John R. Kasich, Governor
Mary Taylor, Lt. Governor
Scott J. Nally, Director

9/18/2013

Certified Mail

Yes	TOXIC REVIEW
Yes	PSD
No	SYNTHETIC MINOR TO AVOID MAJOR NSR
Yes	CEMS
Yes	MACT/GACT
Yes	NSPS
No	NESHAPS
No	NETTING
No	MAJOR NON-ATTAINMENT
Yes	MODELING SUBMITTED
Yes	MAJOR GHG
No	SYNTHETIC MINOR TO AVOID MAJOR GHG

Ms. Amy Frazier
Carroll County Energy LLC
31 Milk Street, Suite 1001
Boston, MA 02109

RE: DRAFT AIR POLLUTION PERMIT-TO-INSTALL
Facility ID: 0210002025
Permit Number: P0113762
Permit Type: Initial Installation
County: Carroll

Dear Permit Holder:

A draft of the Ohio Administrative Code (OAC) Chapter 3745-31 Air Pollution Permit-to-Install for the referenced facility has been issued for the emissions unit(s) listed in the Authorization section of the enclosed draft permit. This draft action is not an authorization to begin construction or modification of your emissions unit(s). The purpose of this draft is to solicit public comments on the permit. A public notice will appear in the Ohio Environmental Protection Agency (EPA) Weekly Review and the local newspaper, Free Press Standard. A copy of the public notice and the draft permit are enclosed. This permit can be accessed electronically on the Division of Air Pollution Control (DAPC) Web page, www.epa.ohio.gov/dapc by clicking the "Search for Permits" link under the Permitting topic on the Programs tab. Comments will be accepted as a marked-up copy of the draft permit or in narrative format. Any comments must be sent to the following:

Andrew Hall
Permit Review/Development Section
Ohio EPA, DAPC
50 West Town Street, Suite 700
P.O. Box 1049
Columbus, Ohio 43216-1049

and

Ohio EPA DAPC, Northeast District Office
2110 East Aurora Road
Twinsburg, OH 44087

Comments and/or a request for a public hearing will be accepted within 30 days of the date the notice is published in the newspaper. You will be notified in writing if a public hearing is scheduled. A decision on issuing a final permit-to-install will be made after consideration of comments received and oral testimony if a public hearing is conducted. Any permit fee that will be due upon issuance of a final Permit-to-Install is indicated in the Authorization section. Please do not submit any payment now. If you have any questions, please contact Ohio EPA DAPC, Northeast District Office at (330)425-9171.

Sincerely,

Michael W. Ahern

Michael W. Ahern, Manager
Permit Issuance and Data Management Section, DAPC

Cc: U.S. EPA Region 5 *-Via E-Mail Notification*
Ohio EPA-NEDO; Pennsylvania; West Virginia

Facility: Carroll County Energy LLC
Facility ID No.: 0210002025
Permit No.: P0113762

Permit Summary Review

Facility Description

Carroll County Energy LLC has applied for a PTI to install a natural gas-fired, combined cycle gas turbine, electric generating station in rural Carroll County, Ohio. The facility will have a nominal electric generating capacity of 742 MW.

This project will trigger PSD review for NOx, CO, SO2, PM10, PM2.5, VOC, GHG, and H2SO4 mist emissions. When built and operating it will be subject to the Title V Permit Program. This facility is projected to be an area source for HAPs.

Carroll County is an NAAQS attainment area for all criteria pollutants and is mostly rural.

A summary of total project source emission is below:

Pollutant	**Total** in tpy
PM10	173.27
PM2.5	173.27
SO2	65.4
NOx	214.91
CO	441.38
VOC	82.38
H2SO4	35.53
NH3	158.56
Pb	0.00005
CO2equivalents	2,718,576.44

This plant is essentially similar to the recently permitted Oregon Clean Energy Ctr., Permit No. P0110840, which was issued final on 6/18/13. This facility will install GE CTGs; the Oregon facility will install Mitsubishi CTGs.

The design net electric generating plant heat rate will be 7,350 Btu/kW-hr HHV (ISO conditions w/o duct firing, which is the indicator of the efficiency of the conversion of heat input to electric generation. That compares to the 7,280 Btu/kW-hr heat rate listed in the aforementioned Oregon Clean Energy Ctr PTI, which is about a 1% difference.

The project developer company is not the same but the consultant that wrote the permit application is, TetraTech/Arcadis. Consultant lead contact is Lynn Gresock, Vice Pres.

I took the draft version of the Oregon PTI and cut and pasted from it, changing emissions nos and made a few other changes as necessary but the permit terms are essentially the same.

Emissions Units

Note: There will not be a Wet Cooling Tower installed at this facility.

P001 & P002
2 identical, natural gas-fired combined cycle turbine generators (CTG) each with in-line duct burner, 566 mmBtu/hr heat input rated/ heat recovery steam generator (HRSG). The HRSGs will send steam to a single common steam turbine generator, referred to as a 2 x 2 x1 combined cycle combustion gas turbine configuration.

CTG Units: each w/rated heat input cap. of 2,045 mmBtu/hr
In-Line Duct Burner: each w/rated heat input cap. of 556 mmBtu/hr

BACT Control Equipment:
Each CTG will be equipped with Dry Low-NOx Burners.

The add-on controls include SCR for NOx emissions control and a Catalytic Oxidation Unit for CO and VOC emissions control.

Use of inherently clean fuel (natural gas only) and good combustion practices will minimize emission of PM10/PM2.5, SO2, VOC, CO, H2SO4 and HAPs.

A summary of the CTG & Duct Burner emissions, per unit, is below:

Pollutant	**BACT limit**	**Hourly** in lbs/hr	**Annual** in tpy per unit
PM10	0.0078 lb/mmbtu	19.6	85.67
PM2.5	0.0078 lb/mmbtu	19.6	85.67
SO2		7.4	32.37
NOx	2.0 ppmvd @ 15% oxygen	19.5	103.22
CO	2.0 ppmvd @ 15% oxygen	11.9	213.21
VOC	0.0026 ppmvd @ 15% oxygen	6.8	40.24
H2SO4	0.0016 lb/mmbtu	4.1	17.74
NH3	-	18.1	79.28
Pb	n/a	0	0.0
CO2equivalents	859 lbs/kW-hr, gross energy output	307,279	1,345,883.48

B001
Auxiliary Boiler: natural gas-fired, rated heat input cap. of 99 mmBtu/hr. The boiler's operation will be limited to 4,500 hrs per rolling 12-month period, in the PTI.
BACT Control Equipment:
Low NOx Burners and Flue Gas Recirculation (FGR), no other add-on control equipment is proposed.

Use of inherently clean fuel (natural gas only) and good combustion practices will minimize emission of PM10/PM2.5, SO2, VOC, CO, H2SO4 and HAPs.

A summary of the Aux Boiler emissions is below:

Pollutant	**BACT limit**	**Hourly** in lbs/hr	**Annual** in tpy per unit
PM10	0.008 lb/mmbtu	0.79	1.78
PM2.5	0.008 lb/mmbtu	0.79	1.78
SO2	2.9 E-03 lb/mmbtu	0.29	0.65
H2SO4	2.2 E-04 lb/mmbtu	0.02	0.05
NOx	0.02 lb/mmbtu	1.98	4.46
CO	0.055 lb/mmbtu	5.45	12.25
VOC	0.006 lb/mmbtu	0.59	1.34
Pb	n/a	0	0
CO2equivalents		11,671 lbs/hr	26,259.76

P003
Emergency Generator: diesel fuel-fired and rated 1,112 KW output. The emerg generator's operation will be limited to 500 hrs per rolling 12-month period, in the PTI.

BACT Control Equipment:
No add-on control equipment will be installed. The applicant, based upon the BACT review, concluded that BACT is equivalent to compliance with the emissions limits in the NSPS Rule, Subpart IIII of 40 CFR Part 60.

A summary of the Emergency Generator emissions is below:

Pollutant	**BACT limit**	**Hourly** in lbs/hr	**Annual** in tpy per unit
PM10	0.20 g/kW-hr	0.49	0.12
PM2.5	0.20 g/kW-hr	0.49	0.12
SO2	n/a	0.02	.0.005
H2SO4	1.32 E-04 g/kW-hr	3.23 E-04	8.08 E-05
NOx	5.61 g/kW-hr	13.74	3.44
CO	3.5 g/kW-hr	8.57	2.14
VOC	0.79 0.20 g/kW-hr	1.93	0.48
Pb	n/a	1.46 E-04	3.65 E-05
CO2equivalents			433.96

P004
Emergency Fire Pump Engine: diesel fuel-fired and rated 440 HP/298 KW output. The emerg fire pump engine's operation will be limited to 500 hrs per rolling 12-month period, in the PTI.

BACT Control Equipment:

No add-on control equipment. The applicant, based upon the BACT review, concluded that BACT is equivalent to compliance with the emissions limits in the NSPS Rule, Subpart IIII of 40 CFR Part 60.

A summary of the Emergency Fire Pump Engine emissions is below:

Pollutant	**BACT limit**	**Hourly** in lbs/hr	**Annual** in tpy per unit
PM10	0.2 g/kW-hr	0.131	0.033
PM2.5	0.2 g/kW-hr	0.131	0.033
SO2	n/a	0.004	0.001
H2SO4	1.32 E-04 g/kW-hr	8.7 E-05	2.2 E-05
NOx	3.5 g/kW-hr	2.3	0.57
CO	3.5 g/kW-hr	2.3	0.57
VOC	0.5 g/kW-hr	0.325	0.08
Pb	n/a	3.92 E-05	9.8 E-06
CO2equivalents			115.75

Applicable Federal Rules

Acid Rain Program - the applicant indicates that this facility will be subject to Title IV of the Clean Air Act Amendments. NOx emissions will be monitored and reported by a CEMS per 40 CFR Part 75.

The applicant must submit an acid rain permit application 24 months prior to the commencement of affected unit operation.

Clean Air Interstate Rule/Cross State air Pollution Rule – CAIR is currently in effect while the CSAPR was stayed by a federal court. Under CASPR, electric generating facilities in Ohio would have to obtain allowances for NOx and SO2 emissions. The application states that the facility will be prepared to comply with either rule in effect upon operational startup.

Individual Emissions Units:

B001
Part 60, Subpart A – Subject to the general provisions of Subpart 60.

Part 60, Subpart Dc – because it will be natural gas-fired only , there are no applicable emissions limitations. Only applicable requirement is gas use recordkeeping..

Part 63, Subpart JJJJJ- because it is an area source of HAPs and natural gas-fired only, the Aux. Boiler is exempt from the requirements of this rule.

P001 and P002
Part 60, Subpart A – Subject to the general provisions of Subpart 60.

Part 63, Subpart YYYY – not subject to the requirements of this because it is an area source of HAPs.

Part 63, Subpart JJJJJ – the duct burners are not subject to the requirements of this because only natural gas fuel will be combusted.

P003
Part 60, Subpart A – Subject to the general provisions of Subpart 60.

Part 60, Subpart IIII – subject to the emissions limits, monitoring, record keeping & reporting requirements of this NSPS rule.

P004
Part 60, Subpart A – Subject to the general provisions of Subpart 60.

Part 60, Subpart IIII – subject to the emissions limits, monitoring, record keeping & reporting requirements of this NSPS rule.

Part 63, Subpart ZZZZ –subject to this rule, though the only requirement is to comply with the requirements of Part 60, Subpart IIII.

Ohio Air Toxics Policy
Only P001 and P002 are subject to the Ohio Air Toxics Policy review. Emissions of H2SO4, ammonia, formaldehyde, toluene and xylenes were modeled and all passed.

The worst case pollutant was H2SO4, with an emission rate of 19.0 lbs/hr and a MAGLC of 414.5 micrograms per cubic meter. The model's max predicted impact was 4.0 micrograms per cubic meter.

The standard air toxics language is included in the P001 & P002 terms and conditions for the H2SO4 results as worst case air toxic pollutant.

See page 5-24 of the permit application book for a summary of all results.

Air Quality Dispersion Modeling
The project's emissions air quality dispersion modeling was submitted to Ohio EPA Central Office and was reviewed by Sarah Vander Wielen prior to her leaving the Agency.

Recommendation
Issue a Draft PTI for the emissions units listed in this PTI application.

Written By: Ken Djukic
DAPC-Northeast District Office
Ohio EPA

July 31, 2013

STAFF DETERMINATION FOR THE APPLICATION TO CONSTRUCT UNDER THE PREVENTION OF SIGNIFICANT DETERIORATION REGULATIONS FOR CARROLL COUNTY ENERGY, LLC CARROLLTON, OHIO PERMIT NUMBER P0113762

The Clean Air Act and regulations promulgated thereunder require that major air pollution sources undergoing construction or modification comply with all applicable Prevention of Significant Deterioration (PSD) provisions and nonattainment area New Source Review requirements. The federal PSD rules govern emission increases in attainment areas for major sources, which are sources with the potential to emit 250 tons per year or more of any pollutant regulated under the Clean Air Act, or 100 tons per year or more if the source is included in one of 28 source categories. In nonattainment areas, the definition of major source is one having at least 100 tons per year potential emissions. A major modification is one resulting in a contemporaneous increase in emissions which exceeds the significance level of one or more pollutants. Any changes in actual emissions within a five-year period are considered to be contemporaneous. In addition, Ohio now has incorporated the PSD and NSR requirements by rule under OAC 3745-31.

Both PSD and nonattainment rules require that certain analyses be performed before a facility can obtain a permit authorizing construction of a new source or major modification to a major source. The principal requirements of the PSD regulations are:

1. Best Available Control Technology (BACT) review - A detailed engineering review must be performed to ensure that BACT is being installed for the pollutants for which the new source is a major source.

2. Ambient Air Quality Review - An analysis must be completed to ensure the continued maintenance of the National Ambient Air Quality Standards (NAAQS) and that any increases in ambient air pollutant concentrations do not exceed the incremental values set pursuant to the Clean Air Act.

For nonattainment areas, the requirements are:

1. Lowest Achievable Emissions Rate (LAER) - New major sources must install controls that represent the lowest emission levels (highest control efficiency) that has been achieved in practice.

2. The emissions from the new major source must be offset by a reduction of existing emissions of the same pollutant by at least the same amount, and a demonstration must be made that the resulting air quality shows a net air quality benefit. This is more completely described in the Emission Offset Interpretative Ruling as found in Appendix S of 40 CFR Part 51.

3. The facility must certify that all major sources owned or operated in the state by the same entity are either in compliance with the existing State Implementation Plan (SIP) or are on an approved schedule resulting in full compliance with the SIP.

For rural ozone nonattainment areas, the requirements are:

1. LAER - New major sources must install controls that represent the lowest emissions levels (highest control efficiency) that has been achieved in practice.

2. The facility must certify that all major sources owned or operated in the state by the same entity are either in compliance with the existing SIP or are on an approved schedule resulting in full compliance with the SIP.

Finally, New Source Performance Standards (NSPS), SIP emission standards and public participation requirements must be followed in all cases.

SITE DESCRIPTION

The facility will be located near Carrollton, Ohio, which is in Carroll County. This area is classified as attainment or unclassifiable for all of the criteria pollutants, particulate matter less than 10 microns, particulate matter less than 2.5 microns, sulfur dioxide, nitrogen oxides, carbon monoxide, volatile organic compounds (ozone) and lead.

FACILITY DESCRIPTION

Carroll County Energy, LLC (CCE) is proposing to construct a nominal 742-megawatt (MW) combined cycle gas turbine (CCGT) facility (hereinafter “the Project”) that will utilize CCGT technology in a 2x2x1 configuration.

The Project is intended to operate as a base-load facility and is proposed to be available to operate up to 8,760 hours per year, incorporating a range of load conditions. The Project also seeks the flexibility to operate with frequent starts in order to meet energy demands. Air emissions from the proposed Project primarily consist of products of combustion from the CTGs, HRSG duct burners, and ancillary equipment and will be subject to Prevention of Significant Deterioration (PSD) requirements.

PROJECT DESCRIPTION

The Project will utilize General Electric (GE) 7FA combustion turbine technology. Duct firing will be incorporated into the Project's design. An auxiliary boiler will be used to assist plant start-up and maintain warm-start conditions during standby periods. Other ancillary equipment having emissions includes an emergency generator and an emergency fire pump. Back-up fuel oil for CTG and HRSG duct firing operations will not be used; except for the diesel-fired emergency equipment, the Project will operate on natural gas only. The Project will utilize air cooling and, therefore, water use and discharge volumes will be very low.

The Project site consists of a 76.5-acre parcel of land located in Carroll County near Carrollton, Ohio. In addition to the site, CCE has acquired rights to an adjacent 23-acre parcel for use as a construction laydown and parking area. Two utility electrical interconnections are under consideration, both within 3 miles of the site. Natural gas is also available in close proximity, with an existing Tennessee Gas Pipeline system located within 0.5 mile of the site.

The Project will include the following major and ancillary equipment:

- Two combustion turbine generators (CTGs);
- Two heat recovery steam generators (HRSGs) with supplemental duct firing;
- One steam turbine generator (STG);
- One air cooled condenser (ACC);
- One 1,112-kilowatt (kW) emergency diesel generator;
- One natural gas-fired, 99-million British thermal units (MMBtu) steam production auxiliary boiler;
- One 400-horsepower (hp) emergency fire pump; and
- Storage tanks for aqueous ammonia (NH_3), ultra low sulfur diesel (ULSD) and water.

Combustion Turbine Generators

Thermal energy will be produced in the two CTGs through the ignition of natural gas as the sole fuel. Each CTG is capable of running independently of the other. The thermal energy is converted to mechanical energy in the CTG that drives its integral compressor and electric generator. The maximum heat input rate of each CTG is 2,045 million British thermal units per hour (MMBtu/hr) (higher heating value [HHV]) at 100 percent load and ISO conditions.

Heat Recovery Steam Generators and Duct Burners

In combined cycle configuration, each CTG will exhaust through a dedicated HRSG to generate steam from the waste heat energy in the exhaust gas. Each HRSG will be equipped with supplemental firing via a duct burner. The duct burners provide additional thermal energy to the HRSG, to provide more steam to the STG during periods of high electricity demand. The duct burners will be natural gas-fired and each will have a maximum input capacity of 566 MMBtu/hr (HHV), although the duct burners will not always operate at maximum capacity. The use of the duct burners will vary based upon different temperature and operating conditions.

Steam Turbine Generator

Steam generated in the HRSGs will be expanded through a multi-stage, reheat-capable, condensing steam turbine. The discharge steam from the steam turbine will be collected and distributed to the ACC. Rotational power created by the steam turbine will be converted to electric power via the connected generator.

Air Cooled Condenser

Discharged steam will enter a steam distribution manifold located on top of the ACC structure. The steam will be distributed into heat exchangers. Flowing down inside the heat exchanger tubes, steam will

condense due to the cooling effect of ambient air drawn over the heat exchanger surface by the fans. Condensate will drain from the heat exchanger tubes into condensate manifolds and return back to the process. The ACC does not constitute a source of air emissions; as such, it is not considered further in this application, except that the structures are included in the building profile analysis for air quality impact modeling.

Auxiliary Boiler

The auxiliary boiler will be natural gas-fired and operate as needed to keep the HRSG warm during periods of facility shutdown and provide steam to the STG during start-ups. The auxiliary boiler will have a maximum input capacity of 99 MMBtu/hr, and will be limited
to 4,500 hours of operation per year.

Emergency Diesel Generator

The Project will have an emergency diesel generator with a rated electrical output of 750 kilowatt (kW) powered with a 1,112-kW (1,491-horsepower [hp]) diesel engine to provide on-site emergency power capabilities independent of the utility grid. The emergency generator will fire ULSD fuel and will typically only operate for testing and to maintain operational readiness in the event of an emergency. Routine operation of the generator will be limited to a maximum of 500 operating hours per year.

Emergency Diesel Fire Pump

The Project will have a 400 hp (298 kW) emergency fire pump to provide on-site firefighting capabilities independent of the off-site electrical utilities grid. The emergency fire pump will fire ULSD fuel and will typically only operate for testing and to maintain operational readiness in the event of an emergency. Similar to the emergency generator, it will be limited to a maximum of 500 operating hours per year.

Aqueous Ammonia Storage Tanks

The proposed Project will have tanks for storage of 19 percent aqueous NH_3 for use in the SCR system. The tanks will be equipped with secondary containment sized to accommodate the entire volume of one tank and sufficient freeboard for precipitation. The tanks will be located outdoors within an impermeable containment area. Other tanks will include small, integrated units providing ULSD in the emergency equipment and for water storage.

NEW SOURCE REVIEW (NSR)/PSD APPLICABILITY

The Project will generate significant levels of criteria pollutant emissions including NO_x, SO_2, CO, VOC, H_2SO_4, GHGs, PM_{10} and $PM_{2.5}$. For PSD purposes, the installation of this facility makes CCE a major facility. A PSD analysis was required for any increase in emissions of a pollutant exceeding the PSD threshold emissions level, or the significance levels. Non-Attainment New Source Review was not applicable, due to attainment status.

CCE is subject to MACT. The facility is subject to 40 CFR Part 63, Subpart ZZZZ.

Summary of Proposed Potential Emissions and Applicable Regulatory Thresholds

Pollutant	Annual Emissions (tpy)	PSD Major Source Threshold (tpy)	PSD Significant Emission Rate (tpy)	PSD Applies? (Yes/No)
PM_{10}	173.27	100	15	Yes
$PM_{2.5}$	173.27	100	10	Yes

SO_2	65.40	100	40	Yes
NO_x	214.91	100	40[a]	Yes
CO	441.38	100	100	Yes
VOC	82.38	100	40	Yes
H_2SO_4	35.53	100	7	Yes
Pb	0.00005	10	0.6	No
GHGs[b]	2,718,576	100,000	75,000	Yes

a. PSD significant emission rate for NO_2.
b. GHGs are expressed as CO_2e.

PM_{10}= Particulate Matter <10 microns
$PM_{2.5}$ = Particulate Matter <2.5 microns
SO_2= Sulfur Dioxide
NO_x = Nitrogen Oxides
CO = Carbon Monoxide
VOC = Volatile Organic Compound
H_2SO_4 = Sufuric Acid
Pb = Lead
GHG (CO2e) = Greenhouse Gases (CO2 equivalent)

Based upon the above information, PSD review is required for PM_{10}, $PM_{2.5}$, SO_2, NO_x, CO, VOC, H_2SO_4 and GHGs.

BACT REVIEW

As part of the application for any source regulated under the PSD requirements, an analysis must be conducted that demonstrates that Best Available Control Technology will be employed by the source. In this specific case, the BACT analysis was conducted for PM_{10}, $PM_{2.5}$, SO_2, NO_x, CO, VOC, H_2SO_4 and GHGs. Each pollutant will be reviewed separately.

The application used a "top-down" approach to determine an appropriate level of control.

The basic steps to be followed are:

- Identify all available potential control options;
- Eliminate technically infeasible options;
- Rank remaining technologies by control effectiveness;
- Evaluate the feasible controls by performance and cost analysis; and
- Select BACT

BACT Analysis for NOx

NO_x is formed during the combustion of fuel and is generally classified as either thermal NOx or fuel-related NO_x. Thermal NO_x results when atmospheric nitrogen is oxidized at high temperatures to produce nitrogen oxide (NO), NO_2, and other oxides of nitrogen. The major factors influencing the formation of thermal NO_x are temperature, concentrations of oxygen in the inlet air and residence time within the combustion zone. Fuel-related NO_x is formed from the oxidation of chemically bound nitrogen in the fuel. Fuel-related NO_x is generally minimal for natural gas combustion. As such, NO_x formation from combustion of natural gas is due mostly to thermal NO_x formation.
Reduction in NO_x formation can be achieved using combustion controls and/or flue gas treatment. Available combustion controls include water or steam injection and low emission combustors. Most CTGs are designed to operate at a nearly stoichiometric ratio of fuel in the combustion zone, with additional air introduced downstream. Fuel-to-air ratios below stoichiometric are referred to as fuel-lean mixtures. This type of fuel

mixture limits the formation of NO_x because there is lower flame temperature with a lean fuel mixture. Using this concept, lean combustors are designed to operate below the stoichiometric ratio, thereby reducing the thermal NO_x formation within the combustion chamber.

The CTGs proposed for the Project utilize a lean fuel technology. In addition, exhaust gases from the CTG (and duct burner) will exhaust through an SCR system (discussed below) to further reduce NO_x emissions to 2.0 ppmv at 15 percent O_2, with and without duct firing.

The Project will also utilize an auxiliary boiler, emergency diesel fire pump and emergency diesel generators. The auxiliary boiler will utilize flue gas recirculation (FGR) and low-NO_x burner (LNB) technology, two combustion optimization techniques that also reduce the formation of NO_x. Using these enhanced combustion techniques, emissions from the auxiliary boiler will be limited to 0.02 lb/MMBtu. The emergency diesel fire pump and the emergency generator will meet the emission limitations for current model years under the NSPS for Stationary Compression Ignition Internal Combustion Engines (40 CFR 60 Subpart IIII).

The following discussion demonstrates that the proposed NO_x emission rates for the CCGT Units and ancillary equipment are considered BACT.

Identification of Control Options

SCR is an add-on NO_x control technology that is placed in the exhaust stream following the CTG/duct burner. SCR involves the injection of NH_3 into the exhaust gas upstream of a catalyst bed. On the catalyst surface, NH_3 reacts with the NO_x contained within the flue gas to form N_2 and H_2O in accordance with the following chemical reactions:

$4NH_3 + 4NO + O_2 \rightarrow 4N_2 + 6H_2O$

$8NH_3 + 6NO_2 \rightarrow 7N_2 + 12H_2O$

The catalyst's active surface is usually a noble metal (platinum), base metal (titanium or vanadium) or a zeolite-based material. Metal-based catalysts are usually applied as a coating over a metal or ceramic substrate. Zeolite catalysts are typically a homogeneous material that forms both the active surface and the substrate. NH3 is fed and mixed into the combustion gas upstream of the catalyst bed in greater than stoichiometric amounts to achieve maximum conversion of NO_x. Excess NH_3 which is not reacted in the catalyst bed is subsequently emitted through the stack; this is called "ammonia slip."

An important factor that affects the performance of an SCR system is the operating temperature. The optimal temperature range for standard base metal catalysts is between 400°F and 800°F. Because the optimal temperature is below the CTG exhaust temperature but above the stack exhaust temperature, the catalyst needs to be located within the HRSG.

An undesirable side effect of the use of SCR systems is the potential for formation of ammonium bisulfate and ammonium sulfate, referred to as ammonium salts. These salts are reaction products of SO_3 and NH_3. Ammonium salts are corrosive and can stick to the heat exchanger surfaces, duct work or the stack at low temperatures. In addition, ammonium salts are considered $PM_{10}/PM_{2.5}$ and, therefore, increase the emissions of these criteria pollutants. Use of low sulfur fuels such as natural gas minimizes the formation of SO_3 and the subsequent formation of these ammonium salts.

