

SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT ENGINEERING AND COMPLIANCE DIVISION PERMIT APPLICATION EVALUATION AND CALCULATIONS	PAGES 2	PAGE 1
	APPL. NO 485959	DATE 05/24/2012
	PROCESSED BY GCR	CHECKED BY AD

TITLE V REVISION EVALUATION
(Minor Revision)

APPLICANT'S NAME: **BREA PARENT 2007, LLC**
(Previous Business name Ridgewood Power Management, LLC)

MAILING ADDRESS: 1057 East Imperial Highway, # 609
Placentia, CA 92870-1717

EQUIPMENT ADDRESS: 1942 Valencia Avenue
Brea, CA 92823-6807

FACILITY ID: **113518**

CONTACTS: Attn.: Karl Darrington, Plant Manager
Phone: (714) 985-1781
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Yorke Engineering, LLC
Kedar Desai, Sr. Engr.
Phone: (949) 248-8490, Ext 233
E-mail: kdesai@yorkeengr.com

Equipment Description: (A/N 485956 (Engine A), 485957 (Engine B) & 485958 (Engine C))

1. SILOXANES REMOVAL SYSTEM, APPLIED FILTER TECHNOLOGY, MODEL SAG 842D, WITH TWO VESSELS IN SERIES, LOCATED PRIOR TO ENGINE, COMMON TO THREE INTERNAL COMBUSTION ENGINES (A/N, 414941, 414942, AND 414943)
2. COMBUSTION PRE-CHAMBER FOR ENGINE, COOPER COMPRESSION MODEL 825
3. INTERNAL COMBUSTION ENGINE "A", OR "B" OR "C", COOPER ENERGY SERVICES/SUPERIOR, MODEL NO. 16 SGTA, LANDFILL GAS-FIRED, LEAN-BURN, TURBOCHARGED, INTERCOOLED, 4-STROKE, RECIPROCATING, SPARK IGNITION, V-16 TYPE, 2650 H.P., EQUIPPED WITH TIME-SHARED CEMS WITH ICE "B", AND DRIVING AN 1875 K.W. ELECTRICAL GENERATOR.
4. OXIDATION CATALYST, EAS INC., 4-ELEMENT, 1.8 INCHES W. C. MAXIMUM BACK-PRESSURE.
5. EXHAUST STACK, 17.75 "DIAMETER x 28'-0"H.

BACKGROUND:

On 7/31/2008, A/N 485959 was submitted for Title V permit revision to include change of permit conditions submitted under A/Ns 485956, 485957 and 485958 for identical IC engines. This permit revision is considered minor revision as there is no change in mass emission rates for the criteria pollutants.

The main reason for change of permit condition for the above three applications, is to revise NOx concentration limit by applying Emission Correction Factor (ECF), per Rule 1110.2 (d) (1) (i) and (ii). Any

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other changes requested were addressed, as deemed appropriate, under most recent Title V revision permit granted December 21, 2011, Section D, permits to operate G16274, G16275 and G16276.

On 12/21/2011, Title V permit administrative revision (A/N 515531) was issued for business name change from Ridgewood Power Management, LLC to Brea Parent 2007, LLC. Also, permits to construct for 3-IC engines [A/Ns 414941PC (A), 414942PC (B) and 414943PC (C)] were converted to permits to operate as G16274, G16275 and G16276, respectively. Previous permits to operate for IC engines (for A/Ns 331717, 331718 and 331719) were inactivated and removed from Title V permit.

Facility has filed Title V Renewal A/N 535752 on 4/4/12.

Attached is the evaluation for change of permit condition for A/Ns 485956, 485957 and 485958 for the revised NOx concentration limit, for each of the engine, by applying Emission Correction Factor (ECF), per Rule 1110.2.

RULES EVALUATION:

Compliance with all applicable rules and regulations is expected for this TV minor revision, with no increase in mass emission for criteria pollutants, no relaxation in monitoring and recordkeeping and no impact for NSPS and NESHAP standards. No public notice is required

CONCLUSIONS/RECOMMENDATION:

Issuance of the Title V permit minor revision is recommended by including 3 IC engines in Section D, upon completion of 45-day EPA review.

