District approved protocol for startups. If relative accuracy of CEMS cannot be demonstrated during the startup, CEMS results during startup and shutdown events shall be replaced with startup emission rates obtained from the source test conducted by the facility to determine compliance with emission limits contained in this document. [District Rules 1080, 2201 and 4703, 40 CFR 60.334(b)(1)] Federally Enforceable Through Title V Permit
29. The CEMS shall complete a minimum of one cycle of operation (sampling, analyzing, and data recording) for each 15-minute quadrant of the hour or shall meet equivalent specifications established by mutual agreement of the District, the ARB and the EPA. [District Rule 1080 and 40 CFR 60.334(b)(2)] Federally Enforceable Through Title V Permit

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30. The NO_x, CO and O₂ CEMS shall meet the requirements in 40 CFR 60, Appendix F Procedure 1 and Part 60, Appendix B Performance Specification 2 (PS 2), or shall meet equivalent specifications established by mutual agreement of the District, the ARB, and the EPA. [District Rule 1080 and 40 CFR 60.334(b)(1)] Federally Enforceable Through Title V Permit
31. In accordance with 40 CFR Part 60, Appendix F, 5.1, the CEMS must be audited at least once each calendar quarter. The District shall be notified prior to completion of the audits. Audit reports shall be submitted along with quarterly compliance reports to the District. [District Rule 1080] Federally Enforceable Through Title V Permit
32. The requirements in 40 CFR 60, Appendix F, shall be met through the following EPA and District approved modified procedures: 1) annual RATA testing of at least one gas turbine engine (S-1129-53, -54, -55), and rotate the unit tested so that all three units are tested over three years, 2) annual RAA testing for the two gas turbine engines for which the annual RATA testing is not performed, 3) if any of the gas turbine engines fail the RAA testing, they must have a RATA test within 60 days, and 4) for every quarter that RATA or RAA testing is not performed, a CGA is to be performed for each gas turbine engine. [District Rule 1080] Federally Enforceable Through Title V Permit
33. APCO or an authorized representative shall be allowed to inspect, as determined to be necessary, the required monitoring devices to ensure that such devices are functioning properly. [District Rule 1080] Federally Enforceable Through Title V Permit
34. The CEMS data shall be reduced to hourly averages as specified in 40 CFR 60.13(h), or by other methods deemed equivalent by mutual agreement with the District, the ARB, and the EPA. [District Rule 1080 and 40 CFR 60.334(b)(3)] Federally Enforceable Through Title V Permit
35. Upon written notice from the District, the owner or operator shall provide a summary of the data obtained from the CEMS. This summary shall be in the form and the manner prescribed by the District. [District Rule 1080] Federally Enforceable Through Title V Permit
36. The facility shall install and maintain equipment, facilities, and systems compatible with the District's CEMS data polling software system and shall make CEMS data available to the District's automated polling system on a daily basis. Upon notice by the District that the facility's CEMS is not providing polling data, the facility may continue to operate without providing automated data for a maximum of 30 days per calendar year provided the CEMS data is sent to the District by a District-approved alternative method. [District Rule 1080] Federally Enforceable Through Title V Permit
37. The permittee shall maintain the following records: the date, time and duration of any malfunction of the continuous monitoring equipment; dates of performance testing; dates of evaluations, calibrations, checks, and adjustments of the continuous monitoring equipment; date and time period which a continuous monitoring system or monitoring device was inoperative. [District Rules 1080 and 2201 and 40 CFR 60.8(d)] Federally Enforceable Through Title V Permit
38. The owner or operator shall submit a written report of CEM operations for each calendar quarter to the District. The report is due on the 30th day following the end of the calendar quarter and shall include the following: Time intervals, data and magnitude of excess NO_x emissions, nature and the cause of excess (if known), corrective actions taken and preventive measures adopted; Averaging period used for data reporting corresponding to the averaging period specified in the emission test period used to determine compliance with an emission standard; Applicable 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; A negative declaration when no excess emissions occurred. [District Rule 1080 and 40 CFR 60.334(j)(5)] Federally Enforceable Through Title V Permit
39. Monitor downtime for NO_x shall be any unit operating hour in which sufficient data are not obtained to validate the hour for either NO_x concentration or diluent O₂ (or both). [40 CFR 60.334(j)(1)(iii)(B)] Federally Enforceable Through Title V Permit
40. If the gas turbine system is not fired on PUC-regulated or FERC-regulated natural gas, then a fuel sample shall be collected during the source test to determine sulfur content of the fuel combusted in the turbine. The fuel sample shall be analyzed for the total sulfur content using ASTM D1072; D3246; D4084; D4468; D6228; or D6667; or double GC for H₂S and mercaptans. The applicable ranges of some ASTM methods are not adequate to measure the levels of sulfur in some fuel gases. Dilution of samples before analysis (with verification of dilution ratio) may be used after getting a prior approval from the District. [40 CFR 60.334(b)(10)] Federally Enforceable Through Title V Permit

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CONDITIONS CONTINUE ON NEXT PAGE

41. Should the applicant decide to conduct performance evaluation of CEMS with the initial performance test, a minimum of 9 reference method runs, with a minimum time per run of 21 minutes, at a single load level, between 90 and 100 percent of peak (or the highest physically achievable) load shall be performed. The test data obtained during these run can be used to demonstrate compliance with the applicable NOx emission limit and to provide reference method data for the RATA of the CEMS. The requirement to test at three additional load levels is waived under this option. [40 CFR 60.335(b)(6)] Federally Enforceable Through Title V Permit
42. A totalizing mass or volumetric fuel flow computer shall be utilized and maintained to calculate the amount of natural gas combusted based on measured flow meter parameters (fuel pressure and temperature) and gas composition. [District Rule 4703] Federally Enforceable Through Title V Permit
43. Except during black start, start-up shall not exceed 2.0 hours per event. [District Rule 4703] Federally Enforceable Through Title V Permit
44. Shutdown shall not exceed 2.0 hours per event. [District Rule 4703] Federally Enforceable Through Title V Permit
45. The emission control systems shall be in operation and emissions shall be minimized insofar as technologically feasible during startup (black start) and shutdown. [District Rule 4703] Federally Enforceable Through Title V Permit
46. Start-up is defined as the period of time during which a unit is brought from a shutdown status to its operating temperature and pressure, including the time required by the unit's emission control system to reach full operation. [District Rule 4703] Federally Enforceable Through Title V Permit
47. Shutdown is defined as the period of time during which a unit is taken from an operational to a non-operational status by allowing it to cool down from its operating temperature to ambient temperature as the fuel supply to the unit is completely turned off. [District Rule 4703] Federally Enforceable Through Title V Permit
48. Reduced load period is defined as the time during which a gas turbine is operated at less than rated capacity in order to change the position of the exhaust gas diverter gate. Each reduced load period shall not exceed one hour. [District Rule 4703] Federally Enforceable Through Title V Permit
49. A black start event is defined as the startup of a unit while the cogen plant is electrically separated from the utility grid. A black start shall not exceed 4.0 hours per event. [District Rules 2201 and 4703] Federally Enforceable Through Title V Permit
50. The owner or operator shall submit to the District information correlating the NOx control system operating parameters to the associated measured NOx output. The information must be sufficient to allow the District to determine compliance with the NOx emission limits of this permit when the CEMS is not operating properly. [District Rule 4703] Federally Enforceable Through Title V Permit
51. The owner or operator shall maintain a stationary gas turbine system operating log that includes, on a daily basis, the actual local startup and stop time, length and reason for reduced load periods, total hours of operation, the type and quantity of fuel used, duration of each start-up (or black start) and each shutdown time period. [District Rule 4703] Federally Enforceable Through Title V Permit
52. The owner or operator shall maintain all records of required monitoring data and support information for a period of five years from the date of data entry and shall make such records available to the District upon request. [District Rules 2201 and 4703] Federally Enforceable Through Title V Permit
53. NOx emissions shall not exceed 150 ppmvd @ 15% O2 (1-hour average), excluding startup (black start), shutdown and reduced load periods. [40 CFR 60.332(a)(1) & 60.332(a)(2)] Federally Enforceable Through Title V Permit
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San Joaquin Valley
Air Pollution Control District

AUTHORITY TO CONSTRUCT

ISSUANCE DATE: DRAFT
DRAFT

PERMIT NO: S-1129-55-13

LEGAL OWNER OR OPERATOR: CHEVRON U S A INC
MAILING ADDRESS: PO BOX 1392
BAKERSFIELD, CA 93302

LOCATION: HEAVY OIL WESTERN
CA

SECTION: 34 TOWNSHIP: 30S RANGE: 22E

EQUIPMENT DESCRIPTION:

MODIFICATION OF 3.5 MW COMBINED CYCLE GAS TURBINE TOPPING CYCLE COGENERATION NORTH MIDWAY UNIT #9: INSTALL A SELECTIVE CATALYTIC REDUCTION (SCR) SYSTEM WITH AMMONIA INJECTION TO COMPLY WITH RULE 4703 TIER 3 EMISSION LIMIT OF 5 PPMVD NOX @ 15% O2; INSTALL A CONTINUOUS EMISSIONS MONITORING SYSTEM (CEMS) TO MEASURE NOX, CO AND O2 CONCENTRATIONS; AND REPLACE STRUTHERS-WELLS HEAT RECOVERY STEAM GENERATOR (HRSG) WITH ANOTHER HRSG (IF NECESSARY)

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3. Cogeneration unit shall include 48.7 MMBtu/hr (nominal rating) Allison, model 501-KB-5, gas-fired turbine engine with pilotless fuel nozzles or conventional fuel nozzles, Ideal Synchronous electrical generator, unfired 22.5 MMBtu/hr steam generator and an inlet air evaporative cooler. [District NSR Rule] Federally Enforceable Through Title V Permit
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Seyed Sadredin, Executive Director APCO

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DAVID WARNER, Director of Permit Services
S-1129-55-13 : Oct 20 2009 9:16AM - AHMADS : Joint Inspection NOT Required

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11. If the gas turbine system is not fired on PUC-regulated natural gas, the sulfur content of each fuel source shall be tested weekly except that if compliance with the fuel sulfur content limit has been demonstrated for 8 consecutive weeks for a fuel source, then the testing frequency shall be quarterly. If a test shows noncompliance with the sulfur content requirement, the source must return to weekly testing until eight consecutive weeks show compliance. [40 CFR 60.334(h)(3)] Federally Enforceable Through Title V Permit
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14. Upon concluding the initial shakedown period, emissions from the gas turbine system, when startup or shutdown or black start do not occur, shall not exceed any of the following limits: 5 ppmvd NO_x @ 15% O₂ referenced as NO₂; 41 ppmvd CO @ 15% O₂; 0.61 lb-PM₁₀/hr; 1.65 lb-VOC/hr referenced as methane; and 0.16 lb-SO_x/hr referenced as SO₂. NO_x and CO emission limits are based on 3-hour rolling average period. If unit is in either startup, shutdown, or black start mode during any portion of a clock hour, the unit will not be subject to the ppmvd limits for NO_x and CO during that clock hour. [District Rules 2201 and 4703] Federally Enforceable Through Title V Permit
15. Upon concluding the initial shakedown period, emissions from the gas turbine system, on days when startup, shutdown, or black start occurs, shall not exceed any of the following limits: 39.4 lb-NO_x/day referenced as NO₂; 1,394.7 lb-CO/day; 3.3 lb-SO_x/day; 14.6 lb-PM₁₀/day; 109.0 lb-VOC/day referenced as methane; and 33.2 lb-NH₃/day. [District Rule 2201] Federally Enforceable Through Title V Permit
16. Upon concluding the initial shakedown period, the emissions from the gas turbine system shall not exceed any of the following limits: 7,948 lb-NO_x/year; 45,768 lb-CO/year; 1,195 lb-SO_x/year; 5,333 lb-PM₁₀/year; 14,809 lb-VOC/year; 12,121 lb-NH₃/year. All annual emission limits are based on 12 consecutive month rolling emissions totals. [District Rule 2201] Federally Enforceable Through Title V Permit
17. Ammonia (NH₃) emissions shall not exceed 21 ppmvd @ 15% O₂ over a 24-hour average period. [District Rule 2201] Federally Enforceable Through Title V Permit
18. Each three hour rolling average will be compiled from the three most recent one hour periods. Each one hour period shall commence on the hour. Each one hour period in a twenty-four hour average for ammonia slip will commence on the hour. The twenty-four hour average will be calculated starting and ending at twelve-midnight. [District Rule 2201] Federally Enforceable Through Title V Permit

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19. Daily emissions shall be compiled for a twenty-four hour period starting and ending at twelve-midnight. Each calendar month in a twelve consecutive month rolling emissions total shall commence at the beginning of the first day of the month. The twelve consecutive month rolling emissions totals used to determine compliance with annual emission limits shall be compiled from the twelve most recent calendar months. [District Rule 2201] Federally Enforceable Through Title V Permit
20. The exhaust stack shall be equipped with permanent provisions to allow collection of stack gas samples consistent with EPA test methods and shall be equipped with safe permanent provisions to sample stack gases with a portable NO_x, CO, and O₂ analyzer during District inspections. The sampling ports shall be located in accordance with the CARB regulation titled California Air Resources Board Air Monitoring Quality Assurance Volume VI, Standard Operating Procedures for Stationary Emission Monitoring and Testing. [District Rule 1081] Federally Enforceable Through Title V Permit
21. Source testing shall be conducted using the methods and procedures approved by the District. The District must be notified at least 30 days prior to any compliance source test, and a source test plan must be submitted for approval at least 15 days prior to testing. [District Rule 1081] Federally Enforceable Through Title V Permit
22. Source testing shall be witnessed or authorized by District personnel and samples shall be collected by a California Air Resources Board (CARB) certified testing laboratory or a CARB certified source testing firm. [District Rule 1081] Federally Enforceable Through Title V Permit
23. Source testing to measure start-up mass emission rates of NO_x, CO, and VOC shall be conducted for one of the gas turbine engines (S-1129-53, -54, -55) within 60-days of initial startup under this permit and at least once every seven years thereafter. CEMS relative accuracy shall be determined during source testing in accordance with the procedure listed in 40 CFR Part 60, Appendix F with any necessary changes approved by the District. [District Rule 1081] Federally Enforceable Through Title V Permit
24. Source testing to determine compliance with the NO_x, CO and NH₃ emission rates (ppmvd @ 15% O₂) during normal operation shall be conducted within 60 days of initial startup under this permit and annually thereafter. [District Rules 2201 and 4703, CFR 60.335(a)] Federally Enforceable Through Title V Permit
25. For the purpose of determining compliance with the emissions limits (ppmvd @ 15% O₂) during normal operation in this permit, the arithmetic mean of three test runs shall apply, unless two of the three results are above an applicable limit. If two of three runs are above the applicable limit the test cannot be used to demonstrate compliance with an applicable limit. [District Rule 1081] Federally Enforceable Through Title V Permit
26. The following test methods shall be used: NO_x - EPA Method 7E or 20 or CARB Method 100; CO - EPA Method 10 or 10B or CARB Method 100; VOC - EPA Method 18 or 25; PM₁₀ - EPA Method 5 (front half and back half) or 201 and 202a; ammonia - BAAQMD ST-1B; and O₂ - EPA Method 3, 3A, or 20 or CARB Method 100. EPA approved alternative test methods as approved by the District may also be used to address the source testing requirements of this permit. [District Rules 1081 and 4703, 40 CFR 60.335(a), and 40 CFR 60.335(b)(1)] Federally Enforceable Through Title V Permit
27. The results of each source test shall be submitted to the District within 60 days thereafter. [District Rule 1081] Federally Enforceable Through Title V Permit
28. The owner or operator shall install, certify, maintain, operate, and quality-assure a continuous emission monitor system (CEMS) which continuously measures and records the exhaust gas NO_x, CO, and O₂ concentrations. Continuous emissions monitors shall be capable of monitoring emissions during normal operating conditions and during startups and shutdowns, provided that CEMS passes the relative accuracy requirements of 40 CFR Part 60, Appendix B, Performance Specification 2 (PS-2) and District approved protocol for startups. If relative accuracy of CEMS cannot be demonstrated during the startup, CEMS results during startup and shutdown events shall be replaced with startup emission rates obtained from the source test conducted by the facility to determine compliance with emission limits contained in this document. [District Rules 1080, 2201 and 4703, 40 CFR 60.334(b)(1)] Federally Enforceable Through Title V Permit
29. The CEMS shall complete a minimum of one cycle of operation (sampling, analyzing, and data recording) for each 15-minute quadrant of the hour or shall meet equivalent specifications established by mutual agreement of the District, the ARB and the EPA. [District Rule 1080 and 40 CFR 60.334(b)(2)] Federally Enforceable Through Title V Permit

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30. The NO_x, CO and O₂ CEMS shall meet the requirements in 40 CFR 60, Appendix F Procedure 1 and Part 60, Appendix B Performance Specification 2 (PS 2), or shall meet equivalent specifications established by mutual agreement of the District, the ARB, and the EPA. [District Rule 1080 and 40 CFR 60.334(b)(1)] Federally Enforceable Through Title V Permit
31. In accordance with 40 CFR Part 60, Appendix F, 5.1, the CEMS must be audited at least once each calendar quarter. The District shall be notified prior to completion of the audits. Audit reports shall be submitted along with quarterly compliance reports to the District. [District Rule 1080] Federally Enforceable Through Title V Permit
32. The requirements in 40 CFR 60, Appendix F, shall be met through the following EPA and District approved modified procedures: 1) annual RATA testing of at least one gas turbine engine (S-1129-53, -54, -55), and rotate the unit tested so that all three units are tested over three years, 2) annual RAA testing for the two gas turbine engines for which the annual RATA testing is not performed, 3) if any of the gas turbine engines fail the RAA testing, they must have a RATA test within 60 days, and 4) for every quarter that RATA or RAA testing is not performed, a CGA is to be performed for each gas turbine engine. [District Rule 1080] Federally Enforceable Through Title V Permit
33. APCO or an authorized representative shall be allowed to inspect, as determined to be necessary, the required monitoring devices to ensure that such devices are functioning properly. [District Rule 1080] Federally Enforceable Through Title V Permit
34. The CEMS data shall be reduced to hourly averages as specified in 40 CFR 60.13(h), or by other methods deemed equivalent by mutual agreement with the District, the ARB, and the EPA. [District Rule 1080 and 40 CFR 60.334(b)(3)] Federally Enforceable Through Title V Permit
35. Upon written notice from the District, the owner or operator shall provide a summary of the data obtained from the CEMS. This summary shall be in the form and the manner prescribed by the District. [District Rule 1080] Federally Enforceable Through Title V Permit
36. The facility shall install and maintain equipment, facilities, and systems compatible with the District's CEMS data polling software system and shall make CEMS data available to the District's automated polling system on a daily basis. Upon notice by the District that the facility's CEMS is not providing polling data, the facility may continue to operate without providing automated data for a maximum of 30 days per calendar year provided the CEMS data is sent to the District by a District-approved alternative method. [District Rule 1080] Federally Enforceable Through Title V Permit
37. The permittee shall maintain the following records: the date, time and duration of any malfunction of the continuous monitoring equipment; dates of performance testing; dates of evaluations, calibrations, checks, and adjustments of the continuous monitoring equipment; date and time period which a continuous monitoring system or monitoring device was inoperative. [District Rules 1080 and 2201 and 40 CFR 60.8(d)] Federally Enforceable Through Title V Permit
38. The owner or operator shall submit a written report of CEM operations for each calendar quarter to the District. The report is due on the 30th day following the end of the calendar quarter and shall include the following: Time intervals, data and magnitude of excess NO_x emissions, nature and the cause of excess (if known), corrective actions taken and preventive measures adopted; Averaging period used for data reporting corresponding to the averaging period specified in the emission test period used to determine compliance with an emission standard; Applicable 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; A negative declaration when no excess emissions occurred. [District Rule 1080 and 40 CFR 60.334(j)(5)] Federally Enforceable Through Title V Permit
39. Monitor downtime for NO_x shall be any unit operating hour in which sufficient data are not obtained to validate the hour for either NO_x concentration or diluent O₂ (or both). [40 CFR 60.334(j)(iii)(B)] Federally Enforceable Through Title V Permit
40. If the gas turbine system is not fired on PUC-regulated or FERC-regulated natural gas, then a fuel sample shall be collected during the source test to determine sulfur content of the fuel combusted in the turbine. The fuel sample shall be analyzed for the total sulfur content using ASTM D1072; D3246; D4084; D4468; D6228; or D6667; or double GC for H₂S and mercaptans. The applicable ranges of some ASTM methods are not adequate to measure the levels of sulfur in some fuel gases. Dilution of samples before analysis (with verification of dilution ratio) may be used after getting a prior approval from the District. [40 CFR 60.334(b)(10)] Federally Enforceable Through Title V Permit