Search of RBLC Determinations

Combustion Turbine Generators and Duct Burners

The search of the RBLC and other available permits identified several natural gas-fired CCGT projects. As described previously, representative projects were selected based upon recent decisions, local proximity, or stringent limits. Details for representative facilities are presented in Appendix C. The lowest permitted NO_x limit for a natural gasfired CCGT with duct burning was 2.0 ppmv at 15 percent O_2. All of these projects use SCR systems in combination with combustion optimization technology such as LNB. It is our understanding that several of these projects have demonstrated compliance with the 2.0 ppmv emission limits under primary operating modes. Some of these projects have permit limits above 2.0 ppmv to accommodate alternative operating modes such as duct burning.

In general, BACT determinations have focused on the level that can be achieved in the primary operating mode (typically gas-fired 100 percent load), with NO_x levels being set for alternative modes (duct burning, partial load, etc.) at the levels that result from application of the same degree of control used to achieve BACT in the primary mode.

Auxiliary Boiler

The RBLC and recent air permit search for natural gas-fired boilers between 10 and 100 MMBtu/hr (HHV) in size identified close to 100 installations. NO_x emission limits for these boilers widely range from approximately 0.0035 lb/MMBtu to 0.37 lb/MMBtu (HHV). Details on the installations that were determined to be most representative for the proposed boiler are provided in Appendix C. The projects with emission limits less than 0.011 lb/MMBtu are generally industrial/commercial boilers less than 30 MMBtu/hr that are operated continuously to support industrial processes or other operations; these were not considered relevant to the Project. Beyond these projects, other determinations generally proposed NO_x emission limits greater than 0.03 lb/MMBtu. The most recent determination for an auxiliary boiler in Ohio proposed a NO_x emission limit of 0.035 lb/MMBtu.

BACT Determinations

Combustion Turbine Generators and Duct Burners

CCE is proposing a NO_x emission limit of 2.0 ppmv at 15 percent O_2 (with and without duct burning) as BACT for the proposed Project. This level of emissions will be achieved through the application of DLN burners in combination with SCR. This emission level is consistent with the most stringent level of control found during the RBLC search and has been demonstrated in practice.

Auxiliary Boiler

CCE is proposing a NO_x emission limit of 0.02 lb/MMBtu (HHV). The auxiliary boiler will use FGR in combination with LNBs. These technologies, used in combination, are capable of reducing NO_x emissions by 60 to 90 percent. This limit is consistent with the results from the RBLC database search and is the lowest in the RBCL database for auxiliary boilers at energy facilities.

Diesel Engines

CCE is proposing to utilize state-of-the-art combustion design to comply with the federal emission limitations for the current model years for the emergency fire pump and emergency generator. Thus, CCE proposes emission rates of 3.5 g/kW-hr for the emergency fire pump and 5.61 g/kW-hr for the emergency generator. Both units will be certified to comply with NSPS Subpart IIII. The NSPS emission limits were established recently, and are based on the USEPA's extensive analysis of the feasibility of controls. Compliance with the applicable NSPS for the proposed emergency engines associated with the Project is considered BACT for NO_x.

BACT Analysis for VOC

CTGs have inherently low VOC emission rates. Emissions of VOC from a CTG occur as a result of incomplete combustion of organic compounds within the fuel. In an ideal combustion process, all carbon and hydrogen contained within the fuel are oxidized to form CO2 and water. VOC emissions can be minimized by the use of good combustion controls and add-on controls as described below.

The CTGs proposed for the Project will utilize good combustion controls and exhaust through an oxidation catalyst to further reduce VOC emissions. Emissions of VOC from the exhaust stack will be limited to 2.0 ppmv at 15 percent O2 with duct burning and 1.0 ppmv at 15 percent O2 without duct burning.

The Project will also utilize an auxiliary boiler, emergency diesel fire pump and emergency diesel generator. The auxiliary boiler will utilize combustion optimization technologies to minimize incomplete combustion and subsequent emissions of VOC. Using good combustion controls, emissions from the auxiliary boiler will be limited to 0.006 lb/MMBtu (HHV). The emergency diesel fire pump and the emergency generator will meet the emission limitations for current model years under the NSPS for Stationary Compression Ignition Internal Combustion Engines (40 CFR 60 Subpart IIII). The following discussion demonstrates that the proposed VOC emission rates for the CCGT Units and ancillary equipment are considered BACT.

Identification of Control Options

There are only two practical methods for controlling VOC emissions from combustion processes: efficient combustion and add-on control equipment. The most stringent level of control is through the use of add-on control equipment. The only post-combustion control that can be practically implemented is catalytic oxidation. Oxidation catalyst systems consist of a passive reactor comprised of a grid of metal panels with a platinum catalyst. The optimal location for VOC control, in the 900°F to 1,100°F temperature range, would be upstream of the HRSG or in the front-end section of the HRSG. However, at the high temperatures necessary to make the oxidation catalyst optimized for VOC reduction, there is the undesirable result of causing substantially more conversion of SO_2 to SO_3. As described previously, SO_3 may react with H_2O and/or NH_3 to form H_2SO_4 and/or ammonium salt (PM_{10}/$PM_{2.5}$). Therefore, the placement of the oxidation catalyst in the “cooler” section of the HRSG, which is necessary for CO control, is the optimal design.

VOC emissions from the auxiliary boiler will also occur due to incomplete combustion. As such, VOC emissions are minimized by combustion practices that promote high combustion temperatures, long residence times, and turbulent mixing of fuel and combustion air. In practice, post-combustion control methods are not routinely implemented for the reduction of VOC emissions from auxiliary boilers, as supported by the search of the RBLC determinations presented below.

Search of RBLC Determinations

Combustion Turbine Generators and Duct Burners

The search of the RBLC and other available permits identified many natural gas-fired CCGT projects. Details for approximately 30 of these facilities have been included in Appendix C. Based on this search, use of an oxidation catalyst appears to be the most stringent level of VOC control for natural gas fired CCGTs. VOC limits in the RBLC range from 0.3 ppmv to 34 ppmv. The 0.3 ppmv limit appears to be an error in the database. The VOC limit for Chouteau Power Plant, based on their most recent Title V air permit is 0.7 ppmv. However, the CO limit for the facility is 10 ppmv, which is considerably higher than the 2 ppmv proposed for the Project. This is indicative of the fact that it is difficult to design a system that provides a very high level of control for VOC while simultaneously providing a very high level of control for CO. As such, systems are more commonly designed to provide substantial control for both CO and VOC simultaneously. This is illustrated by the fact that most of the RBLC entries seem to be between 1.5 and 2 ppmv. This small variation in VOC concentrations between different projects is not unexpected due to differences in turbine and HRSG

manufacturers and overall engineering design. Based on the review of the RBLC, BAT for VOC is utilization of an oxidation catalyst system to achieve an outlet VOC concentration of no greater than 2.0 ppmv.

Auxiliary Boiler

The RBLC and recent air permit search for natural gas-fired boilers between 10 and 100 MMBtu/hr (HHV) in size identified close to 100 installations. VOC emission limits for these installations range from approximately 0.002 lb/MMBtu to 0.02 lb/MMBtu (HHV). Details on the installations that were determined to be most applicable to the proposed boiler are provided in Appendix C.

The most recent determination in the database is for a commercial boiler with a VOC BACT limit of 0.003 lb/MMBtu. Most of the boilers that operate in a similar manner to the proposed boiler also have operational restrictions on hours. There are several determinations for auxiliary boilers at energy generating facilities in the database. The majority of the installations have emission limits of 0.005 lb/MMBtu or greater. Based on the review of the RBLC, BAT for VOC is good combustion practices to achieve a VOC emission limit in the 0.004 to 0.006 lb/MMBtu range. The small variations in VOC emissions are not unexpected due to differences in boiler manufacturers, overall burner design, the very small emissions of VOC and the desire to optimize the simultaneous minimization of NO_x, CO and VOC.

BACT Determinations

Combustion Turbine Generators and Duct Burners

CCE is proposing a VOC emission limit of 2 ppmv and 1.0 ppmv at 15 percent O_2, with and without duct firing, respectively as BACT for the proposed Project. This level of emissions will be achieved via good combustion control and an oxidation catalyst.

Auxiliary Boiler

CCE is proposing a VOC emission limit of 0.006 lb/MMBtu (HHV) with reduced annual operating hours from the auxiliary boiler using good combustion practices as BACT/BAT.

Diesel Engines

CCE is proposing to utilize state-of-the-art combustion design to comply with the federal emission limitations for the current model years for the emergency fire pump and emergency generator. Thus, CCE proposes emission rates of 0.5 g/kW-hr for the emergency fire pump and 0.79 g/kW-hr for the emergency generator. The units will be certified to meet NSPS IIII. The NSPS emission limits were established recently, and are based on the USEPA's extensive analysis of the feasibility of controls. Compliance with the applicable NSPS for the proposed emergency engines associated with the Project is considered BACT for VOC.

1.1 BACT Analysis for CO

Emissions of CO from combustion occur as a result of incomplete combustion of fuel. CO emissions are minimized by the use of proper combustor design, good combustion practices and add-on controls. The CCGT Units and the auxiliary boiler will be sources of CO emissions. Since the potential emissions from the Project exceed PSD significance thresholds, BACT is required for CO emissions. As indicated previously, pollutants that comply with BACT meet BAT requirements.

The CTGs proposed for the Project will utilize good combustion controls and exhaust through an oxidation catalyst to reduce CO emissions. Emissions of CO from the exhaust stack will be limited to 2.0 ppmv at 15 percent O2 with and without duct firing in the HRSG.

The auxiliary boiler will utilize good combustion practices to minimize incomplete combustion and subsequent emissions of CO. Using good combustion controls, emissions from the auxiliary boiler will be

limited to 0.055 lb/MMBtu (HHV). The emergency diesel fire pump and the emergency diesel generator will meet the emission limitations for current model years under the NSPS for Stationary Compression Ignition Internal Combustion Engines (40 CFR Part 60, Subpart IIII).

The following discussion demonstrates that the proposed CO emission rates for the CCGTs and ancillary equipment are considered BACT.

Identification of Control Options

There are only two practical methods for controlling CO emissions from combustion processes: efficient combustion and add-on control equipment. The most stringent level of control is the use of add-on equipment. The only post-combustion control that can be practically implemented is catalytic oxidation. Oxidation catalyst systems consist of a passive reactor comprised of a grid of metal panels with a platinum catalyst. CO reduction efficiencies in the range of 80 to 90 percent can be expected, although CO reduction may at times be less than these values due to the low inlet concentrations expected from the CCGT Units.

CO emissions from the auxiliary boiler will also occur due to incomplete combustion. As such, combustion design that promotes high combustion temperatures, long residence times, and turbulent mixing of fuel and combustion air is the common practice used to minimize CO emissions. Although it is technologically feasible to control CO emissions from a boiler in the 10 to 100 MMBtu/hr (HHV) size range using an oxidation catalyst, current combustion technology results in very low emissions of CO such that add-on control would not be considered cost-effective for auxiliary boilers that are not operated continuously. The Project will limit operation of the auxiliary boiler to 4,500 hours per year.

Search of RBLC Determinations

Combustion Turbine Generators and Duct Burners

The search of the RBLC available permits identified almost 300 natural gas-fired CCGT projects. Based on this search, use of an oxidation catalyst appears to be the most stringent level of control for natural gas-fired CCGTs.

CO emission limits from recently permitted projects generally ranged from 0.9 ppmv to 15 ppmv (or greater). The lowest CO limit found in a permit for a natural gas fired CCGT was 0.9 ppmv without duct-firing and 1.8 ppmv with duct-firing, issued to Kleen Energy Systems in Connecticut. While the duct burning limit is consistent with other determinations, the 0.9 ppmv limit is an outlier. It is important to note that Kleen Energy has a VOC BACT limit of 5.0 ppmv, which is significantly higher than the proposed VOC limit for the Project. This is indicative of the fact that it is difficult to design a system that provides a very high level of control for CO while simultaneously providing a very high level of control for VOC. As such, systems are more commonly designed to provide substantial control for both CO and VOC simultaneously. This is illustrated by two recent BACT/Lowest Achievable Emission Rate (LAER) determinations for proposed combined cycle power plants in New Jersey. Final permits for the Woodbridge Energy Center and the Newark Energy Center were issued in September 2012. Both facilities proposed CO BACT limits of 2.0 ppmv and VOC LAER limits of 1.0 ppmv (without duct burning). For these facilities, the CCGT Unit was designed to optimize control of both CO and VOC. There are many facilities in the RBLC with recently permitted BACT CO emission limits of 2.0 ppmv (or greater). For example, the Empire Generating and Caithness Long Island Energy projects in New York State have permit limits of 2.0 ppmv for CO, which is considered representative of BACT. It is our understanding that several of these facilities are operating in compliance with their 2.0 ppmv limit.

Auxiliary Boiler

The RBLC and recent air permit search for natural gas-fired boilers between 10 and 100 MMBtu/hr in size identified close to 100 installations. CO emission limits for these installations range from approximately 0.0073 lb/MMBtu to 0.8 lb/MMBtu (HHV). Details on approximately 30 of the installations that were determined to be most applicable to the proposed boiler are provided in Appendix C.

The most stringent limit for an auxiliary boiler at an energy generating facility is 0.0164 lb/MMBtu (HHV) at Emery Generating Station in Iowa, which was permitted in 2002. This installation is operational and it utilizes a catalytic oxidizer with an estimated control efficiency of 80 percent to achieve this emission rate. Since this installation, there have been many projects permitted without add-on controls that utilize good combustion practices to achieve CO control. The most recent auxiliary boiler installation listed in the RBLC has a CO limit of 0.15 lb/MMBtu. There are several other recent determinations with CO limits between 0.02 and 0.08 lb/MMBtu. The small variations in CO emissions are not unexpected due to differences in boiler manufacturers, overall burner design, and the desire to optimize the simultaneous minimization of NO_x, CO and VOC.

BACT Determinations

Combustion Turbine Generators and Duct Burners

CCE is proposing a CO emission limit of 2.0 ppmv at 15 percent O_2 with and without duct firing as BACT for the proposed Project. This level of emissions will be achieved via good combustion control and an oxidation catalyst. This proposal is consistent with the limits and control technologies found in the RBLC and with recent BACT determinations in Ohio and in other states.

Auxiliary Boiler

CCE is proposing a CO emission limit of 0.055 lb/MMBtu (HHV) from the auxiliary boiler using good combustion practices and a limitation of operation to 4,500 hours per year. This is consistent with BACT determinations for this type of equipment.

Diesel Engines

The proposed diesel engines for the Project will utilize state-of-the-art combustion design to comply with the federal emission limitations for the current model years. Thus, CCE proposes a CO emission rate of 3.5 g/kW-hr for the emergency fire pump and emergency generator as BACT, with limited annual hours of operation. The units will meet NSPS Subpart IIII. The NSPS emission limits were established recently, and are based on the USEPA's extensive analysis of the feasibility of controls. Compliance with the applicable NSPS for the proposed emergency engines associated with the Project is considered BACT for CO.

1.2 BACT Analysis for Particulate Matter ($PM_{10}/PM_{2.5}$)

Emissions of particulate matter from combustion occur as a result of inert solids contained in the fuel, unburned fuel hydrocarbons which agglomerate to form particles, and mineral matter in water that may be injected for NO_x or power augmentation in certain applications. Particulate emissions can also result from the formation of ammonium salts due to the conversion of SO_2 to SO_3, which is then available to react with NH_3 to form ammonium sulfates. All of the particulate matter emitted from the CCGTs is conservatively assumed to be less than 2.5 microns in diameter. Therefore, PM_{10} and $PM_{2.5}$ emission rates are assumed to be the same.

The combustion of clean-burning fuels is the most effective means for controlling particulate emissions from combustion equipment. The Project is proposing to use natural gas as the only fuel for the turbines. Natural gas is a very clean-burning fuel with very low associated particulate emissions. CCE is not aware of any CCGT projects in existence that have add-on particulate control.

The CCGT Units proposed for the Project will utilize natural gas as their only fuel to minimize particulate emissions. Emissions of $PM_{10}/PM_{2.5}$ from the exhaust stack will be limited to 0.0061 lb/MMBtu (HHV) without duct-firing and 0.0076 lb/MMBtu (HHV) with duct-firing.

The Project will also utilize an auxiliary boiler, emergency diesel fire pump, and emergency generator. The auxiliary boiler will combust only natural gas, resulting in a $PM_{10}/PM_{2.5}$ emission limit of 0.008 lb/MMBtu (HHV). The emergency diesel fire pump and the diesel generator engines will meet the emission limitations for current model years under the NSPS for Stationary Compression Ignition Internal Combustion Engines (40 CFR Part 60, Subpart IIII).

The following discussion demonstrates that the proposed $PM_{10}/PM_{2.5}$ emission rates for the CCGTs and ancillary equipment are considered BACT.

Search of RBLC Determinations

Combustion Turbine Generators and Duct Burners

The search of the RBLC and other available permits identified several natural gas-fired CCGT projects. Based on this search, use of clean-burning fuels is the primary control for particulate emissions. Particulate matter emission limits in the RBLC database generally ranged from approximately 0.003 lb/MMBtu to 0.3 lb/MMBtu (HHV) (or greater). The most recent $PM_{10}/PM_{2.5}$ BACT determination for a large combined cycle turbine train is 0.0066 lb/MMBtu for the Sumpter Power Plant in Michigan. Beyond this example, there are many facilities in the RBLC with permitted BACT $PM_{10}/PM_{2.5}$ emission limits in the range of 0.006 lb/MMBtu to 0.01 lb/MMBtu. Generally, all of these projects utilize clean-burning fuel as their primary control technology and their emission limits are based upon the overall quality of their commercial natural gas source.

Auxiliary Boiler

A review of the RBLC indicates that good combustion practices and clean-burning fuels have typically been determined to be BACT for boilers. $PM_{10}/PM_{2.5}$ emission limits for natural gas-fired boilers vary widely, ranging from 0.002 lb/MMBtu through 0.6 lb/MMBtu (HHV). $PM_{10}/PM_{2.5}$ emission limits for gas-fired auxiliary boilers of similar size are as low as 0.003 lb/MMBtu. The most recent listing in the RBLC for an auxiliary boiler proposed a $PM_{10}/PM_{2.5}$ limit of 0.008 lb/MMBtu.

BACT Determinations

Combustion Turbine Generators and Duct Burners

CCE is proposing a $PM_{10}/PM_{2.5}$ emission limit of 0.0061 lb/MMBtu (HHV) without duct firing and 0.0076 lb/MMBtu with duct firing as BACT for the proposed Project. This level of emissions will be achieved by combusting only commercially available, pipeline quality natural gas in the CCGT Units. This emission level is consistent with the limits and control technologies found in the RBLC for recent BACT determinations in Ohio and in other states. The high degree of NO_x control, which creates secondary formation of particulate, and the variability of sulfur content in natural gas precludes a lower vendor guarantee.

Auxiliary Boiler

CCE is proposing the exclusive use of clean-burning pipeline quality natural gas in conjunction with good combustion practices as BACT for the auxiliary boiler. The Project proposes a $PM_{10}/PM_{2.5}$ emission limit of 0.008 lb/MMBtu (HHV) boiler using natural gas as the only fuel. This is consistent with other BACT determinations for this type of equipment. BACT determinations with lower limits were for smaller size boilers with different natural gas sulfur content.

Diesel Engines

The proposed engines for the Project will utilize state-of-the-art combustion design to comply with the federal emission limitations for the current model years. Thus, CCE proposes $PM_{10}/PM_{2.5}$ emission rates of 0.15 g/hp-hr (0.2 g/kW-hr) for the emergency fire pump and emergency generator as BACT, with limited annual hours of operation. The units will be certified to meet NSPS Subpart IIII. The NSPS emission limits were established recently, and are based on the USEPA's extensive analysis of the feasibility of controls. Compliance with the applicable NSPS for the proposed emergency engines associated with the Project is considered BACT.

BAT/BACT Analysis for SO_2 and H_2SO_4

Emissions of SO_2 are formed from the oxidation of sulfur in the fuel. Normally, all sulfur compounds contained in the fuel will oxidize, and virtually all will oxidize to form SO_2. A small percentage will oxidize to SO_3 and sulfate (SO_4), dependent on a number of factors including: combustor design; temperature; pressure; O_2 level; and moisture level in the combustion zone and downstream in the HRSG's heat exchange tube bundles. After being formed, the SO_3 and SO_4 will react to form H_2SO_4 and sulfate particulate. SO_2 and H_2SO_4 emissions can be controlled using pre- and post-combustion controls. Pre-combustion controls involve the use of low sulfur fuels such as natural gas or ULSD. Post-combustion controls involve the use of add-on control technology such as wet and dry flue gas desulfurization (FGD) processes. Installation of such systems is an established technology principally on coal-fired and high sulfur oil-fired steam electric generation stations. However, FGD systems are not practical for CTGs due to several factors including the large exhaust flow (and corresponding pressure drop) and the low inlet concentration in the flue gas. The use of natural gas and ULSD are the most common methods for controlling SO_2/H_2SO_4 emissions from CTGs.

The CCGT Units proposed for the Project will utilize natural gas with a maximum sulfur content of 1.0 grains (gr) per 100 standard cubic feet (scf) as their only fuel to minimize SO_2 and H_2SO_4 emissions. Emissions of SO_2 from the exhaust stack will be limited to 0.0029 lb/MMBtu (HHV) with and without duct firing, respectively. Emissions of H_2SO_4 from the exhaust stack will be limited to 0.0016 lb/MMBtu (HHV) with duct firing and 0.0012 lb/MMBtu (HHV) without duct burning.

The Project will also utilize an auxiliary boiler, an emergency diesel fire pump, and an emergency generator. The auxiliary boiler will combust only natural gas, resulting in SO_2 and H_2SO_4 emission limits of 0.0029 lb/MMBtu and 0.00022 lb/MMBtu (HHV), respectively. The diesel fire pump and the diesel generator engines will utilize ULSD. SO_2 emissions from the fire pump and generators will be limited to 0.0048 g/hp-hr for both pieces of equipment. Emissions of H_2SO_4 from both engines will be limited to 0.000132 g/kW-hr.

The following discussion demonstrates that the proposed SO_2 and H_2SO_4 emission rates for the CCGT Units and auxiliary boiler are considered BAT/BACT.

Search of RBLC Determinations

Combustion Turbine Generators and Duct Burners

The search of the RBLC and other available permits identified more than 300 natural gas fired CCGT projects. Based on this search, use of low sulfur fuels is the primary control for SO_2 emissions, with emission limits being dependent upon the sulfur content of the fuel and engine design. SO_2 emission limits in the RBLC generally ranged from 0.0003 lb/MMBtu to 0.01 lb/MMBtu (HHV) (or greater), with a recent BACT determination having a sulfur content of 5 gr/100 scf.

Similarly, a search of permits for natural gas-fired combined cycle units indicated H_2SO_4 emissions ranging from 0.0001 lb/MMBtu to 0.002 lb/MMBtu (HHV) (or greater). Similar to SO_2, BACT for these sources was the use of low sulfur fuels and emission limits are dependent upon the sulfur content of the fuel and engine design.

Auxiliary Boiler

A review of the RBLC indicates that combustion of clean burning low-sulfur fuels has typically been determined to be BACT for SO_2 and H_2SO_4. The most stringent SO_2 emission limit for an auxiliary boiler found the RBLC was 0.0006 lb/MMBtu (HHV). The most recent project listed in the RBLC proposes an SO_2 emission limit of 0.001 lb/MMBtu (HHV). In all cases, the BACT limit is based upon the assumed sulfur content of the pipeline quality natural gas.

A search of the RBLC for H_2SO_4 emissions only identified two boilers of similar size to the proposed auxiliary boiler. Of these listings, only one was for an auxiliary boiler at an energy facility. This project, CPV Saint Charles, proposed an H_2SO_4 limit of 0.0001 lb/MMBtu.

BACT Determinations

Combustion Turbine Generators and Duct Burners

CCE is proposing an SO_2 emission limit of 0.0029 lb/MMBtu (HHV) (with and without duct burning) as BACT and an H_2SO_4 emission limit of 0.0016 (HHV) lb/MMBtu with duct firing and 0.0012 without duct firing as BACT for the proposed Project. This level of emissions will be achieved by combusting commercially available, pipeline quality natural gas with a maximum sulfur content of 1.0 gr/100 scf in the CTGs and duct burners. This emission level is consistent with the limits and control technologies found in the RBLC. The emissions of SO_2 and H_2SO_4 are directly dependent on the maximum sulfur content in natural gas, which has substantial variability between projects.

Auxiliary Boiler

CCE is proposing an SO_2 emission limit of 0.0029 lb/MMBtu (HHV) and an H_2SO_4 emission limit of 0.00022 lb/MMBtu (HHV) as BACT for the proposed Project. The proposed auxiliary boiler will combust natural gas with a maximum sulfur content of 1.0 gr/100 scf. This is consistent with other BACT determinations for this type of equipment. BACT determinations with lower limits were for smaller size boilers with different natural gas sulfur content.

Diesel Engines

The proposed diesel engines for the Project will use ULSD with a maximum sulfur content of 15 parts per million by weight (ppmw) as a fuel. Thus, CCE proposes SO_2 emission rates of 0.0048 g/hp-hr, and H_2SO_4 emission rates of 0.000132 g/kW-hr for the engines as BACT, with limited annual hours of operation.

BACT Analysis for Greenhouse Gases

This section presents the BACT analysis for GHGs using methodology presented in the USEPA document *PSD and Title V Permitting Guidance for Greenhouse Gases* (USEPA, 2011).

The principal GHGs associated with the Project are CO_2, methane (CH_4), and nitrous oxide (N_2O). Because these gases differ in their ability to trap heat, 1 ton of CO_2 in the atmosphere has a different effect on warming than 1 ton of CH_4 or 1 ton of N_2O. For example, CH_4 and N_2O have 21 times and 310 times the global warming potential of CO_2, respectively. GHG emissions from the proposed Project are primarily attributable to combustion of fuels in the CCGT Units, auxiliary boiler and emergency engines. There will also be minor fugitive releases of natural gas (primarily CH_4) from valves and flanges associated with the

natural gas piping and of sulfur hexafluoride (SF_6) from the circuit breakers in the substation. By far the greatest proportion of potential GHGs emissions associated with the Project are CO_2 emissions associated with combustion of natural gas in the CCGTs. Trace amounts of CH_4 and N_2O, will be emitted during combustion in varying quantities depending on operating conditions. However, as indicated in Table 4-1, emissions of CH_4 and N_2O are negligible when compared to total CO_2 emissions. In addition, as presented previously, the Project is proposing to implement BACT for both VOC (expressed as CH_4) and NO_x, such that these pollutants are being effectively controlled. As such, BACT for the combustion processes focus on the options for reducing and controlling emissions of CO_2.

Summary of GHG Emissions from Combustion Equipment (tpy)

Pollutant	CO_2[a]	CH_4	N_2O	CO_2e[b]
CTGs	2,686,096.32	50.84	14.85	2,691,766.97
Auxiliary Boiler	26,205.88	0.50	0.14	26,259.76
Emergency Generator	432.39	0.024	0.0035	433.96
Emergency Fire Pump	115.00	0.022	0.000924	115.75
Total	**2,712,849.6**	**51.39**	**14.99**	**2,718,576**

a. Potential emissions are based on ISO conditions.
b. The global warming potential (GWP) for CH_4 is 21 and the GWP for N_2O is 310.

