Bureau of Air
Curtis State Office Building
1000 SW Jackson, Suite 310
Topeka, KS 66612-1366

Phone: 785-296-1581
Fax: 785-291-3953
ttavener@kdheks.gov
www.kdheks.gov/bar

Kansas

Robert Moser, MD, Secretary | Department of Health & Environment | Sam Brownback, Governor

AIR EMISSION SOURCE CONSTRUCTION PERMIT

Source ID No.: 1890231

Effective Date: September 16, 2011

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: Robert Wildgen
Project Development Manager
Abengoa Bioenergy Biomass of Kansas, LLC
Telephone Number: (636) 728-4515

This permit is issued pursuant to K.S.A. 65-3008 as amended.

I. DESCRIPTION OF ACTIVITY SUBJECT TO AIR POLLUTION CONTROL REGULATIONS

A. Abengoa Bioenergy Biomass of Kansas, LLC (ABBK) intends to install and operate a biomass to ethanol and biomass-to-energy production facility near Hugoton, Kansas. The biomass to ethanol manufacturing facility, employing an enzymatic hydrolysis alcohol production process, will utilize cellulosic feedstock (e.g. biomass) such as wheat straw, milo (sorghum) stubble, corn stover, switchgrass, and opportunity feedstocks that are locally available. The biomass to energy cogeneration plant will consist of one (1) steam turbine electrical generator nominally rated up to a total of 22 Megawatts and will supply electrical power exclusively to ABBK. Steam will be generated from one (1) water-cooled vibrating grate biomass-fired stoker boiler that will use solid biomass feedstocks, enzymatic hydrolysis residuals, particles collected during biomass grinding, non-condensable gases (NCG) vent streams from plant processes, wastewater treatment sludge, biogas and natural gas as fuel. Natural gas will be used during the biomass-fired stoker boiler start-up or shutdown periods or when biomass cannot be burned as required per manufacturer recommendations.

B. Nominal production for the enzymatic hydrolysis alcohol production process is based on a designed production rate of 23,300,000 gallons per year (23.3 MMgpy) anhydrous ethanol. The anhydrous ethanol is then denatured prior to shipment offsite, resulting in a total denatured nominal production rate of 23.8 MMgpy. By implementing a 20 percent increase in plant efficiency and operating on a 365 days per year production schedule, a maximum potential anhydrous production rate of 30.0 MMgpy and a denatured potential production rate of 31.6 MMgpy can be realized.

C. The facility will be subject to the requirements of 40 CFR 52.21, *Prevention of Significant Deterioration (PSD)* as adopted under K.A.R. 28-19-350 as a result of being a major new stationary source for at least one regulated pollutant emitted in excess of the PSD trigger level of 250 tons per year (tpy).

D. On June 3, 2010, the U.S. Environmental Protection Agency (EPA) issued the final Greenhouse Gas (GHG) Tailoring Rule (75 FR 31514). This rule established the thresholds for GHG emissions under the PSD permit program for new and existing industrial facilities. GHGs are a single air pollutant defined as the aggregate group of the following six gases:

- carbon dioxide (CO_2)
- nitrous oxide (N_2O)
- methane (CH_4)
- hydrofluorocarbons (HFCs)
- perfluorocarbons (PFCs)
- sulfur hexafluoride (SF_6)

E. Starting on July 1, 2011, new sources emitting GHGs in excess of 100,000 ton/yr on a carbon dioxide equivalent (CO_2e) basis and also exceeding 100/250 ton/yr on a mass basis are subject to permitting requirements for their GHG emissions under PSD. For those affected facilities, Best Available Control Technology (BACT) would need to be determined for GHG emissions.

F. PSD applies to the GHG emissions from ABBK's facility because the potential emissions of GHGs from ABBK are greater than 100,000 ton/yr on a CO_2e basis and 250 ton/yr on a mass basis.

G. The biomass-fired stoker boiler will be subject to the requirements of 40 CFR Part 60, Subpart Db, *Standards of Performance for Industrial-Commercial-Institutional Steam Generating Units* and 40 CFR Part 63, Subpart JJJJJJ, *National Emission Standards for Hazardous Air Pollutants for Industrial, Commercial, and Institutional Boilers Area Sources*. The emergency diesel fire pump engine will be subject to the requirements of 40 CFR 60, Subpart IIII, *Standards of Performance for Stationary Compression Ignition Internal Combustion Engines* and 40 CFR 63, Subpart ZZZZ, *National Emission Standards for Hazardous Air Pollutants for Stationary Reciprocating Internal Combustion Engines*. Several storage vessels will be subject to the requirements of 40 CFR 60, Subpart Kb, *Standards of Performance for Volatile Organic Liquid (VOL) Storage Vessels (Including Petroleum Liquid Storage Vessels) for Which Construction, Reconstruction, or Modification Commenced after July 23, 1984.* Synthetic Organic Chemical Manufacturing Industry (SOCMI) associated equipment will be subject to the requirements of 40 CFR Part 60 Subpart VVa - *Standards of Performance for Equipment Leaks of VOC in the Synthetic Organic Chemicals Manufacturing Industry for Which Construction, Reconstruction, or Modification Commenced After November 7, 2006.*

H. Emissions of oxides of nitrogen (NO_X), carbon monoxide (CO), sulfur dioxide (SO_2), volatile organic compounds (VOC), particulate matter (PM), particulate matter less than 10 microns in diameter (PM_{10}), particulate matter less than 2.5 microns in diameter ($PM_{2.5}$), and hazardous air pollutants (HAPs) were evaluated for this permit review. This project is subject to the provisions of K.A.R. 28-19-300 (Construction permits and approvals; applicability) because ABBK has the potential-to-emit NO_X, CO, SO_2, PM, PM_{10} and $PM_{2.5}$ in excess of 40, 100, 40, , 25, 15 and 10 tons per year, respectively. The potential emissions of lead and fluorides from ABBK are estimated to be below their respective annual significance thresholds.

I. The application of SO_2 and particulate matter BACT control technology on the biomass-fired stoker boiler also reduces the level of emissions of hazardous air pollutants (HAPs). Based upon testing on similarly-equipped biomass-fired stoker boiler sources, there is no potential that ABBK, controls considered, will emit, during normal operation, startup, shutdown and maintenance activity, any single HAP in an amount equal to or greater than 10 tons annually or any combination of HAPs an amount equal to or greater than 25 tons annually. Compliance with the HAPs requirements in this permit will verify ABBK is

not a major source of HAPs and the provisions of Section 112(g)(2)(B) of the Clean Air Act do not apply.

J. Additionally, because ABBK is a minor source of HAP emissions, the biomass-fired stoker boiler will be subject to 40 CFR Part 63, Subpart JJJJJJ - National Emission Standards for Hazardous Air Pollutants for Industrial, Commercial, and Institutional Boilers Area Sources.

K. An air dispersion modeling impact analysis, an additional impact analysis, and a Best Available Control Technology (BACT) determination were conducted as a part of the construction permit application process.

L. After installation of the new biomass to ethanol manufacturing and biomass to power cogeneration facility, ABBK will require a Title V operating permit.

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. 28-19-30 through K.A.R. 28-19-32 and K.A.R. 28-19-650

B. K.A.R. 28-19-200a. General provisions; definitions to implement the federal greenhouse gas tailoring rule

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

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. KAR 28-19-20. Particulate Matter Emission Limitations

F. KAR 28-19-650(a)(3). Opacity Requirements

G. KAR 28-19-30 through KAR 28-19-32. Emission Limitations (Indirect Heating Equipment)

H. KAR 28-19-720. New Source Performance Standards, which adopts 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 Kb - Standards of Performance for Volatile Organic Liquid (VOL) Storage Vessels (Including Petroleum Liquid Storage Vessels) for Which Construction, Reconstruction, or Modification Commenced after July 23, 1984.

3. 40 CFR Part 60, Subpart Db - Standards of Performance for Industrial-Commercial-Institutional Steam Generating Units.

4. 40 CFR Part 60, Subpart IIII – Standards of Performance for Stationary Compression Ignition Internal Combustion Engines.

5. 40 CFR Part 60, Subpart VVa - Standards of Performance for Equipment Leaks of VOC in the Synthetic Organic Chemicals Manufacturing Industry for Which Construction, Reconstruction, or Modification Commenced After November 7, 2006.

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

1. 40 CFR Part 63, Subpart A, National Emission Standards for Hazardous Air Pollutants for Source Categories – General Provisions.

2. 40 CFR Part 63, Subpart ZZZZ, National Emission Standards for Hazardous Air Pollutants for Stationary Reciprocating Internal Combustion Engines.

3. 40 CFR Part 63, Subpart JJJJJJ - National Emission Standards for Hazardous Air Pollutants for Industrial, Commercial, and Institutional Boilers Area Sources.

III. AIR EMISSION UNIT TECHNICAL SPECIFICATIONS

The following equipment or equivalent is approved:

A. Cogeneration Equipment:

1. The cogeneration plant shall consist of the following design configuration:

   a. one (1) water-cooled vibrating grate biomass-fired stoker boiler (EP-20001), one (1) steam turbine, and one (1) electrical generator nominally rated up to a total of 22 Megawatts

b. one (1) high voltage circuit breaker rated at 125 kilovolts (kV)

c. one (1) three (3) cell enzymatic hydrolysis (EH) plant cooling water tower (EP-04001) shall have a water circulation rate of 43,2000 gallons/minute and shall be equipped with a drift (mist) eliminator for cooling exhaust steam from the condensing-extracting steam turbine. It also is used for cooling purposes in the Enzymatic Hydrolysis Ethanol Manufacturing Plant. (See III.E.5).

Generated electrical power shall be supplied exclusively to ABBK. Steam shall be generated for use in the electricity-producing turbine and the biomass to ethanol manufacturing facility.

The owner or operator shall install a biomass-fired stoker boiler rated at 500 MMBtu/hr design heating input and shall burn a combination of wheat straw, milo (sorghum) stubble, corn stover, switch grass, other opportunity solid biomass feedstocks that are available, enzymatic hydrolysis residuals (including lignin-rich stillage cake and thin stillage syrup), particles collected during biomass grinding, NCG vent streams, wastewater treatment sludge, biogas and natural gas.

Natural gas shall be used during startup and shutdown periods as required per manufacturer recommendations. The biomass-fired stoker boiler will also be capable of firing on natural gas during normal operations as needed at a limited capacity and firing on a combination of natural gas, liquid fuel (such as enzymatic hydrolysis thin stillage syrup) and biogas in the event of a solid fuel failure.

2. The biomass-fired stoker boiler shall be subject to the requirements of 40 CFR Part 60, Subpart Db, Standards of Performance for Industrial-Commercial-Institutional Steam Generating Units, 40 CFR 52.21, Prevention of Significant Deterioration (PSD) and 40 CFR Part 63, Subpart JJJJJJ, National Emission Standards for Hazardous Air Pollutants for Industrial, Commercial, and Institutional Boilers Area Sources. Emission controls to meet the requirements are listed below:

   a. NOx emissions shall be controlled by installation of a Selective Catalytic Reduction System (SCR) and an over-fire air system (OFA). The burners used for natural gas firing during startup shall be low-Nox burners.

   b. SO_2 emissions shall be controlled with the injection of sorbent (lime) in combination with a dry flue gas desulfurization (FGD) system.

   c. Carbon monoxide (CO) emissions shall be controlled by good combustion practices (GCP).

   d. Particulate emissions shall be controlled by a 206,672 acfm fabric filter baghouse (EP-20001).

3. The biomass-fired stoker boiler's potential to emit CO_2e based emission is 481,652 short tons/yr of CO_2e. This amount of CO_2e is 81.6% of the total facility-wide CO_2e. The GHG emissions from the biomass-fired stoker boiler shall be controlled with the installation/implementation of:

   a. a restriction of the fuel type to biomass that is otherwise considered to have low to no economic value or benefit (i.e. crop residuals such as wheat straw, milo (sorghum) stubble, and corn stover); and/or is a lower impacting crop (i.e. mixed warm season grasses such as switchgrass).

   b. an energy efficient design, incorporating cogeneration, process integration, combustion of co-products, heat recovery and operational and maintenance monitoring.

   c. one (1) high voltage circuit breaker (EP-08000), rated at 125 kilovolts (kV) shall be utilized at the facility. The breaker shall use 82 pounds of a sulfur hexafluoride (SF_6) dielectric, in an enclosed-pressure system. SF_6 has a significant global warming potential, therefore, GHG emissions from the circuit breaker shall be controlled with the installation of a state-of-the-art enclosed-pressure SF_6 circuit breaker with leak detection.

B. Biomass-Fired Stoker Boiler Materials Handling

The biomass-fired stoker boiler materials handling shall consist of a hydrated lime handling and injection system, a biomass-fired stoker boiler bottoms ash collection system, and a biomass-fired stoker boiler fly ash collection system. The bottoms ash (including non-combustibles) collected from the biomass-fired stoker boiler will be landfilled. The collected fly ash will be conveyed to the bulk fly ash storage silo for rail or truck loadout. The equipment for these operations include the following:

1. The hydrated lime injection system includes one hydrated lime storage silo (T-20512), pneumatic truck off-load system and hydrated lime handling conveyors. The emissions from the handling conveyors shall be vented to a 2,000 acfm baghouse (EP-20512).

2. The biomass-fired stoker boiler bottoms ash collection system includes one (1) bottoms ash roll-off box (T-20514) and conveyors. The emissions from the bottoms ash collection system shall be vented to one (1) 28,100 acfm baghouse (EP-20514).

3. The biomass-fired stoker boiler fly ash collection system includes ash handling pneumatic conveyors, one 15-ft diameter x 20-ft high interim storage silo with a combined truck/rail load-out system. The emissions from the biomass-fired stoker boiler fly ash collection system shall be vented to two (2) 14,050 acfm baghouses (EP-20510 and EP-20520).

4. One 40-ft diameter x 55-ft high elevated bulk fly ash silo (T-02710) with a capacity of 812 tons (36,099 ft^3) shall be vented to one 28,100 acfm baghouse (EP-02710).

5. One fly ash loud-out silo spout (EP-02711) shall be vented to one 28,100 acfm baghouse (EP-02711).

C. Biomass Receiving, Grinding, Conveyance and Storage:

The enzymatic hydrolysis ethanol manufacturing plant will utilize cellulosic feedstocks (e.g. biomass) including: agricultural residues such as wheat straw, milo (sorghum) stubble, and corn stover; energy crops, such as switchgrass; and opportunity feedstocks that are locally available. The cogeneration plant will utilize the same cellulosic feedstocks used in the enzymatic hydrolysis ethanol manufacturing plant.

1. Receiving and Storage

Agricultural residues and energy crops will be delivered in bale form primarily on flatbed/module/custom trucks. Receiving operations at the grinding lines will consist of receiving the biomass bales by truck and unloading the bales at the conveyors to support a "nearly just in time" operational process. The baled biomass can be unloaded as follows:

a. Unloaded directly onto conveyors supplying the grinding lines.

b. Unloaded at the paved temporary biomass overnight staging area, which has a maximum storage capacity of 950 wet tons. The biomass overnight staging area is utilized during the night shift and is located immediately adjacent to the biomass grinding lines to reduce traffic traveling in the biomass storage field.

c. Unloaded in the 10-acre unpaved biomass storage field. The biomass storage field is a 10-acre storage area onsite to ensure process continuity in case of a short-term disruption of biomass delivery from off-site locations.

Biomass consists of 3-ft x 4-ft x 8-ft bales weighing approximately 1,000 to 1,500 pounds, which are unloaded directly from the flatbed / module / custom trucks which may be equipped with either tilt or walking beds. A typical 52-ft long flatbed trailer can hold 36 1,000 to 1,500 pound bales or one module bale. The 1,000 to 1,500 pound bales will be stacked three high (9-ft), two wide (8-ft) and 6 long (48-ft), with

a shipping weight of approximately 18 tons per truckload. The baled biomass material is scheduled to be delivered in regular intervals to the facility during a typical daily 12-hour daylight window. The maximum daily truck traffic is 146 trucks per day. Night time deliveries are limited to 44 trucks between the hours of 6 pm and 6 am. Maximum annual truck traffic is 47,852 trucks per year with night time deliveries limited to 14,356 trucks between the hours of 6 pm and 6 am

2. Grinding

Grinding is a mechanical process that reduces the biomass into useable sizes for feedstock to the ethanol production process and the biomass-fired stoker boiler. The grinders are to be housed within the Biomass Handling Building, where all de-stringing, cleaning, and grinding takes place.

The grinding process begins when retrieved bales are delivered to one (1) single process in-feed singulating conveyor line consisting of a "pan style" chain conveyor capable of moving two bales, side by side. The conveyor is capable of storing approximately 36 wet tons. One (1) transfer table and one (1) bale destacker segregate bales into two (2) biomass grinding lines (biomass grinding line #1 and biomass grinding line #2). Each biomass grinding line is equipped with a scale for rate and process infeed, automatic bale de-stringer, rotochopper grinder (with discharge conveyor and conveyor magnets for tramp metals), and dust hood on the infeed. Emissions from biomass grinding lines #1 and #2 and associated transfer points are controlled by one (1) 143,900 acfm baghouse (EP-11110).

3. Conveyance

a. Ground biomass is conveyed to either of two (2) air classifier live-bottom surge bins (T-11130 and T-11230), each with 20 minutes of detention time. The ground biomass is air classified to remove rocks and other large debris. String, rock, metal, and/or dirt will be shipped off-site exclusively by trucks via roll-off dumpsters.

Each air classifier surge bin will be equipped with a rotary valve vent with a maximum 35 cfm exhaust potential that will only be in use when the biomass is being fed from the bin. Rotary valve vents shall be ducted into the air classifier cyclones (CY-11160 and CY-11260) which are vented to two (2) 21,600 acfm baghouses (EP-11170 and EP-11270).

b. Positive displacement blowers pneumatically transfer the classified ground biomass to either the EH Plant weigh belt or to eight elevated biomass-fired stoker boiler live-bottom metering bins. Each bin will be equipped with one slide gate isolation valve and one air swept feed chute. Biomass-fired stoker boiler metering bins are open to the biomass-fired stoker boiler during combustion and

cannot be controlled under negative pressure by a baghouse; however, the conveyors transferring solid fuel to the biomass-fired stoker boiler metering bins shall be vented to one common 21,600 acfm baghouse (EP-11711).

c. A positive pressure fines collection and transfer system for the biomass bale handling and grinding operations consists of a floor sweep system with input shredders that deliver the floor sweepings to the biomass-fired stoker boiler via a vacuum conveyor, cleanup cyclone with a 7,800 acfm baghouse (EP-11120) and pneumatic conveyor.

d. Positive displacement blowers pneumatically transfer biomass grinding and cleaning fines to the biomass-fired stoker boiler as fuel.

