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Kansas
Department of Health & Environment

Robert Moser, MD, Secretary

Sam Brownback, Governor

AIR EMISSION SOURCE CONSTRUCTION PERMIT

Source ID No.: 1890231

Effective Date: May 27, 2014

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

This PSD Air Emission Source Construction Permit supersedes the September 16, 2011 and the January 22, 2013 PSD Air Emission Source Construction Permits.

I. Description of Activity Subject to Air Pollution Control Regulations

A. On September 16, 2011, the KDHE issued a Prevention of Significant Deterioration (PSD) Air Emission Source Construction Permit (C-9600) to Abengoa Bioenergy Biomass of Kansas, LLC (ABBK) for the installation and operation of a biomass-to-ethanol and biomass-to-energy production facility near Hugoton, Kansas. Since issuance of the September 16, 2011 Air Emission Source Construction Permit, ABBK was issued an Air Emission Source Construction Permit on January 22, 2013 (C-10550) that was an appended PSD Air Emission Source Construction Permit to the September 16, 2011 permit for the addition of four (4) emergency spark ignition internal combustion generator engines to the construction project.

On August 26, 2013, KDHE received a Prevention of Significant Deterioration Air Construction Permit Application from ABBK to amend the September 16, 2011 and January 22, 2013 PSD Permits. The *Conforming Prevention of Significant Deterioration, Air Quality Construction Permit Modification Application* dated January, 2014 was submitted by ABBK as a corrected update to the application received on August 26, 2013.

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

B. 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 other opportunity feedstock that are locally available. The biomass to energy cogeneration plant will consist of one (1) steam turbine electrical generator nominally rated at a total of 22 Megawatts for supplying power to plant operations and to supply power to the utility grid. Steam will be generated from one (1) water-cooled vibrating grate biomass-fired stoker boiler that will use solid biomass feedstock, 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 startup or shutdown periods or when biomass cannot be burned as required by manufacturer recommendations, and it will be used to fire the boiler reheat burner to reheat flue gas exhausting to air pollution control devices.

In addition to the steam turbine electrical generator, the facility will utilize two (2) spark ignition generator engines each with a maximum power generation capacity of 1.85 Megawatts supplying power to plant operations and to sell to the utility grid

Additional emergency power will be supplied by two (2) spark ignition generator engines each with a maximum power capacity of 1.85 Megawatts for emergency only power generation. Fire protection will be served through the use of a 617 horsepower (hp) diesel fired emergency fire pump.

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

D. Emissions of Oxides of Nitrogen (NO_x), Carbon Monoxide (CO), Sulfur Dioxide (SO_2), Volatile Organic Compounds (VOCs), Particulate Matter (PM), Particulate Matter less than or equal to 10 Microns (PM_{10}), Particulate Matter less than or equal to 2.5 Microns ($PM_{2.5}$), Hazardous Air Pollutants (HAPs), and Carbon Dioxide Equivalents (CO_2e) were evaluated for this project. The facility is subject to the requirements of 40 CFR 52.21, *Prevention of Significant Deterioration (PSD),* as adopted under K.A.R. 28-19-350 and is defined as a new major stationary source for at least one regulated pollutant emitted in excess of the PSD major source threshold of 250 tons per year (tpy) for the source category applicable to ABBK. The regulated pollutants for which the project has a potential to emit (PTE) greater than 250 tpy are: NO_x, CO, SO_2, VOCs, PM, PM_{10}, $PM_{2.5}$, and CO_2e (mass). The potential emissions of lead (Pb), sulfuric acid mist and fluorides from the project are estimated to be below their respective significance levels based on annual emissions potential. Pursuant to 40 CFR Part 52.21, since NO_x and VOC emissions for the proposed activity are significant, emissions of ozone (O_3) precursors are deemed significant. NO_x and VOC are precursors and therefore surrogates for O_3, and NO_x and VOC BACT limitations and controls will be deemed BACT limitations and controls for O_3.

E. This project, being subject to K.A.R. 28-19-350, is therefore subject to the provisions of K.A.R. 28-19-300 (Construction permits and approvals; applicability) and K.A.R. 28-19-302(a) (Construction permits and approvals; additional provisions; construction permits). The project has the PTE for NO_x, CO, SO_2, VOCs, PM, PM_{10}, and $PM_{2.5}$ in excess of 40, 100, 40, 40, 25, 15, and 10 tons per year, respectively.

F. On Nov. 29, 2010, **K.A.R. 28-19 350, Prevention of Significant Deterioration (PSD) of Air Quality which adopts by reference 40 CFR Part 52.21,** was amended to adopt language from 75 Federal Register 61606 and 61607, incorporating Greenhouse Gases (GHGs) requirements. 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)

G. Beginning January 2, 2011, the pollutant GHG became subject to PSD review if the new source emits regulated NSR pollutants (that are not GHG) in excess of the PSD major source threshold (greater than 100/250 tons by source category) and the potential emissions of GHG are greater than 75,000 tpy on a Carbon Dioxide equivalent (CO_2e) basis. The project's GHG potential emissions are greater than 75,000 tpy and Best Available Control Technology (BACT) shall be determined for GHG emissions.

H. The owner or operator will calculate the GHG PTE and demonstrate compliance with GHG emission limitations for the purposes of this PSD Permit using the procedures and Global Warming Potentials (GWP) contained in Greenhouse Gas Regulations, 40 CFR Part 98, Subpart A, Table A-1, effective January 1, 2014. This aligns the source with the new requirements that will be applicable to GHG Reporting and for Title V purposes. The use of the GWP that went into effect January 1, 2014 will change the facility's PTE for GHG and will change the GHG BACT emission rates that had been previously applicable. However, the GHG BACT controls will not be altered by the change in GWP.

I. Although the BACT technology proposed for the project to control SO_2 and particulate matter from the biomass-fired stoker boiler reduced the potential emissions of HAPs from the boiler, the controlled facility wide PTE of combined HAPs is equal to or greater than the major source threshold of 25 tpy.. The controlled PTE for the largest single HAP, Hydrogen Chloride (HCl), is less than the major source threshold for any single HAP of 10 tpy.

J. 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 Unit.* The biomass-fired stoker boiler and the boiler reheat burner shall be subject to the requirements of 40 CFR Part 63, Subpart DDDDD, *National Emission Standards for Hazardous Air Pollutants for Major Sources: Industrial, Commercial and Institutional Boilers and Process Heater*

K. The emergency diesel fire pump shall be subject to the requirements of 40 CFR Part 60 Subpart IIII *Standards of Performance for Stationary Compression Ignition Internal Combustion Engines*, and 40 CFR Part 63 Subpart ZZZZ, *National Emission Standards for Hazardous Air Pollutants for Stationary Reciprocating Internal Combustion Engines.*

L. The four (4) spark ignition generator engines shall be subject to the requirements of 40 CFR Part 60 Subpart JJJJ, *Standards of Performance for Stationary Spark Ignition Internal Combustion Engines* and 40 CFR Part 63 Subpart ZZZZ, *National Emission Standards for Hazardous Air Pollutants for Stationary Reciprocating Internal Combustion Engines.*

M. Several Storage vessels shall be subject to 40 CFR Part 60 Subpart Kb, *Standards of Performance for Volatile Organic Liquid (VOL) Storage Vessels (Including Petroleum Liquid Storage Vessels) for Which Construction Commenced after July 23, 1984.*

N. Synthetic Organic Chemical Manufacturing Industry (SOCMI) associated equipment shall 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.*

O. An air dispersion modeling impact analysis and a BACT determination were conducted as a part of the construction permit application process.

P. After installation of the new biomass-to-ethanol manufacturing and biomass to power cogeneration facility, the owner or operator will be required to obtain a Title V Operating Permit.

II. Significant Applicable Air Regulations

The project is subject to air quality regulations relating to air pollution control. The following 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 only 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. 28-19-275, Special Provisions, Acid Rain Deposition

C. K.A.R. 28-19-300, Construction Permits and Approvals; Applicability

D. K.A.R. 28-19-350, Prevention of Significant Deterioration of Air Quality adopting by reference 40 CFR Part 52.21, Prevention of Significant Deterioration (PSD)

E. K.A.R. 28-19-20, Particulate Matter Emission Limitations

F. K.A.R. 28-19-650, Emission Opacity Limits

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

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

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

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

3. 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*

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

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

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

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

2. 40 CFR Part 63 Subpart FFFF, *National Emission Standard for Hazardous Air Pollutants: Miscellaneous Organic Chemical Manufacturing*

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

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

N. 40 CFR Part 72 Subpart A, *Acid Rain Program General Provisions*

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), with a maximum heat input rating of 500 MMBtu/hr, firing a combination 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, waste water treatment sludge, biogas and natural gas. Steam generated by the biomass-fired stoker boiler will drive the steam turbine and generate electrical power to be used to power the facility as well as to be sold to the utility grid. Extracted steam from the turbine will heat the biomass-to-ethanol process. Natural gas shall be used during startup and shutdown periods as required per boiler manufacturer recommendations. The biomass-fired stoker boiler will be capable of firing with various percentages of fuels during normal operations including natural gas, as needed for flame stabilization, and combinations of solid biomass, liquid biomass (enzymatic hydrolysis thin stillage syrup), enzymatic hydrolysis residuals (lignin rich stillage cake), biogas, biomass grinding cleanings or fines, NCG vent streams, and waste water treatment sludge. The following emission controls shall be installed or implemented to meet the emission requirements:

i. NO_x 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 NO_x burners.

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

iii. Particulate emissions shall be controlled by a 206,672 acfm fabric filter baghouse (DC-20001) with a bag leak detection system.

iv. CO emissions shall be controlled by good combustion practices and installation of an oxidation catalyst.

v. VOC emissions shall be controlled by good combustion practices and the installation of an oxidation catalyst.

vi. CO_2e emissions shall be controlled with the installation of one (1) high voltage circuit breaker (EP-08000) with a dual voltage rating of 115 kV and 69 kV (See Section III.A.1.d). Operational controls shall be implemented to control GHG emissions from the boiler which include the use of biomass materials that otherwise are considered to have low or no economic value or benefit; energy efficient design; incorporation of cogeneration; process integration; combustion of co-products; heat recovery; and operational and maintenance monitoring.

b. One (1) boiler reheat burner (EP-20002), with a maximum heat input rating of 25 MMBtu/hr, firing natural gas or biogas only and installed in the boiler flue gas train downstream of the stoker boiler baghouse (DC-20001) to correct flue gas temperatures for proper operation of the Selective Catalytic Reduction (SCR) system and the Oxidation Catalyst (OC). The boiler reheat burner will be exhausted through the same stack as the biomass-fired stoker boiler. The SCR will control the NO_x emissions from the boiler reheat burner and the OC will control the CO and VOC emissions from the boiler reheat burner.

The following emission controls shall be installed or implemented to meet the emission requirements:

i. NO_x emissions shall be controlled by installation of a Selective Catalytic Reduction System (SCR).

ii. SO_2 emissions shall be controlled by good combustion practices and use of low sulfur fuel (natural gas/biogas) will be considered BACT for the reheat burner. Biogas shall be limited to less than 100 ppm H_2S.

iii. Particulate emissions shall be controlled by good combustion practices and use of low ash fuel (natural gas/biogas) will be considered BACT for the reheat burner.

iv. CO emissions shall be controlled by good combustion practices and the installation of an oxidation catalyst.

v. VOC emissions shall be controlled by good combustion practices and the installation of an oxidation catalyst.

vi. CO_2e emissions shall be controlled with firing natural gas/biogas only, good combustion practices, operational and maintenance monitoring.

c. One (1) steam turbine generator nominally rated up to a maximum 22 Megawatts;

d. One (1) high voltage circuit breaker (EP-08000) with a dual voltage rating of 115 kV and 69 kV. The circuit breaker shall use 58 pounds of sulfur hexafluoride (SF_6) dielectric, in a state-of-the-art enclosed pressure system with leak detection.

e. One (1) hydrated lime injection system (FGD system) including one (1) hydrated lime storage silo (T-20512), pneumatic truck off-load system and hydrated lime handling conveyors. The emissions from the silo shall be vented to a baghouse (EP-20512). The lime handling conveyors are sent to the FGD.

f. One (1) three (3) cell cooling water tower (EP-04001) having a water circulation rate of 52,000 gallons/minute (gpm) and equipped with a drift (mist) eliminator which provides cooling for both the cogeneration equipment and for the Enzymatic Hydrolysis Ethanol Manufacturing Plant. (See Section III.E.5)

B. Biomass-Fired Stoker Boiler Materials Handling

1. Fly ash is a byproduct of combustion of biomass in the biomass-fired stoker boiler and the injection of lime sorbent for pollution control. Fly ash production is estimated at a maximum 120 dry tons per 24-hour day from the biomass-fired stoker boiler. Fly ash shall be collected from multiple points in the biomass boiler, directed to one (1) main stream, transported and discharged to the fly ash storage silo (T-20110). Fly ash will be transferred onsite to the facility berm/visibility screen or transported off-site for disposal or for sale as a marketable product. The biomass-fired stoker boiler fly ash collection system includes the following:

   a. One (1) Mixer-unloader or pug mill, a totally enclosed, paddle-type mixer designed to condition the fly ash with water and one (1) load-out screw conveyor (CV-20110) having a greater than or equal to 99% control effectiveness

   b. One (1) Fly Ash Silo Bin (T-20110) with Bin Vent Fabric Filter (EP-20143)

   c. One (1) Fly Ash Truck Loadout Slide Gate (EP-20111-1)

   d. Two (2) Fly Ash Rail Loadout Slide Gates, # 1 and # 2 (EP-20111-2 and EP-20111-3)

2. Bottoms ash is the remnants of combusting biomass materials (including noncombustible materials) in the biomass-fired stoker boiler. Production is estimated at a maximum 100 wet tons per 24-hour day. Bottoms ash will be collected from the boiler via a submerged ash drag chain conveyor (CV-20119), transported and discharged to a roll-off dumpster for transfer onsite to the facility berm/visibility screen or transported off-site for disposal or for sale as a marketable product. The biomass-fired stoker boiler bottoms ash collection system includes the following:

   a. One (1) Bottoms Ash Loadout (EP-20119) with totally enclosed submerged (water) ash drag chain conveyor (CV-20119) having a greater than or equal to 99% control effectiveness. The system is designed to provide 1,700 lbs of water/hr to the ash in the submerged ash drag chain conveyor (CV-20119).

C. Biomass Receiving, Grinding, Conveyance, and Storage

The enzymatic hydrolysis ethanol manufacturing plant and the biomass-fired stoker boiler will utilize cellulosic feedstocks as described in Section I.B. 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 modules.

1. Receiving and Storage

Agriculture residues and energy crops will be delivered in bale form primarily on flatbed/module/custom trucks which are equipped with tilt or walking beds. Each bale weighs 1,000 to 1,500 pounds. A typical 52 foot long flatbed can hold 36 bales or 18 tons per truckload. Biomass materials will be delivered in regular intervals to the facility during a 12 hour daylight window. Daylight deliveries are limited to 146 trucks per day, and an annual limit of 47,852 trucks per year. Nighttime deliveries are restricted to a daily limit of 44 trucks between the hours of 6 PM to 6 AM and an annual limit of 14,356 trucks per year between the hours of 6 PM and 6 AM. Receiving operations at the grinding lines will consist of receiving the biomass bales by truck and unloading the bales at the conveyors.

The baled biomass can be unloaded as follows:

a. Unloaded directly onto conveyors supplying the grinding lines;

b. Unload 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 150 acre unpaved biomass storage field (west). This large storage field is to ensure continuity of biomass in case of short-term disruption of biomass delivery from offsite locations. The 150 acre storage field will store approximately 28,800 tons of biomass bales in 12 storage divisions made up of 4 stacks of bales per division. Each stack is comprised of 3 foot by 4 foot by 8 foot bales stacked 6 bales high, 40 bales wide and 5 bales long; and

d. Unloaded in the 10 acre unpaved biomass storage field (east). This small storage field is to provide storage in the event of inclement weather. The 10 acre storage field will store approximately 7,200 tons of biomass bales in 3 storage divisions made up of 4 stacks of bales per division. Each stack is comprised of 3 foot by 4 foot by 8 foot bales stacked 6 bales high, 40 bales wide and 5 bales long.

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 Cleaning/Grinding Area. Bale de-stacking, de-stringing and chopping is housed within the Biomass Handling Building.

The process begins when received bales are delivered to one of four (4) in-feed singulating conveyor lines consisting of a "pan style" chain conveyor capable of moving modules of thirty-six (36) bales in a configuration of two bales, side by side stacked three bales high (6-pack configuration) and six bales long (36-bale module). The conveyors are capable of receiving approximately 36 wet tons onto each of four (4) transfer conveying lines. Each conveying line includes a speed-up deck to separate a 6-pack from the modules, bale de-stacker that singulater (separates a 6-pack into a single bale), a load cell conveyor, moisture analyzer conveyor, and a de-stringer before being transferred to the biomass grinder. Each biomass grinder is equipped with an in-feed conveyor, rotochopper (with discharge conveyor and conveyor magnets for tramp metals), and dust hood. As part of the biomass cleaning process, sand and dirt are removed from the biomass and the cleaned material is fed into the grinder. The rotochopper, vibrating screens on the dirt production process, and the grinder are enclosed to reduce fugitive dusts (FUG_DP) are controlled by two (2) baghouses (EP-11600 and EP-11610). Fines from the two baghouses are combined with the fines from the screening process and are pneumatically transferred to the boiler using a closed system.

