

Responsiveness Summary

The Empire District Electric Company
Riverton Power Station
Cherokee County, Kansas

Prevention of Significant Deterioration Permit



Kansas Department of Health and Environment

Bureau of Air

Air Permitting Section

July 11, 2013

I. KDHE Decision

The Kansas Department of Health and Environment (KDHE) Bureau of Air (BOA) has made the decision to issue an Air Quality Construction Permit to The Empire District Electric Company (Empire) for conversion of unit 12 at the Riverton Power Station to combined cycle operation. Empire plans to complete this conversion by June 2016 to replace capacity and energy provided by the boiler units 7 and 8 which will be retired in conjunction with the completion of this. The Riverton Power Station is located in Cherokee County.

The construction permit issued for the project identifies the applicable rules governing emissions from the facility, and establishes enforceable limitations on its emissions. The permit also establishes appropriate compliance procedures, including requirements for emissions testing, monitoring, recordkeeping and reporting. Empire will be required to carry out these procedures on an ongoing basis to demonstrate that the facility is operating within the limitations established by the permits and that emissions are being properly controlled.

The permit related documents can be found at the KDHE BOA website address:

<http://www.kdheks.gov/bar/empire/empireriv.html>

II. Project Description

The Empire District Electric Company (Empire), Riverton Unit 12, a Siemens V84.3A(2) natural gas-fired combustion turbine, nominally rated at 150 MW, was originally issued a construction permit on October 18, 2005 (amended on August 18, 2006 and February 5, 2009) and began operation in 2007.

On January 29, 2013, the KDHE BOA received an application from Empire requesting a permit to convert the Riverton Unit 12 to a combined cycle turbine, with a nominal capacity of 250 MW (1963 MMBtu/hr). The proposed combined cycle unit will replace the capacity and energy provided by coal fired boilers Unit 7 (426 MMBtu/hr) and Unit 8 (600 MMBtu/hr), which will both be retired in conjunction with the completion of this project. Empire plans to complete this conversion by June, 2016.

Modifications will include a heat recovery steam generator (HRSG) with supplemental natural gas duct firing (duct burners) and a condensing steam turbine generator. A selective catalytic reduction (SCR) system will control oxides of nitrogen (NO_x). A carbon monoxide catalyst will control carbon monoxide (CO) and volatile organic compound (VOC) emissions from the turbine and HRSG. Other equipment will include a cooling tower, an 18.5 MMBtu/hr natural gas-fired auxiliary boiler with the capacity to produce 15,000 pounds of steam per hour (approximately 18.6 MMBtu/hr), a 1102 HP (750 Kw) emergency

diesel engine and two (2) sulfuric hexafluoride (SF₆) insulated circuit breakers. Except in the case of an actual emergency, Empire will not operate the emergency diesel engine more than 100 hours per year in a non-emergency capacity to accommodate maintenance and readiness testing.

III. KDHE Permit Considerations

The project proposed by Empire is considered a major modification of a major stationary source because one or more of the Prevention of Significant Deterioration (PSD) regulated air pollutants from the proposed activity exceeds the major source thresholds. Therefore, KDHE permit considerations must follow the PSD Air Quality Construction Permit requirements.

PSD does not prevent sources from increasing emissions. PSD is designed to:

- protect public health;
- preserve, protect, and enhance the air quality in national parks, national wilderness areas, national monuments, national seashores, and other areas of special national or regional natural, recreational, scenic, or historic value;
- insure that economic growth will occur in a manner consistent with the preservation of existing clean air resources; and
- assure that any decision to permit increased air pollution in any area to which this section applies is made only after careful evaluation of all the consequences of such a decision and after adequate procedural opportunities for informed public participation in the decision making process.

PSD applies to new major sources or major modifications at existing sources for pollutants where the area the source is located is in attainment or unclassifiable with the National Ambient Air Quality Standards (NAAQS). It requires the following:

- installation of the “Best Available Control Technology” (BACT);
- an air quality analysis;
- an additional impacts analysis; and
- public involvement.

A. Best Available Control Technology (BACT)

BACT is an emissions limitation which is based on the maximum degree of control that can be achieved. It is a case-by-case decision that considers energy, environmental, and economic impacts. BACT can be add-on control equipment or modification of the production processes or methods. This includes fuel cleaning or treatment and innovative fuel combustion techniques. BACT may be a design, equipment, work practice or operation standard if imposition of an emissions standard is infeasible.

