



9/22/2014

Certified Mail

Mr. Michael Schuster
Middletown Energy Center
24 Cathedral Place, Suite 300
St. Augustine, FL 32084

RE: DRAFT AIR POLLUTION PERMIT-TO-INSTALL

Facility ID: 1409001151
Permit Number: P0116610
Permit Type: Initial Installation
County: Butler

Yes	TOXIC REVIEW
Yes	PSD
Yes	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

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, Journal News. 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 Southwest Ohio Air Quality Agency
250 William Howard Taft Rd.
Cincinnati, OH 45219

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 Southwest Ohio Air Quality Agency at (513)946-7777.

Sincerely,

Erica R. Engel-Ishida, Interim Manager
Permit Issuance and Data Management Section, DAPC

Cc: U.S. EPA Region 5 -Via E-Mail Notification
SWOQA; Indiana; Kentucky

**STAFF DETERMINATION FOR THE APPLICATION TO CONSTRUCT
UNDER THE PREVENTION OF SIGNIFICANT DETERIORATION
REGULATIONS FOR MIDDLETOWN ENERGY CENTER
LOCATED IN BUTLER COUNTY, OHIO
PERMIT NUMBER P0116610**

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) rules. The federal PSD rules govern emission increases in attainment areas for major stationary sources, which are facilities 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. A major modification is one resulting in a contemporaneous net increase in emissions which exceeds the significance level of one or more pollutants. Any changes in actual emissions within this five- or ten-year period are considered to be contemporaneous. In addition, Ohio has incorporated both PSD and nonattainment requirements by rule under OAC 3745-31, and currently has a program that is fully approved by USEPA. For particulate matter 2.5 microns or less in diameter (PM_{2.5}), Ohio will have to use the requirements established in 40 CFR Part 51, Appendix S until the Ohio Administrative Code (OAC) regulations are modified to include PM_{2.5} emissions.

The PSD 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 stationary 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 stationary 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.

Finally, New Source Performance Standards (NSPS), National Emission Standards for Hazardous Air Pollutants (NESHAP), State Implementation Plan (SIP) emission standards and public participation requirements must be followed in all cases.

Site Description

The Middletown Energy Center (MEC) facility will be located in Middletown, Ohio, Butler County.

This area is classified as nonattainment for ozone (volatile organic compounds being a precursor to ozone) for the 8 hour standard and attainment for all other criteria pollutants, including particulate matter 10 microns and less in diameter (PM₁₀), particulate matter 2.5 microns and less in diameter (PM_{2.5}), sulfur dioxide (SO₂), nitrogen oxides (NO_x), carbon monoxide (CO), and lead (Pb).

Facility Description

MEC is proposing to construct a nominal 500-megawatt (MW) combined cycle gas turbine (CCGT) electric generating facility which will be located on an approximate 50-acre site that is set back from the Cincinnati Dayton Road and near Oxford State Road in the City of Middletown in Butler County.

The project site is situated in southwestern Ohio, approximately 27 miles north-northeast of Cincinnati and about 22 miles south-southwest of Dayton. Approximately 35 acres of the 50-acre property will be completely surrounded by a railroad owned by Norfolk Southern (west), AK Steel (east), and Precision Strip, a light industrial coil processing facility that processes metal coils for the metal industry (north).

Its setting is located within a mixture of industrial, commercial and residential properties and is zoned I-2, General Industrial in the south end of Middletown, Ohio.

Project Description

The project consists of a combined-cycle power block in a 1X1 multi-shaft configuration, consisting of a combustion turbine (CT), heat recovery steam generator (HRSG) and steam turbine (ST). The CT and ST will have separate electric generators.

Major components are the following:

- One Mitsubishi Hitachi Power System Americas, Inc. (MHPSA) M501JAC or M501 GAC combustion turbine (CT);
- One supplementary fixed HRSG (with duct burners) containing selective catalytic reduction (SCR) for NO_x control and oxidation catalysts for CO and VOC control;
- One steam turbine generating electricity from the steam generated by the HRSG;
- One auxiliary boiler, natural gas-fired;
- Two fuel gas heaters – natural gas-fired (the two units will not operate simultaneously or each will operate at maximum of 50 percent of their individual loads when operating simultaneously);
- CT inlet evaporative cooler;
- Multiple-cell mechanical draft, counter flow, evaporative cooling tower system;
- One diesel engine powered emergency generator;
- One diesel engine powered fire water pump;
- Diesel fuel, lubricating oil and aqueous ammonia storage tanks.

Combustion Turbine

Thermal energy will be produced in the CT through the combustion of natural gas as the sole fuel. The thermal energy is converted to mechanical energy in the CT turbine that drives the CT compressor and electric generator.