The ground biomass is sifted over a vibrating screen to remove rocks and other large debris. Another vibrating screen removes dirt and sand. The dirt and sand are sent to the Dirt/Fines Silo controlled by a fabric filter dust collector (EP-10507). String and metal will be shipped offsite by trucks via roll-off dumpsters. Dirt and rock will be used either onsite and applied to the facility berm or shipped off-site for other beneficial use.

Additional potential fugitive emissions result from transfer of washed sand (FUG_WSL), dirt production (FUG_DP) and dirt offloading (FUG_DO). Emissions from these activities will be controlled by a Fugitive Dust Management Plan.

3. Conveyance

   a. For the biomass boiler feed line, ground biomass is pneumatically conveyed to one (1) biomass boiler surge bin (SB-11400). Emissions are controlled by the biomass boiler storage bin baghouse system (EP-11400).

   b. For the ethanol process feed line, ground biomass is pneumatically conveyed to two (2) surge bins (SB-11100 and SB-11200). Emissions are controlled by the ethanol process storage bin baghouse system (EP-11100 and EP-11200).

   c. Each surge bin is equipped with a rotary valve vent that will only be in use when the biomass is being fed from the bin. Rotary valves for the two (2) ethanol pneumatic transfer line vents shall be ducted to two (2) cyclones (CY-11100 and CY-11200) and to two (2) baghouse systems (EP-11600 and EP-11610). Rotary valve for the one (1) pneumatic transfer line vent shall be ducted to one (1) baghouse system (EP-11400).

   d. Ground Biomass is transferred from the storage bins to either the EH Plant weigh belt or to six 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. The conveyors transferring solid fuel to the biomass-fired

stoker boiler metering bins shall be pneumatically transferred to the boiler. Fines from the biomass receiving area being pneumatically transferred to the biomass boiler storage bins shall be vented to one (1) baghouse with two parallel blowers (EP- 11500 and EP-11510). Only one blower operates at a time.

e. The biomass grinding building vacuum system will be used to collect fines and dirt in the area. The vacuum system is driven by a cyclone with a baghouse (EP-11700).

4. Wet Cake Conveyor, Emergency Pad and Reclaim Conveyors (FUG_WCP and FUG_WCE)

Spent biomass (whole stillage) from the cellulosic ethanol plant is processed through the wet cake filter presses. The presses separate whole stillage suspended solids from the liquid phase prior to transfer to the boiler. This dewatered material (wet cake) is sent to the boiler using an inclined wet cake belt conveyor.

If the boiler is down or if the inclined wet cake belt conveyor is broken, the owner or operator has the option to either hold the filter presses in their current state or to transfer the dewatered material to the wet cake pad.

The wet cake pad will provide a temporary storage location for the dewatered material. Once the boiler is up and running again or the conveyor is repaired, a front end loader can scoop up the dewatered material from the wet cake pad and dump it into a reclaim hopper. This hopper transfers the material, via a screw conveyor, to the inclined wet cake belt conveyor where it is conveyed to the boiler.

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-02101 and T-02108), each having a normal capacity of 41,000 gallons (maximum capacity of 52,876) for the purpose of storing anhydrous ethanol. Each tank shall be equipped with a fixed roof, internal floating roof and seal system that meets the applicable requirements of 40 CFR Part 60, Subpart Kb.

b. Two (2) Product Storage Tanks (T-02102 and T-02112), each having a normal capacity of 528,600 gallons (maximum capacity of 597,700 gallons) for the purpose of storing denatured ethanol. Each tank shall be equipped with a fixed roof, internal 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 normal capacity of 22,500 gallons (maximum capacity of 30,390 gallons) for the purpose of storing denaturant (natural gasoline). The tank shall be equipped with a fixed roof, internal floating roof and seal system that meets the applicable requirements of 40 CFR Part 60, Subpart Kb.

d. One (1) Methanol Tank (T-02109) having a normal capacity of 41,000 gallons (maximum capacity of 52,876). The tank shall be equipped with a fixed roof, internal floating roof and seal system that meets the applicable requirements of 40 CFR Part 60, Subpart Kb.

e. 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 Tanks (T-01912), having a capacity of 28,800 gallons.

f. Three (3) Cellulase Tanks (T-01940, T-01941, and T-01942), having a capacity of 50,400, 50,400, and 6,500 gallons respectively.

g. One (1) Sodium Hydroxide Tank (T-01900), having a capacity of 13,500 gallons.

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

E. Enzymatic Hydrolysis (EH) 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 a 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 (EP-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 and 16000 from the enzymatic hydrolysis process vents shall be routed to the biomass-fired stoker boiler for destruction. The enzymatic hydrolysis process vents include the digester vent, propagator vent, and saccharification vent.

F. Lignin Storage and Loadout (EP-19001FUG)

Wet lignin-rich stillage, produced from the enzymatic hydrolysis ethanol manufacturing process will be burned as solid biomass boiler fuel. A walled 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 24 hours of accumulation at full plant capacity.

G. Biogas Thermal Oxidizer (EP-09001)

Biogas produced by the wastewater treatment plant shall be used as a feedstock for the biomass-fired stoker boiler. However, whenever the biogas cannot be sent to the boiler for combustion, the owner or operator shall install and operate a thermal oxidizer for the purposes of back-up destruction of biogas.

1. One (1) biogas thermal oxidizer (EP-09001), with maximum design heat input rate of 51 MMBtu/hr for back-up destruction of biogas flow normally combusted in the biomass-fired stoker boiler.

2. The thermal oxidizer will have the potential to emit biogenic and 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 thermal oxidizer 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 thermal oxidizer pilot.

H. Ethanol Loadout Thermal Oxidizer (EP-02100)

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 the product loadout thermal oxidizer (EP-02100) for destruction of collected loadout vapors.

1. One (1) product loadout thermal oxidizer, with a maximum design heat input rate of 12 MMBtu/hr. The thermal oxidizer has the potential to emit GHG emissions, as the primary ignition fuel is natural gas for the pilot flame and secondary fuel is ethanol.

2. The GHG emissions from the thermal oxidizer shall be controlled with the restriction of the fuel type to natural gas and ethanol.

I. Diesel Fire Pump Engine (EP-06001)

1. One (1) Clarke Model JX6H-UFAD88, 6 cylinder, compression ignition fire pump engine (EP-06001) manufactured on November 26, 2012, rated at 617 maximum brake horsepower, burning diesel fuel only.

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

3. The GHG emissions from the diesel fire 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.

J. Electrical Power Generation: Natural Gas Fired Engines (EP-20010, EP-20020, EP-20030, and EP-20040)

In support of the electrical power demands for the operation of the facility, four (4) spark ignition, four stroke lean burn (4SLB) natural gas fired generator engines shall be installed. This additional electrical power generation capacity shall include the following:

1. Four (4) identical Cummins Power Generations, Model C1750-N6C, 4SLB, natural gas fired generator engines, each rated at 2,476 maximum brake horsepower and maximum generator nameplate capacity of 4,682 kW with the following engine identifications:

   a. GEN-08001A (EP-20010), Serial Number 66302458, manufactured on October 8, 2012. This engine is equipped with a Harco Manufacturing, Model EnviCat-5314-33.5x3.5x1, or equivalent, Selective Catalytic Reduction system (SCR) for the reduction of NO_x. This engine is equipped with an Oxidation Catalyst for reduction of CO and VOC.

   b. GEN-08001B (EP-20020), Serial Number 66302451, manufactured on October 3, 2012. This engine is equipped with a Harco Manufacturing, Model EnviCat-5314-33.5x3.5x1, or equivalent, Selective Catalytic Reduction system (SCR) for the reduction of NO_x. This engine is equipped with an Oxidation Catalyst for reduction of CO and VOC.

   c. GEN-08001C (EP-20030), Serial Number 66302572, manufactured on December 7, 2012;

   d. GEN-08001D (EP-20040), Serial Number 66302574, manufactured on December 10, 2012;

2. The four (4) spark ignition reciprocating internal combustion engines will have the potential to emit GHG emissions (CO_2, CH_4, and N_2O) because they combust a hydrocarbon fuel (natural gas).

3. Engines EP-20010 and EP-20020 shall not be restricted in their operations. The engines will be used to provide electricity in support of plant operations and will have the ability to produce electricity for sale to the grid.

4. Engines EP-20030 and EP-20040 shall operate as emergency engines as defined in 40 CFR 60.4248 and 40 CFR 63.6640 (f).

K. Plant Roads (EP-01000FUG and EP-01050FUG)

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

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

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

L. Facility Berm (EP-10002)

A facility berm/visibility screen is being proposed to be erected around the facility with byproducts from the biomass-to-ethanol and biomass-to-energy production facility, including dirt and sand removed from the biomass before it is processed along with fly ash and bottoms ash. The berm will be continuously constructed at a rate of approximately 1,500 linear feet per year. The berm will be a maximum of 15 feet tall and have an approximate base width of 150 feet. The completion of the proposed berm could take up to 20 years.

BACT review and a Modeling Analysis were performed on the proposed berm/visibility screen, however the final approval for construction of this berm shall be in accordance with the KDHE BWM's Beneficial Use Authorization 738, originally approved August 6, 2012, with all subsequent conditions required by BWM.

IV. Air Emission Estimates from the Proposed Activity

Table 1 - Estimated Operating Emissions

Pollutant	Potential to Emit Emissions[1] (tons per year)	
	Pre- Permit	Post-Permit
Particulate Matter (PM)	>250	138.8
Particulate Matter less than or equal to 10 microns (PM_{10})	>250	109.5
Particulate Matter less than or equal to 2.5 microns ($PM_{2.5}$)	>250	76.5
Oxides of Nitrogen (NO_x)	>250	701.9
Carbon Monoxide (CO)	>250	594.0
Sulfur Dioxide (SO_2)	>250	504.4
Volatile Organic Compounds (VOC)	>250	47.9
Lead (Pb)	0.11	0.11
Sulfuric Acid (H_2SO_4)	67.7	6.9[2]
Hydrogen Chloride (HCl)	574.6	7.2
Hydrogen Fluoride (HF)	0.66	0.01
Carbon Dioxide equivalents (CO_2e)	>100,000	626,000
Total HAPs	>25	27.7
Largest Single HAP • Hydrogen Chloride	>10	7.2

V. 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.

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

2. Emissions are projected to be 3.6 tons per year. The source has elected to take a limit of 6.9 tons per consecutive 12 month period to remain below the major source threshold for H_2SO_4.

A. Plantwide Permit Conditions from Dispersion Modeling Analysis

1. Stack parameters for all equipment listed under 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)]

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

3. If significant changes are proposed, 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. Dispersion modeling for the 1-hour NO_2 NAAQS relied on an NO_2/NO_x ratio of 0.05 for the biomass boiler, which shall be confirmed as required in the Performance Testing requirements of this permit. [K.A.R. 28-19-302(a)]

B. General Air Pollution Control Equipment Limitation

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. [K.A.R. 28-19-302(a)]

C. K.A.R. 28-19-20, Particulate Matter Emission Limitations

This regulation applies to the storage and handling, hammers mill and biomass grinding and limits the concentration of particulate emissions from these processes. Based upon emission estimates, these emission sources are expected to operate in compliance with KDHE particulate matter rules.

D. K.A.R. 28-19-650(a)(3), Emissions Opacity Limitation

The visible emissions from all emission sources other than the biomass-fired stoker boiler, the product loadout thermal oxidizer and the biogas thermal oxidizer shall be limited to less than or equal to 20% opacity.

E. 40 CFR Part 60.18, General Control Device and Work Practice Requirements Limitations

The product loadout thermal oxidizer (EP-02100) and the biogas thermal oxidizer (EP-09001) shall emit no visible emissions (0% opacity) in accordance with 40 CFR Part 60.18. The citation to 40 CFR 60.18 is used here as a general design standard for modern thermal oxidizer and thermal oxidizer emission control systems and should not be interpreted to indicate EP-02100 or EP-09001 are subject to a New Source Performance Standard under 40 CFR Part 60 or control affected sources under 40 CFR Part 60. [K.A.R. 28-19-302(a)]

F. High Voltage Circuit Breaker Limitations (EP-08000)

GHG BACT for one (1) high voltage circuit breaker (EP-08000) is the installation of a 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 shall install a breaker using 58 lbs of SF_6. At a leak rate of 0.5%, annual SF_6 emissions would be a combined maximum of 6,612 lbs/year, which would equal 3.31 short tons CO_2e per year.

1. 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.

2. For every replacement event of lost SF_6 with new product, the owner or operator shall record the date and quantity of SF_6 lost in pounds, and the 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.

3. 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.

4. 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.

G. Biomass-Fired Stoker Boiler and Boiler Reheat Burner (EP-20001 and EP-20002) Air Limitations

1. Specific definitions for startup and shutdown are defined within the context of the applied control technology, unless specified differently elsewhere in the permit requirements. 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.

2. 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 in the biomass-fired stoker boiler (EP-20001). Full requirements and restrictions for the use of new fuel combinations are

listed in **Section V.G.23**. The burning of other fuels, such as wood, would trigger different emission requirements under 40 CFR Part 60 Subpart Db which are not explicitly imposed by this permit, therefore prior approval is required to be obtained before burning certain biomass materials.

3. The owner or operator shall only burn natural gas or biogas in the boiler reheat burner (EP-20002).

4. The boiler reheat burner (EP-20002) emissions shall exhaust through the same stack as the biomass-fired stoker boiler (EP-20001). The emissions of EP-20002 will pass through the SCR and Oxidation Catalyst, but do not pass through baghouse DC-20001 or the FGD system.

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

6. K.A.R. 28-19-31(c) limits the amount of SO_2 to less than or equal to 3.0 lbs of SO_2/MMBtu from indirect heating equipment having a heat input of 250 million BTU/hr or greater. Compliance with the BACT emissions limits for SO_2 shall be deemed compliance with the SO_2 emission limit of K.A.R. 28-19-31(c).

7. K.A.R. 28-19-31(b)(2) limits opacity of the visible air emissions from the biomass-fired stoker boiler and boiler reheat burner to 20 percent. Compliance with the requirements of 40 CFR 63.7500 and Table 4 of 40 CFR Part 63 Subpart DDDDD shall demonstrate compliance with K.A.R. 28-19-31(b)(2). However, if the owner or operator uses a PM Continuous Parameter Monitoring System (PM CPMS) to monitor stack emissions of the boiler, then compliance with K.A.R. 28-19-31(b)(2) shall be required. (See **Section V.G.11.f**, Table 4 – *Excerpt of Table 4 of 40 CFR 63 Subpart DDDDD)*

8. 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. To determine compliance with the emission limitations for sulfuric acid mist, 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 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.

9. 40 CFR Part 60 Subpart Db Limitations

a. The boiler is subject to the applicable requirements of 40 CFR Part 60 Subpart Db. **These requirements are summarized in this permit.** If a conflict exists between the federal rule and what is summarized in **Section V.G.10** of this permit, the requirements of the federal rule shall take precedence.

b. The source shall comply with the applicable requirements of 40 CFR Part 60 Subpart A – General Provisions, or as otherwise specified by 40 CFR Part 60 Subpart Db.

c. 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, as follows:

i. Natural gas shall be used during biomass-fired stoker boiler startup periods as required per manufacturer recommendations. The biomass-fired stoker boiler shall be limited to less than or equal to 10 percent of the biomass-fired stoker boiler 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 and shall include the combined heat input of the biomass-fired stoker boiler [e.g. 500 MMBtu/hr x 8,760 hrs/yr].

ii. 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 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). The source shall install a

NO_x Continuous Emissions Monitoring System (CEMS) for compliance demonstration with the NO_x BACT limitations and the CEMS shall serve as the compliance demonstrating system should the source fail to limit the natural gas usage in the biomass-fired stoker boiler to less than or equal to 10 percent of the biomass-fired stoker boiler annual capacity.

d. NSPS standards referenced in 40 CFR Part 60, Subpart Db specify limitations to the emission of SO_2. The owner or operator shall limit 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 1b/MMBtu heat input on a 30 day rolling average including periods of startup, shutdown, and malfunction. [40 CFR 60.42b(k), (e) and (g)]

e. The owner or operator shall install, calibrate, maintain and operate the 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 of 40 CFR Part 60.13 shall be followed for installation, evaluation, and operation of the CEMS. [40 CFR 60.47b(e)]

f. 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.

i. The owner or 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.

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

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

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

v. Quality-assured (or valid) data must be generated when the boiler 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.