Identification of Control Options

CO_2 is a product of combusting any carbon containing fuel, including natural gas. All fossil fuel contains significant amounts of carbon. During complete combustion, the fuel carbon is oxidized into CO_2 via the following reaction:

$C + O_2 \rightarrow CO_2$

Full oxidation of carbon in fuel is desirable because CO, a product of partial combustion, has long been a regulated pollutant and because full combustion results in more useful energy. In fact, emission control technologies required for CO emissions (oxidation catalysts) increase CO_2 emission by oxidizing CO to CO_2. Recent BACT determinations for CCGT projects have focused on reducing emissions of CO_2 through high efficiency engine technology and use of cleaner-burning fuels. There are limited post-combustion options for controlling CO_2. The USEPA has indicated in the document, *PSD and Title V Permitting Guidance for Greenhouse Gases,* that carbon capture and sequestration (CCS) should be considered in BACT analyses as a technically feasible add-on control option for CO_2 (USEPA, 2011). Currently, there are no CCGT projects utilizing CCS, and although theoretically feasible, this technology is not commercially available. Each of these control options are discussed in greater detail in the sections below.

Engine Efficiency

Because emissions of CO_2 are directly related to the amount of fuel combusted, an effective means of reducing GHG emissions is through highly efficient combustion technologies. By utilizing more efficient technology, less fuel is required to produce the same amount of output electricity. The Project is proposing to use CTGs which utilize highly efficient combustion technology.

The Project will utilize state-of-the-art CTG technology in combined cycle mode. Combined cycle generation takes advantage of the waste heat from the CTGs, capturing that heat in the HRSG and generating steam which then powers a conventional steam turbine. Use of waste heat in this manner makes combined cycle projects considerably more efficient than conventional boiler technology. The proposed Project has a "Design Base Heat Rate" of approximately 6,516 British thermal units per kilowatt-hour (Btu/kWhr), HHV full load at ISO conditions (with no duct firing) which equates to 761 lb CO2 per MW-hr gross output. The emphasis on GHG

reductions via efficient combustion is reflected in the recently proposed NSPS for power plants and recently issued BACT determinations for similar projects.

On March 27, 2012, the USEPA proposed an NSPS for carbon emissions from power plants. This NSPS would apply to new fossil-fuel-fired electric utility generating units (EGUs), which, under this rule, include stationary CCGTs larger than 25 MW. New EGUs would be required to meet an output-based standard of 1,000 pounds of CO_2 per MW-hr gross output. The NSPS emission limits are based on the USEPA's extensive analysis of the feasibility of controls. In addition, the NSPS implements standards in more stringent phases from 2007 to 2015 based upon a feasibility analysis for future years. As such, compliance with an applicable NSPS can be considered BACT.

In addition to the NSPS, there are several recent CCGT projects that have been issued permits incorporating engine efficiency into the GHG BACT determination. Under these permits, the BACT limits range from 887 lb CO_2/MW-hr gross to 918 lb CO_2/MW-hr net, while combusting natural gas.

Cleaner-Burning Fuels

Another effective method to reduce GHG emissions is pollution prevention or the use of inherently lower-emitting fuels. The CTGs and auxiliary boiler for the proposed Project will combust natural gas as their only fuel source. As presented in Table 4-2, other fossil fuels generate a greater amount of CO_2 per MMBtu of fuel consumed. As such, using natural gas as the only fuel source for the turbine and the auxiliary boiler, which have the potential to emit 99.98 percent of the annual CO_2 emissions for the facility, effectively minimizes the production of CO_2 from combustion.

Comparison of CO_2 Emissions from Different Fuels (lb CO_2/ MMBtu)

Pollutant	Emission Factor
Natural Gas	117
Diesel Fuel	164
Coal	210

Note that the emergency engines will utilize ULSD fuel because, as emergency equipment, they need a discrete, on-site fuel source. However, the annual hours of operation for these engines are limited to 500 hours per year. As such, only 0.02 percent of potential annual CO_2 emissions are from these sources.

Carbon Capture and Sequestration (CCS)

There are limited post-combustion options for controlling CO_2, the most common being CCS, which is considered a technically feasible add-on control option for CO_2. CCS is a relatively new technology which requires three distinct processes:

1. Isolation of CO_2 from the waste gas stream;
2. Transportation of the captured CO_2 to a suitable storage location; and
3. Safe and secure storage of the captured and delivered CO_2.

The first step in the CCS process is capture of the CO_2 from the process in a form that is suitable for transport. There are several methods that may be used for capturing CO_2 from gas streams including chemical and physical absorption, cryogenic separation, and membrane separation. Exhaust streams from natural gas combustion sources have relatively low CO_2 concentrations. Only physical and chemical absorption would be considered technically implementable for a high volume, low concentration gas stream. The capital expenditure required to capture CO_2 from the exhaust and compress it to the pressure required for transport and sequestration is very significant. The Report of the *Interagency Task Force on Carbon Capture and*

Storage indicates that it costs approximately $105 per ton ($95 per metric ton) to install a post-combustion system on a new installation to capture and compress CO_2 for transport and sequestration. Applying this factor to the 2,686,097 tpy of CO_2 potentially emitted from the CCGT Units and annualizing the cost over 10 years (including capital recovery costs) results in an estimated annual cost of $40,162,528 or a total capital expenditure (for the first 10 years) of $401,625,283. This is clearly an excessive cost, and does not take into account the large parasitic load caused by a CCS system, which reduces the overall efficiency of the facility and increases overall emissions of CO_2 and all other regulated pollutants on a per megawatt-hour basis.

The next step in the CCS process is transportation of the captured CO_2 to a suitable storage location. Currently CO_2 storage is available at only a very limited number of sites. Geologic conditions at the proposed Project site are not suitable for carbon sequestration. CCE does not own or control any other sites that would be appropriate for CO_2 sequestration. Funding from the Department of Energy (DOE) is supporting a research and demonstration project called the Regional Carbon Sequestration Partnership (RCSP). While several large-scale CO_2 sequestration demonstrations have been initiated under this program, the results of these projects will not be known for some time. Currently, the closest commercially available CO_2 sequestration site is in Saskatchewan, Canada, over 1,600 miles from the Project site.

As such, to remain a viable control technology, captured CO_2 would have to be transported to a remote storage site in order to achieve any environmental benefit. Pipelines are the most common method for transporting large quantities of CO_2 over long distances. There are currently approximately 3,600 miles of existing pipeline located in the United States, the nearest being over 700 miles away. As such, a CO_2 transportation pipeline would need to be constructed to tie into the existing pipeline structure. The cost for permitting and constructing this pressurized pipeline would be economically prohibitive and impractical.

It is important to note that there are no CCGT facilities utilizing CCS. As such, this technology, while theoretically feasible, has not been demonstrated in practice for combined cycle facilities. As demonstrated above, even if it were commercially available, the cost for designing, installing and operating this type of capture system would be prohibitive. Based upon the large costs associated with the capture, transportation and storage of CO_2, in addition to the large parasitic load, CCS is considered cost prohibitive and economically infeasible for the Project.

Search of RBLC Determinations

CCE is aware of several projects that have been issued permits incorporating GHG requirements. These projects include:

- Russell City Energy Center
- Cricket Valley Energy Center
- Lower Colorado River Authority
- Woodbridge Energy Center
- Newark Energy Center

The GHG emissions limits in these permits are based upon engine efficiency expressed as HHV heat rate and range from 7,522 to 7,730 Btu/kW-hr (operating at 100 percent load, ISO conditions without duct firing). Several of these permits also incorporate emission limits for CO_2 in lbs CO_2 per MW-hr. These limits range from 887 lb CO_2/MW-hr gross to 918 lb CO_2/MW-hr net, while combusting natural gas.

The heat rate limits for the above referenced projects incorporate a margin over the design heat rate to account for degradation over the life of the equipment. Documentation associated with Russell City Energy Center provides a methodology for determining a reasonable estimate of degradation. The Bay Area Air Quality Management District (BAAQMD) in California issued a permit in February 2010 for the Russell City Energy Center that included a BACT limit. Russell City is a proposed combined cycle generating facility with a nominal capacity of 600 MW utilizing two Siemens F-class CTGs. In its analysis, the BAAQMD evaluated

factors that could be reasonably expected to degrade the theoretical design efficiency of the turbines and increase the heat rate. They considered a number of factors including:

- A design margin to reflect that the equipment as constructed and installed may not fully achieve the assumptions that went into the design calculations;
- A reasonable performance degradation margin to reflect normal wear and tear; and

- A reasonable degradation margin based on normal wear and tear caused by variability in the operation of the auxiliary plant equipment.

Based on their analysis, BAAMD concluded that 12.8 percent was a reasonable compliance margin to add to the design base heat rate to develop a numerical BACT limit.

BACT Determinations

Combustion Turbines

As described above, the technically feasible options for controlling GHG's from the CTGs include:

- Use of high-efficiency engine technology
- Use of natural gas; and
- Installation and operation of CCS.

As presented in Section 4.8.1.3, installation and operation of a CCS system is economically cost-prohibitive and impractical. Implementation of high efficiency technology and lower-carbon fuels is being utilized by the facility. The Project will utilize combined cycle technology which provides greater power output per fuel input, and will burn natural gas exclusively. Based upon the Project design, and adding a reasonable margin of compliance consistent with the BAAQMD analysis for Russell City Energy Center (12.8 percent), CCE is proposing the following as BACT:

- 7,350 Btu/kW-hr HHV (full load at ISO conditions without duct firing); and
- 859 lb CO2 per MW-hr gross output (ISO conditions).

These limits are consistent with recently permitted projects and can reasonably be assured under all full load operating scenarios. This level of emissions will be achieved through utilization of high efficiency, state-of-the-art, combustion turbine technology and combusting only commercially available, pipeline quality natural gas in the turbines.

Auxiliary Boiler

Similar to the CTGs, the technically feasible control options for the auxiliary boiler include high efficiency combustion, low-carbon fuels and CCS. The prohibitive costs and technical issues associated with installing a CCS system on the auxiliary boiler are the same as those for the CTGs. The total equipment cost for a capture and compression system for the auxiliary boiler will exceed $2,751,619, which does not include the costs to the Project caused by the parasitic load associated with the system. In addition, transporting and storing the captured CO_2 would be impractical. As such, BACT for the auxiliary boiler is efficient combustion and use of a lower-carbon fuel, natural gas. The natural gas fired boiler proposed for the Project will be state-of-the-art and, thus, have a combustion efficiency reflective of new equipment.

Other Ancillary Sources

There are several other smaller sources associated with the Project that have the potential to emit GHGs. These include fugitive releases from the natural gas pipelines, SF_6 releases from circuit breakers, and combustion emissions from the emergency engines.

Methane is a GHG with a global warming potential of 21 times that of CO_2. There is the potential for minor fugitive leaks of methane gas from connection points along the natural gas pipeline. These connection points include valves, flanges and compressors. The Project will have many of these piping components incorporated into its design. The Project will implement best management practices and routine monitoring to minimize fugitive leaks from the piping components. While BACT for fugitive emissions has not been included in recent permits, this is consistent with BACT determinations for other projects.

SF_6 is a dielectric fluid used in circuit breakers with a global warming potential of 23,900 times that of CO_2. There is the potential for negligible leakage of SF_6 from circuit breakers and the Project will may have several circuit breakers incorporated into its design. The Project will use state-of-the-art enclosed pressure SF_6 circuit breakers with leak detection, which is consistent with BACT for other similar projects.

The emergency engines will utilize ULSD as a fuel source. Because they are emergency equipment, they require an on-site, discrete fuel source. In addition, operation of the engines will be limited to 500 hours per year. As such, only 0.02 percent of potential annual CO_2 emissions are from these emergency engines.

SUMMARY OF BACT EVALUATIONS

The following tables summarize the proposed emission limits and associated control technology for the facility.

Summary of Proposed BACT/BAT Emission Limits and Associated Control Technologies for the Combustion Turbines

Pollutant	Emission Rate (lb/MMBtu)[a]	Emission Rate (ppm_v) at 15% O_2	Control Technology	Represents
NO_x CT only CT w/ DB	 0.0076 0.0076	 2.0 2.0	DLN and SCR	BACT/BAT
VOC CT only CT w/ DB	 0.0013 0.0026	 1.0 2.0	Good combustion controls and oxidation catalyst	BACT/BAT
CO CT only CT w/ DB	 0.0046 0.0046	 2.0 2.0	Good combustion controls and oxidation catalyst	BACT/BAT
$PM_{10}/PM_{2.5}$ CT only CT w/ DB	 0.0061[c] 0.0076[c]	 n/a n/a	Low sulfur fuel	BACT/BAT
SO_2 CT only CT w/ DB	 0.0029 0.0029	 n/a n/a	Low sulfur fuel	BACT/BAT
H_2SO_4 CT only CT w/ DB	 0.0012 0.0016	 n/a n/a	Low sulfur fuel	BACT/BAT
GHG[b]	859[a]	n/a	High efficient combustion technology	BACT/BAT

a. Based on HHV of fuel.

b. BACT/BAT for GHGs is expressed as lbs CO_2 per MW-hr gross output on an annual

basis.

c. $PM_{10}/PM_{2.5}$ emission limits are at ISO conditions.

Summary of Proposed BACT/BAT Emission Limits and Associated Control Technologies for the Auxiliary Boiler

Pollutant	Emission Rate (lb/MMBtu)[a]	Control Technology	Represents
NO_x	0.02	FGR and LNB	BACT/BAT
VOC	0.006	Good combustion controls	BACT/BAT
CO	0.055	Good combustion controls	BACT/BAT
$PM_{10}/PM_{2.5}$	0.008	Low sulfur fuel	BACT/BAT
SO_2	0.0029	Low sulfur fuel	BACT/BAT
H_2SO_4	0.00022	Low sulfur fuel	BACT/BAT
CO_2e (GHG)	118[b]	Good combustion controls and Natural gas combustion	BACT/BAT

a. Based on HHV of fuel.

b. Based on a CO_2 emission factor of 117.65 lbs/MMBtu, a CH_4 emission factor of 0.002 lb/MMBtu and a N_2O emission factor of 0.001 lb/MMBtu.

Summary of Proposed BACT/BAT Emission Limits and Associated Control Technologies for the Emergency Fire Pump

Pollutant	Emission Rate (g/kW-hr)	Emission Rate (g/hp-hr)	Control Technology	Represents
NO_x	3.5	--	State-of-the-art combustion design	BACT/BAT
VOC	0.5	--	State-of-the-art combustion design	BACT/BAT
CO	3.5	--	State-of-the-art combustion design	BACT/BAT
$PM_{10}/PM_{2.5}$	0.2	0.15	State-of-the-art combustion design	BACT/BAT
SO_2	--	0.0048	Low sulfur fuel	BACT/BAT
H_2SO_4	0.000132	--	Low sulfur fuel	BACT/BAT

Summary of Proposed BACT/BAT Emission Limits and Associated Control Technologies for the Emergency Generator

Pollutant	Emission Rate (g/kW-hr)	Emission Rate (g/hp-hr)	Control Technology	Represents
NO_x	5.61	3.88	State-of-the-art combustion design	BACT/BAT
VOC	0.79	0.09	State-of-the-art combustion design	BACT/BAT
CO	3.5	0.43	State-of-the-art combustion design	BACT/BAT
$PM_{10}/PM_{2.5}$	0.2	0.15	State-of-the-art combustion design	BACT/BAT
SO_2	--	0.0048	Low sulfur fuel	BACT/BAT
H_2SO_4	0.000132	--	Low sulfur fuel	BACT/BAT

Modeling Review

Carroll County Energy (CCE)/ARCADIS has submitted air dispersion modeling for carbon monoxide (CO), nitrogen oxides (NO_x), sulfur dioxide (SO_2) and particulate matter with a diameter equal to or less than 10 microns (PM_{10}), and particulate matter with a diameter equal to or less than 2.5 microns ($PM_{2.5}$) on behalf of CCE, LLC. CCE is proposing to construct a nominal 742-megawatt (MW) air-cooled 2x2x1 combined cycle gas turbine (CCGT) electric generating facility near Carrollton, OH. CCE has proposed to install two integrated combustion turbine generators (CTG) and duct-fired heat recovery steam generator (HRSG) trains, a common steam turbine generator (STG), an air cooled condenser (ACC), and associated ancillary equipment.The ancillary equipment includes one auxiliary boiler, one emergency generator, and one emergency fire pump.

Potential emissions from the proposed project are shown to be 441 tons per year (tpy) for CO, 215 tpy of NO_x, 65 tpy of SO_2, and 173 tpy each of $PM_{2.5}$ and PM_{10}. The summary of the annual potential emissions and applicable regulatory thresholds are presented in Tables 2-8 and 3-1, respectively (see Application for Prevention of Significant Deterioration Preconstruction Permit-Carroll County Energy LLC) submitted by

CCE/ARCADIS. Based on the analysis of the potential emissions from the proposed facility, the project triggers Federal Prevention of Significant Deterioration (PSD) and Ohio modeling requirements for its emissions of CO, NO_x, SO_2, PM_{10}, and $PM_{2.5}$. The proposed facility will also emit air toxics (sulfuric acid, ammonia, formaldehyde, toluene, and xylene) that exceed the Ohio EPA threshold of one ton per year (Appendix B).

CCE has used the AERMOD dispersion model to show compliance for CO, NO_x, SO_2, PM_{10}, and $PM_{2.5}$ in accordance to the Federal Significant Emission Rates (SER) and Ohio Modeling Standards. The facility has also submitted qualitative/quantitative (hybrid) analysis of secondary $PM_{2.5}$ formation potential to show compliance with $PM_{2.5}$ NAAQS under new USEPA's Draft guidance for $PM_{2.5}$ Permit Modeling (March 4, 2013). For air toxics modeling, the facility has used AERMOD to show compliance in accordance with the Ohio EPA's Maximum Allowable Ground Level Concentrations (MAGLC).

Modeling Information

CCE Project is proposed to be located on a 76.5-acre parcel of land located in Carroll County near Carrollton, Ohio. The coordinates of the center of the property, represented in the Universal Transverse Mercator (UTM) coordinate system, are approximately 494,994.13 m East, 4,494,887.66 m North in UTM Zone 17 (NAD83).

When modeling, all concentrations were computed in micrograms per cubic meter ($\mu g/m^3$). No deposition or depletion was modeled for this case. The latest version of AERMOD model with regulatory default option was selected in the control parameter. Complex terrain and building parameters were considered in the modeling. Source elevations for all sources within the CCE boundary were determined using to-scale plot plans that included site specific elevation data.

Emissions from two CTG units and an auxiliary boiler were included in the modeling for proposed energy facility. A list of various emission scenarios and stack parameters considered in modeling analyses under steady state operation can be found in Table 5-1. Table 5-2 shows the modeling inputs for CTG start-up events (worst scenarios) since the proposed facility assumed a total of 300 combined start-up events per year. Emission rates and other stack parameters for the ancillary unit are shown in Table 5-3. A more detailed emission calculation and modeling scenarios can be found in Appendix B and Appendix D, respectively of the Permit document submitted by CCE/ARCADIS.

Ground-level concentrations were calculated within Cartesian receptor grids and at receptors placed along the property line to determine the location of the maximum estimated concentration impact at a resolution of 25-meter grid spacing. For most modeling scenarios, a 5 km x 5 km receptor grid with 100 m spacing between the receptors, and 20 km x 20 km Cartesian grid with 1,000 m spacing between the receptors was used. A total of 3,093 receptors were considered. For worst-case (hot start-up) scenario, a receptor grid was extended to 50 km x 50 km with 1,000 m spacing between the receptors. The final receptor grid consisted of 5,317 receptors.

Five years of meteorological data have been used in accordance with the Engineering Guidelines #69 Guideline on Air Quality Models. Carroll Energy Center used five years (i.e., 2008-2012) of surface meteorological data and five years of upper air data from the Pittsburgh International Airport (PIT, WMO# 72520, WBAN# 94823) in the model. The National Weather Service data of the region was determined to be representative of the geographical surroundings of the proposed facility.

RESULTS

Class I

CCE was not required to submit a Class I modeling analysis.

Class II

PSD Significant Impact Level (SIL)

Ohio EPA analyzed the significant impact of criteria pollutants (SO_2, NO_2, CO, PM_{10} and $PM_{2.5}$), and compared the estimated concentration with the appropriate SIL resulting from the potential emissions. Ohio EPA is in agreement with the maximum modeled concentrations for various averaging periods (1-hr, 3-hr, 8-hr, 24-hr, and annual) found in Appendix D (Modeling Results- Steady State Dispersion Modeling Results) in Permit (see

Application for Prevention of Significant Deterioration Preconstruction Permit- Carroll Energy Center LLC) submitted by CCE. For all modeling scenarios (15), the maximum predicted concentrations were found to be less than the respective SILs.

CCE also modeled start-up cases with both CCGT units and the auxiliary boiler operating as worst case scenarios for the evaluating the concentrations of NO_2 and CO from the proposed project. The maximum modeled 1-hr NO_2 concentration exceeded SIL for hot start-up scenario (Table 5-7). However, as per Ohio EPA Guidance for 1-hr NO_2, if the project impact exceeds SIL then the sum of maximum impact and the conservative background should be less than NAAQS. The CCE Project impact is less than the NAAQS. The maximum 1-hr modeled concentration of CO was found to be highest for cold start-up scenario, but considerably below SIL (Table 5-7).

Secondary $PM_{2.5}$ Formation Analysis

Pursuant to draft guidance issued by USEPA in March, 2013, addressing secondary formation of $PM_{2.5}$ in a NAAQS compliance demonstration under the PSD program, CCE Project submitted an analysis of secondary $PM_{2.5}$ formation based on the increase in SO_2 and NO_x emissions from the facility. Although no formal procedure has been promulgated for analysis of secondary $PM_{2.5}$, Ohio EPA reviewed the hybrid analysis submitted by CCE. The agency is in agreement that secondary $PM_{2.5}$ formation will neither consume additional PSD increments nor cause a violation of the 24-hour and annual $PM_{2.5}$ NAAQS.

PSD Increment and NAAQS

CCE Project was not required to submit a PSD increment and a NAAQS modeling analyses.

Ohio Acceptable Increment Impact (OAII) Modeling

After reviewing increment modeling of the proposed project, Ohio EPA found that the modeled 1-hr, 3-hr, 8-hr, 24-hr and annual pollutants concentrations to be well below the OAII levels (Table 5-7). Ohio EPA is in agreement with the maximum modeled impacts of SO_2, NO_2, CO, PM_{10} and $PM_{2.5}$ from the project found in above table. The installation of CCE Project will not result in any exceedances of the OAII levels.

Ohio Air Toxic Modeling

After reviewing the state-only air toxic modeling analysis of air toxics (sulfuric acid, ammonia, formaldehyde, toluene, and xylene) for the proposed installation, the Ohio EPA found no exceedances of the MAGLCs of these air toxics. The Ohio EPA is in agreement with the modeled maximum 1-hr ground level concentrations of the above air toxics presented in Table 5-17 in the document - Application for Prevention of Significant Deterioration Preconstruction Permit, Carroll Energy Center LLC submitted by CCE/ARCADIS.

Soils and Vegetation Analysis

EPA Air Quality Criteria documents were reviewed for information on pollutants and adverse effects on the type of vegetation and soils in the area. No adverse impact upon soils or vegetation is expected. The modeled concentrations are below the primary and secondary NAAQS limits.

Modeling analyses shows that the proposed installation of the CCE Project will not cause or contribute significantly to a violation of the NAAQS criteria pollutants. Modeling demonstrates compliance with all applicable air toxics standards too.

CONCLUSION

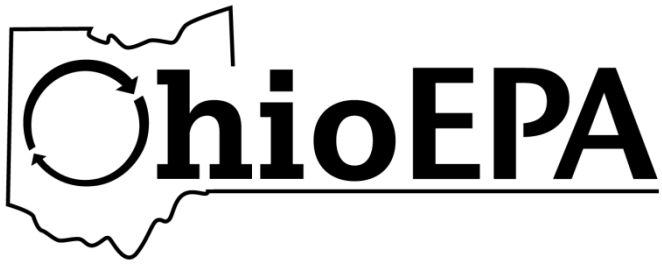
Based upon the review of the permit to install application and the supporting documentation provided by the applicant, the Ohio EPA staff has determined the proposed installation will comply with all applicable State and Federal environmental regulations and that the requirements for BACT are satisfied. Therefore, the Ohio EPA staff recommends that a permit to install be issued to the CCE for the proposed installation.

Carroll County

PUBLIC NOTICE
Issuance of Draft Air Pollution Permit-To-Install
Carroll County Energy LLC

Issue Date: 9/18/2013
Permit Number: P0113762
Permit Type: Initial Installation
Permit Description: Installation of a natural gas-fired combined cycle combustion turbine electric utility power plant, nominally rated at 742 MW.
Facility ID: 0210002025
Facility Location: Carroll County Energy LLC
2061 Kensington Rd,
Washington Twp., OH 44615
Facility Description: Fossil Fuel Electric Power Generation

The Director of the Ohio Environmental Protection Agency issued the draft permit above. The permit and complete instructions for requesting information or submitting comments may be obtained at: http://epa.ohio.gov/dapc/permitsonline.aspx by entering the permit # or: Kenneth Djukic, Ohio EPA DAPC, Northeast District Office, 2110 East Aurora Road, Twinsburg, OH 44087. Ph: (330)425-9171



DRAFT

Division of Air Pollution Control
Permit-to-Install
for
Carroll County Energy LLC

Facility ID:	0210002025
Permit Number:	P0113762
Permit Type:	Initial Installation
Issued:	9/18/2013
Effective:	To be entered upon final issuance

Division of Air Pollution Control
Permit-to-Install
for
Carroll County Energy LLC

Table of Contents

Authorization

Facility ID:	0210002025
Facility Description:	
Application Number(s):	A0047258, A0048289
Permit Number:	P0113762
Permit Description:	Installation of a natural gas-fired combined cycle combustion turbine electric utility power plant, nominally rated at 742 MW.
Permit Type:	Initial Installation
Permit Fee:	$4,800.00*DO NOT send payment at this time, subject to change before final issuance*
Issue Date:	9/18/2013
Effective Date:	To be entered upon final issuance

This document constitutes issuance to:

Carroll County Energy LLC
2061 Kensington Rd
Washington Twp., OH 44615

of a Permit-to-Install for the emissions unit(s) identified on the following page.

Ohio Environmental Protection Agency (EPA) District Office or local air agency responsible for processing and administering your permit:

Ohio EPA DAPC, Northeast District Office
2110 East Aurora Road
Twinsburg, OH 44087
(330)425-9171

The above named entity is hereby granted a Permit-to-Install for the emissions unit(s) listed in this section pursuant to Chapter 3745-31 of the Ohio Administrative Code. Issuance of this permit does not constitute expressed or implied approval or agreement that, if constructed or modified in accordance with the plans included in the application, the emissions unit(s) of environmental pollutants will operate in compliance with applicable State and Federal laws and regulations, and does not constitute expressed or implied assurance that if constructed or modified in accordance with those plans and specifications, the above described emissions unit(s) of pollutants will be granted the necessary permits to operate (air) or NPDES permits as applicable.

