PERMITTEE

Live Oak Heat & Power, LLC
19470 US Highway 90
Live Oak, FL 32060

PERMITTING AUTHORITY

Florida Department of Environmental Protection
Waste and Air Resource Management Program
Northeast District Office
8800 Baymeadows Way West, Suite 100
Jacksonville, Florida 32256

PROJECT

Air Permit No. 1210472-001-AC
Air Construction Permit

This air construction permit authorizes the construction of a 9.0 megawatt (MW) cogeneration (combined heat and power) facility. The facility will include a natural gas-fired engine and a natural gas-fired boiler that will be used as a backup to the engine when it is not in operation. The proposed work will be conducted at the new Live Oak Heat & Power, LLC, a project developed by Blue Earth, Inc. facility, which is categorized under Standard Industrial Classification No. 4911. The facility will be is located in Suwannee County at 19470 US Highway 90, Live Oak, Florida. This location is adjacent to the existing Pilgrim's Pride Corporation of Georgia, Inc., Live Oak Florida Processing Facility. The UTM coordinates are Zone 17: 292.7 km East; 3361.8 km North. .

NOTICE AND PUBLICATION

The Department issued a Draft Air Construction Permit (draft permit) package on December 17, 2013. Subsequent to its issuance, it was determined that applicant's authorized corporation name according to the Florida Department of State is Live Oak Heat & Power, LLC. Therefore the Department, through its permitting authority, withdrew the draft permit package issued on December 17, 2013, and replaced it with a new draft permit package on January 14, 2014. The applicant published the Public Notice in The Suwannee Democrat on January 17, 2014. The Department received the proof of publication on January 17, 2014. No requests for administrative hearings or requests for extensions of time to file a petition for administrative hearing were received.

COMMENTS

A. Comments were received from Mr. Thomas P. Sweat, P.E., Principal Engineer, EPS, on January 30, 2014. The comments and Department responses are summarized below:

1. Please update the following sections to reflect a change in engine manufacturer:

    a. Title Page, Project and Location (page 1 of 25):

    The construction permit authorizes the construction of a ~~9.34~~9.0 megawatt (MW) cogeneration

(combined heat and power) facility. The facility will include a natural gas-fired engine and a natural gas-fired boiler that will be used as a backup to the engine when it is not in operation. The proposed work will be conducted at the new Live Oak Heat & Power, LLC, a project developed by Blue Earth, Inc. facility, which is categorized under Standard Industrial Classification No. 4911. The facility will be is located in Suwannee County at 19470 US Highway 90, Live Oak, Florida. This location is adjacent to the existing Pilgrim's Pride Corporation of Georgia, Inc., Live Oak Florida Processing Facility. The UTM coordinates are Zone 17: 292.7 km East; 3361.8 km North.

b. Footer (multiple pages):

- Live Oak Heat & Power, LLC
- Live Oak Heat & Power, LLC, a project developed by Blue Earth, Inc.
- Air Permit No. 1210472-001-AC
- ~~9.34~~9.0 MW Cogeneration Plant

c. Section 1, Facility and Project Description, Facility (page 3 of 25):

This facility consists of one nominal ~~9.34~~9.0 megawatt (MW) cogeneration (combined heat and power) facility and a back-up steam boiler. The generator is manufactured by ~~Wartsila~~Rolls-Royce, Model No. ~~20V34SG~~B35:40V20AG, and consists of a spark-ignition, four-stroke, lean burn, natural gas fired internal combustion engine. The engine is rated at ~~9.34~~9.0 MW electrical output and ~~12,864~~12,364 brake horsepower mechanical output at 100 percent load.

d. Section 1, Facility and Project Description, Proposed Project (page 3 of 25):

This project authorizes the construction permit authorizes the construction of a ~~9.34~~9.0 megawatt (MW) cogeneration (combined heat and power) facility. The facility will include a ~~12,864~~12,364 brake horsepower natural gas-fired engine and a 500 hp natural gas-fired boiler that will be used as a backup to the engine when it is not in operation.

e. Section 1, Facility and Project Description, Brief Description Table (page 3 of 25):

E.U. ID No.	Brief Description
-001	20.92 MMBtu/hr natural gas fired boiler
-002	~~12,864~~12,364 brake horsepower natural gas fired spark ignition engine

f. Section 3, Subsection B, Emission Unit Description (page 14 of 25):

ID No.	Emission Unit Description
002	A generator set (~~Wartsila~~Rolls-Royce Model ~~20V34SG~~B35:40V20AG or equivalent) comprised of a spark-ignition, four-stroke, lean-burn internal combustion engine. The engine is rated at ~~9.34~~9.0 MW of electrical output and ~~12,864~~12,364 brake horsepower mechanical output at 100 percent load. The engine is fired with natural gas. Exhaust gas exits at approximately ~~740°F~~680°F with a volumetric flow rate of ~~64,500~~67,000 acfm through a stack that is approximately 4 feet in diameter and 55 feet above ground level. The engine will be equipped with two thermal heat exchangers: • A jacket surrounding the engine that will be used to heat water to 195 °F, and