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

10. 40 CFR Part 63 Subpart DDDDD Limitations

a. The biomass-fired stoker boiler is defined as a new Stoker Unit designed to burn wet biomass/bio-based solids and is an affected source subject to the applicable requirements of 40 CFR Part 63 Subpart DDDDD. The boiler reheat burner is defined as a process heater that burns gaseous fuel (natural gas/biogas), is designed to heat flue gases for optimal operation of the SCR and OC control systems for the boiler, and is an affected source subject to the applicable requirements of 40 CFR Part 63 Subpart DDDDD. [40 CFR 63.7499(i)] The boiler and boiler reheat burner exhaust through the same stack; therefore compliance for both units shall be demonstrated through the single stack and emission requirements for the biomass-fired stoker boiler. **These requirements are summarized in this permit.** If a conflict exists between the federal rule and what is summarized in **Section V.G.10** of this permit, the requirements of the federal rule shall take precedence.

b. The source shall comply with the applicable requirements of 40 CFR Part 63 Subpart A – General Provisions, or as otherwise specified by 40 CFR Part 63 Subpart DDDDD.

c. The owner or operator shall comply with the applicable emission limitations, work practice standards and operating limits of 40 CFR Part 63 Subpart DDDDD upon startup of the biomass-fired stoker boiler and boiler reheat burner. [40 CFR 63.7500]

d. Except for as provided by 40 CFR 63.7501, the owner or operator shall comply with the applicable emission limitations in Table 1 of 40 CFR 63 Subpart DDDDD. Table 1 of 40 CFR 63 Subpart DDDDD provides the following emission limitations for the biomass stoker boiler and boiler reheat burner:

Table 2 – *Excerpt of Table 1 of 40 CFR 63 Subpart DDDDD*

Pollutant	Emissions Shall Not Exceed The Following Limits, Except During Startup And Shutdown,	Or Emissions Shall Not Exceed The Following Alternative Output Based Limits Except During Startup And Shutdown	Specified Sampling Volume Or Test Run Duration
CO (CEMS)	620 ppm by volume on a dry basis corrected to 3 percent oxygen, 3-run average; or (390 ppm by volume on a dry basis corrected to 3 percent oxygen, 30-day rolling average)	5.8E-01 lb per MMBtu of steam output or 6.8 lb per MWh; 3-run average	1 hr minimum sampling time

Pollutant	Emissions Shall Not Exceed The Following Limits, Except During Startup And Shutdown,	Or Emissions Shall Not Exceed The Following Alternative Output Based Limits Except During Startup And Shutdown	Specified Sampling Volume Or Test Run Duration
Filterable PM (TSM)	3.0E-02 lb per MMBtu of heat input; or (2.6E-05 lb per MMBtu of heat input)	3.5E-02 lb per MMBtu of steam output or 4.2E-01 lb per MWh; or (2.7E-05 lb per MMBtu of steam output or 3.7E-04 lb per MWh)	Collect a minimum of 2 dscm per run.

e. At all times, the owner or operator must operate and maintain the biomass-fired stoker boiler and boiler reheat burner, including associated air pollution control equipment and monitoring equipment, in a manner consistent with safety and good air pollution control practices for minimizing emissions. [40 CFR 63.7500(a)(3)]

f. These standards apply at all times the affected unit is operating, except during periods of startup and shutdown during which time the owner or operator shall comply only with the Table 3 listed in 40 CFR Part 63 Subpart DDDDD - Work Practice Standards, as follows:

i. The owner or operator must operate all Continuous Monitoring Systems (CMS) during startup. For startup of the biomass-fired stoker boiler, the owner or operator shall use natural gas.

ii. If the owner or operator starts firing biomass/bio-based solids, the owner or operator shall vent emissions to the main stack and engage all of the applicable control devices except fabric filter and selective catalytic reduction (SCR). The owner or operator shall start the fabric filter and SCR systems as expeditiously as possible. Startup ends when steam or heat is supplied for any purpose.

iii. The owner or operator must operate all CMS during shutdown. While firing biomass/bio-based solids during shutdown, the owner or operator shall vent emissions to the main stack(s) and operate all applicable control devices, except the fabric filter and SCR.

iv. The owner or operator shall comply with all applicable emission limits at all times except for startup or shutdown periods conforming to this work practice. The owner or operator must collect monitoring data during periods of startup, as specified in 40 CFR 63.7535(b). The owner or operator shall keep records during periods of startup. The owner or operator shall provide reports concerning activities and periods of startup, as specified in 40 CFR 63.7555.

g. The owner shall comply with the Operating Limits of Table 4 to Subpart DDDDD of Part 63 - Operating Limits for Boilers and Process Heaters, as follows: [40 CFR 63.7500(a)(2)]

Table 3 – *Excerpt of Table 4 of 40 CFR 63 Subpart DDDDD*

When complying with Table 1, numerical emission limit using	Required Operating Limits
Fabric filter controls on units not using a PM CPMS	Maintain opacity to less than or equal to 10 percent opacity (daily block average); or
	Install and operate a bag leak detection system according to 40 CFR 63.7525 and operate the fabric filter such that the bag leak detection system alert is not activated more than 5 percent of the operating time during each 6-month period.
Fuel analysis	Maintain the fuel type or fuel mixture such that the applicable emission rates calculated according to 40 CFR 63.7530(c)(1), (2) and/or (3) is less than the applicable emission limits.
Oxygen analyzer system	For boilers subject to a CO emission limit that demonstrate compliance with an O_2 analyzer system as specified in 40 CFR 63.7525(a), maintain the 30-day rolling average oxygen content at or above the lowest hourly average oxygen concentration measured during the most recent CO performance test, as specified in Table 8. This requirement does not apply to units that install an oxygen trim system since these units will set the trim system to the level specified in 40 CFR 63.7525(a).
Performance Testing	For boilers that demonstrate compliance with a performance test, maintain the operating load of each unit such that it does not exceed 110 percent of the highest hourly average operating load recorded during the most recent performance test.

h. If compliance with any applicable emission limit is demonstrated through performance testing and subsequent compliance with operating limits (including the use of CPMS), or with a CEMS, or COMS, the owner or operator must develop a site-specific monitoring plan according to the requirements in 40 CFR 63.7505(d)(1) through (4) for the use of any CEMS, COMS, or CPMS. This requirement also applies to you if you petition the EPA Administrator for alternative monitoring parameters under 40 CFR 63.8(f).

i. The owner or operator shall comply with the applicable requirements of Table 7 to Subpart DDDDD of Part 63 - Establishing Operating Limits [40 CFR 63.7520]

j. The owner or operator shall comply with the applicable requirements of Table 8 to Subpart DDDDD of Part 63 - Demonstrating Continuous Compliance, as follows: [40 CFR 63.7540]

Table 4 – *Excerpt of Table 8 of 40 CFR 63 Subpart DDDDD*

If meeting the following operating limits or work practice standards, as applicable:	**Continuous compliance shall be demonstrated by:**
Opacity	Collecting the opacity monitoring system data according to 40 CFR 63.7525(c) and 40 CFR 63.7535; and
	Reducing the opacity monitoring data to 6-minute averages; and
	Maintaining opacity to less than or equal to 10 percent (daily block average).
PM CPMS	Collecting the PM CPMS output data according to 40 CFR 63.7525;
	Reducing the data to 30-day rolling averages; and
	Maintaining the 30-day rolling average PM CPMS output data to less than the operating limit established during the performance test according to 40 CFR 63.7530(b)(4).
Fabric Filter Bag Leak Detection Operation	Installing and operating a bag leak detection system according to 40 CFR 63.7525 and operating the fabric filter such that the requirements in 40 CFR 63.7540(a)(9) are met.

If meeting the following operating limits or work practice standards, as applicable:	Continuous compliance shall be demonstrated by:
Oxygen content	Continuously monitor the oxygen content using an oxygen analyzer system according to 40 CFR 63.7525(a). This requirement does not apply to units that install an oxygen trim system since these units will set the trim system to the level specified in 40 CFR 63.7525(a)(2).
	Reducing the data to 30-day rolling averages; and
	Maintain the 30-day rolling average oxygen content at or above the lowest hourly average oxygen level measured during the most recent CO performance test.
Boiler operating load	Collecting operating load data or steam generation data every 15 minutes.
	Maintaining the operating load such that it does not exceed 110 percent of the highest hourly average operating load recorded during the most recent performance test according to 40 CFR 63.7520(c).

k. The owner or operator shall comply with the applicable recordkeeping requirements of 40 CFR 63.7555 and 63.7560.

l. The owner or operator shall comply with the applicable requirements of Table 9 to Subpart DDDDD of Part 63 – Reporting Requirements. [40 CFR 63.7550]

m. The owner or operator is subject to 40 CFR Part 63 Subpart A as described in Table 10 to Subpart DDDDD of Part 63 - Applicability of General Provisions to Subpart DDDDD [40 CFR 63.7565]

11. The BACT NO_x Emission Limitations and Controls

The BACT NO_x emission limitations and controls for the biomass-fired stoker boiler (EP-20001) and boiler reheat burner (EP-20002) 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, and 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 of 157.5 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 of the biomass-fired boiler shall be controlled by burning only natural gas via low NO_x burners and an operational over-fire air system. No other fuels shall be combusted by the biomass fired boiler until the SCR is operational.

e. The boiler reheat burner shall fire natural gas or biogas only.

f. 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.

12. The BACT SO_2 Emission Limitations and Controls

The BACT SO_2 emission limitations and controls for the biomass-fired stoker boiler (EP-20001) and boiler reheat burner (EP-20002) are as follows:

a. 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.

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 110.25 lbs/hr on a 1-hour average including periods of startup and shutdown and excluding malfunction.

c. The SO_2 emissions from the biomass-fired stoker boiler shall be controlled with the injection of sorbent (lime) in combination with a dry 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.

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

e. Emissions of SO_2 during startup of the boiler 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.

g. SO_2 emissions from the boiler reheat burner shall be controlled by good combustion practices and use of low sulfur fuel (natural gas/biogas) will be considered BACT for the reheat burner. Biogas shall be limited to less than 100 ppm H_2S (See **Section V.M.7**).

h. Compliance with the BACT SO_2 emissions from the boiler reheat burner (EP-20002) is established by the BACT analysis and emissions calculations submitted with the permit application, as well as the sampling requirements contained in **Section V.M.7.**

13. The BACT PM Emissions Limitations and Controls

The BACT PM emissions limitation and controls for the biomass-fired stoker boiler (EP-20001) and boiler reheat burner (EP-20002) are as follows:

a. The owner or operator shall not emit or cause to be emitted any gases that contain total PM in excess of the BACT emission limit of 0.032 lb/MMBtu (16.8 lb/hr) on a 30 day rolling average including periods of startup, shutdown, and malfunction.

b. The PM emissions from the biomass-fired stoker boiler shall be controlled with the installation of a baghouse (DC-20001) equipped with fabric filter bags.

c. The BACT PM emissions from the boiler reheat burner (EP-20002) shall be controlled by the firing of natural gas or biogas only.

d. Compliance with the BACT PM emissions from the boiler reheat burner (EP-20002) is established by the BACT analysis and emissions calculations submitted with the permit application.

e. 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.

14. The BACT PM_{10} and $PM_{2.5}$ Emission Limitations and Controls

The BACT PM_{10} and $PM_{2.5}$ emission limitations and controls for the biomass-fired stoker boiler (EP-20001) and boiler reheat burner (EP-20002) are as follows:

a. The owner or operator shall not emit or cause to be emitted any gases that contain total PM_{10} emissions in excess of the BACT emission limit of 0.032 lb/MMBtu (16.80 lb/hr).

b. The owner or operator shall not emit or cause to be emitted any gases that contain condensable PM_{10} emissions in excess of the BACT emission limit of 0.017 lb/MMBtu (8.93 lb/hr).

c. 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 0.015 lb/MMBtu (7.87 lb/hr).

d. The owner or operator shall not emit or cause to be emitted any gases that contain total $PM_{2.5}$ emissions in excess of the BACT emission limit of 0.030 lb/MMBtu (15.75 lb/hr).

e. The owner or operator shall not emit or cause to be emitted any gases that contain condensable $PM_{2.5}$ emissions in excess of the BACT emission limit of 0.017 lb/MMBtu (8.93 lb/hr).

f. 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 0.013 lb/MMBtu (6.82 lb/hr).

g. The BACT $PM_{10}/PM_{2.5}$ emissions from the biomass-fired stoker boiler shall be controlled with the installation of a baghouse (DC-20001) equipped with fabric filter bags.

h. Compliance with the BACT $PM_{10}/PM_{2.5}$ emissions from the boiler reheat burner (EP-20002) is established by the BACT analysis and emissions calculations submitted with the permit application.

i. If the emission rate results from the initial performance test(s) are less than the limit described above and deemed consistently achievable, the emission rate determined during the performance test will be the limit imposed.

15. The BACT PM, PM_{10} and $PM_{2.5}$ Emission Limitations and Controls for FGD System

The emissions from the hydrated lime handling conveyors shall be controlled by the lime handling baghouse #1 (EP-20512).

a. The BACT emissions of PM/PM_{10} are limited to 0.11 lb/hr.

b. The BACT emissions of $PM_{2.5}$ are limited to 0.06 lb/hr.

c. 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.

16. The BACT CO Emission Limitations and Controls

The BACT CO emission limitations and controls for the biomass-fired stoker boiler (EP-20001) and boiler reheat burner (EP-20002) 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 or 115.5 lb/hr) on a 30 day rolling average, including periods of startup, shutdown, and malfunction.

b. This BACT limit is based upon the installation of an oxidation catalyst and 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.

17. The BACT VOC Emission Limitations and Controls

The BACT VOC emission limitations and controls for the biomass-fired stoker boiler (EP-20001) and boiler reheat burner (EP-20002) are as follows:

a. The owner or operator shall not emit or cause to be emitted any gases that contain VOC emissions in excess of the BACT emission limit of 0.005 lb/MMBtu (2.55 lb/hr), including periods of startup, shutdown, and malfunction.

b. This BACT limit is based upon the installation of an oxidation catalyst and 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.

c. Demonstration of compliance with the VOC BACT will performed through successful performance testing. The source will utilize EPA Reference Method 320 performing three, one (1) hour runs, the average of which will not be in excess of the VOC BACT emission limit.

d. Continuous compliance shall be demonstrated by following the subsequent testing requirements of **Section XI.F**.

18. The BACT CO_2e Emission Limitations and Controls

The BACT CO_2e emission limitations and controls for the biomass-fired stoker boiler (EP-20001) and the boiler reheat burner (EP-20002) are as follows:

a. For the biomass-fired stoker boiler: 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 are lower impacting crops (i.e. mixed warm season grasses such as switchgrass);

b. For the boiler reheat burner: a restriction of the fuel type to natural gas or biogas only.

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

d. The BACT limit for the biomass-fired stoker boiler and boiler reheat burner shall be 0.35 lb CO_2e /lb of steam produced averaged over 30 day rolling periods including periods of startup and shut-down.

e. "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.

f. Performance testing demonstrating compliance with the nitrous oxide (N_2O) and methane (CH_4) limitations shall be according to **Section V.G.25** of this permit.

g. 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.

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

i. 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.

j. The owner or operator shall determine compliance with the CO_2 emissions limitation in the biomass-fired stoker boiler using emissions data acquired by the CO_2 CEMS. The 30-day rolling average shall be determined as follows:

    i. 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.

    ii. 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.

k. The owner or operator shall determine compliance with the CO_2 emissions limitation in the biomass-fired stoker boiler using daily records of the hourly steam production rate output monitoring device. The 30-day rolling average shall be determined as follows:

i. 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.

ii. 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.

iii. 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.

l. 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.

m. CO_2 CEMs Installation, Evaluation and Operation Requirements

The owner or 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:

i. 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]). References to 40 CFR Part 75 and 40 CFR Part 60 are used here as general standard for Performance Specification Methods for Continuous Emissions Monitoring for the BACT GHG monitoring requirements and should not be interpreted to indicate EP-20001 or EP-20002 are subject to a New Source Performance Standard requirement under 40 CFR Part 60 or to acid rain provisions under 40 CFR Part 75 for GHGs.

ii. For 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, the owner or operator shall perform daily calibration drift assessments for both the CO_2 monitor (or surrogate O_2 monitor) 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 CO_2 concentration monitor and the CERMS.

iii. 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.

iv. Quality-assured (or valid) data must be generated when the boiler 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.

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

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

19. 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, the OC 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 bag leak detection system installed on the fabric filter (DC-20001), 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.

20. For the purposes of this permit and unless otherwise prohibited by an applicable regulation, 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 until the inlet to the SDA is the manufacturer's recommended temperature, 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 approximately 30% load. The biomass-fired stoker boiler baghouse shall be operational during the entire startup period.

b. Shutdown begins with the emptying of 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.

21. 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 and the boiler reheat burner.

22. The owner or operator shall only burn the fuel type 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.

23. 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.