This permit is granted subject to the conditions attached hereto.

Ohio Environmental Protection Agency

Scott J. Nally
Director

Authorization (continued)

Permit Number: P0113762
Permit Description: Installation of a natural gas-fired combined cycle combustion turbine electric utility power plant, nominally rated at 742 MW.

Permits for the following Emissions Unit(s) or groups of Emissions Units are in this document as indicated below:

Emissions Unit ID:	**B001**
Company Equipment ID:	Auxiliary Boiler
Superseded Permit Number:	
General Permit Category and Type:	Not Applicable
Emissions Unit ID:	**P003**
Company Equipment ID:	Emergency Generator
Superseded Permit Number:	
General Permit Category and Type:	Not Applicable
Emissions Unit ID:	**P004**
Company Equipment ID:	Emergency Fire Pump
Superseded Permit Number:	
General Permit Category and Type:	Not Applicable

Group Name: CTGs #1 and #2.

Emissions Unit ID:	**P001**
Company Equipment ID:	CTG Unit #1
Superseded Permit Number:	
General Permit Category andType:	Not Applicable
Emissions Unit ID:	**P002**
Company Equipment ID:	CTG Unit #2
Superseded Permit Number:	
General Permit Category andType:	Not Applicable

A. Standard Terms and Conditions

1. Federally Enforceable Standard Terms and Conditions

a) All Standard Terms and Conditions are federally enforceable, with the exception of those listed below which are enforceable under State law only:

(1) Standard Term and Condition A.2.a), Severability Clause

(2) Standard Term and Condition A.3.c) through A. 3.e)General Requirements

(3) Standard Term and Condition A.6.c) and A. 6.d), Compliance Requirements

(4) Standard Term and Condition A.9., Reporting Requirements

(5) Standard Term and Condition A.10., Applicability

(6) Standard Term and Condition A.11.b) through A.11.e), Construction of New Source(s) and Authorization to Install

(7) Standard Term and Condition A.14., Public Disclosure

(8) Standard Term and Condition A.15., Additional Reporting Requirements When There Are No Deviations of Federally Enforceable Emission Limitations, Operational Restrictions, or Control Device Operating Parameter Limitations

(9) Standard Term and Condition A.16., Fees

(10) Standard Term and Condition A.17., Permit Transfers

2. Severability Clause

a) A determination that any term or condition of this permit is invalid shall not invalidate the force or effect of any other term or condition thereof, except to the extent that any other term or condition depends in whole or in part for its operation or implementation upon the term or condition declared invalid.

b) All terms and conditions designated in parts B and C of this permit are federally enforceable as a practical matter, if they are required under the Act, or any of its applicable requirements, including relevant provisions designed to limit the potential to emit of a source, are enforceable by the Administrator of the U.S. EPA and the State and by citizens (to the extent allowed by section 304 of the Act) under the Act. Terms and conditions in parts B and C of this permit shall not be federally enforceable and shall be enforceable under State law only, only if specifically identified in this permit as such.

3. General Requirements

a) The permittee must comply with all terms and conditions of this permit. Any noncompliance with the federally enforceable terms and conditions of this permit constitutes a violation of the Act, and is grounds for enforcement action or for permit revocation, revocation and re-issuance, or modification.

b) It shall not be a defense for the permittee in an enforcement action that it would have been necessary to halt or reduce the permitted activity in order to maintain compliance with the federally enforceable terms and conditions of this permit.

c) This permit may be modified, revoked, or revoked and reissued, for cause. The filing of a request by the permittee for a permit modification, revocation and reissuance, or revocation, or of a notification of planned changes or anticipated noncompliance does not stay any term and condition of this permit.

d) This permit does not convey any property rights of any sort, or any exclusive privilege.

e) The permittee shall furnish to the Director of the Ohio EPA, or an authorized representative of the Director, upon receipt of a written request and within a reasonable time, any information that may be requested to determine whether cause exists for modifying or revoking this permit or to determine compliance with this permit. Upon request, the permittee shall also furnish to the Director or an authorized representative of the Director, copies of records required to be kept by this permit. For information claimed to be confidential in the submittal to the Director, if the Administrator of the U.S. EPA requests such information, the permittee may furnish such records directly to the Administrator along with a claim of confidentiality.

4. Monitoring and Related Record Keeping and Reporting Requirements

a) Except as may otherwise be provided in the terms and conditions for a specific emissions unit, the permittee shall maintain records that include the following, where applicable, for any required monitoring under this permit:

(1) The date, place (as defined in the permit), and time of sampling or measurements.

(2) The date(s) analyses were performed.

(3) The company or entity that performed the analyses.

(4) The analytical techniques or methods used.

(5) The results of such analyses.

(6) The operating conditions existing at the time of sampling or measurement.

b) Each record of any monitoring data, testing data, and support information required pursuant to this permit shall be retained for a period of five years from the date the record was created. Support information shall include, but not be limited to all calibration and maintenance records and all original strip-chart recordings for continuous monitoring instrumentation, and copies of all reports required by this permit. Such records may be maintained in computerized form.

c) Except as may otherwise be provided in the terms and conditions for a specific emissions unit, the permittee shall submit required reports in the following manner:

(1) Reports of any required monitoring and/or recordkeeping of federally enforceable information shall be submitted to the Ohio EPA DAPC, Northeast District Office.

(2) Quarterly written reports of (i) any deviations from federally enforceable emissionlimitations, operationalrestrictions, andcontroldeviceoperatingparameterlimitations, excluding deviations resulting from malfunctions reported in accordance with OAC rule 3745-15-06, that have been detected by the testing, monitoring and recordkeeping requirements specified in this permit, (ii) the probable cause of such deviations, and (iii) any corrective actions or preventive measures taken, shall be made to the Ohio EPA DAPC, Northeast District Office. The written reports shall be submitted (i.e., postmarked) quarterly, by January 31, April 30, July 31, and October 31 of each year and shall cover the previous calendar quarters. See A.15. below if no deviations occurred during the quarter.

(3) Written reports, which identify any deviations from the federally enforceable monitoring, recordkeeping, andreportingrequirements contained in this permit shall be submitted (i.e., postmarked) to the Ohio EPA DAPC, Northeast District Office every six months, by January 31 and July 31 of each year for the previous six calendar months. If no deviations occurred during a six-month period, the permittee shall submit a semi-annual report, which states that no deviations occurred during that period.

(4) This permit is for an emissions unit located at a Title V facility. Each written report shall be signed by a responsible official certifying that, based on information and belief formed after reasonable inquiry, the statements and information in the report are true, accurate, and complete.

d) The permittee shall report actual emissions pursuant to OAC Chapter 3745-78 for the purpose of collecting Air Pollution Control Fees.

5. Scheduled Maintenance/Malfunction Reporting

Any scheduled maintenance of air pollution control equipment shall be performed in accordance with paragraph (A) of OAC rule 3745-15-06. The malfunction, i.e., upset, of any emissions units or any associated air pollution control system(s) shall be reported to the Ohio EPA DAPC, Northeast District Office in accordance with paragraph (B) of OAC rule 3745-15-06. (The definition of an upset condition shall be the same as that used in OAC rule 3745-15-06(B)(1) for a malfunction.) The verbal and written reports shall be submitted pursuant to OAC rule 3745-15-06.

Except as provided in that rule, any scheduled maintenance or malfunction necessitating the shutdown or bypassing of any air pollution control system(s) shall be accompanied by the shutdown of the emission unit(s) that is (are) served by such control system(s).

6. Compliance Requirements

a) The emissions unit(s) identified in this Permit shall remain in full compliance with all applicable State laws and regulations and the terms and conditions of this permit.

b) Any document (including reports) required to be submitted and required by a federally applicable requirement in this permit shall include a certification by a responsible official that, based on information and belief formed after reasonable inquiry, the statements in the document are true, accurate, and complete.

c) Upon presentation of credentials and other documents as may be required by law, the permittee shall allow the Director of the Ohio EPA or an authorized representative of the Director to:

(1) At reasonable times, enter upon the permittee's premises where a source is located or the emissions-related activity is conducted, or where records must be kept under the conditions of this permit.

(2) Have access to and copy, at reasonable times, any records that must be kept under the conditions of this permit, subject to the protection from disclosure to the public of confidential information consistent with ORC section 3704.08.

(3) Inspect at reasonable times any facilities, equipment (including monitoring and air pollution control equipment), practices, or operations regulated or required under this permit.

(4) As authorized by the Act, sample or monitor at reasonable times substances or parameters for the purpose of assuring compliance with the permit and applicable requirements.

d) The permittee shall submit progress reports to the Ohio EPA DAPC, Northeast District Office concerning any schedule of compliance for meeting an applicable requirement. Progress reports shall be submitted semiannually or more frequently if specified in the applicable requirement or by the Director of the Ohio EPA. Progress reports shall contain the following:

(1) Dates for achieving the activities, milestones, or compliance required in any schedule of compliance, and dates when such activities, milestones, or compliance were achieved.

(2) An explanation of why any dates in any schedule of compliance were not or will not be met, and any preventive or corrective measures adopted.

7. Best Available Technology

As specified in OAC Rule 3745-31-05, new sources that must employ Best Available Technology (BAT) shall comply with the Applicable Emission Limitations/Control Measures identified as BAT for each subject emissions unit.

8. Air Pollution Nuisance

The air contaminants emitted by the emissions units covered by this permit shall not cause a public nuisance, in violation of OAC rule 3745-15-07.

9. Reporting Requirements

The permittee shall submit required reports in the following manner:

a) Reports of any required monitoring and/or recordkeeping of state-only enforceable information shall be submitted to the Ohio EPA DAPC, Northeast District Office.

b) Except as otherwise may be provided in the terms and conditions for a specific emissions unit, quarterly written reports of (a) any deviations (excursions) from state-only required emission limitations, operational restrictions, and control device operating parameter limitations that have

been detected by the testing, monitoring, and recordkeeping requirements specified in this permit, (b) the probable cause of such deviations, and (c) any corrective actions or preventive measures which have been or will be taken, shall be submitted to the Ohio EPA DAPC, Northeast District Office. If no deviations occurred during a calendar quarter, the permittee shall submit a quarterly report, which states that no deviations occurred during that quarter. The reports shall be submitted (i.e., postmarked) quarterly, by January 31, April 30, July 31, and October 31 of each year and shall cover the previous calendar quarters. (These quarterly reports shall exclude deviations resulting from malfunctions reported in accordance with OAC rule 3745-15-06.)

10. Applicability

This Permit-to-Install is applicable only to the emissions unit(s) identified in the Permit-to-Install. Separate application must be made to the Director for the installation or modification of any other emissions unit(s).

11. Construction of New Sources(s) and Authorization to Install

a) This permit does not constitute an assurance that the proposed source will operate in compliance with all Ohio laws and regulations. This permit does not constitute expressed or implied assurance that the proposed facility has been constructed in accordance with the application and terms and conditions of this permit. The action of beginning and/or completing construction prior to obtaining the Director's approval constitutes a violation of OAC rule 3745-31-02. Furthermore, issuance of this permit does not constitute an assurance that the proposed source will operate in compliance with all Ohio laws and regulations. Issuance of this permit is not to be construed as a waiver of any rights that the Ohio Environmental Protection Agency (or other persons) may have against the applicant for starting construction prior to the effective date of the permit. Additional facilities shall be installed upon orders of the Ohio Environmental Protection Agency if the proposed facilities cannot meet the requirements of this permit or cannot meet applicable standards.

b) If applicable, authorization to install any new emissions unit included in this permit shall terminate within eighteen months of the effective date of the permit if the owner or operator has not undertaken a continuing program of installation or has not entered into a binding contractual obligation to undertake and complete within a reasonable time a continuing program of installation. This deadline may be extended by up to 12 months if application is made to the Director within a reasonable time before the termination date and the party shows good cause for any such extension.

c) The permittee may notify Ohio EPA of any emissions unit that is permanently shut down (i.e., the emissions unit has been physically removed from service or has been altered in such a way that it can no longer operate without a subsequent "modification" or "installation" as defined in OAC Chapter 3745-31) by submitting a certification from the authorized official that identifies the date on which the emissions unit was permanently shut down. Authorization to operate the affected emissions unit shall cease upon the date certified by the authorized official that the emissions unit was permanently shut down. At a minimum, notification of permanent shut down shall be made or confirmed by marking the affected emissions unit(s) as “permanently shut down” in Ohio EPA’s “Air Services” along with the date the emissions unit(s) was permanently removed and/or disabled. Submitting the facility profile update will constitute notifying of the permanent shutdown of the affected emissions unit(s).

d) The provisions of this permit shall cease to be enforceable for each affected emissions unit after the date on which an emissions unit is permanently shut down (i.e., emissions unit has been physically removed from service or has been altered in such a way that it can no longer operate without a subsequent "modification" or "installation" as defined in OAC Chapter 3745-31). All records relating to any permanently shutdown emissions unit, generated while the emissions unit was in operation, must be maintained in accordance with law. All reports required by this permit must be submitted for any period an affected emissions unit operated prior to permanent shut down. At a minimum, the permit requirements must be evaluated as part of the reporting requirements identified in this permit covering the last period the emissions unit operated.

No emissions unit certified by the authorized official as being permanently shut down may resume operation without first applying for and obtaining a permit pursuant to OAC Chapter 3745-31.

e) The permittee shall comply with any residual requirements related to this permit, such as the requirement to submit a deviation report, air fee emission report, or other any reporting required by this permit for the period the operating provisions of this permit were enforceable, or as required by regulation or law. All reports shall be submitted in a form and manner prescribed by the Director. All records relating to this permit must be maintained in accordance with law.

12. Permit-To-Operate Application

The permittee is required to apply for a Title V permit pursuant to OAC Chapter 3745-77. The permittee shall submit a complete Title V permit application or a complete Title V permit modification application within twelve (12) months after commencing operation of the emissions units covered by this permit. However, if the proposed new or modified source(s) would be prohibited by the terms and conditions of an existing Title V permit, a Title V permit modification must be obtained before the operation of such new or modified source(s) pursuant to OAC rule 3745-77-04(D) and OAC rule 3745-77-08(C)(3)(d).

13. Construction Compliance Certification

The applicant shall identify the following dates in the online facility profile for each new emissions unit identified in this permit.

a) Completion of initial installation date shall be enteredupon completion of construction and prior to start-up.

b) Commence operation after installation or latest modification date shall be entered within 90 days after commencing operation of the applicable emissions unit.

14. Public Disclosure

The facility is hereby notified that this permit, and all agency records concerning the operation of this permitted source, are subject to public disclosure in accordance with OAC rule 3745-49-03.

15. Additional Reporting Requirements When There Are No Deviations of Federally Enforceable Emission Limitations, Operational Restrictions, or Control Device Operating Parameter Limitations

If no deviations occurred during a calendar quarter, the permittee shall submit a quarterly report, which states that no deviations occurred during that quarter. The reports shall be submitted quarterly (i.e., postmarked), by January 31, April 30, July 31, and October 31 of each year and shall cover the previous calendar quarters.

16. Fees

The permittee shall pay fees to the Director of the Ohio EPA in accordance with ORC section 3745.11 and OAC Chapter 3745-78. The permittee shall pay all applicable permit-to-install fees within 30 days after the issuance of any permit-to-install. The permittee shall pay all applicable permit-to-operate fees within thirty days of the issuance of the invoice.

17. Permit Transfers

Any transferee of this permit shall assume the responsibilities of the prior permit holder. The new owner must update and submit the ownership information via the “Owner/Contact Change” functionality in Air Services once the transfer is legally completed.The change must be submitted through Air Services within thirty days of the ownership transfer date.

18. Risk Management Plans

If the permittee is required to develop and register a risk management plan pursuant to section 112(r) of the Clean Air Act, as amended, 42 U.S.C. 7401 et seq. ("Act"), the permittee shall comply with the requirement to register such a plan.

19. Title IV Provisions

If the permittee is subject to the requirements of 40 CFR Part 72 concerning acid rain, the permittee shall ensure that any affected emissions unit complies with those requirements. Emissions exceeding any allowances that are lawfully held under Title IV of the Act, or any regulations adopted thereunder, are prohibited.

B. Facility-Wide Terms and Conditions

1. All the following facility-wide terms and conditions are federally enforceable with the exception of those listed below which are enforceable under state law only:

   a) None.

2. The permittee shall ensure that any emissions unit(s) subject to the Clean Air Interstate Rule (CAIR) complies/comply with the requirements of the Ohio Administrative Code (OAC) Chapter 3745-109, which includes submitting timely permit applications.

3. The following emissions unit contained in this permit is subject to 40 CFR Part 60 Subparts A and Dc: B001. The complete NSPS requirements, including the NSPS General Provisions may be accessed via the internet from the electronic Code of Federal Regulations (e-CFR) website www.ecfr.gov or by contacting the appropriate Ohio EPA district or local air agency.

4. The following emissions unit contained in this permit is subject to 40 CFR Part 60 Subparts A and IIII: P003 and P004. The complete NSPS requirements, including the NSPS General Provisions may be accessed via the internet from the electronic Code of Federal Regulations (e-CFR) website www.ecfr.gov or by contacting the appropriate Ohio EPA district or local air agency.

5. The following emissions unit contained in this permit is subject to 40 CFR Part 60 Subparts A and KKKK: P001 and P002. The complete NSPS requirements, including the NSPS General Provisions may be accessed via the internet from the electronic Code of Federal Regulations (e-CFR) website www.ecfr.gov or by contacting the appropriate Ohio EPA district or local air agency.

6. The following emissions unit contained in this permit is subject to 40 CFR Part 63 Subparts A and ZZZZ: P003 and P004. The complete MACT requirements, including the MACT General Provisions may be accessed via the internet from the electronic Code of Federal Regulations (e-CFR) website www.ecfr.gov or by contacting the appropriate Ohio EPA district or local air agency.

C. Emissions Unit Terms and Conditions

1. B001, Auxiliary Boiler

Operations, Property and/or Equipment Description:

99 mmBtu/hr (higher heating value (HHV)) natural gas-fired boiler with low-NO_x burners and flue gas re-circulation.

a) The following emissions unit terms and conditions are federally enforceable with the exception of those listed below which are enforceable under state law only.

(1) None.

b) Applicable Emissions Limitations and/or Control Requirements

(1) The specific operation(s), property, and/or equipment that constitute each emissions unit along with the applicable rules and/or requirements and with the applicable emissions limitations and/or control measures are identified below. Emissions from each unit shall not exceed the listed limitations, and the listed control measures shall be specified in narrative form following the table.

	Applicable Rules/Requirements	Applicable Emissions Limitations/Control Measures
a.	ORC 3704.03(T)	See b)(2)a.
b.	OAC rule 3745-31-05(A)(3), as effective 11/30/2001	Sulfur dioxide (SO_2) emissions shall not exceed 2.9E-03 pound per million Btu (lb/mmBtu) of heat input and 0.65 ton per year. See b)(2)a and b)(2)b.
c.	OAC rule 3745-31-05(A)(3)(b), as effective 12/01/2006	See b)(2)c.
d.	OAC rule 3745-31-10 through 20	Carbon monoxide (CO) emissions shall not exceed 0.055 pound per million Btu (lb/mmBtu) of heat input, 5.45 pounds per hour (lbs/hr), and 12.25 tons per rolling, 12-month period. Nitrogen oxides (NO_x) emissions shall not exceed 0.020 lb/mmBtu of heat input, 1.98 lbs/hr, and 4.46 tons per rolling, 12-month period. Particulate matter emissions less than 10 microns in diameter (PM_{10}) and particulate matter less than 2.5 microns in diameter ($PM_{2.5}$) shall not exceed 0.008 lb/mmBtu of heat input, 0.79 lb/hr, and 1.78 ton per rolling, 12-month period.

	Applicable Rules/Requirements	Applicable Emissions Limitations/Control Measures
		Volatile organic compound (VOC) emissions shall not exceed 0.006 lb/mmBtu of heat input, 0.59 lb/hr and 1.34 ton per rolling, 12-month period. Sulfuric acid mist (H_2SO_4) emissions shall not exceed 2.2E-04 lb/mmBtu, 0.02 lb/hr, and 0.05 ton per rolling, 12-month period. Carbon dioxide equivalent (CO_2e) emissions shall not exceed 26,259.76 tons per rolling, 12-month period. Visible particulate emissions from the stack serving this emissions unit shall not exceed 10% opacity as a 6-minute average. See b)(2)d, b)(2)e and b)(2)k.
e.	OAC rule 3745-17-07(A)	See b)(2)f.
f.	OAC rule 3745-17-10(B)(1)	See b)(2)f.
g.	OAC rule 3745-110-03(J)(16)	Exemption. See b)(2)l.
h.	40 CFR Part 60, Subpart A	See b)(2)g.
i.	40 CFR Part 60, Subpart Dc	See b)(2)h and b)(2)i.
j.	40 CFR Part 63, Subpart JJJJJJ	See b)(2)j.

Note that values are based on higher heating value (HHV).

(2) Additional Terms and Conditions

a. Compliance with the requirements of this rule for CO, NO_x, $PM_{10}/PM_{2.5}$, and VOC emissions includes compliance with the requirements of OAC rule 3745-31-10 through 20.

b. The permittee has satisfied the Best Available Technology (BAT) requirements pursuant to Ohio Administrative Code (OAC) paragraph 3745-31-05(A)(3), as effective November 30, 2001, in this permit. On December 1, 2006, paragraph (A)(3) of OAC rule 3745-31-05 was revised to conform to the Ohio Revised Code (ORC) changes effective August 3, 2006 (Senate Bill 265 changes), such that BAT is no longer required by State regulations for National Ambient Air Quality Standards (NAAQS) pollutant(s) less than ten tons per year. However, that rule revision has not yet been approved by U.S. EPA as a revision to Ohio's State Implementation Plan (SIP). Therefore, until the SIP revision occurs and the U.S. EPA approves the revisions to OAC rule 3745-31-05, the requirement to satisfy BAT still exists as part of the federally-approved SIP for Ohio. Once U.S. EPA approves the December 1, 2006 version of OAC rule 3745-31-05, then these emission limitations/control measures no longer apply.

c. This rule paragraph applies once U.S. EPA approves the December 1, 2006 version of OAC rule 3745-31-05 as part of the State Implementation Plan.

The Best Available Technology (BAT) requirements under OAC rule 3745-31-05(A)(3) do not apply to the NO_x, $PM_{10}/PM_{2.5}$, SO_2, and VOC emissions from this air contaminant source since the uncontrolled potential to emit for NO_x, $PM_{10}/PM_{2.5}$, SO_2, and VOC is less than 10 tons per year .

d. All particulate emissions are assumed to be less than 2.5 microns in diameter. The $PM_{10}/PM_{2.5}$ emission limitations include both filterable and condensable particulate emissions.

e. The lb/mmBtu and lb/hr emission limitations are based on the emissions unit's potentials to emit. Therefore, no monitoring, record keeping, and reporting requirements are necessary to ensure ongoing compliance with these emission limitations.

f. The emission limitation required by this applicable rule is less stringent than the emission limitation established by OAC rule 3745-31-10 through 20.

g. 40 CFR Part 60, Subpart A provides applicability provisions, definitions, and other general provisions that are pertinent to emissions units affected by 40 CFR Part 60.

h. This rule does not establish emission limitations for natural gas-fired boilers, but does require record keeping of gas usage per 40 CFR 60.48c(g).

i. This emissions unit is subject to the applicable provisions of Subpart Dc of the New Source Performance Standards (NSPS) as promulgated by the United States Environmental Protection Agency, 40 CFR Part 60. The application and enforcement of these standards are delegated to the Ohio EPA. The requirements of 40 CFR Part 60 are also federally enforceable.

j. This emissions unit is exempt from the requirements of this rule per 40 CFR 63.11195(e) due to combusting only natural gas.

k. The maximum annual operating hours for this emissions unit shall not exceed 4,500 hours per rolling, 12-month period.

To ensure enforceability during the first 12 calendar months of operation or the first 12 calendar months following the issuance of this permit, the permittee shall not exceed the operating hours levels specified in the following table:

Month(s)	Maximum Allowable Cumulative Operating Hours
1	744
1-2	1,488
1-3	2,232
1-4	2,976
1-5	3,720

1-6	4,464
1-7	4,500
1-8	4,500
1-9	4,500
1-10	4,500
1-11	4,500
1-12	4,500

After the first 12 calendar months of operation or the first 12 calendar months following the issuance of this permit, compliance with the annual operating hours limitation shall be based upon a rolling, 12-month summation of the operating hours.

l. The permittee is exempt from the requirements of OAC rule 3745-110-03(A) through (F), since this permit restricts NO_x emissions from this emissions unit to less than 25 tons per year.

c) Operational Restrictions

(1) The permittee shall burn only natural gas as fuel in this emissions unit.

d) Monitoring and/or Recordkeeping Requirements

(1) For each day during which the permittee burns a fuel other than natural gas, the permittee shall maintain a record of the type and quantity of fuel burned in this emissions unit.

(2) The permittee shall maintain monthly records of the following information:

a. the operating hours for each month; and

b. beginning after the first 12 calendar months of operation or the first 12 calendar months following the issuance of this permit, the rolling, 12-month summation of the operating hours.

Also, during the first 12 calendar months of operation or the first 12 calendar months following the issuance of this permit, the permittee shall record the cumulative operating hours for each calendar month.

(3) See 40 CFR Part 60, Subpart Dc (40 CFR 60.4200-4219).

e) Reporting Requirements

(1) The permittee shall submit deviation (excursion) reports that identify each day when a fuel other than natural gas was burned in this emissions unit. Each report shall be submitted within 30 days after the deviation occurs.

(2) Pursuant to the 40 CFR Part 60.7 and 60.48c(a), the permittee is hereby advised of the requirement to report the following at the appropriate times:

a. construction date (no later than 30 days after such date);

b. anticipated start-up date (not more than 60 days or less than 30 days prior to such date);

c. actual start-up date (within 15 days after such date); and

d. the design heat input capacity of the affected facility and identification of fuels to be combusted in the affected facility.

(3) The permittee shall submit quarterly deviation (excursion) reports that identify the following:

a. all exceedances of the rolling, 12-month limitation on the hours of operation for this emissions unit; and

b. for the first 12 calendar months of operation or the first 12 calendar months following the issuance of this permit, all exceedances of the maximum allowable cumulative hours of operation.

The quarterly deviation (excursion) reports shall be submitted in accordance with the reporting requirements of the Standard Terms and Conditions of this permit.

(4) See 40 CFR Part 60, Subpart Dc (40 CFR 60.4200-4219).

(5) Unless other arrangements have been approved by the Director, all notifications and reports shall be submitted through the Ohio EPA's eBusiness Center: Air Services online web portal.

f) Testing Requirements

(1) Compliance with the Emissions Limitations and/or Control Requirements specified in section b) of these terms and conditions shall be determined in accordance with the following methods:

a. Emission Limitation:

CO emissions shall not exceed 0.055 lb/mmBtu of heat input (HHV), 5.45 lbs/hr, and 12.25 tons per rolling, 12-month period.