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41. Should the applicant decide to conduct performance evaluation of CEMS with the initial performance test, a minimum of 9 reference method runs, with a minimum time per run of 21 minutes, at a single load level, between 90 and 100 percent of peak (or the highest physically achievable) load shall be performed. The test data obtained during these run can be used to demonstrate compliance with the applicable NOx emission limit and to provide reference method data for the RATA of the CEMS. The requirement to test at three additional load levels is waived under this option. [40 CFR 60.335(b)(6)] Federally Enforceable Through Title V Permit
42. A totalizing mass or volumetric fuel flow computer shall be utilized and maintained to calculate the amount of natural gas combusted based on measured flow meter parameters (fuel pressure and temperature) and gas composition. [District Rule 4703] Federally Enforceable Through Title V Permit
43. Except during black start, start-up shall not exceed 2.0 hours per event. [District Rule 4703] Federally Enforceable Through Title V Permit
44. Shutdown shall not exceed 2.0 hours per event. [District Rule 4703] Federally Enforceable Through Title V Permit
45. The emission control systems shall be in operation and emissions shall be minimized insofar as technologically feasible during startup (black start) and shutdown. [District Rule 4703] Federally Enforceable Through Title V Permit
46. Start-up is defined as the period of time during which a unit is brought from a shutdown status to its operating temperature and pressure, including the time required by the unit's emission control system to reach full operation. [District Rule 4703] Federally Enforceable Through Title V Permit
47. Shutdown is defined as the period of time during which a unit is taken from an operational to a non-operational status by allowing it to cool down from its operating temperature to ambient temperature as the fuel supply to the unit is completely turned off. [District Rule 4703] Federally Enforceable Through Title V Permit
48. Reduced load period is defined as the time during which a gas turbine is operated at less than rated capacity in order to change the position of the exhaust gas diverter gate. Each reduced load period shall not exceed one hour. [District Rule 4703] Federally Enforceable Through Title V Permit
49. A black start event is defined as the startup of a unit while the cogen plant is electrically separated from the utility grid. A black start shall not exceed 4.0 hours per event. [District Rules 2201 and 4703] Federally Enforceable Through Title V Permit
50. The owner or operator shall submit to the District information correlating the NOx control system operating parameters to the associated measured NOx output. The information must be sufficient to allow the District to determine compliance with the NOx emission limits of this permit when the CEMS is not operating properly. [District Rule 4703] Federally Enforceable Through Title V Permit
51. The owner or operator shall maintain a stationary gas turbine system operating log that includes, on a daily basis, the actual local startup and stop time, length and reason for reduced load periods, total hours of operation, the type and quantity of fuel used, duration of each start-up (or black start) and each shutdown time period. [District Rule 4703] Federally Enforceable Through Title V Permit
52. The owner or operator shall maintain all records of required monitoring data and support information for a period of five years from the date of data entry and shall make such records available to the District upon request. [District Rules 2201 and 4703] Federally Enforceable Through Title V Permit
53. NOx emissions shall not exceed 150 ppmvd @ 15% O2 (1-hour average), excluding startup (black start), shutdown and reduced load periods. [40 CFR 60.332(a)(1) & 60.332(a)(2)] Federally Enforceable Through Title V Permit
54. Compliance with permit conditions in the Title V permit shall be deemed compliance with the following subsumed requirements: SJVUAPCD Rule 4703, 6.2.2; 40 CFR 60.332(a) and (b); 60.333(a) and (b); 60.334 (a), (b), and (c)(1); 60.335(a), (b), (c), and (e). A permit shield is granted from these requirements. [District Rule 2520, 13.2] Federally Enforceable Through Title V Permit
55. Compliance with permit conditions in the Title V permit shall be deemed compliance with the following subsumed requirements: Kern County Rule 407; 40 CFR 60.332(c), (d); ~~60.334(b)~~, and (c)(2); 60.335(d). A permit shield is granted from these requirements. [District Rule 2520, 13.2] Federally Enforceable Through Title V Permit

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Appendix II
Current Permits to Operate

San Joaquin Valley Air Pollution Control District

PERMIT UNIT: S-1129-47-11

EXPIRATION DATE: 02/28/2007

SECTION: 18 **TOWNSHIP:** 30S **RANGE:** 22E

EQUIPMENT DESCRIPTION:

3.5 MW GAS TURBINE ENGINE COGENERATION UNIT #1 - MCKITTRICK

PERMIT UNIT REQUIREMENTS

1. Units shall be fired exclusively on PUC-quality natural gas which has a sulfur content of less than or equal to 0.017% by weight. [40 CFR 60.333(a) & (b);60.332(a); Kern County Rule 407] Federally Enforceable Through Title V Permit
2. Operator shall not discharge into the atmosphere combustion contaminants (PM) exceeding in concentration at the point of discharge, 0.1 gr/dscf . [District Rule 4201; Kern County Rule 404] Federally Enforceable Through Title V Permit
3. Operator shall be required to conform to the compliance testing procedures described in District Rule 1081. [District Rule 1081; Kern County Rule 108.1] Federally Enforceable Through Title V Permit
4. If the turbine is not fired on PUC-regulated natural gas, then the sulfur content of the natural gas being fired in the turbine shall be determined using ASTM method D 1072, D 3031, D 4084, D 3246 or Double GC for H₂S and Mercaptans. [40 CFR 60.335(d)] Federally Enforceable Through Title V Permit
5. If the turbine is not fired on PUC-regulated natural gas, the sulfur content of each fuel source shall be tested weekly except that if compliance with the fuel sulfur content limit has been demonstrated for 8 consecutive weeks for a fuel source, then the testing frequency shall be quarterly. If a test shows noncompliance with the sulfur content requirement, the source must return to weekly testing until eight consecutive weeks show compliance. [40 CFR 60.334(b)(2)] Federally Enforceable Through Title V Permit
6. HHV and LHV of the fuel shall be determined using ASTM D3588, ASTM 1826, or ASTM 1945. [40 CFR 60.335(b) and District Rule 4703, 6.4.5] Federally Enforceable Through Title V Permit
7. Nitrogen oxides (NO_x) concentrations shall be determined using EPA Method 7E or 20, and oxygen (O₂) concentrations shall be determined using EPA Method 3, 3A, or 20. [40 CFR 60.335(b) and District Rule 4703, 6.4] Federally Enforceable Through Title V Permit
8. The operator shall provide source test information annually regarding the exhaust gas NO_x concentration corrected to 15% O₂ (dry). [40 CFR 60.332(a), (b) and District Rule 4703, 5.1] Federally Enforceable Through Title V Permit
9. Unit shall demonstrate compliance annually with NO_x and CO emissions limits with the duct burner in operation and not in operation. An annual demonstration of compliance with the duct burner in operation is not required in any year in which the duct burner is not operated at all in the preceding 12 months, in such case, the unit shall be compliance source tested within 60 days of resumption of operation of the duct burner. An annual demonstration of compliance with the duct burner not in operation is not required in any year in which the duct burner operated continuously in conjunction with the turbine in the preceding 12 months, in such case, the unit shall be compliance source tested within 60 days of shutdown of operation of the duct burner. [40 CFR 60.335(b) and District Rule 4703, 6.3.2] Federally Enforceable Through Title V Permit
10. If the turbine is fired on PUC-regulated natural gas, then the operator shall maintain a log describing the source of natural gas and the quantity used. [District Rule 2520, 9.3.2] Federally Enforceable Through Title V Permit

PERMIT UNIT REQUIREMENTS CONTINUE ON NEXT PAGE

These terms and conditions are part of the Facility-wide Permit to Operate.

11. The operator of a stationary gas turbine system shall maintain all records of required monitoring data and support information for inspection at any time for a period of five years. [District Rule 2520, 9.4.2] Federally Enforceable Through Title V Permit
12. Operator shall maintain a stationary gas turbine operating log that includes, on a daily basis, the actual local start-up and stop time, length and reason for reduced load periods, total hours of operation, source(s) of and quantity of fuel used, fuel sulfur content and fuel nitrogen content. [40 CFR 60.332(a),(b); District Rules 2520, 9.3.2 and 4703, 6.2.4] Federally Enforceable Through Title V Permit
13. The following types of units are not affected units subject to the requirements of the Acid Rain Program: 1) A simple combustion turbine that commenced operation before November 15, 1990, 2) Any unit that, during 1985, did not serve a generator that produced electricity for sale and that did not, as of November 15, 1990, and does not currently, serve a generator that produces electricity for sale, 3) A cogeneration facility which for a unit that commenced construction prior to November 15, 1990, was constructed for the purpose of supplying equal to or less than one-third its potential electrical output capacity or equal to or less than 219,000 Mwe-hrs actual electric output on an annual basis to any utility power distribution system for sale. Therefore, the requirements of 40 CFR 72.6 do not apply to this source. A permit shield is granted from this requirement. [District Rule 2520, 13.2] Federally Enforceable Through Title V Permit
14. Compliance with permit conditions in the Title V permit shall be deemed in compliance with the following applicable requirements: SJVUAPCD Rule 1081, 4201, 3.1; Rules 406 (Fresno), 407 (Kings, San Joaquin, Stanislaus, Tulare, Merced, and Kern), and 404(Madera); 40 CFR 60.332(c), (d); 60.334 (b), and (c)(2); 60.335(d). A permit shield is granted from these requirements. [District Rule 2520, 13.2] Federally Enforceable Through Title V Permit
15. Compliance with permit conditions in the Title V permit shall be deemed compliance with the following subsumed requirements: SJVUAPCD Rule 4703, 6.2.2; Rules 108 (Kings), 108.1 (Fresno, Merced, San Joaquin, Tulare, Kern and Stanislaus), and 110 (Madera); Rules 402 (Madera) and 404 (Fresno, Kern, Kings, San Joaquin, Merced, Stanislaus, Tulare); 40 CFR 60.332 (a) and (b); 60.333(a) and (b); 60.334 (a), (b), and (c)(1); 60.335 (a), (b), (c), and (e). A permit shield is granted from these requirements. [District Rule 2520, 13.2] Federally Enforceable Through Title V Permit
16. Compliance with the permit conditions in the Title V permit shall be deemed compliance with the following applicable requirements: SJVUAPCD Rule 4703, sections 5.0, 5.1.1, 6.2.1, 6.2.4, 6.3, 6.4.1, 6.4.3, 6.4.5, 6.4.6. A permit shield is granted from these requirements. [District Rule 2520, 13.2] Federally Enforceable Through Title V Permit
17. Permittee shall install, operate and maintain in calibration a predictive emissions monitoring system which continuously measures and records the water-to-fuel ratio and which correlates the water-to-fuel ratio with the NOx concentration in the exhaust by using the method described in 40 CFR 60.335(c). [Rule 4703 and 40 CFR 60.334] Federally Enforceable Through Title V Permit
18. Permittee shall submit to the APCO the information correlating the control system operating parameters to the associated measured NOx output. [District Rule 4703, 6.2.5] Federally Enforceable Through Title V Permit
19. Permittee shall install, operate and maintain in calibration a system which continuously measures and records elapsed time of turbine operation. [40 CFR 60.334 and District Rule 4703, 6.2.1] Federally Enforceable Through Title V Permit
20. Permittee shall submit an excess emissions and monitoring systems performance report (excess emissions are defined in applicable subparts) and/or a summary report form to the APCO semiannually, except when more frequent reporting is specifically required by an applicable subpart. All reports shall be postmarked by the 30th day of each calendar half (or quarter, as appropriate). [40 CFR 60.7(c)] Federally Enforceable Through Title V Permit
21. Any one-hour period during which the average water-to-fuel ratio, as measured by the continuous monitoring system, falls below the water-to-fuel ratio determined to demonstrate NSPS NOx compliance shall be reported to the APCO. Each report shall include the average water-to-fuel ratio, average fuel consumption, ambient conditions, turbine gas load and nitrogen content of the fuel during the period of excess emissions. [40 CFR 60.334(c)] Federally Enforceable Through Title V Permit

PERMIT UNIT REQUIREMENTS CONTINUE ON NEXT PAGE

These terms and conditions are part of the Facility-wide Permit to Operate.

22. Cogeneration unit includes 48.7 MMBtu/hr (nominal rating) Allison, model 501-KB-5, gas fired turbine engine with either pilotless fuel nozzles or conventional fuel nozzles and 20.0 MMBtu/hr (nominal rating) gas fired Forney duct burner. [District NSR Rule] Federally Enforceable Through Title V Permit
23. Cogeneration unit includes Ideal synchronous electrical generator, Struthers-Wells unfired 22.5 MMBtu/hr steam generator, and an inlet air evaporative cooler. [District NSR Rule] Federally Enforceable Through Title V Permit
24. Turbine lube oil tank shall vent only through CECO Model #STTOR-10 fiber bed filter system. [District NSR Rule] Federally Enforceable Through Title V Permit
25. Fuel gas sulfur content shall not exceed 14 ppmv as hydrogen sulfide (H₂S). [District NSR Rule] Federally Enforceable Through Title V Permit
26. Permittee shall notify the District by fax or in writing prior to or within 4 hours of any turbine nozzle replacement, except for identical replacement. [District NSR Rule] Federally Enforceable Through Title V Permit
27. Except during periods of startup/shutdown, emission rates (3 hr average) shall not exceed: PM₁₀: 0.61 lb/hr; SO_x (as SO₂): 0.16 lb/hr; NO_x (as NO₂): 30 ppmvd @ 15% O₂; VOC: 1.65 lb/hr; and CO: 29 ppmvd @ 15% O₂. [District NSR Rule] Federally Enforceable Through Title V Permit
28. NO_x (as NO₂) and SO_x (as SO₂) emission rates (1 hr average) shall not exceed NSPS standard of 150 ppmv-dry @ 15% O₂, and 150 ppmv-dry @ 15% O₂, respectively. [District Rule 2520, 9.3.2; 40 CFR 60.332(c) and 40 CFR 60.333(a)] Federally Enforceable Through Title V Permit
29. Emissions shall not exceed the following: PM₁₀: 14.6 lb/day; SO_x (as SO₂): 3.8 lb/day; NO_x (as NO₂): 182.4 lb/day; VOC: 39.6 lb/day; and CO: 107.8 lb/day. [District NSR Rule] Federally Enforceable Through Title V Permit
30. During days of gas turbine startup/shutdown, permittee shall maintain accurate daily records of natural gas consumption in gas turbine for normal operation and startup/shutdown periods. [District NSR Rule] Federally Enforceable Through Title V Permit
31. Generator gearbox lube oil tank shall vent only through CECO Model #STTOR-10 fiber bed filter system. [District NSR Rule] Federally Enforceable Through Title V Permit
32. Gas turbine engine shall be equipped with continuously recording fuel gas flow rate monitor. [District NSR Rule] Federally Enforceable Through Title V Permit
33. Gas turbine engine shall be equipped with operational water injection system for NO_x control. [District NSR Rule] Federally Enforceable Through Title V Permit
34. Gas turbine engine shall be equipped with continuously recording water injection rate monitor accurate to within 5%. [District NSR Rule] Federally Enforceable Through Title V Permit
35. Waste heat recovery steam generator exhaust shall be equipped with permanent provisions to allow collection of gas samples consistent with EPA methods. [District NSR Rule] Federally Enforceable Through Title V Permit
36. Gas turbine shall be fired exclusively with PUC quality natural gas or equivalent. [District NSR Rule] Federally Enforceable Through Title V Permit
37. Gas turbine engine water injection rate shall be maintained at a water to fuel ratio no less than 0.48/1.0 by weight while operating with pilotless fuel nozzles and no less than 0.8/1.0 by weight while operating with conventional fuel nozzles. [District NSR Rule] Federally Enforceable Through Title V Permit
38. Maximum emission rate of volatile organic compounds (VOC's) from turbine lube oil vent shall not exceed 0.02 lb/hr. [District NSR Rule] Federally Enforceable Through Title V Permit
39. Compliance testing of lube oil vent and gearbox vent shall be required if monthly visible emissions checks from either vent exceeds 5% opacity or equivalent Ringelmann 1/4. If visible emissions are observed, corrective action shall be taken to eliminate visible emissions. If visible emissions cannot be corrected within 24 hours, a visible emissions test using EPA Method 9 shall be conducted. [District Rules 2520, 9.3.2 and NSR] Federally Enforceable Through Title V Permit

PERMIT UNIT REQUIREMENTS CONTINUE ON NEXT PAGE
These terms and conditions are part of the Facility-wide Permit to Operate.