24. Biomass-Fired Stoker Boiler and Boiler Reheat Burner Monitoring Requirements

a. The owner or operator shall demonstrate compliance with the BACT SO_2 emissions limitations using emissions data acquired by the SO_2 CEMS required to be installed (See **Section V.G.9.e. and f**). The 1 hour average and the 30-day rolling average shall be determined as follows:

i. 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.

ii. 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.

iii. 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.

iv. 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.

b. The owner or operator took a Federally Enforceable Limitation on the annual capacity factor for natural gas in lieu of complying with a NO_x limitation under NSPS Db, however the owner or operator shall install, calibrate, maintain and operate continuous emission monitoring systems (CEMS) to monitor and record BACT emissions of NO_x and CO_2 concentrations and shall record the output of those systems as described in 40 CFR Part 60 Subpart Db and this permit to demonstrate compliance with the BACT NO_x limitations. In addition to following the Subpart Db requirements for the NO_x CEMS, the facility shall also monitor and record the NO_2/ NO_x 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 of 40 CFR Part 60.13 shall be followed for installation, evaluation, and operation of the CEMS. [K.A.R. 28-19-302(a)]

i. 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.

ii. The owner or 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.

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

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

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

vi. Quality-assured (or valid) data must be generated when the boiler 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.

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

c. The owner or operator shall determine compliance with the BACT NO_x emissions limitation using emissions data acquired by the NO_x CEMS. The 1 hour average and the 30-day rolling average shall be determined as follows:

i. 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.

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

iii. 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.

iv. 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.

d. 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.

e. The owner or operator shall install, calibrate, maintain and operate CEMs 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.

i. 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.

ii. The owner or 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.

iii. 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.

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

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

vi. Quality-assured (or valid) data must be generated when the boiler 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.

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

f. The owner or operator shall determine compliance with the CO emissions limitation using emissions data acquired by the CO CEMS. The 30-day rolling average shall be determined as follows:

i. 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.

ii. 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.

iii. 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.

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

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

ii. 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 KDHE.

iii. The baghouse shall be equipped with a bag leak detection system alarm which shall not sound more than 5 percent of the operating time during each 6-month period. The owner or operator shall install, calibrate, maintain, and continuously operate the bag leak detection system as specified in paragraphs 40 CFR 63.7525(j)(1) through (6). 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.

iv. 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.

v. 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.

h. 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 and boiler reheat burner.

i. The owner or operator shall record the amount of natural gas fired in the biomass-fired stoker boiler each month. Beginning the 12^{th} 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 15^{th} day of the following month for the previous 12 month period.

j. 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:

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

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

iii. Quantity (dry tons) of solid biomass (switchgrass, corn stover, any other crop residuals or other opportunity feedstock that are locally available).

iv. Quantity (dry tons) of biogas.

v. Quantity (dry tons) of WWTP sludge.

25. Biomass-Fired Stoker Boiler and Boiler Reheat Burner Recordkeeping and Reporting Requirements

a. The owner or operator shall maintain a log of the amount of natural gas fired in the biomass-fired stoker boiler and boiler reheat burner 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 Bureau of Air (BOA).

b. 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 **Section V.G.24.j**. The owner or operator shall use these records to demonstrate compliance with the limitations in **Section V.G.22**.

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

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

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

d. 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).

e. 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.

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

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

26. The owner or operator shall submit semiannual reports detailing compliance with the emission limits, monitoring, and recordkeeping requirements found in **Section V.G**. 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. Summary of compliance or noncompliance with the emission limitations, monitoring and recordkeeping requirements of **Section V.G**, including a summary of the records maintained.

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)]

27. Biomass-Fired Stoker Boiler and Boiler Reheat Burner General Performance Testing Requirements for Performance Test Protocol:

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

a. 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, CO_2, Sulfuric Acid Mist H_2SO_4 (SAM), SO_2, NO_X, CO, VOC, PM, PM10, and PM2.5, 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 / NO_x ratio shall be conducted to demonstrate compliance with the 0.05 NO_2 /NO_x ratio used in dispersion modeling. CEMS shall be utilized to demonstrate compliance with the emission limitations for, SO_2, NO_X and CO following the initial performance test, including the NO2/NO_x ratio. If the NO_2/NO_x 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/NO_x ratio may be discontinued. If a new feedstock is introduced after the first year, the NO_2/NO_x ratio shall be monitored for one year.

b. In conducting the performance tests required by this permit and/or under 40 CFR 60.8 for N_2O, CH_4, H_2SO_4, SO_2, NO_2, NO_X, VOC, 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 other approved EPA methods and procedures. 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.

c. The owner or operator shall comply with the applicable performance testing requirements of 40 CFR Part 63 Subpart DDDDD as described in 40 CFR 63.7520 and Table 5 to Subpart DDDDD of Part 63—Performance Testing Requirements.

d. The stoker boiler stack performance test for PM, PM_{10}, $PM_{2.5}$, VOC, N_2O, CH_4, and SAM 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. Biomass-Fired Stoker Boiler Materials Handling Limitations

1. Fly ash is primarily controlled by the biomass-fired stoker boiler baghouse (DC-20001). The fly ash produced shall be controlled after exiting the (DC-20001) baghouse.

2. The BACT emissions for the fly ash silo bin (T-20110) shall be controlled with a bin vent fabric filter (EP-20143):

a. The BACT emissions for PM/PM_{10} shall be limited to 0.004 gr/dscf (0.0057 lb/hr), including periods of startup, shutdown and malfunction.

b. The BACT emissions for $PM_{2.5}$ shall be limited to 0.002 gr/dscf (0.0029 lb/hr), including periods of startup, shutdown and malfunction.

c. The owner or operator shall operate and maintain the fabric filter to ensure proper and effective operation, in a manner consistent with safety and good air pollution control practices for minimizing emissions. The operation of the fabric filter shall be in accordance with the following requirements:

i. The fabric filter shall be operated whenever the associated emission units are in operation.

ii. The fabric filter 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 fabric filter shall be kept on site and readily available to KDHE.

3. The fly ash load-out operations shall be designed to use the water conditioning pug mill to control BACT PM, PM_{10}, and $PM_{2.5}$ emissions. The fly ash load-out operations BACT limitations are based on the source maintaining moisture content of the fly ash at 20% or greater. The fly ash load-out operations shall consist of a single enclosed screw conveyor with three (3) slide gate valves for discharge of fly ash to one truck loadout slide gate (EP-20111-1) and to two (2) rail loadout slide gates (EP-20111-2 and EP-20111-3). Only one slide gate valve can be open at any given time.

4. The BACT emission limitations for the fly ash truck loadout slide gate (EP-20111-1):

   a. The owner or operator shall continuously operate the water conditioning pug mill at all times fly ash is transferred to truck loadout.

   b. The owner or operator shall operate and maintain the water conditioning pug mill according to the manufacturer's guidelines and in a manner consistent with safety, good engineering and air pollution control practices for minimizing emissions.

   c. The owner or operator shall continuously operate the water the water conditioning pug mill at all times fly ash is transferred to the truck loadout slide gate.

   d. The owner or operator shall maintain the moisture content of the fly ash at 20% or greater and shall develop a monthly record of amount of fly ash produced. A sample of fly ash will be taken at the beginning of each loadout operation on a monthly basis to ensure sufficient water is used to maintain an average of no less than 20% moisture in each twelve consecutive month period.

   e. A monthly moisture percentage average shall be calculated. Beginning the 12th month of operation and thereafter, the owner or operator shall calculate the 12 month consecutive moisture percentage. The owner shall maintain a record of the moisture analysis for five years from the date of record.

   f. The owner or operator shall implement a written preventive maintenance program. The owner or operator shall provide construction specifications, operation and maintenance records, water flow rate and fly ash feed rate records, and other record keeping documents to KDHE upon request to demonstrate compliance with BACT.

5. The BACT emission limitations for the two (2) fly ash rail loadout slide gates, # 1 and # 2 (EP-20111-2 and EP-20111-3):

   a. The owner or operator shall continuously operate the water conditioning pug mill at all times fly ash is transferred to rail loadout slide gates.

   b. The owner or operator shall operate and maintain the water conditioning system and pug mill according to the manufacturer's guidelines and in a manner consistent with safety, good engineering and air pollution control practices for minimizing emissions.

   c. The owner or operator shall continuously operate the water the water conditioning pug mill at all times fly ash is transferred to the truck loadout slide gate.

d. The owner or operator shall maintain the moisture content of the fly ash at 20% or greater and shall develop a monthly record of the amount of fly ash produced. A sample of fly ash will be taken at the beginning of each loadout operation on a monthly to ensure sufficient water is used to maintain an average of no less than 20% moisture in each twelve consecutive month period.

e. A monthly moisture percentage average shall be calculated. Beginning the 12th month of operation and thereafter, the owner or operator shall calculate the 12 month consecutive moisture percentage. The owner shall maintain a record of the moisture analysis for five years from the date of record.

f. The owner or operator shall implement a written preventive maintenance program. The owner or operator shall provide construction specifications, operation and maintenance records, water flow rate and fly ash feed rate records, and other record keeping documents to KDHE upon request to demonstrate compliance with BACT.

6. The BACT emission limitations for the bottoms ash loadout (EP-20119):

The bottoms ash loadout operations will consist of a single submerged drag conveyor that drops wet bottoms ash into a roll-off dumpster. The bottoms ash collection system shall use water submersion and a water spray system to control PM, PM_{10} and $PM_{2.5}$ emissions. The bottoms ash loadout operations BACT limitations are based on the source maintaining moisture content of the bottoms ash at 20% or greater.

a. The owner or operator shall operate and maintain the water submersion and water spray system according to the manufacturer's guidelines and in a manner consistent with safety, good engineering and air pollution control practices for minimizing emissions.

b. The owner or operator shall continuously operate the water submersion and water spray system at all times bottoms ash is transferred out of the biomass-fired stoker boiler to slide gates.

c. Bottoms ash is transferred to a water quench tank and discharged using a drag conveyor. The bottoms ash contains at least 20% water for dust control. The water levels in the quench tank are controlled by use of a low and high level switch on the tank.

d. The owner or operator shall maintain the moisture content of the bottoms ash at 20% or greater and shall develop a monthly record of the amount of bottoms ash produced. A sample of bottoms ash will be taken at the beginning of each loadout operation to ensure sufficient water is used to maintain an average of no less than 20% moisture in each twelve consecutive month period.

e. The owner or operator shall use the biomass-fired stoker boiler hours of operation to determine the hours of operation for the bottoms ash loadout each month for use in calculating the monthly lb/hr average water usage.

f. The owner or operator shall implement a written preventive maintenance program. The owner or operator shall provide construction specifications, operation and maintenance records, water flow rate and fly ash feed rate records, and other record keeping documents to KDHE upon request to demonstrate compliance with BACT.

I. Biomass Receiving, Grinding and Storage Operations Limitations

1. The 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 modules.

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. Dust Collection System DC#1 (EP-11600) – emissions of PM/PM_{10} are limited to 0.625 lb/hr and emissions of $PM_{2.5}$ are limited to 0.11 lb/hr.

   b. Dust Collection System DC#2 (EP-11610) – emissions of PM/PM_{10} are limited to 0.625 lb/hr and emissions of $PM_{2.5}$ are limited to 0.11 lb/hr.

   c. Floor Sweep System Baghouse (EP-11700) – emissions of PM/PM_{10} are limited to 0.011 lb/hr and emissions of $PM_{2.5}$ are limited to 0.002 lb/hr.

   d. EH Storage Bin # 1 DC (EP-11100) – emissions of PM/PM_{10} are limited to 0.72 lb/hr and emissions of $PM_{2.5}$ are limited to 0.12 lb/hr.

   e. EH Storage Bin # 2 DC (EP-11200) – emissions of PM/PM_{10} are limited to 0.72 lb/hr and emissions of $PM_{2.5}$ are limited to 0.12 lb/hr.

   f. Boiler Feed System DC (EP-11500) – emissions of PM/PM_{10} are limited to 0.044 lb/hr and emissions of $PM_{2.5}$ are limited to 0.008 lb/hr.

   g. Boiler Feed System DC (EP-11510) – emissions of PM/PM_{10} are limited to 0.044 lb/hr and emissions of $PM_{2.5}$ are limited to 0.008 lb/hr.

   h. Dirt/Fines Silo fabric filter dust collector (EP-10507) – emissions of PM/PM_{10} are limited to 0.01 lb/hr and emissions of $PM_{2.5}$ are limited to 0.002 lb/hr.

   i. Biomass Boiler Storage Bin (T-11130 and T-11230) DC (EP-11400) – emissions of PM/PM10 are limited to 0.72 lb/hr and emissions of $PM_{2.5}$ are limited to 0.122 lb/hr.

4. The BACT for fugitive emissions from washed sand (FUG_WSL), dirt production (FUG_DP) and dirt offloading (FUG_DO) is a work place standard requiring a closed system and development of a Fugitive Dust Management Plan.

5. The BACT for fugitive emissions from wet cake production (FUG_WCP) and wet cake emergency pad and reclaim (FUG_WCE) is a work place standard requiring a closed system and development of a Fugitive Dust Management Plan.

6. The owner or operator shall prepare, submit, maintain and follow a Fugitive Dust Management Plan for control of fugitive particulate matter emissions from washed sand (FUG_WSL), dirt production (FUG_DP), dirt offloading (FUG_DO), wet cake production (FUG_WCP) and wet cake emergency pad and reclaim (FUG_WCE) operations.

7. The owner or operator shall enclose the vibrating screens and conveyors on the dirt production process (FUG_DP).

8. The owner or operator shall enclose all transfer conveyors from the wet cake emergency pad to the biomass-fired boiler in the wet cake production (FUG_WCP) and wet cake emergency pad and reclaim (FUG_WCE) operations.

9. The owner or operator shall follow the dust management plan at all times washed sand (FUG_WSL), dirt production (FUG_DP) and dirt offloading (FUG_DO) operations are performed.

10. The owner or operator shall develop an operations log which documents startup, shutdown, and malfunction conditions for the washed sand (FUG_WSL), dirt production (FUG_DP), dirt offloading (FUG_DO), wet cake production (FUG_WCP) and wet cake emergency pad and reclaim (FUG_WCE) operations.

11. Biomass storage is limited to 15 storage divisions of 2,400 tons each in the west and east biomass storage area. BACT is compaction of material and development of a Fugitive Dust Management Plan.

12. Continuous compliance with the BACT emissions limits from the west and east biomass storage areas, washed sand (FUG_WSL), dirt production (FUG_DP), dirt offloading (FUG_DO), wet cake production (FUG_WCP) and wet cake emergency pad and reclaim (FUG_WCE) operations are established by the BACT analysis and emissions calculations submitted with the permit application.

J. Enzymatic Hydrolysis (EH) Ethanol Manufacturing Plant Limitations

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 VOC and 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-condensable vapors generated in areas 12000, 16000, and 19000 from the biomass process vents will be routed to the biomass-fired stoker boiler for destruction.

3. Condensable PM[3] 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 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.

4. The enzymatic hydrolysis CO_2 scrubber (EP-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.

5. GHG BACT for the enzymatic hydrolysis CO_2 scrubber (EP-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.

6. 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.

7. The VOC BACT limit for the enzymatic hydrolysis CO_2 scrubber shall be 2.71 lb/hr of VOC emissions.

3 The term "Condensable PM" as used in this permit means particulate matter that is vapor phase at stack conditions, but condense 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)

a. Demonstration of compliance with the VOC BACT will performed through successful performance testing. The source will utilize EPA Reference Method 320 performing three, one (1) hour runs, the average of which will not be in excess of the VOC BACT emission limit.

b. Continuous compliance shall be demonstrated by following the subsequent testing requirements of **Section XI.G**.

8. 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.

9. 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.

10. 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.

11. 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.

12. CO_2 CEMs Installation, Evaluation and Operation for the Enzymatic Hydrolysis (EH) CO_2 Scrubber

    The owner or 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:

    a. 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_2 concentration monitor) and Performance Specification 6 in appendix B to Part 60 (for a continuous emission rate monitoring system [CERMS]). References to 40 CFR Part 75 and 40 CFR Part 60 are used here as general standard Performance Specification Methods for Continuous Emissions Monitoring for the BACT GHG monitoring requirements and should not be interpreted to indicate EP-18185 is subject to a New Source Performance Standard under 40 CFR Part 60 or to acid rain provisions under 40 CFR Part 75 for GHGs.

    b. 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, then the owner or operator shall perform daily calibration drift assessments for both the CO_2 monitor (or surrogate O_2 monitor) and the flow rate monitor, conduct cylinder gas audits of the CO_2 concentration monitor in three of the four quarters of each year (except for non-operating quarters), and perform annual RATAs of the CO_2 concentration monitor and the CERMS.

    c. 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.

d. Quality-assured (or valid) data must be generated when the scrubber 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.

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

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

K. One (1) Cooling Water Tower System for Cogeneration and Enzymatic Hydrolysis Limitations (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 52,000 gallons/minute. The cooling tower shall be equipped with a drift (mist) eliminator.