Heat Recovery Steam Generators and Duct Burners

In the combined cycle configuration, the CT will exhaust through a dedicated HRSG to generate steam from the waste heat energy in the exhaust gas. The HRSG will be equipped with supplemental fuel firing via a duct burner. The duct burner provides additional thermal energy to the HRSG, to provide more steam to the steam turbine generator during periods of high demand.

Steam Turbine Generator

Steam generated in the HRSG will be expanded through a multi-stage, reheat-capable, condensing steam turbine. Rotational power in the steam turbine is converted to electric power via the steam turbine generator.

Auxiliary Boiler

The auxiliary boiler will be natural gas-fired and operate as needed to keep the HRSG warm during periods of turbine shutdown and provide sealing steam to the steam turbine during warm and hot start-ups.

One, maybe two fuel natural gas-fired heaters

A small natural gas-fired combustion unit associated with CT operation will be a fuel gas/dew-point heater. If MEC installs and operates two fuel gas heaters, then neither unit would operate above 50 percent of their maximum capacity.

Cooling Tower

The steam condenser cooling system will utilize a multi-cell mechanical draft wet cooling tower. In the cooling tower, circulating water is distributed among multiple cells of the cooling tower, where it cascades downward through each cell and then collects in the cooling tower basin. The mechanical draft cooling tower employs electric motor-driven fans to move air through each cooling tower cell. The cascading circulating water is partially evaporated and the evaporated water is dispersed to the atmosphere as part of the moist air leaving each cooling tower cell. The circulating water is cooled primarily through its partial evaporation. The cooling tower will be equipped with a high-efficiency drift eliminator.

Emergency Diesel Generator

The emergency diesel generator is to provide on-site emergency power capabilities independent of the utility grid. The emergency generator will fire diesel fuel and will typically only operate for testing and to maintain operational readiness in the event of an emergency.

Emergency Diesel Fire Pump

The emergency diesel fire pump is to provide on-site fire-fighting capabilities independent of the utility grid. The emergency fire pump will fire diesel fuel and will typically only operate for testing and to maintain operational readiness in the event of an emergency caused by a fire.

New Source Review (NSR)/PSD Applicability

This facility will generate significant levels of criteria pollutant emissions including NO_x, SO₂, CO, sulfuric acid mist (H₂SO₄), greenhouse gas (GHG) and PM₁₀/PM_{2.5}.

Butler County is designated as attainment for PM₁₀, PM_{2.5}, SO₂, NO_x, CO, GHG, and Lead so the PSD rules may be applicable to a new source. MCE is a new source and is a fossil fuel-fired steam electric plant with a heat input capacity greater than 250 mmBtu per hour including fugitive emissions as specified in 3745-31-01 of the Ohio Administrative Code. The proposed facility has the potential to emit greater than 100 tons per year, therefore the installation of this project makes MEC a major stationary source.

Once a source emits a regulated pollutant (in this case, for CO) that triggers being a major stationary source as part of a project, then if any regulated pollutants that are emitted in excess of the significance emission levels as specified in 3745-31-01 of the Administrative Code would also require the source to perform a PSD analysis for those pollutants as well.

Based upon the table below a PSD analysis is required for the following pollutants: particulate matter (PM) because PM is listed in Ohio EPA's rules as a criteria pollutant, pursuant to OAC rule 3745-31 (listed as a significant pollutant), PM₁₀, PM_{2.5}, CO, NO_x, H₂SO₄, and GHG. Nonattainment permit requirements were not applicable due to MEC accepting restrictions to the amounts of NO_x and VOC emissions to less than 100 tons per year thereby avoiding nonattainment permit requirements for those pollutants.

TABLE 1
MEC'S POLLUTANT EMISSION RATES

Pollutant	Allowable Emission Rate (in tpy)*	Significant PSD Threshold (in tpy)
Carbon Monoxide	265.64	100
Nitrogen Oxides	99.81	40
Sulfur Dioxide	18.38	40
Particulate Matter (filterable)	73.75	25
PM ₁₀ (surrogate for PM _{2.5} for purposes of PSD review)	69.46	15
PM _{2.5} (filterable for purposes of PSD review).	62.01	10
Volatile Organic Compounds	94.27	N/A**
Lead	0.004	0.6
Sulfuric Acid Mist (H ₂ SO ₄)	14.07	7
GHG	1,668,317	100,000

*these are the worse-case emissions from either proposed CT installation

**this facility will be located in an non-attainment area and since VOC emissions are less than 100 per year, this project will not trigger non-attainment new source review or PSD because PSD areas are designated in terms of ozone, not VOC.

Applicability of 40 CFR Part 60 (NSPS)

The requirements of 40 Code of Federal Regulations (CFR) Part 60, Subpart Db, Standards of Performance for Industrial-Commercial-Institutional Steam Generating Units; Subpart IIII, Standards of Performance for Stationary Compression Ignition Combustion Engines; Subpart KKKK, Standards of Performance for Stationary Combustion Turbine Emissions are applicable to the appropriate emissions units contained within this project.