Applicable Compliance Method:

The lb/mmBtu emission limitation is based on manufacturer's data (HHV). The hourly emission limitation was developed by multiplying the maximum heat input (99 mmBtu/hr) by the CO emission factor supplied by the manufacturer (0.055 lb/mmBtu) to determine the hourly emissions.

The annual CO emission limitation was developed by multiplying the hourly emission limitation (5.45 lbs/hr) by the maximum annual operating hours (4,500 hrs/yr) and dividing by 2,000 pounds per ton. Therefore, compliance with the annual limitation shall be demonstrated if compliance with the hourly limitation is shown.

Compliance with the short-term emission limitations shall be demonstrated based upon the emission test required in f)(2).

b. Emission Limitation:

NO_x emissions shall not exceed 0.020 lb/mmBtu of heat input (HHV), 1.98 lbs/hr, and 4.46 tons per rolling, 12-month period.

Applicable Compliance Method:

The lb/mmBtu limitation is based on manufacturer's data (HHV). The hourly emission limitation was developed by multiplying the maximum heat input (99 mmBtu/hr) by the NO_x emission factor supplied by the manufacturer (0.020 lb/mmBtu) to determine the hourly emissions.

The annual NO_x emission limitation was developed by multiplying the hourly emission limitation (1.98 lbs/hr) by the maximum annual operating hours (4,500 hrs/yr) and dividing by 2,000 pounds per ton. Therefore, compliance with the annual limitation shall be demonstrated if compliance with the hourly limitation is shown.

Compliance with the short-term emission limitations shall be demonstrated based upon the emission test required in f)(2).

c. Emission Limitation:

PM_{10} and $PM_{2.5}$ shall not exceed 0.008 lb/mmBtu of heat input (HHV), 0.79 lb/hr, and 1.78 ton per rolling, 12-month period.

Applicable Compliance Method:

The lb/mmBtu limitation is based on manufacturer's data (HHV). The hourly emission limitation was developed by multiplying the maximum heat input (99 mmBtu/hr) by the $PM_{10}/PM_{2.5}$ emission factor supplied by the manufacturer (0.008 lb/mmBtu) to determine the hourly emissions.

If required, the permittee shall demonstrate compliance with the lb/mmBtu and hourly emission limitations using Methods 201 or 201A and 202 of 40 CFR Part 51, Appendix M. Alternative U.S. EPA-approved test methods may be used with prior approval from the Ohio EPA.

The annual $PM_{10}/PM_{2.5}$ emission limitation was developed by multiplying the hourly emission limitation (0.79 lb/hr) by the maximum annual operating hours (4,500 hrs/yr) and dividing by 2,000 pounds per ton. Therefore, compliance with the annual limitation shall be demonstrated if compliance with the hourly limitation is shown.

d. Emission Limitation:

SO_2 emissions shall not exceed 2.9E-03 lb/mmBtu of heat input (HHV) and 0.65 ton/yr.

Applicable Compliance Method:

The lb/mmBtu limitation (HHV) was established based on using natural gas having a maximum sulfur content of 1.0 grain per 100 cubic feet according to the following calculation. Multiply the maximum sulfur content of natural gas (1.0 grain S/100 scf) by the molecular weight of SO_2 (64.07 lb SO_2/lb-mole) divide by the molecular weight of sulfur (32.06 lb S/lb-mole) divide by (7,000 grains/lb), divide by (1,000 Btu/scf), and multiply by (10^6 Btu/mmBtu).

If required, the permittee shall demonstrate compliance with the lb/mmBtu emission limitation using Methods 1 thru 4 and 6C of 40 CFR Part 60, Appendix A. Alternative U.S. EPA-approved test methods may be used with prior approval from the Ohio EPA.

The annual emission limitation was developed by multiplying the lb/mmBtu emission limitation (2.9E-03 lb/mmBtu) by the maximum heat input (99 mmBtu/hr), multiplied by the maximum operating hours (4,500 hrs/yr) and then dividing by 2,000 pounds per ton. Therefore compliance with the annual limitation shall be demonstrated if compliance with the hourly limitation is shown.

e. Emission Limitation:

VOC emissions shall not exceed 0.006 lb/mmBtu of heat input, 0.59 lb/hr, and 1.34 ton per rolling, 12-month period.

Applicable Compliance Method:

The lb/mmBtu limitation is based on manufacturer's data (HHV). The hourly emission limitation was developed by multiplying the maximum heat input (99 mmBtu/hr) by the VOC emission factor supplied by the manufacturer (0.006 lb/mmBtu) to determine the hourly emissions.

If required, the permittee shall demonstrate compliance with the lb/mmBtu and hourly emission limitations using Methods 1 through 4 and 18, 25 or 25A, as appropriate, of 40 CFR Part 60, Appendix A. Use of Method 18, 25 or 25A is to be selected based on the results of pre-survey stack sampling and U.S. EPA guidance documents. Alternative U.S. EPA-approved test methods may be used with prior approval from the Ohio EPA.

The annual emission limitation was developed by multiplying the hourly emission limitation (0.59 lb/hr) by the maximum annual operating hours (4,500 hrs/yr) and dividing by 2,000 pounds per ton. Therefore, compliance with the annual limitation shall be demonstrated if compliance with the hourly limitation is maintained.

f. Emission Limitation:

H_2SO_4 emissions shall not exceed 2.2E-04 lb/mmBtu (HHV), 0.02 lb/hr , and 0.05 ton per rolling, 12-month period.

Applicable Compliance Method:

The lb/mmBtu emission limitation is based on the assumption that 5% of the SO_2 emissions are converted to SO_3 and then converted to H_2SO_4 when combined with water vapor by the following calculation.

2.9E-03 lb SO_2/mmBtu(0.05)(98 lb H_2SO_4/lb-mole)(lb-mole/64 lb SO_2) = 2.2E-04 lb H_2SO_4/mmBtu

Multiply the lb H_2SO_4/mmBtu (2.2E-04 lb/mmBtu) by the maximum heat input (99 mmBtu/hr) to determine the maximum hourly H_2SO_4 emissions (0.02 lb/hr), and multiply by the maximum annual hours of operation (4,500 hrs/yr) divided by 2,000 lbs/ton to determine the annual H_2SO_4 emissions (0.05 ton/yr).

If required, the permittee shall demonstrate compliance with the lb/mmBtu and lb/hr emission limitations using Methods 1 thru 4 and 8 of 40 CFR Part 60, Appendix A.

g. Emission Limitation:

CO_2e emissions shall not exceed 26,259.76 tons per rolling, 12-month period.

Applicable Compliance Method:

This emission limitation was established to reflect the potential to emit for this emissions unit by calculating the sum of the product of the maximum natural gas firing rate (99 mmBtu/hr) multiplied by the AP-42 emission factor for CO_2, N_2O, and CH_4 from Table 1.4-2 dated 7/98 (120,000 lb/mmscf, 0.64 lb/mmscf, and 2.3 lb/mmscf, respectively), multiplied by the global warming potential for CO_2, N_2O, and CH_4 (1, 310, and 21, respectively from Table A-1 to Subpart A of 40 CFR Part 98). Divide by the average heating value used for AP-42 emission factors in Table 1.-42 dated 7/98 (1,020 Btu/scf), multiply by the maximum annual hours of operation (4,500 hrs/yr) and divide by 2,000 pounds per ton.

$$\left(99\frac{mmBtu}{hr}\right)x\left[\left(120{,}000\frac{lb}{mmscf}x(1)\right)+\left((0.64\frac{lb}{mmscf)}(310)\right)\right.$$
$$\left.+\left(\left(2.3\frac{lb}{mmscf}\right)(21)\right)\right]x\left(\frac{mmscf}{1020mmBtu}\right)\left(4{,}500\frac{hrs}{hr}\right)x\left(\frac{ton}{2{,}000\ lb}\right)$$
$$=26{,}259.76\frac{tons}{yr}$$

Since the CO_2e emissions are estimated to consist of more than 99% CO_2, compliance with this emission limitation will be assumed provided that the lb/scf CO_2 emission rate does not exceed 120,000 lb/mmscf.

If required, the permittee shall conduct emissions testing using Methods 1, 2, 3A and 4 of 40 CFR Part 60, Appendix A to determine the lb/scf CO_2 emission rate. Alternative U.S. EPA-approved test methods may be used with prior approval from the Ohio EPA.

h. Emission Limitation:

Visible particulate emissions from the stack serving this emissions unit shall not exceed 10% opacity as a 6-minute average.

Applicable Compliance Method:

If required, compliance with the stack visible particulate emission limitation shall be demonstrated through visible emission observations performed in accordance with the methods and procedures specified in 40 CFR Part 60, Appendix A, Method 9.

(2) The permittee shall conduct, or have conducted, emission testing for this emissions unit in accordance with the following requirements:

a. The emission testing shall be conducted within 60 days after achieving the maximum production rate at which the emissions unit will be operated, but not later than 180 days after initial startup of the emissions unit.

b. The emission testing shall be conducted to demonstrate compliance with the following emission limitations:

i. CO emissions in lb/hr and lb/mmBtu; and

ii. NO_x emissions in lb/hr and lb/mmBtu.

The emission testing shall also be conducted to determine the CO_2 emission rate in lb/scf.

c. The following test method(s) shall be employed to demonstrate compliance with the allowable mass emission rate(s):

for CO, Methods 1 thru 4 and 10 of 40 CFR Part 60, Appendix A;

for NO_x Methods 1 thru 4 and 7E of 40 CFR Part 60, Appendix A; and

for CO_2, Methods 1, 2, 3A and 4 of 40 CFR Part 60, Appendix A.

Alternative U.S. EPA-approved test methods may be used with prior approval from the Ohio EPA.

d. The test(s) shall be conducted under those representative conditions that challenge to the fullest extent possible a facility's ability to meet the applicable emissions limits and/or control requirements, unless otherwise specified or approved by the Ohio EPA Northeast District Office. Although this generally consists of operating the emissions unit at its maximum material input/production rates and results in the highest emission rate of the tested pollutant, there may be circumstances where a lower emissions loading is deemed the most challenging control scenario. Failure to test under these conditions is justification for not accepting the test results as a demonstration of compliance.

e. Not later than 30 days prior to the proposed test date(s), the permittee shall submit an "Intent to Test" notification to the Ohio EPA Northeast District Office. The "Intent to Test" notification shall describe in detail the proposed test methods and procedures, the emissions unit operating parameters, the time(s) and date(s) of the test(s), and the person(s) who will be conducting the test(s). Failure to submit such notification for review and approval prior to the test(s) may result in the Ohio EPA Northeast District Office's refusal to accept the results of the emission test(s).

f. Personnel from the Ohio EPA Northeast District Office shall be permitted to witness the test(s), examine the testing equipment, and acquire data and information necessary to ensure that the operation of the emissions unit and the testing procedures provide a valid characterization of the emissions from the emissions unit and/or the performance of the control equipment.

g. A comprehensive written report on the results of the emissions test(s) shall be signed by the person or persons responsible for the tests and submitted to the Ohio EPA Northeast District Office within 30 days following completion of the test(s). The permittee may request additional time for the submittal of the written report, where warranted, with prior approval from the appropriate Ohio EPA District Northeast Office.

g) Miscellaneous Requirements

(1) None.

2. P003, Emergency Generator

Operations, Property and/or Equipment Description:

1,112 kW emergency diesel fired generator.

a) The following emissions unit terms and conditions are federally enforceable with the exception of those listed below which are enforceable under state law only.

(1) None.

b) Applicable Emissions Limitations and/or Control Requirements

(1) The specific operation(s), property, and/or equipment that constitute each emissions unit along with the applicable rules and/or requirements and with the applicable emissions limitations and/or control measures are identified below. Emissions from each unit shall not exceed the listed limitations, and the listed control measures shall be specified in narrative form following the table.

	Applicable Rules/Requirements	Applicable Emissions Limitations/Control Measures
a.	OAC rule 3745-31-05(A)(3), as effective 11/30/2001	Sulfur dioxide (SO_2) emissions shall not exceed 0.02 pound per hour (lb/hr) and 0.005 ton per year. See b)(2)a and b)(2)b.
b.	OAC rule 3745-31-05(A)(3)(b), as effective 12/01/2006	See b)(2)c.
c.	OAC rule 3745-31-10 through 20	Carbon monoxide (CO) emissions shall not exceed 3.5 g/kW-hr, 8.57 pounds per hour (lbs/hr), and 2.14 tons per rolling, 12-month period. Nitrogen oxides (NO_x) emissions shall not exceed 5.61 g/kW-hr, 13.74 lbs/hr, and 3.44 tons per rolling, 12-month period. Particulate matter emissions less than 10 microns in diameter (PM_{10}) and particulate matter less than 2.5 microns in diameter ($PM_{2.5}$) shall not exceed 0.20 g/kW-hr, 0.49 lb/hr, and 0.12 ton per rolling, 12-month period. Volatile organic compound (VOC) emissions shall not exceed 0.79 g/kW-hr, 1.93 lbs/hr, and 0.48 ton per rolling, 12-month period.

	Applicable Rules/Requirements	Applicable Emissions Limitations/Control Measures
		Sulfuric acid mist (H_2SO_4) emissions shall not exceed 1.32E-04 g/kW-hr, 3.23E-04 lb/hr and 8.08E-05 ton per rolling, 12-month period. Carbon dioxide equivalent (CO_2e) emissions shall not exceed 433.96 tons per rolling, 12-month period. See b)(2)d and b)(2)e.
d.	OAC rule 3745-17-07(A)	Visible particulate emissions from the stack serving this emissions unit shall not exceed 20% opacity as a 6-minute average, except as provided by the rule.
e.	OAC rule 3745-17-11(B)(5)(a)	See b)(2)f.
f.	OAC rule 3745-18-06(G)	Less stringent than 40 CFR Part 60, Subpart IIII.
g.	OAC rule 3745-110-03(J)(16) and (J)(19)	Exemptions. See b)(2)g.
h.	40 CFR Part 60, Subpart A (40 CFR 60.1 - 60.19)	Table 8 to Subpart IIII of 40 CFR Part 60 – Applicability of General Provisions to Subpart IIII shows which parts of the General Provisions in 40 CFR 60.1 - 60.19 apply.
i.	40 CFR Part 60, Subpart IIII (40 CFR 60.4200 – 60.4219) [In accordance with 40 CFR 60.4200(a)(2), this emissions unit is a compression ignition emergency stationary internal combustion engine (CI ICE) for which construction commenced after July 11, 2005 subject to the emissions limitation/control measures specified in this section.]	Non-methane hydrocarbon (NMHC) + NO_x emissions shall not exceed 6.4 g/kW-hr. CO emissions shall not exceed 3.5 g/kW-hr. PM emissions shall not exceed 0.20 g/kW-hr. Exhaust opacity shall not exceed: 20 percent during acceleration mode; 15 percent during lugging mode; and 50 percent during the peaks in either the acceleration or lugging modes. See b)(2)h. [60.4205(b) and 60.4207(b)]

	Applicable Rules/Requirements	Applicable Emissions Limitations/Control Measures
j.	40 CFR Part 63, Subpart ZZZZ (40 CFR 63.6580-63.6675) [In accordance with 40 CFR 63.6590(c)(1), this emissions unit is a new stationary internal combustion engine (RICE) located at an area source of HAP emissions subject to the emissions limitation/control measures specified in this section.]	See b)(2)i. [63.6590(c), (c)(1)]

Note that values are based on higher heating value (HHV).

(2) Additional Terms and Conditions

a. Compliance with the requirements of this rule for CO, NO_x, PM_{10}, $PM_{2.5}$, and VOC emissions includes compliance with the requirements of OAC rule 3745-31-10 through 20.

b. The permittee has satisfied the Best Available Technology (BAT) requirements pursuant to Ohio Administrative Code (OAC) paragraph 3745-31-05(A)(3), as effective November 30, 2001, in this permit. On December 1, 2006, paragraph (A)(3) of OAC rule 3745-31-05 was revised to conform to the Ohio Revised Code (ORC) changes effective August 3, 2006 (Senate Bill 265 changes), such that BAT is no longer required by State regulations for National Ambient Air Quality Standards (NAAQS) pollutant(s) less than ten tons per year. However, that rule revision has not yet been approved by U.S. EPA as a revision to Ohio's State Implementation Plan (SIP). Therefore, until the SIP revision occurs and the U.S. EPA approves the revisions to OAC rule 3745-31-05, the requirement to satisfy BAT still exists as part of the federally-approved SIP for Ohio. Once U.S. EPA approves the December 1, 2006 version of OAC rule 3745-31-05, then these emission limitations/control measures no longer apply.

c. This rule paragraph applies once U.S. EPA approves the December 1, 2006 version of OAC rule 3745-31-05 as part of the State Implementation Plan.

The Best Available Technology (BAT) requirements under OAC rule 3745-31-05(A)(3) do not apply to the CO, NO_x, $PM_{10}/PM_{2.5}$, SO_2, and VOC emissions from this air contaminant source since the uncontrolled potential to emit for CO, NO_x, $PM_{10}/PM_{2.5}$, SO_2, and VOC is less than 10 tons per year taking into account the federally enforceable emission limitations and operating hours restriction specified by OAC rule 3745-31-10 through 20.

d. All particulate emissions are assumed to be less than 2.5 microns in diameter. The $PM_{10}/PM_{2.5}$ emission limitations include both filterable and condensable particulate emissions.

e. The maximum annual operating hours for this emissions unit shall not exceed 500 hours, based upon a rolling, 12-month summation of the operating hours.

To ensure enforceability during the first 12 calendar months of operation or the first 12 calendar months following the issuance of this permit, the permittee shall not exceed the operating hours levels specified in the following table:

Month(s)	Maximum Allowable Cumulative Operating Hours
1	500
1-2	500
1-3	500
1-4	500
1-5	500
1-6	500
1-7	500
1-8	500
1-9	500
1-10	500
1-11	500
1-12	500

After the first 12 calendar months of operation or the first 12 calendar months following the issuance of this permit, compliance with the annual operating hours limitation shall be based upon a rolling, 12-month summation of the operating hours.

f. The emission limitation required by this applicable rule is less stringent than the emission limitation established by OAC rule 3745-31-10 through 20.

g. The requirements of this rule do not apply, since:

i. NO_x emissions are restricted to less than 25 tons per year; and

ii. the emissions unit is subject to a BACT limitation for NO_x.

h. The permittee shall only combust ultra low sulfur diesel fuel in this emissions unit meeting the following per gallon standards:

i. 15 ppm maximum sulfur content; and

ii. a minimum cetane index of 40 or a maximum aromatic content of 35 volume percent.

i. This emissions unit must meet the requirements of 40 CFR Part 60, Subpart IIII. No further requirements apply under this subpart.

c) Operational Restrictions

(1) See 40 CFR Part 60, Subpart IIII (40 CFR 60.4200 - 60.4219).

d) Monitoring and/or Recordkeeping Requirements

(1) The permittee shall maintain monthly records of the following information:

a. the operating hours for each month; and

b. beginning after the first 12 calendar months of operation or the first 12 calendar months following the issuance of this permit, the rolling, 12-month summation of the operating hours.

Also, during the first 12 calendar months of operation or the first 12 calendar months following the issuance of this permit, the permittee shall record the cumulative operating hours for each calendar month.

(2) For each shipment of ultra low sulfur diesel fuel received for burning in this emissions unit, the permittee shall maintain records of the oil supplier's (or permittee's) analyses for sulfur content in parts per million (40 CFR 80.510). The permittee shall perform or require the supplier to perform the analyses for sulfur content in accordance with 40 CFR 80.585.

(3) The permittee shall also maintain documentation of supplier verification that the ultra low sulfur diesel fuel as purchased has a minimum cetane index of 40 or a maximum aromatic content of 35 volume percent.

(4) See 40 CFR Part 60, Subpart IIII (40 CFR 60.4200 - 60.4219).

e) Reporting Requirements

(1) The permittee shall submit quarterly deviation (excursion) reports that identify the following:

a. each shipment of ultra low sulfur diesel fuel received for burning in this emissions unit which did not comply with the per gallon standards specified in b)(2); and

b. all exceedances of the rolling, 12-month limitation on the hours of operation for this emissions unit; and for the first 12 calendar months of operation or the first 12 calendar months following the issuance of this permit, all exceedances of the maximum allowable cumulative hours of operation.

The quarterly deviation (excursion) reports shall be submitted in accordance with the reporting requirements of the Standard Terms and Conditions of this permit.

(2) See 40 CFR Part 60, Subpart IIII (40 CFR 60.4200 - 60.4219).

(3) Unless other arrangements have been approved by the Director, all notifications and reports shall be submitted through the Ohio EPA's eBusiness Center: Air Services online web portal.

f) Testing Requirements

(1) Compliance with the Emissions Limitations and/or Control Requirements specified in section b) of these terms and conditions shall be determined in accordance with the following methods:

a. Emission Limitation:

CO emissions shall not exceed 3.5 g/kW-hr, 8.57 lbs/hr, and 2.14 tons per rolling, 12-month period.

Applicable Compliance Method:

The g/kW-hr limitation is based on the Tier 2 emission standards under 40 CFR 89.112(a), Subpart B, Table 1. The hourly emission limitation was developed by multiplying the maximum operating load (1,112 kW) by the CO emission factor supplied by the manufacturer (3.5 g/kW-hr) and dividing by (454 g/lb) to determine the hourly emissions.

If required, the permittee shall demonstrate compliance with the g/kW-hr limitation and hourly emission limitation using Methods 1 thru 4 and 10 of 40 CFR Part 60, Appendix A. Alternative U.S. EPA-approved test methods may be used with prior approval from the Ohio EPA.

The annual emission limitation was developed by multiplying the hourly emission limitation (8.57 lbs/hr) by the maximum annual operating hours (500 hrs/yr) and dividing by 2,000 pounds per ton. Therefore, compliance with the annual limitation shall be demonstrated if compliance with the hourly limitation and operating hours restriction is shown.

b. Emission Limitation:

NO_x emissions shall not exceed 5.61 g/kW-hr, 13.74 lbs/hr, and 3.44 tons per rolling, 12-month period.

Applicable Compliance Method:

The g/kW-hr limitation is based on the combined NO_x + NMHC emission limitation specified by the Tier 2 standard in 40 CFR 89.112(a) Table 1 (6.4 g/kW-hr) multiplied by the Tier 1 emission limitation for NO_x in Table 1 (9.2 g/kW-hr) divided by the sum of the Tier 1 emission limitations for NO_x and HC in Table 1 (9.2 g/kW-hr + 1.3 g/kW-hr). The hourly emission limitation was developed by multiplying the maximum operating load (1,112 kW) by the NO_x g/kW-hr emission limitation (5.61 g/kW-hr) divided by (454 g/lb) to determine the hourly emissions.

If required, the permittee shall demonstrate compliance with the g/kW-hr limitation and hourly emission limitation using Methods 1 thru 4 and 7E of 40 CFR Part 60, Appendix A. Alternative U.S. EPA-approved test methods may be used with prior approval from the Ohio EPA.

The annual emission limitation was developed by multiplying the hourly emission limitation (13.74 lbs/hr) by the maximum annual operating hours (500 hrs/yr) and dividing by 2,000 pounds per ton. Therefore, compliance with the annual limitation shall be demonstrated if compliance with the hourly limitation and operating hours restriction is shown.

c. Emission Limitation:

$PM_{10}/PM_{2.5}$ emissions shall not exceed 0.20 g/kW-hr, 0.49 lb/hr, and 0.12 ton per rolling, 12-month period.

Applicable Compliance Method:

The g/kW-hr limitation is based on manufacturer's emissions data. The hourly emission limitation was developed by multiplying the maximum operating load (1,112 kW) by the $PM_{10}/PM_{2.5}$ emission factor supplied by the manufacturer (0.20 g/kW-hr) divided by (454 g/lb) to determine the hourly emissions.

If required, the permittee shall demonstrate compliance with the g/kW-hr limitation and hourly emission limitation using Methods 201 or 201A and 202 of 40 CFR Part 51, Appendix M. Alternative U.S. EPA-approved test methods may be used with prior approval from the Ohio EPA.

The annual emission limitation was developed by multiplying the hourly emission limitation (0.49 lb/hr) by the maximum annual operating hours (500 hrs/yr) and dividing by 2,000 pounds per ton. Therefore, compliance with the annual limitation shall be demonstrated if compliance with the hourly limitation and operating hours restriction is shown.

d. Emission Limitation:

SO_2 emissions shall not exceed 0.02 lb/hr and 0.005 ton/yr.

Applicable Compliance Method:

The hourly emission limitation is based dividing the AP-42 emission factor for SO_2 from AP-42 Table 3.4-1 dated 10/96 when burning diesel fuel with a maximum sulfur content of 15 ppmw (0.0015 lb/mmBtu) by (10^6 Btu/mmBtu) multiplied by (7,000 Btu/hp-hr) and multiplied by the maximum power rating (1,491 hp).

If required, the permittee shall demonstrate compliance with the hourly emission limitation using Methods 1 thru 4 and 6C of 40 CFR Part 60, Appendix A. Alternative U.S. EPA-approved test methods may be used with prior approval from the Ohio EPA.

The annual emission limitation was developed by multiplying the hourly emission limitation (0.02 lb/hr) by the maximum annual operating hours (500 hrs/yr) and dividing by 2,000 pounds per ton. Therefore, compliance with the annual limitation shall be demonstrated if compliance with the hourly limitation and operating hours restriction is shown.

e. Emission Limitation:

VOC emissions shall not exceed 0.79 g/kW-hr, 1.93 lbs/hr, and 0.48 ton per rolling, 12-month period.

Applicable Compliance Method:

The g/kW-hr limitation is based on the combined NO_x + NMHC emission limitation specified by the Tier 2 standard in 40 CFR 89.112(a) Table 1 (6.4 g/kW-hr) multiplied by the Tier 1 emission limitation for NMHC in Table 1 (1.3 g/kW-hr) divided by the sum of the Tier 1 emission limitations for NO_x and HC in Table 1 (9.2 g/kW-hr + 1.3 g/kW-hr). The hourly emission limitation was developed by multiplying the maximum operating load (1,112 kW) by the VOC emission factor supplied by the manufacturer (0.79 g/kW-hr) to determine the hourly emissions.

If required, the permittee shall demonstrate compliance with the g/kW-hr limitation and hourly emission limitation using Methods 1 through 4 and 18, 25 or 25A, as appropriate, of 40 CFR Part 60, Appendix A. Use of Method 18, 25 or 25A is to be selected based on the results of pre-survey stack sampling and U.S. EPA guidance documents. Alternative U.S. EPA-approved test methods may be used with prior approval from the Ohio EPA.

The annual emission limitation was developed by multiplying the hourly emission limitation (1.93 lbs/hr) by the maximum annual operating hours (500 hrs/yr) and dividing by 2,000 pounds per ton. Therefore, compliance with the annual limitation shall be demonstrated if compliance with the hourly limitation and operating hours restriction is shown.

f. Emission Limitation:

H_2SO_4 emissions shall not exceed 1.32E-04 g/kW-hr, 3.23E-04 lb/hr and 8.08E-05 ton per rolling, 12-month period.