	• An exhaust gas boiler that will be used to generate steam and a heat recovery steam generator. There is not a duct burner associated with the heat recovery gas boiler. Exhaust gas exits at approximately 160 °F. The hot water and steam generated will be sent directly to Pilgrim's Pride Corporation of Georgia, Inc., Live Oak Florida Processing Facility located adjacent to this facility. A portion of the electricity generated will be sent directly to the Pilgrim's Pride facility while the remainder is to be sold to the local electric utility. Nitrogen Oxides (NOx) emissions will be minimized through the use of the lean burn technology and electronic tuning of the engine. Carbon Monoxide (CO), Volatile Organic Compounds (VOCs), and organic Hazardous Air Pollutant (HAP) emissions will be controlled through the use of an oxidation catalyst. Exhaust gases passes through a fixed catalyst bed and an oxidation reaction occurs converting the CO, VOC and HAP to carbon dioxide (CO2) and water vapor (H2O). The oxidation catalyst will be either a ceramic or metallic substrate coated with a layer that increases its surface area (washcoat) and a catalytically active material (e.g. platinum or palladium) is added onto the washcoat. It is estimated that the control efficiency of the oxidation catalyst is 80% and 94% respectively, for VOC and organic HAPs, and CO emissions.

g. Section 3, Subsection B, Additional Details Table (page 14 of 25):

Engine Brake HP	Date of Construction	Model Year	Primary Fuel	Type of Engine	Displacement liters/cylinder (l/c)	Serial #	Date of last mod. or reconst.
~~9.34~~9.0 MW ~~12,864~~ 12,364 HP	2014	2013	Natural Gas	Non-Emergency	~~—~~ 38.45	Unknown	N/A

h. Section 3, Subsection B, Equipment B.1.a. (page 15 of 25):

Reciprocating Internal Combustion Engine: The permittee is authorized to construct and install a ~~12,864~~12,364 brake horsepower (mechanical output at 100 percent load) engine driven co-generator unit (~~Wartsila~~Rolls-Royce, Model No. ~~20V34SG~~B35:40V20AG). The co-generator unit generally consists of the following components: engine, oxidation catalyst, exhaust gas heat recovery boiler.

i. Section 3, Subsection B, Equipment B.2. (page 15 of 25):

Permitted Capacity. The natural gas fired engine has a maximum ~~12,864~~12,364 brake horsepower mechanical output at 100 percent load (approximate design heat input rate is ~~82.68~~63.59 MMBtu/hour equivalent to ~~81,000~~62,300 cubic feet of natural gas per hour).

Department response: Based on the comment, the requested changes have been made in the final permit as requested.

2. Section 3, Subsection B, Permit Condition B.9. (page 16 of 25):

~~a.~~ NOx emissions shall not exceed 1.0 grams per horsepower hour (g/HP-hr) or 82 parts per million by volume dry (ppmvd) @15%O2. Owners and operators of stationary non-certified SI engines may choose to comply with the emission standards in units of either g/HP-hr or ppmvd at 15 percent O2.

[40 CFR 60.4233(e); Table 1 of Subpart JJJJ of Part 60 CFR]

~~b. NOx emissions shall not exceed 57.0 tons per any consecutive 12-month rolling period. This limitation is requested by the applicant to escape being classified as a Title V Major source when emissions are totaled with the Pilgrim's Pride Corporation of Georgia, Inc., Live Oak Florida Processing Facility (AIRS ID #1210018).~~

~~[Application No. 1210472-001-AC; Applicant Requested Emission Limitation; Title V Major Source Applicability Avoidance; Rule 62-4.070, F.A.C.; Rule 62-210.200(PTE), F.A.C.]~~

Justification: Live Oak Heat & Power, LLC respectfully requests the removal of the above permit condition. This permit condition is redundant (also listed under Section 3, Facility-Wide Conditions).

Department response: Based on the comment, Section 3, Subsection B, Permit Condition B.9.b. is revised as follows in the final permit:

b. ~~NOx emissions shall not exceed 57.0 tons per any consecutive 12-month rolling period.~~

~~This limitation is requested by the applicant to escape being classified as a Title V Major source when emissions are totaled with the Pilgrim's Pride Corporation of Georgia, Inc., Live Oak Florida Processing Facility (AIRS ID #1210018).~~ Annual NO_x emissions for this emissions unit are limited in accordance with the facility-wide emissions cap stated in Section 3. Facility-Wide Conditions, Condition No.1.a.

[Application No. 1210472-001-AC; ~~Applicant Requested Emission Limitation; Title V Major Source Applicability Avoidance;~~ Rule 62-4.070, F.A.C.; Rule 62-210.200(PTE), F.A.C.]

3. Section 3, Subsection B, Permit Condition B.10. (page 16 of 25):

~~a.~~ CO emissions shall not exceed 2.0 g/HP-hr or 270 ppmvd@ 15%O2. Owners and operators of stationary non-certified SI engines may choose to comply with the emission standards in units of either g/HP-hr or ppmvd at 15 percent O2.