BACT applies to each new or modified affected emissions unit and pollutant emitting activity at the source for each pollutant having a potential to emit, or an increase in potential to emit, above the PSD significance level(s). The Riverton Station facility is an existing major stationary source for at least one regulated pollutant (CO₂e, PM, PM_{2.5}, and PM₁₀) and is subject to the requirements of 40 CFR 52.21 as adopted under K.A.R. 28-19-350.

For the Riverton Station facility, BACT is listed in the PSD Permit Summary, Section V.

B. Ambient Air Quality Analysis

The proposed facility is a major source as defined by K.A.R. 28-19-350, Prevention of Significant Deterioration and the facility must demonstrate that allowable emission increases from the proposed facility would not cause or contribute to air pollution in violation of:

1. any NAAQS in any air quality control region; or
2. any applicable maximum allowable increase over the baseline concentration in any area (increment).

This demonstration was made and is presented in the PSD Permit Summary, Section VI.

C. Additional Impact Analysis

In accordance with 40 CFR 52.21(o)(1), the owner shall provide an analysis of the impairment to visibility, soils and vegetation that would occur as a result of this project and to what extent the emissions from the proposed modification impacts the general commercial, residential, industrial and other growth. This analysis is presented in the PSD Permit Summary, Section VI.

D. Public Involvement

Following the initial application review, the KDHE BOA made a preliminary determination that the application met the standards for issuance of a construction permit and prepared a draft permit for public review and comment.

The draft permits were available for public review from May 2, 2013 through June 3, 2013. No requests were made for a public hearing, therefore, no public hearing was conducted.

KDHE received written comments from the U.S. Environmental Protection Agency (EPA) Region 7 in a letter dated May 23, 2013. Section IV of this document includes the KDHE responses to EPA. KDHE received written comments from Empire in a letter dated May 31, 2013. Section V of this document includes the KDHE responses to Empire.

IV. Response to EPA Region 7

- A. The Permit sets a ton per year (tpy) Best Available Control Technology (BACT) limits for carbon dioxide (CO₂) in condition V.G. These seem to be based on the potential to emit of the emission units. We recommend that BACT limits not be tpy limits since the stringency of the BACT limit then depends on the amount the source is actually operated. Instead, we would recommend limits on an output basis. For example, for the turbine and duct burners we would recommend a limit based on pounds of emissions per MW-hr generated. Output based BACT limits fully consider the efficiency of the unit and better reflect the good combustion practices and selected energy efficiency measures that were selected as BACT for these units. In some cases it may not be practical to set output based limit. In those cases we would suggest input based limits such as pounds per BTU of fuel fired. Of course, where technological or economic limitations on the application of a measurement methodology make it infeasible to impose an emissions standard then a design, equipment, operational standard, or combination may be prescribed for the BACT limit. 40 C.F.R. 51.166(b)(12).

KDHE Response:

KDHE has revised condition V.G. to include both input based BACT limits and tons per year BACT limits for carbon dioxide.

- B.** The permit needs to clarify how compliance with the CO₂e BACT limits are determined. For example, the draft permit states that compliance with the CO₂e BACT limit for the auxiliary boiler shall be demonstrated by recording the fuel usage and using the Global Warming Potential Factors from Table A-1 of 40 CFR Part 98, Subpart A to determine resulting emissions on a monthly basis. The factors in Table A-1 convert the emissions from a mass basis to a CO₂e basis. The permit also needs to specify how the mass emitted is determined. Procedures in 40 CFR Part 98 could be used for these calculations.

KDHE Response:

KDHE has revised permit conditions VI.J and VI.L to specify how the mass emitted is determined.

- C.** The U.S. Environmental Protection Agency has proposed to revise Table A-1 of 40 CFR Part 98, Subpart A. We suggest that where this table is referenced in the permit that the permit also specifies the date of the version of this table Empire is to use. This will clarify that the CO₂e calculations are to be done with current global warming potential factors and not future factors that could increase or decrease the stringency of the BACT limits if used.

KDHE Response:

KDHE has revised permit condition VI.L to reference Table A-1 of 40 CFR Part 98, Subpart A as published in 74 FR 56374 on October 30, 2009.

- D.** Compliance with the PM/PM₁₀/PM_{2.5} BACT limit for the combined cycle turbine is demonstrated with a performance test. Kansas should consider requiring some type of ongoing monitoring to assure compliance with the BACT limit. If this permit does not specify monitoring sufficient to assure compliance, the Title V permit will require periodic monitoring sufficient to assure compliance with this BACT limit.

KDHE Response:

KDHE has revised section VII.A of the permit to require performance testing for PM/PM₁₀/PM_{2.5} every five years.