Applicable Compliance Method:

The g/kW-hr emission is based on the sulfuric acid mist emission factor from page 276 of Toxic Air Pollution Emission Factors, EPA 450/2-90-011 (8.9 ng/J x %sulfur in fuel = 8.9(0.0015) = 0.01335 ng/J). The H_2SO_4 emission factor (0.01335 ng/J) was converted to g/kW-hr by multiplying by (1055.1 J/Btu), multiplying by (7000 Btu/hp-hr), multiplying by ($g/10^9$ ng), and multiplying by (1.341 hp/kW) = 1.32E-04 g/kW-hr.

The pound per hour emissions limitation was developed by multiplying the g/kW-hr allowable H_2SO_4 emission limitation (1.32E-04 g/kW-hr) by the maximum operating load (1,112 kW) and divided by 454 grams per pound to determine the hourly emissions (3.23E-04 lb/hr).

If required, the permittee shall demonstrate compliance with the g/kW-hr and lb/hr emission limitation using Methods 1 thru 4 and 8 of 40 CFR Part 60, Appendix A. Alternative U.S. EPA-approved test methods may be used with prior approval from the Ohio EPA.

The ton per year emission limitation was developed by multiplying the hourly allowable H_2SO_4 emission limitation (3.23E-04 lb/hr) by the maximum annual hours of operation (500 hours), and then dividing by 2,000 pounds per ton. Therefore, compliance with the annual limitation shall be demonstrated if compliance with the hourly limitation and operating hours restriction is shown.

g. Emission Limitation:

CO_2e emissions shall not exceed 433.96 tons per rolling, 12-month period.

Applicable Compliance Method:

This emissions limitation was established to reflect the potential to emit for this emissions unit by calculating the sum of the maximum capacity (1,491 hp) by the emission factor for CO_2, N_2O, and CH_4, multiplied by the global warming potential for CO_2, N_2O, and CH_4 (1, 310, and 21, respectively from Table A-1 to Subpart A of 40 CFR 98). Multiply the sum by the maximum annual hours of operation (500 hrs/yr) and divide by 2,000 pounds per ton. The CO_2 emission factor was obtained from AP-42 Table 3.4-1 dated 10/96 (1.16 lb/hp-hr). The N_2O emission factor was obtained from 40 Table C-2 to Subpart C of 40 CFR 98 (0.6 g/mmBtu). The CH_4 emission factor was obtained from AP-42 Table 3.4-1 dated 10/96 (7.05E-04 lb TOC/hp-hr x 0.09 lb CH_4/lb TOC = 6.34E-05 lb CH_4/hp-hr).

$$(1{,}491\ hp)x\left[\left(1.16\frac{lb}{hp-hr}(1)\right)+\left(\left(0.6\frac{g}{mmBtu}\right)\left(7000\frac{Btu}{hp-hr}\right)\left(\frac{mmBtu}{1E06Btu}\right)\left(\frac{lb}{454g}\right)(310)\right)+\left(6.34E-05\frac{lb}{(hp-hr)}\right)(21)\right]x\left(500\frac{hrs}{hr}\right)x\left(\frac{ton}{2{,}000lb}\right)=433.96\ tons/yr$$

Since the CO_2e emissions are estimated to consist of more than 99% CO_2, compliance with this emission limitation will be assumed provided that the lb/hp-hr CO_2 emission rate does not exceed 1.16 lb/hp-hr. If required, the permittee shall conduct emissions testing using Methods 1, 2, 3A and 4 of 40 CFR Part 60, Appendix A to determine the lb/hp-hr CO_2 emission rate. Alternaitve U.S. EPA-approved test methods may be used with prior approval from the Ohio EPA.

h. Emission Limitation:

The permittee shall only combust diesel fuel in this emissions unit meeting the following per gallon standard: 15 ppm maximum sulfur content

Applicable Compliance Method:

The records required by d)(2) shall be used to demonstrate compliance.

i. Emission Limitation:

The permittee shall only combust ultra low sulfur diesel fuel in this emissions unit meeting the following per gallon standard: a minimum cetane index of 40 or a maximum aromatic content of 35 volume percent.

Applicable Compliance Method:

The records required by d)(2) and d)(3) shall serve as demonstration of compliance.

j. Emission Limitation:

Visible particulate emissions from the stack serving this emissions unit shall not exceed 20% opacity as a 6-minute average, except as provided in the rule.

Applicable Compliance Method:

If required, the permittee shall demonstrate compliance based upon an emission test performed in accordance with the methods and procedures specified in 40 CFR Part 60, Appendix A, Method 9.

k. Emission Limitation:

NMHC + NO_x emissions shall not exceed 6.4 g/kW-hr.

CO emissions shall not exceed 3.5 g/kW-hr.

PM emissions shall not exceed 0.20 g/kW-hr.

Exhaust opacity shall not exceed:

20 percent during acceleration mode;

15 percent during lugging mode; and

50 percent during the peaks in either the acceleration or lugging modes.

Applicable Compliance Method:

According to 40 CFR 60.4211(c), the permittee shall demonstrate compliance with these emission limitations by purchasing an engine certified to the emission standards in 40 CFR 60.4205(b) for the same model year and maximum engine

power. The engine must be installed and configured according to the manufacturer's emission-related specifications, except as permitted in 40 CFR 60.4211(g). The permittee shall maintain documentation of certification to the emission standards in 40 CFR 60.4205.

g) Miscellaneous Requirements

(1) None.

3. P004, Emergency Fire Pump

Operations, Property and/or Equipment Description:

400 hp (298 kW) emergency diesel-fired fire pump engine.

a) The following emissions unit terms and conditions are federally enforceable with the exception of those listed below which are enforceable under state law only.

(1) None.

b) Applicable Emissions Limitations and/or Control Requirements

(1) The specific operation(s), property, and/or equipment that constitute each emissions unit along with the applicable rules and/or requirements and with the applicable emissions limitations and/or control measures are identified below. Emissions from each unit shall not exceed the listed limitations, and the listed control measures shall be specified in narrative form following the table.

	Applicable Rules/Requirements	Applicable Emissions Limitations/Control Measures
a.	OAC rule 3745-31-05(A)(3), as effective 11/30/2001	Sulfur dioxide (SO_2) emissions shall not exceed 0.004 lb/hr and 1.0 E-03 ton/yr. See b)(2)a and b)(2)b.
b.	OAC rule 3745-31-05(A)(3)(b), as effective 12/01/2006	See b)(2)c.
c.	OAC rule 3745-31-10 through 20	Carbon monoxide (CO) emissions shall not exceed 3.5 g/kW-hr, 2.3 pounds per hour (lbs/hr), and 0.57 ton per rolling, 12-month period. Nitrogen Oxides (NO_x) emissions shall not exceed 3.5 g/kW-hr, 2.3 lb/hr, and 0.57 ton per rolling, 12-month period. Particulate matter emissions less than 10 microns in diameter (PM_{10}) and particulate matter less than 2.5 microns in diameter ($PM_{2.5}$) shall not exceed 0.20 g/kW-hr, 0.131 lb/hr, and 0.033 ton per rolling, 12-month period. Volatile organic compound (VOC) emissions shall not exceed 0.50 g/kW-hr, 0.325 lb/hr, and 0.08 ton per rolling, 12-month period.

	Applicable Rules/Requirements	Applicable Emissions Limitations/Control Measures
		H_2SO_4 emissions shall not exceed 1.32 E-04 g/kW-hr, 8.7E-05 lb/hr and 2.2E-05 ton per rolling, 12-month period Carbon dioxide equivalent (CO_2e) emissions shall not exceed 115.75 tons per rolling, 12-month period. See b)(2)d and b)(2)e.
d.	OAC rule 3745-17-07(A)	Visible particulate emissions from the stack serving this emissions unit shall not exceed 20% opacity as a 6-minute average, except as provided by the rule.
e.	OAC rule 3745-17-11(B)(5)(a)	See b)(2)f.
f.	OAC rule 3745-110-03(J)(16) and (J)(19)	Exemption. See b)(2)g.
g.	40 CFR Part 60, Subpart A (40 CFR 60.1 - 60.19)	Table 8 to Subpart IIII of 40 CFR Part 60 – Applicability of General Provisions to Subpart IIII shows which parts of the General Provisions in 40 CFR 60.1 - 60.19 apply.
h.	40 CFR Part 60, Subpart IIII (40 CFR 60.4200–4219) [In accordance with 40 CFR 60.4200(a)(2), this emissions unit is a compression ignition stationary internal combustion fire pump engine for which construction commenced after July 11, 2005 subject to the emissions limitation/control measures specified in this section.]	Non-methane hydrocarbon (NMHC) + NO_x emissions shall not exceed 4.0 g/kW-hr. CO emissions shall not exceed 3.5 g/kW-hr. PM emissions shall not exceed 0.20 g/kW-hr. See b)(2)h. [60.4205(c) and 60.4207(b)]
i.	40 CFR Part 63, Subpart ZZZZ (40 CFR 63.6580-63.6675) [In accordance with 40 CFR 63.6590(c)(1), this emissions unit is a new stationary reciprocating internal combustion engine (RICE) located at an area source of HAP emissions subject to the emissions limitation/control measures specified in this section.]	See b)(2)i. [63.6590(c), (c)(1)]

	Applicable Rules/Requirements	Applicable Emissions Limitations/Control Measures
j.	40 CFR Part 63, Subpart A (40 CFR 63.1 - 63.16)	Table 8 to Subpart ZZZZ of 40 CFR Part 63 – Applicability of General Provisions to Subpart ZZZZ shows which parts of the General Provisions in 40 CFR 63.1 - 63.16 apply.

(2) Additional Terms and Conditions

a. Compliance with the requirements of this rule for CO, NO_x, PM_{10}, $PM_{2.5}$, and VOC emissions includes compliance with the requirements of OAC rule 3745-31-10 through 20.

b. The permittee has satisfied the Best Available Technology (BAT) requirements pursuant to Ohio Administrative Code (OAC) paragraph 3745-31-05(A)(3), as effective November 30, 2001, in this permit. On December 1, 2006, paragraph (A)(3) of OAC rule 3745-31-05 was revised to conform to the Ohio Revised Code (ORC) changes effective August 3, 2006 (Senate Bill 265 changes), such that BAT is no longer required by State regulations for National Ambient Air Quality Standards (NAAQS) pollutant(s) less than ten tons per year. However, that rule revision has not yet been approved by U.S. EPA as a revision to Ohio's State Implementation Plan (SIP). Therefore, until the SIP revision occurs and the U.S. EPA approves the revisions to OAC rule 3745-31-05, the requirement to satisfy BAT still exists as part of the federally-approved SIP for Ohio. Once U.S. EPA approves the December 1, 2006 version of OAC rule 3745-31-05, then these emission limitations/control measures no longer apply.

c. This rule paragraph applies once U.S. EPA approves the December 1, 2006 version of OAC rule 3745-31-05 as part of the State Implementation Plan.

The Best Available Technology (BAT) requirements under OAC rule 3745-31-05(A)(3) do not apply to the CO, NO_x, $PM_{10}/PM_{2.5}$, SO_2, and VOC emissions from this air contaminant source since the uncontrolled potential to emit for CO, NO_x, $PM_{10}/PM_{2.5}$, SO_2, and VOC is less than 10 tons per year taking into consideration the federally enforceable emission limitations and operating hours restriction specified by OAC rule 3745-31-10 through 20.

d. All particulate emissions are assumed to be less than 2.5 microns in diameter. The $PM_{10}/PM_{2.5}$ emission limitations include both filterable and condensable particulate emissions.

e. The maximum annual operating hours for this emissions unit shall not exceed 500 hours, based upon a rolling, 12-month summation of the operating hours.

To ensure enforceability during the first 12 calendar months of operation or the first 12 calendar months following the issuance of this permit, the permittee shall not exceed the operating hours levels specified in the following table:

Month(s)	Maximum Allowable Cumulative Operating Hours
1	500
1-2	500
1-3	500
1-4	500
1-5	500
1-6	500
1-7	500
1-8	500
1-9	500
1-10	500
1-11	500
1-12	500

After the first 12 calendar months of operation or the first 12 calendar months following the issuance of this permit, compliance with the annual operating hours limitation shall be based upon a rolling, 12-month summation of the operating hours.

f. The emission limitation required by this applicable rule is less stringent than the emission limitation established by OAC rule 3745-31-10 through 20.

g. The requirements of this rule do not apply, since:

i. NO_x emissions are restricted to less than 25 tons per year; and

ii. the emissions unit is subject to a BACT limitation for NO_x.

h. The permittee shall only combust ultra low sulfur diesel fuel in this emissions unit meeting the following per gallon standards:

i. 15 ppm maximum sulfur content; and

ii. a minimum cetane index of 40 or a maximum aromatic content of 35 volume percent.

i. This emissions unit must meet the requirements of 40 CFR Part 60, Subpart IIII. No further requirements apply under this subpart.

c) Operational Restrictions

(1) See 40 CFR Part 60, Subpart IIII (40 CFR 60.4200-4219).

d) Monitoring and/or Recordkeeping Requirements

(1) The permittee shall maintain monthly records of the following information:

a. the operating hours for each month; and

b. beginning after the first 12 calendar months of operation or the first 12 calendar months following the issuance of this permit, the rolling, 12-month summation of the operating hours.

Also, during the first 12 calendar months of operation or the first 12 calendar months following the issuance of this permit, the permittee shall record the cumulative operating hours for each calendar month.

(2) For each shipment of ultra low sulfur diesel fuel received for burning in this emissions unit, the permittee shall maintain records of the oil supplier's (or permittee's) analyses for sulfur content in parts per million (40 CFR 80.510). The permittee shall perform or require the supplier to perform the analyses for sulfur content in accordance with 40 CFR 80.585.

(3) The permittee shall also maintain documentation of supplier verification that the ultra low sulfur diesel fuel as purchased has a minimum cetane index of 40 or a maximum aromatic content of 35 volume percent.

(4) See 40 CFR Part 60, Subpart IIII (40 CFR 60.4200-4219).

e) Reporting Requirements

(1) The permittee shall submit quarterly deviation (excursion) reports that identify the following:

a. each shipment of ultra low sulfur diesel fuel received for burning in this emissions unit which did not comply with the per gallon standards specified in b)(2); and

b. all exceedances of the rolling, 12-month limitation on the hours of operation for this emissions unit; and for the first 12 calendar months of operation or the first 12 calendar months following the issuance of this permit, all exceedances of the maximum allowable cumulative hours of operation.

The quarterly deviation (excursion) reports shall be submitted in accordance with the reporting requirements of the Standard Terms and Conditions of this permit.

(2) See 40 CFR Part 60, Subpart IIII (40 CFR 60.4200-4219).

(3) Unless other arrangements have been approved by the Director, all notifications and reports shall be submitted through the Ohio EPA's eBusiness Center: Air Services online web portal.

f) Testing Requirements

(1) Compliance with the Emissions Limitations and/or Control Requirements specified in section b) of these terms and conditions shall be determined in accordance with the following methods:

a. Emission Limitation:

CO emissions shall not exceed 3.5 g/kW-hr, 2.3 lbs/hr, and 0.57 ton per rolling, 12-month period.

Applicable Compliance Method:

The g/kW-hr limitation is based on the standard specified in Table 4 to 40 CFR Part 60, Subpart IIII. The hourly emission limitation was developed by multiplying the maximum operating load (298 kW) by the g/kW-hr CO emission limitation (3.5 g/kW-hr) divided by (454 g/lb) to determine the hourly emissions.

If required, the permittee shall demonstrate compliance with the g/kW-hr limitation and hourly emission limitation using Methods 1 thru 4 and 10 of 40 CFR Part 60, Appendix A. Alternative U.S. EPA-approved test methods may be used with prior approval from the Ohio EPA.

The annual emission limitation was developed by multiplying the hourly emission limitation (2.3 lbs/hr) by the maximum annual operating hours (500 hrs/yr) and dividing by 2,000 pounds per ton. Therefore, compliance with the annual limitation shall be demonstrated if compliance with the hourly limitation and operating hours restriction is shown.

b. Emission Limitation:

NO_x emissions shall not exceed 3.5 g/kW-hr, 2.3 lbs/hr, and 0.57 ton per rolling, 12-month period.

Applicable Compliance Method:

The g/kW-hr limitation is based on the combined NO_x + NMHC emission limitation specified by the Table 2 to 40 CFR Part 60, Subpart IIII (4.0 g/kW-hr) multiplied by the Tier 1 emission limitation for NO_x in Table 1 to 40 CFR 89.112(a) (9.2 g/kW-hr) divided by the sum of the Tier 1 emission limitations for NO_x and HC in Table 1 to 40 CFR 89.112(a) (9.2 g/kW-hr + 1.3 g/kW-hr). The hourly emission limitation was developed by multiplying the maximum operating load (298 kW) by the g/kW-hr NO_x emission limitation (3.5 g/kW-hr) divided by (454 g/lb) to determine the hourly emissions.

If required, the permittee shall demonstrate compliance with the g/kW-hr limitation and hourly emission limitation using Methods 1 thru 4 and 7E of 40 CFR Part 60, Appendix A. Alternative U.S. EPA-approved test methods may be used with prior approval from the Ohio EPA.

The annual emission limitation was developed by multiplying the hourly emission limitation (2.3 lbs/hr) by the maximum annual operating hours (500 hrs/yr) and dividing by 2,000 pounds per ton. Therefore, compliance with the annual limitation shall be demonstrated if compliance with the hourly limitation and operating hours restriction is shown.

c. Emission Limitation:

$PM_{10}/PM_{2.5}$ emissions shall not exceed 0.20 g/kW-hr, 0.131 lb/hr, and 0.033 ton per rolling, 12-month period.

Applicable Compliance Method:

The g/kW-hr limitation is based on manufacturer's emissions data. The hourly emission limitation was developed by multiplying the maximum operating load (298 kW) by the $PM_{10}/PM_{2.5}$ emission factor supplied by the manufacturer (0.20 g/kW-hr) divided by (454 g/lb) to determine the hourly emissions.

If required, the permittee shall demonstrate compliance with the g/kW-hr limitation and hourly emission limitation using Methods 201 or 201A and 202 of 40 CFR Part 51, Appendix M. Alternative U.S. EPA-approved test methods may be used with prior approval from the Ohio EPA.

The annual emission limitation was developed by multiplying the hourly emission limitation (0.131 lb/hr) by the maximum annual operating hours (500 hrs/yr) and dividing by 2,000 pounds per ton. Therefore, compliance with the annual limitation shall be demonstrated if compliance with the hourly limitation is shown.

d. Emission Limitation:

SO_2 emissions shall not exceed 0.004 lb/hr and 1.0E-03 ton/yr.

Applicable Compliance Method:

The hourly emission limitation is based dividing the AP-42 emission factor for SO_2 from AP-42 Table 3.4-1 dated 10/96 when burning diesel fuel with a maximum sulfur content of 15 ppmw (0.0015 lb/mmBtu) by (10^6 Btu/mmBtu) multiplied by (7,000 Btu/hp-hr) and multiplied by the maximum power rating (400 hp).

If required, the permittee shall demonstrate compliance with the hourly emission limitation using Methods 1 thru 4 and 6C of 40 CFR Part 60, Appendix A. Alternative U.S. EPA-approved test methods may be used with prior approval from the Ohio EPA.

The annual emission limitation was developed by multiplying the hourly emission limitation (0.004 lb/hr) by the maximum annual operating hours (500 hrs/yr) and dividing by 2,000 pounds per ton. Therefore, compliance with the annual limitation shall be demonstrated if compliance with the hourly limitation is shown.

e. Emission Limitation:

VOC emissions shall not exceed 0.50 g/kW-hr, 0.325 lb/hr, and 0.08 ton/yr as a rolling, 12-month summation of the monthly emissions.

Applicable Compliance Method:

The g/kW-hr limitation is based on the combined NO_x + NMHC emission limitation specified by the Table 2 to 40 CFR Part 60, Subpart IIII (4.0 g/kW-hr) multiplied by the Tier 1 emission limitation for NMHC in Table 1 to 40 CFR 89112(a) (1.3 g/kW-hr) divided by the sum of the Tier 1 emission limitations for NO_x and HC in Table 1 to 40 CFR 89.112(a) (9.2 g/kW-hr + 1.3 g/kW-hr). The hourly emission limitation was developed by multiplying the maximum operating load (298 kW) by the g/kW-hr VOC emission limitation (0.50 g/kW-hr) divided by (454 g/lb) to determine the hourly emissions.

If required, the permittee shall demonstrate compliance with the g/kW-hr limitation and hourly emission limitation using Methods 1 through 4 and 18, 25 or 25A, as appropriate, of 40 CFR Part 60, Appendix A. Use of Method 18, 25 or 25A is to be selected based on the results of pre-survey stack sampling and U.S. EPA guidance documents. Alternative U.S. EPA-approved test methods may be used with prior approval from the Ohio EPA.

The annual emission limitation was developed by multiplying the hourly emission limitation (0.325 lb/hr) by the maximum annual operating hours (500 hrs/yr) and dividing by 2,000 pounds per ton. Therefore, compliance with the annual limitation shall be demonstrated if compliance with the hourly limitation is shown.

f. Emission Limitation:

H_2SO_4 emissions shall not exceed 1.32E-04 g/kW-hr, 8.7E-05 lb/hr and 2.2E-05 ton per rolling, 12-month period.

Applicable Compliance Method:

The g/kW-hr emission is based on the sulfuric acid mist emission factor from page 276 of Toxic Air Pollution Emission Factors, EPA 450/2-90-011 (8.9 ng/J x %sulfur in fuel = 8.9(0.0015) = 0.01335 ng/J). The H_2SO_4 emission factor (0.01335 ng/J) was converted to g/kW-hr by multiplying by (1055.1 J/Btu), multiplying by (7000 Btu/hp-hr), multiplying by ($g/10^9$ ng), and multiplying by (1.341 hp/kW) = 1.32E-04 g/kW-hr.

The pound per hour emissions limitation was developed by multiplying the g/kW-hr allowable H_2SO_4 emission limitation (1.32E-04 g/kW-hr) by the maximum operating load (298 kW) and divided by 454 grams per pound to determine the hourly emissions (8.7E-05 lb/hr).

If required, the permittee shall demonstrate compliance with the g/kW-hr and lb/hr emission limitation using Methods 1 thru 4 and 8 of 40 CFR Part 60, Appendix A. Alternative U.S. EPA-approved test methods may be used with prior approval from the Ohio EPA.

The ton per year emission limitation was developed by multiplying the hourly allowable H_2SO_4 emission limitation (8.7E-05 lb/hr) by the maximum annual hours of operation (500 hours), and then dividing by 2,000 pounds per ton. Therefore, compliance with the annual limitation shall be demonstrated if compliance with the hourly limitation and operating hours restriction is shown.

g. Emission Limitation:

CO_2e emissions shall not exceed 115.75 tons per rolling, 12-month period.

Applicable Compliance Method:

This emissions limitation was established to reflect the potential to emit for this emissions unit by calculating the sum of the maximum capacity (400 hp) by the emission factor for CO_2, N_2O, and CH_4, multiplied by the global warming potential for CO_2, N_2O, and CH_4 (1, 310, and 21, respectively from Table A-1 to Subpart of 40 CFR 98). Multiply the sum by the maximum annual hours of operation (500 hrs/yr) and divide by 2,000 pounds per ton. The CO_2 emission factor was obtained from AP-42 Table 3.3-1 dated 10/96 (1.15 lb/hp-hr). The N_2O emission factor was obtained from Table C-2 to Subpart C of 40 CFR 98 (0.6 g/mmBtu). The CH_4 emission factor was obtained from AP-42 Table 3.3-1 dated 10/96 (2.47E-03 lb TOC/hp-hr (0.09 lb CH_4/lb TOC)= 2.223E-04 lb CH_4/hp-hr, this table did not include an estimate of how much methane comprises the TOC emission factor, so the value of 9% from AP-42 Table 3.4-1 dated 10/96 was used).

$$(400\ hp)x\left[\left(1.15\frac{lb}{hp-hr}(1)\right)+\left(\left(0.6\frac{g}{mmBtu}\right)\left(7000\frac{Btu}{hp-hr}\right)\left(\frac{mmBtu}{1E06Btu}\right)\left(\frac{lb}{454g}\right)(310)\right)+\left(2.223E-04\frac{lb}{(hp-hr)}\right)(21)\right]x\left(500\frac{hrs}{hr}\right)x\left(\frac{ton}{2{,}000lb}\right)$$
$$=115.75\ tons/yr$$

Since the CO_2e emissions are estimated to consist of more than 99% CO_2, compliance with this emission limitation will be assumed provided that the lb/hp-hr CO_2 emission rate does not exceed 1.15 lb/hp-hr. If required, the permittee shall conduct emissions testing using Methods 1, 2, 3A and 4 of 40 CFR Part 60, Appendix A to determine the lb/hp-hr CO_2 emission rate. Alternative U.S. EPA-approved test methods may be used with prior approval from the Ohio EPA.

h. Emission Limitation:

The permittee shall only combust ultra low sulfur diesel fuel in this emissions unit meeting the following per gallon standard: 15 ppm maximum sulfur content

Applicable Compliance Method:

The records required by d)(2) shall be used to demonstrate compliance.

i. Emission Limitation:

The permittee shall only combust diesel fuel in this emissions unit meeting the following per gallon standard: a minimum cetane index of 40 or a maximum aromatic content of 35 volume percent.

Applicable Compliance Method:

The records required by d)(2) and d)(3) shall serve as demonstration of compliance.

j. Emission Limitation:

Visible particulate emissions from the stack serving this emissions unit shall not exceed 20% opacity as a 6-minute average, except as provided by the rule.

Applicable Compliance Method:

If required, the permittee shall demonstrate compliance based upon an emission test performed in accordance with the methods and procedures specified in 40 CFR Part 60, Appendix A, Method 9.

k. Emission Limitation:

NMHC + NO_x emissions shall not exceed 4.0 g/kW-hr (3.0 g/hp-hr).

CO emissions shall not exceed 3.5 g/kW-hr (2.6 g/hp-hr).

PM emissions shall not exceed 0.20 g/kW-hr (0.15 g/hp-hr).

Applicable Compliance Method:

According to 40 CFR 60.4211(c), the permittee shall demonstrate compliance with these emission limitations by purchasing an engine certified to the emission standards in 40 CFR 60.4205(c) for the same model year and maximum engine power. The engine must be installed and configured according to the manufacturer's emission-related specifications, except as permitted in 40 CFR 60.4211(g).

g) Miscellaneous Requirements

(1) None.

4. Emissions Unit Group - CTGs #1 and #2.: P001,P002,

EU ID	Operations, Property and/or Equipment Description
P001	General Electric 7FA combined cycle combustion turbine (2,045 mmBtu/hr heat input turbine at ISO conditions and 566 mmBtu/hr heat input duct burner, HHV) with dry low NO_x combustors, selective catalytic reduction (SCR), and catalytic oxidizer.
P002	General Electric 7FA combined cycle combustion turbine (2,045 mmBtu/hr heat input turbine at ISO conditions and 566 mmBtu/hr heat input duct burner, HHV) with dry low NO_x combustors, selective catalytic reduction (SCR), and catalytic oxidizer.

a) The following emissions unit terms and conditions are federally enforceable with the exception of those listed below which are enforceable under state law only.