D. Organic Liquid and Chemical Storage Tanks and Piping, Pumps and Valves

1. Enzymatic Hydrolysis Ethanol Manufacturing Plant Storage Tanks, Piping, Pumps and Valves include the following:

a. Two (2) Shift Process Tanks (T-02107 and T-02108), each having a capacity of 45,200 gallons for the purpose of storing anhydrous ethanol. Each tank shall be equipped with an interior floating roof and seal system, although there are no federal requirements applicable for these tanks.

b. Two (2) Product Storage Tanks (T-02102 and T-02112), each having a capacity of 500,000 gallons for the purpose of storing denatured ethanol. Each tank shall be equipped with an interior floating roof and seal system that meets the applicable requirements of 40 CFR Part 60, Subpart Kb.

c. One (1) Denaturant Tank (T-02105), having a capacity of 22,500 gallons for the purpose of storing denaturant (natural gasoline). The tank shall be equipped with an interior floating roof and seal system that meets the applicable requirements of 40 CFR Part 60, Subpart Kb.

d. Piping, pumps and valves will be utilized for transport of organic liquid to and from the ethanol storage tank yard. All piping, pumps and valves shall be constructed, operated and maintained in accordance with the applicable requirements of 40 CFR Part 60, Subpart Vva.

2. Chemical Material Storage Vessels for storing the following:

   a. One (1) 94% Sulfuric Acid Tank (T-01911), with a capacity of 22,500 gallons. The tank shall be equipped with a seal system and desiccant filter.

   b. One (1) Nutrient Tank (T-01930), with a capacity of 9,000 gallons.

   c. One (1) Anhydrous Ammonia Vessel (V-01910), having a capacity of 14,400 gallons.

   d. One (1) 19% Aqua Ammonia Tank (T-01915), having a capacity of 7,920 gallons.

   e. One (1) Media Liquid Tank (T-01912), having a capacity of 28,800 gallons.

   f. One (1) Cellulase Tank (T-01940), having a capacity of 50,400 gallons.

   g. Piping, pumps, valves and other equipment will be utilized for transport of chemicals from the chemical storage tank yard. .

E. Enzymatic Hydrolysis Ethanol Manufacturing Plant

The enzymatic hydrolysis production process consists of pre-treatment and digestion (Area 12000); liquefaction, yeast propagation, saccharification and co-fermentation (Area 16000); ethanol recovery (i.e. distillation) (Area 18000); and stillage processing (Area 19000).

1. The emissions generated from the biomass co-fermentation process (Area 16000) shall be routed through the EH fermentation CO_2 scrubber (EP-18185). This scrubber shall be a packed bed, impingement scrubbing tower, designed to clean 4,100 cfm of gas and support a scrubbing liquid flow rate of 50 gpm. The rated control efficiency shall be equal to or greater than 99 percent and the capture efficiency shall be 100 percent. The scrubber will be packed-tower wet scrubber, which allow for ethanol vapors to be collected in order to produce a higher product yield, and consequently the units control emissions of VOCs, HAPs, organic acids, furfural and higher alcohols. The scrubber systems will recover more than 99% of the ethanol from the vapor stream and return the ethanol to the process downstream. The water from the wet scrubber is pumped back into the process for recycling.

2. The emissions generated from the biomass ethanol recovery process (Area 18000) shall be routed through the EH distillation vent scrubber (S-18180). This scrubber shall be a packed bed, impingement scrubbing tower, designed to clean 90 cfm of gas. The distillation scrubber vent shall feed into the EH fermentation CO_2 scrubber (EP-18185) for further control.

3. The enzymatic hydrolysis production process potential to emit CO_2e-based emissions is approximately 88,360 short ton/yr CO_2e. The GHG emissions from the fermentation and distillation scrubber vents streams shall be controlled with the installation of an efficient design, incorporating energy efficient heat integration, water recycling, and co-product production that make the overall process efficient and economical.

4. The NCGs generated in areas 12000, 16000, and 19000 from the biomass process vents shall be routed to either the biomass-fired stoker boiler or flare for destruction. The biomass process vents include the digester vent, propagator vent, saccharification vent, stillage handling vent, ethanol load out vent and ammonia tank vent.

5. A three (3) cell enzymatic hydrolysis (EH) plant cooling water tower (EP-04001) will have a water circulation rate of 43,200 gallons/minute. The cooling tower shall be equipped with a drift (mist) eliminator. This EH cooling water tower will also cool exhaust steam from the condensing-extracting steam turbine in the cogeneration plant (see III.A.1.c).

F. Lignin Storage and Loadout

Wet lignin-rich stillage, produced from the enzymatic hydrolysis ethanol manufacturing process will be burned as solid biomass boiler fuel. A covered concrete pad storage area will be constructed to divert lignin-rich stillage cake away from the biomass-fired stoker boiler during process upsets and to provide additional storage. Storage needs are based on a pad sized for 4 hours of storage.

G. Ethanol Loadout

One (1) Truck/Railcar Loading Terminal for the purpose of transferring denatured ethanol to trucks and railcar for shipment offsite. Truck and railcar loading shall be equipped with a vapor collection system that is routed to either the biomass-fired stoker boiler or flare for destruction of collected load-out vapors.

1. One (1) product loadout flare (EP-9001): with maximum design heat input rate of 51 MMBtu/hr for emissions control of vapor recovery during product loadout, as well as for back-up destruction of biogas and NCG process vent flow normally combusted in the biomass-fired stoker boiler.

2. The flare will have the potential to emit biogenic and anthropogenic GHG emissions (CO_2, CH_4, and N_2O) because it combusts a biogas as the primary fuel and a hydrocarbon fuel (natural gas) in the pilot.

3. The GHG emissions from the flare shall be controlled with the restriction of the fuel type to biogas as the primary fuel and pipeline-grade natural gas in the pilot; and energy efficient design, incorporating a fuel efficient flare pilot.

H. Diesel Firewater Pump Engine (EP-06001)

1. One (1) diesel engine (EP-06001) (manufacturer to be determined), rated at 460 maximum brake horsepower, burning diesel fuel, for the purpose of providing power to the emergency firewater pump.

2. The emergency diesel firewater pump engine will have the potential to emit anthropogenic GHG emissions (CO_2, CH_4, and N_2O) because it combusts a hydrocarbon fuel (diesel).

3. The GHG emissions from the diesel firewater pump engine shall be controlled with the selection of the most efficient engine that meets the stringent National Fire Protection Association (NFPA) standards for reserve horsepower capacity, engine cranking systems, engine cooling systems, fuel type's instrumentation and control and exhaust systems.

I. Plant Roads

Maintenance shall be performed on all roads on plant property, as necessary, to ensure that the structural integrity of the roads is preserved and that fugitive emissions of PM, PM_{10} and $PM_{2.5}$ from all roads on plant property are minimized.

1. In-plant haul roads (EP-01000) shall be paved.

2. Biomass laydown roads (EP-01050) may be unpaved. Best management practices, such as wind fences and other wind breaks, as well as chemical stabilization shall be used as necessary.

IV. AIR EMISSIONS ESTIMATES FROM THE PROPOSED ACTIVITY

Table 1. Estimated Operating Emissions

POLLUTANT	Potential to Emit[1] Emissions (tons per year)	
	Pre-Permit	**Post-Permit**
PM	> 250	130.5
PM_{10}	> 250	118.6
$PM_{2.5}$	> 250	77.0
NO_x	> 250	668.5
CO	> 250	519.5
SO_2	> 250	483.4
VOC	> 250	29.1
Lead	0.11	0.11
Sulfuric Acid (H_2SO_4)	67.7	3.0
Hydrogen Chloride (HCl)	569.5	5.7
Hydrogen Fluoride (HF)	0.66	0.01
CO_2e	> 100,000	590,297
Total HAPs	> 25	20.2
Largest Single HAP	> 10	5.7

V. GHG BACT LIMITATIONS

A. The ABBK emission units subject to GHG BACT requirements are as follows:

- One (1) high voltage circuit breaker (EP-08000)
- One (1) biomass-fired stoker boiler (EP-20001)
- One (1) enzymatic hydrolysis CO_2 scrubber (S-18185)
- One (1) product load-out vapor recovery/biogas flare (EP-09001)
- One (1) diesel firewater pump engine (EU-06001)

[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.

GHG BACT for one (1) high voltage circuit breaker (EP-08000) is the installation of state-of-the-art enclosed-pressure SF_6 circuit breaker with leak detection to maintain fugitive SF_6 emissions below 0.5% (by weight) per year. The owner or operator will install one breaker using 82 lbs of SF_6. At a leak rate of 0.5%, annual SF_6 emissions would be a maximum of 0.41 lbs/year, which would equal 4.9 short tons CO_2e per year.

Fugitive SF_6 emissions shall be calculated by measuring the replacement of lost SF_6 with new product. The amount of SF_6 that has leaked and entered the atmosphere is the amount that has to be replaced to maintain a full SF_6 level. Therefore, no direct monitoring of SF_6 fugitive emissions will be required. In place of direct monitoring, a surrogate monitoring process through measuring the amount of SF_6 lost and using a conversion factor to calculate daily SF_6 fugitive emissions in terms of CO_2e shall be implemented.

For every replacement event of lost SF_6 with new product, owner or operator shall record the date and quantity of SF_6 lost in pounds, and time period in days since the previous addition of SF_6. The recorded data shall be converted to pounds CO_2e per day and short tons CO_2e per year.

The owner or operator shall install a density monitor alarm system to alert controllers when a circuit breaker loses SF_6. This alarm shall function as an early leak detector that will bring potential fugitive SF_6 emissions problems to light before a substantial portion of the SF_6 escapes. In the event of an alarm, the owner or operator shall investigate the event and take any necessary corrective action to address any problems.

The owner or operator shall provide construction specifications, operation and maintenance records, and other record keeping documents to KDHE upon request to demonstrate compliance with BACT.

B. Biomass-Fired Stoker Boiler (EP-20001)

1. GHG BACT for the biomass-fired stoker boiler is the installation/implementation of:

   a. A restriction of the fuel type to biomass that is otherwise considered to have low to no economic value or benefit (i.e. crop residuals); and/or is a lower impacting crops (i.e. mixed warm season grasses such as switchgrass);

   b. Energy efficient design, incorporating cogeneration, process integration, combustion of co-products, heat recovery and operational and maintenance monitoring.

2. The BACT limit for the biomass-fired stoker boiler shall be 0.34 lb CO_2e /lb of steam produced averaged over 30 day rolling periods including periods of startup and shut-down.

3. "Day" in the 30-day rolling average limit for CO_2e means a 24-hour period between 12 midnight and the following midnight during which any fuel is combusted at any time in the biomass-fired stoker boiler. It is not necessary for fuel to be combusted the entire 24-hour period.

4. GHGs nitrous oxide (N_2O) and methane (CH_4) shall be performance tested according to Permit Section Biomass-Fired Stoker Boiler Performance Test, VIII.D.1, 2 and 6.

5. The owner or operator shall maintain a rolling 12-month calculation of the CO_2e emissions of N_2O and CH_4 based upon the most recent performance test. This calculation shall be combined with the emissions data acquired by the CO_2 CEMS.

6. The owner or operator shall record the fuel type and quantity combusted in the biomass-fired stoker boiler. Biomass-fired stoker boiler CO_2 emissions shall be continuously monitored with a CO_2 CEMS.

7. The owner or operator shall install, calibrate, maintain, and operate CEMs and monitoring devices for measuring the following: CO_2 emissions and hourly steam production rate from the stocker boiler. An hourly steam production rate output monitoring device for the stoker boiler shall be calibrated and maintained according to manufacturer's specifications. The data from these devices shall be used in the calculation of the CO_2e/lb of steam produced to determine compliance with the BACT limit for the stoker boiler as required in Item 2 of this section (above)..

8. The owner or operator shall determine compliance with the CO_2 emissions limitation in the biomass-fired stoker boiler as required in Item 2 of this section (above) using emissions data acquired by the CO_2 CEMS. The 30-day rolling average shall be determined as follows:

    a. The 30-day average shall be the average of all valid hours of CO_2 emissions data for any 30 successive operating days. The average shall include data from periods of startups and shutdowns.

    b. After the first 30-day average, a new 30-day rolling average shall be calculated after each operating day. The new average shall include data from periods of startups and shutdowns.

9. The owner or operator shall determine compliance with the CO_2 emissions limitation in the biomass-fired stoker boiler as required in Item 2 of this section (above) using daily records of the hourly steam production rate output monitoring device. The 30-day rolling average shall be determined as follows:

a. The 30-day average shall be the average of all valid days of boiler steam production data for any 30 successive operating days. The average shall include data from periods of startups and shutdowns.

b. After the first 30-day average, a new 30-day rolling average shall be calculated after each operating day. The new average shall include data from periods of startups and shutdowns.

c. For the purpose of this Permit, an operating day is a 24-hour period between 12:00 midnight and the following midnight during which the boiler is producing steam at any time. It is not necessary for the boiler to be producing steam continuously for the entire 24-hour period.

10. The owner or operator shall implement a written preventive maintenance program. The owner or operator shall provide construction specifications, operation and maintenance records, feedstock records, and other record keeping documents to KDHE upon request to demonstrate compliance with BACT.

C. One (1) Enzymatic Hydrolysis CO_2 Scrubber (EP-18185)

1. GHG BACT for the enzymatic hydrolysis CO_2 scrubber (S-18185) is the installation/implementation of an efficient design, incorporating energy efficient heat integration, water recycling, and co-product production that make the overall process efficient and economical.

2. The BACT limit for the enzymatic hydrolysis CO_2 scrubber shall be 5.89 lb CO_2e/gal anhydrous ethanol produced for the enzymatic hydrolysis fermentation CO_2 scrubber stack (EP-18185), averaged over a 30-day rolling period The enzymatic hydrolysis CO_2 scrubber emissions shall be continuously monitored with a CO_2 CEMS.

3. The owner or operator shall install, calibrate, maintain, and operate a monitoring device for measuring the daily anhydrous ethanol production rate from the facility. The daily anhydrous ethanol production rate output monitoring device for the facility shall be calibrated and maintained according to manufacturer's specifications. The data from this device shall be used in the calculation of the CO_2e/gal anhydrous ethanol produced to determine compliance with the BACT limit for the enzymatic hydrolysis CO_2 scrubber as required in Item 2 of this section (above).

4. The owner or operator shall determine compliance with the CO_2 emissions limitation in the enzymatic hydrolysis CO_2 scrubber permit condition above using emissions data acquired by the CO_2 CEMS. The 30-day rolling average shall be determined as follows:

a. The 30-day average shall be the average of all valid hours of CO_2 emissions data for any 30 successive operating days. The average shall include data from periods of startups and shutdowns.

b. After the first 30-day average, a new 30-day rolling average shall be calculated after each operating day. The new average shall include data from periods of startups and shutdowns.

c. For the purpose of this Permit, an operating day is a 24-hour period between 12:00 midnight and the following midnight during which the enzymatic hydrolysis CO_2 scrubber is operating at any time. It is not necessary for the enzymatic hydrolysis CO_2 scrubber to be operating continuously for the entire 24-hour period.

5. The owner or operator shall determine compliance with the CO_2 emissions limitation in the enzymatic hydrolysis CO_2 scrubber permit condition above using daily records of the anhydrous ethanol produced. The 30-day rolling average shall be determined as follows:

   a. The 30-day average shall be the average of all valid days of anhydrous ethanol production data for any 30 successive operating days. The average shall include data from periods of startups and shutdowns.

   b. After the first 30-day average, a new 30-day rolling average shall be calculated after each operating day. The new average shall include data from periods of startups and shutdowns.

   c. For the purpose of this Permit, an operating day is a 24-hour period between 12:00 midnight and the following midnight during which anhydrous ethanol production is occurring at any time. It is not necessary for the anhydrous ethanol production to be occurring continuously for the entire 24-hour period.

6. The owner or operator shall monitor the efficiency of the enzymatic hydrolysis process and implement the following efficiency processes:

   a. Energy Efficient Heat Integration – The enzymatic hydrolysis process is integrated with the cogeneration facility to maximize energy efficiency.

   b. Water Recycling – Process-related water shall be recycled whenever possible to reduce the facility's consumption.

   c. Co-product Production – Valuable co-products will be generated during the enzymatic hydrolysis process. The valuable co-products include products such as enzymatic hydrolysis residuals (including lignin-rich/lignin-lean stillage cake and

thin stillage syrup) and wastewater treatment biogas. These products can be combusted as a supplemental fuel in the biomass-fired stoker boiler.

D. CO_2 CEMs Installation, Evaluation and Operation

The owner/operator shall install, calibrate, maintain and operate continuous emission monitoring systems (CEMS) to monitor and record emissions of CO_2 mass concentrations and install, calibrate, maintain and operate stack gas flow rate monitors and (if applicable) moisture monitors as follows:

1. Initial certification must be performed using 40 CFR Part 75.20(c) (2) and (4) and appendix A to 40 CFR part 75, or by the calibration drift test and relative accuracy test audit (RATA) procedures of Performance Specification 3 in appendix B to part 60 (for the CO_2concentration monitor) and Performance Specification 6 in appendix B to part 60 (for a continuous emission rate monitoring system [CERMS].

2. Ongoing quality assurance, the applicable procedures in either appendix B to 40 CFR Part 75, or appendix F to 40 CFR Part 60, shall be followed. If appendix F to 40 CFR part 60 is selected for on-going quality assurance, perform daily calibration drift assessments for both the CO_2monitor (or surrogate O_2monitor) and the flow rate monitor, conduct cylinder gas audits of the CO_2concentration monitor in three of the four quarters of each year (except for non-operating quarters), and perform annual RATAs of the CO2 concentration monitor and the CERMS.

3. The stack gas volumetric flow rate monitor RATAs required by appendix B to 40 CFR part 75 and the annual RATAs of the CERMS required by appendix F to 40 CFR part 60 need only be done at one operating level, representing normal load or normal process operating conditions, both for initial certification and for ongoing quality assurance.

4. Quality-assured (or valid) data must be generated when the boiler and scrubber are operating; except during the performance of a daily zero and span check. The measurements missed due to startup, shutdown and malfunction, shall be estimated using engineering judgment and the methods used recorded. Options to increase system reliability to an acceptable value, including a redundant CEMS, may be required.

5. All monitoring data and quality-assurance data shall be maintained by the source.

6. KDHE shall be notified at least 30 days prior to any required RATA in order to provide the opportunity to observe the testing.