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 0.20 lb/hr, PM_{10} BACT limit of 0.14 lb/hr and a $PM_{2.5}$ BACT limit of 0.09 lb/hr.

3. To demonstrate compliance with the Air Emissions Limitations, 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.

L. Lignin Storage and Loadout (EP-19001FUG)

1. The BACT emission of VOC for lignin storage and loadout is limited to less than or equal to 1.29 tons per year in each consecutive 12 month period.

2. The owner or operator shall maintain the lignin-rich stillage storage at ambient temperature.

3. The owner or operator shall record the tons of lignin stored and loaded out monthly and develop and maintain a record of each consecutive 12 month VOC total emissions.

4. 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. The records shall be maintained 5 years from the date of record.

M. Biogas Thermal Oxidizer Limitations (EP-09001)

BACT for the thermal oxidizer consists of design and workplace standards since there is no currently feasible method to measure emissions exiting the thermal oxidizer. BACT is using a thermal oxidizer 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 thermal oxidizer is not less than 300 Btu/scf and smokeless operation. The hours of operation for the thermal oxidizer 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 and the biogas shall be treated to remove sulfur to a maximum value of 100 ppm. The thermal oxidizer shall consist of a low NO_x burner. Emissions shall be controlled by good combustion practices.

1. The BACT emission of CO_2e for the biogas vent thermal oxidizer shall be limited to 20,166 short tons CO_2e/yr during any twelve (12) consecutive month period. The hours of thermal oxidizer 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 thermal oxidizer (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 thermal oxidizer pilot.

   b. Develop and implement a written Leak Detection and Repair (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 hours of operation of the biogas thermal oxidizer on a monthly basis and calculate the consecutive 12 month total of hours of operation on a monthly basis. These records shall be maintained for five years from the date of record.

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

   c. 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.

5. The biogas shall be sampled no less than every 30 days to ensure the maximum Hydrogen Sulfide concentration is less than 100 ppm (0.0132 % sulfur by weight). A record shall be maintained of the sampling for five years from the date of record.

6. Continuous compliance with the BACT emissions limits for NO_x, CO, $PM/PM_{10}/PM_{2.5}$, VOC, SO_2, and CO_2e is established by the BACT analysis and emissions calculations submitted with the permit application.

N. Ethanol Loadout Thermal Oxidizer Limitations (EP-02100)

BACT for the thermal oxidizer consists of design, combustion control, good combustion practices and workplace standards since there is no currently feasible method to measure emissions exiting the thermal oxidizer. BACT is using a thermal oxidizer 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 thermal oxidizers is not less than 300 Btu/scf and smokeless operation. The hours of operation for the thermal oxidizer shall be limited to no more than 1,500 hours per consecutive 12 month period, natural gas for the pilot flame and primary fuel is ethanol.

1. The BACT emission of CO_2e for the ethanol loadout thermal oxidizer is limited to 1,356 tons per each consecutive 12 month period.

2. The owner or operator shall monitor and record the number of hour of operations of the thermal oxidizer on a daily basis and maintain a monthly record of the total hours of operation each month.

3. The hours of operation for the thermal oxidizer shall be limited to no more than 1,500 hours per consecutive 12 month period.

4. The owner or operator shall calculate on a monthly basis the annual CO_2e emissions by multiplying the hours of operation of the thermal oxidizer times the CO_2e emission rate of 1,808 lb/hr.

5. GHG BACT for the ethanol loadout thermal oxidizer is the installation/implementation of:

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

   b. Develop and implement a written Leak Detection and Repair (LDAR) program.

6. The owner or operator shall demonstrate compliance with the BACT limits by recording fuel usage each month and using approved emissions factors to determine resulting NO_x, CO, $PM/PM_{10}/PM_{2.5}$, VOC, SO_2, and CO_2e emissions.

   a. The owner or operator shall monitor and record the value of monthly thermal oxidizer fuel usage and resulting 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.

7. 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.

8. Continuous compliance with the BACT emissions limits for NO_x, CO, $PM/PM_{10}/PM_{2.5}$, VOC, SO_2, and CO_2e is established by the BACT analysis and emissions calculations submitted with the permit application.

O. Emergency Fire Pump Diesel Engine Limitations (EP-06001)

1. BACT emissions for the diesel fire pump engine are being established as good combustion practices, firing of low sulfur fuels and purchase of a Certified Engine meeting the emission limits in 40 CFR Part 60, NSPS Subpart IIII.

2. The BACT emission of NO_x for the diesel fire pump engine is 2.60 g/hp-hr, including periods of startup, shutdown, and malfunction. [K.A.R. 28-19-302(a)]

3. The BACT emission of CO for the diesel fire pump engine is 0.50 g/hp-hr, including periods of startup, shutdown, and malfunction. [K.A.R. 28-19-302(a)]

4. The BACT emission of $PM/PM_{10}/PM_{2.5}$ for the diesel fire pump engine is 0.09 g/hp-hr, including periods of startup, shutdown, and malfunction. [K.A.R. 28-19-302(a)]

5. The BACT emission of VOC for the diesel fire pump engine is 0.10 g/hp-hr, including periods of startup, shutdown, and malfunction. [K.A.R. 28-19-302(a)]

6. The BACT emission of SO_2 for the diesel fire pump engine is 0.27 g/hp-hr and a work place diesel fuel standard that meets the fuel sulfur standard of 0.0015 % sulfur by weight. [K.A.R. 28-19-302(a)]

7. The BACT emission of CO_2e for the diesel fire pump engine is 34.43 tons per year in any twelve (12) month consecutive period. [K.A.R. 28-19-302(a)]

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

9. 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.

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

11. Initial compliance with BACT limits of NO_x, CO, and $PM/PM_{10}/PM_{2.5}$ shall be demonstrated within 180 days of startup for the engine through a performance test at steady state, full load operation following the applicable performance testing protocols as described in 40 CFR 60.4212.

12. Initial compliance with BACT limits of SO_2 and VOC shall be demonstrated within 180 days of startup for the engine through a performance test at steady state, full load operation utilizing approved EPA test methods in 40 CFR Part 60 Appendix A and K.A.R. 28-19-212.

13. Following successful initial performance test(s), continuous compliance with the BACT emissions limits from the fire pump engine is established by the BACT analysis and emissions calculations submitted with the permit application.

14. The diesel fire pump operations will be limited such that it will not be operated at any time that the biogas thermal oxidizer or the product loadout thermal oxidizer are operating except in the event of a facility emergency or in circumstances when maintenance or readiness testing had been planned or is occurring. [K.A.R. 28-19-302(a)]

15. 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 facility site on occasions when the plant fire protection systems are activated. The diesel fire pump may be operated up to 50 hours of operation in non-emergency situations 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). [K.A.R. 28-19-302(a)]

16. The owner or operator shall comply with the applicable requirements of 40 CFR Part 60 Subpart IIII upon startup of the engine. **These requirements are summarized in this permit.** If a conflict exists between the federal rule and what is summarized in **Section V.O. 16 through 21** of this permit, the requirements of the federal rule shall take precedence.

17. The source shall comply with the applicable requirements of 40 CFR Part 60 Subpart A – General Provisions, or as otherwise specified by 40 CFR Part 60 Subpart IIII.

18. NSPS standards referenced in 40 CFR Part 60, Subpart IIII specify limitations to the emissions of Non-Methane Hydrocarbons (NMHC) plus (+) NO_x, CO and VOC for the engine. The limitation expressed in **Section V.O.2** does not account for NMHC emissions and therefore the NSPS requirement for NMHC + NO_x of 3.0 g/hp-hr is not subsumed into the NO_x BACT emission limitation for this unit. Additionally, recordkeeping, reporting and performance testing requirements applicable to the NSPS NMHC + NO_x limit apply. Demonstrating compliance with the NMHC + NOx NSPS emission limitation in addition to the BACT limitation is required. [K.A.R. 28-19-302(a)]

19. NSPS standards referenced in 40 CFR Part 60, Subpart IIII specify limitations to the emissions of CO and PM for the engine. The BACT limitations expressed in **Section V.O.3 and V.O.4** is more restrictive than the NSPS limitations for CO and PM. Therefore the NSPS emission limitation for CO (2.6 g/hp-hr) and PM (0.15 g/hp-hr) is subsumed into the CO and PM BACT emission limitation for this unit. However, recordkeeping and reporting requirements applicable to the NSPS CO and PM limit still apply. Demonstrating compliance with the CO and PM NSPS emission limitations in addition to the BACT limitation is required. [K.A.R. 28-19-302(a)]

20. The owner or operator shall fire only diesel fuel that meets the requirements of 40 CFR 80.510(b) for nonroad diesel fuel. [40 CFR 60.4207(b)]

21. The owner or operator shall operate the engine according to the requirements of 40 CFR 60.4211(f)(1) through (3). In order for the engine to be considered an emergency engine under 40 CFR Part 60 Subpart IIII, any operation other than emergency operation, maintenance and testing, emergency demand response, and operation in non-emergency situations for 50 hours per year, as described 40 CFR 60.4211 (f)(1) through (3) of this section, is prohibited. Failure to operate the engine according to the requirements the engine will not be considered an emergency engine and shall meet all requirements for non-emergency engines. The engine shall be operated as follows:

    a. There is no time limit on the use of emergency stationary ICE in emergency situations.

    b. The owner or operator may operate the engine for any combination of the purposes specified in 40 CFR 60.4211 (f)(2)(i) through (iii) for a maximum of 100 hours per calendar year. Any operation for non-emergency situations as allowed 40 CFR 60.4211 (f)(3) counts as part of the 100 hours per calendar year allowed by 40 CFR 60.4211(f)(2).

    c. The engine may be operated for maintenance checks and readiness testing, provided that the tests are recommended by federal, state or local government, the manufacturer, the vendor, the regional transmission organization or equivalent balancing authority and transmission operator, or the insurance company associated with the engine. The owner or operator may petition the Administrator 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 ICE beyond 100 hours per calendar year.

    d. The engine may be operated for emergency demand response for periods in which the Reliability Coordinator under the North American Electric Reliability Corporation (NERC) Reliability Standard EOP-002-3, Capacity and Energy Emergencies (incorporated by reference, see 40 CFR 60.17), or other authorized entity as determined by the Reliability Coordinator, has declared an Energy Emergency Alert Level 2 as defined in the NERC Reliability Standard EOP-002-3.

e. The engine may be operated for periods where there is a deviation of voltage or frequency of 5 percent or greater below standard voltage or frequency.

f. The engine may be operated for up to 50 hours per calendar year in non-emergency situations. The 50 hours of operation in non-emergency situations are counted as part of the 100 hours per calendar year for maintenance and testing and emergency demand response provided in 40 CFR 60.4211(f)(2). Except as provided in 40 CFR 60.4211(f)(3)(i), the 50 hours per calendar year for non-emergency situations cannot be used for peak shaving or non-emergency demand response, or to generate income for a facility to an electric grid or otherwise supply power as part of a financial arrangement with another entity.

g. The 50 hours per year for non-emergency situations can be used to supply power as part of a financial arrangement with another entity if all of the following conditions are met:

    i. The engine is dispatched by the local balancing authority or local transmission and distribution system operator;

    ii. The dispatch is intended to mitigate local transmission and/or distribution limitations so as to avert potential voltage collapse or line overloads that could lead to the interruption of power supply in a local area or region.

    iii. The dispatch follows reliability, emergency operation or similar protocols that follow specific NERC, regional, state, public utility commission or local standards or guidelines.

    iv. The power is provided only to the facility itself or to support the local transmission and distribution system.

    v. The owner or operator identifies and records the entity that dispatches the engine and the specific NERC, regional, state, public utility commission or local standards or guidelines that are being followed for dispatching the engine. The local balancing authority or local transmission and distribution system operator may keep these records on behalf of the engine owner or operator.

h. If the owner or operator does not install, configure, operate, and maintain the engine and control device according to the manufacturer's emission-related written instructions, or changes emission-related settings in a way that is not permitted by the manufacturer, compliance shall be demonstrated as follows:

    i. The owner or operator shall keep a maintenance plan and records of conducted maintenance and shall, to the extent practicable, maintain and operate the engine in a manner consistent with good air pollution control practice for minimizing emissions. In addition, the owner or operator must conduct an initial performance test to demonstrate compliance with the applicable emission standards within 1 year of startup, or within 1 year

after an engine and control device is no longer installed, configured, operated, and maintained in accordance with the manufacturer's emission-related written instructions, or within 1 year after the change in emission-related settings in a way that is not permitted by the manufacturer.

ii. Subsequent performance testing shall be conducted every 8,760 hours of engine operation or 3 years, whichever comes first, thereafter to demonstrate compliance with the applicable emission standards.

22. The owner or operator shall comply with the applicable requirements of 40 CFR Part 63 Subpart ZZZZ upon startup of the engine. [40 CFR 63.6595(a)(3)] **These requirements are summarized in this permit.** If a conflict exists between the federal rule and what is summarized in **Section V.N.21 through 24** of this permit, the requirements of the federal rule shall take precedence. At the time of the permit issuance there are no requirements under 40 CFR Part 63 Subpart ZZZZ to performance test this engine for the purposes of complying with 40 CFR Part 63 Subpart ZZZZ. This does not apply to BACT limits.

23. At all times the owner or operator shall operate and maintain the engine, including any associated air pollution control equipment and monitoring equipment, in a manner consistent with safety and good air pollution control practices for minimizing emissions. The general duty to minimize emissions does not require any further efforts to reduce emissions if levels required have been achieved. Determination of whether such operation and maintenance procedures are being used will be based on information available to the Administrator which include, but is not limited to, monitoring results, review of operation and maintenance procedures, review of operation and maintenance records, and inspection of the source. [40 CFR 63.6605 (b)]

24. The owner or operator shall comply with the requirements for the fire pump engine as an emergency engine as described in 40 CFR 63.6640(f).

25. The owner or operator shall submit an Initial Notification in accordance with 40 CFR 63.6590(b). The notification should include the information in 40 CFR 63.9(b)(2)(i) through (v), and a statement that engines have no additional requirements and explain the basis of the exclusion (for example: the engines have a site rating of more than 500 brake HP and are located at a major source of HAP emissions, however they operate exclusively as emergency engines). [40 CFR 63.6645(f)]

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

27. 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 the unit. [K.A.R. 28-19-302(a)]

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

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

P. Two (2) Natural Gas Fired Power Generation Engines Limitations (EP-20010 and EP-20020)

1. Engines EP-20010 and EP-20020 will be equipped with a Harco Manufacturing, Model EnviCat-5314-33.5x3.5x1, or equivalent, Selective Catalytic Reduction systems (SCR) for the reduction of NO_x.

   The BACT emission of NO_x for each engine is 0.29 lb/hr (0.05 g/hp-hr) on a 1-hr averaging period, including periods of startup, shutdown, and malfunction. [K.A.R. 28-19-302(a)]

2. The engines shall be equipped with an Oxidation Catalyst for reduction of CO and VOC.

   a. The BACT emission of CO for each engine is 2.73 lb/hr (0.50 g/hp-hr) on a 1-hr averaging period, including periods of startup, shutdown, and malfunction. [K.A.R. 28-19-302(a)]

   b. The BACT emission of VOC for each engine is 1.36 lb/hr (0.25 g/hp-hr) on a 1-hr averaging period, including periods of startup, shutdown, and malfunction. [K.A.R. 28-19-302(a)]

3. The owner or operator shall fire the engines on low sulfur pipeline quality natural gas.

   The BACT emission of SO_2 for each engine is 0.01 lb/hr (0.0006 lb/MMBtu) on a 1-hr averaging period, including periods of startup, shutdown, and malfunction. [K.A.R. 28-19-302(a)]

4. The BACT emission of $PM/PM_{10}/PM_{2.5}$ for each engine is 0.16 lb/hr on a 24-hr averaging period, including periods of startup, shutdown, and malfunction. [K.A.R. 28-19-302(a)]

5. The BACT emissions of CO_2e for each engine are limited to 10,905 tons (2,489.7 lb/hr) per any consecutive 12 month period. This includes the GHG individual BACT limits as follows:

   a. The BACT emissions of CO_2 for each engine are limited to 8,192.64 tons (1,870.47 lb/hr) per any consecutive 12 month period.

   b. The BACT emissions of CH_4 for each engine are limited to 108 tons (24.7 lb/hr) per any consecutive 12 month period.

   c. The BACT emissions of N_2O for each engine are limited to 0.015 tons (0.0035 lb/hr) per any consecutive 12 month period.

6. CO_2e emissions shall be controlled with the selection of the most efficient engines, maintenance procedures to maintain efficiency of the engines over their life, and use of natural gas as a fuel.

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

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

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

10. 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)]

11. Initial compliance with BACT limits of NO_x, CO, VOC, SO_2 and $PM/PM_{10}/PM_{2.5}$ shall be demonstrated within 180 days of startup for each engine through a performance test at steady state, full load operation utilizing EPA approved test methods in 40 CFR Part 60 Appendix A and K.A.R. 28-19-212.