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PERMIT TO OPERATE EVALUATION

APPLICANT'S NAME: **BREA PARENT 2007, LLC**
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Yorke Engineering, LLC
Kedar Desai, Sr. Engr.
Phone: (949) 248-8490, Ext 233
E-mail: kdesai@yorkeengr.com

Equipment Description: (A/N 485956 (Engine A), 485957 (Engine B) & 485958 (Engine C)

LANDFILL GAS PRE-TREATMENT AND CONTROL SYSTEM CONSISTING OF:

1. SILOXANES REMOVAL SYSTEM, APPLIED FILTER TECHNOLOGY, MODEL SAG 842D, WITH TWO VESSELS IN SERIES, COMMON TO THREE INTERNAL COMBUSTION ENGINES.
2. COMBUSTION PRE-CHAMBER FOR ENGINE, COOPER COMPRESSION MODEL 825
3. INTERNAL COMBUSTION ENGINE "A" OR "B" OR "C", COOPER ENERGY SERVICES/SUPERIOR, MODEL NO. 16 SGTA, LANDFILL GAS-FIRED, LEAN-BURN, TURBOCHARGED, INTERCOOLED, 4-STROKE, RECIPROCATING, SPARK IGNITION, V-16 TYPE, 2650 H.P., AND DRIVING AN 1875 K.W. ELECTRICAL GENERATOR.
4. OXIDATION CATALYST, EAS INC., 4-ELEMENT.
5. EXHAUST STACK, 17.75 INCH DIA. x 28 FT. H.

Conditions:

1. OPERATION OF THIS EQUIPMENT SHALL BE CONDUCTED IN COMPLIANCE WITH ALL DATA AND SPECIFICATIONS SUBMITTED WITH THE APPLICATION UNDER WHICH THIS PERMIT IS ISSUED UNLESS OTHERWISE NOTED BELOW.
[RULE 204]

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2. THIS EQUIPMENT SHALL BE PROPERLY MAINTAINED AND KEPT IN GOOD OPERATING CONDITION AT ALL TIMES.
[RULE 204]
3. SILOXANE REMOVAL SYSTEM, CONTAINING ADEQUATE QUANTITY OF MEDIA, SHALL BE OPERATED AS PER MANUFACTURER'S SPECIFICATIONS AND RECOMMENDATIONS.
[RULE 204]
4. A FLOW INDICATING AND RECORDING DEVICE SHALL BE MAINTAINED IN THE LANDFILL GAS SUPPLY LINE TO EACH ENGINE TO MEASURE AND RECORD THE VOLUMETRIC FLOW RATE OF LANDFILL GAS (IN SCFH) BEING BURNED.
[RULE 1303(b) (2)-OFFSET]
5. THE TOTAL HEATING VALUE OF LANDFILL GAS BURNED IN THIS ENGINE SHALL NOT EXCEED 28.8 MILLION BTU'S PER HOUR. A LOG SHALL BE KEPT INDICATING THE TOTAL HEATING VALUE OF GAS BURNED IN THIS ENGINE BASED ON THE RECORDED FLOW RATE (SCFH) AND THE LATEST WEEKLY BTU CONTENT READING.
[RULE 1303(b) (2)-OFFSET]
6. WEEKLY READINGS OF THE BTU CONTENT OF THE LANDFILL GAS AT THE INLET TO THE ENGINE SHALL BE TAKEN USING LANDTEC GEM 2000 ANALYZER OR EQUIVALENT. ALL RESULTS SHALL BE RECORDED.
[RULE 204]
7. ALL RECORDING DEVICES SHALL BE SYNCHRONIZED WITH RESPECT TO THE TIME OF DAY.
[RULE 204]
8. A SAMPLING PORT SHALL BE INSTALLED AT THE INLET GAS LINE TO THE ENGINE TO ALLOW THE COLLECTION OF A LANDFILL GAS SAMPLE.
[RULE 217]
9. TWO SAMPLING PORTS SHALL BE MAINTAINED IN THE INTERNAL COMBUSTION ENGINE EXHAUST DUCT 8-10 DUCT DIAMETERS DOWNSTREAM AND TWO DUCT DIAMETERS UPSTREAM OF ANY FLOW DISTURBANCE AT 90 DEGREES APART AND SHALL CONSIST OF TWO 2-1/2 INCH WELD NIPPLES WITH PLUGS. AN EQUIVALENT METHOD FOR EMISSIONS SAMPLING MAY BE USED UPON APPROVAL OF THE SCAQMD. ADEQUATE AND SAFE ACCESS TO THE TEST PORTS SHALL BE PROVIDED.
[RULE 217]
10. THE OPERATOR SHALL CONDUCT EQUIPMENT PERFORMANCE TESTS, AT LEAST ONCE EVERY TWO YEARS, OR EVERY 8,760 OPERATING HOURS, IN ACCORDANCE WITH SCAQMD APPROVED PROTOCOL AND TEST PROCEDURES, AND FURNISH THE SCAQMD WRITTEN RESULTS OF SUCH PERFORMANCE TESTS WITHIN 60 DAYS OF COMPLETION OF TESTS. WRITTEN NOTICE OF THE PERFORMANCE TEST SHALL BE PROVIDED TO THE SCAQMD 10 DAYS PRIOR TO THE TESTING SO THAT AN OBSERVER MAY BE PRESENT. THE TESTS SHALL INCLUDE, BUT MAY NOT BE LIMITED TO. A TEST OF THE INLET FUEL GAS TO THE ENGINE AND THE ENGINE EXHAUST FOR:

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- A. METHANE
- B. TOTAL NON-METHANE ORGANIC COMPOUNDS (TNMOC)
- C. OXIDES OF NITROGEN (EXHAUST ONLY)
- D. CARBON MONOXIDE (EXHAUST ONLY – AFTER CATALYST)
- E. CARBON DIOXIDE
- F. OXYGEN
- G. NITROGEN
- H. MOISTURE CONTENT
- I. TEMPERATURE
- J. FLOW RATE
- K. TOTAL REDUCED SULFUR COMPOUNDS, AS H₂S (INLET)
- L. TNMOC DESTRUCTION EFFICIENCY, WT%
- M. BTU CONTENT (INLET ONLY)
- N. POWER OUTPUT

[RULE 1110.2, 1150.1, 1303 (a) (1)-BACT, 1303(b)(2)-OFFSET]

11. EMISSIONS THIS EQUIPMENT SHALL NOT EXCEED THE FOLLOWING:

POLLUTANTS	EMISSIONS PER ENGINE (LB/DAY)
RHC	27
NOX	84
SOX	12
CO	167
PM	1

[RULE 1110.2, 1150.1, 1303 (a) (1)-BACT, 1303 (b) (2) -OFFSET]

12. OPERATION OF THIS EQUIPMENT SHALL NOT RESULT IN THE EMISSION OF RAW LANDFILL GAS TO THE ATMOSPHERE. ANY BREAKDOWN OR MALFUNCTION WHICH RESULTS IN EMISSIONS OF RAW LANDFILL GAS SHALL BE REPORTED TO THE SCAQMD MANAGER OF TOXICS AND WASTE MANAGEMENT TEAM WITHIN ONE HOUR OF OCCURRENCE AND IMMEDIATE REMEDIAL MEASURES SHALL BE UNDER TAKEN TO CORRECT THE PROBLEM AND PREVENT FURTHER EMISSIONS INTO THE ATMOSPHERE.

[RULE 1150.1]

13. THIS EQUIPMENT SHALL NOT BE OPERATED IN SUCH A MANNER AS TO INTERFERE UNREASONABLY WITH THE ABILITY OF THE LANDFILL OWNER/OPERATOR AND, BREA PARENT, LLC, TO COMPLY WITH DISTRICT RULE 1150.1 OR ANY OTHER DISTRICT RULE LIMITING LANDFILL GAS MIGRATION OR SURFACE EMISSIONS.