- E. There is a typographical error in condition V.F.4. where draft should be drift.

KDHE Response:

KDHE has corrected the typographical error in condition V.F.4.

V. Response to Empire

A. Section I, Paragraph 2

Empire District Electric Company (EDE) requests that the first sentence of this section be modified to read:

Empire plans to convert the existing Riverton Unit 12 simple cycle combustion turbine to a combined cycle ~~turbine~~ unit, with a nominal capacity of 250 MW.

KDHE Response:

KDHE has modified the sentence as requested.

B. Section I, Paragraph 3

In order to be consistent with the 18.6 MMBtu/hr used in the BACT analysis, EDE requests that this section be modified to read:

Modifications will include a heat recovery steam generator (HRSG) with supplemental natural gas duct firing (duct burners) and a condensing steam turbine generator. A selective catalytic reduction (SCR) system will control oxides of nitrogen (NO_x). A carbon monoxide catalyst will control carbon monoxide (CO) and volatile organic compound (VOC) emissions from the turbine and HRSG. Other equipment will include a cooling tower, an 18.65 MMBtu/hr natural gas-fired auxiliary boiler with the capacity to produce 15,000 pounds of steam per hour (approximately 18.65 MMBtu/hr), a 1102 HP (750 Kw) emergency diesel engine and two (2) sulfuric hexafluoride (SF₆) insulated circuit breakers. Except in the case of an actual emergency, Empire will not operate the emergency diesel engine more than 100 hours per year in a non-emergency capacity to accommodate maintenance and readiness testing.

KDHE Response:

KDHE has modified the sentence as requested.

C. Section II. O.

This section should also be modified in order to use the heat rate of 18.6 MMBtu/hr instead of 18.5 MMBtu/hr.

While it is true that the auxiliary boiler is subject to 40 CFR, Part 60, Subpart Dc, this regulation does not apply emission limits for natural gas fired boilers as stated in 40 CFR, 60.40 C (c).

EDE requests that the second sentence of this section be modified to read:

O. The auxiliary boiler would fire at approximately ~~18.5~~18.6 MMBtu/hr; ~~therefore, the SO₂ and PM standards of Subpart Dc would apply.~~ **In 60.40C (c) of Subpart Dc, it specifies that a natural gas fired boiler is not subject to the SO₂ and PM limits, performance testing, and monitoring requirements of this regulation. Therefore, the SO₂ and PM limits do not apply.**

KDHE Response:

- A. *KDHE has revised Section II.O to read “40 CFR Part 60 Subpart Dc, Standards of Performance for Small Industrial Commercial-Institutional Steam Generating Units applies to the auxiliary boiler. Since the auxiliary boiler will fire solely natural gas it is subject to the Reporting and Recordkeeping requirements of 40 CFR Part 60, Subpart Dc [40 CFR 60.48(c)].”*

D. Section III. A.

EDE requests that this section be modified to read:

A. Combined cycle ~~combustion turbine~~ unit (CT+HRSG) - Conversion of one (1) Siemens Westinghouse Model V84.3A(2) simple cycle combustion turbine/generator, known as emission Unit 12, equipped with dry low NO_x burners, to a combined cycle operation, burning ~~pipeline~~ pipeline-quality natural gas. The manufacturer's estimated performance is 250 MW. The combined cycle ~~combustion turbine~~ unit includes a heat recovery steam generator (HRSG) with supplemental natural gas duct firing (duct burners) and a condensing steam turbine generator with SCR and CO catalyst

KDHE Response:

KDHE has modified the section as requested.

E. Section III. B.

EDE requests that this section be modified to read:

B. One mechanical draft cooling tower with high efficiency ~~draft~~ drift eliminator to reduce aerosol and particulate emissions from the tower.

KDHE Response:

KDHE has modified the sentence as requested.

F. Section III. D.

EDE requests the following modification to this section:

D. One ~~48.5~~ 18.6 Mm Btu/hr natural gas-fired auxiliary boiler with the capacity to produce 15,000 pounds of steam per hour. The auxiliary boiler is designed to operate when the combined cycle unit is in a brief period of shutdown and for startup.

KDHE Response:

KDHE has modified the sentence as requested.

G. Section V.A.

EDE supports the KDHE comments submitted to docket ID No. EPA-HQ-OAR-2012-0322 regarding the EPA Startup, Shutdown, and Malfunction SIP Call (SSM SIP Call) and believes that the emission limits of this permit should NOT apply during periods of startup, shutdown, and malfunction. Further, there is no proven scientific/ambient monitoring evidence that a facility's emissions, specifically the Riverton facility's emissions, during the infrequently occurring startup, shutdown, and malfunction events cause a violation of the NAAQS.