Applicability of 40 CFR Part 63 (MACT)

For purposes of being a major stationary source for hazardous air pollutants (HAP), MEC has accepted HAP emission restrictions below trigger emission levels of 10 tons per year of a single HAP and 25 tons per year for combined HAPs.

The requirements of 40 Code of Federal Regulations (CFR) Part 63, Subpart ZZZZ, National Emissions Standards for Hazardous Air Pollutants for Stationary Reciprocating Internal Combustion Engines which is applicable to both major and non-major (area source) HAP facilities. Pursuant to 63.6590(c), new or reconstructed compression ignition engines are area sources (non-major HAP sources) and therefore must meet the requirements of 40 CFR 60, NSPS, Subpart IIII to comply with the requirements of Subpart ZZZZ.

Control Technology Review (BACT)

The requirement to conduct a BACT analysis and determination is set forth in section 165(a)(4) of the Clean Air Act (Act), in federal regulations at 40 CFR Part 52.21.(j) and also in OAC rules 3745-31-15(C) and 3745-31-01(S). The BACT requirement is defined as:

“... an emissions limitation (including a visible emissions standard) based on the maximum degree of reduction for each regulated NSR pollutant which would be emitted from any proposed major stationary source or major modification which the director, on a case-by-case basis, taking into account energy, environmental, and economic impacts and other costs, determines is achievable for such major stationary source or major modification through application of production processes or available methods, systems and techniques, including fuel cleaning or treatment or innovative fuel combustion techniques for control of such pollutant. In no event shall application of best available control technology result in emissions of any pollutant that would exceed the emissions allowed by any applicable standard under 40 CFR Parts 60, 61, and 63. If the director determines that technological or economic limitations on the application of measurement methodology to a particular emissions unit would make the imposition of an emissions standard infeasible, a design, equipment, work practice, operational standard, or combination thereof, may be approved by the director instead to satisfy the requirement for the application of best available control technology. Such standard shall, to the degree possible, set forth the emissions reduction achievable by implementation of such design, equipment, work practice or operation and shall provide for compliance by means which achieve equivalent results.”

The BACT process was further formalized in a memorandum by USEPA on December 1, 1987 and in the draft New Source Review Workshop Manual (EPA 1990b) issued on March 15, 1990, by introducing a “top-down” concept for BACT analysis. The top-down process requires that all available control technologies be ranked in descending order of control effectiveness. The BACT process first examines the most stringent - or “top” - alternative. That alternative is established as BACT unless it is demonstrated that technical considerations, or energy, environmental, or economic impacts justify a conclusion that the most stringent technology is not applicable. If the most stringent technology is eliminated, then the next most stringent alternative is considered, and this process is continued until an acceptable BACT is selected.

The objective of the BACT analysis is to conduct pollutant-specific control technology evaluation per USEPA requirements. The BACT evaluation steps consist of:

Step 1: identify all control technologies;

Step 2: eliminate technically infeasible options;

Step 3: rank remaining control technologies by control effectiveness;

Step 4: evaluate most effective controls and document results; and

Step 5: select the most effective control based on energy, environmental and economic impacts (it is generally understood that the chosen feasible technology option is also considered to be cost effective)

BACT Review:

BACT Analysis: Combustion Turbine CT and Duct Burner - Ohio EPA emissions unit P001.

Pollutant	Operations	BACT Control Technology	BACT Limitation	BACT Emission Rate for tons per rolling, 12-month period
NOx	CT	Use of natural gas, low NOx burner, and selective catalytic reduction (SCR).	2.0 ppmvd@ 15 percent O ₂ , to be achieved at all operating loads between 50 and 100 percent for each CT configuration option and 21.8 lbs. per hr.	88.4 all modes of operation, including start-up and periods.
	CT + Duct Burner		2.0 ppmvd@ 15 percent O ₂ , to be achieved at all operating loads between 50 and 100 percent for each CT configuration option and 27.7 lbs. per	

			hr.	
CO	CT	Used of natural gas, combustion controls, and catalytic oxidation	2.0 ppmvd@ 15 percent O ₂ , to be achieved at all operating loads between 50 and 100 percent for each CT configuration option and 13.2 lbs. per hr.	249.1 all modes of operation, including start-up and periods.
	CT + Duct Burner		2.0 ppmvd@ 15 percent O ₂ , to be achieved at all operating loads between 50 and 100 percent for each CT configuration option and 16.8 lbs. per hour.	
PM, PM ₁₀ , and PM _{2.5}	CT	Exclusive use of natural gas, high efficiency inlet air filters and low NOx burner.	0.0038 lb./mmBtu and 10.8 lbs. per hr.	59.4 all modes of operation, including start-up and periods
	CT + Duct Burner		0.0057 lb./mmBtu and 20.0 lbs. per hr.	
GHG	CT only @ ISO	Good combustion, oxidation catalysts, used of natural gas, energy efficiency.		1,626,781 all modes of operation, including start-up and periods
H ₂ SO ₄	CT	Used of natural gas.	0.0011 lb./mmBtu and 3.5 lbs. per hr.	14
	CT + Duct Burner		0.0011 lb./mmBtu and 4.3 lbs. per hr.	