40. Thermal stabilization period shall be defined as the start-up or shutdown time necessary to bring the heat recovery steam generator to proper temperature, not exceeding two hours. [District NSR Rule] Federally Enforceable Through Title V Permit
41. Startup and shutdown of gas turbine engine, as defined in 40 CFR Subpart A 60.2, shall not exceed a time period of two hours and two hours, respectively, per occurrence. [40 CFR Subpart A 60.2, District NSR Rule] Federally Enforceable Through Title V Permit
42. Permittee shall keep accurate records of fuel sulfur content, and such records shall be made available for District inspection for five years. [40 CFR 60.334(b)(2), District Rule 2520, 9.3.2] Federally Enforceable Through Title V Permit
43. Annual compliance with GTE/duct burner NOx and CO emission limits (pursuant to Rule 4703 (10/16/97)) and fuel sulfur limit shall be demonstrated by District witnessed or authorized sample collection by independent laboratory. Test results shall be submitted within 60 days. [District NSR Rule and Rule 4703] Federally Enforceable Through Title V Permit
44. The following test methods shall be used: CO (ppmv) - EPA Method 10 or 10B. [District Rules 2520, 9.3.2 and 4703] Federally Enforceable Through Title V Permit

These terms and conditions are part of the Facility-wide Permit to Operate.

San Joaquin Valley Air Pollution Control District

PERMIT UNIT: S-1129-48-11

EXPIRATION DATE: 02/28/2007

SECTION: 18 **TOWNSHIP:** 30S **RANGE:** 22E

EQUIPMENT DESCRIPTION:

3.5 MW GAS TURBINE ENGINE COGENERATION UNIT #2 - MCKITTRICK

PERMIT UNIT REQUIREMENTS

1. Units shall be fired exclusively on PUC-quality natural gas which has a sulfur content of less than or equal to 0.017% by weight. [40 CFR 60.333(a) & (b);60.332(a); Kern County Rule 407] Federally Enforceable Through Title V Permit
2. Operator shall not discharge into the atmosphere combustion contaminants (PM) exceeding in concentration at the point of discharge, 0.1 gr/dscf . [District Rule 4201; Kern County Rule 404] Federally Enforceable Through Title V Permit
3. Operator shall be required to conform to the compliance testing procedures described in District Rule 1081. [District Rule 1081; Kern County Rule 108.1] Federally Enforceable Through Title V Permit
4. If the turbine is not fired on PUC-regulated natural gas, then the sulfur content of the natural gas being fired in the turbine shall be determined using ASTM method D 1072, D 3031, D 4084, D 3246 or Double GC for H2S and Mercaptans. [40 CFR 60.335(d)] Federally Enforceable Through Title V Permit
5. If the turbine is not fired on PUC-regulated natural gas, the sulfur content of each fuel source shall be tested weekly except that if compliance with the fuel sulfur content limit has been demonstrated for 8 consecutive weeks for a fuel source, then the testing frequency shall be quarterly. If a test shows noncompliance with the sulfur content requirement, the source must return to weekly testing until eight consecutive weeks show compliance. [40 CFR 60.334(b)(2)] Federally Enforceable Through Title V Permit
6. HHV and LHV of the fuel shall be determined using ASTM D3588, ASTM 1826, or ASTM 1945. [40 CFR 60.335(b) and District Rule 4703, 6.4.5] Federally Enforceable Through Title V Permit
7. Nitrogen oxides (NOx) concentrations shall be determined using EPA Method 7E or 20, and oxygen (O2) concentrations shall be determined using EPA Method 3, 3A, or 20. [40 CFR 60.335(b) and District Rule 4703, 6.4] Federally Enforceable Through Title V Permit
8. The operator shall provide source test information annually regarding the exhaust gas NOx concentration corrected to 15% O2 (dry). [40 CFR 60.332(a), (b) and District Rule 4703, 5.1] Federally Enforceable Through Title V Permit
9. Unit shall demonstrate compliance annually with NOx and CO emissions limits with the duct burner in operation and not in operation. An annual demonstration of compliance with the duct burner in operation is not required in any year in which the duct burner is not operated at all in the preceding 12 months, in such case, the unit shall be compliance source tested within 60 days of resumption of operation of the duct burner. An annual demonstration of compliance with the duct burner not in operation is not required in any year in which the duct burner operated continuously in conjunction with the turbine in the preceding 12 months, in such case, the unit shall be compliance source tested within 60 days of shutdown of operation of the duct burner. [40 CFR 60.335(b) and District Rule 4703, 6.3.2] Federally Enforceable Through Title V Permit
10. If the turbine is fired on PUC-regulated natural gas, then the operator shall maintain a log describing the source of natural gas and the quantity used. [District Rule 2520, 9.3.2] Federally Enforceable Through Title V Permit

PERMIT UNIT REQUIREMENTS CONTINUE ON NEXT PAGE

These terms and conditions are part of the Facility-wide Permit to Operate.

11. The operator of a stationary gas turbine system shall maintain all records of required monitoring data and support information for inspection at any time for a period of five years. [District Rule 2520, 9.4.2] Federally Enforceable Through Title V Permit
12. Operator shall maintain a stationary gas turbine operating log that includes, on a daily basis, the actual local start-up and stop time, length and reason for reduced load periods, total hours of operation, source(s) of and quantity of fuel used, fuel sulfur content and fuel nitrogen content. [40 CFR 60.332(a),(b); District Rules 2520, 9.3.2 and 4703, 6.2.4] Federally Enforceable Through Title V Permit
13. The following types of units are not affected units subject to the requirements of the Acid Rain Program: 1) A simple combustion turbine that commenced operation before November 15, 1990, 2) Any unit that, during 1985, did not serve a generator that produced electricity for sale and that did not, as of November 15, 1990, and does not currently, serve a generator that produces electricity for sale, 3) A cogeneration facility which for a unit that commenced construction prior to November 15, 1990, was constructed for the purpose of supplying equal to or less than one-third its potential electrical output capacity or equal to or less than 219,000 Mwe-hrs actual electric output on an annual basis to any utility power distribution system for sale. Therefore, the requirements of 40 CFR 72.6 do not apply to this source. A permit shield is granted from this requirement. [District Rule 2520, 13.2] Federally Enforceable Through Title V Permit
14. Compliance with permit conditions in the Title V permit shall be deemed in compliance with the following applicable requirements: SJVUAPCD Rule 1081, 4201, 3.1; Rules 406 (Fresno), 407 (Kings, San Joaquin, Stanislaus, Tulare, Merced, and Kern), and 404(Madera); 40 CFR 60.332(c), (d); 60.334 (b), and (c)(2); 60.335(d). A permit shield is granted from these requirements. [District Rule 2520, 13.2] Federally Enforceable Through Title V Permit
15. Compliance with permit conditions in the Title V permit shall be deemed compliance with the following subsumed requirements: SJVUAPCD Rule 4703, 6.2.2; Rules 108 (Kings), 108.1 (Fresno, Merced, San Joaquin, Tulare, Kern and Stanislaus), and 110 (Madera); Rules 402 (Madera) and 404 (Fresno, Kern, Kings, San Joaquin, Merced, Stanislaus, Tulare); 40 CFR 60.332 (a) and (b); 60.333(a) and (b); 60.334 (a), (b), and (c)(1); 60.335 (a), (b), (c), and (e). A permit shield is granted from these requirements. [District Rule 2520, 13.2] Federally Enforceable Through Title V Permit
16. Compliance with the permit conditions in the Title V permit shall be deemed compliance with the following applicable requirements: SJVUAPCD Rule 4703, sections 5.0, 5.1.1, 6.2.1, 6.2.4, 6.3, 6.4.1, 6.4.3, 6.4.5, 6.4.6. A permit shield is granted from these requirements. [District Rule 2520, 13.2] Federally Enforceable Through Title V Permit
17. Permittee shall install, operate and maintain in calibration a predictive emissions monitoring system which continuously measures and records the water-to-fuel ratio and which correlates the water-to-fuel ratio with the NOx concentration in the exhaust by using the method described in 40 CFR 60.335(c). [Rule 4703 and 40 CFR 60.334] Federally Enforceable Through Title V Permit
18. Permittee shall submit to the APCO the information correlating the control system operating parameters to the associated measured NOx output. [District Rule 4703, 6.2.5] Federally Enforceable Through Title V Permit
19. Permittee shall install, operate and maintain in calibration a system which continuously measures and records elapsed time of turbine operation. [40 CFR 60.334 and District Rule 4703, 6.2.1] Federally Enforceable Through Title V Permit
20. Permittee shall submit an excess emissions and monitoring systems performance report (excess emissions are defined in applicable subparts) and/or a summary report form to the APCO semiannually, except when more frequent reporting is specifically required by an applicable subpart. All reports shall be postmarked by the 30th day of each calendar half (or quarter, as appropriate). [40 CFR 60.7(c)] Federally Enforceable Through Title V Permit
21. Any one-hour period during which the average water-to-fuel ratio, as measured by the continuous monitoring system, falls below the water-to-fuel ratio determined to demonstrate NSPS NOx compliance shall be reported to the APCO. Each report shall include the average water-to-fuel ratio, average fuel consumption, ambient conditions, turbine gas load and nitrogen content of the fuel during the period of excess emissions. [40 CFR 60.334(c)] Federally Enforceable Through Title V Permit

PERMIT UNIT REQUIREMENTS CONTINUE ON NEXT PAGE
These terms and conditions are part of the Facility-wide Permit to Operate.

22. Cogeneration unit includes 48.7 MMBtu/hr Allison (nominal rating), model 501-KB-5, gas fired turbine engine with either pilotless fuel nozzles or conventional fuel nozzles and 20.0 MMBtu/hr (nominal rating) gas fired Forney duct burner. [District NSR Rule] Federally Enforceable Through Title V Permit
23. Cogeneration unit includes Ideal synchronous electrical generator, Struthers-Wells unfired 22.5 MMBtu/hr steam generator, and an inlet air evaporative cooler. [District NSR Rule] Federally Enforceable Through Title V Permit
24. Turbine lube oil tank shall vent only through CECO Model #STTOR-10 fiber bed filter system. [District NSR Rule] Federally Enforceable Through Title V Permit
25. Fuel gas sulfur content shall not exceed 14 ppmv as hydrogen sulfide (H₂S). [District NSR Rule] Federally Enforceable Through Title V Permit
26. Permittee shall notify the District by fax or in writing prior to or within 4 hours of any turbine nozzle replacement, except for identical replacement. [District NSR Rule] Federally Enforceable Through Title V Permit
27. Except during periods of startup/shutdown, emission rates (3 hr average) shall not exceed: PM₁₀: 0.61 lb/hr; SO_x (as SO₂): 0.16 lb/hr; NO_x (as NO₂): 30 ppmvd @ 15% O₂; VOC: 1.65 lb/hr; and CO: 29 ppmvd @ 15% O₂. [District NSR Rule] Federally Enforceable Through Title V Permit
28. NO_x (as NO₂) and SO_x (as SO₂) emission rates (1 hr average) shall not exceed NSPS standard of 150 ppmv-dry @ 15% O₂, and 150 ppmv-dry @ 15% O₂, respectively. [District Rule 2520, 9.3.2; 40 CFR 60.332(c) and 40 CFR 60.333(a)] Federally Enforceable Through Title V Permit
29. Emissions shall not exceed the following: PM₁₀: 14.6 lb/day; SO_x (as SO₂): 3.8 lb/day; NO_x (as NO₂): 182.4 lb/day; VOC: 39.6 lb/day; and CO: 107.8 lb/day. [District NSR Rule] Federally Enforceable Through Title V Permit
30. During days of gas turbine startup/shutdown, permittee shall maintain accurate daily records of natural gas consumption in gas turbine for normal operation and startup/shutdown periods. [District NSR Rule] Federally Enforceable Through Title V Permit
31. Generator gearbox lube oil tank shall vent only through CECO Model #STTOR-10 fiber bed filter system. [District NSR Rule] Federally Enforceable Through Title V Permit
32. Gas turbine engine shall be equipped with continuously recording fuel gas flow rate monitor. [District NSR Rule] Federally Enforceable Through Title V Permit
33. Gas turbine engine shall be equipped with operational water injection system for NO_x control. [District NSR Rule] Federally Enforceable Through Title V Permit
34. Gas turbine engine shall be equipped with continuously recording water injection rate monitor accurate to within 5%. [District NSR Rule] Federally Enforceable Through Title V Permit
35. Waste heat recovery steam generator exhaust shall be equipped with permanent provisions to allow collection of gas samples consistent with EPA methods. [District NSR Rule] Federally Enforceable Through Title V Permit
36. Gas turbine shall be fired exclusively with PUC quality natural gas or equivalent. [District NSR Rule] Federally Enforceable Through Title V Permit
37. Gas turbine engine water injection rate shall be maintained at a water to fuel ratio no less than 0.48/1.0 by weight while operating with pilotless fuel nozzles and no less than 0.8/1.0 by weight while operating with conventional fuel nozzles. [District NSR Rule] Federally Enforceable Through Title V Permit
38. Maximum emission rate of volatile organic compounds (VOC's) from turbine lube oil vent shall not exceed 0.02 lb/hr. [District NSR Rule] Federally Enforceable Through Title V Permit
39. Compliance testing of lube oil vent and gearbox vent shall be required if monthly visible emissions checks from either vent exceeds 5% opacity or equivalent Ringelmann 1/4. If visible emissions are observed, corrective action shall be taken to eliminate visible emissions. If visible emissions cannot be corrected within 24 hours, a visible emissions test using EPA Method 9 shall be conducted. [District Rules 2520, 9.3.2 and NSR] Federally Enforceable Through Title V Permit

PERMIT UNIT REQUIREMENTS CONTINUE ON NEXT PAGE

These terms and conditions are part of the Facility-wide Permit to Operate.

40. Thermal stabilization period shall be defined as the start-up or shutdown time necessary to bring the heat recovery steam generator to proper temperature, not exceeding two hours. [District NSR Rule] Federally Enforceable Through Title V Permit
41. Startup and shutdown of gas turbine engine, as defined in 40 CFR Subpart A 60.2, shall not exceed a time period of two hours and two hours, respectively, per occurrence. [40 CFR Subpart A 60.2, District NSR Rule] Federally Enforceable Through Title V Permit
42. Permittee shall keep accurate records of fuel sulfur content, and such records shall be made available for District inspection for five years. [40 CFR 60.334(b)(2), District Rule 2520, 9.3.2] Federally Enforceable Through Title V Permit
43. Annual compliance with GTE/duct burner NOx and CO emission limits (pursuant to Rule 4703 (10/16/97)) and fuel sulfur limit shall be demonstrated by District witnessed or authorized sample collection by independent laboratory. Test results shall be submitted within 60 days. [District NSR Rule and Rule 4703] Federally Enforceable Through Title V Permit
44. The following test methods shall be used: CO (ppmv) - EPA Method 10 or 10B. [District Rules 2520, 9.3.2 and 4703] Federally Enforceable Through Title V Permit

These terms and conditions are part of the Facility-wide Permit to Operate.

San Joaquin Valley Air Pollution Control District

PERMIT UNIT: S-1129-49-11

EXPIRATION DATE: 02/28/2007

SECTION: 18 **TOWNSHIP:** 30S **RANGE:** 22E

EQUIPMENT DESCRIPTION:

3.5 MW GAS TURBINE ENGINE COGENERATION UNIT #3 - MCKITTRICK

PERMIT UNIT REQUIREMENTS

1. Units shall be fired exclusively on PUC-quality natural gas which has a sulfur content of less than or equal to 0.017% by weight. [40 CFR 60.333(a) & (b);60.332(a); Kern County Rule 407] Federally Enforceable Through Title V Permit
2. Operator shall not discharge into the atmosphere combustion contaminants (PM) exceeding in concentration at the point of discharge, 0.1 gr/dscf . [District Rule 4201; Kern County Rule 404] Federally Enforceable Through Title V Permit
3. Operator shall be required to conform to the compliance testing procedures described in District Rule 1081. [District Rule 1081; Kern County Rule 108.1] Federally Enforceable Through Title V Permit
4. If the turbine is not fired on PUC-regulated natural gas, then the sulfur content of the natural gas being fired in the turbine shall be determined using ASTM method D 1072, D 3031, D 4084, D 3246 or Double GC for H2S and Mercaptans. [40 CFR 60.335(d)] Federally Enforceable Through Title V Permit
5. If the turbine is not fired on PUC-regulated natural gas, the sulfur content of each fuel source shall be tested weekly except that if compliance with the fuel sulfur content limit has been demonstrated for 8 consecutive weeks for a fuel source, then the testing frequency shall be quarterly. If a test shows noncompliance with the sulfur content requirement, the source must return to weekly testing until eight consecutive weeks show compliance. [40 CFR 60.334(b)(2)] Federally Enforceable Through Title V Permit
6. HHV and LHV of the fuel shall be determined using ASTM D3588, ASTM 1826, or ASTM 1945. [40 CFR 60.335(b) and District Rule 4703, 6.4.5] Federally Enforceable Through Title V Permit
7. Nitrogen oxides (NOx) concentrations shall be determined using EPA Method 7E or 20, and oxygen (O2) concentrations shall be determined using EPA Method 3, 3A, or 20. [40 CFR 60.335(b) and District Rule 4703, 6.4] Federally Enforceable Through Title V Permit
8. The operator shall provide source test information annually regarding the exhaust gas NOx concentration corrected to 15% O2 (dry). [40 CFR 60.332(a), (b) and District Rule 4703, 5.1] Federally Enforceable Through Title V Permit
9. Unit shall demonstrate compliance annually with NOx and CO emissions limits with the duct burner in operation and not in operation. An annual demonstration of compliance with the duct burner in operation is not required in any year in which the duct burner is not operated at all in the preceding 12 months, in such case, the unit shall be compliance source tested within 60 days of resumption of operation of the duct burner. An annual demonstration of compliance with the duct burner not in operation is not required in any year in which the duct burner operated continuously in conjunction with the turbine in the preceding 12 months, in such case, the unit shall be compliance source tested within 60 days of shutdown of operation of the duct burner. [40 CFR 60.335(b) and District Rule 4703, 6.3.2] Federally Enforceable Through Title V Permit
10. If the turbine is fired on PUC-regulated natural gas, then the operator shall maintain a log describing the source of natural gas and the quantity used. [District Rule 2520, 9.3.2] Federally Enforceable Through Title V Permit

PERMIT UNIT REQUIREMENTS CONTINUE ON NEXT PAGE

These terms and conditions are part of the Facility-wide Permit to Operate.