EDE requests that paragraph A of this section be modified to read:

A. The emission limitations established in this permit apply to the combined cycle ~~combustion turbine~~ unit (CT+HRSG) at all times, ~~including~~ excluding startup, shutdown and malfunction, ~~except as provided in Section VII. Performance Testing and Compliance, H Malfunction,~~ of this permit.

KDHE Response:

KDHE acknowledges EDE's support of our comments to EPA regarding EPA's SSM proposal. KDHE's comments were process oriented and fairly general in nature. We wish to ensure Kansas will have standing in the event we have concerns with the final version of the SSM rule.

Since the previous PSD permit was issued for Empire District a few years ago, several new NAAQS have been issued by EPA, including NO₂ and SO₂ standards with a 1-hour averaging time. Periods of SSM are much more likely to have an impact on a one-hour standard than on a standard with longer averaging periods and operations during periods of SSM become more significant when determining compliance with the 1-hour standards.

This permit for EDE establishes BACT limits for greenhouse gases, PM, PM₁₀, and PM_{2.5}. Of these BACT pollutants, there are NAAQS 24-hour and annual averaging periods for PM_{2.5} and PM₁₀. The NO_x and SO₂ limits were not established as part of the BACT process. They are based on the federal new source review standards which have different SSM requirements. KDHE will add "BACT" in front of "emission limitations" in Section V.A. for clarification. The SSM requirements in this permit are consistent with recent PSD permits for electric generating utilities (EGUs) issued by KDHE to address protection of the NAAQS during SSM periods. KDHE believes this permit will protect the NAAQS and will be consistent with other EGU permits without creating an undue burden on EDE.

H. Section V.D.

40 CFR, 60.4350 (h) of Subpart KKKK applies a 30 day rolling average to the NO_x emission limit (15 ppm, corrected) for combined cycle units. EDE requests that the NO_x emission limit of 15 ppm, corrected, 30 unit operating day rolling average be specified in the permit. It provides clarity to have the permit spell-out the emission limits in order for anyone reading the permit to clearly understand.

EDE requests that this section be modified to read:

D. The NO_x emissions from the combined cycle ~~unit combustion turbine~~ (CT+HRSG) shall meet the applicable emission limits specified in 40 CFR 60.4320(a). NO_x emission limits shall not exceed the limits specified in Table 1 to Subpart KKKK of Part 60—Nitrogen Oxide Emission Limits for New Stationary Combustion Turbines. The NO_x

emission limit is 15 ppm @15% O₂ on a 30 unit operating day rolling average. (40 CFR 60.4350(h)).

KDHE Response:

KDHE has revised the section to read “The NO_x emissions from the combined cycle unit (CT+HRSG) shall meet the applicable emission limits specified in 40 CFR 60.4320(a). NO_x emission limits shall not exceed the limits specified in Table 1 to Subpart KKKK of Part 60—Nitrogen Oxide Emission Limits for New Stationary Combustion Turbines. The NO_x emission limit specified in 40 CFR 60.4350(h) is 15 ppm @ 15% O₂ on a 30 unit operating day rolling average.”

I. Section V.E.

40 CFR, 60.4330 (a) of Subpart KKKK defines the SO₂ emission limit. EDE requests that the SO₂ emission limit be specified in the permit. It provides clarity to have the permit spell-out the emission limits in order for anyone reading the permit to clearly understand.

EDE requests that this section be modified to read:

E. The SO₂ emissions from the combined cycle unit combustion turbine (CT+HRSG) shall meet the applicable emission limits specified in 40 CFR 60.4330 (a) which is 110 Nanogram/joule (0.90 lb/gross MW-hr)

KDHE Response:

KDHE has modified the sentence as requested.

J. Section V.F.4.

EDE requests that this section be modified to read:

4. 0.0005% drift draft rate for the mechanical

KDHE Response:

KDHE has modified the sentence as requested.

K. Section V.G.

EDE requests that this section title be modified to read:

Greenhouse Gas ~~CO₂E~~ emissions shall not exceed:

KDHE Response:

KDHE has modified the sentence to read “The BACT Greenhouse Gas emissions shall not exceed:”

L. Section V.G.1., 2. & 3.

This section identifies the GHG BACT limits expressed as a 12 month rolling average basis. As stated in EDE’s GHG BACT analysis, the USEPA in its GHG guidance recommended that because the environmental concern with GHG emissions is their cumulative impact on the environment, emission limitations should focus on longer-term averages (12-month or 365-day rolling average) rather than short term averages.