E. One (1) Product Load-Out Vapor Recovery/Biogas Flare (EP-09001)

1. The BACT limit for the product load-out vapor recovery/biogas flare shall be 20,166 short tons CO_2e/yr during any twelve (12) consecutive month period. The hours of flare operation shall be limited to no more than 3,960 hours per consecutive 12 month period.

2. GHG BACT for the product load-out vapor recovery/biogas flare (EP-09001) is the installation/implementation of:

   a. Use of lower GHG-emitting processes and practices through an energy-efficient design, incorporating a fuel efficient flare pilot; and

   b. Develop and implement a written LDAR program.

3. The owner or operator shall demonstrate compliance with the BACT limit by recording fuel usage each month and using approved emissions factors to determine resulting CO_2e emissions.

   a. The owner or operator shall monitor and record the value of monthly flare fuel usage and resulting CO_2e emissions as specified in this permit. All records shall reflect totals for the most recent 12 month period.

   b. Records for the combined total shall be updated monthly, no later than the last day of the following calendar month.

4. The owner or operator shall provide construction specifications, operation and maintenance records, and fuel usage records to KDHE upon request to demonstrate compliance with BACT.

F. One (1) Diesel Firewater Pump Engine (EU-06001)

1. GHG BACT for the diesel firewater pump engine (EU-6001) is the installation of the most fuel-efficient National Fire Protection Association (NFPA-20) certified firewater pump engine available.

2. The BACT limit for the diesel firewater pump engine shall be 24.0 ton CO_2e during any twelve (12) consecutive month period. The diesel firewater pump engine shall not be operated for more than 100 hours per year for testing and maintenance.

3. The owner or operator shall demonstrate compliance with the BACT limit by recording monthly fuel usage and using approved emissions factors to determine resulting CO_2e emissions.

4. The owner or operator shall monitor and record the value of monthly diesel fuel usage and resulting CO_2e emissions as specified in this permit. All records shall reflect totals for the most recent 12 month period

5. Records for the combined total shall be updated monthly, no later than the last day of the following calendar month.

6. The owner or operator shall provide engine specifications, operation and maintenance records, and fuel usage records to KDHE upon request to demonstrate compliance with BACT.

G. Summary of the Units subject to GHG BACT and the BACT Requirements

Table 2 summarizes the emission units, the GHG BACT emission limit(s) and the BACT device or limitation.

Table 2. Summary of Emission Units Subject to GHG PSD BACT Limits

Stack ID	Equipment/Process	BACT Emission Limit(s)	BACT Device(s) or Operational Limitation(s)
EP-08000	HV Circuit Breaker	4.9 short ton CO_2e/yr	State-of-the-art enclosed-pressure SF_6 circuit breaker with leak detection to maintain fugitive SF_6 emissions below 0.5% per year (by weight); implementation of an LDAR program; and density monitor alarm set to 4 psi drop.
EP-20001	Biomass-Fired Stoker Boiler	0.34 lb CO_2e/lb steam produced, averaged over 30 day rolling periods including periods of startup, and shut-down.	Restriction of the fuel type to biomass that is otherwise considered to have low to no economic value or benefit, and/or is a lower impacting crops; and lower GHG-emitting processes and practices through an energy efficient design, incorporating cogeneration, process integration, combustion of co-products, heat recovery and operational and maintenance monitoring.
EP-18185	EH Fermentation CO_2 Scrubber	5.89 lb CO_2e/gal anhydrous ethanol produced, averaged over 30 day rolling periods including periods of startup and shut-down.	Monitoring enzymatic hydrolysis process efficiency, incorporating monitoring CO_2 production during fermentation, energy efficient heat integration, water recycling, and co-product production.
EP-09001	Product Load-out Vapor Recovery/Biogas Flare	20,166 short tons CO_2e/yr during any twelve (12) consecutive month period.	Restriction of the fuel type to primarily biogas and pipeline-grade natural gas in the pilot; and to use the most efficient flare that can perform to the specification required by the facility's process.

Table 2. Summary of Emission Units Subject to GHG PSD BACT Limits

Stack ID	Equipment/Process	BACT Emission Limit(s)	BACT Device(s) or Operational Limitation(s)
EP-06001	Firewater Pump Engine	24.0 tons CO_2e/yr during any twelve (12) consecutive month period	Fuel-efficient NFPA-20 certified firewater pump engine (20.3±5% gal/hr fuel consumption limit for a 460 Hp engine with a rated speed of 1760 rpm and an EPA Tier 3 emission rating).

VI. AIR EMISSION LIMITATIONS

Each emission limitation established or referenced in this permit applies to the respective emission source subject to that limitation at all times, including startup, shutdown, and malfunction, unless the applicability of that limitation is expressly excluded under certain conditions as to which a different limitation is applicable under a specific provision of this permit. The owner or operator shall comply with requirements of this permit. The exceedance of any emission limitation established by or referenced in this permit may constitute a violation of the permit and may be subject to enforcement action.

A. KAR 28-19-20 limits the concentration of particulate emissions from processing. This regulation applies to the storage and handling, hammer mills and biomass grinding. Based upon emission estimates, these emission sources are expected to operate in compliance with KDHE particulate matter rules.

B. K.A.R. 28-19-650(a)(3) limits the visible emissions from all emission sources other than the biomass-fired stoker boiler and loadout vapor recovery flare to 20% opacity.

C. The product loadout flare (EP-09001) shall be utilized at the facility for emissions control of vapor recovery during product loadout, as well as for back-up destruction of biogas and NCG process vent flow normally combusted in the biomass-fired stoker boiler, shall emit no visible emissions in accordance with 40 CFR 60.18. The citation to 40 CFR 60.18 is used here as a general design standard for modern flare emission control systems and should not be interpreted as meaning that the emissions controlled by the flare system is subject to a New Source Performance Standard.

D. Emissions from ABBK shall not exceed 10 tons per year for any single Hazardous Air Pollutant (HAP), or 25 tons per year of any combination of HAPs in any consecutive 12-month period.

Table 3. ABBK Hazardous Air Pollutants Emission Inventory Summary

Equipment/Source of HAPs	Maximum Controlled HAPs (tpy)	Maximum Controlled Single HAP (tpy)
Biomass Stoker Boiler (EP-20001)	18.40	5.7 (HCl)
		2.8 (Benzene)
		2.6 (Acrolein)
		2.9 (Formaldehyde)
		1.3 (Styrene)
EH Fermentation CO_2 Scrubber (EP-18185)	1.69	1.47 (Acetaldehyde)
		0.10 (Acrolein)
		0.12 (Methanol)
Total Controlled HAPs	**20.09**	
	Uncontrolled PTE (tpy)	
Flare (EP-09001)	0.001	
Lignin-rich stillage storage (EP-19001FUG)	0.06	
Fire pump engine (EP-06001EMG)	0.001	
Small Sources (tanks, loading losses)	0.148	
EP-02000		
T-02107		
T-02018		
T-02012 EH Ethanol Product Storage Tank #1		
T-02112		
T-02105		
EP-02100		
EP-02100 FUG		
Total Uncontrolled PTE HAPs	**0.21**	

Only the biomass stoker boiler and EH fermentation CO_2 scrubber shall be stack tested to determine compliance with the ABBK HAP emission limits, since the uncontrolled potential to emit for the flare, lignin-rich stillage storage, fire pump engine and small sources are less than 1.7 tpy. To ensure the total HAPs are limited to below 25 tpy, the HAPs shall be measured as specified in Sections VIII.D.5. and XIII.B. The combined emissions from the biomass stoker boiler and EH fermentation CO_2 scrubber shall contain no greater than 22.0 tons of total HAPs during any consecutive 12 month period.

E. Emissions from ABBK shall not exceed 40 Tons/year for VOCs in any consecutive 12-month period.

Table 4. ABBK Volatile Organic Compounds Emission Inventory Summary

Equipment/Source of VOCs	Uncontrolled PTE (tpy)	Maximum Controlled VOCs (tpy)
Biomass Stoker Boiler		11.17
EH Fermentation CO2 Scrubber		11.87
EP-02000 (LDAR)		1.69
Flare	0.27	
Lignin-rich stillage storage	1.29	
Fire pump engine	0.001	
Small Sources (tanks, loading losses)	9.52	
T-02107		
T-02018		
T-02012 EH Ethanol Product Storage Tank #1		
T-02112		
T-02105		
EP-02100 (routed to flare)		
EP-02100 FUG		
Total VOCs	11.08	24.73

Only the biomass stoker boiler and EH fermentation CO_2 scrubber shall be stack tested to determine compliance with the ABBK VOC emission limit, since the uncontrolled potential to emit for the flare, lignin-rich stillage storage, fire pump engine and small sources are less than 12 tpy. Emission Point EP-02000 will be monitored by leak detection as required by NSPS Subpart VVa (See section XIII.H) To ensure the total VOCs are limited to below 40 tpy, the VOCs shall be measured as specified in Sections VIII.D.4. and XIII.B. The combined emissions from the biomass stoker boiler and EH fermentation CO_2 scrubber shall contain no greater than 26.0 tons of total VOCs during any consecutive 12 month period.

F. The emergency diesel fire pump engine (EP-06001) is not subject to requirements from 40 CFR Part 63, Subpart ZZZZ as long as the engine meets the requirements of 40 CFR Part 60, Subpart IIII. [40 CFR 63.6590(a)((3)(c)]

G. Biomass-Fired Stoker Boiler Materials Handling

The biomass-fired stoker boiler materials handling will consist of a hydrated lime handling and injection system, a boiler bottoms ash collection system, and a boiler fly ash collection system. Emissions are controlled by five baghouses, (EP-20512), (EP-20514), (EP-20510), (EP-20520) and (EP-20511).

1. The BACT emissions of PM/PM_{10} from each baghouse are limited to 0.004 gr/dscf based on the average of at least three test runs conducted at each baghouse. Negative pressure shall be maintained on all baghouse systems.

2. The BACT emissions of $PM_{2.5}$ from each baghouse are limited to 0.002 gr/dscf based on the average of at least three test runs conducted at each baghouse. Negative pressure shall be maintained on all baghouse systems.

3. The hydrated lime injection system includes one hydrated lime storage silo (T-20512), pneumatic truck off-load system and handling conveyors. The emissions from the hydrated lime handling conveyors shall be controlled by:

   - Lime Handling Baghouse #1 (EP-20512) – emissions of PM/PM_{10} are limited to 0.07 lb/hr and $PM_{2.5}$ is limited to 0.03 lb/hr.

4. The boiler bottoms ash collection system shall consist of one (1) bottoms ash roll-off box (T-20514) controlled by:

   - Boiler Bottoms Ash Handling Baghouse #1 (EP-20514) – emissions of PM/PM_{10} are limited to 0.96 lb/hr and $PM_{2.5}$ is limited to 0.48 lb/hr.

5. The boiler fly ash collection system shall consist of ash handling pneumatic conveyors, one 15-ft diameter x 20-ft high interim storage silo and a combined truck/rail load-out system. The fly ash collection system shall be controlled by:

   a. Boiler Fly Ash Handling Baghouse #1 (EP-20510) – emissions of PM/PM_{10} are limited to 0.48 lb/hr and $PM_{2.5}$ is limited to 0.24 lb/hr.

   b. Boiler Fly Ash Handling Baghouse #2 (EP-20520) – emissions of PM/PM_{10} are limited to 0.48 lb/hr and $PM_{2.5}$ is limited to 0.24 lb/hr.

6. The bulk fly ash silo shall consist of one 40-ft diameter x 55-ft high storage silo T-02710. The bulk fly ash silo shall be controlled by:

   a. Bulk Fly Ash Load-out Silo Baghouse (EP-02710) – emissions of PM/PM_{10} are limited to 0.96 lb/hr and $PM_{2.5}$ is limited to 0.48 lb/hr.

b. Bulk Fly Ash Load-out Silo Spout Baghouse (EP-02711) – emissions of PM/PM_{10} are limited to 0.96 lb/hr and $PM_{2.5}$ is limited to 0.48 lb/hr.

H. Biomass Receiving, Grinding and Storage Operations

1. BACT for the biomass receiving, handling, grinding and silo storage operation is a work place standard requiring a closed system except for the module grinding conveyor lines which will be open at the loading end due to the large size of the biomass loaves.

2. The BACT emissions of PM/PM_{10} from the following baghouses are limited to 0.004 gr/dscf based on the average of at least three test runs conducted at each baghouse.

3. The BACT emissions of $PM_{2.5}$ from the following baghouses are limited to 0.0007 gr/dscf based on the average of at least three test runs conducted at each baghouse.

   a. Biomass Grinding Line Baghouse (EP-11110) – emissions of PM/PM_{10} are limited to 4.93 lb/hr and emissions of $PM_{2.5}$ are limited to 0.84 lb/hr.

   b. Floor Sweep System Baghouse (EP-11120) – emissions of PM/PM_{10} are limited to 0.27 lb/hr and emissions of $PM_{2.5}$ are limited to 0.05 lb/hr.

   c. Classifier Cyclone #1 Baghouse (EP-11170) – emissions of PM/PM_{10} are limited to 0.74 lb/hr and emissions of $PM_{2.5}$ are limited to 0.13 lb/hr.

   d. Classifier Cyclone #2 Baghouse (EP-11270) – emissions of PM/PM_{10} are limited to 0.74 lb/hr and emissions of $PM_{2.5}$ are limited to 0.13 lb/hr.

   e. Boiler Feed System Baghouse (EP-11711) – emissions of PM/PM_{10} are limited to 0.74 lb/hr and emissions of $PM_{2.5}$ are limited to 0.13 lb/hr

I. Enzymatic Hydrolysis (EH) Ethanol Manufacturing Plant

The EH production process consists of pre-treatment and digestion (Area 12000); liquefaction, yeast propagation, saccharification and co-fermentation (Area 16000); ethanol recovery (i.e. distillation) (Area 18000); and stillage processing (Area 19000).

1. The CO_2 generated from the biomass co-fermentation process (Area 16000) shall be routed through the EH fermentation CO_2 scrubber (EP-18185). The CO_2 generated from the biomass ethanol recovery process (Area 18000) shall be routed through the EH distillation vent scrubber (EP-18180). The distillation scrubber vent feeds into

the enzymatic hydrolysis fermentation CO_2 scrubber (EP-18185) for further control efficiency.

2. The non-condensables generated in areas 12000, 16000, and 19000 from the biomass process vents will be routed to either the biomass-fired stoker boiler or flare for destruction.

3. Condensable PM[2] and NO_2

   PM is formed after the stream exhausts from the scrubber and is due to fine particles, including aerosols, condensing at ambient air conditions. There are no additional control options for condensable PM in addition to the packed-tower wet scrubbers that will be employed as part of the fermentation and distillation process.

   NO_2 is a trace contaminant present in the vent streams ducted to the fermentation packed-tower wet scrubber for control. There are no additional control options for condensable NO_2 in addition to the packed-tower wet scrubbers that will be employed as part of the fermentation and distillation process.

   The BACT emissions of condensable PM and NO_2 from the enzymatic hydrolysis CO_2 scrubber (EP-18185) based on the average of at least three test runs are:

   a. EH fermentation CO_2 scrubber (EP-18185) - BACT emissions of condensable PM are limited to 0.10 lb/hr, as determined by Reference Method 202 (Part 51, Appendix M).

   b. EH fermentation CO_2 scrubber (EP-18185) - BACT emissions of NO_2 are limited to 0.07 lb/hr.

J. One (1) Cooling Water Tower System for Cogeneration and Enzymatic Hydrolysis (EP-04001)

The cogeneration cooling water tower and the EH plant cooling water tower will be combined into one cooling water tower with a total of three (3) cells and a total water circulation rate of 43,200 gallons/minute. The cooling tower shall be equipped with a drift (mist) eliminator.

[2] The term "Condensable PM" as used in this permit means material that is vapor phase at stack conditions, but condenses and/or reacts upon cooling and dilution in the ambient air to form solid or liquid PM immediately after discharge from the stack that can be quantified by analysis using EPA Reference Method 202 (Part 51, Appendix M).

1. No chromium-based water treatment chemicals shall be used in the circulating water system and thus the requirements of 40 CFR Part 63, Subpart Q shall not apply.

2. The BACT emissions of $PM/PM_{10}/PM_{2.5}$ for the cooling water tower (EP-04001) is the installation of high efficiency mist eliminators that will limit drift to 0.0005% and a maximum total dissolved solids (TDS) limit of 1,575 ppm by volume. Compliance with this requirement is demonstrated by maintaining records of the vendor-guaranteed maximum total liquid drift. Total dissolved solids in the circulating water shall not exceed 1,575 ppm by volume. The method of demonstrating compliance with the PM emission limit is limiting the TDS content of the cooling water. This results in a PM BACT limit of 0.17 lb/hr, PM_{10} BACT limit of 0.12 lb/hr and a $PM_{2.5}$ BACT limit of 0.07 lb/hr.

K. Product Load-out Vapor Recovery/Biogas Flare (EP-9001)

BACT for the flare consists of design and workplace standards since there is no currently feasible method to measure emissions exiting the flare. BACT is using a flare design that meets the requirements of the New Source Performance Standards Subpart A, Section 60.18 (40 CFR 60.18). Workplace standards include continuously monitoring the pilot flame with infrared sensors, maintaining a natural gas purge so that the heating value of gases to the flares is not less than 300 Btu/scf, and using steam assisted mixing at the flare tip for smokeless operation. The hours of operation for the flare shall be limited to no more than 3,960 hours per consecutive 12 month period, the pilot fuel shall be limited to exclusively natural gas, the biogas shall be treated to remove sulfur to a maximum value of 100 ppm and the flare shall consist of a low NOx burner.

L. Plant Haul Roads

1. In-Plant Haul Roads (EP-01000FUG):

   a. The number of trucks entering onsite for shipping and receiving operations in the ABBK plant shall not exceed 148 trucks per day averaged over a rolling 7-day period.

   b. The number of trucks entering onsite for shipping and receiving operations in the ABBK plant shall not exceed 44 trucks per night between the hours of 6PM to 6AM (night-time) averaged over a rolling 7-night period.

   c. The number of trucks entering onsite for shipping and receiving operations in the ABBK plant shall not exceed 47,852 trucks per year over a rolling 365-day period.

d. The number of trucks entering onsite for shipping and receiving operations in the ABBK plant shall not exceed 14,356 trucks between the hours of 6:00 PM to 6:00 AM (night-time) per year over a rolling 365-day period.

e. BACT for emissions of $PM/PM_{10}/PM_{2.5}$ is a work place practice to pave all in-plant haul roads and to post and enforce at all times a maximum speed limit of 15 mph. The owner or operator shall perform frequent washing, vacuuming and sweeping, and enforce a speed limit to reduce fugitive emissions from the paved plant haul roads.

f. The owner or operator shall prepare, submit, maintain and follow a Fugitive Dust Management Plan for control of fugitive particulate matter emissions from the in-plant haul roads. This plan shall be submitted to KDHE for approval no later than ninety (90) days before plant start-up.