[RULE 1150.1]

14. THIS EQUIPMENT SHALL BE OPERATED IN COMPLIANCE WITH RULE 1110.2. [RULE 1110.2]

15. A CONTINUOUS EMISSION MONITORING SYSTEM (CEMS) SHALL BE INSTALLED AND OPERATED TO MEASURE THE ENGINE EXHAUST STACK CONCENTRATION FOR NOX AND O₂, ON A DRY BASIS. IN ADDITION, THE SYSTEM SHALL CONVERT THE ACTUAL NOX CONCENTRATION TO A CORRECTED NOX CONCENTRATION AT 15% O₂ AND CONTINUOUSLY RECORD THE STACK NOX

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CONCENTRATION, STACK O2 CONCENTRATION AND CORRECTED NOX CONCENTRATION AT 15% O2. THIS MONITORING SYSTEM SHALL COMPLY WITH THE REQUIREMENTS OF SCAQMD RULE 218.
[RULE 218, 1110.2]

16. THIS EQUIPMENT SHALL NOT BURN NATURAL GAS OR OTHER AUXILIARY FUEL. [RULE 1110.2, 1303 (a) (1)-BACT]
17. A GAUGE SHALL BE INSTALLED AND MAINTAINED TO INDICATE, IN INCHES OF WATER COLUMN, THE PRESSURE DIFFERENTIAL ACROSS THE CATALYST. WHEN IN OPERATION, THE PRESSURE DIFFERENTIAL ACROSS THE CATALYST SHALL NOT EXCEED 1.8 INCHES OF WATER COLUMN OR AS PER CATALYST SUPPLIER'S SPECIFICATION, WHICHEVER IS GREATER.
[RULE 204, 1303(a) (1)-BACT]
18. THE CATALYST SHALL BE CHEMICALLY WASHED PER MANUFACTURER'S SPECIFICATIONS. RECORDS OF CHEMICAL WASHINGS AND/OR CATALYST REPLACEMENT SHALL BE MAINTAINED AND MADE AVAILABLE TO AQMD PERSONNEL UPON REQUEST.
[RULE 204, RULE 1303(a) (1)-BACT]
19. ALL RECORDS SHALL BE KEPT FOR A PERIOD OF AT LEAST FIVE YEARS AND SHALL BE MADE AVAILABLE TO SCAQMD PERSONNEL UPON REQUEST.
[RULE 3004(a) (4)]

EMISSIONS AND REQUIREMENTS:

20. THIS EQUIPMENT IS SUBJECT TO THE APPLICABLE REQUIREMENTS OF THE FOLLOWING RULES AND REGULATIONS:
 - METHANE: LEAN BURN COMBUSTION ENGINE, OUTLET METHANE CONCENTRATION TO LESS THAN 3,000 PPMV, DRY BASIS, CORRECTED TO 15% OXYGEN, RULE 1150.1.
 - NMOC: 98 % (BY WT) TNMOC DESTRUCTION EFFICIENCY OR IN EXHAUST 20 PPMV, DRY BASIS, AS HEXANE, AT 3% O2, RULE 1150.1
 - NMOC: 20 PPMV, 40CFR60 SUBPART WWW
 - CO: 2000 PPMV, CORRECTED TO 15% O2, DRY BASIS, AVERAGED OVER 15 MINUTES, RULE 1110.2.
 - NOX: 50.8 PPMV (A), 53.6 PPMV (B), 49.7 PPMV (C), CORRECTED TO 15% O2, DRY BASIS, AVERAGED OVER 15 MINUTES, RULE 1110.2.
 - ROG: 40 PPMV, AS CARBON, CORRECTED TO 15% O2, DRY BASIS, RULE 1110.2.
 - PM: RULE 404, SEE APPENDIX B FOR EMISSION LIMITS
 - HAP: 40 CFR PART 63 SUBPART ZZZZ

BACKGROUND:

On 7/31/2008, A/Ns 485956, 485957 and 485958 were submitted for change of permit conditions for these identical IC engines. A/N 485959 was also submitted for Title V revision to include these permits. The main reason for change of permit condition is to revise NOx concentration limit by applying Emission Correction Factor (ECF), per Rule 1110.2 (d) (1) (i) and (ii). Any other changes requested were addressed

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under Title V revision permit granted December 21, 2011, Section D, for permits to operate G16274, G16275 and G16276.