Because of this reasoning cited by EPA, EDE wants to emphasize the importance of agreeing with the 12-month rolling averaging basis for all GHG emission limits provided in Section V.G.1., 2. & 3. as currently written in the draft permit.

KDHE Response:

KDHE has revised Section V.G of the permit to address comments received from EPA. KDHE has revised condition V.G. to include both input based BACT limits and tons per year BACT limits for carbon dioxide.

M. Section V.G.1.

This section pertains to the GHG BACT emission limit for the combined cycle unit which is expressed as a CO₂ emission rate in tons per year 12-month rolling average. EDE strongly agrees with KDHE that the combined cycle unit’s permitted GHG emission limit should be based on a tons per year emission rate and not in terms of an output based emission rate.

The EPA Tailoring Rule which requires GHG PSD permitting for existing sources that are being modified, such as Riverton unit 12, and exceed the GHG emissions threshold is based on projected tons per year emitted and not on a tons emitted per unit of output basis. In addition, NSR/PSD applicability is determined based on projected emission rates on a tons per year basis not on a tons emitted per output basis.

EDE believes that the final CO₂ permit limit should be consistent with what the regulations mandate for the permitting process and not use a hybrid approach that incorporates an output basis limit. Therefore, EDE

agrees that the CO₂ limit should be expressed as tons per year limit, as currently written below, in the draft permit.

1. 1,021,770 tpy of CO₂ on a 12-month rolling average basis for the combined cycle combustion turbine and duct burners.

KDHE Response:

See Item L above.

N. Section V.G.2. & 3.

EDE requests that these section items be modified to read:

2. 9,521 tpy of CO₂e on a 12-month rolling average basis for the auxiliary boiler.
3. 59.5 tpy of CO₂e on a 12-month rolling average basis for the emergency diesel engine.

KDHE Response:

See Item L above.

O. Section V.H.

This section in the draft permit incorrectly identifies the emergency diesel engine as a fire suppression engine and cites an incorrect regulatory citation.

EDE requests that Section V.H. be modified to read:

H. Pursuant to 40 CFR 60.4205(b) ~~(e)~~, the owner or operator of the emergency diesel engine, shall comply with the applicable emission standards ~~in Table 4 of 40 CFR 60 Subpart III.~~ In accordance with ~~Table 4 of 40 CFR 60.4205(b), which references 40 CFR 89.112 and 40 CFR 89.113 60 Subpart III,~~ the emergency diesel engine's NMHC+NO_x emissions shall not exceed ~~6.4~~ 4.0 g/kW-hr (~~4.8~~ 3.0 g/hp-hr), CO emissions shall not exceed 3.5 g/kW-hr (2.6 g/hp-hr), and PM emissions shall not exceed 0.2 g/kW-hr (0.15 g/hp-hr) over the life of the engine. The emergency diesel engine shall be certified by the manufacturer to meet these emission limits per 40 CFR 60.4202(a)(2) ~~(d)~~. The owner or operator shall also meet the requirements of 40 CFR 60.4206.

KDHE Response:

KDHE has modified the section as requested.

P. Section VI. A. 1.

The startup time-frame in the original Title V operating permit for the simple cycle unit 12 is identified as 2 hours. The simple cycle combustion turbine alone has a short startup time compared to a combined cycle unit (combustion turbine, HRSG, and duct burners). The combined cycle unit has more components to initiate which creates a longer startup duration. Therefore, EDE requests an 8 hour startup for the combined cycle unit.

The typical sequence of a combined cycle start-up begins with starting of the combustion turbine (CT). The CT is held at certain exhaust gas temperature (EGT) “hold” points to allow metal temperatures in the heat recovery steam generator (HRSG) to rise within the manufacturers allowable rates. The next step in the typical process is to bring the CT up to a point where the EGT will allow for vacuum to be pulled on the steam turbine (ST) condenser. After vacuum is pulled, the valves which bypass steam around the ST are brought into service. The next step is to raise load on the CT such that the CT EGT allows the HRSG to generate sufficient steam of a quality acceptable for the ST. The ST is then rolled up at ST manufacture allowable rates and then brought on line and loaded at rates as allowed by the ST manufacturer. As the ST is loaded the CT is raised to allow for adequate generation of quality steam by the HRSG. When the CT & ST are loaded various other components are then brought into service. The typical start-up will end with the CT at approximately 50% load. Due to variations in EGT vs CT load, based primarily on ambient conditions and condition of the CT, the percent load of the ST will vary in relation to the CT percent load.