2. In-Plant Biomass Laydown Roads and Unpaved Staging Area (EP-01050FUG):

a. The number of trucks hauling feedstock and materials into the ABBK biomass laydown roads and unpaved staging area shall not exceed 109 trucks per day averaged over a rolling 7-day period.

b. BACT for $PM/PM_{10}/PM_{2.5}$ for the in-plant unpaved biomass laydown roads and unpaved staging area (EP-01050FUG) is a work place practice to perform frequent water and/or chemical dust suppressant applications and to post and enforce at all times a maximum speed limit of 15 mph.

c. The owner or operator shall prepare, submit, maintain and follow a Fugitive Dust Management Plan for control of fugitive particulate matter emissions from the plant biomass laydown roads. This plan shall be submitted to KDHE for approval no later than ninety (90) days before plant start-up.

M. Diesel Firewater Pump Engine (EP-06001)

BACT emissions for the diesel firewater pump engine are being established as the emission limits in 40 CFR Part 60, NSPS Subpart IIII.

1. The BACT emission of NMHC + NO_x for the diesel firewater pump engine is 2.57 g/Hp-hr.

2. The BACT emission of CO for the diesel firewater pump engine is 0.67 g/Hp-hr.

3. The BACT emission of PM/PM_{10} for the diesel firewater pump engine is 0.08 g/Hp-hr.

4. The BACT emissions of SO_2 for the diesel firewater pump engine is a work place diesel fuel standard that meets the following fuel sulfur standard:

   - Beginning October 1, 2010, the facility shall fuel the fire pump engine using diesel fuel that meets 0.0015 % sulfur by weight.

5. The diesel fire pump shall not be operated for more than 100 hours per year for testing and maintenance. Maintenance and testing hours of operation, except for necessary operational demonstrations to prove completion of maintenance, shall occur between 9:00 AM and 6:00 PM, Monday through Friday. Otherwise, the diesel fire pump shall be used only to provide emergency fire protection water supply to the ABBK site on occasions when the plant fire protection systems are activated. The diesel fire pump may be operated for up to 50 hours per year for maintenance operations and such hours shall be included in the total 100 hours limitation. Hours of use shall be verified by the use of non-resettable run time meters (RTM).

6. The diesel fire pump operations will be limited such that it will not be operated at any time that the flare is operating except in the event of a facility emergency.

VII. GENERAL PERMIT CONDITIONS

A. The following permit conditions are applicable for the biomass-fired stoker boiler and other emission units as specified.

1. All air pollution control equipment identified in this permit shall be properly installed, operated and maintained at all times whenever the emissions source that it is designated to control is operating.

2. The enzymatic hydrolysis CO_2 scrubber (S-18185) and the enzymatic hydrolysis distillation vent scrubber (S-11180) shall have the pressure drop and water level range for the wet scrubber established and maintained based upon a successful performance test conducted for each scrubber. For the purposes of this permit condition, a successful performance test is a test, conducted in accordance with performance test requirements of this permit, during which all of the emissions limitations in this permit for the EH scrubber were met.

3. Stack parameters for all equipment listed under Air Emission Unit Technical Specifications, including but not limited to stack heights, stack diameters, exhaust temperatures, emission rates, and exit velocities, shall be consistent with data provided for the dispersion modeling analysis. Dispersion modeling for the 1-hour

NO_2 NAAQS relied on an NO_2/NOx ratio of 0.05 for the biomass boiler, which shall be confirmed as required in the Performance Testing requirements of this permit. If significant changes are made, or modeling parameters are not representative of site conditions, the facility shall document compliance with the NAAQS and increment to KDHE prior to making changes. KDHE has final authority in determining what constitutes a significant change. If modeling indicates a potential NAAQS or increment violation, mitigation shall be required.

4. 40 CFR Part 60 Subpart A – General Provisions Requirements

   a. Compliance with the standards in this part, other than the opacity standards, shall be determined in accordance with the performance tests specified in 40 CFR 60.8, unless otherwise specified in the applicable standard. [40 CFR 60.11(a)]

   b. The opacity standards set forth in this part shall apply at all times except during periods of startup, shutdown, malfunction, and as otherwise provided in the applicable standard. [40 CFR 60.11(c)]

   c. At all times, including period of, shutdown, and malfunction, owners and operators shall, to the extent practically possible, maintain and operate any affected facility, including associated air pollution control equipment, in a manner consistent with good air pollution practice for minimizing emissions. [40 CFR 60.11(d)]

   d. Flare design and operation requirements are as described in 40 CFR 60.18.

5. 40 CFR Part 60 Subpart VV-a

   a. The provisions of 40 CFR Part 60 Subpart VV-a and Subpart A apply to the group of all equipment within each process unit. Equipment means each pump, compressor, pressure relief device, sampling connection system, open-ended valve or line, valve, and flange or other connector in VOC service and any devices or systems as specified by 40 CFR Part 60 Subpart VVa.

   b. The owner or operator shall comply with the general equipment leak standards in 40 CFR 60.482-1a. [NSPS Subpart VVa]

6. Pumps in light liquid service

   a. Each pump in light liquid service shall be monitored monthly to detect leaks by the methods specified in 40 CFR 60.485a(b), except as provided at 40 CFR 60.482-1a(c) and (f) and paragraphs (d), (e), and (f) of 40 CFR 60.482-2a.

   b. Each pump in light liquid service shall be checked by visual inspection each

calendar week for indications of liquids dripping from the pump seal, except as provided at 40 CFR 60.482-1a(f).

c. The instrument reading that defines a leak is specified as follows:

i. 5,000 parts per million (ppm) or greater for pumps handling polymerizing monomers.

ii. 2,000 ppm or greater for all other pumps.

d. If there are indications of liquids dripping from the pump seal, the owner or operator shall follow the procedure specified in 40 CFR 60.482-2a(b)(2).

e. When a leak is detected, it shall be repaired as soon as practicable, but not later than 15 calendar days after it is detected, except as provided at 40 CFR 60.482-9a.

f. A first attempt at repair shall be made no later than 5 calendar days after each leak is detected.

7. Compressors

The owner or operator shall comply with the equipment leak standards for compressors in 40 CFR 60.482-3a. [NSPS Subpart VV-a]

8. Pressure Relief Devices in Gas/Vapor Service

The owner or operator shall comply with the equipment leak standards for pressure relief devices in gas/vapor service in 40 CFR 60.482-4a. [NSPS Subpart VV-a]

9. Sampling Connection Systems

The owner or operator shall comply with the equipment leak standards for sampling connection systems in 40 CFR 60.482-5a. [NSPS Subpart VV-a]

10. Open-Ended Valves or Lines

The owner or operator shall comply with the equipment leak standards for open-ended valves or lines in 40 CFR 60.482-6a. [NSPS Subpart VV-a]

11. Valves in gas/vapor service and in light liquid service

The owner or operator shall comply with the equipment leak standards for valves in gas/vapor service and in light liquid service, found in 40 CFR 60.482-7a. [NSPS Subpart VV-a]

12. Pumps, valves, and connectors in heavy liquid service, connectors in gas/vapor or light liquid service, and pressure relief devices in light liquid or heavy liquid service

    The owner or operator shall comply with the equipment leak standards for pumps, valves, and connectors in heavy liquid service and pressure relief devices in light liquid or heavy liquid service, found in 40 CFR 60.482-8a. [NSPS Subpart VV-a]

13. Delay of repair

    The owner or operator shall comply with the standards for delay of repair found in 40 CFR 60.482-9a. [NSPS Subpart VV-a]

14. Closed vent systems and control devices:

    The owner or operator shall comply with the standards for closed vent systems and control devices in 40 CFR 60.482-10a. [NSPS Subpart VV-a]

15. Exceptions:

    a. Any existing reciprocating compressor that becomes an affected facility under provisions of 40 CFR 60.14 or 40 CFR 60.15 is exempt from 40 CFR 60.482-3a(a), (b), (c), (d), (e), and (h) provided the owner or operator demonstrates that recasting the distance piece or replacing the compressor are the only options available to bring the compressor into compliance with the provisions of 40 CFR 60.482-3a(a), (b), (c), (d), (e), and (h).

    b. An owner or operator may use the following provision in addition to 40 CFR 60.485a(e): Equipment is in light liquid service if the percent evaporated is greater than 10 percent at 150 °C as determined by ASTM Method D86-78, 82, 90, 93, 95, or 96 (incorporated by reference as specified in 40 CFR 60.17).

16. 40 CFR Part 60 Subpart Kb Standards for Tanks T02102, T02105 and T02112

    a. The owner or operator shall equip the tanks listed above with a fixed roof in combination with an internal floating roof meeting the following specifications [40 CFR 60.112b(a)(1)]:

    b. The internal floating roof shall rest or float on the liquid surface (but not necessarily in complete contact with it) inside a storage vessel that has a fixed roof. The internal floating roof shall be floating on the liquid surface at all times,

except during initial fill and during those intervals when the storage vessel is completely emptied and refilled. When the roof is resting on the leg supports, the process of filling, emptying, or refilling shall be continuous and shall be accomplished as rapidly as possible [40 CFR 60.112b(a)(1)(i)].

c. The internal floating roof shall be equipped with a seal meeting the requirements of 40 CFR 60.112b(a)(1)(ii) as a closure device between the wall of the storage vessel and the edge of the internal floating roof [40 CFR 60.112b(a)(1)(ii)].

d. Each opening in a noncontact internal floating roof except for automatic bleeder vents (vacuum breaker vents) and the rim space vents shall provide a projection below the liquid surface [40 CFR 60.112b(a)(1)(iii)].

e. Each opening in the internal floating roof except for leg sleeves, automatic bleeder vents, rim space vents, column wells, ladder wells, sample wells, and stub drains shall be equipped with a cover or lid which is to be maintained in a closed position at all times (i.e., no visible gap) except when the device is in actual use. The cover or lid shall be equipped with a gasket. Covers on each access hatch and automatic gauge float well shall be bolted except when they are in use [40 CFR 60.112b(a)(1)(iv)].

f. Automatic bleeder vents shall be equipped with a gasket and shall be closed at all times when the roof is floating except when the roof is being floated off or is being landed on the roof leg supports [40 CFR 60.112b(a)(1)(v)].

g. Rim space vents shall be equipped with a gasket and shall be set to open only when the internal floating roof is not floating or at the manufacturer's recommended setting [40 CFR 60.112b(a)(1)(vi)].

h. Each penetration of the internal floating roof for the purpose of sampling shall be a sample well. The sample well shall have a slit fabric cover that covers at least 90 percent of the opening [40 CFR 60.112b(a)(1)(vii)].

i. Each penetration of the internal floating roof that allows for passage of a column supporting the fixed roof shall have a flexible fabric sleeve seal or a gasketed sliding cover [40 CFR 60.112b(a)(1)(viii)].

j. Each penetration of the internal floating roof that allows for passage of a ladder shall have a gasketed sliding cover [40 CFR 60.112b(a)(1)(ix)].

17. 40 CFR Part 60 Subpart IIII Standards of Performance for Stationary Compression

Ignition Internal Combustion Engines

The emergency fire pump engine (EU-06001) shall comply with the applicable requirements specified in 40 CFR 60.4205 of Subpart IIII.

a. The facility shall operate and maintain the emergency fire pump engine according to manufacturer's written instructions or by procedures developed by the owner or operator that are approved by the manufacturer, over the life of the engine.

b. The emergency fire pump engine shall meet the applicable fuel requirements referenced in 40 CFR 60.4207 of Subpart IIII.

c. The owner or operator shall meet the following monitoring requirements for the emergency fire pump engine:

   i. The owner or operator shall install a non-resettable hour meter prior to startup.

   ii. The owner or operator shall meet the monitoring requirements specified in 40 CFR 60.4209.

d. The owner or operator shall meet the following compliance requirements for the emergency fire pump engine:

   i. The owner or operator shall comply with the emission standards specified in 40 CFR 60.4211, and operate and maintain the emergency fire pump engine according to the manufacturer's written instructions or by procedures developed by the facility that is approved by the manufacturers.

   ii The owner or operator shall also comply with the applicable requirements of 40 CFR Part 89 and/or 40 CFR Part 1068.

   iii The owner or operator shall keep records of the emergency fire pump engine manufacturer data as necessary to demonstrate compliance with the standards.

18. The emergency fire pump engine may be operated for the purpose of maintenance and readiness testing, provided that the tests are recommended by Federal, State, or local government, the manufacturer, the vendor, or the insurance company associated with the engines. Maintenance checks and readiness testing of the units shall be limited to 100 hours per year. There is no time limit on the use of the fire pump in emergency situations. The owner or operator may petition KDHE for approval of additional hours to be used for maintenance checks and readiness testing, but a petition is not required if the owner or operator maintains records indicating that Federal, State, or local standards require maintenance and testing of emergency units beyond 100 hours per year.

VIII. BIOMASS-FIRED STOKER BOILER PERMIT CONDITIONS

A. Air Emission Limitations for Biomass-Fired Stoker Boiler (EP-20001)

The following air limitations apply to the biomass-fired stoker boiler:

1. K.A.R. 28-19-31(a) limits the amount of Particulate Matter (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. K.A.R. 28-19-31(b)(2) limits opacity of the visible air emissions from the biomass-fired stoker boiler to 20 percent. Compliance with the requirements of 40 CFR 63.11201(c) shall demonstrate compliance with K.A.R. 28-19-31(b)(2).

3. The owner or operator shall only burn a combination of wheat straw, milo (sorghum) stubble, corn stover, switchgrass, other opportunity solid biomass feedstocks that are available, enzymatic hydrolysis residuals (including lignin-rich stillage cake and thin stillage syrup), particles collected during biomass grinding, NCG vent streams, wastewater treatment sludge, biogas and natural gas.

4. "Day" in the 30-day rolling average limits for NO_X , SO_2 and CO means a 24-hour period between 12 midnight and the following midnight during which any fuel is combusted at any time in the biomass-fired stoker boiler. It is not necessary for fuel to be combusted the entire 24-hour period.

5. The owner or operator shall not emit or cause to be emitted into the atmosphere, from the biomass-fired stoker boiler, emissions of sulfuric acid mist (SAM) in an amount exceeding 6.9 tons during any twelve consecutive months.

6. To determine compliance with the emission limitations for sulfuric acid mist set forth above in this section, the owner or operator shall on a monthly basis perform a - calculation of emissions using emission rates from the latest performance tests for each specified period of operation using the formula:

   a. Calculation of monthly sulfuric acid mist (SAM) emissions (tons/month) from the boiler:

      SAM = (EF) (R) / (2000 lb/ton)

      Where,

      SAM = Monthly SAM emissions from the boiler in tons per month.

EF = Tested Emission Factor in lbs/MMBtu from stack testing results in Section VIII.D.2 and D.6, and approved by KDHE.

R = Measured Heat Input capacity (MMBtu/month) for the boiler.

b. The owner or operator shall use the monthly records required in above to determine the rolling 12-month total SAM emissions from the biomass-fired stoker boiler for each calendar month. All calculations, including any KDHE approved emission factor and Measured Heat Input capacity (MMBtu/month) for the boiler, shall be kept as part of the records.

c. The owner or operator shall notify KDHE in writing if emissions of SAM exceed 6.9 tons from the boiler, during any consecutive twelve-month period. This notification shall be postmarked by the fifteenth day of the following month and shall include an explanation of how the owner or operator intends to maintain compliance with the applicable emissions limit in Section VIII.A.5.

7. NSPS standards referenced in 40 CFR Part 60, Subpart Db specify limitations to the emission of NO_X. Pursuant to 40 CFR 60.44b(d), in lieu of an emission limit for NO_X, the owner or operator can comply with a federally enforceable requirement that limits operation of the biomass-fired stoker boiler (EP-20001) to an annual capacity factor of 10 percent (0.10) or less for natural gas. The owner or operator has elected to comply with the 40 CFR Part 60, Subpart Db limit of burning natural gas.

8. Specific definitions for startup and shutdown are defined within the context of the applied control technology. The owner or operator shall use good air pollution control practices to minimize emissions during startup and shutdown. Work practices shall include the use of natural gas as the only ignition fuel, combustion NO_x control technology, and placing in service of the specific control technologies in accordance with the respective manufacturers' recommendations.

9. The BACT NO_X emission limitations and controls for the biomass-fired stoker boiler (EP-20001) are as follows:

a. The owner or operator shall not emit or cause to be emitted any gases that contain NO_X emissions in excess of the BACT emission limit of 0.30 lb/MMBtu on a 30 day rolling average including periods of startup, shutdown, or malfunction.

b. The owner or operator shall not emit or cause to be emitted any gases that contain NO_X emissions in excess of the BACT emission limit 150 pounds per hour (lbs/hr) on a 1-hour average, including periods of startup and shutdown, and excluding malfunction.

c. The NO_X emissions from the biomass-fired stoker boiler shall be controlled with the installation of a Selective Catalytic Reduction System (SCR). The NO_X emissions from the biomass-fired stoker boiler shall also be controlled with the implementation of over-fire air (OFA) and good combustion practices (GCP). The owner or operator must operate and maintain the SCR system to assure proper, effective and optimal NO_X control. If the emission rate results from the initial performance test are less than the limit described above and deemed consistently achievable, the emission rate determined during the performance test will be the limit imposed.

d. Emissions during startup shall be controlled by burning only natural gas via low NOx burners and an operational over-fire air system. No other fuels shall be combusted until the SCR is operational.

e. Emissions during shutdown shall be controlled by keeping the SCR operational until the boiler load is significantly reduced and all solid/liquid fuels are removed from the boiler.

f. Natural gas shall be used during biomass-fired stoker boiler startup periods as required per manufacturer recommendations, but shall be limited to less than or equal to 10 percent of the biomass-fired stoker boiler's annual capacity on a consecutive 12-month rolling average basis. The *annual capacity factor* shall mean the ratio between the actual heat input to a steam generating unit from the natural gas during each consecutive 12-month rolling average period and the potential heat input to the steam generating unit had it been operated for 8,760 hours during each consecutive 12-month rolling average period at the maximum steady state design heat input capacity [500 MMBtu/hr x 8,760 hrs/yr].

   Failure to limit natural gas usage in the biomass-fired stoker boiler to less than or equal to 10 percent of the biomass-fired stoker boiler's annual capacity on a consecutive 12-month rolling average basis could result in a violation of the NSPS NO_X limit that would be applicable for this biomass-fired stoker boiler in lieu of a federally enforceable annual capacity factor of 10% for natural gas as per 40 CFR 60.44b(d).

