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Susan Mosier, MD, Secretary | Department of Health & Environment | Sam Brownback, Governor

AIR EMISSION SOURCE CONSTRUCTION PERMIT

Source ID No.: 1890231

Effective Date: **DRAFT 2015**

Source Name: Abengoa Bioenergy Biomass of Kansas, LLC

NAICS Code: 325193; Ethyl Alcohol Manufacturing

SIC Code: 2869; Industrial Organic Chemicals Not Elsewhere Classified

Mailing Address: 16150 Main Circle Drive, Suite 200
Chesterfield, MO 63017

Source Location: Stevens County, Township 33 South, Range 37 West, Section 18
Hugoton, Kansas 67951

Contact Person: Brent Inkelaar
QSE Manager
Abengoa Bioenergy Biomass of Kansas, LLC
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This permit is issued pursuant to K.S.A. 65-3008 as amended. This permit appends new regulations and requirements for a temporary 96.6 MMBtu/hr natural gas-fired boiler to the construction permit issued on May 27, 2014. All conditions and applicable regulations listed in the May 27, 2014 permit remain in effect.

I. Description of Activity Subject to Air Pollution Control Regulations

On September 16, 2011, the KDHE issued a Prevention of Significant Deterioration (PSD) Air Emission Source Construction Permit (C-9600) to Abengoa Bioenergy Biomass of Kansas, LLC (ABBK) for the installation and operation of a biomass-to-ethanol and biomass-to-energy production facility near Hugoton, Kansas. Since issuance of the September 16, 2011 Air Emission Source Construction Permit, ABBK was issued an Air Emission Source Construction Permit on January 22, 2013 (C-10550) that was

an appended PSD Air Emission Source Construction Permit to the September 16, 2011 permit for the addition of four (4) emergency spark ignition internal combustion generator engines to the construction project.
On August 26, 2013, KDHE received a Prevention of Significant Deterioration Air Construction Permit Application from ABBK to amend the September 16, 2011 and January 22, 2013 PSD Permits. The *Conforming Prevention of Significant Deterioration, Air Quality Construction Permit Modification Application* dated January, 2014 was submitted by ABBK as a corrected update to the application received on August 26, 2013.

On May 27, 2014, the KDHE issued a PSD Air Emission Source Construction Permit to correct and clarify existing regulatory requirements of the September 16, 2011 (C-9600) Air Emission Source Construction Permit; to authorize two (2) of the four (4) spark ignition internal combustion generator emergency engines previously permitted in the January 22, 2013 (C-10550) Air Emission Source Construction Permit to operate in an unrestricted manner; to incorporate air emission limitations and requirements for new equipment to be installed; to incorporate regulations applicable to Major Sources of Hazardous Air Pollutants (HAPs); and to incorporate a Best Achievable Control Technology (BACT) for Volatile Organic Compounds (VOCs) emission units.

On June 22, 2015, the KDHE received a Prevention of Significant Deterioration Air Construction Permit Application from ABBK for the installation of a temporary natural gas-fired rental boiler. The purpose and scope of this permit is to append the May 27, 2014 permit to include the use of a temporary natural gas-fired rental boiler. ABBK has determined that a 96.6 MMBtu/hr boiler will be required to support the 500 MMBtu/hr biomass-fired stoker boiler (EP-20001) until a permanent 99 MMBtu/hr natural gas-fired standby boiler, which is proposed to be installed through a separate modification of the May 27, 2014 permit, is permitted and built (see the Prevention of Significant Deterioration Air Construction Permit Application from ABBK dated April 1, 2015).