BACT Analysis: Auxiliary Equipment

Pollutant	Operations	BACT Control Technology	BACT Limitation	BACT Emission Rate for (tpy)
CO	Emergency Diesel Engine Powered	Emergency operation only, < 500 hours/year each for	2.61 g/HP-hr. (3.5 g/kW-hr) and 8.49 lbs. per hr.	2.12
NOx			8.92 g/HP-hr. and 29.01 lbs. per hr.	7.25

PM, PM ₁₀ , and PM _{2.5}	Standby Generator rated at 1,100 kilowatts – emissions unit P002	maintenance checks and readiness testing designed to meet NSPS Subpart III	0.236 g/HP-hr. (0.2 g/kW-hr) and 0.77 pound per hr.	0.19
H ₂ SO ₄			6.74 E-04 g/HP-hr. and 2.19 E-03 lb. per hr. and fuel sulfur content of 15 ppm.	5.48E-04
GHG				474 of CO _{2e}
CO	Emergency Diesel Engine Fire Pump Engine rated at maximum 260 HP – emissions unit P003.	Emergency operation only, < 500 hours/year each for maintenance checks and readiness testing designed to meet NSPS Subpart III	1.2 g/HP-hr. and 0.69 lb. per hour.	0.17
NO _x			3.0 g/HP-hr. and 1.72 lbs. per hour.	0.43
PM PM ₁₀ , and PM _{2.5}			0.15 g/HP-hr. and 0.09 lb. per hour.	0.023
H ₂ SO ₄			6.7 E-04 g/HP-hr. and 3.9 E-04 lb. per hour and fuel sulfur content of 15 ppm.	9.7 E-05
GHG				75 of CO _{2e}
NO _x	Auxiliary Boiler – emissions unit B001/ and Fuel Gas Heaters – emissions units B002 and B003	Ultra low NO _x burner	9 ppmvd @ 3% O ₂ (0.011 lb./mmBTU) and 1.65 lbs. per hr.	3.30/0.43
CO		Good Combustion	Boiler: 50 ppmvd @ 3% O ₂ (0.037 lb./mmBTU) and 5.55 lbs. per hr. Fuel Gas Heater: 0.08 lb./mmBTU	11.1/3.15
PM, PM ₁₀ , and PM _{2.5}		Exclusive Natural Gas	0.007 lb./mmBTU and 1.05 lbs. per hr.	2.1/0.276
H ₂ SO ₄		Exclusive Natural Gas	0.00017 lb./mmBTU and 0.03 lb. per hr.	0.06/0.00676
GHG		Exclusive Natural Gas		Boiler: 35,895/ Fuel Gas Heater: 4,714 of CO _{2e}
PM	Wet Mechanical Cooling Tower	High efficiency drift eliminators and minimize total dissolved solid (TDS)	0.0005% drift loss, maximum TDS of 5800 parts per million (ppm), and 2.685 lbs. per hr.	11.76
PM ₁₀			0.0005% drift loss, maximum TDS of 5800 ppm and 1.7	7.47

			lbs. per hr.	
PM _{2.5}			0.0005% drift loss, maximum TDS of 5800 ppm and 0.006 lb. per hr.	0.025
GHG	Fugitive GHG from Natural Gas Piping		Best management practices	73 of CO ₂ e
GHG	Natural Gas Maintenance + SU/SD Venting		Standard industry work practice and minimize startups and shutdowns to the extent that is practical.	170 of CO ₂ e
GHG	Fugitive GHG from SF ₆ Insulated Electric Equipment	Equipment design specifications	Equipment design specifications – low pressure alarm and a low pressure lockout.	132.8 of CO ₂ e

The MEC is located at West of Cincinnati Dayton Rd./South of Oxford State Rd. in Middletown, Butler County, Ohio. The area is attainment for all criteria pollutants, except 2008 8-Hr ozone standard (marginal nonattainment). U.S. EPA regulations require the establishment of baseline air quality in the vicinity of the proposed project. This is normally accomplished using representative air quality monitoring data. Air quality modeling can be utilized to demonstrate that the project will have less than a threshold impact. This threshold impact is identified as the PSD monitoring de minimus level. If the projected impact from the proposed project exceeds this level, ambient data must be collected or existing representative data must be identified which is representative of the area.