11. The operator of a stationary gas turbine system shall maintain all records of required monitoring data and support information for inspection at any time for a period of five years. [District Rule 2520, 9.4.2] Federally Enforceable Through Title V Permit
12. Operator shall maintain a stationary gas turbine operating log that includes, on a daily basis, the actual local start-up and stop time, length and reason for reduced load periods, total hours of operation, source(s) of and quantity of fuel used, fuel sulfur content and fuel nitrogen content. [40 CFR 60.332(a),(b); District Rules 2520, 9.3.2 and 4703, 6.2.4] Federally Enforceable Through Title V Permit
13. The following types of units are not affected units subject to the requirements of the Acid Rain Program: 1) A simple combustion turbine that commenced operation before November 15, 1990, 2) Any unit that, during 1985, did not serve a generator that produced electricity for sale and that did not, as of November 15, 1990, and does not currently, serve a generator that produces electricity for sale, 3) A cogeneration facility which for a unit that commenced construction prior to November 15, 1990, was constructed for the purpose of supplying equal to or less than one-third its potential electrical output capacity or equal to or less than 219,000 Mwe-hrs actual electric output on an annual basis to any utility power distribution system for sale. Therefore, the requirements of 40 CFR 72.6 do not apply to this source. A permit shield is granted from this requirement. [District Rule 2520, 13.2] Federally Enforceable Through Title V Permit
14. Compliance with permit conditions in the Title V permit shall be deemed in compliance with the following applicable requirements: SJVUAPCD Rule 1081, 4201, 3.1; Rules 406 (Fresno), 407 (Kings, San Joaquin, Stanislaus, Tulare, Merced, and Kern), and 404(Madera); 40 CFR 60.332(c), (d); 60.334 (b), and (c)(2); 60.335(d). A permit shield is granted from these requirements. [District Rule 2520, 13.2] Federally Enforceable Through Title V Permit
15. Compliance with permit conditions in the Title V permit shall be deemed compliance with the following subsumed requirements: SJVUAPCD Rule 4703, 6.2.2; Rules 108 (Kings), 108.1 (Fresno, Merced, San Joaquin, Tulare, Kern and Stanislaus), and 110 (Madera); Rules 402 (Madera) and 404 (Fresno, Kern, Kings, San Joaquin, Merced, Stanislaus, Tulare); 40 CFR 60.332 (a) and (b); 60.333(a) and (b); 60.334 (a), (b), and (c)(1); 60.335 (a), (b), (c), and (e). A permit shield is granted from these requirements. [District Rule 2520, 13.2] Federally Enforceable Through Title V Permit
16. Compliance with the permit conditions in the Title V permit shall be deemed compliance with the following applicable requirements: SJVUAPCD Rule 4703, sections 5.0, 5.1.1, 6.2.1, 6.2.4, 6.3, 6.4.1, 6.4.3, 6.4.5, 6.4.6. A permit shield is granted from these requirements. [District Rule 2520, 13.2] Federally Enforceable Through Title V Permit
17. Permittee shall install, operate and maintain in calibration a predictive emissions monitoring system which continuously measures and records the water-to-fuel ratio and which correlates the water-to-fuel ratio with the NOx concentration in the exhaust by using the method described in 40 CFR 60.335(c). [Rule 4703 and 40 CFR 60.334] Federally Enforceable Through Title V Permit
18. Permittee shall submit to the APCO the information correlating the control system operating parameters to the associated measured NOx output. [District Rule 4703, 6.2.5] Federally Enforceable Through Title V Permit
19. Permittee shall install, operate and maintain in calibration a system which continuously measures and records elapsed time of turbine operation. [40 CFR 60.334 and District Rule 4703, 6.2.1] Federally Enforceable Through Title V Permit
20. Permittee shall submit an excess emissions and monitoring systems performance report (excess emissions are defined in applicable subparts) and/or a summary report form to the APCO semiannually, except when more frequent reporting is specifically required by an applicable subpart. All reports shall be postmarked by the 30th day of each calendar half (or quarter, as appropriate). [40 CFR 60.7(c)] Federally Enforceable Through Title V Permit
21. Any one-hour period during which the average water-to-fuel ratio, as measured by the continuous monitoring system, falls below the water-to-fuel ratio determined to demonstrate NSPS NOx compliance shall be reported to the APCO. Each report shall include the average water-to-fuel ratio, average fuel consumption, ambient conditions, turbine gas load and nitrogen content of the fuel during the period of excess emissions. [40 CFR 60.334(c)] Federally Enforceable Through Title V Permit

PERMIT UNIT REQUIREMENTS CONTINUE ON NEXT PAGE

These terms and conditions are part of the Facility-wide Permit to Operate.

22. Cogeneration unit includes 48.7 MMBtu/hr (nominal rating) Allison, model 501-KB-5, gas fired turbine engine with either pilotless fuel nozzles or conventional fuel nozzles and 20.0 MMBtu/hr (nominal rating) gas fired Forney duct burner. [District NSR Rule] Federally Enforceable Through Title V Permit
23. Cogeneration unit includes Ideal synchronous electrical generator, Struthers-Wells unfired 22.5 MMBtu/hr steam generator, and an inlet air evaporative cooler. [District NSR Rule] Federally Enforceable Through Title V Permit
24. Turbine lube oil tank shall vent only through CECO Model #STTOR-10 fiber bed filter system. [District NSR Rule] Federally Enforceable Through Title V Permit
25. Fuel gas sulfur content shall not exceed 14 ppmv as hydrogen sulfide (H₂S). [District NSR Rule] Federally Enforceable Through Title V Permit
26. Permittee shall notify the District by fax or in writing prior to or within 4 hours of any turbine nozzle replacement, except for identical replacement. [District NSR Rule] Federally Enforceable Through Title V Permit
27. Except during periods of startup/shutdown, emission rates (3 hr average) shall not exceed: PM₁₀: 0.61 lb/hr; SO_x (as SO₂): 0.16 lb/hr; NO_x (as NO₂): 30 ppmvd @ 15% O₂; VOC: 1.65 lb/hr; and CO: 29 ppmvd @ 15% O₂. [District NSR Rule] Federally Enforceable Through Title V Permit
28. NO_x (as NO₂) and SO_x (as SO₂) emission rates (1 hr average) shall not exceed NSPS standard of 150 ppmv-dry @ 15% O₂, and 150 ppmv-dry @ 15% O₂, respectively. [District Rule 2520, 9.3.2; 40 CFR 60.332(c) and 40 CFR 60.333(a)] Federally Enforceable Through Title V Permit
29. Emissions shall not exceed the following: PM₁₀: 14.6 lb/day; SO_x (as SO₂): 3.8 lb/day; NO_x (as NO₂): 182.4 lb/day; VOC: 39.6 lb/day; and CO: 107.8 lb/day. [District NSR Rule] Federally Enforceable Through Title V Permit
30. During days of gas turbine startup/shutdown, permittee shall maintain accurate daily records of natural gas consumption in gas turbine for normal operation and startup/shutdown periods. [District NSR Rule] Federally Enforceable Through Title V Permit
31. Generator gearbox lube oil tank shall vent only through CECO Model #STTOR-10 fiber bed filter system. [District NSR Rule] Federally Enforceable Through Title V Permit
32. Gas turbine engine shall be equipped with continuously recording fuel gas flow rate monitor. [District NSR Rule] Federally Enforceable Through Title V Permit
33. Gas turbine engine shall be equipped with operational water injection system for NO_x control. [District NSR Rule] Federally Enforceable Through Title V Permit
34. Gas turbine engine shall be equipped with continuously recording water injection rate monitor accurate to within 5%. [District NSR Rule] Federally Enforceable Through Title V Permit
35. Waste heat recovery steam generator exhaust shall be equipped with permanent provisions to allow collection of gas samples consistent with EPA methods. [District NSR Rule] Federally Enforceable Through Title V Permit
36. Gas turbine shall be fired exclusively with PUC quality natural gas or equivalent. [District NSR Rule] Federally Enforceable Through Title V Permit
37. Gas turbine engine water injection rate shall be maintained at a water to fuel ratio no less than 0.48/1.0 by weight while operating with pilotless fuel nozzles and no less than 0.8/1.0 by weight while operating with conventional fuel nozzles. [District NSR Rule] Federally Enforceable Through Title V Permit
38. Maximum emission rate of volatile organic compounds (VOC's) from turbine lube oil vent shall not exceed 0.02 lb/hr. [District NSR Rule] Federally Enforceable Through Title V Permit
39. Compliance testing of lube oil vent and gearbox vent shall be required if monthly visible emissions checks from either vent exceeds 5% opacity or equivalent Ringelmann 1/4. If visible emissions are observed, corrective action shall be taken to eliminate visible emissions. If visible emissions cannot be corrected within 24 hours, a visible emissions test using EPA Method 9 shall be conducted. [District Rules 2520, 9.3.2 and NSR] Federally Enforceable Through Title V Permit

PERMIT UNIT REQUIREMENTS CONTINUE ON NEXT PAGE

These terms and conditions are part of the Facility-wide Permit to Operate.

40. Thermal stabilization period shall be defined as the start-up or shutdown time necessary to bring the heat recovery steam generator to proper temperature, not exceeding two hours. [District NSR Rule] Federally Enforceable Through Title V Permit
41. Startup and shutdown of gas turbine engine, as defined in 40 CFR Subpart A 60.2, shall not exceed a time period of two hours and two hours, respectively, per occurrence. [40 CFR Subpart A 60.2, District NSR Rule] Federally Enforceable Through Title V Permit
42. Permittee shall keep accurate records of fuel sulfur content, and such records shall be made available for District inspection for five years. [40 CFR 60.334(b)(2), District Rule 2520, 9.3.2] Federally Enforceable Through Title V Permit
43. Annual compliance with GTE/duct burner NO_x and CO emission limits (pursuant to Rule 4703 (10/16/97)) and fuel sulfur limit shall be demonstrated by District witnessed or authorized sample collection by independent laboratory. Test results shall be submitted within 60 days. [District NSR Rule and Rule 4703] Federally Enforceable Through Title V Permit
44. The following test methods shall be used: CO (ppmv) - EPA Method 10 or 10B. [District Rules 2520, 9.3.2 and 4703] Federally Enforceable Through Title V Permit

These terms and conditions are part of the Facility-wide Permit to Operate.

San Joaquin Valley Air Pollution Control District

PERMIT UNIT: S-1129-53-10

EXPIRATION DATE: 02/28/2007

SECTION: 34 **TOWNSHIP:** 30S **RANGE:** 22E

EQUIPMENT DESCRIPTION:

3.5 MW COMBINED CYCLE GAS TURBINE TOPPING CYCLE COGENERATION NORTH MIDWAY UNIT #7

PERMIT UNIT REQUIREMENTS

1. Units shall be fired exclusively on PUC-quality natural gas which has a sulfur content of less than or equal to 0.017% by weight. [40 CFR 60.333(a) & (b);60.332(a); Kern County Rule 407] Federally Enforceable Through Title V Permit
2. Gas turbine shall be fired exclusively with PUC-quality natural gas or equivalent with total sulfur content of less than or equal to 1.0 gr S/100 scf of gas. [District NSR Rule] Federally Enforceable Through Title V Permit
3. Operator shall not discharge into the atmosphere combustion contaminants (PM) exceeding in concentration at the point of discharge, 0.1 gr/dscf . [District Rule 4201; Kern County Rule 404] Federally Enforceable Through Title V Permit
4. If the turbine is not fired on PUC-regulated natural gas, then the sulfur content of the natural gas being fired in the turbine shall be determined using ASTM method D 1072, D 3031, D 4084, D 3246 or Double GC for H2S and Mercaptans. [40 CFR 60.335(d)] Federally Enforceable Through Title V Permit
5. HHV and LHV of the fuel shall be determined using ASTM D3588, ASTM 1826, or ASTM 1945. [40 CFR 60.335(b) and District Rule 4703, 6.4.5] Federally Enforceable Through Title V Permit
6. Nitrogen oxides (NOx) concentrations shall be determined using EPA Method 7E or 20, and oxygen (O2) concentrations shall be determined using EPA Method 3, 3A, or 20. [40 CFR 60.335(b) and District Rule 4703, 6.4] Federally Enforceable Through Title V Permit
7. The operator shall provide source test information annually regarding the exhaust gas NOx concentration corrected to 15% O2 (dry). [40 CFR 60.332(a), (b) and District Rule 4703, 5.1] Federally Enforceable Through Title V Permit
8. Carbon monoxide (CO) concentrations shall be determined using EPA Method 10 or 10B. [District Rule 4703] Federally Enforceable Through Title V Permit
9. If the turbine is fired on PUC-regulated natural gas, then the operator shall maintain a log describing the source of natural gas and the quantity used. [District Rule 2520, 9.3.2] Federally Enforceable Through Title V Permit
10. The operator of a stationary gas turbine system shall maintain all records of required monitoring data and support information for inspection at any time for a period of five years. [District Rule 2520, 9.4.2] Federally Enforceable Through Title V Permit
11. Operator shall maintain a stationary gas turbine operating log that includes, on a daily basis, the actual local start-up and stop time, length and reason for reduced load periods, total hours of operation, source(s) of and quantity of fuel used, fuel sulfur content and fuel nitrogen content. [40 CFR 60.332(a),(b); District Rules 2520, 9.3.2 and 4703, 6.2.4] Federally Enforceable Through Title V Permit

PERMIT UNIT REQUIREMENTS CONTINUE ON NEXT PAGE

These terms and conditions are part of the Facility-wide Permit to Operate.

12. Permittee shall install, operate and maintain in calibration a predictive emissions monitoring system which continuously measures and records the water-to-fuel ratio and which correlates the water-to-fuel ratio with the NO_x concentration in the exhaust by using the method described in 40 CFR 60.335(c). [Rule 4703 and 40 CFR 60.334] Federally Enforceable Through Title V Permit
13. Permittee shall submit to the APCO the information correlating the control system operating parameters to the associated measured NO_x output. [District Rule 4703, 6.2.5] Federally Enforceable Through Title V Permit
14. Permittee shall install, operate and maintain in calibration a system which continuously measures and records elapsed time of turbine operation. [District Rule 4703, 6.2.1] Federally Enforceable Through Title V Permit
15. Permittee shall submit an excess emissions and monitoring systems performance report (excess emissions are defined in applicable subparts) and/or a summary report form to the APCO semiannually, except when more frequent reporting is specifically required by an applicable subpart. All reports shall be postmarked by the 30th day of each calendar half (or quarter, as appropriate). [40 CFR 60.7(c)] Federally Enforceable Through Title V Permit
16. Any one-hour period during which the average water-to-fuel ratio, as measured by the continuous monitoring system, falls below the water-to-fuel ratio determined to demonstrate NSPS NO_x compliance shall be reported to the APCO. Each report shall include the average water-to-fuel ratio, average fuel consumption, ambient conditions, turbine gas load and nitrogen content of the fuel during the period of excess emissions. [40 CFR 60.334(c)] Federally Enforceable Through Title V Permit
17. All wells producing from strata steamed by this unit shall be connected to a District-approved emissions control system, have District-approved closed casing vents or be District-approved uncontrolled cyclic wells. [District Rule 4401, 5.0] Federally Enforceable Through Title V Permit
18. Cogeneration unit shall include 48.7 MMBtu/hr (nominal rating) Allison, model 501-KB-5, gas-fired turbine engine with pilotless fuel nozzles or conventional fuel nozzles, Ideal Synchronous electrical generator, Struthers-Wells unfired 22.5 MMBtu/hr steam generator and an inlet air evaporative cooler. [District NSR Rule] Federally Enforceable Through Title V Permit
19. Turbine lube oil tank shall vent only through CECO Model #STTOR-10 fiber bed filter system. [District NSR Rule] Federally Enforceable Through Title V Permit
20. Generator gearbox lube oil tank shall vent only through CECO Model #STTOR-10 fiber bed filter system. [District NSR Rule] Federally Enforceable Through Title V Permit
21. Permittee shall notify the District by fax or in writing prior to or within 4 hours of any turbine nozzle replacement, except for identical replacement. [District NSR Rule] Federally Enforceable Through Title V Permit
22. Gas turbine engine shall be equipped with continuously recording fuel gas flow rate monitor. [District NSR Rule] Federally Enforceable Through Title V Permit
23. Gas turbine engine shall be equipped with operational water injection system for NO_x control. [District NSR Rule] Federally Enforceable Through Title V Permit
24. Gas turbine engine shall be equipped with continuously recording water injection rate monitor accurate to within 5%. [District NSR Rule] Federally Enforceable Through Title V Permit
25. Waste heat recovery steam generator exhaust shall be equipped with permanent provisions to allow collection of gas samples consistent with EPA methods. [District NSR Rule] Federally Enforceable Through Title V Permit
26. Gas turbine engine water injection rate shall be maintained at a water to fuel ratio no less than 0.48/1.0 by weight while operating with pilotless fuel nozzles and no less than 0.8/1.0 by weight while operating with conventional fuel nozzles. [District NSR Rule] Federally Enforceable Through Title V Permit
27. Evaporative cooler shall use only fresh and filtered water. [District NSR Rule] Federally Enforceable Through Title V Permit
28. Fiber bed filter system shall be maintained and operated in accordance with the manufacturer's plans and specifications. [District NSR Rule] Federally Enforceable Through Title V Permit

PERMIT UNIT REQUIREMENTS CONTINUE ON NEXT PAGE

These terms and conditions are part of the Facility-wide Permit to Operate.