In consideration of the explanation above, EDE requests that this section be modified to read:

1. Startup: The period from when the combined cycle ~~unit combustion turbine permit~~ (CT+HRSG) is started until ~~reaching it~~ reaches 50% of the combustion turbine (CT) load. The startup periods will be readily identifiable by the monitoring system. Such periods shall not exceed ~~8~~ 2 hours. When startup is expected to exceed 8 hours or after startup has exceeded 8 2 hours, KDHE is to be notified. ~~Without approval by KDHE.~~

KDHE Response:

Because the combined cycle unit has more components to initiate which creates a longer startup duration, KDHE is agreeable to an 8 hour startup for the combined cycle unit. This section has been revised to read: “1. Startup: The period from when the combined cycle unit (CT+HRSG) is

started until reaching 50% of the combustion turbine (CT) load. The startup periods will be readily identifiable by the monitoring system. Such periods shall not exceed 8 hours.”

Q. Section VI. A. 2.

Depending on ambient conditions and the amount of stored energy of the HRSG during shutdown operations, the Steam Turbine (ST) will be carrying more load in relation to the combustion turbine (CT) than during normal operations. Therefore, it is sound engineering practice to base shutdown on the combustion turbine (CT) load only.

EDE requests that this section be modified to read:

2. Shutdown: The period when the combined cycle ~~unit combustion turbine~~ (CT+HRSG) is shutting down from 50% of combustion turbine (CT) load to 0% of combustion turbine (CT) load. The shutdown periods shall be readily identifiable by the monitoring system. When shutdown is expected to exceed 2 hours or after shutdown has exceeded 2 hours, KDHE is to be notified. Such periods shall not exceed 2 hours without approval by KDHE

KDHE Response:

KDHE is agreeable to basing shutdown on the combustion turbine (CT) load only. This section has been revised to read: “2. Shutdown: The period when the combined cycle unit (CT+HRSG) is shutting down from 50% of combustion turbine (CT) load to 0% of combustion turbine (CT) load. The shutdown periods shall be readily identifiable by the monitoring system. Such periods shall not exceed 2 hours.”

R. Section VI. B.

The output of a combined cycle plant (without duct-firing) is primarily a function of the natural gas combustion turbine (CT) condition and ambient conditions which causes variations in CT load vs exhaust gas temperature (EGT), thereby affecting the output of the steam turbine (ST). The duct firing of the HRSG is only allowed when the CT is at 100% of its “base load”. It is sound engineering practice to base the lower end of normal operations on the CT load only and to base the upper end of normal operations on the CT plus the HRSG plus the maximum duct burner firing load.

EDE requests that this section be modified to read:

B. The combined cycle ~~unit combustion turbine~~ (CT+HRSG) shall operate at load conditions Between 50% of combustion turbine load (CT) and 100%

of combined cycle unit (including HRSG and maximum duct burner firing) of capacity except during startup and shutdown.

KDHE Response:

KDHE has revised this section as requested.

S. Section VI. C.

EDE requests that this section be modified to read:

C. The combined cycle ~~unit combustion turbine~~ (CT+HRSG) shall use only natural gas as a fuel.

KDHE Response:

KDHE has revised this section as requested.

T. Section VI. D.

EDE requests that this section be modified to read:

D. The high efficiency ~~drift draft~~ eliminators for the Mechanical Draft Cooling Tower are an integral part of the design and function any time the cooling tower is in operation ~~shall be operated continuously.~~

KDHE Response:

KDHE has revised this section to read: "The high efficiency drift eliminators for the Mechanical Draft Cooling Tower are an integral part of the design and shall function any time the cooling tower is in operation"

U. Section VI. E.

It is unclear regarding what is required to demonstrate compliance with the BACT limit for the cooling tower. This section needs to add clarity.

-In addition to the comment above, EDE requests that the first sentence of this section read:

E. Compliance with the PM/PM₁₀/PM_{2.5} BACT limit for the Mechanical Draft Cooling Tower shall be demonstrated by maintaining records of the vendor-guaranteed ~~maximum total liquid~~ drift rate.

KDHE Response:

Since the BACT for the cooling tower is a design drift rate of 0.0005 percent of inlet flow, Empire must maintain the documentation from the vendor showing the cooling tower purchased by Empire meets this drift rate specification.