MEC has conducted ambient air quality modeling for NO₂, CO, PM₁₀ and PM_{2.5} to determine the potential impact due to the proposed installation. The facility has conducted modeling for two different loading scenarios over a range of normal operating and startup scenarios (M501JAC and M501GAC) CT options. The facility has used the regulatory model, AERMOD (Version 14134) to demonstrate that the allowable emissions will not cause or contribute to violation of the applicable NAAQS or any applicable maximum allowable increase over baseline concentrations (allowable PSD increment) in the area.

Middletown Energy has used five years (2008-2012) of surface meteorological data from Cincinnati/Covington (KCVG, WMO# 724210, WBAN# 93814), and five years (2008-2012) of upper air data from Wilmington Airborne Park (ILN, WMO# 72426, WBAN# 13481). The National Weather Service data was determined to be representative of the geographical surroundings of MEC. Terrain features and building downwash was incorporated into the AERMOD estimates.

Modeling shows that the modeled NO₂, CO, PM₁₀ and PM_{2.5} concentrations over various averaging periods (1-hr, 8-hr, 24-hr, and annual) from the proposed installation are below

their respective PSD monitoring de minimus levels). If the maximum ambient impact for a particular pollutant and averaging period are less than the respective SIL, the source is presumed not to cause or significantly contribute to a PSD Increment or NAAQS violation and is not required to perform multiple source cumulative impact assessments for that pollutant. Based on the modeling results, predicted impacts for all pollutants and averaging periods are less than the applicable SILs (Table 7-3 in June 24, 2014 air dispersion modeling analysis). Therefore, the project is presumed not to cause or significantly contribute to a PSD Increment or NAAQS violation. Additional modeling to address PSD increments and NAAQS were not required. The following are the projected impacts for two CT scenarios (M501JAC and M501GAC):

Pollutant	Modeled Period	Modeled Impact (ug/m3)		PSD Class II SIL (ug/m3)	Monitoring De Minimus (ug/m3)
		M501GAC	M501JAC		
NO2	1-hour	4.3	4.3	7.5	---
	Annual	0.6	0.6	1	14
PM2.5	24-hour	1.0	1.0	1.2	0
	Annual	0.07	0.07	0.3	---
PM10	24-hour	4.9	4.9	5	10
	Annual	0.7	0.7	1	---
CO	1-hour	233	266	2000	---
	8-hour	26	26	500	575

Furthermore, it is noted that the facility has included the modeling of intermittent sources (startups/shutdowns) for both CT scenarios in their air quality modeling report (Table 7-2 in June 24, 2014 air dispersion modeling analysis). The table shows that for cold startup, the predicted Class II 1-hr NO2 values exceed the SIL for both CT scenarios. For warm startup, the modeled value exceeds the Class II 1-hr NO2 SIL for M501GAC CT scenario only.

Pollutant/Period	Intermittent Source	Modeled Impact (ug/m3)	
		M501GAC	M501JAC
1-hr NO2	Cold Startup	20.36	25.61
	Warm Startup	9.84	5.12

PSD Increment and NAAQS

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

Ohio Acceptable Increment Impact (OAIL)

After reviewing increment modeling of the proposed project, Ohio EPA found that the modeled 1-hr, 8-hr, 24-hr and annual pollutants concentrations to be well below the OAIL levels. Ohio EPA is in agreement with the maximum modeled impacts of NO2, CO, PM10 and PM2.5 from the project found in the table (Table 7-3 in June 24, 2014 air dispersion modeling analysis). The installation of Middletown Energy Project will not result in any exceedances of the OAIL levels.

Ohio Air Toxics

Modeling for H2SO4 (company performed an air toxic analysis, but due to the provisions listed in Ohio Senate Bill 265, Ohio EPA does not require an air toxic analysis because that pollutant triggered PSD), ammonia, formaldehyde, hexane and toluene was required by Ohio EPA

because those emissions exceeded more than one ton per year. All modeled air toxics did not exceed their respective Maximum Achievable Ground Level Concentration (MAGLC) values pursuant to Ohio EPA's Engineering Guidelines: in this case, Engineering Guide titled "#69 Guideline on Air Quality Models". The Ohio EPA is in agreement with the maximum concentrations found in Table 10-2 of the Air Quality Impact Analysis submitted on June 24, 2014, NTE MEC Application for Major New Source Permit to Install document prepared by the facility.

Secondary Impact Analysis

Pursuant to guidance issued by USEPA in May 2014, addressing secondary formation of PM_{2.5} in a NAAQS compliance demonstration under the PSD program, MEC Project has submitted qualitative analysis only of secondary PM_{2.5} formation based on the increase in NO_x and/or SO₂ emissions from the facility. The agency is in agreement with the submission 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.

Soils and Vegetation Analysis

U.S. EPA Air Quality Criteria documents were reviewed for information on pollutants and adverse effects on the type of vegetation and soils in the area. The secondary NAAQS are designed to limit the amount of pollutants in the ambient air to levels below those which could have an adverse impact on human welfare, soils and vegetation. No adverse impact upon soils or vegetation is expected. The modeling analyses demonstrate that no significant impacts on human welfare, soils or vegetation will occur from the proposed installation (Table 9-3 in June 24, 2014, submittal).