29. Maximum emission rate of volatile organic compounds (VOC's) from turbine lube oil vent shall not exceed 0.02 lb/hr. [District NSR Rule] Federally Enforceable Through Title V Permit
30. Except during periods of startup/shutdown, emission rates (3 hr average) shall not exceed: PM10: 0.61 lb/hr; SOx (as SO2): 0.16 lb/hr; NOx: 42 ppmvd @ 15% O2; VOC: 1.65 lb/hr; and CO: 41 ppmvd @ 15% O2. [District Rules 2201 and 4703] Federally Enforceable Through Title V Permit
31. Except during periods of startup/shutdown, NOx emission rate (3 hr average) shall not exceed 35 ppmvd NO2 @ 15% O2. [District Rule 4703]
32. Emissions shall not exceed the following: PM10: 14.6 lb/day; SOx (as SO2): 3.3 lb/day; NOx (as NO2): 153.0 lb/day; VOC: 39.6 lb/day; and CO: 107.8 lb/day. [District NSR Rule] Federally Enforceable Through Title V Permit
33. NOx and SOx emission rates (1 hr average) shall not exceed NSPS standard of 150 ppmv-dry @ 15% O2, and 150 ppmv-dry @ 15% O2, respectively. [District Rule 2520, 9.3.2; 40 CFR 60.332(c); 40CFR 60.333(a)] Federally Enforceable Through Title V Permit
34. During days of gas turbine startup/shutdown, permittee shall maintain accurate daily records of natural gas consumption in gas turbine for normal operation and startup/shutdown periods. [District NSR Rule] Federally Enforceable Through Title V Permit
35. Compliance testing of lube oil vent and gearbox vent shall be required if monthly visible emissions checks from either vent exceeds 5% opacity or equivalent Ringelmann 1/4. If visible emissions are observed, corrective action shall be taken to eliminate visible emissions. If visible emissions cannot be corrected within 24 hours, a visible emissions test using EPA Method 9 shall be conducted. [District Rules 2520, 9.3.2 and NSR] Federally Enforceable Through Title V Permit
36. Thermal stabilization period shall be defined as the start-up or shutdown time necessary to bring the heat recovery steam generator to proper temperature, not exceeding two hours. [District NSR Rule] Federally Enforceable Through Title V Permit
37. Startup and shutdown of gas turbine engine, as defined in 40 CFR Subpart A 60.2, shall not exceed a time period of two hours and two hours, respectively, per occurrence. [40 CFR Subpart A 60.2, District NSR Rule] Federally Enforceable Through Title V Permit
38. Permittee shall keep accurate records of fuel sulfur content, and such records shall be made available for District inspection for five years. [40 CFR 60.334(b)(2), District Rule 2520, 9.3.2] Federally Enforceable Through Title V Permit
39. Annual compliance with GTE NOx and CO emission limits (pursuant to Rule 4703 (10/16/97)) and fuel sulfur limit shall be demonstrated by District witnessed or authorized sample collection by independent laboratory. Test results shall be submitted within 60 days. [District NSR Rule and Rule 4703] Federally Enforceable Through Title V Permit
40. Operator shall be required to conform to the compliance testing procedures described in District Rule 1081. [District Rule 1081; Kern County Rule 108.1] Federally Enforceable Through Title V Permit
41. The following types of units are not affected units subject to the requirements of the Acid Rain Program: 1) A simple combustion turbine that commenced operation before November 15, 1990, 2) Any unit that, during 1985, did not serve a generator that produced electricity for sale and that did not, as of November 15, 1990, and does not currently, serve a generator that produces electricity for sale, 3) A cogeneration facility which for a unit that commenced construction prior to November 15, 1990, was constructed for the purpose of supplying equal to or less than one-third its potential electrical output capacity or equal to or less than 219,000 Mwe-hrs actual electric output on an annual basis to any utility power distribution system for sale. Therefore, the requirements of 40 CFR 72.6 do not apply to this source. A permit shield is granted from this requirement. [District Rule 2520, 13.2] Federally Enforceable Through Title V Permit
42. Compliance with permit conditions in the Title V permit shall be deemed in compliance with the following applicable requirements: SJVUAPCD Rule 1081, 4201, 3.1; Rules 406 (Fresno), 407 (Kings, San Joaquin, Stanislaus, Tulare, Merced, and Kern), and 404(Madera); 40 CFR 60.332(c), (d); 60.334 (b), and (c)(2); 60.335(d). A permit shield is granted from these requirements. [District Rule 2520, 13.2] Federally Enforceable Through Title V Permit

PERMIT UNIT REQUIREMENTS CONTINUE ON NEXT PAGE

These terms and conditions are part of the Facility-wide Permit to Operate.

43. Compliance with permit conditions in the Title V permit shall be deemed compliance with the following subsumed requirements: SJVUAPCD Rule 4703, 6.2.2; Rules 108 (Kings), 108.1 (Fresno, Merced, San Joaquin, Tulare, Kern and Stanislaus), and 110 (Madera); Rules 402 (Madera) and 404 (Fresno, Kern, Kings, San Joaquin, Merced, Stanislaus, Tulare); 40 CFR 60.332 (a) and (b); 60.333(a) and (b); 60.334 (a), (b), and (c)(1); 60.335 (a), (b), (c), and (e). A permit shield is granted from these requirements. [District Rule 2520, 13.2] Federally Enforceable Through Title V Permit
44. Compliance with the permit conditions in the Title V permit shall be deemed compliance with the following applicable requirements: SJVUAPCD Rule 4703, sections 5.0, 5.1.1, 6.2.1, 6.2.4, 6.3, 6.4.1, 6.4.3, 6.4.5, 6.4.6. A permit shield is granted from these requirements. [District Rule 2520, 13.2] Federally Enforceable Through Title V Permit

These terms and conditions are part of the Facility-wide Permit to Operate.

San Joaquin Valley Air Pollution Control District

PERMIT UNIT: S-1129-54-11

EXPIRATION DATE: 02/28/2007

SECTION: 34 **TOWNSHIP:** 30S **RANGE:** 22E

EQUIPMENT DESCRIPTION:

3.5 MW COMBINED CYCLE GAS TURBINE TOPPING CYCLE COGENERATION NORTH MIDWAY UNIT #8

PERMIT UNIT REQUIREMENTS

1. Units shall be fired exclusively on PUC-quality natural gas which has a sulfur content of less than or equal to 0.017% by weight. [40 CFR 60.333(a) & (b);60.332(a); Kern County Rule 407] Federally Enforceable Through Title V Permit
2. Gas turbine shall be fired exclusively with PUC-quality natural gas or equivalent with total sulfur content of less than or equal to 1.0 gr S/100 scf of gas. [District NSR Rule] Federally Enforceable Through Title V Permit
3. Operator shall not discharge into the atmosphere combustion contaminants (PM) exceeding in concentration at the point of discharge, 0.1 gr/dscf . [District Rule 4201; Kern County Rule 404] Federally Enforceable Through Title V Permit
4. If the turbine is not fired on PUC-regulated natural gas, then the sulfur content of the natural gas being fired in the turbine shall be determined using ASTM method D 1072, D 3031, D 4084, D 3246 or Double GC for H2S and Mercaptans. [40 CFR 60.335(d)] Federally Enforceable Through Title V Permit
5. HHV and LHV of the fuel shall be determined using ASTM D3588, ASTM 1826, or ASTM 1945. [40 CFR 60.335(b) and District Rule 4703, 6.4.5] Federally Enforceable Through Title V Permit
6. Nitrogen oxides (NOx) concentrations shall be determined using EPA Method 7E or 20, and oxygen (O2) concentrations shall be determined using EPA Method 3, 3A, or 20. [40 CFR 60.335(b) and District Rule 4703, 6.4] Federally Enforceable Through Title V Permit
7. The operator shall provide source test information annually regarding the exhaust gas NOx concentration corrected to 15% O2 (dry). [40 CFR 60.332(a), (b) and District Rule 4703, 5.1] Federally Enforceable Through Title V Permit
8. Carbon monoxide (CO) concentrations shall be determined using EPA Method 10 or 10B. [District Rule 4703] Federally Enforceable Through Title V Permit
9. If the turbine is fired on PUC-regulated natural gas, then the operator shall maintain a log describing the source of natural gas and the quantity used. [District Rule 2520, 9.3.2] Federally Enforceable Through Title V Permit
10. The operator of a stationary gas turbine system shall maintain all records of required monitoring data and support information for inspection at any time for a period of five years. [District Rule 2520, 9.4.2] Federally Enforceable Through Title V Permit
11. Operator shall maintain a stationary gas turbine operating log that includes, on a daily basis, the actual local start-up and stop time, length and reason for reduced load periods, total hours of operation, source(s) of and quantity of fuel used, fuel sulfur content and fuel nitrogen content. [40 CFR 60.332(a),(b); District Rules 2520, 9.3.2 and 4703, 6.2.4] Federally Enforceable Through Title V Permit

PERMIT UNIT REQUIREMENTS CONTINUE ON NEXT PAGE

These terms and conditions are part of the Facility-wide Permit to Operate.

12. Permittee shall install, operate and maintain in calibration a predictive emissions monitoring system which continuously measures and records the water-to-fuel ratio and which correlates the water-to-fuel ratio with the NOx concentration in the exhaust by using the method described in 40 CFR 60.335(c). [Rule 4703 and 40 CFR 60.334] Federally Enforceable Through Title V Permit
13. Permittee shall submit to the APCO the information correlating the control system operating parameters to the associated measured NOx output. [District Rule 4703, 6.2.5] Federally Enforceable Through Title V Permit
14. Permittee shall install, operate and maintain in calibration a system which continuously measures and records elapsed time of turbine operation. [District Rule 4703, 6.2.1] Federally Enforceable Through Title V Permit
15. Permittee shall submit an excess emissions and monitoring systems performance report (excess emissions are defined in applicable subparts) and/or a summary report form to the APCO semiannually, except when more frequent reporting is specifically required by an applicable subpart. All reports shall be postmarked by the 30th day of each calendar half (or quarter, as appropriate). [40 CFR 60.7(c)] Federally Enforceable Through Title V Permit
16. Any one-hour period during which the average water-to-fuel ratio, as measured by the continuous monitoring system, falls below the water-to-fuel ratio determined to demonstrate NSPS NOx compliance shall be reported to the APCO. Each report shall include the average water-to-fuel ratio, average fuel consumption, ambient conditions, turbine gas load and nitrogen content of the fuel during the period of excess emissions. [40 CFR 60.334(c)] Federally Enforceable Through Title V Permit
17. All wells producing from strata steamed by this unit shall be connected to a District-approved emissions control system, have District-approved closed casing vents or be District-approved uncontrolled cyclic wells. [District Rule 4401, 5.0] Federally Enforceable Through Title V Permit
18. Cogeneration unit shall include 48.7 MMBtu/hr (nominal rating) Allison, model 501-KB-5, gas-fired turbine engine with pilotless fuel nozzles or conventional fuel nozzles, Ideal Synchronous electrical generator, Struthers-Wells unfired 22.5 MMBtu/hr steam generator and an inlet air evaporative cooler. [District NSR Rule] Federally Enforceable Through Title V Permit
19. Turbine lube oil tank shall vent only through CECO Model #STTOR-10 fiber bed filter system. [District NSR Rule] Federally Enforceable Through Title V Permit
20. Generator gearbox lube oil tank shall vent only through CECO Model #STTOR-10 fiber bed filter system. [District NSR Rule] Federally Enforceable Through Title V Permit
21. Permittee shall notify the District by fax or in writing prior to or within 4 hours of any turbine nozzle replacement, except for identical replacement. [District NSR Rule] Federally Enforceable Through Title V Permit
22. Gas turbine engine shall be equipped with continuously recording fuel gas flow rate monitor. [District NSR Rule] Federally Enforceable Through Title V Permit
23. Gas turbine engine shall be equipped with operational water injection system for NOx control. [District NSR Rule] Federally Enforceable Through Title V Permit
24. Gas turbine engine shall be equipped with continuously recording water injection rate monitor accurate to within 5%. [District NSR Rule] Federally Enforceable Through Title V Permit
25. Waste heat recovery steam generator exhaust shall be equipped with permanent provisions to allow collection of gas samples consistent with EPA methods. [District NSR Rule] Federally Enforceable Through Title V Permit
26. Gas turbine engine water injection rate shall be maintained at a water to fuel ratio no less than 0.48/1.0 by weight while operating with pilotless fuel nozzles and no less than 0.8/1.0 by weight while operating with conventional fuel nozzles. [District NSR Rule] Federally Enforceable Through Title V Permit
27. Evaporative cooler shall use only fresh and filtered water. [District NSR Rule] Federally Enforceable Through Title V Permit
28. Fiber bed filter system shall be maintained and operated in accordance with the manufacturer's plans and specifications. [District NSR Rule] Federally Enforceable Through Title V Permit

PERMIT UNIT REQUIREMENTS CONTINUE ON NEXT PAGE

These terms and conditions are part of the Facility-wide Permit to Operate.

29. Maximum emission rate of volatile organic compounds (VOC's) from turbine lube oil vent shall not exceed 0.02 lb/hr. [District NSR Rule] Federally Enforceable Through Title V Permit
30. Except during periods of startup/shutdown, emission rates (3 hr average) shall not exceed: PM10: 0.61 lb/hr; SOx (as SO2): 0.16 lb/hr; NOx: 42 ppmvd @ 15% O2; VOC: 1.65 lb/hr; and CO: 41 ppmvd @ 15% O2. [District Rules 2201 and 4703] Federally Enforceable Through Title V Permit
31. Except during periods of startup/shutdown, NOx emission rate (3 hr average) shall not exceed 35 ppmvd NO2 @ 15% O2. [District Rule 4703]
32. Emissions shall not exceed the following: PM10: 14.6 lb/day; SOx (as SO2): 3.3 lb/day; NOx (as NO2): 153.0 lb/day; VOC: 39.6 lb/day; and CO: 107.8 lb/day. [District NSR Rule] Federally Enforceable Through Title V Permit
33. NOx and SOx emission rates (1 hr average) shall not exceed NSPS standard of 150 ppmv-dry @ 15% O2, and 150 ppmv-dry @ 15% O2, respectively. [District Rule 2520, 9.3.2; 40 CFR 60.332(c); 40CFR 60.333(a)] Federally Enforceable Through Title V Permit
34. During days of gas turbine startup/shutdown, permittee shall maintain accurate daily records of natural gas consumption in gas turbine for normal operation and startup/shutdown periods. [District NSR Rule] Federally Enforceable Through Title V Permit
35. Compliance testing of lube oil vent and gearbox vent shall be required if monthly visible emissions checks from either vent exceeds 5% opacity or equivalent Ringelmann 1/4. If visible emissions are observed, corrective action shall be taken to eliminate visible emissions. If visible emissions cannot be corrected within 24 hours, a visible emissions test using EPA Method 9 shall be conducted. [District Rules 2520, 9.3.2 and NSR] Federally Enforceable Through Title V Permit
36. Thermal stabilization period shall be defined as the start-up or shutdown time necessary to bring the heat recovery steam generator to proper temperature, not exceeding two hours. [District NSR Rule] Federally Enforceable Through Title V Permit
37. Startup and shutdown of gas turbine engine, as defined in 40 CFR Subpart A 60.2, shall not exceed a time period of two hours and two hours, respectively, per occurrence. [40 CFR Subpart A 60.2, District NSR Rule] Federally Enforceable Through Title V Permit
38. Permittee shall keep accurate records of fuel sulfur content, and such records shall be made available for District inspection for five years. [40 CFR 60.334(b)(2), District Rule 2520, 9.3.2] Federally Enforceable Through Title V Permit
39. Annual compliance with GTE NOx and CO emission limits (pursuant to Rule 4703 (10/16/97)) and fuel sulfur limit shall be demonstrated by District witnessed or authorized sample collection by independent laboratory. Test results shall be submitted within 60 days. [District NSR Rule and Rule 4703] Federally Enforceable Through Title V Permit
40. Operator shall be required to conform to the compliance testing procedures described in District Rule 1081. [District Rule 1081; Kern County Rule 108.1] Federally Enforceable Through Title V Permit
41. The following types of units are not affected units subject to the requirements of the Acid Rain Program: 1) A simple combustion turbine that commenced operation before November 15, 1990, 2) Any unit that, during 1985, did not serve a generator that produced electricity for sale and that did not, as of November 15, 1990, and does not currently, serve a generator that produces electricity for sale, 3) A cogeneration facility which for a unit that commenced construction prior to November 15, 1990, was constructed for the purpose of supplying equal to or less than one-third its potential electrical output capacity or equal to or less than 219,000 Mwe-hrs actual electric output on an annual basis to any utility power distribution system for sale. Therefore, the requirements of 40 CFR 72.6 do not apply to this source. A permit shield is granted from this requirement. [District Rule 2520, 13.2] Federally Enforceable Through Title V Permit
42. Compliance with permit conditions in the Title V permit shall be deemed in compliance with the following applicable requirements: SJVUAPCD Rule 1081, 4201, 3.1; Rules 406 (Fresno), 407 (Kings, San Joaquin, Stanislaus, Tulare, Merced, and Kern), and 404(Madera); 40 CFR 60.332(c), (d); 60.334 (b), and (c)(2); 60.335(d). A permit shield is granted from these requirements. [District Rule 2520, 13.2] Federally Enforceable Through Title V Permit

PERMIT UNIT REQUIREMENTS CONTINUE ON NEXT PAGE

These terms and conditions are part of the Facility-wide Permit to Operate.

43. Compliance with permit conditions in the Title V permit shall be deemed compliance with the following subsumed requirements: SJVUAPCD Rule 4703, 6.2.2; Rules 108 (Kings), 108.1 (Fresno, Merced, San Joaquin, Tulare, Kern and Stanislaus), and 110 (Madera); Rules 402 (Madera) and 404 (Fresno, Kern, Kings, San Joaquin, Merced, Stanislaus, Tulare); 40 CFR 60.332 (a) and (b); 60.333(a) and (b); 60.334 (a), (b), and (c)(1); 60.335 (a), (b), (c), and (e). A permit shield is granted from these requirements. [District Rule 2520, 13.2] Federally Enforceable Through Title V Permit
44. Compliance with the permit conditions in the Title V permit shall be deemed compliance with the following applicable requirements: SJVUAPCD Rule 4703, sections 5.0, 5.1.1, 6.2.1, 6.2.4, 6.3, 6.4.1, 6.4.3, 6.4.5, 6.4.6. A permit shield is granted from these requirements. [District Rule 2520, 13.2] Federally Enforceable Through Title V Permit

These terms and conditions are part of the Facility-wide Permit to Operate.

San Joaquin Valley Air Pollution Control District

PERMIT UNIT: S-1129-55-10

EXPIRATION DATE: 02/28/2007

SECTION: 34 **TOWNSHIP:** 30S **RANGE:** 22E

EQUIPMENT DESCRIPTION:

3.5 MW COMBINED CYCLE GAS TURBINE TOPPING CYCLE COGENERATION NORTH MIDWAY UNIT #9

PERMIT UNIT REQUIREMENTS

1. Units shall be fired exclusively on PUC-quality natural gas which has a sulfur content of less than or equal to 0.017% by weight. [40 CFR 60.333(a) & (b);60.332(a); Kern County Rule 407] Federally Enforceable Through Title V Permit
2. Gas turbine shall be fired exclusively with PUC-quality natural gas or equivalent with total sulfur content of less than or equal to 1.0 gr S/100 scf of gas. [District NSR Rule] Federally Enforceable Through Title V Permit
3. Operator shall not discharge into the atmosphere combustion contaminants (PM) exceeding in concentration at the point of discharge, 0.1 gr/dscf . [District Rule 4201; Kern County Rule 404] Federally Enforceable Through Title V Permit
4. If the turbine is not fired on PUC-regulated natural gas, then the sulfur content of the natural gas being fired in the turbine shall be determined using ASTM method D 1072, D 3031, D 4084, D 3246 or Double GC for H2S and Mercaptans. [40 CFR 60.335(d)] Federally Enforceable Through Title V Permit
5. HHV and LHV of the fuel shall be determined using ASTM D3588, ASTM 1826, or ASTM 1945. [40 CFR 60.335(b) and District Rule 4703, 6.4.5] Federally Enforceable Through Title V Permit
6. Nitrogen oxides (NOx) concentrations shall be determined using EPA Method 7E or 20, and oxygen (O2) concentrations shall be determined using EPA Method 3, 3A, or 20. [40 CFR 60.335(b) and District Rule 4703, 6.4] Federally Enforceable Through Title V Permit
7. The operator shall provide source test information annually regarding the exhaust gas NOx concentration corrected to 15% O2 (dry). [40 CFR 60.332(a), (b) and District Rule 4703, 5.1] Federally Enforceable Through Title V Permit
8. Carbon monoxide (CO) concentrations shall be determined using EPA Method 10 or 10B. [District Rule 4703] Federally Enforceable Through Title V Permit
9. If the turbine is fired on PUC-regulated natural gas, then the operator shall maintain a log describing the source of natural gas and the quantity used. [District Rule 2520, 9.3.2] Federally Enforceable Through Title V Permit
10. The operator of a stationary gas turbine system shall maintain all records of required monitoring data and support information for inspection at any time for a period of five years. [District Rule 2520, 9.4.2] Federally Enforceable Through Title V Permit
11. Operator shall maintain a stationary gas turbine operating log that includes, on a daily basis, the actual local start-up and stop time, length and reason for reduced load periods, total hours of operation, source(s) of and quantity of fuel used, fuel sulfur content and fuel nitrogen content. [40 CFR 60.332(a),(b); District Rules 2520, 9.3.2 and 4703, 6.2.4] Federally Enforceable Through Title V Permit

PERMIT UNIT REQUIREMENTS CONTINUE ON NEXT PAGE

These terms and conditions are part of the Facility-wide Permit to Operate.