Section VI.E. has been modified by deleting the words “maximum total liquid and clarifying the requirement. It now states: Compliance with the PM/PM₁₀/PM_{2.5} BACT limit for the Mechanical Draft Cooling Tower shall be demonstrated by maintaining records of the vendor-guaranteed drift rate of 0.0005 percent of inlet flow.

V. Section VI. F.

EDE requests that this section be modified to read:

F. The emergency diesel engine shall burn only low sulfur diesel fuel oil that is \leq (less than or equal to) 15 ppm sulfur. 40 CFR 60.4207(b).

KDHE Response:

KDHE has revised this section to read: “The emergency diesel engine shall burn only low sulfur diesel fuel oil that is \leq (less than or equal to) 15 ppm sulfur in accordance with 40 CFR 60.4207(b).”

W. Section VI. J.

EDE requests that this section be modified to read:

J. Compliance with the CO₂e BACT limit for the combined cycle unit, including the combustion turbine ~~combustion turbine~~ and duct burners shall be demonstrated with an oxygen (O₂) concentration monitor in accordance with CO₂e calculations provided in 40 CFR Part 75.

KDHE Response:

KDHE has revised this section as requested.

X. Section VI. K.

EDE requests that this section be modified to read:

K. Compliance with the PM/PM₁₀/PM_{2.5} BACT limit for the combined cycle unit ~~combustion turbine~~ shall be demonstrated with a performance test.

KDHE Response:

KDHE has revised this section as requested.

Y. Section VI. L.

EDE requests that this section be modified to read:

L. Compliance with the CO₂e BACT limit for the auxiliary boiler shall be demonstrated by recording fuel usage and using emission factors from Tables C-1 and C-2 of 40 CFR Part 98, Subpart C along with the Global Warming Potential Factors from Table A-1 of 40 CFR Part 98, Subpart A to determine resulting emissions on an annual monthly basis. Reports of excess emissions shall be submitted semi-annually.

KDHE Response:

KDHE has revised this section to read: “Compliance with the CO₂e BACT limit for the auxiliary boiler shall be demonstrated by recording fuel usage and using emissions factors from Tables C-1 and C-2 of 40 CFR Part 98, Subpart C along with the Global Warming Potential Factors from Table A-1 of 40 CFR Part 98, Subpart A (as published in 74 FR 56374 on October 30, 2009) to determine resulting emissions on a monthly basis. Reports of excess emissions shall be submitted semi-annually.

Z. Section VI. N.

EDE requests that this section be modified to read:

N. Compliance with the CO₂e BACT limit for the SF₆, Insulated Circuit Breakers shall be demonstrated by calculating the annual mass emissions of SF₆ from the electrical breakers using an annual SF₆ leak rate of 0.5% by weight and the Global Warming Potential Factor for SF₆ from Table A-1 of 40 CFR Part 98, Subpart A to determine resulting emissions on a monthly basis. Reports of excess emissions shall be submitted semi-annually.

KDHE Response:

KDHE has revised this section as requested.

AA. Section VI. O.

EDE requests that the citation be changed to 40 CFR Part 60 rather than 40 CFR Part 6.

Also, for item O.2. please add (b) to the citation 60.4207 to revise to read 60.4207(b).

KDHE Response:

KDHE has revised this section as requested.

BB. Section VI. R.

EDE requests that this section be modified to read:

R. Empire shall permanently remove Unit 7 and Unit 8 from service when the Unit 12 combined cycle ~~unit combustion turbine~~ (CT+HRSG) enters commercial operation.

KDHE Response:

KDHE has revised this section as requested.

CC. Section VII. A.

EDE requests that this section be modified to read:

A. Within 60 days after achieving a maximum production rate at which the combined cycle ~~unit combustion turbine~~ (CT+HRSG) will be operated, but not later than 180 days after initial start up of the combined cycle ~~unit combustion turbine~~ (CT+HRSG), the owner or operator shall conduct performance test(s) for PM, PM₁₀, PM_{2.5} ~~and Sulfuric Acid Mist~~ to demonstrate compliance with the applicable conditions and limitations set forth in this permit, ~~and the estimated emissions rates supplied in the permit application (Sulfuric Acid Mist)~~, and furnish KDHE a written report of the results of such performance test(s).

In addition, this section indicates the need to conduct performance testing for Sulfuric Acid Mist (SAM). This project is not major for this pollutant. Please clarify why such performance testing is being required. Since there are no emission limits for SAM, EDE is requesting that the SAM performance testing requirement be removed.