Associated Growth Analysis

As part of the 32-month construction phase of the Project, several hundred temporary construction jobs will be created and once construction has been completed there will be 25 to 30 full time employees employed at the MEC facility. MEC provided information to support that there was adequate housing to accommodate these workers in the area and they do not anticipate additional roadway construction due to the workers being in the area.

In addition, MEC believes that existing pollution in the area will be reduced due to the fact that existing power plants will be shut down and their operation will be more efficient than existing power plant operations located in the area.

Conclusions

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 installation will comply with all applicable State and Federal environmental regulations and that the requirements for PSD review are satisfied. Therefore, the Ohio EPA staff recommends that a permit to install be issued to MEC for the installation of t

PUBLIC NOTICE
Issuance of Draft Air Pollution Permit-To-Install
Middletown Energy Center

Issue Date: 9/22/2014

Permit Number: P0116610

Permit Type: Initial Installation

Permit Description: Initial installation of either one (1) Mitsubishi Hitachi Power Systems Americas M501JAC or one (1) Mitsubishi Hitachi Power Systems Americas M501GAC single power block in a 1x1 combined-cycle multi-shaft configuration, including a combustion turbine and heat recovery steam generator with duct burners and a steam turbine to be known as the Middletown Energy Center.

Facility ID: 1409001151

Facility Location: Middletown Energy Center

South of Oxford State Rd west of Cincinnati Dayton Rd,
Middletown, OH 45044

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: Paul Tedtman, Southwest Ohio Air Quality Agency, 250 William Howard Taft Rd., Cincinnati, OH 45219. Ph: (513)946-7777



DRAFT

Division of Air Pollution Control
Permit-to-Install
for
Middletown Energy Center

Facility ID:	1409001151
Permit Number:	P0116610
Permit Type:	Initial Installation
Issued:	9/22/2014
Effective:	To be entered upon final issuance



Division of Air Pollution Control
Permit-to-Install
for
Middletown Energy Center

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Draft Permit-to-Install
Middletown Energy Center
Permit Number: P0116610
Facility ID: 1409001151

Effective Date: To be entered upon final issuance

Authorization

Facility ID: 1409001151
Facility Description: Combined-cycle, natural gas-fired power plant
Application Number(s): A0050416, A0050480
Permit Number: P0116610
Permit Description: Initial installation of either one (1) Mitsubishi Hitachi Power Systems Americas M501JAC or one (1) Mitsubishi Hitachi Power Systems Americas M501GAC single power block in a 1x1 combined-cycle multi-shaft configuration, including a combustion turbine and heat recovery steam generator with duct burners and a steam turbine to be known as the Middletown Energy Center.
Permit Type: Initial Installation
Permit Fee: \$3,000.00 *DO NOT send payment at this time, subject to change before final issuance*
Issue Date: 9/22/2014
Effective Date: To be entered upon final issuance

This document constitutes issuance to:

Middletown Energy Center
South of Oxford State Rd west of Cincinnati Dayton Rd
Middletown, OH 45044

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:

Southwest Ohio Air Quality Agency
250 William Howard Taft Rd.
Cincinnati, OH 45219
(513)946-7777

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

Craig W. Butler
Director



Authorization (continued)

Permit Number: P0116610

Permit Description: Initial installation of either one (1) Mitsubishi Hitachi Power Systems Americas M501JAC or one (1) Mitsubishi Hitachi Power Systems Americas M501GAC single power block in a 1x1 combined-cycle multi-shaft configuration, including a combustion turbine and heat recovery steam generator with duct burners and a steam turbine to be known as the Middletown Energy Center.

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:	Aux Bioler
Superseded Permit Number:	
General Permit Category and Type:	Not Applicable
Emissions Unit ID:	P001
Company Equipment ID:	CT+HRSG M501JAC or M501GAC
Superseded Permit Number:	
General Permit Category and Type:	Not Applicable
Emissions Unit ID:	P002
Company Equipment ID:	Emergency Generator
Superseded Permit Number:	
General Permit Category and Type:	Not Applicable
Emissions Unit ID:	P003
Company Equipment ID:	Emergency Fire Pump Engine
Superseded Permit Number:	
General Permit Category and Type:	Not Applicable
Emissions Unit ID:	P004
Company Equipment ID:	Cooling Tower
Superseded Permit Number:	
General Permit Category and Type:	Not Applicable



Draft Permit-to-Install
Middletown Energy Center
Permit Number: P0116610
Facility ID: 1409001151
Effective Date: To be entered upon final issuance

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) 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 Southwest Ohio Air Quality Agency.