10. The SO_2 emission limitations and controls for the biomass-fired stoker boiler (EP-20001) are as follows (The owner or operator is also subject to NSPS standards and limitations referenced in 40 CFR Part 60, Subpart Db which specify limitations to the emission of SO_2 from the biomass-fired stoker boiler):

    a. The owner or operator shall limit NSPS Db emissions of SO_2 to 0.20 lb/MMBtu heat input or 8 percent (0.08) of the potential SO_2 emission rate (92% reduction) and 1.2 MMBtu heat input on a 30 day rolling average including periods of startup, shutdown, and malfunction. [40 CFR 60.42b(k), (e) and (g)]

b. The owner or operator shall not emit or cause to be emitted any gases that contain SO_2 emissions in excess of the BACT emission limit of 0.21 lb/MMBtu on a 30 day rolling average including periods of startup, shutdown, and malfunction.

c. The owner or operator shall not emit or cause to be emitted any gases that contain SO_2 emissions in excess of the BACT emission limit of 106 lbs/hr on a 1-hour average including periods of startup and shutdown and excluding malfunction.

d. The SO_2 emissions from the biomass-fired stoker boiler shall be controlled with the injection of sorbent, (trona (sodium sesquicarbonate) or lime) in combination with an FGD system. The owner or operator must operate and maintain the FGD system to assure proper, effective and optimal SO_2 control. The system shall achieve at least 90% control efficiency except when inlet SO_2 concentrations are below 2.4 lb/MMBtu. If the emission rate results from the initial performance test are less than the limit described above and deemed consistently achievable, the emission rate determined during the performance test will be the limit imposed.

e. Emissions of SO_2 during startup shall be controlled by burning only natural gas. No other fuels shall be combusted until the FGD is operational.

f. Emissions of SO_2 during shutdown shall be controlled by keeping the FGD operational until the boiler load is significantly reduced and all solid/liquid fuels are removed from the boiler.

11. The PM emission limitations and controls for the biomass-fired stoker boiler (EP-20001) are as follows:

The emission limitations and controls are as follows:

a. Pursuant to Table 1 To Subpart JJJJJJ Of Part 63—Emission Limits, the owner or operator shall not emit or cause to be emitted any gases that contain filterable PM in excess of 0.03 lb per MMBtu of heat input except during periods of startup and shutdown. [40 CFR 63.11201(a)]

b. The owner or operator shall not emit or cause to be emitted any gases that contain filterable PM in excess of the BACT emission limit of 0.015 lb/MMBtu.

c. The PM emissions from the biomass-fired stoker boiler shall be controlled with the installation of a baghouse (EP-20001) equipped with fabric filter bags. If the emission rate results from the initial performance test are less than the limits described above and deemed consistently achievable, the emission rate determined during the performance test will be the limit imposed.

12. The BACT PM_{10} and $PM_{2.5}$ emission limitations and controls for the biomass-fired stoker boiler (EP-20001) are as follows:

    a. The owner or operator shall not emit or cause to be emitted any gases that contain filterable PM_{10} emissions in excess of the BACT emission limit of 0.013 lb/MMBtu.

    b. The owner or operator shall not emit or cause to be emitted any gases that contain filterable $PM_{2.5}$ emissions in excess of the BACT emission limit of 0.011 lb/MMBtu.

    c. The $PM_{10}/PM_{2.5}$ emissions from the biomass-fired stoker boiler shall be controlled with the installation of a baghouse (EP-20001) equipped with fabric filter bags. If the emission rate results from the initial performance test are less than the limit described above and deemed consistently achievable, the emission rate determined during the performance test will be the limit imposed.

    d. The owner or operator shall not emit or cause to be emitted any gases that contain total PM_{10}[3] emissions and total $PM_{2.5}$[4] emissions in excess of the emission limit of 0.017 lb/MMBtu

13. The emission limitations and controls for CO for the biomass-fired stoker boiler (EP-20001) are as follows:

    a. The owner or operator shall not emit or cause to be emitted any gases that contain CO emissions in excess of the BACT emission limits of 0.22 lb/MMBtu (260 ppmv@3% O_2) on a 30 day rolling average, including periods of startup, shutdown, and malfunction.

    b. This BACT limit is based upon the implementation of good combustion practices (GCP). If the emission rate results from the initial performance test are less than the limit described above and deemed consistently achievable, the emission rate determined during the performance test will be the limit imposed.

14. The owner or operator shall minimize the boiler's startup and shutdown periods following the manufacturer's recommended biomass-fired stoker boiler procedures. If

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[3] The term "PM_{10}" as used in this permit means that particulate matter (existing as solid, liquid, and gaseous form) emitted by a steam generator that can be quantified by analysis using EPA Reference Methods 5 and 202 or by Methods 201A and 202 or by Other Test Method (OTM) 27 (with cyclone sizing devices appropriate for the quantification of PM_{10}) and OTM28 or other such USEPA-approved methods.

[4] The term "$PM_{2.5}$" as used in this permit means that particulate matter (existing as solid, liquid, and gaseous form) emitted by a steam generator that can be quantified by analysis using EPA Reference Methods 5 and 202 or by Methods 201 (or 201A) and 202 or by Other Test Method (OTM) 27 (with appropriate cyclone sizing devices appropriate for the quantification of $PM_{2.5}$) and OTM28 or other such USEPA-approved methods.

manufacturer's recommended procedures are not available, the owner or operator must follow recommended procedures for a unit of similar design for which manufacturer's recommended procedures are available. [40 CFR 63.11201(b)]

15. The owner or operator shall use good air pollution control practices to minimize the emissions of emissions during startup and shutdown of the biomass-fired stoker boiler. These practices shall apply to the baghouse fabric filter bags, the FGD, the SCR and shall include the use of natural gas as an ignition fuel, the placement in service and removal from service of the baghouse fabric filter bags in accordance with the manufacturers' recommendations consistent with long-term sustainable operation of the biomass-fired stoker boiler and the fabric filter bags, operation and maintenance of the SCR in accordance with manufacturer's recommendations and operation and maintenance of the FGD in accordance with manufacturer's recommendations.

16. For the purposes of this Permit, the following scenario shall be used for the startup and shutdown of the biomass-fired stoker boiler:

    a. Startup begins with the introduction of exclusively natural gas fuel to heat the biomass-fired stoker boiler to approximately 400 °F, at which time the FGD is started. Natural gas shall continue to be used for fuel during startup until the SCR is operational. Startup shall end when the SCR is fully functional which occurs when the boiler reaches greater than 30% load or 141 MMBtu/hr. The biomass-fired stoker boiler baghouse shall be operational during the entire startup period.

    b. Shutdown begins with the emptying the boiler solid fuel bins and stopping liquid fuel feed until only natural gas is used as fuel after the boiler load has been reduced to 30% load or 141 MMBtu/hr, the SCR and FGD control systems shall be stopped. Shutdown ends when the natural gas fuel feed is stopped. The biomass-fired stoker boiler baghouse shall be operational during the entire shutdown period

17. The owner or operator shall have installed a natural gas meter prior to the biomass-fired stoker boiler for the purpose of recording monthly natural gas usage by the biomass-fired stoker boiler.

18. The owner or operator shall only burn the fuel types and fuel mixtures used to demonstrate compliance with the applicable emission limits according to requirements in this permit. **Municipal Solid Waste (MSW) is prohibited from use as a boiler fuel type.** The owner or operator initially shall burn as fuel the following biomass fuel blends:

    a. A nominal typical fuel blend consisting of 41.6% EH lignin – rich stillage, 27.2% EH thin stillage syrup, 24.0% corn stover, 6.8% Biogas and 0.40% waste water treatment plant sludge, based on dry ton per day feed rates.

b. A maximum emission case fuel blend consisting of 47.4% EH lignin – rich stillage, 30.9% EH thin stillage syrup, 13.5% corn stover, 7.8% Biogas and 0.40% Waste Water Treatment Plant Sludge, based on dry ton per day feed rates.

19. If the owner or operator proposes to burn a new mixture of biomass fuel blends which varies for the mixture listed above, the owner or operator shall calculate the concentration of pollutants in the new biomass blend. If the results of calculating the concentration of pollutants are:

    a. equal to or lower than the concentration of pollutants level established for the worst emission case fuel blend used to demonstrate compliance with the applicable emission limits, then the owner or operator shall be allowed to burn the new mixture of biomass fuels.

    b. greater than the concentration of pollutants level established for the worst emission case fuel blend used to demonstrate compliance with the applicable emission limits, the owner or operator shall be allowed to burn the new mixture of biomass fuels contingent on conducting a new performance test within 60 days of burning the new fuel mixture to demonstrate compliance with the applicable emission limits of the biomass-fired stoker boiler according to requirements in this permit.

B. Biomass-Fired Stoker Boiler Monitoring Requirements

The following monitoring requirements apply to the biomass-fired stoker boiler, and associated air pollution control devices:

1. The biomass-fired stoker boiler (EP-20001) is subject to and shall comply with the applicable requirements in 40 CFR Part 60, Subpart Db. The owner/operator shall install, calibrate, maintain and operate continuous emission monitoring systems (CEMS) to monitor and record emissions of SO_2 and CO_2 concentrations and shall record the output of those systems. For units complying with the percent reduction standard, the SO_2 and CO_2 concentrations shall both be monitored at the inlet and outlet of the SO_2 control device as described by 40 CFR 60, Subpart Db and this permit. The procedures under 40 CFR Part 60.13 shall be followed for installation, evaluation, and operation of the CEMS. [40 CFR 60.47b(e)]

    a. The CEMS shall meet the design and performance specifications, pass the field tests, and meet the installation, data analysis, and reporting requirements listed in the Performance Specification Number 2 of 40 CFR Part 60, Appendix B.

    b. The owner/operator shall assure that the CEMS meets the applicable quality-assurance requirements specified in 40 CFR Part 60, Appendix F. Relative

accuracy exceedances, as specified in 40 CFR Part 60, Appendix F, Section 5.2.3 and any CEMS downtime shall be reported to KDHE, and necessary corrective action shall be taken.

c. The monitoring data shall be reduced to 1-hour average concentrations and expressed in units of lbs/MMBtu for SO_2. The 1-hour average SO_2 emissions rates shall also be recorded in pound per hour.

d. All monitoring data and quality-assurance data shall be maintained by the source.

e. KDHE shall be notified at least 30 days prior to any required RATA in order to provide the opportunity to observe the testing.

f. Quality-assured (or valid) data must be generated when the combustor is operating; except during the performance of a daily zero and span check. The measurements missed due to startup, shutdown and malfunction, shall be estimated using engineering judgment and the methods used recorded. Options to increase system reliability to an acceptable value, including a redundant CEMS, may be required.

g. In lieu of operating a CEMS for monitoring emissions, the owner/operator may elect to submit an alternative monitoring plan to the EPA for approval; pursuant to 40 CFR 60.13(i).

2. The owner or operator shall determine compliance with the SO_2 emissions limitation in biomass-fired stoker boiler permit conditions VIII.A.9.a, b and c using emissions data acquired by the SO_2 CEMS. The 1 hour average and the 30-day rolling average shall be determined as follows:

   a. After the first 1-hour average, a new 1-hour average shall be calculated after each operating hour including periods of startups and shutdowns and excluding malfunctions.

   b. The 30-day average shall be the average of all valid hours of SO_2 emissions data for any 30 successive operating days. The average shall include data from periods of startups, shutdowns and malfunctions.

   c. After the first 30-day average, a new 30-day rolling average shall be calculated after each operating day. The new average shall include data from periods of startups, shutdowns and malfunctions.

   d. For the purpose of this Permit, an operating day is a 24-hour period between 12:00 midnight and the following midnight during which any fuel is combusted at

any time. It is not necessary for the fuel to be combusted continuously for the entire 24-hour period.

3. The owner/operator shall install, calibrate, maintain and operate continuous emission monitoring systems (CEMS) to monitor and record emissions of NOx and CO_2 concentrations and shall record the output of those systems as described by 40 CFR 60, Subpart Db and this permit. In addition to Subpart Db requirements, the facility shall also monitor and record the NO_2/ NOx ratio for one year following startup of the biomass boiler, and one additional year following addition of new feedstock after the first year. The procedures under 40 CFR Part 60.13 shall be followed for installation, evaluation, and operation of the CEMS. [40 CFR 60.47b(e)]

   a. The CEMS shall meet the design and performance specifications, pass the field tests, and meet the installation, data analysis, and reporting requirements listed in the Performance Specification Number 2 of 40 CFR Part 60, Appendix B.

   b. The owner/operator shall assure that the CEMS meets the applicable quality-assurance requirements specified in 40 CFR Part 60, Appendix F. Relative accuracy exceedances, as specified in 40 CFR Part 60, Appendix F, Section 5.2.3 and any CEMS downtime shall be reported to KDHE, and necessary corrective action shall be taken.

   c. The monitoring data shall be reduced to 1-hour average concentrations and expressed in units of lbs/MMBtu for NOx. The 1-hour average NOx and NO_2 emissions rates shall also be recorded in pound per hour.

   d. All monitoring data and quality-assurance data shall be maintained by the source.

   e. KDHE shall be notified at least 30 days prior to any required RATA in order to provide the opportunity to observe the testing.

   f. Quality-assured (or valid) data must be generated when the combustor is operating; except during the performance of a daily zero and span check. The measurements missed due to startup, shutdown and malfunction, shall be estimated using engineering judgment and the methods used recorded. Options to increase system reliability to an acceptable value, including a redundant CEMS, may be required.

   g. In lieu of operating a CEMS for monitoring emissions, the owner/operator may elect to submit an alternative monitoring plan to the EPA for approval; pursuant to 40 CFR 60.13(i).

4. The owner or operator shall determine compliance with the NOx emissions limitation in biomass-fired stoker boiler permit conditions VIII.A.8.a and b using emissions data

acquired by the NOx CEMS. The 1 hour average and the 30-day rolling average shall be determined as follows:

a. After the first 1-hour average, a new 1-hour average shall be calculated after each operating hour including periods of startups and shutdowns and excluding malfunctions.

b. The 30-day average shall be the average of all valid hours of NOx emissions data for any 30 successive operating days. The average shall include data from periods of startups, shutdowns and malfunctions.

c. After the first 30-day average, a new 30-day rolling average shall be calculated after each operating day. The new average shall include data from periods of startups, shutdowns and malfunctions.

d. For the purpose of this Permit, an operating day is a 24-hour period between 12:00 midnight and the following midnight during which any fuel is combusted at any time. It is not necessary for the fuel to be combusted continuously for the entire 24-hour period.

5. In accordance with the manufacturer's recommendations, the owner or operator shall install, calibrate, operate and maintain a flow meter to measure and record the ammonia injection rate for the SCR system for the biomass-fired stoker boiler. The owner or operator shall document the general range of NH_3 flow rates required to meet the NO_X standard over the range of load conditions by comparing NO_X emissions with NH_3 flow rates. During the NO_X CEMS downtimes or malfunctions, the permittee shall operate an NH_3 flow rate that is consistent with the documented flow rate for the given load condition. Records shall be maintained on site and made available upon request to KDHE authorized representatives.

6. The biomass-fired stoker boiler (EP-20001) is subject to and shall comply with the applicable requirements in 40 CFR Part 63, Subpart JJJJJJ for PM. The owner/operator shall install, calibrate, maintain and operate a bag leak detection system (BLDS) in lieu of monitoring opacity as described by 40 CFR 63, Subpart JJJJJJ.

   a. A bag leak detection system must be installed and operated for each exhaust stack of the fabric filter.

   b. Each bag leak detection system must be installed, operated, calibrated, and maintained in a manner consistent with the manufacturer's written specifications and recommendations and in accordance with EPA–454/R–98– 015 (incorporated by reference, see 40 CFR 63.14).

c. The bag leak detection system must be certified by the manufacturer to be capable of detecting particulate matter emissions at concentrations of 10 milligrams per actual cubic meter or less.

d. The bag leak detection system sensor must provide output of relative or absolute particulate matter loadings.

e. The bag leak detection system must be equipped with a device to continuously record the output signal from the sensor.

f. The bag leak detection system must be equipped with an audible or visual alarm system that will activate automatically when an increase in relative particulate matter emissions over a preset level is detected. The alarm must be located where it is easily heard or seen by plant operating personnel.

g. For positive pressure fabric filter systems that do not duct all compartments of cells to a common stack, a bag leak detection system must be installed in each baghouse compartment or cell.

h. Where multiple bag leak detectors are required, the system's instrumentation and alarm may be shared among detectors. [40 CFR 63.11224(f)(1)-(8)].

7. The owner/operator shall install, calibrate, maintain and operate a continuous emission monitoring system (CEM) to monitor and record emissions of CO and CO_2 concentrations and shall record the output of those systems. The procedures under 40 CFR 60.13 shall be followed for installation, evaluation, and operation of the CEMS.

   a. The CEMS shall meet the design and performance specifications, pass the field tests, and meet the installation, data analysis, and reporting requirements listed in the Performance Specification Number 2 of 40 CFR Part 60, Appendix B.

   b. The owner/operator shall assure that the CEMS meets the applicable quality-assurance requirements specified in 40 CFR Part 60, Appendix F. Relative accuracy exceedances, as specified in 40 CFR Part 60, Appendix F, Section 5.2.3 and any CEMS downtime shall be reported to KDHE, and necessary corrective action shall be taken.

   c. The monitoring data shall be reduced to 1-hour average concentrations and expressed in units of lbs/MMBtu or ppmv@3% O_2 for CO.

   d. All monitoring data and quality-assurance data shall be maintained by the source.

   e. KDHE shall be notified at least 30 days prior to any required RATA in order to provide the opportunity to observe the testing.

f. Quality-assured (or valid) data must be generated when the combustor is operating; except during the performance of a daily zero and span check. The measurements missed due to startup, shutdown and malfunction, shall be estimated using engineering judgment and the methods used recorded. Options to increase system reliability to an acceptable value, including a redundant CEMS, may be required.

g. In lieu of operating a CEMS for monitoring emissions, the owner/operator may elect to submit an alternative monitoring plan to the EPA for approval; pursuant to 40 CFR 60.13(i).

8. The owner or operator shall determine compliance with the CO emissions limitation in biomass-fired stoker boiler permit condition VIII.A.12.a using emissions data acquired by the CO CEMS. The 30-day rolling average shall be determined as follows:

   a. The 30-day average shall be the average of all valid hours of CO emissions data for any 30 successive operating days. The average shall include data from periods of startups, shutdowns and malfunctions.

   b. After the first 30-day average, a new 30-day rolling average shall be calculated after each operating day. The new average shall include data from periods of startups, shutdowns and malfunctions.

   c. For the purpose of this Permit, an operating day is a 24-hour period between 12:00 midnight and the following midnight during which any fuel is combusted at any time. It is not necessary for the fuel to be combusted continuously for the entire 24-hour period.