12. Continuous compliance shall be demonstrated as follows:

    a. Following successful initial performance test(s), the frequency of subsequent performance testing for NO_x, CO, and VOC shall be every 8,760 hours or every 3 years, whichever occurs first. [K.A.R. 28-19-302(a) and 40 CFR 60.4243(b)(2)(ii)]

    b. Following successful initial performance test(s), the frequency of subsequent performance testing for SO_2 and $PM/PM_{10}/PM_{2.5}$ shall be every 5 years. [K.A.R. 28-19-302(a)]

13. 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 **Section V.P.5**, no compliance strategy needs to be developed.

    c. If the above calculated CO_2e emission total exceeds the tons per year (TPY) specified in **Section V.P.5**, 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. [K.A.R. 28-19-302(a)]

14. Beginning on the 12^{th} month of operations after startup of each engine and continuing monthly thereafter, compliance with BACT limits for CO_2e shall be demonstrated each month by calculating the CO_2e emissions on a 12-month rolling average, based on the procedures and GWP contained in Greenhouse Gas Regulations, 40 CFR Part 98, Subpart A, Table A-1, effective January 1, 2014. 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)]

15. 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. Summary of compliance or noncompliance with the emission limitations, monitoring and recordkeeping requirements of **Section V.P**, including a summary of the records maintained.

    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)]

16. The owner or operator shall comply with the applicable requirements of 40 CFR Part 60 Subpart JJJJ upon startup of each engine. **These requirements are summarized in this permit.** If a conflict exists between the federal rule and what is summarized in **Section V.P.16 though 23** of this permit, the requirements of the federal rule shall take precedence.

17. The source shall comply with the applicable requirements of 40 CFR Part 60 Subpart A – General Provisions, or as otherwise specified by 40 CFR Part 60 Subpart JJJJ.

18. The owner or operator shall comply with the requirements of sections 40 CFR 60.4233(e) and 60.4234. These regulations require the owner or operator to meet the applicable emission limitations in Table 1 of 40 CFR 60 Subpart JJJJ over their entire life of each engine. Table 1 of 40 CFR 60 Subpart JJJJ provides the following emission limitations for the engines:

    a. Emission of NO_x is limited to no more than 1.0 g/hp-hour or 82 ppmvd at 15% O_2.

    b. Emission of CO is limited to no more than 2.0 g/hp-hour or 270 ppmvd at 15% O_2. Owners or operators of engines located at major sources that are meeting the requirements of 40 CFR Part 63, Subpart ZZZZ Table 2a, do not have to comply with this standard as specified in Table 1.

    c. Emission of VOC is limited to no more than 0.7 g/hp-hour or 60 ppmvd at 15% O_2.

19. For each engine that is not certified, and as required by 40 CFR 60.4243(b)(2)(ii), the owner or operator must keep a maintenance plan and records of conducted maintenance and must, to the extent practicable, maintain and operate the engine in a manner consistent with good air pollution control practice for minimizing emissions.

20. The owner or operator shall comply with the recordkeeping requirements of 40 CFR 60.4245(a).

21. The owner or operator of any engine that is uncertified shall comply with the notification requirements of 40 CFR 60.4245(c).

22. For each engine that is not certified, the owner or operator shall comply with the reporting requirement outlined in 40 CFR 60.4245(d), which requires the owner or operator to submit a copy of each performance test within 60 days after the test has been completed.

23. The owner or operator shall comply with the performance testing requirements of 40 CFR Part 60.4244. The initial performance test is required within 180 days of startup and subsequent testing is required every 8,760 hours or every three years, whichever comes first.

24. The owner or operator shall comply with the applicable requirements of 40 CFR Part 63 Subpart ZZZZ upon startup of each engine. [40 CFR 63.6595(a)(3)] **These requirements are summarized in this permit.** If a conflict exists between the federal rule and what is summarized in **Section V.P.24 through 42** of this permit, the requirements of the federal rule shall take precedence.

25. The source shall comply with the applicable requirements of 40 CFR Part 63 Subpart A – General Provisions, or as otherwise specified by 40 CFR Part 63 Subpart ZZZZ.

26. The owner or operator shall comply with the requirements and procedures of 40 CFR 63.6600(b) and Table 2a. Each engine's emission control system is required to reduce CO emissions by 93 percent or more; or limit the concentration of formaldehyde in the exhaust to 14 ppmvd or less at 15 percent O_2.

27. The owner or operator shall comply with the requirements 40 CFR 63.6600(b) and Table 2b, and which are summarized in this permit.

28. The owner or operator shall comply with the following requirements of 40 CFR 63.6630 to demonstrate initial compliance with emission limitations and operating limits:

    a. Comply with applicable emission and operating limitations in Table 5 of 40 CFR Part 63 Subpart ZZZZ.

    b. Establish each applicable operating limitation in Table 2b of 40 CFR Part 63 Subpart ZZZZ.

    c. Submit the Notification of Compliance Status containing the results of the initial compliance demonstration according to the requirements in 40 CFR 63.6645.

29. The owner or operator must be in compliance with the applicable emission limitations and operating limitations in 40 CFR 63 Subpart ZZZZ at all times. [40 CFR 63.6605(a)]

30. The owner or operator must operate and maintain the engines, including their associated air pollution control equipment and monitoring equipment, in a manner consistent with safety and good air pollution control practices for minimizing emissions. Determination of whether such operation and maintenance procedures are being used will be based on information which may include, but is not limited to, monitoring results, review of operation and maintenance procedures, review of operation and maintenance records, and inspection of the source. [40 CFR 63.6605(b)]

31. The owner or operator shall comply with the requirements of 40 CFR 63.6635 to monitor and collect data to demonstrate continuous compliance.

32. Except for monitor malfunctions, associated repairs, required performance evaluations, and required quality assurance or control activities, the owner or operator must monitor continuously at all times when each engine is operating. A monitoring malfunction is any sudden, infrequent, not reasonably preventable failure of the monitoring to provide valid data. Monitoring failures that are caused in part by poor maintenance or careless operation are not malfunctions. [40 CFR Part 63.6635(b)]

33. The owner or operator may not use data recorded during monitoring malfunctions, associated repairs, and required quality assurance or control activities in data averages and calculations used to report emission or operating levels. The owner or operator must use all the valid data collected during all other periods. [40 CFR Part 63.6635(c)]

34. The owner or operator shall comply with the following requirements of 40 CFR 63.6640 to demonstrate continuous compliance with emission limitations and operating limitations:

    a. The owner or operator must demonstrate continuous compliance with each emission limitation and operation limitation in Tables 2a and 2b according to the methods specified in Table 6 of 40 CFR 63 Subpart ZZZZ. [40 CFR 63.6640(a)]

    b. The owner or operator must report each instance in which each engine does not meet each emission limitation or operating limitation in Tables 2a and 2b or 40 CFR 63 Subpart ZZZZ. These instances are deviations from the emissions and operating limitations in 40 CFR 63 Subpart ZZZZ. These deviations must be reported according to the requirements in 40 CFR 64.6650. If the catalyst is changed, the owner or operator must reestablish the values of the operating parameters measured during the initial performance test. The owner or operator must also conduct a performance test to demonstrate compliance with the required emission limitation applicable to each engine. [40 CFR 63.6640(b)]

    c. Deviations from the emission or operating limitations that occur during the first 200 hours of operation from the initial startup (engine burn-in period) are not violations. [40 CFR 63.6640(d)]

35. The owner or operator must report each instance in which the applicable requirements in Table 8 to 40 CFR 63 Subpart ZZZZ are not met. [40 CFR Part 63.6640(e)]

36. The owner or operator shall comply with the requirements of 40 CFR 63.6625(b) to install a continuous parameter monitoring system (CPMS) as specified in Table 5 to 40 CFR 63 Subpart ZZZZ. The owner or operator must install, operate, and maintain each CPMS according to the requirements of 40 CFR 63.6625(b).

37. The owner or operator shall comply with the requirements of 40 CFR 63.6625(h) to minimize the engine's time spent at idle during startup and minimize the engine's startup time to a period needed for appropriate and safe loading of the engine, not to exceed 30 minutes, after which time the emission standards applicable to conditions other than startup in Table 2a shall apply.

38. For each engine, the owner or operator shall comply with the notification requirements of 40 CFR 63.6645. These include but are not limited to the following:

    a. The owner or operator shall submit all of the notifications required in sections 40 CFR 63.7(b) and (c), 63.8(e), (f)(4) and (f)(6), 63.9(b) through (e), and (g) and (h) by the dates specified. [40 CFR 63.6645(a)]

    b. The owner or operator shall submit an Initial Notification not later than 120 days after the facility becomes subject to 40 CFR Part 63 Subpart ZZZZ. [40 CFR 63.6645(c)]

    c. The owner or operator shall submit a Notification of Intent to conduct a performance test at least 60 days before the performance test is scheduled to begin as required in 40 CFR 63.7(b)(1). [40 CFR 63.6645(g)]

39. For each engine, the owner or operator shall submit a Notification of Compliance Status according to 40 CFR 63.9(h)(2)(ii). For each initial compliance demonstration required in Table 5 that includes a performance test conducted according to the requirements in Table 3 the owner or operator shall submit the Notification of Compliance Status, including the performance test results, before the close of business on the 60th day following the completion of the performance test according to 40 CFR 63.10(d)(2). [40 CFR 63.6645(h)]

40. For each engine, the owner or operator shall comply with the applicable reporting requirements of 40 CFR 63.6650 and in Table 7 of 40 CFR 63 Subpart ZZZZ.

41. For each engine, the owner or operator shall comply with the applicable recordkeeping requirements of 40 CFR 63.6655 and in Table 6 of 40 CFR 63 Subpart ZZZZ.

42. For each engine, the owner or operator must keep records in the form and for the length of time specified in 40 CFR 63.6660.

43. 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)]

44. 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)]

45. 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)]

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

Q. Two (2) Natural Gas Fired Emergency Power Generation Engines Limitations (EP-20030 and EP-20040)

1. The BACT emission of NO_x for each engine is 0.88 g/hp-hr, including periods of startup, shutdown, and malfunction. [K.A.R. 28-19-302(a)]

2. The BACT emission of CO for each engine is 2.88 g/hp-hr, including periods of startup, shutdown, and malfunction. [K.A.R. 28-19-302(a)]

3. The BACT emission of VOC for each engine is 0.40 g/hp-hr, including periods of startup, shutdown, and malfunction. [K.A.R. 28-19-302(a)]

4. The BACT emission of $PM/PM_{10}/PM_{2.5}$ for each engine is 0.16 lb/hr, including periods of startup, shutdown, and malfunction. [K.A.R. 28-19-302(a)]

5. The BACT emission of SO_2 for each engine is 0.01 lb/hr, including periods of startup, shutdown, and malfunction. [K.A.R. 28-19-302(a)]

6. The BACT emissions of CO_2e for each engine are limited to 124.48 tons (2,489.7 lb/hr) per any consecutive 12 month period. This includes the GHG individual BACT limits as follows:

    a. The BACT emissions of CO_2 for each engine are limited to 93.52 tons (1,870 lb/hr) per any consecutive 12 month period.

    b. The BACT emissions of CH_4 for each engine are limited to 1.2 tons (24.73 lb/hr) per any consecutive 12 month period.

    c. The BACT emissions of N_2O for each engine are limited to 0.0002 tons (0.0035 lb/hr) per any consecutive 12 month period.

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

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

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

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

11. 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)]

12. The engines shall be operated as emergency engines as described in 40 CFR 60.4243(d).

13. Maintenance and testing hours of operation for engines EP-20030 and EP-20040, except for necessary operational demonstrations to prove completion of maintenance, shall occur between 9:00 AM and 6:00 PM, Monday through Friday.

14. Initial compliance with BACT limits of NO_x, CO, VOC, SO_2, PM, PM_{10}, and $PM_{2.5}$ shall be demonstrated within 180 days of startup for each emergency engine through a performance test at steady state, full load operation utilizing EPA approved test methods in 40 CFR Part 60 Appendix A and K.A.R. 28-19-212.

15. Continuous compliance shall be demonstrated as follows:

    a. Following successful initial performance test(s), the frequency of subsequent performance testing for NO_x, CO, and VOC shall be every 8,760 hours or every 3 years, whichever occurs first, and utilizing the approved testing methods as listed in Table 2 of 40 CFR Part 60 Subpart JJJJ. [K.A.R. 28-19-302(a) and 40 CFR 60.4243(b)(2)(ii)]

    b. Following successful initial performance test(s), continuous compliance with the BACT emissions limits for SO_2, PM, PM_{10}, and $PM_{2.5}$ from each emergency engine is established by the BACT analysis and emissions calculations submitted with the permit application.

16. 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 **Section V.Q.6**, no compliance strategy needs to be developed.

    c. If the above calculated CO_2e emission total exceeds the tons per year (TPY) specified in **Section V.Q.6**, 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. [K.A.R. 28-19-302(a)]

17. Beginning on the 12^{th} month of operations after startup of each engine and continuing monthly thereafter, compliance with BACT limits for CO_2e shall be demonstrated each month by calculating the CO_2e emissions on a 12-month rolling average, based on the procedures and GWP contained in Greenhouse Gas Regulations, 40 CFR Part 98, Subpart

A, Table A-1, effective January 1, 2014. 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)]

18. 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. Summary of compliance or noncompliance with the emission limitations, monitoring and recordkeeping requirements of **Section V.Q**, including a summary of the records maintained.

    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)]

19. The owner or operator shall comply with the applicable requirements of 40 CFR Part 60 Subpart JJJJ upon startup of each engine. **These requirements are summarized in this permit.** If a conflict exists between the federal rule and what is summarized in **Section V.Q.19 through 33** of this permit, the requirements of the federal rule shall take precedence.

20. The owner or operator shall comply with the requirements of sections 40 CFR 60.4233(e). These regulations require the owner or operator to meet the applicable emission limitations in Table 1 of 40 CFR 60 Subpart JJJJ over their entire life of each engine. *Table 1 of 40 CFR 60 Subpart JJJJ - NO_X, CO, and VOC Emission Standards for Stationary Emergency SI Engines ≥ 130 HP* provides the following emission limitations for the engines:

    a. Emission of NO_x is limited to no more than 2.0 g/hp-hour at 15% O_2.

    b. Emission of CO is limited to no more than 4.0 g/hp-hour at 15% O_2.

    c. Emission of VOC is limited to no more than 1.0 g/hp-hour at 15% O_2.

21. In order for the engines to be considered emergency stationary engines under 40 CFR Part 60 Subpart JJJJ, any operation other than emergency operation, maintenance and testing, emergency demand response, and operation in non-emergency situations for 50 hours per year, as described in paragraphs 40 CFR 60.4243(d)(1) through (3) is prohibited. If the engines are not operated according to the requirements in 40 CFR 60.4243(d)(1) through (3), the engines will not be considered emergency engines and shall meet all requirements for non-emergency engines.

22. There is no time limit on the hours of use for engines EP-20030 and EP-20040 in emergency situations.

23. The owner or operator may operate engines EP-20030 and EP-20040 for any combination of the purposes specified in 40 CFR 60.4243(d)(2)(i) through (iii) for a maximum of 100 hours per calendar year, as follows:

    a. The engines may be operated for maintenance checks and readiness testing, provided that the tests are recommended by federal, state or local government, the manufacturer, the vendor, the regional transmission organization or equivalent balancing authority and transmission operator, or the insurance company associated with the engine. The owner or operator may petition the Administrator 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 engines beyond 100 hours per calendar year.

    b. The engines may be operated for emergency demand response for periods in which the Reliability Coordinator under the North American Electric Reliability Corporation (NERC) Reliability Standard EOP-002-3, Capacity and Energy

       Emergencies (incorporated by reference, see 40 CFR 60.17), or other authorized entity as determined by the Reliability Coordinator, has declared an Energy Emergency Alert Level 2 as defined in the NERC Reliability Standard EOP-002-3.

    c. The engines may be operated for periods where there is a deviation of voltage or frequency of 5 percent or greater below standard voltage or frequency.

24. Any operation for non-emergency situations as allowed by 40 CFR 60.4243(d)(3) counts as part of the 100 hours per calendar year.

25. The engines may be operated for up to 50 hours per calendar year in non-emergency situations. The 50 hours of operation in non-emergency situations are counted as part of the 100 hours per calendar year for maintenance and testing and emergency demand response provided in 40 CFR 60.4243(d)(2). The 50 hours per year for non-emergency situations cannot be used for peak shaving or non-emergency demand response, or to generate income for a facility to an electric grid or otherwise supply power as part of a financial arrangement with another entity, except as provided in 40 CFR 60.4243(d)(3)(i).