- (2) Quarterly written reports of (i) any deviations from federally enforceable emission limitations, operational restrictions, and control device operating parameter limitations, 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 Southwest Ohio Air Quality Agency. The written reports shall be submitted 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, and reporting requirements contained in this permit shall be submitted to the Southwest Ohio Air Quality Agency 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 Southwest Ohio Air Quality Agency 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) All applications, notifications or reports required by terms and conditions in this permit to be submitted or "reported in writing" are to be submitted to Ohio EPA through the Ohio EPA's eBusiness Center: Air Services web service ("Air Services"). Ohio EPA will accept hard copy submittals on an as-needed basis if the permittee cannot submit the required documents through the Ohio EPA eBusiness Center. In the event of an alternative hard copy submission in lieu of the eBusiness Center, the post-marked date or the date the document is delivered in person will be recognized as the date submitted. Electronic submission of applications, notifications or reports required to be submitted to Ohio EPA fulfills the requirement to submit the required information to the Director, the appropriate Ohio EPA District Office or contracted



local air agency, and/or any other individual or organization specifically identified as an additional recipient identified in this permit unless otherwise specified. Consistent with OAC rule 3745-15-03, the electronic signature date shall constitute the date that the required application, notification or report is considered to be "submitted". Any document requiring signature may be represented by entry of the personal identification number (PIN) by responsible official as part of the electronic submission process or by the scanned attestation document signed by the Authorized Representative that is attached to the electronically submitted written report.

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

- b) 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.
- c) The permittee shall submit progress reports to the Southwest Ohio Air Quality Agency 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 Southwest Ohio Air Quality Agency.
- 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 Southwest Ohio Air Quality Agency. 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, 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) not exempt from the requirement to obtain a Permit-to-Install.

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 permittee 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 "Air Services" along with the date the emissions unit(s) was permanently removed and/or disabled. Submitting the facility profile update electronically will constitute notifying the Director 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.

Unless otherwise exempted, no emissions unit certified by the responsible official as being permanently shut down may resume operation without first applying for and obtaining a permit pursuant to OAC Chapter 3745-31 and OAC Chapter 3745-77 if the restarted operation is subject to one or more applicable requirements.

- 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 operation of the proposed new or modified source(s) as authorized by this permit would be prohibited by the terms and conditions of an existing Title V permit, a Title V permit modification of such new or modified source(s) pursuant to OAC rule 3745-77-04(D) and OAC rule 3745-77-08(C)(3)(d) must be obtained before operating the source in a manner that would violate the existing Title V permit requirements.



13. Construction Compliance Certification

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

- a) Completion of initial installation date shall be entered upon 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 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.



Draft Permit-to-Install
Middletown Energy Center
Permit Number: P0116610
Facility ID: 1409001151
Effective Date: To be entered upon final issuance

B. Facility-Wide Terms and Conditions



Effective Date: To be entered upon final issuance

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 Subpart A and Db: B001 (150 MMBtu/hr natural gas fired boiler). 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 units contained in this permit are subject to 40 CFR Part 60 Subpart A and IIII: P002 and P003 (diesel fired emergency standby generator and emergency fire pump). 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 Subpart A and KKKK: P001 (CC CTG). 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 units contained in this permit are subject to 40 CFR Part 63 Subpart A and ZZZZ: P002 and P003 (diesel fired emergency standby generator and emergency fire pump). 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.
7. The following emissions units are also part of this project:

Emission Unit Description	Emission Unit ID#	BACT	Emissions, tons per year (TPY)
9 MMBtu/hr. fuel gas/dew-point heater	B002	The permittee shall only operate one (1) fuel gas/dew-point heater at a time, or, if both units are operated simultaneously, each shall be operated at no more than 50% load; Each fuel gas/dew-point heater shall employ ULN burners, good combustion practices (GCP), and the exclusive use of natural gas as a fuel to satisfy BACT.	Emissions from B002 and B003, combined, shall not exceed: 0.43 TPY of NO _x per rolling, 12-month period; 3.15 TPY CO per rolling, 12-month period; 0.197 TPY VOC per rolling, 12-month period; 0.276 TPY PE/PM ₁₀ /PM _{2.5} per rolling, 12-month period; 6.76E-03 TPY H ₂ SO ₄ per rolling, 12-month period.
9 MMBtu/hr. fuel gas/dew-	B003		



Effective Date: To be entered upon final issuance

point heater			All TPY figures are based on 8760 hours per year of operation, 2 units, only 1 operating at a time or, if 2 units operating, not >50% each.
Natural Gas Piping Fugitives		Daily audio/visual/olfactory inspection walk-throughs for piping components in natural gas service.	73.0 TPY of CO2e per rolling, 12-month period.
Natural Gas Maintenance + SU/SD Venting		Standard industry work practice and minimize startups and shutdowns to the extent that is practical.	170.0 TPY of CO2e per rolling, 12-month period.
SF6 Circuit Breakers		Equipment design specifications – low pressure alarm and a low pressure lockout.	132.8 TPY of CO2e per rolling, 12-month period.