9. The owner or operator must operate and maintain the baghouse to assure proper and effective operation. The operation of the baghouse shall be in accordance with the following requirements:

   a. The baghouse shall be operated whenever the associated emission units are in operation.

   b. The baghouse shall be properly installed, operated and maintained. The manufacturer's operation and maintenance manual, or its equivalent, detailing proper operation, inspection and maintenance of the baghouse shall be kept on site and readily available to Department representatives.

   c. The baghouse shall be equipped with a bag leak detection system alarm does not sound more than 5 percent of the operating time during each 6-month period. The owner or operator must install, calibrate, maintain, and continuously operate the

bag leak detection system as specified in paragraphs 40 CFR 63.11224(f)(1) through (8). The manufacturer's operation and maintenance manual, or its equivalent, detailing proper operation, inspection and maintenance of the bag leak detection system shall be kept on site and readily available to KDHE representatives.

d. Baghouse filter bags/cartridges shall be inspected and/or replaced according to the operation and maintenance manual, or more frequently as indicated by pressure differential indicator readings or other indication of unit failure.

e. The source shall maintain on-site an inventory of spare bags/cartridges of each type used to ensure rapid replacement in the event of bag/cartridge failure.

10. The owner or operator shall install a natural gas meter at the biomass-fired stoker boiler for the purpose of measuring and documenting the amount of natural gas being fired in the biomass-fired stoker boiler.

11. The owner or operator shall record the amount of natural gas fired in the biomass-fired stoker boiler each month. Beginning the 12-month of operation and thereafter, the owner or operator shall calculate the annual capacity factor for natural gas. The annual capacity factor shall be determined on a 12-month rolling average basis with a new annual capacity factor calculated at the end of each calendar month, no later than the 15th day of the following month for the previous 12 month period.

12. The owner or operator shall conduct a tune-up of the biomass-fired stoker boiler biennially as specified in 40 CFR 63.11223.

13. The owner or operator shall record and retain daily records of the amounts of each fuel, including fuel type, combusted in the biomass-fired stoker boiler excluding natural gas (see above for natural gas record keeping). The records shall contain the following:

    a. Quantity (dry tons) of EH lignin-rich stillage.

    b. Quantity (dry tons) of EH thin stillage syrup.

    c. Quantity (dry tons) of solid biomass (switchgrass, corn stover and any other crop residuals).

    d. Quantity (dry tons) of biogass.

    e. Quantity (dry tons) of WWTP sludge.

C. Biomass-Fired Stoker Boiler Recordkeeping and Reporting Requirements

1. The owner or operator of each affected facility shall develop records required by this permit and as required by 40 CFR Part 60 Subparts A and Db and 40 CFR Part 63 Subparts A and JJJJJJ as applicable.

2. The owner or operator of each affected facility shall submit reports and notifications required by this permit and as required by 40 CFR Part 60 Subparts A and Db and 40 CFR Part 63 Subparts A and JJJJJJ, as applicable.

3. As required by 40 CFR 63.10(b)(1), records and reports required by 40 CFR Part 63 Subparts A and JJJJJJ shall be for 5 years following the date of each recorded action. The owner or operator must keep each record onsite for at least 2 years after the date of each recorded action. Records for the remaining years may be retained offsite.

4. The owner or operator must keep records of the date, time, and duration of each bag leak detection system alarm, the time corrective action was initiated and completed, and a brief description of the cause of the alarm and the corrective action taken. The owner or operator must also record the percent of the operating time during each 6-month period that the alarm sounds. In calculating this operating time percentage, if inspection of the fabric filter demonstrates that no corrective action is required, no alarm time is counted. If corrective action is required, each alarm is counted as a minimum of 1 hour. If it takes longer than 1 hour to initiate corrective action, the alarm time is counted as the actual amount of time taken to initiate corrective action. [40 CFR 63.11222(a)(4)]

5. The owner or operator must report each instance in which the emission limits and operating limits in 40 CFR Part 63 Subpart JJJJJJ, Tables 1 and 3 that apply were not met. These instances are deviations from the emission limits in this subpart. These deviations must be reported according to the requirements in 40 CFR 63.11225. [40 CFR 63.11222(b)]

6. The owner or operator shall maintain a log of the amount of natural gas fired in the biomass-fired stoker boiler each month. A record of the monthly natural gas usage and the annual capacity based on each consecutive 12-month rolling average shall be maintained. This record shall be updated monthly no later than the 15th day of the following month for the previous reporting period and maintained onsite for five years from the date of record. If the annual capacity factor for natural gas in any consecutive 12 month rolling average period exceeds 10% of the annual capacity for the biomass-fired stoker boiler, the owner or operator shall submit notification in writing within 10 days following the discovery of the deviation to the KDHE's Bureau of Air.

7. The owner or operator shall record and maintain records of the amounts of each fuel, including fuel type, combusted during each day in the stoker boiler as required by

biomass-fired stoker boiler permit condition VIII.B.13. The owner or operator shall use these records to demonstrate compliance with biomass-fired stoker boiler permit condition VIII.A.3.

8. The owner or operator shall maintain the following records as they relate to the startup and shutdown of the biomass-fired stoker boiler:

   a. The number of startups per day, the hours attributed to the startup, the number of shutdowns per day and the hours attributed to shutdown. If the biomass-fired stoker boiler was not in operation on any given day, the records shall so note.

   b. Identify times of startup and shutdown of the pollution control systems: FGD, SCR and baghouse.

9. The owner or operator shall maintain records of the occurrence and duration of any malfunction of any air pollution control equipment; and all periods during which a continuous monitoring system or monitoring device is inoperative. These requirements are described in 40 CFR 60.7(b).

10. The owner or operator shall maintain records of any correlation calculations or other emission determinations for any emission limitations as are not otherwise continuously monitored under this permit.

11. The owner or operator shall maintain records of the reports, notifications, and performance tests required by this permit and applicable standards under 40 CFR Part 60 and Part 63.

12. Except as otherwise noted, all records shall be maintained onsite for a period of five (5) years from the date of record

D. Biomass-Fired Stoker Boiler Performance Test

(See IX. Pre-Performance Test Meeting, X. Performance Test Protocol and Compliance and Other Performance Testing for additional performance test requirements.)

General Performance Testing Requirements for performance test protocol and pre-performance test meeting. The owner or operator shall prepare and submit to the department, at least thirty (30) days in advance of the pre-performance test meeting described below, a performance test protocol. The protocol shall identify the EPA-approved test methods.

1. Within 60 days after achieving the maximum production rate, but not later than 180 days after initial start-up of the biomass-fired stoker boiler, the owner or operator shall conduct performance tests to demonstrate compliance with the applicable

conditions and limitations set forth in this permit for N_2O, CH_4, Sulfuric Acid Mist H_2SO_4 (SAM), SO_2, NOx, CO, PM, PM_{10}, and $PM_{2.5}$, and furnish KDHE a written report of the results of such performance test(s) within 60 days of said tests. A performance test for the biomass boiler NO_2 / NOx ratio shall be conducted to demonstrate compliance with the 0.05 NO_2 /NOx ratio used in dispersion modeling. CEMS shall be utilized to demonstrate compliance with the emission limitations for HCl, SO_2, NOx and CO following the initial performance test, including the NO2/NOx ratio. If the NO_2/NOx ratio is consistently less than or equal to 0.05 on a monthly averaging basis for one year following startup, CEM monitoring of the NO_2/NOx ratio may be discontinued. If a new feedstock is introduced after the first year, the NO_2/NOx ratio shall be monitored for one year.

2. In conducting the performance tests required under 40 CFR 60.8 for N_2O, CH_4, H_2SO_4, SO_2, NO_2, NO_X, PM_{10}, $PM_{2.5}$ and CO, the owner or operator shall use the methods and procedures in appendix A of 40 CFR Part 60 or the methods and procedures as specified in this section, except as provided in 40 CFR 60.8(b). The owner or operator of an affected source must notify the Administrator in writing of the intention to conduct a performance test at least 30 calendar days before the performance test is initially scheduled.

3. In conducting the performance tests required under 40 CFR 63.7 for PM, the applicable portions of Table 4 to Subpart JJJJJJ of Part 63—Performance (Stack) Testing Requirements shall be followed. [40 CFR 63.11212(b)] The owner or operator of an affected source must notify the Administrator in writing of the intention to conduct a performance test at least 60 calendar days before the performance test is initially scheduled.

4. Within 60 days after achieving the maximum production rate, but not later than 180 days after initial start-up of the biomass-fired stoker boiler, the owner or operator shall conduct performance test(s) to demonstrate compliance with the applicable conditions and limitations as set forth in VI.E of this permit for total VOCs. and the owner or operator shall determine by correlation through such performance tests whether the HCl, CO, CO_2 and SO_2 CEMS, respectively, can be established as indicators of ongoing compliance for these pollutants. The owner or operator shall furnish to KDHE a written report of the results of such performance test(s) within 60 days of said test.

    a. If such correlation cannot be shown to exist for one or more pollutant(s), then continuing compliance shall be assured for such pollutant(s) by annual stack tests. If correlation can be shown to exist, then continuing compliance with the 30-day requirements for CO, CO_2 and SO_2 shall be an indication of ongoing compliance with VOC limitations, respectively.

b. The owner or operator shall affirm such correlation as often as performance tests for the pollutants may otherwise be required. The cessation of the correlation of these tests for a specific pollutant shall occur at such time as the owner or operator shall install, calibrate, and operate CEMS for that specific pollutant, or at such time as the owner or operator shall petition KDHE to cease this requirement for a particular pollutant upon presentment of such adequate test information that such continued demonstration is no longer necessary for assured compliance with said emission limitation or limitations.

5. Within 60 days after achieving the maximum production rate, but not later than 180 days after initial start-up of the biomass-fired stoker boiler, the owner or operator shall conduct performance tests to demonstrate compliance with the applicable conditions and limitations as set forth in VI.D of this permit for HAPs , including, HF, HCL, Mercury , Acrolein, Benzene, Formaldehyde, and Styrene. Test results shall be the average of no fewer than three valid test runs. Test reports for HAPs shall be submitted to KDHE no later than 60 days following the completion of the testing.

6. The stoker boiler stack performance tests for PM, PM_{10}, $PM_{2.5}$, VOC, N_2O, CH_4, SAM, HF, Acrolein, Benzene, Formaldehyde, and Styrene and mercury shall be conducted annually and shall be completed not less than nine (9) months and not greater than 12 months apart. Upon completion of three (3) consecutive yearly successful tests (including the initial performance test), the frequency of testing may be reduced to once during a three (3) consecutive year period. In the event that a performance test is not completed successfully, the frequency of testing shall return to once every year. The three (3) consecutive yearly successful tests shall be demonstrated to reduce the frequency of testing to once during a three (3) consecutive year period.

IX. PERFORMANCE TEST PROTOCOL

The owner or operator shall prepare and submit to the department, at least thirty (30) days in advance of the pre-performance test meeting described below, a performance test protocol.

X. PRE-PERFORMANCE TEST MEETING

The owner or operator shall arrange a pre-performance test meeting with the compliance section of the Bureau, at least thirty (30) days in advance of the date of conducting any emission source performance tests required by this permit. The purpose of the meeting shall be to outline and discuss the schedule and implementation plans for conducting the required

performance test(s). The department may elect to have an observer(s) on-site at the facility during any or all emission source performance testing required by this permit.

XI. COMPLIANCE AND OTHER PERFORMANCE TESTING

A. Within 60 days after achieving the maximum production rate, but not later than 180 days after initial start-up, the owner or operator shall conduct Method 9 performance test(s) to demonstrate compliance with the opacity limitations set forth for all emission sources other than the biomass-fired stoker boiler and shall furnish KDHE a written report of the results of such performance test(s) within 60 days of the test(s).

B. All performance testing, notifications, reporting of results and performance test compliance time-frames shall be conducted and deadlines met in accordance with the requirements of 40 CFR 60.8.

C. Performance testing for the EH fermentation CO_2 scrubber (EP-18185) shall be conducted initially within 60 days after achieving the maximum production rate, but not later than 180 days after initial start-up of the enzymatic hydrolysis ethanol manufacturing plant. The owner or operator shall conduct performance tests on the enzymatic hydrolysis CO_2 scrubber to demonstrate compliance with the applicable conditions and limitations set forth in this permit for NO_x, VOCs, HAPs (methanol, acrolein and acetaldehyde) and CO_2 as described herein; and then again once during each of the two (2) years following successful completion of the initial performance testing. Testing shall not be conducted during the lowest emission point in the batch cycle.

D. These tests must be completed no less than nine (9) and no greater than twelve(12) months apart. Upon successful completion of three (3) consecutive tests, the frequency of testing may be reduced to once during each three (3) year period thereafter, so long as each test is completed successfully. In the event that a performance test is not completed successfully, the frequency of testing shall return to once annually, until three (3) consecutive successful tests have again been demonstrated.

E. For the purpose of the permit, a *successful performance test* means a test completed in accordance with a performance test protocol approved by the department, during which all of the emissions limitations required by this permit were met.

F. Performance testing shall be conducted in accordance with a performance test protocol approved by the department to verify compliance with the emission limitations, conditions and requirements of this permit.

G. Within 180 days after initial start-up of the material handling equipment, an initial performance test for PM, PM_{10}, and $PM_{2.5}$ is required for the baghouses (or bin filters) in each of the following material handling systems (biomass grinding, floor sweep system,

biomass surge bin, biomass-fired stoker boiler metering bin, dirt load-out, boiler bottoms ash, boiler fly ash, boiler bed media and lime) so equipped. On-going compliance for these control devices can be assured by utilizing broken bag detectors and/or particulate monitors, by observing or annunciating pressure drop, or by periodic quantitative and qualitative observation, or by individual methods, or a combination thereof, as is appropriate for each type of material being handled and for the location in which it is installed. The owner or operator shall furnish to KDHE a written report of the results of the performance tests within 60 days of said tests and shall submit for KDHE approval the method of verifying on-going compliance for all the control devices in the material handling equipment.

The material handling equipment performance tests for PM, PM_{10}, and $PM_{2.5}$ shall be conducted annually and shall be completed not less than nine (9) months and not greater than 12 months apart. Upon completion of three (3) consecutive yearly successful tests (including the initial performance test), the frequency of testing may be reduced to once during a three (3) consecutive year period. In the event that a performance test is not completed successfully, the frequency of testing shall return to once every year. The three (3) consecutive yearly successful tests shall be demonstrated to reduce the frequency of testing to once during a three (3) consecutive year period.

H. Within 60 days after achieving the maximum production rate for the biomass-fired stoker boiler, but not later than 180 days after initial start-up, the owner or operator shall verify compliance with the cooling water tower system (cogeneration cooling and enzymatic hydrolysis cooling) for total dissolved solids concentration limit and shall furnish KDHE a written report of the results of the verification within 60 days of said test. For the six (6) months thereafter, the owner or operator shall perform monthly analyses to verify the limitation is not exceeded. Once this has been verified, the analyses shall be performed semiannually.

I. In conducting the compliance performance tests required by this permit, the reference test methods and procedures outlined in K.A.R. 28-19-212 shall be used to demonstrate compliance with the limitations and conditions set forth in this permit.

J. NSPS Subpart Kb Performance Testing Requirement for Tanks T02102, T02105 and T02112

1. The owner or operator shall determine the gap areas and maximum gap widths, between the primary seal and the wall of the storage vessel and between the secondary seal and the wall of the storage vessel, according the requirements of 40 CFR 60.113b(b). [40 CFR 60.113b(b)]

2. After installing a permanently fixed roof and internal floating roof on the IFR tanks, the facility shall [40 CFR 60.113b(a)]:

a. Visually inspect the internal floating roof and the primary seal prior to filling the storage vessel with any volatile organic liquid (VOL). If there are holes, tears, or other openings in the primary seal, secondary seal, or the seal fabric or defects in the internal floating roof, or both, the facility shall repair the items before filling the storage vessel [40 CFR 60.113b(a)(1)].

b. If the vessel is equipped with a liquid-mounted or mechanical shoe seal, visually inspect the internal floating roof and the primary seal through manholes and roof hatches on the fixed roof at least once every 12 months after initial fill. If the internal floating roof is not resting on the surface of the VOL inside the storage vessel, or there is liquid accumulated on the roof, or the seal is detached, or there are holes or tears in the seal fabric, the facility shall repair the items or empty and remove the storage vessel from service within 45 days [40 CFR 60.113b(a)(2)]. If the vessel is equipped with a double-seal system, the facility shall comply with the requirements at 40 CFR 60.113b(a)(3).

c. Visually inspect the internal floating roof, the primary seal, gaskets, slotted membranes, and sleeve seals (if any) each time the storage vessel is emptied and degassed. If the internal floating roof has defects, the primary seal has holes, tears, or other openings in the seal or seal fabric, or the gaskets no longer close off the liquid surfaces from the atmosphere, or the slotted membrane has more than 10 percent open area, the facility shall repair the items as necessary so that none of the conditions specified in this paragraph exist before refilling the storage vessel with VOL. [40 CFR 60.113b(a)(4)].

K. NSPS Subpart VVa Performance Testing Requirement for Equipment Leaks

In conducting the performance tests required in 40 CFR 60.8, the owner or operator shall use as reference methods and procedures the test methods in Appendix A of 40 CFR 60 or other methods and procedures as specified in 40 CFR 60.485a, except as provided in 40 CFR 60.8(b). [40 CFR 60.485a(a)]

XII. MONITORING REQUIREMENTS

A. All continuous monitoring systems required by 40 CFR Part 60 and this permit shall meet the applicable requirements of 40 CFR 60.13, Appendix B, and Appendix F for certifying, maintaining, operating and assuring quality of the systems, and, where applicable, with the requirements of 40 CFR Part 75.

B. The owner or operator shall install, calibrate, maintain, and operate a non-resettable continuous monitoring system (or device) for the Fire Water Pump Emergency Engine (EU-6001) to track the hours of operation. The owner or operator shall maintain

documentation that demonstrates the reason the engine was in operation (emergency service or non-emergency service, maintenance and/or testing).

XIII. RECORDKEEPING

A. The owner or operator shall maintain records of the occurrence and duration of any startup, shut-down, and malfunction in the operation of each unit subject to 40 CFR Part 60; any malfunction of any air pollution control equipment; and all periods during which a continuous monitoring system or monitoring device is inoperative. These requirements are described in 40 CFR 60.7(b).