12. Permittee shall install, operate and maintain in calibration a predictive emissions monitoring system which continuously measures and records the water-to-fuel ratio and which correlates the water-to-fuel ratio with the NOx concentration in the exhaust by using the method described in 40 CFR 60.335(c). [Rule 4703 and 40 CFR 60.334] Federally Enforceable Through Title V Permit
13. Permittee shall submit to the APCO the information correlating the control system operating parameters to the associated measured NOx output. [District Rule 4703, 6.2.5] Federally Enforceable Through Title V Permit
14. Permittee shall install, operate and maintain in calibration a system which continuously measures and records elapsed time of turbine operation. [District Rule 4703, 6.2.1] Federally Enforceable Through Title V Permit
15. Permittee shall submit an excess emissions and monitoring systems performance report (excess emissions are defined in applicable subparts) and/or a summary report form to the APCO semiannually, except when more frequent reporting is specifically required by an applicable subpart. All reports shall be postmarked by the 30th day of each calendar half (or quarter, as appropriate). [40 CFR 60.7(c)] Federally Enforceable Through Title V Permit
16. Any one-hour period during which the average water-to-fuel ratio, as measured by the continuous monitoring system, falls below the water-to-fuel ratio determined to demonstrate NSPS NOx compliance shall be reported to the APCO. Each report shall include the average water-to-fuel ratio, average fuel consumption, ambient conditions, turbine gas load and nitrogen content of the fuel during the period of excess emissions. [40 CFR 60.334(c)] Federally Enforceable Through Title V Permit
17. All wells producing from strata steamed by this unit shall be connected to a District-approved emissions control system, have District-approved closed casing vents or be District-approved uncontrolled cyclic wells. [District Rule 4401, 5.0] Federally Enforceable Through Title V Permit
18. Cogeneration unit shall include 48.7 MMBtu/hr (nominal rating) Allison, model 501-KB-5, gas-fired turbine engine with pilotless fuel nozzles or conventional fuel nozzles, Ideal Synchronous electrical generator, Struthers-Wells unfired 22.5 MMBtu/hr steam generator and an inlet air evaporative cooler. [District NSR Rule] Federally Enforceable Through Title V Permit
19. Turbine lube oil tank shall vent only through CECO Model #STTOR-10 fiber bed filter system. [District NSR Rule] Federally Enforceable Through Title V Permit
20. Generator gearbox lube oil tank shall vent only through CECO Model #STTOR-10 fiber bed filter system. [District NSR Rule] Federally Enforceable Through Title V Permit
21. Permittee shall notify the District by fax or in writing prior to or within 4 hours of any turbine nozzle replacement, except for identical replacement. [District NSR Rule] Federally Enforceable Through Title V Permit
22. Gas turbine engine shall be equipped with continuously recording fuel gas flow rate monitor. [District NSR Rule] Federally Enforceable Through Title V Permit
23. Gas turbine engine shall be equipped with operational water injection system for NOx control. [District NSR Rule] Federally Enforceable Through Title V Permit
24. Gas turbine engine shall be equipped with continuously recording water injection rate monitor accurate to within 5%. [District NSR Rule] Federally Enforceable Through Title V Permit
25. Waste heat recovery steam generator exhaust shall be equipped with permanent provisions to allow collection of gas samples consistent with EPA methods. [District NSR Rule] Federally Enforceable Through Title V Permit
26. Gas turbine engine water injection rate shall be maintained at a water to fuel ratio no less than 0.48/1.0 by weight while operating with pilotless fuel nozzles and no less than 0.8/1.0 by weight while operating with conventional fuel nozzles. [District NSR Rule] Federally Enforceable Through Title V Permit
27. Evaporative cooler shall use only fresh and filtered water. [District NSR Rule] Federally Enforceable Through Title V Permit
28. Fiber bed filter system shall be maintained and operated in accordance with the manufacturer's plans and specifications. [District NSR Rule] Federally Enforceable Through Title V Permit

PERMIT UNIT REQUIREMENTS CONTINUE ON NEXT PAGE

These terms and conditions are part of the Facility-wide Permit to Operate.

29. Maximum emission rate of volatile organic compounds (VOC's) from turbine lube oil vent shall not exceed 0.02 lb/hr. [District NSR Rule] Federally Enforceable Through Title V Permit
30. Except during periods of startup/shutdown, emission rates (3 hr average) shall not exceed: PM10: 0.61 lb/hr; SOx (as SO2): 0.16 lb/hr; NOx: 42 ppmvd @ 15% O2; VOC: 1.65 lb/hr; and CO: 41 ppmvd @ 15% O2. [District Rules 2201 and 4703] Federally Enforceable Through Title V Permit
31. Except during periods of startup/shutdown, NOx emission rate (3 hr average) shall not exceed 35 ppmvd NO2 @ 15% O2. [District Rule 4703]
32. Emissions shall not exceed the following: PM10: 14.6 lb/day; SOx (as SO2): 3.3 lb/day; NOx (as NO2): 153.0 lb/day; VOC: 39.6 lb/day; and CO: 107.8 lb/day. [District NSR Rule] Federally Enforceable Through Title V Permit
33. NOx and SOx emission rates (1 hr average) shall not exceed NSPS standard of 150 ppmv-dry @ 15% O2, and 150 ppmv-dry @ 15% O2, respectively. [District Rule 2520, 9.3.2; 40 CFR 60.332(c); 40CFR 60.333(a)] Federally Enforceable Through Title V Permit
34. During days of gas turbine startup/shutdown, permittee shall maintain accurate daily records of natural gas consumption in gas turbine for normal operation and startup/shutdown periods. [District NSR Rule] Federally Enforceable Through Title V Permit
35. Compliance testing of lube oil vent and gearbox vent shall be required if monthly visible emissions checks from either vent exceeds 5% opacity or equivalent Ringelmann 1/4. If visible emissions are observed, corrective action shall be taken to eliminate visible emissions. If visible emissions cannot be corrected within 24 hours, a visible emissions test using EPA Method 9 shall be conducted. [District Rules 2520, 9.3.2 and NSR] Federally Enforceable Through Title V Permit
36. Thermal stabilization period shall be defined as the start-up or shutdown time necessary to bring the heat recovery steam generator to proper temperature, not exceeding two hours. [District NSR Rule] Federally Enforceable Through Title V Permit
37. Startup and shutdown of gas turbine engine, as defined in 40 CFR Subpart A 60.2, shall not exceed a time period of two hours and two hours, respectively, per occurrence. [40 CFR Subpart A 60.2, District NSR Rule] Federally Enforceable Through Title V Permit
38. Permittee shall keep accurate records of fuel sulfur content, and such records shall be made available for District inspection for five years. [40 CFR 60.334(b)(2), District Rule 2520, 9.3.2] Federally Enforceable Through Title V Permit
39. Annual compliance with GTE NOx and CO emission limits (pursuant to Rule 4703 (10/16/97)) and fuel sulfur limit shall be demonstrated by District witnessed or authorized sample collection by independent laboratory. Test results shall be submitted within 60 days. [District NSR Rule and Rule 4703] Federally Enforceable Through Title V Permit
40. Operator shall be required to conform to the compliance testing procedures described in District Rule 1081. [District Rule 1081; Kern County Rule 108.1] Federally Enforceable Through Title V Permit
41. The following types of units are not affected units subject to the requirements of the Acid Rain Program: 1) A simple combustion turbine that commenced operation before November 15, 1990, 2) Any unit that, during 1985, did not serve a generator that produced electricity for sale and that did not, as of November 15, 1990, and does not currently, serve a generator that produces electricity for sale, 3) A cogeneration facility which for a unit that commenced construction prior to November 15, 1990, was constructed for the purpose of supplying equal to or less than one-third its potential electrical output capacity or equal to or less than 219,000 Mwe-hrs actual electric output on an annual basis to any utility power distribution system for sale. Therefore, the requirements of 40 CFR 72.6 do not apply to this source. A permit shield is granted from this requirement. [District Rule 2520, 13.2] Federally Enforceable Through Title V Permit
42. Compliance with permit conditions in the Title V permit shall be deemed in compliance with the following applicable requirements: SJVUAPCD Rule 1081, 4201, 3.1; Rules 406 (Fresno), 407 (Kings, San Joaquin, Stanislaus, Tulare, Merced, and Kern), and 404(Madera); 40 CFR 60.332(c), (d); 60.334 (b), and (c)(2); 60.335(d). A permit shield is granted from these requirements. [District Rule 2520, 13.2] Federally Enforceable Through Title V Permit

PERMIT UNIT REQUIREMENTS CONTINUE ON NEXT PAGE

These terms and conditions are part of the Facility-wide Permit to Operate.

43. Compliance with permit conditions in the Title V permit shall be deemed compliance with the following subsumed requirements: SJVUAPCD Rule 4703, 6.2.2; Rules 108 (Kings), 108.1 (Fresno, Merced, San Joaquin, Tulare, Kern and Stanislaus), and 110 (Madera); Rules 402 (Madera) and 404 (Fresno, Kern, Kings, San Joaquin, Merced, Stanislaus, Tulare); 40 CFR 60.332 (a) and (b); 60.333(a) and (b); 60.334 (a), (b), and (c)(1); 60.335 (a), (b), (c), and (e). A permit shield is granted from these requirements. [District Rule 2520, 13.2] Federally Enforceable Through Title V Permit
44. Compliance with the permit conditions in the Title V permit shall be deemed compliance with the following applicable requirements: SJVUAPCD Rule 4703, sections 5.0, 5.1.1, 6.2.1, 6.2.4, 6.3, 6.4.1, 6.4.3, 6.4.5, 6.4.6. A permit shield is granted from these requirements. [District Rule 2520, 13.2] Federally Enforceable Through Title V Permit

These terms and conditions are part of the Facility-wide Permit to Operate.

Appendix III
EPA Memo



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D.C. 20460

JAN 12 2007

OFFICE OF
AIR AND RADIATION

MEMORANDUM

SUBJECT: Source Determinations for Oil and Gas Industries

FROM: William L. Wehrum
Acting Assistant Administrator (6101A)

A handwritten signature in black ink, appearing to read "W. L. Wehrum", written over the printed name and title.

TO: Regional Administrators I-X

The purpose of this memorandum is to provide guidance to assist permitting authorities in making major stationary source determinations for the oil and gas industry. This guidance extends to oil and gas operations on land, in state waters, and on the federal Outer Continental Shelf (OCS).¹

Currently, significant oil and gas development is occurring in the Western United States. With this development, we expect issues to arise related to whether exploration, extraction or production activities need to be aggregated together to determine whether the activities qualify as a "major stationary source" for purposes of the major New Source Review (NSR) and the Title V permitting programs.² As explained in detail below, we suggest that permitting authorities begin the analysis by evaluating whether each individual surface site qualifies as a separate stationary source, and then aggregating two or more surface sites only if the surface sites are under common control and are located in close proximity to each other. The term "surface site" generally refers to a single area of development and includes any combination of one or more graded pad sites, gravel pad sites, foundations, platforms, or the immediate physical location upon which equipment is physically affixed. *See e.g.* 40 CFR 63.761.

¹ On the OCS, "emissions from any vessel servicing or associated with an OCS source, including emissions while at the OCS source or en route to or from the source within 25 miles of the OCS source, shall be considered direct emissions from the OCS source." See CAA §328(a)(4)(C). This memorandum does not supercede our existing interpretation of this regulatory language.

² Oil and gas development activities include such things as geological and geophysical exploration for petroleum deposits, drilling oil and gas wells, and separating natural gas liquids from crude oil. The activities generally fall into the major Standard Industrial Code (SIC) 13 including SIC 1311, 1321, 1381, 1382, and 1389.

The Federal NSR regulations define a “major stationary source” as any “stationary source” that emits or has the potential to emit above certain specified emissions thresholds (ranging from 10-250 tons per year) depending on the attainment status of the area. The Federal NSR regulations define “stationary source” to mean “any building, structure, facility, or installation which emits or may emit any air pollutant subject to regulation under the Act.”³ The regulations establish three criteria for identifying emissions activities that belong to the same “building,” “structure,” “facility,” or “installation”: (1) whether the activities are under common control, (2) whether the activities are located on one or more contiguous or adjacent properties; and (3) whether the activities belong to the same major industrial grouping.⁴ The Title V program also considers whether activities are under common control and located on contiguous or adjacent property.⁵

In implementing the stationary source definition for the major NSR and Title V permit programs, the foremost principle that guides our decision-making is that we should apply a “common sense notion” of a plant. In *Alabama Power v. Costle*, the court cautioned that “...EPA cannot treat contiguous and commonly owned units as a single source unless they fit within the four permissible statutory terms,” and that “EPA should ...provide for the aggregation, where appropriate, of industrial activities according to considerations such as proximity and ownership.”⁶ In 1980, we expressed the view that *Alabama Power* set boundaries on our discretion to interpret the component terms of “stationary source.” Specifically, we indicated that we must (1) reasonably carry out the purposes of Prevention of Significant Deterioration (PSD); (2) approximate a common sense notion of a “plant”; and (3) avoid aggregating pollutant-emitting activities that as a group would not fit within the ordinary meaning of “building,” “structure,” “facility” or “installation.”⁷ Accordingly, we follow these overarching principles in interpreting the three regulatory criteria in context of a given source determination.

Source determinations within the oil and gas industries are not always straightforward. Even when two or more pollutant-emitting activities are clearly under common control and belong to the same 2-digit SIC code, the unique geographical attributes of the oil and gas industry necessitate a detailed evaluation of whether the activities are contiguous and adjacent. For example, well sites can be located hundreds of miles from the natural gas processing plant, and some oil and gas operations (*e.g.*, a production field) can cover many square miles. Moreover, unlike many industries, land ownership and control are not easily distinguished in this industry, because subsurface and surface property rights are often owned and leased by different entities, and drilling and exploration activities are contracted to third parties. While it is not uncommon for a single company to gain the use of a large area of contiguous property through

³ See *e.g.* 40 CFR 52.21(b)(5)

⁴ Under this definition, activities are within the same industrial grouping if they share the same two-digit Standard Industrial Classification (SIC). Exploration, extraction or production activities in the oil and natural gas development industry share the same two-digit SIC code – “13”.

⁵ 40 CFR 70.2 also includes a SIC reference which is not contained in the statute. We have proposed to delete this reference from the title V regulations.

⁶ *Alabama Power Co. v. Costle* 636 F.2d 323, 397 (D.C. Cir. 1979)

⁷ 45 FR 52676, 52695 (August 7, 1980)

these lease and mineral rights agreements, owners or operators of production field facilities typically control only the surface area necessary to operate the physical structures used in oil and gas production, and not the land between well drill sites.⁸

The concept of “contiguous and adjacent” considers whether the land associated with the pollutant-emitting activity is connected to, or is nearby, land associated with another pollutant-emitting activity. Historically, we also have used such factors as operational dependence and proximity to inform our analysis of whether two properties are contiguous or adjacent.⁹ The concept of “operational dependence” considers the extent to which each activity relies on the other for its operations. In the oil and gas industries, materials are transferred between pollutant-emitting points and many activities are physically connected via pipelines, but the extent of the operational reliance may vary widely from point to point.

Notably, in 1980, we declined to add a specific “functionality” criteria to the definition of source because we believed that “assessments of functional interrelationships would be highly subjective” and “embroil[] the Agency in fine-grained analysis.”¹⁰ We also made clear that we do not intend “source” to encompass activities that would be many miles apart along a long-line. For instance, EPA would not treat all of the pumping stations along a pipeline as one source.¹¹ Accordingly, for this industry, we do not believe determining whether two activities are operationally dependent drives the determination as to whether two properties are contiguous or adjacent, because it would embroil the Agency in precisely the fine-grained analysis we intended to avoid, and it would potentially lead to results which do not adhere to the common sense notion of a plant.

The concept of proximity considers the physical distance between two activities. EPA has not specifically defined an exact separation of distance that would cause two activities to be considered contiguous or adjacent. Nonetheless, we have stated that proximity can be the most informative factor in determining whether two activities are contiguous or adjacent. For example, we stated that when two facilities are close together, a permitting authority can consider the two facilities as a single source irrespective of an absence of physical connection and operational dependence.¹² We also think that the opposite is equally true. A permitting authority can find that two pollutant-emitting activities are separate sources when they are located far apart, irrespective of the presence of physical connections and operational dependence between the sites.

Given the diverse nature of the oil and gas activities, we believe that proximity is the most informative factor in making source determinations for these industries. We do not believe that it is reasonable to aggregate well site activities, and other production field activities that

⁸ We recognized the unique challenges this industry presents in our discussion of the facility definition in the section 112 rulemaking. 64 FR 32620, 32617 (June 17, 1999).

⁹ See e.g. Memo. from Winston Smith, Director Air, Pesticides and Toxics Management Division to Randy C. Poole, Air Hygienist II, *Applicability of Title V Permitting Requirements to Gasoline Bulk Terminals Owned by Williams Energy Ventures, Inc.* (May 19, 1999)

¹⁰ 45 FR 52676, 52694 (August 7, 1980).

¹¹ *Id.* at 52695

¹² Memo. from Winston Smith at 6.

occur over large geographic distances, with the downstream processing plant into a single major stationary source. Aggregation of such geographically-dispersed activities defies the concept of contiguous and adjacent. While the land mass may be “contiguous or adjacent” when viewed as a whole, the limited portion of the properties physically associated with the pollutant-emitting activity are not necessarily nearby, connected, or in any way proximate to each other.

Congress also recognized the unique geographic attributes of the oil and gas industries when it provided specific direction on how emission sources in the oil and gas exploration and production industry should be grouped together for purposes of defining a major source under the Section 112 Air Toxics Program.¹³ Specifically, Section 112(n)(4) of the Act states:

[E]missions from any pipeline compressor or pump station shall not be aggregated with emissions from other similar units, whether or not such units are in a contiguous area or under common control, to determine whether such units or stations are major sources, and in the case of any oil or gas exploration or production well (with its associated equipment), such emissions shall not be aggregated for any purpose under this section.