The rental boiler is proposed to be installed as a temporary unit. As a temporary unit, when operated as indicated in 40 CFR 60.40c and as defined in 40 CFR 60.41c, Definitions: *Temporary Boiler*, and/or as indicated by 40 CFR 63.7491(j), and as defined in 40 CFR 63.7575, *What definitions apply to this subpart?*: *Temporary Boiler*, the unit would fall under exemptions from the requirements of either 40 CFR 60, Subpart Dc, *Standards of Performance for Industrial-Commercial-Institutional Steam Generating Units* and/or 40 CFR Part 63 Subpart DDDDD, *National Emission Standards for Hazardous Air Pollutants for Major Sources: Industrial, Commercial and Institutional Boilers and Process Heaters.* This permit contains requirements which would come into effect should the rental boiler be used in a manner which no longer meets the definition of *Temporary Boiler* contained in one or both regulations.

A BACT determination were conducted as a part of this permit application process.

II. Significant Applicable Air Regulations

The project is subject to KDHE rules relating to air pollution control. The following significant air quality requirements were determined to be applicable to this source:

A. K.A.R. 28-19-11 Exceptions Due to Breakdown or Scheduled Maintenance – as applied to State regulations K.A.R. 28-19-650

B. KAR 28-19-300, Construction Permits and Approvals; Applicability

C. K.A.R. 28-19-302(a), Construction permits and approvals; additional provisions; construction permits.

D. K.A.R. 28-19-350, Prevention of significant deterioration of air quality which adopts by reference 40 CFR 52.21, Prevention of Significant Deterioration (PSD)

E. K.A.R. 28-19-30 through K.A.R. 28-19-32, Indirect Heating Equipment Emissions

F. K.A.R. 28-19-720, New Source Performance Standards, adopting by reference the following:

1. 40 CFR Part 60 Subpart A, *Standards of Performance for New Stationary Sources – General Provisions*

2. 40 CFR Part 60 Subpart Dc, *Standards of Performance for Industrial-Commercial-Institutional Steam Generating Units.*

G. K.A.R. 28-19-750, Hazardous Air Pollutants, Maximum Achievable Control Technology, which adopts by reference, the following:

40 CFR Part 63, Subpart A, *National Emission Standards for Hazardous Air Pollutants for Source Categories – General Provisions.*

H. 40 CFR Part 63 Subpart DDDDD, *National Emission Standards for Hazardous Air Pollutants for Major Sources: Industrial, Commercial and Institutional Boilers and Process Heaters*

III. AIR EMISSION UNIT TECHNICAL SPECIFICATIONS

The following equipment or equivalent is approved:

One (1) Natcom, Model CB-NATCOM LOW NO_X, natural gas-fired only, with a maximum heat input rating of 96.6 MMBtu/hr. The boiler is equipped with low NO_x burner technology.

IV. Air Emission Estimates from the Proposed Activity

Table 1. Estimated Operating Emissions

Pollutant	Potential to Emit Emissions [1] (tons per year)			
	Pre- May 27, 2014 Permit	Post-May 27, 2014 Permit	Emission Increase due to Temporary Rental Boiler Unrestricted[2]	Total Facility Emissions (May 27, 2014 Permit Plus Temporary Rental Boiler)
Particulate Matter (PM)	> 250	138.8	2.10	140.9
PM less than or equal to 10 microns (PM_{10})	> 250	109.5	2.10	111.6
PM less than or equal to 2.5 microns ($PM_{2.5}$)	> 250	76.5	0.53	77.03
Oxides of Nitrogen (NO_x)	> 250	701.9	12.70	714.6
Carbon Monoxide (CO)	> 250	594.0	6.39	600.39
Sulfur Dioxide (SO_2)	> 250	504.4	0	504.4
Volatile Organic Compounds (VOC)	> 250	47.9	0.09	47.99
Lead (Pb)	0.11	0.11	0.0002	0.11
Sulfuric Acid (H_2SO_4)	67.7	6.9	0	6.9
Hydrogen Chloride (HCl)	569.5	7.2	0	7.2
Hydrogen Fluoride (HF)	0.66	0.01	0	0.01
Carbon Dioxide equivalents (CO_2e)	> 100,000	626,000	49,508	675,508
Total HAPs	> 25	27.7	0.78	28.48

V. Air Emission Limitations

A. Plant-wide Permit Conditions from Dispersion Modeling Analysis

[1] Potential-to-emit means the maximum capacity of a stationary source to emit a pollutant under its physical and operational design. Any physical or operational limitation on the capacity of the source to emit a pollutant, including air pollution control equipment and restrictions on hours of operation or on the type or amount of material combusted, stored, or processed, shall be treated as part of its design if the limitation or the effect it would have on emissions is federally enforceable.