B. To determine compliance with the emission limitations for HAPs and VOCs set forth in the sections VI.D and VI.E of this permit, the owner or operator shall on a monthly basis perform a calculation of emissions using emission rates from the latest performance tests (or CEMs) for each specified period of operation to be tested using the formula:

ER (in lb/hr) x hours/period x 1 ton/2000 lb, or
ER (in lb/MMBtu) x MMBtu/period x 1 ton/2000 lb, where:

ER	=	The hourly emission rate, boiler stack and EH fermentation CO_2 scrubber as appropriate (expressed in lb/hr or lb/MMBtu), measured during a performance test of the stoker boiler and EH fermentation CO_2 scrubber averaged over the period of the performance test.
hours/period	=	Actual number of hours per period assessed
MMBtu/period	=	Actual MMBtu heat input (stoker boiler) per period assessed
1/2000	=	Ton per pounds.

1. For normal operation stack emission test results and HCl CEMs results (in lbs/MMBtu) shall be used.

2. The owner or operator shall maintain a rolling 12-month calculation of the emissions of designated VOCs and HAPs.

3. The owner or operator shall maintain a monthly calculation of the emissions of the VOCs and HAPs identified to be tested.

4. The calculated HAP emissions for each month and rolling 12-months shall demonstrate that the 10 ton limit for any individual HAP and the 25 ton limit for any combination of HAPs emissions have not been exceeded.

5. The calculated total HAP emissions for each month and rolling 12-months shall demonstrate that the 22.0 ton limit for combined HAP emissions from the biomass stoker boiler and EH fermentation CO_2 scrubber have not been exceeded.

6. The calculated VOC emissions for each month and rolling 12-months shall demonstrate that the 40 ton limit for total VOCs has not been exceeded.

7. The calculated total VOC emissions for each month and rolling 12-months shall demonstrate that the 26.0 ton limit for combined VOC emissions from the biomass stoker boiler and EH fermentation CO_2 scrubber have not been exceeded.

C. The owner or operator shall maintain records of the occurrence and duration of any periods during which a continuous monitoring system or monitoring device is inoperative. These requirements are described in 40 CFR Part 75.

D. The owner or operator shall maintain records of any correlation calculations or other emission determinations for any emission limitations as are not otherwise continuously monitored under this permit.

E. The owner or operator shall maintain records of the reports, notifications, and performance tests required by this permit.

F. All of the above records shall be maintained on site for a period of five (5) years.

G. NSPS Subpart VVa - All Piping Equipment (Valves and Pumps)

1. When each leak is detected as specified, a weatherproof and readily visible identification (tag), marked with the equipment identification number, shall be attached to the leaking equipment. The identification on the device may be removed after it has been repaired.

2. When each leak is detected as specified, the following information shall be recorded in a log and shall be kept for 2 years in a readily accessible location:

   a. The instrument and operator identification numbers and the equipment identification number.

   b. The date the leak was detected and the dates of each attempt to repair the leak.

   c. Repair methods applied in each attempt to repair the leak.

   d. Maximum instrument reading measured by Method 21 of appendix A–7 of this

part at the time the leak is successfully repaired or determined to be nonrepairable, except when a pump is repaired by eliminating indications of liquids dripping.

e. "Repair delayed" and the reason for the delay if a leak is not repaired within 15 calendar days after discovery of the leak.

f. The signature of the owner or operator (or designate) whose decision it was that repair could not be effected without a process shutdown.

g. The expected date of successful repair of the leak if a leak is not repaired within 15 days.

h. Dates of process unit shutdowns that occur while the equipment is still not repaired.

i. The date of successful repair of the leak.

3. The owner or operator shall develop and maintain a list of identification numbers for equipment subject to 40 CFR Part 60 Subpart VVa.

4. The owner or operator shall maintain a list of identification numbers for equipment that are designated for no detectable emissions as specified in 40 CFR 60.482-2a(e), 40 CFR 60.482-3a(i), and 40 CFR 60.482-7a(f).

5. The owner or operator shall maintain a list of equipment identification numbers for pressure relief devices.

6. The owner or operator shall maintain records of the dates of each of the compliance test as required, the background level measured during each compliance test and the maximum instrument reading measured at the equipment during each compliance test.

7. The owner or operator shall maintain a list of identification numbers for equipment in vacuum service.

H. 40 CFR Part 60 Subpart Kb Recordkeeping, Tanks T02102, T02105 and T02112

1. Unless otherwise noted, all records must be kept for at least 2 years. [40 CFR 60.115b(b)]

2. The owner or operator shall maintain a record of the volume stored, the period of storage, and the maximum true vapor pressure of that volume during the respective storage period. [40 CFR 60.116b(a)].

3. After installing control equipment in accordance with 40 CFR 60.112b(a)(2) (external floating roof), the owner or operator shall keep a record of each gap measurement performed as required by 40 CFR 60.113b(b). Each record shall identify the storage vessel in which the measurement was performed and shall contain:

   a. The date of measurement.

   b. The raw data obtained in the measurement.

   c. The calculations described in 40 CFR 60.113b (b)(2) and (b)(3).

I. To demonstrate compliance with Air Emissions Limitations VI.J.2, the owner or operator shall maintain records documenting that the drift eliminator on the cooling water tower (EP-04001) has been designed to meet the applicable limit.

J. Plant Haul Roads Recordkeeping

1. In-Plant Haul Roads:

   a. The owner or operator shall maintain a daily calculation of the number of trucks entering onsite for shipping and receiving operations in the ABBK plant averaged over a rolling 7-day period.

   b. The owner or operator shall maintain a daily calculation of the number of trucks entering onsite for shipping and receiving operations in the ABBK plant between the hours of 6PM to 6AM (night-time) averaged over a rolling 7-night period.

   c. The owner or operator shall maintain a yearly calculation of the number of trucks entering onsite for shipping and receiving operations in the ABBK plant over a rolling 365-day period.

   d. The owner or operator shall maintain a yearly calculation of the number of trucks entering onsite for shipping and receiving operations in the ABBK plant between the hours of 6:00 PM to 6:00 AM (night-time) over a rolling 365-day period.

2. In-Plant Biomass Laydown Roads and Unpaved Staging Area

   - The owner or operator shall maintain a daily calculation of the number of trucks

hauling feedstock and materials into the ABBK biomass laydown roads and unpaved staging area averaged over a rolling 7-day period.

XIV. REPORTING

Reports demonstrating compliance shall be submitted to KDHE in the same physical units as stated in the applicable requirements.

A. Items that are required to be reported quarterly shall be submitted to KDHE and postmarked by the 30th day following the end of each calendar quarter.

B. The owner or operator shall submit the following information by January 30 and July 30 of each calendar year:

1. The individual calculated or measured rolling 12-month emissions of HCl and HF emissions for each of the previous six months.

2. The calculated rolling 12-month emissions of all other tested HAPs for each of the previous six months.

3. The calculated rolling 12-month emissions of all untested HAPS for each of the previous six months.

4. The calculated HAP emissions for each month of the reporting period shall be presented in a fashion to demonstrate that the 10 ton individual and the 25 ton total HAP emission limitations have not been exceeded.

C. The excess emissions and monitoring systems performance report per 40 CFR 60.258(b)(3) shall be submitted to the KDHE as required by 40 CFR 60.7(c). The summary report form shall contain the information and be in the format as specified in 40 CFR 60.7(d). Written reports of excess emissions shall include the following information:

1. The magnitude of excess emissions computed in accordance with 40 CFR 60.13(h), any conversion factor(s) used, the date and time of commencement and completion of each time period of excess emissions, and the process operating time during the reporting period.
2. Specific identification of each period of excess emissions that occurs during start-ups, shut-downs, and malfunctions, the nature and cause of any malfunction (if known), the corrective action taken or preventive measures adopted. The date and time identifying each period during which the continuous monitoring system was inoperative except for zero span checks and the nature of the system repairs and adjustments.

3. When no excess emissions have occurred or the continuous monitoring system(s) have not been inoperative, repaired, or adjusted, such information shall be stated in the report.

D. Reports shall be submitted semi-annually to KDHE to demonstrate compliance with the following Air Emission Limitations: Items VIII. A.7.a and b, VIII. A.8.a and b, VIII. A.9.a, VIII. A.10.a and b, VIII. A.11.a and with the NO2/NOx ratio monitoring requirement of Section D, Biomass-Fired Stoker Boiler Monitoring Requirements Item 2. These reports shall be submitted within 30 days following the end of each calendar half.

E. Malfunction

The Owner or Operator must notify KDHE by telephone, facsimile, or electronic mail transmission within two (2) working days following the discovery of any failure of air pollution control equipment, process equipment, or of the failure of any process to operate in a normal manner which results in an increase in emissions above any allowable emission limit stated in the "Air Emission Limitations" in this permit. In addition, the Owner or Operator must notify KDHE in writing within ten (10) days of any such failure. The written notification shall include a description of the malfunctioning equipment or abnormal operation, the date of the initial malfunction, the period of time over which emissions were increased due to the failure, the cause of the failure, the estimated resultant emissions in excess of those allowed in "Air Emission Limitations," and the methods utilized to mitigate emissions and restore normal operations.

Compliance with this malfunction notification shall not automatically absolve the owner or operator of liability for the excess emissions resulting from such event.

F. NSPS VVa Reporting - All Piping Equipment

The owner or operator shall submit semiannual reports to the KDHE beginning six months after the initial startup date

1. The initial semiannual report to KDHE shall include the following information:

2. Process unit identification.

3. Number of valves subject to the requirements of 40 CFR Part 60 Subpart VVa, Standards for valves in gas/vapor service in light liquid service, excluding those designated for no detectable emissions or under negative pressure.

4. Number of pumps subject to the requirements of 40 CFR Part 60 Subpart VVa, Standards for pumps in light liquid service, excluding those designated for no detectable emissions.

G. The semiannual reports submitted to KDHE shall include the following information,

summarized from records required to be kept onsite (40 CFR 60.487a(c)):

1. Process unit identification.

2. For each month during the semiannual reporting period:

   a. Number of valves for which leaks were detected,

   b. Number of valves for which leaks were not repaired as required,

   c. Number of pumps for which leaks were detected,

   d. Number of pumps for which leaks were not repaired as required,

   e. The facts that explain each delay of repair and, where appropriate, why a process unit shutdown was technically infeasible.

3. Dates of process unit shutdowns that occurred within the semiannual reporting period.

4. Revisions to items reported if changes have occurred since the initial report or subsequent revisions to the initial report.

H. The owner or operator shall provide a report of the results of all performance tests to the KDHE, by reference, 40 CFR 60.8, as required by 40 CFR 487a(e).

I. 40 CFR Part 60 Subpart Kb Reporting, Tanks T02102, T02105 and T02112

1. After installing control equipment in accordance with 40 CFR 60.112b(a)(2) (external floating roof), the owner or operator shall furnish reports as required below. [40 CFR 60.115b(b)]

2. The owner or operator shall furnish KDHE with a report that describes the control equipment and certifies that the control equipment meets the specifications of 40 CFR 60.113b(b)(2), (b)(3), and (b)(4). This report shall be an attachment to the notification required by 40 CFR 60.7(a)(3). [40 CFR 60.115b(b)(1)]

3. Within 60 days of performing the seal gap measurements required by 40 CFR 60.113b(b)(1), furnish KDHE with a report that contains: [40 CFR 60.115b(b)(2)]

   a. The date of measurement.

b. The raw data obtained in the measurement.

c. The calculations described in 40 CFR 60.113b (b)(2) and (b)(3).

4. After each seal gap measurement that detects gaps exceeding the limitations specified by 40 CFR 60.113b(b)(4), submit a report to KDHE within 30 days of the inspection. The report will identify the vessel and contain the information specified in paragraph (b)(2) of 40 CFR 60.115b and the date the vessel was emptied or the repairs made and date of repair. [40 CFR 60.115b(b)(4)]

XV. NOTIFICATION

A. The owner or operator shall make written notifications of the following to KDHE:

1. The date construction of each affected facility under 40 CFR Part 60 is commenced. The notification is to be postmarked no later than 30 days after such date.
2. The actual date of initial startup of each affected facility under 40 CFR Part 60. The notification is to be postmarked within 15 days after such date.
3. The date when the initial performance testing of each affected facility under 40 CFR Part 60 is to commence. The notification is to be postmarked no less than 30 days prior to such date.

   The attached NSPS notification form shall be used to submit the above required notifications.

B. The owner or operator shall make such initial notifications relating to the diesel fire pump as are required at 40 CFR 63.9 and 40 CFR 63.6645(f) to KDHE.

C. The owner or operator shall make written notifications to be submitted for any physical or operational change which may increase the emission rate of any air pollutant to which a standard applies. This notice shall be postmarked 60 days, or as soon as practicable, before the change is commenced and shall include information described in the following [40 CFR 60.7(a)(4)]:

1. The precise nature of the change;

2. The productive capacity before and after the change; and

3. The expected completion date of the change

D. Notify the KDHE Southwest District Office Air Program Field Staff in Dodge City at (620) 225-0596 when the project is completed so that an evaluation can be conducted.

XVI. TITLE V REQUIREMENTS

The facility is subject to Title V Requirements. A complete application for an initial Title V (Class I) permit shall be submitted in accordance with the deadlines specified in K.A.R. 28-19-510.

XVII. GENERAL PROVISIONS

A. This document shall become void if the 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.

B. A construction permit or approval must be issued by KDHE prior to commencing any construction or modification of equipment or processes other than activities provided for under this permit which results in potential-to-emit increases equal to or greater than the thresholds specified at K.A.R. 28-19-300.

C. Upon presentation of credentials and other documents as may be required by law, representatives of the KDHE (including authorized contractors of the KDHE) shall be allowed to:

1. enter upon the 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 the KDHE, any substances or parameters at any location.

D. The emission unit or stationary source, which is the subject of this document, shall be operated in compliance with all applicable requirements of the Kansas Air Quality Act and the federal Clean Air Act.

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.

F. This document does not relieve the owner/operator of the obligation to obtain other approvals, permits, licenses, or documents of sanction, which may be required by other federal, state, or local agencies.

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 Engineer

Terry Tavener
Environmental Scientist
Air Permitting Section

September 16, 2011
Date Signed

TTT
Enclosure
c: SWDO
C-9600

Bureau of Air
Curtis State Office Building
1000 SW Jackson, Suite 310
Topeka, KS 66612-1366

Phone: 785-296-1581
Fax: 785-291-3953
ttavener@kdheks.gov
www.kdheks.gov/bar

Kansas

Robert Moser, MD, Secretary | Department of Health & Environment | Sam Brownback, Governor

AIR EMISSION SOURCE CONSTRUCTION PERMIT

Source ID No.: 1890231

Effective Date: January 22, 2013

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: Robert Wildgen
Project Development Manager
Abengoa Bioenergy Biomass of Kansas, LLC
Telephone Number: (636) 728-4515

This permit is issued pursuant to K.S.A. 65-3008 as amended. This permit appends new regulations for four emergency generators to the construction permit issued on September 16, 2011. All conditions and applicable regulations listed in the September 16, 2011 permit remain in effect.

I. DESCRIPTION OF ACTIVITY SUBJECT TO AIR POLLUTION CONTROL REGULATIONS

On September 16, 2011, Abengoa Bioenergy Biomass of Kansas, LLC (ABBK) was issued a Prevention of Significant Deterioration (PSD) air quality permit for a biomass to ethanol and biomass-to-energy production facility near Hugoton, Kansas. This permit was based on an air quality impact analysis (AQIA) and a Best Available Control Technology (BACT) determination. The biomass to ethanol manufacturing component of the facility will employ an enzymatic hydrolysis alcohol production process and will utilize cellulosic feedstock (e.g. biomass). The biomass to energy cogeneration component of the facility will consist of one (1) steam turbine electrical generator nominally rated up to a total of 22 Megawatts that will supply all of the electrical power requirements of ABBK. No ABBK produced electric power will be provided to the power grid. Steam will be generated to run the steam turbine from one (1) water-cooled vibrating grate biomass-fired stoker boiler rated at 500 million British Thermal Units per hour (MMBtu/hr) maximum design heating input.

The September 16, 2011 permit established requirements in accordance with the provisions of K.A.R. 28-19-300 (Construction permits and approvals; applicability) because ABBK had the potential-to-emit oxides of nitrogen (NO_X), carbon monoxide (CO), sulfur dioxide (SO_2), volatile organic compounds (VOC), particulate matter (PM), particulate matter less than 10 microns in diameter (PM_{10}) and particulate matter less than 2.5 microns in diameter ($PM_{2.5}$), in excess of 40, 100, 40, 40, 25, 15 and 10 tons per year, respectively. The September 16, 2011 permit also established requirements in accordance with 40 CFR 52.21, *Prevention of Significant Deterioration (PSD)* as adopted under K.A.R. 28-19-350 since the facility was a major new stationary source for NO_x, CO, SO_2, VOC, PM, PM_{10}, $PM_{2.5}$ and Carbon Dioxide Equivalents (CO_2e) since they are emitted in excess of the PSD trigger level.

The September 16, 2011 permit is being appended to include the installation of four emergency generator engines. ABBK has determined that four (4) natural gas fired spark ignition emergency engines, connected to corresponding electrical power generators, will be required to support the steam turbine generator and auxiliary utility support systems during boiler start-up, shutdown and malfunction events. The emergency power generators will produce electrical power for critical equipment when biomass-fired boiler power operation is interrupted.

The four emergency generator engines are subject to BACT for air emissions of NO_x, CO, SO_2, VOC, PM, PM_{10}, $PM_{2.5}$ and CO_2e. The engines are also subject to the requirements of 40 CFR 60, Subpart JJJJ, *Standards of Performance for Stationary Spark Ignition Internal Combustion Engines* and 40 CFR 63, Subpart ZZZZ, *National Emission Standards for Hazardous Air Pollutants for Stationary Reciprocating Internal Combustion Engines*. An AQIA and a BACT determination were conducted as a part of this appended 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. KAR 28-19-650(a)(3), Opacity Requirements

F. 40 CFR Part 60, Subpart JJJJ, Standards of Performance for Stationary Spark Ignition Internal Combustion Engines.

G. KAR 28-19-720, New Source Performance Standards, which adopts by reference, 40 CFR Part 60, Subpart A, Standards of Performance for New Stationary Sources – General Provisions.

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

1. 40 CFR Part 63, Subpart A, National Emission Standards for Hazardous Air Pollutants for Source Categories – General Provisions.

2. 40 CFR Part 63, Subpart ZZZZ, National Emission Standards for Hazardous Air Pollutants for Stationary Reciprocating Internal Combustion Engines.