[40 CFR 60.4233(e); Table 1 of Subpart JJJJ of Part 60 CFR]

~~b. CO emissions shall not exceed 20.0 tons per any consecutive 12-month rolling period. This limitation is requested by the applicant.~~

~~[Application No. 1210472-001-AC; Applicant Requested Emission Limitation; Rule 62-4.070, F.A.C.; Rule 62-210.200(PTE), F.A.C.]~~

Justification: Live Oak Heat & Power, LLC respectfully requests the removal of the above permit condition. This permit condition is redundant (also listed under Section 3, Facility-Wide Conditions).

Department response: Based on the comment, Section 3, Subsection B, Permit Condition B.10.b. is revised as follows in the final permit:

b. ~~CO emissions shall not exceed 20.0 tons per any consecutive 12-month rolling period. This limitation is requested by the applicant.~~ Annual CO emissions for this emissions unit are limited in accordance with the facility-wide emissions cap stated in Section 3. Facility-Wide Conditions, Condition No.2.

[Application No. 1210472-001-AC; ~~Applicant Requested Emission Limitation; Title V Major Source Applicability Avoidance;~~ Rule 62-4.070, F.A.C.; Rule 62-210.200(PTE), F.A.C.]

4. Section 3, Subsection B, Permit Condition B.11.b. (page 17 of 25):

~~b. VOC emissions shall not exceed 20.0 tons per any consecutive 12-month rolling period. This limitation is requested by the applicant.~~

~~[Application No. 1210472-001-AC; Applicant Requested Emission Limitation; Rule 62-4.070, F.A.C.; Rule 62-210.200(PTE), F.A.C.]~~

Justification: Live Oak Heat & Power, LLC respectfully requests the removal of the above permit condition. This permit condition is redundant (also listed under Section 3, Facility-Wide Conditions).

Department response: Based on the comment, Section 3, Subsection B, Permit Condition B.11.b. is revised as follows in the final permit:

b. ~~VOC emissions shall not exceed 20.0 tons per any consecutive 12-month rolling period. This limitation is requested by the applicant.~~ Annual VOC emissions for this emissions unit are limited in accordance with the facility-wide emissions cap stated in Section 3. Facility-Wide Conditions, Condition No.3.

[Application No. 1210472-001-AC; ~~Applicant Requested Emission Limitation; Title V Major Source Applicability Avoidance;~~ Rule 62-4.070, F.A.C.; Rule 62-210.200(PTE), F.A.C.]

5. Section 3, Subsection B, Permit Condition B.13. (page 17 of 25):

The permittee shall demonstrate compliance with the emission standards specified in 40 CFR 60.4233(e) [Conditions B.9.~~a.~~, B.10.~~a.~~, and B.11.a.] and according to the requirements specified in §60.4244, as applicable, and according to paragraphs a. and b. of this condition.

Justification: This update is requested for formatting consistency based on previous comments.

Department response: Since the language to Conditions B.9.b., B.10.b., and B.11.b of Section 3, Subsection B, were revised and not removed, no change is made to Section 3, Subsection B, Permit Condition B.13.in the final permit.

6. Section 3, Subsection B, Permit Condition B.17.d. (page 23 of 25):

Oxidation Catalyst Replacement: The oxidation catalyst shall be replaced according to the following schedule: If~~should~~ the measured CO emissions using the hand-held analyzer stated in Condition B.17.c. are equal to or greater than 4.1 lb/hr CO~~;~~ then the facility shall conduct one or more additional measurements within 12 hours to determine an average CO emission rate. If the additional reading(s) indicate that the average emissions are equal to or greater than 4.1 lb/hr CO, then the oxidation catalyst shall be replaced.

Justification: Live Oak Heat & Power, LLC believes replacing the oxidation catalyst based on one reading may unnecessarily burden the facility. The addition of averaging will reduce the likelihood of replacing the oxidation catalyst due to an erroneous reading.

Department response: Based on the comment, Section 3, Subsection B, Permit Condition B.17.d. is revised as requested in the final permit.

B. A minor typographical error was noticed by the Department in Section 3, Subsection B, Permit Condition B.6. The Permit condition is revised as follows:

B.6. NESHAP, 40 CFR 63 Subpart ZZZZ Applicability: This engine is classified as a new stationary Reciprocating Internal Combustion Engines (RICE). In accordance with 40 CFR 63.6590(c)~~(4)~~ (1), the unit must meet the requirements of 40 CFR 63 Subpart ZZZZ by complying with the 40 CFR 60 Subpart JJJJ standards. No further 40 CFR 63 Subpart ZZZZ standards shall apply to this engine.

[40 CFR 63.6675(def); 40 CFR 63.6585(a) & (c); 40 CFR 63.6590(a)(2)(iii); 40 CFR 63.6590(c)(1)]

No comments on the Draft Permit were received from the public.

CONCLUSION

The final action is to issue the permit with the minor changes, corrections and clarifications as described above.