26. The 50 hours per year for non-emergency situations can be used to supply power as part of a financial arrangement with another entity if all of the following conditions are met:

    a. The engine is dispatched by the local balancing authority or local transmission and distribution system operator;

    b. The dispatch is intended to mitigate local transmission and/or distribution limitations so as to avert potential voltage collapse or line overloads that could lead to the interruption of power supply in a local area or region.

c. The dispatch follows reliability, emergency operation or similar protocols that follow specific NERC, regional, state, public utility commission or local standards or guidelines.

d. The power is provided only to the facility itself or to support the local transmission and distribution system.

e. The owner or operator identifies and records the entity that dispatches the engine and the specific NERC, regional, state, public utility commission or local standards or guidelines that are being followed for dispatching the engine. The local balancing authority or local transmission and distribution system operator may keep these records on behalf of the engine owner or operator.

27. 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)]

28. For each engine (EP-20030 and EP-20040) that is not certified, and as required by 40 CFR 60.4243(b)(2)(ii), the owner or operator must keep a maintenance plan and records of conducted maintenance and must, to the extent practicable, maintain and operate the engine in a manner consistent with good air pollution control practice for minimizing emissions.

29. The owner or operator shall comply with the recordkeeping requirements of 40 CFR 60.4245(a).

30. The owner or operator of any engine that is uncertified shall comply with the notification requirements of 40 CFR 60.4245(c).

31. For each engine (EP-20030 and EP-20040) that is not certified, the owner or operator shall comply with the reporting requirement outlined in 40 CFR 60.4245(d), which requires the owner or operator to submit a copy of each performance test within 60 days after the test has been completed.

32. The owner or operator shall comply with the performance testing requirements of 40 CFR Part 60.4244. The initial performance test is required within 180 days of startup and subsequent testing is required every 8,760 hours or every three years, whichever comes first.

33. KDHE shall be notified of the date that actual start-up of the engine commences, postmarked within 15 days after such date. [40 CFR 60.8(a)]

34. The owner or operator shall comply with the applicable requirements of 40 CFR Part 63 Subpart ZZZZ upon startup of each engine. [40 CFR 63.6595(a)(3)] **These requirements are summarized in this permit.** If a conflict exists between the federal rule and what is summarized in **Section V.Q.34 through 37** of this permit, the requirements of the federal rule shall take precedence.

35. At all times the owner or operator shall operate and maintain the engines EP-20030 and EP-20040, including any associated air pollution control equipment and monitoring equipment, in a manner consistent with safety and good air pollution control practices for minimizing emissions. The general duty to minimize emissions does not require any further efforts to reduce emissions if levels required have been achieved. Determination of whether such operation and maintenance procedures are being used will be based on information available to the Administrator which include, but is not limited to, monitoring results, review of operation and maintenance procedures, review of operation and maintenance records, and inspection of the source. [40 CFR 63.6605 (b)]

36. The owner or operator shall comply with the requirements for emergency engines as described in 40 CFR 63.6640(f).

37. The owner or operator shall submit an Initial Notification in accordance with 40 CFR 63.6590(b). The notification should include the information in 40 CFR 63.9(b)(2)(i) through (v), and a statement that engines have no additional requirements and explain the basis of the exclusion (for example: the engines have a site rating of more than 500 brake HP and are located at a major source of HAP emissions, however they operate exclusively as emergency engines). [40 CFR 63.6645(f)]

38. 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)]

39. 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)]

40. 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)]

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

R. Plant Haul Roads Limitations

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

   a. The number of trucks entering onsite for shipping and receiving operations in the 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 plant shall not exceed 44 trucks per night between the hours of 6:00 PM and 6:00 AM averaged over a rolling 7 night period.

   c. The number of trucks entering onsite for shipping and receiving operations in the 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 plant shall not exceed 14,356 trucks between the hours of 6:00 PM and 6:00 AM averaged 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 a maximum speed limit of 15 mph at all times. 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 Limitations (EP-01050FUG)

a. The number of trucks hauling feedstock and materials into the biomass laydown roads and unpaved staging area shall not exceed 162 trucks per day averaged over a rolling 7-day period.

b. Truck traffic on the unpaved areas and roads on the west side of the facility shall be limited to the hours of 6:00 AM to 6:00 PM daily.

c. 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.

d. 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.

3. In-Plant Haul Roads Recordkeeping (EP-01000FUG)

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

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

The owner or operator shall maintain a daily calculation of the number of trucks hauling feedstock and materials into the biomass laydown roads and unpaved staging area averaged over a rolling 7-day period.

S. Facility Berm Limitations (EP-10002)

1. The owner or operator shall build the berm with a 20 meter setback from the property fenceline. Variances on this distant from the property line is subject to the requirements described by **Section V.A – Plantwide Permit Conditions from Dispersion Modeling Analysis.**

2. The BACT emissions of $PM/PM_{10}/PM_{2.5}$ shall be controlled by the application of wet suppression to maintain moisture content of no less than 20% in the berm during its construction. Additional moisture shall be added to control fugitive dusts. Determination for the need for moisture addition shall be made by qualitative opacity observations whenever trucks are unloading onto the active portion of the berm.

3. The owner or operator shall conduct a Method 22 of the unloading of materials to the berm once per month. Once per month shall be defined as no less than 25 days following the previous Method 22 and no greater than 31 days following the previous Method 22. The average opacity of the fugitive emissions from unloading materials to the berm shall not exceed 20% in a consecutive six (6) minute observation. The average will be determined by taking four (4) observations each minute (one observation every 15 seconds) for a total of the six (6) minutes (or a total of 24 readings in a six (6) minute period). The owner or operator shall then sum the 24 observations and divide by 24 to obtain the opacity average for the total six (6) minute period. The Method 22 shall be conducted as described in 40 CFR Part 60, Appendix A.[K.A.R.28-19-302(a)]

4. The owner or operator shall develop and maintain a record of the monthly Method 22 findings for a period of five years from the date of record. If no material is unloaded to construct the berm in any month, the owner or operator shall record that no materials were unloaded at the berm for that month. [K.A.R.28-19-302(a)]

5. The owner or operator shall permanently seal the developed portions of the berm through compaction and the planting of grasses or other stabilization methods. The owner or operator shall not allow greater than 132 linear foot of unstabilized berm at any one time.

6. The truck traffic related to the hauling of the dirt, sand, fly ash and bottoms ash to the berm is restricted by the total number of trucks allowed as described in **Section V.R.** The owner or operator shall maintain daily records of the number of trucks used to haul dirt, sand, fly ash and bottoms ash and ensure it adheres to the truck traffic limitations, recordkeeping and reporting requirements in **Section V.R.**

7. The owner or operator shall develop and implement a Fugitive Dust Management Plan for operation and maintenance of the berm. This plan shall be submitted to KDHE for approval no later than ninety (90) days prior to beginning construction on the berm.

T. Synthetic Organic Chemical Manufacturing Industry Equipment Limitations (EP-02000) and Loading Losses (EP-02100FUG)

1. The BACT emission of VOC shall be controlled by best management practices, prompt detection and repair of leaks, and the development of a LDAR program.

2. The owner or operator shall comply with the applicable requirements of 40 CFR Part 60 Subpart VVa upon startup. **These requirements are summarized in this permit.** If a conflict exists between the federal rule and what is summarized in **Section V.T.** of this permit, the requirements of the federal rule shall take precedence.

3. The source shall comply with the applicable requirements of 40 CFR Part 60 Subpart A – General Provisions, or as otherwise specified by 40 CFR Part 60 Subpart VVa.

4. The provisions of 40 CFR Part 60 Subpart VVa 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. The owner or operator shall comply with the general equipment leak standards in 40 CFR 60.482-1a.

5. Requirements for 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:

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

iii. 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.

6. Requirements for Compressors

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

7. Requirements for 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.

8. Requirements for Sampling Connection Systems

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

9. Requirements for 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.

10. Requirements for 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.

11. Requirements for 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.

12. Requirements for Delay of Repair

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

13. 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.

14. Exceptions to Requirements of 40 CFR Part 60 Subpart VVa

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).

15. 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.

16. 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 non-repairable, 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.

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

18. 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).

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

20. 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.

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

22. The owner or operator shall submit semiannual reports to the KDHE beginning six months after the initial startup date. The initial semi-annual report shall include the following information:

    a. Process unit identification.

    b. 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.

    c. 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.

23. The semiannual reports submitted to KDHE shall include the following information, summarized from records required to be kept onsite (40 CFR 60.487a(c)):

    a. Process unit identification.

    b. For each month during the semiannual reporting period:

        i. Number of valves for which leaks were detected,

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

        iii. Number of pumps for which leaks were detected,

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

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

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

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

24. NSPS Subpart VVa Performance Testing Requirement for Equipment in VOC Service

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)]

25. 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).

U. Organic Liquid and Chemical Storage Tanks Limitations (T-02101, T-02108, T-02109, T-02102, T-02105, T-0212)

1. For VOC BACT control, the owner or operator shall install fixed roof tanks with internal floating roofs and submerge fill capabilities to reduce VOC emissions from the organic liquid tanks and comply with the applicable requirements of 40 CFR Part 60 Subpart Kb.

2. Continuous compliance with the BACT emissions limits VOC is established by the BACT analysis and emissions calculations submitted with the permit application.

3. The owner or operator shall comply with the applicable requirements of 40 CFR Part 60 Subpart Kb upon startup. **These requirements are summarized in this permit.** If a conflict exists between the federal rule and what is summarized in **Section V.U.** of this permit, the requirements of the federal rule shall take precedence.

4. The source shall comply with the applicable requirements of 40 CFR Part 60 Subpart A – General Provisions, or as otherwise specified by 40 CFR Part 60 Subpart Kb.

5. 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)]:

a. 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)].

b. 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)].

c. 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)].

d. 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)].

e. 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)].

f. 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)].

g. 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)].

h. 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)].

i. 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)].

6. 40 CFR Part 60 Subpart Kb Recordkeeping, Tanks T-02101, T-02108, T-02109, T-02102, T-02105, and T-0212

a. The owner or operator shall keep records and furnish reports as required by paragraphs 40 CFR 60.115b(a) for at least 2 years. [40 CFR 60.115b]

b. After installing control equipment in accordance with 40 CFR 60.112b(a)(1) (fixed roof and internal floating roof), the owner or operator shall meet the following requirements:

i. Furnish the KDHE with a report that describes the control equipment and certifies that the control equipment meets the specifications of 40 CFR 60.112b(a)(1) and 40 CFR 60.113b(a)(1). This report shall be an attachment to the notification required by 40 CFR 60.7(a)(3).

ii. Keep a record of each inspection performed as required by 40 CFR 60.113b (a)(1), (a)(2), (a)(3), and (a)(4). Each record shall identify the storage vessel on which the inspection was performed and shall contain the date the vessel was inspected and the observed condition of each component of the control equipment (seals, internal floating roof, and fittings).

iii. 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)]

7. 40 CFR Part 60 Subpart Kb Reporting, Tanks T-02101, T-02108, T-02109, T-02102, T-02105, and T-0212

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

b. 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 60.112b(a)(1) and 40 CFR 60.113b(a)(1). This report shall be an attachment to the notification required by 40 CFR 60.7(a)(3). [40 CFR 60.115b(a)(1)]

c. If any of the conditions described in 40 CFR 60.113b(a)(2) are detected during the annual visual inspection required by 40 CFR 60.113b(a)(2), a report shall be furnished to the Administrator within 30 days of the inspection. Each report shall identify the storage vessel, the nature of the defects, and the date the storage vessel was emptied or the nature of and date the repair was made.

d. After each inspection required by 40 CFR 60.113b(a)(3) that finds holes or tears in the seal or seal fabric, or defects in the internal floating roof, or other control equipment defects listed in 40 CFR 60.113b(a)(3)(ii), a report shall be furnished to the Administrator within 30 days of the inspection. The report shall identify the storage vessel and the reason it did not meet the specifications of 40 CFR 61.112b(a)(1) or 40 CFR 60.113b(a)(3) and list each repair made.

8. NSPS Subpart Kb Performance Testing Requirements for Tanks T-02101, T-02108, T-02109, T-02102, T-02105, and T-0212

a. After installing the control equipment required to meet 40 CFR 60.112b(a)(1) (permanently affixed roof and internal floating roof), the owner or operator shall meet the requirements of 40 CFR 60.113b(a), as follows:

i. Visually inspect the internal floating roof, the primary seal, and the secondary seal (if one is in service), prior to filling the storage vessel with VOL. If there are holes, tears, or other openings in the primary seal, the secondary seal, or the seal fabric or defects in the internal floating roof, or both, the owner or operator shall repair the items before filling the storage vessel.

ii. For vessels equipped with a liquid-mounted or mechanical shoe primary seal, visually inspect the internal floating roof and the primary seal or the secondary seal (if one is in service) 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 owner or operator shall repair the items or empty and remove the storage vessel from service within 45 days. If a failure that is detected during inspections required in this paragraph cannot be repaired within 45 days and if the vessel cannot be emptied within 45 days, a 30-day extension may be requested from the Administrator in the inspection report required in 40 CFR 60.115b(a)(3). Such a request for an extension must document that alternate storage capacity is unavailable and specify a schedule of actions the company will take that will assure that the control equipment will be repaired or the vessel will be emptied as soon as possible.

b. For vessels equipped with a double-seal system as specified in 40 CFR 60.112b(a)(1)(ii)(B), the owner or operator shall:

i. Visually inspect the vessel as specified in 40 CFR 60.113b(a)(4) at least every 5 years; or

ii. Visually inspect the vessel as specified 40 CFR 60.113b(a)(2).

c. Visually inspect the internal floating roof, the primary seal, the secondary seal (if one is in service), 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 the seal fabric, or the secondary seal has holes, tears, or other openings in the seal or the 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 owner or operator shall repair the items as necessary so that none of the conditions specified in this paragraph exist before refilling the storage vessel with VOL. In no event shall inspections conducted in accordance with this provision occur at intervals greater than 10 years in the case of vessels conducting the annual visual inspection as specified in 40 CFR 60.113b(a)(2) and 40 CFR 60.113b(a)(3)(ii) and at intervals no greater than 5 years in the case of vessels specified in 40 CFR 60.113b(a)(3)(i).

d. Notify the KDHE in writing at least 30 days prior to the filling or refilling of each storage vessel for which an inspection is required by 40 CFR 60.113b(a)(1) and (a)(4) to afford the KDHE the opportunity to have an observer present. If the inspection required by 40 CFR 60.113b(a)(4) of this section is not planned and the owner or operator could not have known about the inspection 30 days in advance or refilling the tank, the owner or operator shall notify the KDHE at least 7 days prior to the refilling of the storage vessel. Notification shall be made by telephone immediately followed by written documentation demonstrating why the

inspection was unplanned. Alternatively, this notification including the written documentation may be made in writing and sent by express mail so that it is received by the KDHE at least 7 days prior to the refilling.

e. 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)]

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

i. 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)].

ii. 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).

iii. 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)].

V. 40 CFR Part 63 Subpart FFFF - National Emission Standard for Hazardous Air Pollutants: Miscellaneous Organic Chemical Manufacturing (MON) – Affected Sources Plantwide

1. The owner or operator shall comply with the applicable requirements of 40 CFR Part 63 Subpart FFFF upon startup. **These requirements are summarized in this permit.** If a conflict exists between the federal rule and what is summarized in **Section V.V.** of this permit, the requirements of the federal rule shall take precedence.

2. The MON applies to certain equipment that is part of a Miscellaneous Organic Chemical Manufacturing Process Unit (MCPU). According to the rule, an MCPU is the facility-wide collection of equipment necessary to operate a miscellaneous organic chemical manufacturing process, as defined in 40 CFR 63.2550, that produces an organic chemical using the SIC code 2869 that is an organic HAP is listed in Section 112(b) of the CAA, and is not regulated under another subpart. An MCPU also includes any assigned storage tanks and product transfer racks; equipment in open systems that is used to convey or store water having the same concentration and flow characteristics as wastewater; and components such as pumps, compressors, agitators, pressure relief devices, sampling connection systems, open-ended valves or lines, valves, connectors, and instrumentation systems that are used to manufacture an organic chemical regulated under this subpart. Based on the above description, the following table lists the equipment at the facility subject to the MON, its status under the MON, and a summary of the MON control requirements applicable to the equipment.