[2] Emissions are based on Natcom (Manufacturer) emission factors and operations at 8,760 hours.

A dispersion modeling analysis was not required by 40 CFR Part 52.21 because the unit is proposed to be used as a temporary unit, however, the owner or operator provided a modeling analysis to demonstrate that the use of the temporary boiler unit would not cause or contribute to a NAAQS exceedance.

B. Temporary Rental Boiler Limitations

1. K.A.R. 28-19-31(a) limits the amount of PM emissions from indirect heating equipment. Compliance with the BACT emission limit for PM shall demonstrate compliance with K.A.R. 28-19-31(a).

2. Good combustion practices have been determined to be BACT for NO_x, CO, VOC, $PM/PM_{10}/PM_{2.5}$, and SO_2. Good combustion practices shall be followed at all times, including periods of startup, shutdown, and malfunction. The owner or operator shall perform necessary tune-ups to maintain optimum combustion conditions. [K.A.R. 28-19-302(a)]

3. The owner or operator shall fire only low sulfur fuel (pipeline quality natural gas) only. [K.A.R.28-19-302(a)]

4. The boiler will be equipped with dry low NO_x burner technology. The BACT emission limitation for NO_x is 0.030 lb/MMBtu, including periods of startup, shutdown, and malfunction. [K.A.R. 28-19-302(a)]

5. The BACT emission limitation for CO is 0.015 lb/MMBtu, including periods of startup, shutdown, and malfunction. [K.A.R. 28-19-302(a)]

6. The BACT emission limitation for VOC is 0.00019 lb/MMBtu, including periods of startup, shutdown, and malfunction. [K.A.R. 28-19-302(a)]

7. The BACT emission limitation for $PM/PM_{10}/PM_{2.5}$ is 0.010 lb/MMBtu, including periods of startup, shutdown, and malfunction. [K.A.R. 28-19-302(a)]

8. The BACT emission limitation for SO_2 is 0.0006 lb/MMBtu, including periods of startup, shutdown, and malfunction. [K.A.R. 28-19-302(a)]

9. The BACT emission limitation for CO_2e is 49,508 tons/yr, including periods of startup, shutdown, and malfunction. [K.A.R. 28-19-302(a)]

10. The definition of *Temporary Boiler* from 40 CFR 60.41c applies to boiler and the boiler is therefore exempt from the compliance requirements of 40 CFR Part 60 Subpart Dc, except under the following conditions:

    a. The equipment is attached to a foundation.

    b. The steam generating unit or a replacement remains at a location for more than 180 consecutive days. Any temporary boiler that replaces a temporary boiler at a location and performs the same or similar function will be included in calculating the consecutive time period.

c. The equipment is located at a seasonal facility and operates during the full annual operating period of the seasonal facility, remains at the facility for at least 2 years, and operates at that facility for at least 3 months each year. (ABBK is not a seasonal facility therefore this provisions is not applicable.)

d. The equipment is moved from one location to another in an attempt to circumvent the residence time requirements of this definition.