III. AIR EMISSION UNIT TECHNICAL SPECIFICATIONS

The following equipment or equivalent is approved:

Four (4) identical Cummins Power Generation model C1750 N6C natural gas fired, 4 cycle lean burn reciprocating engine generator sets for emergency plant power requirements, each rated at 2,463 brake horse power (bhp) (Manufacture dates: to be determined; Serial Numbers: to be determined; designated as EP-20010, EP-20020, EP-20030, and EP-20040)

IV. AIR EMISSIONS ESTIMATES FROM THE PROPOSED ACTIVITY

Table 1. Estimated Operating Emissions

POLLUTANT	Potential to Emit[1] Emissions (tons per year)			
	Pre-September 16, 2011 Permit	Post-September 16, 2011 Permit	Emission Increase due to Four Emergency Engine Gen-Sets*	Total Facility Emissions (September 16, 2011 Permit Plus Four Emergency Gen-sets)
PM	> 250	130.5	0.013	130.5
PM_{10}	> 250	118.6	0.013	118.6
$PM_{2.5}$	> 250	77.0	0.013	77.0
NO_x	> 250	668.5	0.96	669.5
CO	> 250	519.5	3.12	522.6
SO_2	> 250	483.4	0.00074	483.4
VOC	> 250	29.1	0.15	29.3
Lead	0.11	0.11	0	0.11
Sulfuric Acid (H_2SO_4)	67.7	3.0	0	3.0
Hydrogen Chloride (HCl)	569.5	5.7	0	5.7
Hydrogen Fluoride (HF)	0.66	0.01	0	0.01
CO_2e	> 100,000	590,297	147	590,444
Total HAPs	> 25	20.2	0.09	20.3
Largest Single HAP (HCl)	> 10	5.7	0	5.7

* Maintenance checks and readiness testing for each engine shall be limited to 100 hours per year.

[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.

V. PERMIT CONDITIONS FOR THE FOUR (4) IDENTICAL CUMMINS POWER GENERATION NATURAL GAS FIRED RECIPROCATING ENGINE GENERATOR SETS (EP-20010, EP-20020, EP-20030, AND EP-20040)

A. Plant-wide Permit Conditions from Dispersion Modeling Analysis

1. Air Emission Limitations

a. Stack parameters for all equipment listed under **Section III, Air Emissions Unit Technical Specifications**, including but not limited to stack heights, stack diameters, exhaust temperatures, emission rates, and exit velocities, shall be consistent with data provided for the dispersion modeling analysis. [K.A.R. 28-19-302(a)]

b. Actual operational conditions shall be consistent with data provided for the dispersion modeling analysis. [K.A.R. 28-19-302(a)]

2. Reporting Requirements

If significant changes are made, or modeling parameters are not representative of site conditions, the facility shall document compliance with the NAAQS and increments and submit documentation of compliance to KDHE prior to making the change(s). KDHE has final authority in determining what constitutes a significant change. If modeling indicates a potential NAAQS or increment violation, then mitigation shall be required. [K.A.R. 28-19-302(a)]

B. Air Emission Limitations

1. NSPS standards referenced in 40 CFR Part 60, Subpart JJJJ specify limitations to the emission of NO_x, CO and VOC for these engines. The BACT limitations expressed in Condition V.B.6, V.B.7 and V.B.8 are more restrictive than the NSPS requirement for NO_x, CO and VOC. Therefore the NSPS emission limitations for NO_x, CO and VOC are subsumed into the NO_x, CO and VOC BACT emission limitations for these units. However, recordkeeping, reporting and performance testing requirements applicable to the NSPS NO_x, CO and VOC limits still apply. Demonstrating compliance with the NO_x, CO and VOC NSPS limitations in addition to the BACT limitations is required. [K.A.R. 28-19-302(a)]

2. The engines shall comply with 40 CFR Part 63, Subpart ZZZZ by complying with the applicable requirements of 40 CFR Part 60, Subpart JJJJ. No further requirements of 40 CFR Part 63, Subparts A and ZZZZ are applicable.

3. The engines shall be certified by the manufacturer to meet the guidelines of 40 CFR Part 60 Subpart JJJJ.

4. Good combustion practices shall be followed at all times, including periods of startup, shutdown, and malfunction. [K.A.R. 28-19-302(a)]

5. The engines shall fire pipeline quality natural gas only. [K.A.R.28-19-302(a)]

6. For each engine, BACT emission limitation for NO_x is 0.882 g/hp-hr, including periods of startup, shutdown, and malfunction. [K.A.R. 28-19-302(a)]

7. For each engine, BACT emission limitation for CO is 2.87 g/hp-hr, including periods of startup, shutdown, and malfunction. [K.A.R. 28-19-302(a)]

8. For each engine, BACT emission limitation for VOC is 0.136 g/hp-hr, including periods of startup, shutdown, and malfunction. [K.A.R. 28-19-302(a)]

9. For each engine, BACT emission limitation for $PM/PM_{10}/PM_{2.5}$ is 0.063 lb/hr, including periods of startup, shutdown, and malfunction. [K.A.R. 28-19-302(a)]

10. For each engine, BACT emission limitation for SO_2 is 0.0037 lb/hr, including periods of startup, shutdown, and malfunction. [K.A.R. 28-19-302(a)]

11. Emissions of NO_x for each engine shall not exceed 2.0 g/hp-hr. [40 CFR 60.4233(e) and Table 1 to Subpart JJJJ of Part 60—NO_X, CO, and VOC Emission Standards for Stationary Emergency SI Engines $\geq$ 130 HP]

12. Emissions of CO for each engine shall not exceed 4.0 g/hp-hr. [40 CFR 60.4233(e) and Table 1 to Subpart JJJJ of Part 60—NO_X, CO, and VOC Emission Standards for Stationary Emergency SI Engines $\geq$ 130 HP]

13. Emissions of VOC for each engine shall not exceed 1.0 g/hp-hr. [40 CFR 60.4233(e) and Table 1 to Subpart JJJJ of Part 60—NO_X, CO, and VOC Emission Standards for Stationary Emergency SI Engines $\geq$ 130 HP]

14. The owner or operator shall operate and maintain the engines to achieve the emission standards over the entire life of the engine. [K.A.R. 28-19-302(a) and 40 CFR 60.4234]

15. Each emergency engine generator may be operated for the purpose of maintenance checks and readiness testing, provided that the tests are recommended by Federal, State or local government, the manufacturer, the vendor, or the insurance company associated with the engine. Maintenance checks and readiness testing for each engine is limited to 100 hours per year. Each engine may operate up to 50 hours per year in non-emergency situations, but those 50 hours shall be counted towards the 100 hours per year provided for maintenance and testing. The 50 hours per year for non-emergency situations cannot be used for peak shaving or to generate income for the facility to supply power to an electric grid or otherwise supply power as part of a financial arrangement with another entity. For each emergency engine, any operation other than emergency operation, maintenance and testing, and operation in non-emergency situations for 50 hours per year, is prohibited. [40 CFR 60.4243(d)]

16. Maintenance and testing hours of operation, except for necessary operational demonstrations to prove completion of maintenance, shall occur between 9:00 AM and 6:00 PM, Monday through Friday.

17. The owner or operator of the stationary SI ICE shall comply with the applicable General Provisions (40 CFR Part 60, Subpart A) in Table 3 of 40 CFR Part 60 Subpart JJJJ. [40 CFR 60.4246]

18. Except as provided in K.A.R. 28-19-11, opacity of visible emissions from each engine is limited to less than 20%. [K.A.R. 28-19-650(a)(3)]

C. Monitoring Requirements

1. The owner or operator shall install, calibrate, maintain, and operate a non-resettable continuous monitoring system (or device) for each emergency engine to track the hours of operation. The owner or operator shall maintain documentation that demonstrates the reason each engine was in operation (emergency service or non-emergency service, maintenance and/or testing) [40 CFR 60.4237(a)]

2. For certified engines, initial compliance with NSPS JJJJ limits of NO_x, CO and VOC for each engine shall not be required through a performance test. [40 CFR 60.4243(a)(1)] However, BACT performance testing shall be required as below.

3. Initial compliance with BACT limits NO_x, CO and VOC shall be demonstrated through a performance test on one of the identical four emergency engines at steady state, full load operation. Continuous compliance shall be demonstrated as follows:

   a. If the initial performance test results indicate emission rates are less than 95% of the emission limitation, the frequency of subsequent performance testing shall be every 5 years. However, if any initial or any subsequent performance test conducted fails to demonstrate emission rates less than 95% of the emission limitation, then a more frequent testing schedule shall be required as described below.

   b. If performance test results indicate emission rates are greater than 95% of the emission limitation, subsequent testing on the same engine shall be conducted at least once every four (4) calendar quarters or until a subsequent performance test result indicates the emission rate is less 95% of the emission limitation, at which time the frequency of testing can be reduced to every five years. [K.A.R. 28-19-302(a)]

4. Initial compliance with BACT limits of SO_2 and $PM/PM_{10}/PM_{2.5}$ shall be demonstrated on one of the four emergency engines through a performance test at steady state, full load operation. Continuous compliance shall be demonstrated as follows:

   a. If the initial performance test results indicate emission rates are less than 95% of the emission limitation, the frequency of subsequent performance testing shall be every 5 years. However, if any initial or any subsequent performance test conducted fails to demonstrate emission rates less than 95% of the emission limitation, then a more frequent testing schedule shall be required as described below.

   b. If performance test results indicate emission rates are greater than 95% of the emission limitation, subsequent testing on the same engine shall be conducted at least once every four (4) calendar quarters or until a subsequent performance test result indicates the emission rate is less 95% of the emission limitation, at which time the frequency of testing can be reduced to every five years. [K.A.R. 28-19-302(a)]

5. The owner or operator shall maintain and operate the engines in a manner consistent with good air pollution control practice for minimizing emissions. [K.A.R. 28-19-302(a)]

D. Recordkeeping Requirements

The owner or operator shall maintain the records required by 40 CFR 60.4245.

E. Reporting Requirements

1. The owner or operator shall submit written notification of the information required in 40 CFR 60.7(a), including the date of manufacture and serial numbers for the engines.

2. The owner or operator shall notify KDHE whether the engine is certified or non-certified within 30 days after construction is complete.

3. KDHE shall be notified of the date that actual start-up of the engine commences, postmarked within 15 days after such date. [K.A.R. 28-19-302(a); 40 CFR 60.8(a)]

4. The owner or operator shall submit semiannual reports detailing compliance with the BACT emission limits. These reports shall be submitted within 30 days following the end of each calendar half and shall include:

   a. The company name and address of the affected facility.

   b. An identification of each unit being included in the semiannual report.

   c. Beginning and ending dates of the reporting period.

   d. A certification by a responsible official of truth, accuracy, and completeness. This certification shall state that, based on information and belief formed after reasonable inquiry, the statements and information in the document are true, accurate, and complete. [K.A.R. 28-19-302(a)]

VI. PERMIT CONDITIONS FOR CO_2e GHG BACT

A. Air Emission Limitations

1. BACT GHG Emission Limits for the four (4) Cummins Power Generation Natural Gas Fired Reciprocating Engines (EP-20010, EP-20020, EP-20030, and EP-20040) are as follows:

Table 2 – GHG BACT Rates and Emission Limits - Each Engine

Emission Unit	Pollutant	BACT Emission Rate Lb/MMScf	BACT Limit Tons Per any Consecutive 12 Month Period*
Four (4) Cummins Power Generation Engines (EP-20010, EP-20020, EP-20030, and EP-20040)	CO_2	117.0	36.7
	CH_4	0.0022	0.0007
	N_2O	0.00022	0.00007
	CO_2e	117.0	36.7

* Maintenance checks and readiness testing for each engine shall be limited to 100 hours per year.

2. The owner or operator shall calculate the CO_2e emissions on a 12-month rolling average, based on the procedures and Global Warming Potentials (GWP) contained in Greenhouse Gas Regulations, 40 CFR Part 98, Subpart A, Table A-1, as published on October 30, 2009. [K.A.R. 28-19-302(a)]

3. The engines shall be operated with good combustion practices at all times, including startup, shutdown and malfunction. [K.A.R. 28-19-302(a)]

4. The owner or operator shall follow the manufacturer guidelines on maintenance schedules for the reciprocating engines. [K.A.R. 28-19-302(a)]

5. The owner or operator shall only fire pipeline quality natural gas in the reciprocating engines. [K.A.R. 28-19-302(a)]

6. The high heat value (HHV) of the fuel shall be determined by the procedures contained in 40 CFR Part 98.34(a)(6). Records shall be maintained for a period of five years from the date of analysis or record. [K.A.R. 28-19-302(a)]

7. The owner or operator shall install a non-resettable flow fuel meter on each engine to measure the flow rate of the fuel combusted. [K.A.R. 28-19-302(a)]

8. The owner or operator shall record the amount of natural gas fired in the engines on a monthly basis for use in determining compliance on a 12 month rolling basis with the BACT GHG Emission limits listed in the GHG Emissions Limits Table 2 in **Section VI.A.1.** [K.A.R. 28-19-302(a)]

B. Monitoring Requirements

1. Initial compliance for the CO_2e BACT emission limitations for reciprocating engines shall be determined by an initial performance test conducted at steady state, full load operation. The results of the testing shall be used as follows: [K.A.R. 28-19-302(a)]

   a. The owner or operator shall multiply the CO_2e hourly average emission rate determined under maximum operating test conditions by the fuel combusted in the most recent 12 month consecutive period.

   b. If the above calculated CO_2e emission total does not exceed the tons per year (TPY) specified on Table 2 in **Section VI.A.1**, no compliance strategy needs to be developed.

   c. If the above calculated CO_2e emission total exceeds the tons per year (TPY) specified in Table 2 in **Section VI.A.1**, the owner or operator shall document the exceedance in the test report and explain within the report how the facility will assure compliance with the CO_2e emission limit listed in Table 2.[K.A.R. 28-19-302(a)]

2. Beginning on the 12^{th} month of operations after startup of the facility and continuing monthly thereafter, the owner or operator shall calculate the actual CO_2e emissions from firing natural gas in the reciprocating engines from the previous 12 months records of natural gas fired and compare to the BACT emission limits found in the GHG Emission Limits Table 2 in **Section VI.A.1**. The actual tons per year of CO_2e emissions shall not exceed the BACT Emission Limits in any 12 month rolling period. [K.A.R. 28-19-302(a)]

3. The owner or operator shall develop an operations log which documents startup, shutdown, and malfunction conditions for the reciprocating engines. [K.A.R. 28-19-302(a)]

C. Recordkeeping Requirements

1. The owner or operator shall record and maintain records of the amount of fuel combusted in each engine on a monthly basis beginning at the startup of each unit. [K.A.R. 28-19-302(a)]

2. The owner or operator shall maintain records of the monthly and 12 month rolling CO_2e emission calculations for each engine for a period of five (5) years from the date of record. [K.A.R. 28-19-302(a)]

3. All records required to be maintained shall be kept in a readily accessible location for no less than two years from the date of record. [K.A.R. 28-19-302(a)]

D. Reporting Requirements

1. The owner or operator shall submit semiannual reports detailing compliance with the monthly recordkeeping and 12 month rolling BACT emission limits. These reports shall be submitted on a semiannual basis beginning 6 months after the initial startup date. The reports shall contain the following information:

a. The company name and address of the affected facility.

b. An identification of each affected facility being included in the annual report.

c. Beginning and ending dates of the reporting period.

d. Summary of compliance or noncompliance with the emission limitations, monitoring and recordkeeping requirements of **Section VI.** of this permit, including a summary of the records maintained for **Section VI.C.1 and 2.**

e. A certification by a responsible official of truth, accuracy, and completeness. This certification shall state that, based on information and belief formed after reasonable inquiry, the statements and information in the document are true, accurate, and complete. [K.A.R. 28-19-302(a)]

VII. PERFORMANCE TESTING

In conducting the compliance performance tests required by this permit, the reference test methods and procedures outlined in K.A.R. 28-19-212, 40 CFR Part 60 Appendices and the methods required under the applicable Subpart of 40 CFR Part 60 shall be used to demonstrate compliance with the limitations and conditions set forth in this permit.

A. Within 60 days after achieving the maximum rate at which the reciprocating engines will be operated, but not later than 180 days after initial startup of such units, the owner or operator of such facility shall conduct performance tests. A written report of the results of the performance tests shall be provided to the KDHE. [40 CFR 60.8]

Performance tests shall be conducted on one of the Cummins Reciprocating Engine Generator Sets as follows:

1. Performance testing to determine compliance with the BACT emission limitations for NO_x, CO and VOC, the owner or operator shall follow the performance testing requirements outlined in *Table 2 to Subpart JJJJ of 40 CFR Part 60—Requirements for Performance Tests.*

2. Performance testing to determine compliance with the BACT emission limitations for SO_2, $PM/PM_{10}/PM_{2.5}$ and CO_2e shall follow K.A.R. 28-19-212 and approved EPA testing methods. [K.A.R. 28-19-302(a)]

3. All engine performance testing shall be performed while the engine is operating above 90% load capacity. [K.A.R. 28-19-302(a)]

4. The owner or operator shall submit a performance test protocol to the KDHE no later than 30 days prior to the test to allow review of the test plan and to arrange for an observer to be present at the test. [K.A.R. 28-19-302(a)]

VIII. NOTIFICATION

A. Notify the KDHE Southwest District Office Air Program Field Staff in Dodge City at (620) 225-0596 when the project is completed so that an evaluation can be conducted.

B. Notify KDHE of the schedule for the performance tests at least 30 days before the performance tests.

IX. GENERAL PROVISIONS

A. This document shall become void if the 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.

B. A construction permit or approval must be issued by KDHE prior to commencing any construction or modification of equipment or processes other than activities provided for under this approval which results in potential-to-emit increases equal to or greater than the thresholds specified at K.A.R. 28-19-300.

C. Upon presentation of credentials and other documents as may be required by law, representatives of the KDHE (including authorized contractors of the KDHE) shall be allowed to:

1. enter upon the 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 the KDHE, any substances or parameters at any location.

D. The emission unit or stationary source, which is the subject of this document, shall be operated in compliance with all applicable requirements of the Kansas Air Quality Act and the federal Clean Air Act.

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.

F. This document does not relieve the owner/operator of the obligation to obtain other approvals, permits, licenses, or documents of sanction, which may be required by other federal, state, or local agencies.

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 Engineer

Terry Tavener

1/22/13

Terry Tavener
Environmental Scientist
Air Permitting Section

Date Signed

TTT:lv
Enclosure
c: Ethel Evans, SWDO
C-10550