Table 5. MON Applicability Analysis Summary

Equipment Group	MON Category	Basis	Summary of Specific MON Control Requirements
Biomass Co-Fermentation and Distillation Equipment: • Saccharification and Co-Fermentation (Area 16000) • Ethanol Recovery (i.e., Distillation) (Area 18000) Emission Points: • Enzymatic Hydrolysis CO_2 Scrubber (EP-18185) • Enzymatic Hydrolysis Distillation Vent Scrubber (EP-18180)	Each fermentation tank vent is designated a Group 1 Continuous Process Vent in accordance with 40 CFR 63.2455(b).	Data to allow total resource effectiveness (TRE) calculations do not exist at the time of this MON applicability analysis. ABBK is designating this equipment as Group 1 Continuous Process Vents.	Reduce emissions of total organic HAP by ≥98% or to an outlet process concentration ≤20 ppmvd as organic HAP or TOC by venting emissions through a closed-vent system to any combination of control devices (except a flare). These vents will be routed to wet scrubbers to meet this requirement.
Denatured Ethanol Storage Tank Equipment: • Denatured Ethanol Storage Tank Emission Points: • EH Ethanol Product Storage Tank (EP-02102) • EH Ethanol Product Storage Tank (EP-02112)	Group 1 Storage Tank	Tank capacity is >10,000 gallons and the maximum true vapor pressure of total HAP at storage temperature is ≥0.69 kPa and ≤76.6 kPa.	Comply with the requirements of 40 CFR Part 63, Subpart WW. The installation of internal floating roofs per 40 CFR Part 60, Subpart Kb will meet the requirements of Subpart WW, and subsequently Subpart FFFF.
Denaturant Storage Tank Equipment: • Denaturant Storage Tank Emission Points: • EH Denaturant Storage Tank (EP-02105)	Group 1 Storage Tanks	Tank capacity is >10,000 gallons and the maximum true vapor pressure of total HAP at storage temperature is ≥0.69 kPa and ≤76.6 kPa.	Comply with the requirements of 40 CFR Part 63, Subpart WW. The installation of internal floating roofs per 40 CFR Part 60, Subpart Kb will meet the requirements of 40 CFR Part 63, Subpart WW, and subsequently 40 CFR Part 63, Subpart FFFF.

Table 5. MON Applicability Analysis Summary

Equipment Group	MON Category	Basis	Summary of Specific MON Control Requirements
Ethanol Production Process Tanks Equipment: • Process (Shift) Tanks • Off-spec Tank Emission Points: • EH Product Shift Tank #1 (EP-02108) • EH Product Off-Spec Tank (EP-02101)	Group 2 Batch Process Vents	Vents collective uncontrolled batch vent HAP emissions are ≤3,000 lb/yr. Therefore these streams are not Group 1 Batch Process Vents per 40 CFR 63.2550.	None
Methanol Storage Tank • Methanol Storage Tank (T-02109)	Group 1 Storage Tank	Tank capacity is >10,000 gallons and the maximum true vapor pressure of total HAP at storage temperature is ≥0.69 kPa and ≤76.6 kPa.	Comply with the requirements of 40 CFR Part 63, Subpart WW. The installation of internal floating roofs per 40 CFR Part 60, Subpart Kb will meet the requirements of 40 CFR Part 63, Subpart WW, and subsequently 40 CFR Part 63, Subpart FFFF.
Denatured Ethanol Load-Out Equipment: • Truck and Rail Car Loading Rack • Meters • Filters • Pumps Emission Points: • Ethanol Vapor Recovery System (EP-2150) • Ethanol Loading Losses (EP-2150FUG)	Group 2 Transfer Rack	The rack-weighted average partial pressure of HAP for load-out of denatured ethanol is <1.5 psia. Therefore the load-out rack is not a Group 1 Transfer Rack per 40 CFR 63.2550.	None
Equipment Leaks • Biomass Fermentation and Distillation • Denatured Ethanol Transfer and Handling • Anhydrous Ethanol Transfer and Handling • Denatured Ethanol Load-Out	Not in organic HAP service	Equipment contains <5% by weight organic HAP. Therefore this equipment is not in organic HAP service per 40 CFR 63.2550.	None
Equipment Leaks • Denaturant Transfer and Handling	In organic HAP service	Equipment contains ≥5% by weight organic HAP.	LDAR program pursuant to 40 CFR Part 60, Subpart VVa, or 40 CFR Part 65, Subpart F.
Cooling Water Systems	Heat Exchange System	A heat exchange system means any cooling tower system or once-through cooling water system as defined at 40 CFR 63.101(b). The cooling water towers and chilled water system will contain <5% by weight of total HAPs listed in table 4 of 40 CFR Part 65, Subpart F.	None

Table 5. MON Applicability Analysis Summary

Equipment Group	MON Category	Basis	Summary of Specific MON Control Requirements
Wastewater System	Group 2 Wastewater Stream	Total annual organic HAP concentration is <10,000 ppm by weight at all flow rates, <1000 ppm by weight annual average concentration and <200 lb/yr in the total annual load.	None

3. Biomass Co-Fermentation and Distillation

The co-fermentation and distillation equipment vents may be subject to the new Group 1 continuous process vent emission limits and work practice standards of Table 1 of 40 CFR Part 63, Subpart FFFF for the following reasons:

a. The affected sources will start-up after November 10, 2003;

b. The co-fermentation and distillation equipment vents are expected to have a total resource effectiveness (TRE) index value of less than 5.0;

c. The co-fermentation and distillation equipment vents meet the definition of continuous process vents; and

d. The co-fermentation and distillation equipment vent streams will have mass emission rates of halogen atoms (chlorine and/or fluorine) contained in organic compounds of less than 0.45 kilograms per hour.

4. The owner or operator shall designate the co-fermentation and distillation equipment vents as Group 1 vents for purposes of MON applicability; however, the owner or operator may conduct pre-control device testing and TRE index value evaluation for these MCPU. If the owner or operator chooses to conduct pre-control device testing and the resulting emission rates for the co-fermentation and/or distillation equipment vents are such that the TRE index value is greater than 5.0, then these units shall not be considered Group 1 continuous process vents and shall not be subject to any 40 CFR Part 63, Subpart FFFF control requirements.

The Group 1 continuous process vents are required to either reduce emissions of total organic HAP by greater than or equal to 98% or to an outlet process concentration less than or equal to 20 ppmvd as organic HAP or TOC from the vent stream. The owner or operator shall use wet scrubbers to comply with the 40 CFR Part 63, Subpart FFFF control requirements. Wet scrubbers have been established as BACT for these process vents and are equivalent to MACT; therefore, no additional control of the process vents shall be required. Based on engineering design data, the projected control efficiencies of the wet scrubbers meet the level of control required by MON; therefore, these sources are expected to be in compliance with the MON emission limits once constructed.

a. Denatured Ethanol Product Storage Tank

The new denatured ethanol product storage tanks (T-02102 & T-02112) are classified as Group 1 storage tanks. The tank is classified as a Group 1 tank because it has a capacity of greater than 10,000 gallons (i.e., 460,000 gallons) and has a maximum true vapor pressure of greater than 0.69 kPa but less than 76.6 kPa (calculated as 5.2 kPa from an average vapor pressure of 0.7494 psia, as obtained from the TANKS 4.0.9d emissions report). Per 40 CFR Part 63, Subpart FFFF, compliance with the requirements of the provisions of 40 CFR Part 60, Subpart Kb constitutes compliance with the requirements of 40 CFR Part 63, Subpart FFFF. The owner or operator shall design the tank such that it will comply with the applicable requirements of 40 CFR Part 60, Subpart Kb, thereby complying with 40 CFR Part 63, Subpart FFFF.

b. Denaturant Storage Tank

The denaturant storage tank (T-02105) is classified as a Group 1 storage tank. The tank is classified as a Group 1 tank because it has a capacity of greater than 10,000 gallons (i.e., 22,500 gallons) and has a maximum true vapor pressure of greater than 0.69 kPa but less than 76.6 kPa (calculated as 45.5 kPa from an average vapor pressure of 6.5993 psia, as obtained from the TANKS 4.0.9d emissions report). Per 40 CFR Part 63, Subpart FFFF, compliance with the requirements of the provisions of 40 CFR Part 60, Subpart Kb constitutes compliance with the requirements of 40 CFR Part 63, Subpart FFFF. The owner or operator shall design the tank such that it will comply with the applicable requirements of 40 CFR Part 60, Subpart Kb, thereby complying with 40 CFR Part 63, Subpart FFFF.

c. Ethanol Production Process Tanks

The new product shift tank (T-02101) and new product off-spec tank (T-02101) are classified as Group 2 batch process vents. The tanks are classified as a Group 2 batch process vents because these tank vents' collective uncontrolled batch vent HAP emissions are less than 3,000 lb/yr. Therefore, these tanks are not subject to the requirements in 40 CFR Part 63, Subpart FFFF.

d. Denatured Ethanol Load-Out

The new ethanol load-out operation will have a transfer rack average vapor pressure of less than 1.5 psia. Based on the average vapor pressure, the ethanol load-out transfer rack is classified as a Group 2 transfer rack. Therefore, 40 CFR Part 63, Subpart FFFF does not contain any requirements that apply to the ethanol load rack, other than the requirement that the source maintain records in accordance with 40 CFR 63.2525, indicating that the transfer rack average partial pressure is less than 1.5 psia. The transfer rack average partial pressure shall be calculated in accordance with 40 CFR 63.111.

e. Equipment Leaks

The only equipment leaks subject to the requirements of 40 CFR Part 63, Subpart FFFF are those pumps and valves that are associated with the transfer and handling of denaturant. The owner or operator shall comply with the requirements of 40 CFR Part 63, Subpart FFFF applicable to these equipment leaks by meeting the requirements of 40 CPR Part 60, Subpart VVa, as allowed by the MACT standard.

f. Cooling Water Systems

The cooling water systems are classified as heat exchange systems as they meet the definition of a "heat exchange system", as defined at 40 CFR 63.101(b). The recirculating heat exchange systems used to cool process fluids will contain <5% by weight of total HAPs listed in table 4 of 40 CFR Part 65, Subpart F, thereby complying with 40 CFR Part 63, Subpart FFFF.

g. Wastewater System

The ethanol plant wastewater streams are classified as Group 2 wastewater streams. The total annual organic HAP concentration is <10,000 ppm by weight at all flow rates, <1000 ppm by weight annual average concentration and <200 lb/yr in the total annual load. The recordkeeping requirements of 40 CFR Part 63, Subpart FFFF (i.e., identification of wastewater stream, estimation of HAP concentration, and flow rate) shall apply to the ethanol wastewater streams.

VI. Monitoring Requirements

In addition to monitoring requirements listed in **Section V.** of the permit, the following general monitoring requirements are applicable. Records demonstrating compliance shall be maintained onsite readily accessible to KDHE for the length of time specified in the permit.

All continuous monitoring systems required by 40 CFR Part 60, 40 CFR Part 63, 40 CFR Part 75 and this permit shall meet the applicable requirements of the applicable requirements methods for certifying, maintaining, operating and assuring quality of the systems.

VII. Recordkeeping

In addition to recordkeeping requirements listed in **Section V.** of the permit, the following general recordkeeping requirements are applicable. Records demonstrating compliance shall be maintained onsite readily accessible to KDHE for the length of time specified in the permit.

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. 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 60 or 40 CFR Part 75.

C. 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.

D. The owner or operator shall maintain records of the reports, notifications, and performance tests requirement by this permit and applicable regulations.

E. All of the above records shall be maintained on site for a period of five (5) years from the date of the record.

VIII. Reporting

In addition to reporting requirements listed in **Section V.** of the permit, the following general reporting requirements are applicable. Reports demonstrating compliance shall be submitted to the BOA in the same physical units as stated in the applicable requirements of the permit.

A. Items listed in **Section V.** 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. Excess emissions and monitoring systems performance report pursuant to 40 CFR 60.7(c) shall be submitted to the BOA semiannually, except when more frequent reporting is specifically required by an applicable subpart of 40 CFR Part 60. 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.

C. Excess emissions and monitoring systems performance report pursuant to 40 CFR 63.10(e)(3) shall be submitted to the BOA semiannually, except when more frequent reporting is specifically required by an applicable subpart of 40 CFR Part 63. All excess emissions and monitoring system performance reports and all summary reports, if required, shall be delivered or postmarked by the 30th day following the end of each calendar half or quarter, as appropriate. Written reports of excess emissions or exceedances of process or control system parameters shall include all the information required in 40 CFR 63.10(c)(5) through (c)(13), in 40 CFR 63.8(c)(7)

and 40 CFR 63.8(c)(8), and in the applicable standard from 40 CFR Part 63. The reports shall contain the name, title, and signature of the responsible official who is certifying the accuracy of the report. When no excess emissions or exceedances of a parameter have occurred, or a CMS has not been inoperative, out of control, repaired, or adjusted, such information shall be stated in the report.

D. Reports as listed in **Section V.** that are required to be submitted semiannually shall be submitted within 30 days following the end of each calendar half.

E. Malfunction

1. 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 **Section V** 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 **Section V** and the methods utilized to mitigate emissions and restore normal operations.

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

IX. Performance Test Protocol

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

X. Pre-Performance Test Meeting

The owner or operator shall arrange a pre-performance test meeting with the Air Compliance and Enforcement Section of the BOA at least thirty (30) days in advance of the date of conducting any emissions 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 KDHE may elect to have an observer(s) onsite at the facility during any or all emission source performance testing required by this permit.

XI. Compliance and Other Performance Testing

In addition to performance testing requirements listed in **Section V.** of the permit, the following additional performance testing requirements and compliance demonstrations are applicable.

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 boiler reheat burner 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, notification, reporting of results and performance test compliance timeframes shall be conducted and deadlines met in accordance with the requirements of 40 CFR 60.8 or 40 CFR 63.7, as applicable to the emission unit(s).

C. 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.

D. Performance testing shall be conducted in accordance with a performance test protocol approved by the KDHE to verify compliance with the emissions limitations, conditions, and requirements of the permit.

E. For the purposes of all performance testing required by this permit and applicable regulations, a *successful performance test* means a test completed in accordance with a performance test protocol approved by the BOA, during which all emissions limitations required by this permit were met.

F. All emissions units listed in **Section V**. (unless otherwise specifically noted in **Section V**) for which subsequent performance tests must be conducted to demonstrate ongoing compliance with the emissions limitations of the permit shall have a complete performance test conducted 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.

G. 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, 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.

H. Within 180 days after initial startup of the associated units, 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 systems:

1. Two (2) 18,225 acfm baghouses, EP-11600 and EP-11610 on the biomass grinding lines #1 through # 4, rotary valve vents, and associated transfer points;

2. Two (2) 21,600 acfm baghouses, EP-11100 and EP-11200 on the Rotary valve vents and air classifier cyclones (CY-11160 and CY-11260) and EH storage bins.

3. Two (2) 21,600 acfm baghouse boiler feed system DCs (EP-11500 and EP-11510) on conveyors transferring solid fuel to the biomass-fired stoker boiler metering bins;

4. Cleanup cyclone with a 7,800 acfm baghouse (EP-11700) for the floor sweepings to the biomass-fired stoker boiler via a vacuum conveyor,

5. Bin Vent Fabric Filter (EP-20143) for fly ash silo bin (T-20110);

6. Dirt/Fines Silo Vent (EP-10507);

7. One (1) fabric filter (EP-11400) for surge bins (T-11130 and T-11230); and

8. One (1) lime handling baghouse #1 (EP-20512).

I. On-going compliance for the control devices listed in **Section XI.H** 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.

J. Performance tests for PM, PM_{10}, and $PM_{2.5}$ from equipment listed in **Section XI.H** 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.

K. Within 60 days after achieving maximum production rate for the biomass-fired stoker boiler, but no later than 180 days after initial startup, 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.

XII. 40 CFR Part 72

The Biomass-Fired Stoker Boiler (EP-20001 and EP-20002) and two (2) natural gas fired spark ignition engines (EP-20010 and EP-20020) are considered to be new utility units under 40 CFR Part 72.6. 40 CFR 72.7(b) states that any new utility unit that has not previously lost an exemption under 40 CFR 72.7(f)(4) and that meets provisions of 40 CFR 72.7(a) shall be exempt from the Acid Rain Program, except for the provisions of 40 CFR 72.2 through 72.6 and 72.10 through 72.13. This exemption shall be effective on January 1 of the first full calendar year of which the unit is to be exempt, a statement signed

by the designated representative or certifying official shall be submitted to the KDHE BOA. The statement shall identify each affected unit, state the nameplate capacity of the turbine and/or each generator served by the affected emission unit, and that the fuels currently burned or expected to be burned by the unit will comply with 40 CFR 72.7(f).

XIII. 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.

XIV. Notification

A. The owner or operator shall make written notifications of the following to the 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.
4. The enclosed NSPS notification form may be used to submit the above required notifications.

B. The owner or operator shall make such written notifications relating to the diesel fire pump engine and natural gas fired engines as required by 40 CFR 63 Part Subpart ZZZZ and 40 CFR Part 63 Subpart A, as specifically indicated by the 40 CFR 63 Part Subpart ZZZZ.

C. For the biomass fired boiler and boiler reheat burner, the owner or operator shall submit all of the applicable notifications in required by 40 CFR 63.7545, including Sections 40 CFR 63.7(b) and (c), 63.8(e), (f)(4) and (6), and 63.9(b) through (h) that apply by the dates specified. As specified in 40 CFR 63.9(b)(2), if startup the affected source occurred before January 31, 2013, the owner or operator must submit an Initial Notification not later than 120 days after January 31, 2013. [40 CFR 63.7545(a)-(b)]

D. 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

E. 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.

XV. General Provisions

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

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

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

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

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

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

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

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

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

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

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

Permit Writer

Lynelle Ladd

May 27, 2014

Lynelle Ladd
Environmental Scientist
Air Permitting Section

Date Signed

LML:saw
c: SWDO
C-11396