11. The definition of *Temporary Boiler* from 40 CFR 63.7575 applies to this boiler and is therefore exempt from the compliance requirements of 40 CFR Part 63 Subpart DDDDD, except under the following conditions:

a. The equipment is attached to a foundation.

b. The boiler or a replacement remains at a location within the facility and performs the same or similar function for more than 12 consecutive months (unless the regulatory agency approves an extension. An extension may be granted by the regulating agency upon petition by the owner or operator of a unit specifying the basis for such a request. Any temporary boiler that replaces a temporary boiler at a location and performs the same or similar function will be included in calculating the consecutive time period.)

c. The equipment is located at a seasonal facility and operates during the full annual operating period of the seasonal facility, remains at the facility for at least 2 years, and operates at that facility for at least 3 months each year. (ABBK is not a seasonal facility therefore this provisions is not applicable.)

d. The equipment is moved from one location to another within the facility but continues to perform the same or similar function and serve the same electricity, steam, and/or hot water system in an attempt to circumvent the residence time requirements of this definition.

12. If the temporary rental boiler (or a replacement) remains onsite for more than 180 consecutive days, the owner or operator shall comply with the applicable requirements of 40 CFR Part 60 Subpart Dc.

13. If the temporary rental boiler (or a replacement) remains onsite for more than 12 consecutive months, the owner or operator shall comply with the applicable requirements of 40 CFR Part 63 Subpart DDDDD.

14. The temporary rental boiler shall not be operated concurrently with the proposed 99 MMBtu/hr, natural gas-fired boiler and shall be removed from the location within 30 days following the startup of the proposed 99 MMBtu/hr, natural gas-fired boiler, which is being proposed to be permanently installed (See ABBK Prevention of Significant Deterioration Air Construction Approval Application dated April 1, 2015).

15. Except as provided in K.A.R. 28-19-11, opacity of visible emissions from the boiler is limited to less than 20%. [K.A.R. 28-19-31(b)(2)]

VI. Monitoring Requirements

A. The owner or operator shall develop a log recording the startup, shutdown and malfunctions of the temporary rental boiler. [K.A.R. 28-19-302(a)]

B. The owner or operator shall develop a log documenting any necessary tune-ups performed to maintain optimum combustion conditions. The log will contain the date the tune-up was performed and the reason for the tune-up. [K.A.R. 28-19-302(a)]

C. The owner or operator shall develop a record documenting the fuel type fired in the boiler and amount of fuel combusted in the rental boiler each month. [K.A.R. 28-19-302(a)]

VII. Recordkeeping and Reporting Requirements

A. The owner or operator shall maintain a record of the date the temporary rental boiler is brought onsite. [K.A.R. 28-19-302(a)]

B. The owner or operator shall maintain a record of the startup, shutdown and malfunctions of the temporary rental boiler. [K.A.R. 28-19-302(a)]

C. The owner or operator shall maintain a record of fuel type fired in the boiler and amount of fuel combusted in the rental boiler each month. [K.A.R. 28-19-302(a)]

D. If the temporary rental boiler remains onsite greater than 180 days, the owner or operator shall develop and submit a Compliance Plan, which will outline the compliance requirements and actions for the boiler 40 CFR Part 60 Subpart Dc. The Compliance Plan shall be submitted within 195 days of the date the boiler was brought onsite (i.e. 15 days following the date that marks 180 days of the boiler being onsite). [K.A.R. 28-19-302(a)]

E. If the temporary rental boiler remains onsite greater than 12 months, the owner or operator shall develop and submit a Compliance Plan, which will outline the compliance requirements and actions for the boiler under 40 CFR Part 63 Subpart DDDDD or submit a request to the Administrator for an extension of the exemption to 40 CFR Part 63 Subpart DDDDD as described in 40 CFR 63.7575. The Compliance Plan or request for exemption extension shall be submitted within 15 days following the last day marking the end of the 12th month that the boiler has been onsite. [K.A.R. 28-19-302(a)]