(1) d)(11), d)(12), d)(13), d)(14) and e)(6)

b) Applicable Emissions Limitations and/or Control Requirements

(1) The specific operation(s), property, and/or equipment that constitute each emissions unit along with the applicable rules and/or requirements and with the applicable emissions limitations and/or control measures are identified below. Emissions from each unit shall not exceed the listed limitations, and the listed control measures shall be specified in narrative form following the table.

	Applicable Rules/Requirements	Applicable Emissions Limitations/Control Measures
a.	ORC 3704.03(T)	Sulfur dioxide (SO_2) emissions shall not exceed 0.0029 lb/mmBtu of heat input. See b)(2)b.
b.	OAC rule 3745-31-05(D)	SO_2 emissions shall not exceed 32.4 tons per rolling, 12-month period. See b)(2)e and b)(2)f.
c.	OAC rule 3745-31-10 through 20	Visible particulate emissions from the stack serving this emissions unit shall not exceed 10% opacity as a 6-minute average. Carbon dioxide equivalent (CO_2e) emissions shall not exceed 859 lb/MW-hr gross energy output and 307,279 lbs/hr. Both of these values are at ISO conditions. See b)(2)c, b)(2)d, b)(2)g through b)(2)n and b)(2)v through b)(2)x.
d.	OAC rule 3745-17-07(A)	See b)(2)i.
e.	OAC rule 3745-17-11(B)(4)	See b)(2)i.

	Applicable Rules/Requirements	Applicable Emissions Limitations/Control Measures
f.	OAC rule 3745-18-06(A)	See b)(2)k.
g.	OAC rule 3745-110-03(J)(19)	Exemption
h.	OAC rule 3745-114	See d)(11), d)(12), d)(13, d)(14) and e)(6)
i.	40 CFR Part 60, Subpart A (40 CFR 60.1 – 60.19)	See b)(2)l.
j.	40 CFR Part 60, Subpart KKKK (40 CFR 60.4300 – 60.4420) [In accordance with 40 CFR 60.4305(a), this emissions unit is a stationary combustion turbine with a heat input at peak load greater than 10 mmBtu/hr with a heat recovery steam generator/duct burners subject to the emission limitations/control measures specified in this section.]	See b)(2)j and b)(2)m.
k.	40 CFR Part 63, Subpart YYYY	See b)(2)n.
l.	40 CFR Part 63, Subpart JJJJJJ	See b)(2)o.

Note that values are based on higher heating value (HHV).

(2) Additional Terms and Conditions

a. All requirements specified in this Section of the permit for Emissions Unit Group P001 and P002 apply to each combined cycle combustion turbine (P001 and P002).

b. Compliance with the requirements of this rule for CO, NO_x, PM_{10}, $PM_{2.5}$ and VOC includes compliance with the requirements of OAC rule 3745-31-10 through 20.

c. The emissions from this emissions unit shall be vented to the SCR and catalytic oxidation units at all times during which the emissions unit is in operation.

d. All particulate emissions are assumed to be less than 2.5 microns in diameter. The PM_{10}/$PM_{2.5}$ emission limitations include both filterable and condensable particulate emissions.

e. The sulfur content of natural gas burned in this emissions unit shall not exceed 1.0 grain per 100 standard cubic feet.

f. The permittee shall comply with the following emission limitations:

Allowable Emissions				
Pollutant	**Operating Mode[a]**	**Emission Rate [b,e]**	**Emission rate, lb/hr[b]**	**Emission rate, tons per rolling, 12-month period**
CO	CT with DB	2.0[c]	12.5	-
	CT only	2.0[c]	9.9	-
	All operating modes, including startup periods	-	-	213.2
NO_x	CT with DB	2.0[c]	20.5	-
	CT only	2.0[c]	16.3	-
	All operating modes, including startup periods			103.2
$PM_{10}/PM_{2.5}$	CT with DB	0.0078[d]	19.8	-
	CT only	0.0108[d]	12.4	-
	All operating modes, including startup periods	-	-	85.7
VOC	CT With DB	0.0026[d]	7.1	-
	CT only	0.0013[d]	2.8	-
	All operating modes, including startup periods	-	-	40.2
H_2SO_4	CT only	0.0012[d]	2.52	-
	CT with DB	0.0016[d]	4.26	-
	All operating modes, including startup periods	-	-	17.74
CO_2e	All operating modes, including startup periods	-	-	1,345,883.48

Allowable Emissions				
Pollutant	**Operating Mode[a]**	**Emission Rate [b,e]**	**Emission rate, lb/hr[b]**	**Emission rate, tons per rolling, 12-month period**
a. CT = combustion turbine DB = duct burner b. Emission limitation does not apply during periods of startup and shutdown. c. Parts per million by volume dry (ppmvd) at 15% oxygen d. Pound per million Btu of heat input e. Emission limitations are based on an hourly average.				

g. The permittee shall comply with the following requirements during periods of startup and shutdown.

	Emission Limitations During Startup (lbs/hr)[a]			
	Cold Startup	**Hot Startup**	**Warm Startup**	**Shutdown**
CO	869.5	627.9	801.4	243.0
NO_x	116.6	124.1	115.3	76.8
VOC	140.2	53.8	151.7	75.6
[a] Pound per hour emissions rates as presented are averaged over the duration of the event where (for the lead/lag turbine) the duration of a cold start is 245/220 minutes, the duration of a warm start is 140/115 minutes, the duration of a hot start is 83/58 minutes, and the duration of a shutdown is less than 1 hour. Emissions reflect the higher of the lead or lag turbine, on a pollutant-specific basis.				

"Cold Startup" is defined as a combustion turbine startup that occurs more than 72 hours after a combustion turbine shutdown. The period of startup is defined as the lesser of the first 245 minutes of continuous fuel flow to the combustion turbine after fuel flow is initiated or the period of time from combustion turbine fuel flow initiation until the combustion turbine achieves ten consecutive CEM data points in compliance with the ppmvd emission limitations for CO and NO_x.

"Hot Startup" is defined as a combustion turbine startup that occurs within 8 hours of a combustion turbine shutdown. The period of hot startup is defined as the lesser of the first 83 minutes of continuous fuel flow to the combustion turbine after fuel flow is initiated or the period of time from combustion turbine fuel flow initiation until the combustion turbine achieves ten consecutive CEM data points in compliance with the ppmvd emission limitations for CO and NO_x.

"Warm Startup" is defined as a combustion turbine startup that occurs between 8 hours of and 72 hours of a combustion turbine shutdown. The period of startup is defined as the lesser of the first 140 minutes of continuous fuel flow to the combustion turbine after fuel flow is initiated or the period of time from combustion turbine fuel flow initiation until the combustion turbine achieves ten consecutive CEM data points in compliance with the ppmvd emission limitations for CO and NO_x.

h. The design net plant base load heat rate shall not exceed 7,350 Btu/kW-hr HHV (ISO conditions without duct firing).

i. The emission limitation specified by this rule is less stringent than the limitation established by OAC rule 3745-31-10 through 20.

j. The emission limitation required by this applicable rule is less stringent than the emission limitation established by ORC 3704.03(T).

k. This emissions unit is exempt from the requirements of this rule, since only natural gas is burned.

l. 40 CFR Part 60, Subpart A provides applicability provisions, definitions, and other general provisions that are pertinent to emissions units affected by 40 CFR Part 60.

m. This emissions unit is subject to the applicable provisions of Subpart KKKK of the New Source Performance Standards (NSPS) as promulgated by the United States Environmental Protection Agency, 40 CFR Part 60. The application and enforcement of these standards are delegated to the Ohio EPA. The requirements of 40 CFR Part 60 are also federally enforceable.

n. This emissions unit is not subject to the requirements of 40 CFR Part 63, Subpart YYYY, since it is not located at a major source of HAP emissions.

o. The duct burner is exempt from the requirements of this rule per 40 CFR 63.11195(e) due to combusting only natural gas.

p. Each continuous NO_x monitoring system shall be certified to meet the requirements of 40 CFR Part 60, Appendix B, Performance Specifications 2 and 6. At least 45 days before commencing certification testing of the continuous NO_x monitoring system(s), the permittee shall develop and maintain a written quality assurance/quality control plan designed to ensure continuous valid and representative readings of NO_x emissions from the continuous monitor(s), in units of the applicable standard(s). Except as allowed below, the plan shall follow the requirements of 40 CFR Part 60, Appendix F and 40 CFR Part 75, Appendix B. The quality assurance/quality control plan and a logbook dedicated to the continuous monitoring system must be kept on site and available for inspection during regular office hours.

The plan shall include the requirement to conduct relative accuracy test audits for the continuous NO_x monitoring system in accordance with the frequencies

required pursuant to 40 CFR Part 60 and 40 CFR Part 75; or may follow relative accuracy test audit frequency requirements for monitoring systems subject to 40 CFR Part 75, Appendix B, in lieu of frequencies required in 40 CFR Part 60. In either case, results shall be recorded and reported in units of the applicable standard(s) in accordance with 40 CFR Part 60.

The plan shall include the requirement to conduct quarterly cylinder gas audits or relative accuracy audits pursuant to 40 CFR Part 60, and linearity checks pursuant to 40 CFR Part 75; however, linearity checks completed pursuant to 40 CFR Part 75, Appendix B, may be substituted for the quarterly cylinder gas or relative accuracy audits required per 40 CFR Part 60.

q. Each continuous carbon monoxide (CO) monitoring system shall be certified to meet the requirements of 40 CFR Part 60, Appendix B, Performance Specifications 4 or 4a and 6. At least 45 days before commencing certification testing of the continuous CO monitoring system(s), the permittee shall develop and maintain a written quality assurance/quality control plan designed to ensure continuous valid and representative readings of CO emissions from the continuous monitor(s), in units of the applicable standard(s). The fuel flow monitor/meter shall be maintained as required in Part 75, Appendix D. Except as allowed below, the plan shall follow the requirements of 40 CFR Part 60, Appendix F. The quality assurance/quality control plan and a logbook dedicated to the continuous monitoring system must be kept on site and available for inspection during regular office hours.

The plan shall include the requirement to conduct relative accuracy test audits for the continuous CO monitoring system in accordance with the frequencies required for monitoring systems subject to 40 CFR 60, or may follow relative accuracy test audit frequency requirements for monitoring systems subject to 40 CFR Part 75, Appendix B. In either case, results shall be recorded and reported in units of the applicable standard(s) in accordance with 40 CFR Part 60.

The plan shall include the requirement to conduct quarterly cylinder gas audits or relative accuracy audits as required in 40 CFR Part 60; however, the quarterly cylinder gas audit and relative accuracy audit frequency requirements may be adjusted to coincide with linearity checks completed for continuous emissions monitoring systems subject to 40 CFR Part 75, Appendix B requirements.

r. The NO_x and CO continuous emission monitoring systems consist of all the equipment used to acquire data to provide a record of emissions and includes the sample extraction and transport hardware, sample conditioning hardware, analyzers, and data recording/processing hardware and software.

c) Operational Restrictions

(1) The permittee shall only burn natural gas as fuel in this emissions unit.

(2) See 40 CFR Part 60, Subpart KKKK (40 CFR 60.4300 – 60.4420).

d) Monitoring and/or Recordkeeping Requirements

(1) For each day during which the permittee burns a fuel other than natural gas, the permittee shall maintain a record of the type and quantity of fuel burned in this emissions unit.

(2) For purposes of demonstrating compliance with the natural gas sulfur concentration restriction of 1.0 grain/dscf, the permittee shall sample and analyze the natural gas burned in this emissions unit monthly to determine the sulfur content using the appropriate ASTM or Gas Processors Association standards. Fuel supplier data may be used to comply with this requirement, provided that it is demonstrated to be representative of the fuel received for burning at this emissions unit.

(3) The permittee shall maintain monthly records of the following information:

a. the CO, NO_x, $PM_{10}/PM_{2.5}$, VOC and H_2SO_4 emission rate for each month of operation; and

b. beginning after the first 12 calendar months of operation or the first 12 calendar months following the issuance of this permit, the rolling, 12-month summation of the CO, NO_x, $PM_{10}/PM_{2.5}$, VOC and H_2SO_4 emissions.

Also, during the first 12 calendar months of operation or the first 12 calendar months following the issuance of this permit, the permittee shall record the cumulative CO, NO_x, $PM_{10}/PM_{2.5}$, VOC and H_2SO_4 emissions for each calendar month.

(4) The permittee may elect not to monitor the total sulfur content of the fuel combusted in the turbine as specified in d)(2), if the fuel is demonstrated not to exceed potential sulfur emissions of 0.0029 lb SO_2/mmBtu. The permittee shall use one of the following sources of information to make the required demonstration:

a. the fuel quality characteristics in a current, valid purchase contract, tariff sheet or transportation contract for the fuel, specifying that the maximum total sulfur content for natural gas is 1.0 grain of sulfur or less per 100 standard cubic feet and has potential sulfur emissions of less than 0.0029 lb SO_2/mmBtu heat input;

b. representative fuel sampling data which show that the sulfur content of the fuel does not exceed 0.0029 lb SO_2/mmBtu heat input. At a minimum, the amount of fuel sampling data specified in section 2.3.1.4 or 2.3.2.4 of appendix D to part 75 of this chapter is required; or

c. one of the custom sulfur monitoring schedules outlined in 40 CFR 60.4370(c) may be used to comply with the 0.0029 lb SO_2/mmBtu standard.

(5) The permittee shall maintain monthly records of the following information for this emissions unit for purposes of calculating rolling, 12-month emissions:

a. date, time, and duration of each cold, warm and hot startup and shutdown period;

b. the hours of operation of the combustion turbine;

c. the hours of operation of the duct burner;

d. the total duration of all cold startup periods in hours per rolling, 12-month period;

e. the total duration of all hot startup periods in hours per rolling, 12-month period;

f. the total duration of all warm startup periods in hours per rolling, 12-month period;

g. the total duration of all shutdown periods in hours per rolling, 12-month period;

h. the total duration of steady-state operation without duct burner firing in hours per rolling, 12-month period; and

i. the total duration of steady-state operation with duct burner firing in hours per rolling, 12-month period.

(6) Prior to the installation of the continuous NO_x monitoring system, the permittee shall submit information detailing the proposed location of the sampling site in accordance with the siting requirements in 40 CFR Part 60, Appendix B, Performance Specification 2. The Ohio EPA, Central Office shall approve the proposed sampling site and certify that the continuous NO_x monitoring system meets the requirements of Performance Specifications 2 and 6; and the U.S. EPA shall certify that the continuous NO_x monitoring system meets the requirements under 40 CFR Part 75, which may be approved through the recommendation for certification by Ohio EPA to U.S. EPA. Once received, the letter(s)/document(s) of certification under Part 60 and certification or recommendation for certification under Part 75 shall be maintain on-site and made available to the Director (the appropriate Ohio EPA District Office or local air agency) upon request.

(7) The permittee shall install, operate, and maintain equipment to continuously monitor and record NO_x emissions from this emissions unit in units of the applicable standard(s). The continuous monitoring and recording equipment shall comply with the requirements specified in 40 CFR Part 60 and 40 CFR Part 75.

The permittee shall maintain records of all data obtained by the continuous NO_x monitoring system including, but not limited to:

a. emissions of NO_x in parts per million for each cycle time of the analyzer, with no resolution less than one data point per minute required;

b. emissions of NO_x in pounds per hour and in units of the applicable standard(s) in the appropriate averaging period;

c. results of quarterly cylinder gas audits or linearity checks;

d. results of daily zero/span calibration checks and the magnitude of manual calibration adjustments;

e. results of required relative accuracy test audit(s), including results in units of the applicable standard(s);

f. hours of operation of the emissions unit, continuous NO_x monitoring system, and control equipment;

g. the date, time, and hours of operation of the emissions unit without the control equipment and/or the continuous NO_x monitoring system;

h. malfunction of the control equipment and/or the continuous NO_x monitoring system; as well as,

i. the reason (if known) and the corrective actions taken (if any) for each such event in (g) and (h).

All valid data points generated and recorded by the continuous emission monitoring and data acquisition and handling system shall be used in the calculation of the pollutant concentration and/or emission rate over the appropriate averaging period.

(8) Prior to the installation of the continuous carbon monoxide (CO) monitoring system, the permittee shall submit information detailing the proposed location of the sampling site in accordance with the siting requirements in 40 CFR Part 60, Appendix B, Performance Specification 4 or 4a (as appropriate). The Ohio EPA, Central Office shall approve the proposed sampling site and certify that the continuous CO monitoring system meets the requirements of Performance Specifications 4 or 4a and 6. Once received, the letter(s)/document(s) of certification shall be maintained on-site and shall be made available to the Director (the appropriate Ohio EPA District Office or local air agency) upon request.

(9) The permittee shall operate and maintain equipment to continuously monitor and record CO emissions from this emissions unit in units of the applicable standard(s). The continuous monitoring and recording equipment shall comply with the requirements specified in 40 CFR Parts 60.

The permittee shall maintain records of all data obtained by the continuous CO monitoring system including, but not limited to:

a. emissions of CO in parts per million for each cycle time of the analyzer, with no resolution less than one data point per minute required;

b. emissions of CO in pounds per hour and in units of the applicable standard(s) in the appropriate averaging period;

c. results of quarterly cylinder gas audits;

d. results of daily zero/span calibration checks and the magnitude of manual calibration adjustments;

e. results of required relative accuracy test audit(s), including results in units of the applicable standard(s);

f. hours of operation of the emissions unit, continuous CO monitoring system, and control equipment;

g. the date, time, and hours of operation of the emissions unit without the control equipment and/or the continuous CO monitoring system;

h. the date, time, and hours of operation of the emissions unit during any malfunction of the control equipment and/or the continuous CO monitoring system; as well as,

i. the reason (if known) and the corrective actions taken (if any) for each such event in (g) and (h).

All valid data points generated and recorded by the continuous emission monitoring and data acquisition and handling system shall be used in the calculation of the pollutant concentration and/or emission rate over the appropriate averaging period.

(10) The permittee shall calculate and record the monthly CO_2 emissions from P001 and P002 using the procedures set forth in 40 CFR Part 75, Appendix G. In accordance with 40 CFR Part 75, Appendix G, Section 2.3, the permittee may use the hourly heat input from fuel flow measurements to calculate hourly CO_2 mass emission rates From this data, the permittee shall calculate the CO_2 emissions from P001 and P002 per rolling, 12-month period.

(11) The Permit to Install application for these emissions units, P001 and P002, was evaluated based on the actual materials and the design parameters of the emissions unit's(s') exhaust system, as specified by the permittee. The "Toxic Air Contaminant Statute", ORC 3704.03(F), was applied to this/these emissions unit(s) for each toxic air contaminant listed in OAC rule 3745-114-01, using data from the permit application; and modeling was performed for each toxic air contaminant(s) emitted at over one ton per year using an air dispersion model such as SCREEN3, AERMOD, or ISCST3, or other Ohio EPA approved model. The predicted 1-hour maximum ground-level concentration result(s) from the approved air dispersion model, was compared to the Maximum Acceptable Ground-Level Concentration (MAGLC), calculated as described in the Ohio EPA guidance document entitled "Review of New Sources of Air Toxic Emissions, Option A", as follows:

a. the exposure limit, expressed as a time-weighted average concentration for a conventional 8-hour workday and a 40-hour workweek, for each toxic compound(s) emitted from the emissions unit(s), (as determined from the raw materials processed and/or coatings or other materials applied) has been documented from one of the following sources and in the following order of preference (TLV was and shall be used, if the chemical is listed):

i. threshold limit value (TLV) from the American Conference of Governmental Industrial Hygienists (ACGIH) "Threshold Limit Values for Chemical Substances and Physical Agents Biological Exposure Indices"; or

ii. STEL (short term exposure limit) or the ceiling value from the American Conference of Governmental Industrial Hygienists (ACGIH) "Threshold Limit Values for Chemical Substances and Physical Agents Biological Exposure Indices"; the STEL or ceiling value is multiplied by 0.737 to convert the 15-minute exposure limit to an equivalent 8-hour TLV.

b. The TLV is divided by ten to adjust the standard from the working population to the general public (TLV/10).

c. This standard is/was then adjusted to account for the duration of the exposure or the operating hours of the emissions unit(s), i.e., "X = 24" hours per day and "Y = 7" days per week, from that of 8 hours per day and 5 days per week. The resulting calculation was (and shall be) used to determine the Maximum Acceptable Ground-Level Concentration (MAGLC):

TLV/10 x 8/X x 5/Y = 4 TLV/XY = MAGLC

d. The following summarizes the results of dispersion modeling for the "worst case" toxic contaminant(s):

Toxic Contaminant: H_2SO_4

TLV (mg/m3): 0.2 mg/m^3

Maximum Hourly Emission Rate (lbs/hr): 4.1

Predicted 1-Hour Maximum Ground-Level Concentration (µg/m3): 0.9

MAGLC (µg/m3): 4.76

The permittee, has demonstrated that emissions of H_2SO_4, from emissions unit(s) P001 and P002, is calculated to be less than eighty percent of the maximum acceptable ground level concentration (MAGLC); any new raw material or processing agent shall not be applied without evaluating each component toxic air contaminant in accordance with the "Toxic Air Contaminant Statute", ORC 3704.03(F).

(12) Prior to making any physical changes to or changes in the method of operation of the emissions unit(s), that could impact the parameters or values that were used in the predicted 1-hour maximum ground-level concentration, the permittee shall re-model the change(s) to demonstrate that the MAGLC has not been exceeded. Changes that can affect the parameters/values used in determining the 1-hour maximum ground-level concentration include, but are not limited to, the following:

a. changes in the composition of the materials used or the use of new materials, that would result in the emission of a new toxic air contaminant with a lower Threshold Limit Value (TLV) than the lowest TLV previously modeled;

b. changes in the composition of the materials, or use of new materials, that would result in an increase in emissions of any toxic air contaminant listed in OAC rule 3745-114-01, that was modeled from the initial (or last) application; and

c. physical changes to the emissions unit(s) or its/their exhaust parameters (e.g., increased/ decreased exhaust flow, changes in stack height, changes in stack diameter, etc.).

If the permittee determines that the "Toxic Air Contaminant Statute" will be satisfied for the above changes, the Ohio EPA will not consider the change(s) to be a "modification" under OAC rule 3745-31-01 solely due to a non-restrictive change to a parameter or process operation, where compliance with the "Toxic Air Contaminant Statute", ORC 3704.03(F), has been documented. If the change(s) meet(s) the definition of a "modification", the permittee shall apply for and obtain a final PTI prior to the change. The Director may consider any significant departure from the operations of the emissions unit, described in the permit application, as a modification that results in greater emissions than the emissions rate modeled to determine the ground level concentration; and he/she may require the permittee to submit a permit application for the increased emissions.

(13) The permittee shall collect, record, and retain the following information for each toxic evaluation conducted to determine compliance with the "Toxic Air Contaminant Statute", ORC 3704.03(F):

a. a description of the parameters/values used in each compliance demonstration and the parameters or values changed for any re-evaluation of the toxic(s) modeled (the composition of materials, new toxic contaminants emitted, change in stack/exhaust parameters, etc.);

b. the Maximum Acceptable Ground-Level Concentration (MAGLC) for each significant toxic contaminant or worst-case contaminant, calculated in accordance with the "Toxic Air Contaminant Statute", ORC 3704.03(F);

c. a copy of the computer model run(s), that established the predicted 1-hour maximum ground-level concentration that demonstrated the emissions unit(s) to be in compliance with the "Toxic Air Contaminant Statute", ORC 3704.03(F), initially and for each change that requires re-evaluation of the toxic air contaminant emissions; and

d. the documentation of the initial evaluation of compliance with the "Toxic Air Contaminant Statute", ORC 3704.03(F), and documentation of any determination that was conducted to re-evaluate compliance due to a change made to the emissions unit(s) or the materials applied.

(14) The permittee shall maintain a record of any change made to a parameter or value used in the dispersion model, used to demonstrate compliance with the "Toxic Air Contaminant Statute", ORC 3704.03(F), through the predicted 1-hour maximum ground-level concentration. The record shall include the date and reason(s) for the change and if the change would increase the ground-level concentration.

(15) See 40 CFR Part 60, Subpart KKKK (40 CFR 60.4300 – 60.4420)

e) Reporting Requirements

(1) The permittee shall submit deviation (excursion) reports that identify each day when a fuel other than natural gas was burned in this emissions unit. Each report shall be submitted within 30 days after the deviation occurs.

(2) The permittee shall submit quarterly deviation (excursion) reports that identify the following:

a. any monthly record showing an exceedance of the allowable sulfur content of natural gas, 1.0 grain per 100 standard cubic feet.

The quarterly deviation (excursion) reports shall be submitted in accordance with the reporting requirements of the Standard Terms and Conditions of this permit.

(3) The permittee shall comply with the following quarterly reporting requirements for the emissions unit and its continuous NO_x monitoring system:

a. Pursuant to the monitoring, record keeping, and reporting requirements for continuous monitoring systems contained in 40 CFR 60.7 and 60.13(h) and the requirements established in this permit, the permittee shall submit reports within 30 days following the end of each calendar quarter to the appropriate Ohio EPA District Office or local air agency, documenting all instances of NO_x emissions in excess of any applicable limit specified in this permit, 40 CFR Part 60, 40 CFR Parts 75 and 76, OAC Chapters 3745-14 and 3745-23, and any other applicable rules or regulations. The report shall document the date, commencement and completion times, duration, and magnitude of each exceedance, as well as the reason (if known) and the corrective actions taken (if any) for each exceedance. Excess emissions shall be reported in units of the applicable standard(s).

b. These quarterly reports shall be submitted by January 30, April 30, July 30, and October 30 of each year and shall include the following:

i. the facility name and address;

ii. the manufacturer and model number of the continuous NO_x and other associated monitors;

iii. a description of any change in the equipment that comprises the continuous emission monitoring system (CEMS), including any change to the hardware, changes to the software that may affect CEMS readings, and/or changes in the location of the CEMS sample probe;

iv. the excess emissions report (EER)*, i.e., a summary of any exceedances during the calendar quarter, as specified above;

v. the total NO_x emissions for the calendar quarter (tons);

vi. the total operating time (hours) of the emissions unit;

vii. the total operating time of the continuous NO_x monitoring system while the emissions unit was in operation;

viii. results and date of quarterly cylinder gas audits or linearity checks;

ix. unless previously submitted, results and date of the relative accuracy test audit(s), including results in units of the applicable standard(s), (during appropriate quarter(s));

x. unless previously submitted, the results of any relative accuracy test audit showing the continuous NO_x monitor out-of-control and the compliant results following any corrective actions;

xi. the date, time, and duration of any/each malfunction** of the continuous NO_x monitoring system, emissions unit, and/or control equipment;

xii. the date, time, and duration of any downtime** of the continuous NO_x monitoring system and/or control equipment while the emissions unit was in operation; and

xiii. the reason (if known) and the corrective actions taken (if any) for each event in (b)(xi) and (xii).