On 12/21/2011, Title V permit administrative revision (A/N 515531) was issued for business name change from Ridgewood Power Management, LLC to Brea Parent 2007, LLC. Also, permits to construct for 3-IC engines [A/Ns 414941PC (A), 414942PC (B) and 414943PC (C)] were converted to permits to operate as G16274, G16275 and G16276, respectively. Previous permits to operate for IC engines (for A/Ns 331717, 331718 and 331719) were inactivated and removed from Title V permit.

Facility has filed Title V Renewal A/N 535752 on 4/4/12.

ECF Source Tests:

[Three (3) IC engines at Brea Parent 2007. Ref: 414941/G16274, 414942/G16275 & 414943/G16276].

The change of permit condition evaluation pertains to revision of NOx concentration limit for each of the biogas (LFG) fueled IC engine using ECF, as allowed by Rule 1110.2.

Source test (S/T) protocol for ECF determination (for each of the 3 IC engines, POs G16274, G16275 and G16276), in accordance with ASME PTC-17 described under Rule 1110.2 was approved by AQMD on 4/4/12.

A complete source test report, dated May 18, 2012, prepared by the Yorke Engineering, LLC was submitted to AQMD, titled "SCAQMD Rule 1110.2 Efficiency Correction Factor Test" (Based on ASME PTC-17). ECF source tests were conducted on April 17, 18 and 19, 2012 at the Brea Parent 2007 facility, 1942 Valencia Avenue, Brea, CA. The following parties were involved for the S/T;

- West Engineering
- Yorke Engineering, LLC
- Brea Parent 2007, LLC
- Energy Environmental Solutions
- AtmAA Laboratories, and
- Gas Technical Institute (GTI).

A complete report is included with lead A/N 485956. E-copy of the report (Disc) is also submitted by Yorke Engr.

NOx Emission:

Summary of ECF corrected NOx concentration value for each engine is listed below.

Engine	Net Specific Energy Consumption (q _a) Btu/hp-hr	ECF*	ECF Adjusted NOx, ppmvd @ 15% O ₂ = 36 ppmvd# x ECF
A (A/N 414942/G16274)	6551	1.41	50.76
B (A/N 414943/G16275)	6206	1.49	53.64
C (A/N 414944/G16276)	6716	1.38	49.66

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*ECF = 9250 Btu/hp-hr / Measured q_a in Btu/hp-hr per Rule 1110.2 (d) (1) (C)

#Rule 1110.2 concentration limit for Biogas engine, Table II, BHP \geq 500.

RULES EVALUATION:

RULE 1110.2:

The proposed change of condition for each of the three (3) engines only pertains to revised NOx emission concentration (i.e. Condition No. 20 listed under current POs) based on Emission Correction Factor (ECF) derived by source tests results. The revised NOx concentration limit for each engine is listed in a Table shown on Pg. 5. Compliance with Rule 1110.2 NOx concentration limit can be expected.

REGULATION XIII:

There is no change made in NOx mass emission (lbs/day) and, therefore, no BACT/LAER review, air dispersion modeling or offset is required. Compliance is expected.

REGULATION XXX:

Applicant has submitted Title V permit revision A/N 485959 to incorporate proposed new permits to operate under A/Ns 485956, 485957 and 485958 (Minor Revision to Title V permit). Compliance is expected.

As there is no change in criteria pollutants' mass emissions than existing permits, compliance with all applicable Rules and Regulations is expected.

CONCLUSIONS/RECOMMENDATION:

Issuance of the permit to operate for each of the engine listed above is recommended, upon completion of 45-day EPA review. The proposed POs shall be incorporated into Title V minor- permit revision, A/N 485959.

Note: Upon approval of the final POs, they shall be included in Section D and, existing POs (G16274, G16275 and G16276) shall be inactivated and removed from Section D.