Applying our interpretation of the Section 112(a)(1) and (n)(4) statutory language, and our understanding of hazardous air pollutant (HAP) emission sources, we defined the major source under Section 112, for purposes of these industries, in reference to individual surface sites.¹⁴

For purposes of making source determinations for NSR and Title V, we recommend that permitting authorities first look to the Section 112 approach of segregating each individual surface site.¹⁵ While we do not believe that permitting authorities should strictly apply the Section 112 definition of major stationary source for purposes of the NSR and Title V permit programs, we do believe that the “surface site” is a reasonable place to begin the source determination analysis. This is because we have already determined that a surface site fits within a reasonable interpretation of the term stationary source in context of one regulatory program, and administratively, we think it reasonable for a permitting authority to at least consider whether the same boundaries are appropriate in administering other regulatory programs.

After identifying the individual surface site, the permitting authority should consider aggregating pollutant-emitting activities at multiple surface sites, when the surface sites are under common control and located in close proximity to each other. A reviewing authority can consider two surface sites to be in close proximity if they are physically adjacent, or if they are separated by no more than a short distance (e.g. across a highway, separated by a city block or

¹³ Although Congress provided direction in Section 112(n)(4) absent a specific finding related to whether the activities are within a “contiguous area,” notably, the Congressional Record shows that Congress explained its basis for creating special treatment for these industries under Section 112 partially based on a finding that emissions, “are typically located in widely dispersed geographic areas, rather than concentrated in a single area.” 136 Cong.Rec H12848-01.

¹⁴ See 64 FR 32618 and 40 C.F.R. Part 63, Subpart HH.

¹⁵ It is common practice, when making NSR source determinations, to first look at a small group of pollutant-emitting activities, and then determine whether it is appropriate to aggregate these activities with other activities to define the major stationary source. In the oil and gas industries, we think that a surface site contains an appropriate collection of pollutant-emitting activities to begin this analysis.

some similar distance).¹⁶ Once the stationary source is identified, the permitting authority should consider the emissions from all equipment located either temporarily or permanently on the surface site(s) collectively to determine whether the surface site(s) qualifies as a major stationary source for NSR and Title V.^{17,18}

In a great majority of cases, we expect that permitting authorities will find that a single surface site is the most-suitable industrial grouping because it correlates best with the definition of a stationary source. Accordingly, permitting authorities could treat each surface site as a separate stationary source and generally would not need to aggregate activities located on different oil and gas properties (oil and gas lease, mineral fee tract, subsurface unit area, surface fee trace or surface lease tract) or located on the same lease, when the sites are not located in close proximity to each other.

Whether or not a permitting authority should aggregate two or more pollutant-emitting activities into a single major stationary source for purposes of NSR and Title V remains a case-by-case decision considering the factors relevant to the specific circumstances. Nonetheless, today's guidance provides permitting authorities a reasonable analytical approach that simplifies the determination process and assures greater uniformity in permitting decisions. Unless unique factors (such as proximity or interdependence) indicate otherwise, permitting authorities can consider oil and gas exploration and production activity located on a single surface site to be an individual stationary source.

¹⁶ In making major stationary source determinations for this industry, some southern States apply a rule that generally results in separating pollutant-emitting activities located outside a ¼ mile radius.

¹⁷ This approach differs from the Section 112 approach for these industries. The Section 112 approach exempts activities at the well and its associated equipment from the regulations. 64 FR 32610. Congress' based its direction to disaggregate these emission points for purposes of Section 112 on a finding that these emissions points generally have low HAP emissions.¹⁷ 136 Cong.Rec H12848-01. This is not necessarily the case for criteria pollutants. Drilling sites can contribute high levels of CO, NO_x, and SO₂ emissions from internal combustion engines. Accordingly, a potential to impact ambient air quality exists if these pollutant-emitting activities are closely located, and we believe it appropriate to consider these emissions points in defining the major stationary source for the NSR and Title V permitting programs.

¹⁸ Temporary emissions include emissions from a portable stationary source that would be less than two years in duration, unless the Administrator determines that a longer period would be appropriate. 45 FR 52728. Temporary emissions, however, do not include emissions from non-road engines.

**Appendix IV
Property Map**

Appendix V
Risk Management Review

San Joaquin Valley Air Pollution Control District Risk Management Review

To: Steve Roeder, AQE – Permit Services
 From: Jaime Horio, AQS – Technical Services
 Date: December 17, 2008
 Facility Name: Chevron USA
 Location: McKittrick Oilfield and N Midway Oilfield, Heavy Oil Western Source
 Application #(s): S-1129-47-14, -48-17, -49-14, -53-13, -54-14, -55-13
 Project #: S-1085346

A. RMR SUMMARY

RMR Summary			
Categories	Ammonia Injection (Units 47, 48, 49, 53, 54, 55)	Project Totals	Facility Totals
Prioritization Score	6.6	6.3	>1.0
Acute Hazard Index	0.1	0.1	0.1
Chronic Hazard Index	0.05	0.05	0.05
Maximum Individual Cancer Risk (10^{-6})	0.0	0.0	0.0
T-BACT Required?	No		
Special Permit Conditions?	No		

Proposed Permit Conditions

To ensure that human health risks will not exceed District allowable levels; the following permit conditions must be included for:

Units # 47, 48, 49, 53, 54, 55

No special conditions are required.

B. RMR REPORT

I. Project Description

Technical Services received a request on December 15, 2008, to perform a Risk Management Review for a proposed modification to a six large turbine engines. The modification consisted of the installation of: ammonia SCR with 21 ppm ammonia slip on each engine.

II. Analysis

Technical Services performed a prioritization using the District's HEARTs database. Since the total facility prioritization score was greater than one, a refined health risk assessment

was required. Ammonia emissions provided by the project engineer were input into the HEARTs database. The AERMOD model was used, with the parameters outlined below and meteorological data for 2004 from Bakersfield to determine the dispersion factors (i.e., the predicted concentration or X divided by the normalized source strength or Q) for a receptor grid. These dispersion factors were input into the Hot Spots Analysis and Reporting Program (HARP) risk assessment module to calculate the chronic and acute hazard indices and the carcinogenic risk for the project. Although various units had different distances to their nearest receptor, the shortest distance to a receptor was used for modeling purposes.

The following parameters were used for the review:

Analysis Parameters Units 47, 48, 49, 53, 54, 55			
Source Type	Point	Location Type	Rural
Stack Height (m)	4.6	Closest Receptor (m)	61
Stack Diameter. (m)	1.11	Type of Receptor	Business
Stack Exit Velocity (m/s)	17.8003	Max Hours per Year	8760
Stack Exit Temp. (°K)	433	Pollutant	Ammonia

III. Conclusion

The acute and chronic indices are below 1.0 and the cancer risk factor associated with the ammonia injection is less than 1.0 in a million. **In accordance with the District's Risk Management Policy, the project is approved without Toxic Best Available Control Technology (T-BACT).**

These conclusions are based on the data provided by the applicant and the project engineer. Therefore, this analysis is valid only as long as the proposed data and parameters do not change.

Attachments:

- A. RMR request from the project engineer
- B. Prioritization score
- C. Risk Scores
- D. Facility Summary

Appendix VI
Emissions Profiles

DEU ATCs

Permit #: S-1129-47-13	Last Updated
Facility: CHEVRON U S A	10/20/2009 AHMADS
INC	

Equipment Pre-Baselined: NO

	<u>NOX</u>	<u>SOX</u>	<u>PM10</u>	<u>CO</u>	<u>VOC</u>
Potential to Emit (lb/Yr):	66499.0	1384.0	5326.0	45793.0	14790.0
Daily Emis. Limit (lb/Day)	182.4	3.8	14.6	1394.7	109.0
Quarterly Net Emissions Change (lb/Qtr)					
Q1:	0.0	0.0	0.0	0.0	0.0
Q2:	0.0	0.0	0.0	0.0	0.0
Q3:	0.0	0.0	0.0	0.0	0.0
Q4:	0.0	0.0	0.0	0.0	0.0
Check if offsets are triggered but exemption applies	N	N	N	N	N
Offset Ratio					
Quarterly Offset Amounts (lb/Qtr)					
Q1:					
Q2:					
Q3:					
Q4:					

Permit #: S-1129-48-13	Last Updated
Facility: CHEVRON U S A	10/20/2009 AHMADS INC

Equipment Pre-Baselined: NO

	<u>NOX</u>	<u>SOX</u>	<u>PM10</u>	<u>CO</u>	<u>VOC</u>
Potential to Emit (lb/Yr):	66499.0	1384.0	5326.0	45793.0	14790.0
Daily Emis. Limit (lb/Day)	182.4	3.8	14.6	1394.7	109.0
Quarterly Net Emissions Change (lb/Qtr)					
Q1:	0.0	0.0	0.0	0.0	0.0
Q2:	0.0	0.0	0.0	0.0	0.0
Q3:	0.0	0.0	0.0	0.0	0.0
Q4:	0.0	0.0	0.0	0.0	0.0
Check if offsets are triggered but exemption applies	N	N	N	N	N
Offset Ratio					
Quarterly Offset Amounts (lb/Qtr)					
Q1:					
Q2:					
Q3:					
Q4:					

Permit #: S-1129-49-13	Last Updated
Facility: CHEVRON U S A	10/20/2009 AHMADS
INC	

Equipment Pre-Baselined: NO

	<u>NOX</u>	<u>SOX</u>	<u>PM10</u>	<u>CO</u>	<u>VOC</u>
Potential to Emit (lb/Yr):	66499.0	1384.0	5326.0	45793.0	14790.0
Daily Emis. Limit (lb/Day)	182.4	3.8	14.6	1394.7	109.0
Quarterly Net Emissions Change (lb/Qtr)					
Q1:	0.0	0.0	0.0	0.0	0.0
Q2:	0.0	0.0	0.0	0.0	0.0
Q3:	0.0	0.0	0.0	0.0	0.0
Q4:	0.0	0.0	0.0	0.0	0.0
Check if offsets are triggered but exemption applies	N	N	N	N	N
Offset Ratio					
Quarterly Offset Amounts (lb/Qtr)					
Q1:					
Q2:					
Q3:					
Q4:					

Permit #: S-1129-53-12	Last Updated
Facility: CHEVRON U S A	10/20/2009 AHMADS INC

Equipment Pre-Baselined: NO

	<u>NOX</u>	<u>SOX</u>	<u>PM10</u>	<u>CO</u>	<u>VOC</u>
Potential to Emit (lb/Yr):	55810.0	1195.0	5333.0	45768.0	14809.0
Daily Emis. Limit (lb/Day)	153.0	3.3	14.6	1394.7	109.0
Quarterly Net Emissions Change (lb/Qtr)					
Q1:	0.0	0.0	0.0	0.0	0.0
Q2:	0.0	0.0	0.0	0.0	0.0
Q3:	0.0	0.0	0.0	0.0	0.0
Q4:	0.0	0.0	0.0	0.0	0.0
Check if offsets are triggered but exemption applies	N	N	N	N	N
Offset Ratio					
Quarterly Offset Amounts (lb/Qtr)					
Q1:					
Q2:					
Q3:					
Q4:					

Permit #: S-1129-54-13	Last Updated
Facility: CHEVRON U S A	10/20/2009 AHMADS
INC	

Equipment Pre-Baselined: NO

	<u>NOX</u>	<u>SOX</u>	<u>PM10</u>	<u>CO</u>	<u>VOC</u>
Potential to Emit (lb/Yr):	55810.0	1195.0	5333.0	45768.0	14809.0
Daily Emis. Limit (lb/Day)	153.0	3.3	14.6	1394.7	109.0
Quarterly Net Emissions Change (lb/Qtr)					
Q1:	0.0	0.0	0.0	0.0	0.0
Q2:	0.0	0.0	0.0	0.0	0.0
Q3:	0.0	0.0	0.0	0.0	0.0
Q4:	0.0	0.0	0.0	0.0	0.0
Check if offsets are triggered but exemption applies	N	N	N	N	N
Offset Ratio					
Quarterly Offset Amounts (lb/Qtr)					
Q1:					
Q2:					
Q3:					
Q4:					

Permit #: S-1129-55-12	Last Updated
Facility: CHEVRON U S A	10/20/2009 AHMADS
INC	

Equipment Pre-Baselined: NO

	<u>NOX</u>	<u>SOX</u>	<u>PM10</u>	<u>CO</u>	<u>VOC</u>
Potential to Emit (lb/Yr):	55810.0	1195.0	5333.0	45768.0	14809.0
Daily Emis. Limit (lb/Day)	153.0	3.3	14.6	1394.7	109.0
Quarterly Net Emissions Change (lb/Qtr)					
Q1:	0.0	0.0	0.0	0.0	0.0
Q2:	0.0	0.0	0.0	0.0	0.0
Q3:	0.0	0.0	0.0	0.0	0.0
Q4:	0.0	0.0	0.0	0.0	0.0
Check if offsets are triggered but exemption applies	N	N	N	N	N
Offset Ratio					
Quarterly Offset Amounts (lb/Qtr)					
Q1:					
Q2:					
Q3:					
Q4:					

SCR/CEMS ATCs

Permit #: S-1129-47-14	Last Updated
Facility: CHEVRON U S A	10/20/2009 AHMADS
INC	

Equipment Pre-Baselined: NO

	<u>NOX</u>	<u>SOX</u>	<u>PM10</u>	<u>CO</u>	<u>VOC</u>
Potential to Emit (lb/Yr):	11167.0	1384.0	5326.0	45793.0	14790.0
Daily Emis. Limit (lb/Day)	46.6	3.8	14.6	1394.7	109.0
Quarterly Net Emissions Change (lb/Qtr)					
Q1:	-13833.0	0.0	0.0	0.0	0.0
Q2:	-13833.0	0.0	0.0	0.0	0.0
Q3:	-13833.0	0.0	0.0	0.0	0.0
Q4:	-13833.0	0.0	0.0	0.0	0.0
Check if offsets are triggered but exemption applies	N	N	N	N	N
Offset Ratio					
Quarterly Offset Amounts (lb/Qtr)					
Q1:					
Q2:					
Q3:					
Q4:					

Permit #: S-1129-48-14	Last Updated
Facility: CHEVRON U S A	10/20/2009 AHMADS
INC	

Equipment Pre-Baselined: NO

	<u>NOX</u>	<u>SOX</u>	<u>PM10</u>	<u>CO</u>	<u>VOC</u>
Potential to Emit (lb/Yr):	11167.0	1384.0	5326.0	45793.0	14790.0
Daily Emis. Limit (lb/Day)	46.6	3.8	14.6	1394.7	109.0
Quarterly Net Emissions Change (lb/Qtr)					
Q1:	-13833.0	0.0	0.0	0.0	0.0
Q2:	-13833.0	0.0	0.0	0.0	0.0
Q3:	-13833.0	0.0	0.0	0.0	0.0
Q4:	-13833.0	0.0	0.0	0.0	0.0
Check if offsets are triggered but exemption applies	N	N	N	N	N
Offset Ratio					
Quarterly Offset Amounts (lb/Qtr)					
Q1:					
Q2:					
Q3:					
Q4:					

Permit #: S-1129-49-14	Last Updated
Facility: CHEVRON U S A	10/20/2009 AHMADS INC

Equipment Pre-Baselined: NO

	<u>NOX</u>	<u>SOX</u>	<u>PM10</u>	<u>CO</u>	<u>VOC</u>
Potential to Emit (lb/Yr):	11167.0	1384.0	5326.0	45793.0	14790.0
Daily Emis. Limit (lb/Day)	46.6	3.8	14.6	1394.7	109.0
Quarterly Net Emissions Change (lb/Qtr)					
Q1:	-13833.0	0.0	0.0	0.0	0.0
Q2:	-13833.0	0.0	0.0	0.0	0.0
Q3:	-13833.0	0.0	0.0	0.0	0.0
Q4:	-13833.0	0.0	0.0	0.0	0.0
Check if offsets are triggered but exemption applies	N	N	N	N	N
Offset Ratio					
Quarterly Offset Amounts (lb/Qtr)					
Q1:					
Q2:					
Q3:					
Q4:					

Permit #: S-1129-53-13	Last Updated
Facility: CHEVRON U S A	10/20/2009 AHMADS
INC	

Equipment Pre-Baselined: NO

	<u>NOX</u>	<u>SOX</u>	<u>PM10</u>	<u>CO</u>	<u>VOC</u>
Potential to Emit (lb/Yr):	7948.0	1195.0	5333.0	45768.0	14809.0
Daily Emis. Limit (lb/Day)	39.4	3.3	14.6	1394.7	109.0
Quarterly Net Emissions Change (lb/Qtr)					
Q1:	-11966.0	0.0	0.0	0.0	0.0
Q2:	-11966.0	0.0	0.0	0.0	0.0
Q3:	-11966.0	0.0	0.0	0.0	0.0
Q4:	-11966.0	0.0	0.0	0.0	0.0
Check if offsets are triggered but exemption applies	N	N	N	N	N
Offset Ratio					
Quarterly Offset Amounts (lb/Qtr)					
Q1:					
Q2:					
Q3:					
Q4:					

Permit #: S-1129-54-14	Last Updated
Facility: CHEVRON U S A	10/20/2009 AHMADS INC

Equipment Pre-Baselined: NO

	<u>NOX</u>	<u>SOX</u>	<u>PM10</u>	<u>CO</u>	<u>VOC</u>
Potential to Emit (lb/Yr):	7948.0	1195.0	5333.0	45768.0	14809.0
Daily Emis. Limit (lb/Day)	39.4	3.3	14.6	1394.7	109.0
Quarterly Net Emissions Change (lb/Qtr)					
Q1:	-11966.0	0.0	0.0	0.0	0.0
Q2:	-11966.0	0.0	0.0	0.0	0.0
Q3:	-11966.0	0.0	0.0	0.0	0.0
Q4:	-11966.0	0.0	0.0	0.0	0.0
Check if offsets are triggered but exemption applies	N	N	N	N	N
Offset Ratio					
Quarterly Offset Amounts (lb/Qtr)					
Q1:					
Q2:					
Q3:					
Q4:					

Permit #: S-1129-55-13	Last Updated
Facility: CHEVRON U S A	10/20/2009 AHMADS
INC	

Equipment Pre-Baselined: NO

	<u>NOX</u>	<u>SOX</u>	<u>PM10</u>	<u>CO</u>	<u>VOC</u>
Potential to Emit (lb/Yr):	7948.0	1195.0	5333.0	45768.0	14809.0
Daily Emis. Limit (lb/Day)	39.4	3.3	14.6	1394.7	109.0
Quarterly Net Emissions Change (lb/Qtr)					
Q1:	-11966.0	0.0	0.0	0.0	0.0
Q2:	-11966.0	0.0	0.0	0.0	0.0
Q3:	-11966.0	0.0	0.0	0.0	0.0
Q4:	-11966.0	0.0	0.0	0.0	0.0
Check if offsets are triggered but exemption applies	N	N	N	N	N
Offset Ratio					
Quarterly Offset Amounts (lb/Qtr)					
Q1:					
Q2:					
Q3:					
Q4:					

Appendix VII
TV-Form 009

**San Joaquin Valley
Unified Air Pollution Control District**

RECEIVED
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SJVAPCD
Southern Region

TITLE V MODIFICATION - COMPLIANCE CERTIFICATION FORM

I. TYPE OF PERMIT ACTION (Check appropriate box)

- SIGNIFICANT PERMIT MODIFICATION ADMINISTRATIVE
 MINOR PERMIT MODIFICATION AMENDMENT

COMPANY NAME: Chevron U.S.A. Inc. (CUSA)	FACILITY ID: S-1129
1. Type of Organization: <input checked="" type="checkbox"/> Corporation <input type="checkbox"/> Sole Ownership <input type="checkbox"/> Government <input type="checkbox"/> Partnership <input type="checkbox"/> Utility	
2. Owner's Name: Chevron U.S.A. Inc. (CUSA)	
3. Agent to the Owner: N/A	

II. COMPLIANCE CERTIFICATION (Read each statement carefully and initial all circles for confirmation):

- Based on information and belief formed after reasonable inquiry, the equipment identified in this application will continue to comply with the applicable federal requirement(s).
- Based on information and belief formed after reasonable inquiry, the equipment identified in this application will comply with applicable federal requirement(s) that will become effective during the permit term, on a timely basis.
- Corrected information will be provided to the District when I become aware that incorrect or incomplete information has been submitted.
- Based on information and belief formed after reasonable inquiry, information and statements in the submitted application package, including all accompanying reports, and required certifications are true accurate and complete.