F. Should the unit remain onsite for greater than 12 months or be converted such that it no longer meets the definition of *temporary unit*, the owner or operator shall submit a complete PSD permit application containing a modeling protocol, a complete representative dispersion modeling analysis and an updated BACT analysis. The modeling protocol shall be submitted 14 days following the las day marking the end of the 12th month that the boiler has been onsite. The modeling analysis and BACT analysis shall be submitted within 30 days following the last day marking the end of the 12th month that the boiler has been onsite, or within 30 days of such time the boiler becomes a stationary source. [K.A.R. 28-19-302(a)]

VIII. Performance Testing

A. Initial performance testing shall be waived by submittal of emission testing records for the boiler which demonstrate that the boiler has been tested to meet the BACT emission limitations specified in this permit. The owner or operator shall submit the emission testing verification within 30 days of the boiler being brought on site.

B. Subsequent onsite performance testing will be required for demonstration with the BACT emission limits if the temporary rental unit remains at the location for greater than 12 months after being brought onsite or becomes a stationary source.

IX. Notification

A. The owner or operator shall notify the KDHE in writing within 15 days of the actual date the temporary rental boiler has been brought onto the location.

B. The owner or operator shall notify the KDHE in writing within 15 days of removal of the temporary rental boiler from the location.

C. The owner or operator shall submit the applicable notifications of 40 CFR Part 60, Subparts A and Dc, at such time that the boiler has been onsite greater than 180 days.

D. The owner or operator shall submit the applicable notifications of 40 CFR Part 63, Subparts A and DDDDD, at such time that the boiler has been onsite greater than 12 months.

E. The owner or operator shall notify the KDHE Southwest District Office Air Program Field Staff in Dodge City at (620) 225-0596 when the temporary rental boiler is brought to the location so that an evaluation can be conducted.

F. The owner or operator shall notify KDHE of the schedule of any applicable performance tests. A performance testing protocol shall be submitted with the notification. Performance testing shall also be coordinated with the KDHE Bureau of Air, Compliance and Enforcement Section at 785-296-0243 at least 30 days before the performance tests.

X. General Provisions

A. This document will become void if construction or modification has not commenced within 18 months of the effective date, or if the construction or modification is interrupted for a period of 18 months or longer. [K.A.R. 28-19-301(c)]

B. A construction permit or approval must be issued by KDHE prior to commencing any construction or modification of equipment or processes, which result in an increase of potential-to-emit equal to or greater than the thresholds specified at K.A.R. 28-19-300(a)-(b).

C. Upon presentation of credentials and other documents that may be required by law, the permittee will allow a representative of KDHE (including authorized contractors of KDHE) to:

1. enter upon the permittee's premises where a regulated facility or activity is located or conducted or where records must be kept under conditions of this document;

2. have access to and copy, at reasonable times, any records that must be kept under conditions of this document;

3. inspect at reasonable times, any facilities, equipment (including monitoring and control equipment) practices or operations regulated or required under this document; and

4. sample or monitor, at reasonable times, for the purposes of assuring compliance with this document or as otherwise authorized by the Secretary of KDHE, any substances or parameters at any location.
[K.A.R. 28-19-302(a)]

D. The emission unit or stationary source, which is the subject of this document, will be operated in compliance with all applicable requirements of the Kansas Air Quality Act and the federal Clean Air Act. [K.A.R. 28-19-302(a)]

E. This document is subject to periodic review and amendment as deemed necessary to fulfill the intent and purpose of the Kansas Air Quality Statutes and Regulations and rules promulgated in accordance therewith. [K.A.R. 28-19-302(a)]

F. This document does not relieve the permittee of the obligation to obtain any approvals, permits, licenses or documents of sanction, which may be required by other federal, state or local government agencies. [K.A.R. 28-19-302(a)]

G. Issuance of this document does not relieve the owner or operator of any requirement to obtain an air quality operating permit under any applicable provision of K.A.R. 28-19-500.

Permit Writer

Lynelle Ladd Environmental Scientist Air Permitting Section	Date Signed

LML:
Enclosure
c: SWDO
C-12980