Each report shall address the operations conducted and data obtained during the previous calendar quarter. Data substitution procedures from 40 CFR 75 are not to be used for showing compliance with the short term OAC 3745-31-05(A)(3) rule-based or NSPS-based limitation(s) in this permit.

* where no excess emissions have occurred or the continuous monitoring system(s) has/have not been inoperative, repaired, or adjusted during the calendar quarter, such information shall be documented in the EER quarterly report

** each downtime and malfunction event shall be reported regardless if there is an exceedance of any applicable limit

(4) The permittee shall comply with the following quarterly reporting requirements for the emissions unit and its continuous CO monitoring system:

a. Pursuant to the monitoring, record keeping, and reporting requirements for continuous monitoring systems contained in 40 CFR 60.7 and 60.13(h) and the requirements established in this permit, the permittee shall submit reports within 30 days following the end of each calendar quarter to the appropriate Ohio EPA District Office or local air agency, documenting all instances of CO emissions in excess of any applicable limit specified in this permit, 40 CFR Part 60, OAC Chapter 3745-21, and any other applicable rules or regulations. The report shall document the date, commencement and completion times, duration, and magnitude of each exceedance, as well as, the reason (if known) and the corrective actions taken (if any) for each exceedance. Excess emissions shall be reported in units of the applicable standard(s).

b. These quarterly reports shall be submitted by January 30, April 30, July 30, and October 30 of each year and shall include the following:

i. the facility name and address;

ii. the manufacturer and model number of the continuous CO and other associated monitors;

iii. a description of any change in the equipment that comprises the continuous emission monitoring system (CEMS), including any change to the hardware, changes to the software that may affect CEMS readings, and/or changes in the location of the CEMS sample probe;

iv. the excess emissions report (EER)*, i.e., a summary of any exceedances during the calendar quarter, as specified above;

v. the total CO emissions for the calendar quarter (tons);

vi. the total operating time (hours) of the emissions unit;

vii. the total operating time of the continuous CO monitoring system while the emissions unit was in operation;

viii. results and dates of quarterly cylinder gas audits;

ix. unless previously submitted, results and dates of the relative accuracy test audit(s), including results in units of the applicable standard(s), (during appropriate quarter(s));

x. unless previously submitted, the results of any relative accuracy test audit showing the continuous CO monitor out-of-control and the compliant results following any corrective actions;

xi. the date, time, and duration of any/each malfunction** of the continuous CO monitoring system, emissions unit, and/or control equipment;

xii. the date, time, and duration of any downtime** of the continuous CO monitoring system and/or control equipment while the emissions unit was in operation; and

xiii. the reason (if known) and the corrective actions taken (if any) for each event in (b)(xi) and (xii).

Each report shall address the operations conducted and data obtained during the previous calendar quarter. Data substitution procedures from 40 CFR 75 are not to be used for showing compliance with the short term OAC 3745-31-05(A)(3) rule-based or NSPS-based limitation(s) in this permit.

* where no excess emissions have occurred or the continuous monitoring system(s) has/have not been inoperative, repaired, or adjusted during the calendar quarter, such information shall be documented in the EER quarterly report

** each downtime and malfunction event shall be reported regardless if there is an exceedance of any applicable limit

(5) The permittee shall collect, record, and maintain measurements, data, records, and reports required per 40 CFR Part 75; and shall submit certification, recertification, notifications, applications, monitoring plans, petitions for alternative monitoring systems, electronic quarterly reports and any other pertinent record and/or report to the Administrator (U.S. EPA), as required by this Part.

(6) The permittee shall submit annual reports that include any changes to any parameter or value used in the dispersion model used to demonstrate compliance with the "Toxic Air Contaminate Statute", ORC 3704.03(F), through the predicted 1 hour maximum concentration. The report should include:

a. the original model input;

b. the updated model input;

c. the reason for the change(s) to the input parameter(s); and

d. a summary of the results of the updated modeling, including the input changes; and

e. a statement that the model results indicate that the 1-hour maximum ground-level concentration is less than 80% of the MAGLC.

If no changes to the emissions, emissions unit(s), or the exhaust stack have been made during the reporting period, then the report shall include a statement to that effect.

(7) See 40 CFR Part 60, Subpart KKKK (40 CFR 60.4300 – 60.4420).

f) Testing Requirements

(1) Compliance with the Emissions Limitations and/or Control Requirements specified in section b) of these terms and conditions shall be determined in accordance with the following methods:

a. Emission Limitation:

CO emissions from this emissions unit shall not exceed 2.0 ppmvd at 15% oxygen as an hourly average and 9.9 lbs/hr when the duct burner is not in operation; and, 2.0 ppmvd at 15% oxygen as an hourly average and 12.5 lbs/hr when the duct burner is in operation.

Applicable Compliance Method:

These emissions limitations are based on manufacturer's data. Ongoing compliance with the CO emission limitations shall be demonstrated through the data collected as required in the Monitoring and Record keeping Section of this permit; and through demonstration of compliance with the quality assurance/quality control plan, which shall meet the requirements of 40 CFR Part 60.

Compliance shall be demonstrated based upon an emission test as required in f)(2).

b. Emission Limitation:

CO emissions from this emissions unit shall not exceed 213.2 tons per rolling, 12-month period.

Applicable Compliance Method:

This emissions limitation is based on the following anticipated worst case emissions: 50 cold startups per year, with a minimum downtime preceding cold startup of 72 hours and a cold startup duration of 245 minutes, maximum CO emissions of 3,244 pounds during each cold startup period; 250 hot startups per year with a duration of 83 minutes each and maximum CO emissions of 745 pounds during each hot startup period; hourly CO emissions at ISO conditions during steady state operation of 11.90 lbs/hr based on manufacturer's data and steady state operating hours was determined by the following equation.

$$8{,}760\ hrs - \left(50\left(72\ hrs + \frac{245\ min}{60\left(\frac{min}{hr}\right)}\right) + 250\left(\frac{83\ min}{60\left(\frac{min}{hr}\right)}\right) + 300\ \left(\frac{20\ min}{60\left(\frac{min}{hr}\right)}\right)\right) = 4{,}510 \text{ hours}$$

The allowable annual emission rate was determined by the following calculation using the above information.

$$\frac{\left[\left(50\frac{CS}{yr}\right)\left(3{,}244\frac{lbs}{CS}\right)+\left(250\frac{HS}{yr}\right)\left(745\frac{lbs}{HS}\right)+\left(4{,}510\frac{hrs}{yr}\right)\left(11.9\frac{lbs}{hr}\right)+\left(300\frac{SD}{yr}\right)\left(81\frac{lbs}{SD}\right)\right]}{2000\frac{lbs}{ton}} = 213.2 \text{ tons}$$

where:

CS = cold starts;

HS = hot starts; and

SD = shutdowns.

Ongoing compliance with this emission limitation shall be based on the pounds per hour emission data from the CO CEMS and the actual hours of operation of this emissions unit.

c. Emission Limitation:

CO emissions from this emissions unit shall not exceed 869.5 lbs/hr during cold startup, 627.9 lbs/hr during hot startup, 801.4 lbs/hr during warm startup, and 243 lbs/hr during shutdown averaged over the duration of the event.

Applicable Compliance Method:

These emissions limitations are based on manufacturer's data. Ongoing compliance with the CO emission limitations shall be demonstrated through the data collected as required in the Monitoring and Record keeping Section of this permit; and through demonstration of compliance with the quality assurance/quality control plan, which shall meet the requirements of 40 CFR Part 60.

d. Emission Limitation:

NO_x emissions from this emissions unit shall not exceed 2.0 ppmvd at 15% oxygen as an hourly average and 16.3 lbs/hr when the duct burner is not in operation; and, NO_x emissions shall not exceed 2.0 ppmvd at 15% oxygen as an hourly average and 20.5 lbs/hr when the duct burner is in operation.

Applicable Compliance Method:

These emissions limitations are based on manufacturer's data. Ongoing compliance with the NO_x emissions limitations shall be demonstrated through the data collected as required in the Monitoring and Record keeping Section of this permit; and through demonstration of compliance with the quality assurance/quality control plan, which shall meet the testing and recertification requirements of 40 CFR Part 60 and 40 CFR Part 75.

Compliance shall be demonstrated based upon an emission test as required in f)(2).

e. Emission Limitation:

NO_x emissions shall not exceed 103.2 tons per rolling, 12-month period.

Applicable Compliance Method:

This emissions limitation is based on the following anticipated worst case emissions: 250 hot startups per year with a duration of 83 minutes each and maximum NO_x emissions of 149 pounds during each hot startup period; hourly NO_x emissions at ISO conditions during steady state operation of 19.54 lbs/hr based on manufacturer's data and steady state operating hours as calculated by the following equation.

$$8{,}760\ hrs - \left(250\left(\frac{83\ min}{60\ \left(\frac{min}{hr}\right)}\right) + 250\left(\frac{20\ min}{60\ \left(\frac{min}{hr}\right)}\right)\right)$$
$$= 8{,}330.8\ hours\ during\ normal\ operation$$

The allowable annual emission rate was determined by the following calculation using the above information.

$$\frac{\left(250\frac{HS}{yr}\right)\left(149\frac{lbs}{HS}\right)+\left(250\frac{SD}{yr}\right)\left(25.6\frac{lbs}{SD}\right)+\left(8{,}330.8\frac{hrs}{yr}\right)\left(19.54\frac{lbs}{hr}\right)}{2000\frac{lbs}{ton}} = 103.2 \text{ tons } NO_x$$

where:

HS = hot starts; and

SD = shutdowns.

Ongoing compliance with this emissions limitation shall be determined using the pounds per hour emission data from the NO_x CEMS and the actual hours of operation of this emissions unit.

f. Emission Limitation:

NO_x emissions from this emissions unit shall not exceed 116.6 lbs/hr during cold startup, 124.1 lbs/hr during hot startup, 115.3 lbs/hr during warm startup, and 76.8 lbs/hr during shutdown averaged over the duration of the event.

Applicable Compliance Method:

These emissions limitations are based on manufacturer's data. Ongoing compliance with the NO_x emissions limitations shall be demonstrated through the data collected as required in the Monitoring and Record keeping Section of this permit; and through demonstration of compliance with the quality assurance/quality control plan, which shall meet the testing and recertification requirements of 40 CFR Part 60 and 40 CFR Part 75.

g. Emission Limitation:

PM_{10} emissions and $PM_{2.5}$ emissions shall not exceed 0.0108 lb/mmBtu of heat input and 12.4 lbs/hr when the duct burner is not in operation; and, PM_{10} and $PM_{2.5}$ shall not exceed 0.0078 lb/mmBtu of heat input (HHV) and 19.8 lbs/hr when the duct burner is in operation.

Applicable Compliance Method:

These emissions limitations are based on manufacturer's data.

Compliance shall be demonstrated based upon an emission test as required in f)(2).

h. Emission Limitation:

PM_{10} and $PM_{2.5}$ emissions from this emissions unit shall not exceed 85.7 tons per rolling, 12-month period.

Applicable Compliance Method:

This emission limitation was developed by multiplying the short-term allowable $PM_{10}/PM_{2.5}$ emission limitation at ISO conditions (19.56 lbs/hr) by the maximum annual hours of operation (8,760 hours), and then dividing by 2,000 pounds per ton. Therefore, if compliance is shown with the short-term allowable emission limitation, compliance shall also be shown with the annual emission limitation.

i. Emission Limitation:

The sulfur content of natural gas burned shall not exceed 1.0 grain per standard cubic feet.

Applicable Compliance Method:

Compliance with the sulfur content limitation shall be demonstrated by the monitoring and record keeping specified in 40 CFR 60.4365 or 40 CFR 60.4370.

If required, the permittee shall demonstrate compliance using the procedures specified in 40 CFR 60.4415(a)(1). Alternative U.S. EPA-approved test methods may be used with prior approval from the Ohio EPA.

j. Emission Limitation:

SO_2 emissions shall not exceed 0.0029 lb/mmBtu of heat input (HHV).

Applicable Compliance Method:

The lb/mmBtu limitation was established based on using natural gas having a maximum sulfur content of 1.0 grains per 100 cubic feet according to the following calculation. Multiply the maximum sulfur content of natural gas (1.0 grain S/100 scf) by the molecular weight of SO_2 (64.07 lb SO_2/lb-mole) divide by the molecular weight of sulfur (32.06 lb S/lb-mole) divide by (7,000 grains/lb), divide by (1,000 Btu/scf), and multiply by (10^6 Btu/mmBtu).

Compliance shall be demonstrated based upon an emission test as required in f)(2).

k. Emission Limitation:

The SO_2 emissions shall not exceed 32.4 tons per rolling 12-month period.

Applicable Compliance Method:

Compliance with this emissions limitation shall be determined by the following calculation based on the records required by d). Multiply the maximum sulfur

content of natural gas (1.0 gr S/100 scf) by the molecular weight of SO_2 (64.07 lb/lb-mole), divide by the molecular weight of sulfur (32.06 lb/lb-mole), divide by (7,000 gr/lb), multiply by the monthly natural gas usage (scf), and divide by (2,000 lbs/ton) to determine the monthly SO_2 emissions (tons). Add the SO_2 emissions calculated for the current month to the total SO_2 emissions calculated for the previous 11 months to determine the tons SO_2 emissions per rolling, 12-month period.

l. Emission Limitation:

VOC emissions shall not exceed 1.0 ppmvd at 15% oxygen as an hourly average and 2.8 lbs/hr when the duct burner is not in operation; and, VOC emissions shall not exceed 2.0 ppmvd at 15% oxygen as an hourly average and 7.1 lbs/hr when the duct burner is in operation.

Applicable Compliance Method:

These emissions limitations are based on manufacturer's data.

Compliance shall be demonstrated based upon an emission test as required in f)(2).

m. Emission Limitation:

VOC emissions shall not exceed 40.2 tons per rolling, 12-month period.

Applicable Compliance Method:

This emissions limitation is based on the following anticipated worst case emissions: 50 cold startups per year, with a minimum downtime preceding cold startup of 72 hours and a cold startup duration of 245 minutes, maximum VOC emissions of 525 pounds during each cold startup period; 250 hot startups per year with a of duration of 83 minutes each and maximum VOC emissions of 64 pounds during each hot startup period; hourly VOC emissions at ISO conditions during steady state operation of 6.8 lbs/hr based on manufacturer's data and steady state operating hours was determined by the following equation.

$$8{,}760\ hrs - \left(50\left(72\ hrs + \frac{245\ min}{60\left(\frac{min}{hr}\right)}\right) + 250\left(\frac{83\ min}{60\left(\frac{min}{hr}\right)}\right) + 300\left(\frac{20\ min}{60\left(\frac{min}{hr}\right)}\right)\right) = 4{,}510 \text{ hours}$$

The allowable annual emission rate was determined by the following calculation using the above information.

$$\frac{\left[\left(50\frac{CS}{yr}\right)\left(525\frac{lbs}{CS}\right)+\left(250\frac{HS}{yr}\right)\left(64\frac{lbs}{HS}\right)+\left(4{,}510\frac{hrs}{yr}\right)\left(6.8\frac{lbs}{hr}\right)+\left(300\frac{SD}{yr}\right)\left(25.2\frac{lbs}{SD}\right)\right]}{2000\frac{lbs}{ton}} = 40.2 \text{ tons}$$

where:

CS = cold starts;

HS = hot starts; and

SD = shutdowns.

Ongoing compliance with this emissions limitation shall be based on the following calculation.

$$\frac{VOC = \left[(\#CS)\left(140.2\frac{lbs}{hr}\right) + (\#HS)\left(53.8\frac{lbs}{HS}\right) + (\#WS)\left(151.7\frac{lbs}{hr}\right) + (\mathrm{SD})(75.6) + (\#SSDB)\left(6.8\frac{lbs}{hr}\right) + (\#SSNDB)(2.7\frac{lbs}{hr})\right]}{2000\frac{lbs}{ton}}$$

where:

VOC = tons VOC emissions per rolling, 12-month period;

#CS = hours operated in cold startup per rolling, 12-month period;

#HS = hours operated in hot startup per rolling, 12-month period;

#WS = hours operated in warm startup per rolling, 12-month period;

#SD = hours operated in shutdown, rolling 12-month period;

#SSDB = hours operated in steady state with duct burner per rolling, 12-month period; and

#SSNDB = hours operated in steady state without duct burner per rolling, 12-month period.

n. Emission Limitation:

VOC emissions from this emissions unit shall not exceed 140.2 lbs/hr during cold startup, 53.8 lbs/hr during hot startup, 151.7 lbs/hr during warm startup, and 75.6 lbs/hr during shutdown averaged over the duration of the event.

Applicable Compliance Method:

These emissions limitations are based on manufacturer's data. If required, the permittee shall demonstrate compliance with this emission limitation through emission testing performed in accordance with Methods 1 through 4 and 18, 25 or 25A, as appropriate, of 40 CFR Part 60, Appendix A. Use of Method 18, 25 or 25A is to be selected based on the results of pre-survey stack sampling and U.S. EPA guidance documents. Alternative U.S. EPA approved test methods may be used with prior approval from Ohio EPA.

o. Emission Limitation:

H_2SO_4 emissions shall not exceed 0.0012 lb/mmBtu of heat input (HHV) and 2.52 lbs/hr when the duct burner is not in operation; and, H_2SO_4 emissions shall not exceed 0.0016 lb/mmBtu of heat input (HHV) and 4.26 lbs/hr when the duct burner is in operation.

Applicable Compliance Method:

These emissions limitations are based on manufacturer's data.

Compliance shall be demonstrated based upon an emission test as required in f)(2).

p. Emission Limitation:

H_2SO_4 emissions shall not exceed 17.74 tons per rolling, 12-month period.

Applicable Compliance Method:

This emission limitation was developed by multiplying the short-term allowable H_2SO_4 emission limitation at ISO conditions (4.05 lbs/hr) by the maximum annual hours of operation (8,760 hours), and then dividing by 2,000 pounds per ton. Therefore, if compliance is shown with the short-term allowable emission limitation, compliance shall also be shown with the annual emission limitation.

q. Emission Limitation:

CO_2e emissions shall not exceed 307,279.33 lbs/hr at ISO conditions and 1,345,883.48 tons per rolling, 12-month period.

Applicable Compliance Method:

The hourly emission limitation is based on the sum of following manufacturer's data (306,632 lbs/hr CO_2, 5.804 lbs/hr CH_4, and 1.695 lbs/hr N_2O) multiplied by the associated global warming potential for each pollutant (CO_2=1, CH_4=21, N_2O=310 from Table A-1 of 40 CFR 98).

$$\left[\left(306{,}632\,\frac{lbs}{hr}\right)(1)+\left(5.804\,\frac{lbs}{hr}\right)(21)+\left(1.695\,\frac{lbs}{hr}\right)(310)\right]=307{,}279.33\;lbs/hr$$

Since the CO_2e emissions are estimated to consist of more than 99% CO_2, compliance with this emission limitation will be assumed provided that the hourly CO_2 emission rate does not exceed 307,279.33 lbs/hr at ISO conditions.

Compliance shall be demonstrated based upon an emission test as required in f)(2).

The annual emission limitation is based on the sum of following manufacturer's data (306,632 lbs/hr CO_2, 5.804 lbs/hr CH_4, and 1.695 lbs/hr N_2O) multiplied by the associated global warming potential for each pollutant (CO_2=1, CH_4=21, N_2O=310 from Table A-1 of 40 CFR 98), multiplied by the maximum annual hours of operation (8,760 hrs/yr) and divided by (2,000 lbs/ton).

$$\left[\left(306{,}632\frac{lbs}{hr}\right)(1)+\left(5.804\frac{lbs}{hr}\right)(21)+\left(1.695\frac{lbs}{hr}\right)(310)\right]\left(8{,}760\frac{hrs}{yr}\right)\left(\frac{ton}{2000lbs}\right)$$
$$=1{,}345{,}883.48\;tons/yr$$

Since the CO_2e emissions are estimated to consist of more than 99% CO_2, compliance with this emission limitation will be assumed provided that the rolling, 12-month CO_2 emissions as calculated in section d) above do not exceed 1,345,883.48 tons per rolling, 12-month period (307,729.33 lbs/hr x 8760 hrs/yr x ton/2000 lb = 1,345,883.48 tons/yr).

r. Emission Limitation:

Visible particulate emissions from any stack serving this emissions unit shall not exceed 10% opacity as a 6-minute average.

Applicable Compliance Method:

If required, the permittee shall demonstrate compliance based upon an emission test performed in accordance with the methods and procedures specified in 40 CFR Part 60, Appendix A, Method 9.

(2) The permittee shall conduct, or have conducted, emission testing for this emissions unit in accordance with the following requirements:

a. The emission testing shall be conducted within 60 days after achieving the maximum production rate at which the emissions unit will be operated, but not later than 180 days after initial startup of the emissions unit.

b. The emission testing shall be conducted to demonstrate compliance with the allowable mass emission rate(s) for CO, NO_x, PM_{10}, $PM_{2.5}$, VOC, SO_2 and H_2SO_4, in the appropriate averaging period(s).

The emission testing shall also be conducted to determine a site-specific emission factor for CO_2.

c. The following test method(s) shall be employed to demonstrate compliance with the allowable mass emission rate(s):

for CO, Methods 1 thru 4 and 10 of 40 CFR Part 60, Appendix A;

for NO_x, Methods 1 thru 4 and 7E of 40 CFR Part 60, Appendix A, and the procedures specified in 40 CFR 60.4400;

for PM_{10} and $PM_{2.5}$, Methods 201A and 202 of 40 CFR Part 52, Appendix M;

for SO_2, 40 CFR 60.4415;

for VOC, Methods 1 through 4 and 18, 25 or 25A, as appropriate, of 40 CFR Part 60, Appendix A with the use of Method 18, 25 or 25A to be selected based on the results of pre-survey stack sampling and U.S. EPA guidance documents;

for H_2SO_4, Methods 1 thru 4 and 8 of 40 CFR Part 60, Appendix A; and

for CO_2, Methods 1, 2, 3A, and 4 of 40 CFR Part 60, Appendix A.

Alternative U.S. EPA-approved test methods may be used with prior approval from the Ohio EPA.

d. The test(s) shall be conducted under those representative conditions that challenge to the fullest extent possible a facility's ability to meet the applicable emissions limits and/or control requirements, unless otherwise specified by the Ohio EPA Northeast District Office. Although this generally consists of operating the emissions unit at its maximum material input/production rates and results in the highest emission rate of the tested pollutant, there may be circumstances where a lower emissions loading is deemed the most challenging control scenario. Failure to test under these conditions is justification for not accepting the test results as a demonstration of compliance.

e. Not later than 30 days prior to the proposed test date(s), the permittee shall submit an "Intent to Test" notification to the Ohio EPA Northeast District Office. The "Intent to Test" notification shall describe in detail the proposed test methods and procedures, the emissions unit operating parameters, the time(s) and date(s) of the test(s), and the person(s) who will be conducting the test(s). Failure to submit such notification for review and approval prior to the test(s) may result in the Ohio EPA Northeast District Office's refusal to accept the results of the emission test(s).

f. Personnel from the Ohio EPA Northeast District Office shall be permitted to witness the test(s), examine the testing equipment, and acquire data and information necessary to ensure that the operation of the emissions unit and the testing procedures provide a valid characterization of the emissions from the emissions unit and/or the performance of the control equipment.

g. A comprehensive written report on the results of the emissions test(s) shall be signed by the person or persons responsible for the tests and submitted to the Ohio EPA Northeast District Office within 30 days following completion of the test(s). The permittee may request additional time for the submittal of the written report, where warranted, with prior approval from the Ohio EPA Northeast District Office.

(3) Within 60 days of achieving the maximum production rate at which the emissions unit(s) will be operated, but not later than 180 days after initial startup, the permittee shall conduct certification tests of the continuous NO_x monitoring system, in units of the applicable standard(s), to demonstrate compliance with 40 CFR Part 60, Appendix B, Performance Specification 2; Performance Specification 6 relative accuracy requirements; ORC section 3704.03(I); and 40 CFR Part 75.

The permittee shall certify that the fuel flow monitor/meter meets 40 CFR Part 75 certification requirements prior to the performance specification test and shall demonstrate how the pound per hour emissions of NO_x will be calculated stoichiometrically from the fuel flow rate.

Personnel from the Ohio EPA Central Office and the Ohio EPA Northeast District Office shall be notified 45 days prior to initiation of the applicable tests and shall be permitted to examine equipment and witness the certification tests. Two copies of the test results

shall be submitted to Ohio EPA, one copy to the Ohio EPA Northeast District Office and one copy to Ohio EPA Central Office, and pursuant to OAC rule 3745-15-04, within 30 days after the test is completed.

Certification, or recommendation for certification by Ohio EPA to U.S. EPA, of the continuous NO_x monitoring system shall be granted upon determination by the Ohio EPA, Central Office that the system meets the requirements of 40 CFR Part 60, Appendix B, Performance Specification 2; Performance Specification 6 relative accuracy requirements; ORC section 3704.03(I); and 40 CFR Part 75.

Ongoing compliance with the NO_x emission limitations contained in this permit, 40 CFR Parts 60 and 75, and any other applicable standard(s) shall be demonstrated through the data collected as required in the Monitoring and Record keeping Section of this permit; and through demonstration of compliance with the quality assurance/quality control plan, which shall meet the testing and recertification requirements of 40 CFR Part 60 and 40 CFR Part 75.

(4) Within 60 days of achieving the maximum production rate at which the emissions unit(s) will be operated, but not later than 180 days after initial startup, the permittee shall conduct certification tests of the continuous CO monitoring system in units of the applicable standard(s), to demonstrate compliance with 40 CFR Part 60, Appendix B, Performance Specification 4 or 4a (as appropriate); Performance Specification 6 relative accuracy requirements; and ORC section 3704.03(I).

The permittee shall certify that the fuel flow monitor/meter is calibrated prior to the performance specification test and shall demonstrate how the pound per hour emissions of CO will be calculated stoichiometrically from the fuel flow rate.

Personnel from the Ohio EPA Central Office and the Ohio EPA Northeast District Office shall be notified 30 days prior to initiation of the applicable tests and shall be permitted to examine equipment and witness the certification tests. Two copies of the test results shall be submitted to Ohio EPA, one copy to the Ohio EPA Northeast District Office or local air agency and one copy to Ohio EPA Central Office, and pursuant to OAC rule 3745-15-04, within 30 days after the test is completed.

Certification of the continuous CO monitoring system shall be granted upon determination by the Ohio EPA Central Office that the system meets the requirements of 40 CFR Part 60, Appendix B, Performance Specification 4 or 4a (as appropriate); Performance Specification 6 relative accuracy requirements; and ORC section 3704.03(I).

Ongoing compliance with the CO emission limitations contained in this permit, 40 CFR Part 60, and any other applicable standard(s) shall be demonstrated through the data collected as required in the Monitoring and Record keeping Section of this permit; and through demonstration of compliance with the quality assurance/quality control plan, which shall meet the requirements of 40 CFR Part 60.

g) Miscellaneous Requirements

(1) None.