KDHE Response:

KDHE has revised “combined cycle combustion turbine” to “combined cycle unit” in this section as requested. Performance testing for SAM will be required in this permit. The permit application in section 3.0 indicates that the estimated emissions for SAM are 6.93 tons/year and that the significant emission rate (SER) for SAM is 7 tons/year. Since the estimated emissions for SAM are only 0.07 tons/year below the SER, initial and periodic performance testing is required to verify that actual emissions of SAM are below the SER.

DD. Section VII. D.

EDE requests that this section be modified to read:

D. For the emergency diesel engine, the owner or operator must install, configure, operate, and maintain the engine and control device according to the manufacturer's emission-related written instructions. The owner or operator must not change emission-related settings in a way that is not permitted by the manufacturer, or thereafter demonstrate compliance as specified at 40 CFR 60.42 11(g)(3)~~(2)~~

KDHE Response:

KDHE has revised this section as requested.

EE. Section VII. E. & F.

EDE requests that clarity be provided to indicate that the conditions in E and F apply to the combined cycle unit (CT+HRSG).

KDHE Response:

KDHE Section VII.E has been revised to read: Compliance with NO_x emission limits for the combined cycle unit (CT+ HRSG) shall be demonstrated with a NO_x continuous emission monitor (CEM) that follows the requirements listed in 40 CFR 60.4340(b).

FF. Section VII. H. 4.

The Riverton facility is staffed 24 hours per day with personnel capable of addressing a broad variety of maintenance and repair issues which result from malfunctions without the need to call in off-shift labor. Because of the skilled laborers on each shift, there is no need to have the requirement in the permit to utilize off-shift employees.

EDE requests that this section be modified to read:

4. Repairs were made in an expeditious fashion when the operator knew that applicable emission limitations were being exceeded.

KDHE Response:

KDHE feels that this section is reasonable and should remain unchanged.

GG. Section VIII. A.

EDE requests that this section be modified to read:

A. The owner or operator of the combined cycle ~~unit combustion turbine~~ (CT+HRSG) shall maintain records of the occurrence and duration of any start-up, shut-down, or malfunction in the operation of the combined cycle ~~unit combustion turbine~~ (CT+HRSG); any malfunction of the air pollution control equipment; or any periods during which a continuous monitoring system or monitoring device is inoperative. These requirements are described in 40 CFR 60.7(b).

KDHE Response:

KDHE has revised this section as requested.

HH. Section VIII. F., G., H., & I.

Do these sections refer only to the auxiliary boiler? If so, EDE requests that these sections make reference to the auxiliary boiler.

KDHE Response

Sections VIII. F., G., H., and I. now all reference the auxiliary boiler.

II. Section IX. C.

EDE requests that the first sentence of this section be modified to read:

C. The combined cycle ~~unit combustion turbine~~ (CT+HRSG) excess emissions and monitoring systems performance report and/or a summary report shall be submitted to the KDHE as required by 40 CFR 60.7(c) on a semi-annual basis.

KDHE Response:

KDHE has revised this section as requested.

JJ. Section X. B.1.

EDE requests that the first sentence of this section be modified to read:

B.1. The date construction of the combined cycle ~~unit combustion turbine~~ (CT+HRSG), the auxiliary boiler and the emergency diesel generator are commenced.

KDHE Response:

KDHE has revised this section as requested.

KK. Section X. B.2.

EDE requests that the first sentence of this section be modified to read:

B.2. The actual date of initial startup of the combined cycle unit combustion turbine (CT+HRSG), auxiliary boiler and emergency diesel generator.

KDHE Response:

KDHE has revised this section as requested.

LL. Section X. B.3.

EDE requests that the first sentence of this section be modified to read:

B.3. The actual date the combined cycle unit combustion turbine (CT+HRSG) enters commercial operation and the date(s) Unit 7 and Unit 8 are removed from service.

KDHE Response:

KDHE has revised this section as requested.

MM. Section X. B.4.

EDE requests that the first sentence of this section be modified to read:

B.4. The date when the initial performance testing of the combined cycle unit combustion turbine (CT+HRSG) is to commence.

KDHE Response:

KDHE has revised this section as requested.

NN. Section XI.A.

EDE requests that this section be modified to read:

A. This document shall become void if construction, installation or modification to convert of the existing Riverton 12 simple cycle combustion turbine to a combined cycle unit has not commenced within 18 months of the effective date of this permit, or if the construction, installation or modification to convert the simple cycle combustion

turbine to a combined cycle unit is interrupted for a period of 18 months or longer

KDHE Response:

KDHE has revised this section as requested.