I declare, under penalty of perjury under the laws of the state of California, that the forgoing is correct and true:

William Fall
Signature of Responsible Official

December 4, 2008
Date

William Fall
Name of Responsible Official (please print)

Assistant Secretary
Title of Responsible Official (please print)

Appendix VIII
Overview of Black Start Procedure

A "Black Start" event is a unit/plant start-up during a time when the cogen plant is electrically de-energized and separated from the utility. In other words, utility power cannot be provided to the cogen plant for a normal startup and we therefore have to rely on emergency generators to begin the cogen plant startup. Basically, the black start has to happen from a condition where the cogen plant has no electrical supply (from either the utility or an operating cogen plant).

These are relatively rare events that might happen one or two times in a year in a given oilfield, and sometime not all in some years. The black start procedure is much more involved and time consuming than a normal startup. The 4 hour period requested is necessary to cover the time required to bring the affected cogens up to the conditions so that the procedures for a normal startup can then be performed (all within the 4 hour period requested).

Rather than trying to answer each question independently, the following general overview of the black start procedure addresses the questions along with the steps involved (taking into account the proposed SCR equipment):

1. Since the idle cogen plant and oil field are electrically separated from PG&E, no equipment is operating in the oil field. This includes the produced water treatment plant that supplies feed water to the cogen unit Heat Recovery Steam Generators (HRSG). We cannot put cogen unit engine exhaust heat into the HRSG (and SCR) until the field is re-energized and the water treatment plant is operating.
2. Verify that the field 12kV electrical system is ready to energize and that the cogen plant is separated from the field electrical system. This step includes inspection of the field electrical system to be sure that no damage was caused during the separation from PG&E.
3. Set up the Cogen Plant electrical system for Black Start.
4. Start the Cogen Plant emergency generator. Close the proper breakers to connect the emergency generator to the appropriate 480V bus. Start the first cogen unit.
5. Synchronize the first unit to the plant 12kV bus and close the unit 4160V breaker. The plant 12kV bus is now energized.
6. Separate the emergency generator from the 480V bus that was used to start the first cogen unit. Connect this same 480V bus to the plant 12kV bus by closing the appropriate breaker.
7. Shut down the emergency generator.
8. Start the remaining units in the cogen plant. Synchronize and close the 4160V breakers on all running units. This will connect all operating units to the plant 12kV bus. The units will be sharing the internal plant load (approximately 400kW total, or 100kW per unit). Since the Solar Centaur 40 engines require a minimum of 800kW load before water injection can be initiated, water injection will not be on at this point.
9. Reconnect cogen plant 12 kV bus to the field load. This will add the loads in the field (that automatically return to operation) to the cogen plant.
10. Manually return additional field loads to service to bring the plant load above the 4MW level and assure that water injection is operating on all running cogen units.
11. Continue to return field loads to service until all loads are on-line.

12. Under Black Start conditions, it can take 2 to 3 hours to get to the point where we are starting the HRSG's. Under normal starting conditions, it would only take 10 to 30 minutes to be at the point where the HRSG can be started.
13. Starting the HRSG includes pumping the feed water through the heat exchanger tubes and directing the engine exhaust through the heat exchanger tubes. At this point, the feed water and steel piping will begin heating, from the engine exhaust heat. Over a 15 to 60 minute period, the HRSG will reach its normal operating temperature. 30 to 60 minutes after the engine exhaust heat begins entering the HRSG, the SCR catalyst temperature reaches the 450 F level, allowing for the injection of ammonia and the reduction of NOx. After the catalyst modules are sufficiently saturated with ammonia, the NOx reduction efficiency is reached and the unit is capable of meeting the Rule 4703 NOx limits.

Appendix IX
Emission Estimates as Start-up and Shutdown

Emission Estimates at Start-up, Shutdown, and Commissioning for *SoLoNOx*TM Products

Leslie Witherspoon
Solar Turbines Incorporated

PURPOSE

Regulatory agencies are asking gas turbine users to quantify emissions during start-up and shutdown events in their air permit. The purpose of this PIL is to provide emission estimates for start-up and shutdown events. The commissioning process is also discussed.

INTRODUCTION

The information presented in this document is representative for both generator set and compressor set/mechanical drive (CS/MD) combustion turbine applications. Operation of duct burners and/or any add-on control equipment is not accounted for in the emissions estimates. Emissions related to the start-up, shutdown, and commissioning of combustion turbines will not be guaranteed.

Combustion turbine start-up occurs in one of three modes: cold, warm, or hot. On large, utility size, combustion turbines, the start-up time varies by the "mode". The start-up duration for a hot, warm, or cold *Solar* turbine is less than 10 minutes in simple-cycle and most combined heat and power applications.

Heat recovery steam generator (HRSG) steam pressure is usually 250 psig or less. At 250 psig or less, thermal stress within the HRSG is minimized and, therefore, firing ramp-up is not limited. However, some combined heat and power plant applications will desire or dictate longer start-up times, therefore emissions assuming a 60-minute start are also estimated.

A typical shutdown for a *Solar* turbine is <10 minutes. Emissions estimates for an elongated shutdown, 30-minutes, are also included.

Start-up and Shutdown emissions estimates for the *Mercury* 50 are found in PIL 205.

For start-up and shutdown emissions estimates for conventional combustion turbines, landfill gas, digester gas, or other alternative fuel applications, contact Solar's Environmental Programs Department.

START-UP EMISSION ESTIMATES

The start-up sequence, or getting to *SoLoNOx* mode, takes three steps:

1. Purge-crank
2. Ignition and acceleration to idle
3. Loading / thermal stabilization

During the "purge-crank" step, rotation of the turbine shaft is accomplished with a starter motor to remove any residual fuel gas in the engine flow path and exhaust. During "igni-

tion and acceleration to idle," fuel is introduced into the combustor and ignited in a diffusion flame mode and the engine rotor is accelerated to idle speed.

The third step consists of applying up to 50% load¹ while allowing the combustion flame to transition and stabilize. Once 50% load is achieved, the turbine transitions to *SoLoNOx* mode and the engine control system begins to hold the combustion primary zone temperature and limit pilot fuel to achieve the targeted nitrogen oxides (NO_x), carbon monoxide (CO), and unburned hydrocarbons (UHC) emission levels. Steps 2 and 3 are short-term transient conditions making up less than 10 minutes.

SHUTDOWN EMISSIONS

Normal, planned cool down/shutdown duration varies by engine model. The *Centaur 40*, *Centaur 50*, *Taurus 60*, and *Taurus 65* take about five minutes. The *Taurus 70*, *Mars 90* and *100*, *Titan 130* and *250* take about 10 minutes. Typically, once the shutdown process starts, the emissions will remain in *SoLoNOx* mode for ~ 90 seconds and move into a transitional mode for the balance of the estimated shutdown time (assumes unit was operating at full-load).

Tables 1 through 5 summarize the pounds of emissions per start-up and shutdown event for each product. Emissions estimates are presented for both generator and CS/MD applications on both natural gas and liquid fuel (diesel #2). The emissions estimates are calculated using empirical exhaust characteristics.

COMMISSIONING EMISSIONS

Commissioning generally takes place over a two-week period. Static testing, where no combustion occurs, usually requires one week and no emissions are expected. Dynamic testing, where combustion will occur, will see the engine start and shutdown a number of times and a variety of loads will be placed on the system. It is impossible to predict how long the turbine will run and in what combustion / emissions mode it will be running. The dynamic testing period is generally followed by one to two days of "tune-up" during which the turbine is running at various loads, most likely within low emissions mode (warranted emissions range).

Solar Turbines Incorporated
9330 Sky Park Court
San Diego, CA 92123-5398

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¹ 40% load for a Titan 250 on Natural gas. 65% load for liquid fuel (80% load for Centaur 40 and Mars 90).

**Table 1. Estimation of Start-up and Shutdown Emissions (lbs/event) for SoLoNOx Generator Set Applications
10 Minute Start-up and 10 Minute Shutdown
Natural Gas Fuel**

Data will NOT be warranted under any circumstances

	Centaur 40 4701S			Centaur 50 6201S			Taurus 60 7801S			Taurus 60 7901S			Taurus 65 8401S		
	NOx (lbs)	CO (lbs)	UHC (lbs)	NOx (lbs)	CO (lbs)	UHC (lbs)	NOx (lbs)	CO (lbs)	UHC (lbs)	NOx (lbs)	CO (lbs)	UHC (lbs)	NOx (lbs)	CO (lbs)	UHC (lbs)
Total Emissions per Start (lbs)	0.6	58.1	3.3	0.8	75.0	4.3	0.8	71.9	4.1	0.8	78.5	4.5	0.9	85.8	4.9

Total Emissions per Shutdown (lbs)	0.3	25.5	1.5	0.4	31.1	1.8	0.4	33.0	1.9	0.4	34.7	2.0	0.4	38.2	2.2
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	Taurus 70 10301S			Mars 90 13002S GSC			Mars 100 15002S GSC			Titan 130 20501S			Titan 250 30002S		
	NOx (lbs)	CO (lbs)	UHC (lbs)	NOx (lbs)	CO (lbs)	UHC (lbs)	NOx (lbs)	CO (lbs)	UHC (lbs)	NOx (lbs)	CO (lbs)	UHC (lbs)	NOx (lbs)	CO (lbs)	UHC (lbs)
Total Emissions per Start (lbs)	1.2	113.0	6.5	1.4	129.0	7.4	1.5	142.7	8.2	2.1	195.6	11.2	3.0	273.1	15.6

Total Emissions per Shutdown (lbs)	1.4	118.2	6.8	1.7	147.9	8.4	1.8	153.5	8.8	2.4	210.0	12.0	3.8	325.6	18.6
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Assumes ISO conditions: 59F, 60% RH, sea level, no losses

Assumes unit is operating at full load prior to shutdown.

Assumes natural gas fuel; ES 9-98 compliant.

**Table 2. Estimation of Start-up and Shutdown Emissions (lbs/event) for SoLoNOx Generator Set Applications
60 Minute Start-up and 30 Minute Shutdown
Natural Gas Fuel**

Data will NOT be warranted under any circumstances

	Centaur 40 4701S			Centaur 50 6201S			Taurus 60 7801S			Taurus 60 7901S			Taurus 65 8401S		
	NOx (lbs)	CO (lbs)	UHC (lbs)	NOx (lbs)	CO (lbs)	UHC (lbs)	NOx (lbs)	CO (lbs)	UHC (lbs)	NOx (lbs)	CO (lbs)	UHC (lbs)	NOx (lbs)	CO (lbs)	UHC (lbs)
Total Emissions per Start (lbs)	4.1	219.4	13.0	5.0	272.4	16.1	5.4	279.9	16.6	5.7	299.8	17.8	6.1	326.5	19.3
Total Emissions per Shutdown (lbs)	1.8	121.1	7.1	2.3	163.3	9.5	2.3	145.4	8.5	2.5	163.5	9.6	2.6	177.2	10.4

	Taurus 70 10301S			Mars 90 13002S			Mars 100 15002S			Titan 130 20501S			Titan 250 30002S		
	NOx (lbs)	CO (lbs)	UHC (lbs)	NOx (lbs)	CO (lbs)	UHC (lbs)	NOx (lbs)	CO (lbs)	UHC (lbs)	NOx (lbs)	CO (lbs)	UHC (lbs)	NOx (lbs)	CO (lbs)	UHC (lbs)
Total Emissions per Start (lbs)	7.5	420.4	24.8	10.5	570.8	33.7	10.6	544.0	32.3	13.8	740.4	43.8	15.3	548.1	34.1
Total Emissions per Shutdown (lbs)	3.4	238.0	13.9	4.3	277.0	16.2	4.6	296.5	17.4	6.0	405.3	23.7	6.4	324.3	19.5

Assumes ISO conditions: 59F, 60% RH, sea level, no losses.

Assumes unit is operating at full load prior to shutdown.

**Table 3. Estimation of Start-up and Shutdown Emissions (lbs/event) for SoLoNOx CS/MD Applications
10 Minute Start-up and 10 Minute Shutdown
Natural Gas Fuel**

Data will NOT be warranted under any circumstances

	Centaur 40 4702S			Centaur 50 6102S			Taurus 60 7802S		
	NOx	CO	UHC	NOx	CO	UHC	NOx	CO	UHC
	(lbs)	(lbs)	(lbs)	(lbs)	(lbs)	(lbs)	(lbs)	(lbs)	(lbs)
Total Emissions per Start (lbs)	0.7	64.4	3.7	0.8	69.1	4.0	0.7	64.3	3.7
Total Emissions per Shutdown (lbs)	0.3	30.2	1.7	0.4	35.4	2.0	0.4	33.0	1.9

	Taurus 70 10302S			Mars 90 13002S CSMD			Mars 100 15002S CSMD			Titan 130 20502S			Titan 250 30002S		
	NOx	CO	UHC	NOx	CO	UHC	NOx	CO	UHC	NOx	CO	UHC	NOx	CO	UHC
	(lbs)	(lbs)	(lbs)	(lbs)	(lbs)	(lbs)	(lbs)	(lbs)	(lbs)	(lbs)	(lbs)	(lbs)	(lbs)	(lbs)	(lbs)
Total Emissions per Start (lbs)	0.8	73.1	4.2	1.2	109.3	6.2	1.3	119.5	6.8	1.9	176.9	10.1	3.1	284.8	16.3
Total Emissions per Shutdown (lbs)	1.1	93.4	5.3	1.5	132.6	7.6	1.7	143.2	8.2	2.4	207.6	11.9	3.6	313.4	17.9

Assumes ISO conditions: 59F, 60% RH, sea level, no losses.

Assumes unit is operating at full load prior to shutdown.

Assumes natural gas fuel; ES 9-98 compliant.

**Table 4. Estimation of Start-up and Shutdown Emissions (lbs/event) for SoLoNOx Generator Set
10 Minute Start-up and 10 Minute Shutdown
Liquid Fuel (Diesel #2)**

Data will NOT be warranted under any circumstances

	Centaur 40 4701S			Centaur 50 6201S			Taurus 60 7801S			Taurus 60 7901S			Taurus 65 8401S		
	NOx (lbs)	CO (lbs)	UHC (lbs)	NOx (lbs)	CO (lbs)	UHC (lbs)	NOx (lbs)	CO (lbs)	UHC (lbs)	NOx (lbs)	CO (lbs)	UHC (lbs)	NOx (lbs)	CO (lbs)	UHC (lbs)
Total Emissions per Start (lbs)	1.3	44.5	7.4	1.7	59.0	9.8	1.6	54.1	8.9	1.7	59.8	9.9	1.9	65.3	10.8
Total Emissions per Shutdown (lbs)	0.6	17.3	2.8	0.7	21.2	3.4	0.8	22.3	3.6	0.8	23.5	3.8	0.9	25.9	4.2

	Taurus 70 10301S			Mars 100 15002S GSC			Titan 130 20501S		
	NOx (lbs)	CO (lbs)	UHC (lbs)	NOx (lbs)	CO (lbs)	UHC (lbs)	NOx (lbs)	CO (lbs)	UHC (lbs)
Total Emissions per Start (lbs)	2.5	86.2	14.3	3.1	106.6	17.6	4.3	147.5	24.4
Total Emissions per Shutdown (lbs)	2.7	78.9	12.8	3.5	102.3	16.6	4.7	139.1	22.6

Assumes ISO conditions: 59F, 60% RH, sea level, no losses.

Assumes unit is operating at full load prior to shutdown.

Assumes #2 Diesel fuel; ES 9-98 compliant.

**Table 5. Estimation of Start-up and Shutdown Emissions (lbs/event) for SoLoNOx Generator Set
60 Minute Start-up and 30 Minute Shutdown
Liquid Fuel (Diesel #2)**

Data will NOT be warranted under any circumstances

	Centaur 40 4701S			Centaur 50 6201S			Taurus 60 7801S			Taurus 60 7901S			Taurus 65 8401S		
	NOx	CO	UHC	NOx	CO	UHC	NOx	CO	UHC	NOx	CO	UHC	NOx	CO	UHC
	(lbs)	(lbs)	(lbs)	(lbs)	(lbs)	(lbs)	(lbs)	(lbs)	(lbs)	(lbs)	(lbs)	(lbs)	(lbs)	(lbs)	(lbs)
Total Emissions per Start (lbs)	11.7	194.7	30.9	15.2	271.9	43.3	15.6	267.5	42.5	14.7	282.6	45.0	15.5	303.6	48.4
Total Emissions per Shutdown (lbs)	4.4	84.7	13.6	6.7	164.3	27.0	6.4	142.4	23.2	6.3	159.0	26.0	6.7	170.8	28.0

	Taurus 70 10301S			Mars 100 15002S			Titan 130 20501S		
	NOx	CO	UHC	NOx	CO	UHC	NOx	CO	UHC
	(lbs)	(lbs)	(lbs)	(lbs)	(lbs)	(lbs)	(lbs)	(lbs)	(lbs)
Total Emissions per Start (lbs)	18.6	380.2	60.8	26.3	500.7	79.9	34.4	677.0	108.0
Total Emissions per Shutdown (lbs)	8.3	226.6	37.3	11.2	281.2	46.1	15.0	388.5	63.7

Assumes ISO conditions: 59F, 60% RH, sea level, no losses.

Assumes unit is operating at full load prior to shutdown.

Assumes #2 Diesel fuel; ES 9-98 compliant.