8. Abbreviations used throughout the permit:

- CC Combined Cycle
- CTG Combustion Turbine Generator
- DB Duct Burner
- MW MegaWatt
- NG Natural Gas
- HRSG Heat Recovery Steam Generator
- MMBtu/hr Million(s) of British thermal units per hour
- MMscf Million(s) of standard cubic feet
- Lb/MMBtu Pound(s) per Million British thermal units
- Lb/MW-hr Pound(s) per Mega Watt-hour
- Lbs/hr Pound(s) per hour
- g/hp-hr Grams per horsepower-hour
- g/Lb Grams per pound
- DLN Dry Low NOx
- ULN Ultra Low NOx
- SCR Selective Catalytic Reduction



CEMS	Continuous Emissions Monitoring System
OAC	Ohio Administrative Code
ORC	Ohio Revised Code
BAT	Best Available Technology
PTE	Potential to Emit
PTI	Permit to Install
SIP	State Implementation Plan
NAAQS	National Ambient Air Quality Standards
NO _x	Nitrogen Oxides
CO	Carbon Monoxide
VOC	Volatile Organic Compounds
SO ₂	Sulfur Dioxide
PE	Particulate Emissions
PM ₁₀	Particulate Matter 10 microns and less in diameter
PM _{2.5}	Particulate Matter 2.5 microns and less in diameter
H ₂ SO ₄	Sulfuric acid mist emissions
CO ₂	Carbon Dioxide
CO ₂ e	Carbon Dioxide equivalent
GHG	Green House Gases



Draft Permit-to-Install
Middletown Energy Center
Permit Number: P0116610
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C. Emissions Unit Terms and Conditions



1. B001, Auxiliary Boiler

Operations, Property and/or Equipment Description:

A natural gas-fired auxiliary boiler, rated at 150 MMBtu/hr will be used primarily to provide high-temperature steam when the CTG is offline in order to accommodate more rapid startups after extended shutdowns and potentially to provide fuel gas heating.

- 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	The permittee shall install a burner that is designed to meet 1.4E-03 Lb. of SO ₂ /MMBtu of heat input based on the source design characteristic. 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.	ORC 3704.03(T) and OAC rule 3745-31-05(A)(3)	For emissions of CO, the requirements established pursuant to this rule are equivalent to the requirements established pursuant to OAC rules 3745-31-11 through 20.
d.	OAC rule 3745-31-05(D) Synthetic Minor to avoid Nonattainment Area New Source Review (NAA-NSR) for NOx and VOC	The NOx emissions shall not exceed 3.30 TPY based on a rolling 12-month summation. The VOC emissions shall not exceed 1.50 TPY based on a rolling 12-month summation. See b)(2)k.
e.	OAC rules 3745-31-11 through 20	CO emissions shall not exceed 0.037 Lb/MMBtu of heat input, 5.55 pounds per hour, and 11.10 tons per rolling, 12-month period.



	Applicable Rules/Requirements	Applicable Emissions Limitations/Control Measures
		<p>NO_x emissions shall not exceed 0.011 Lb/MMBtu of heat input, 1.65 pounds per hour, and 3.30 tons per rolling, 12-month period.</p> <p>PM, PM₁₀, and PM_{2.5} emissions shall not exceed 0.007 Lb/MMBtu of heat input, 1.05 pounds per hour, and 2.10 tons per rolling, 12-month period.</p> <p>H₂SO₄ emissions shall not exceed 1.7E-04 Lb/MMBtu, 0.03 pound per hour, and 0.06 ton per rolling, 12-month period.</p> <p>CO_{2e} emissions shall not exceed 35,895 tons per rolling, 12-month period.</p> <p>See b)(2)d., b)(2)e., b)(2)k., b)(2)m, and c)(1).</p>
f.	OAC rule 3745-17-07(A)(1)	Visible particulate emissions from the stack serving this emissions unit shall not exceed 20 percent opacity as a 6-minute average, except as specified by rule.
g.	OAC rule 3745-17-10(B)(1)	See b)(2)f.
h.	OAC rule 3745-110-03(K)(20)	exemption - see b)(2)l.
i.	40 CFR Part 60, Subpart A	See b)(2)g.
j.	<p>40 CFR Part 60, Subpart Db</p> <p>[In accordance with 40 CFR 60.40b(a), this emissions unit is a steam generating unit that commenced construction after June 19, 1984, and that has a heat input capacity of greater than 100 MMBtu/hr.]</p>	<p>The NO_x emission limitation specified by this rule is less stringent than the emission limitation established pursuant to OAC rules 3745-31-11 through 20.</p> <p>See b)(2)h. and b)(2)i.</p>
k.	40 CFR Part 63, Subpart JJJJJJ	See b)(2)j.

(2) Additional Terms and Conditions

- a. Compliance with the requirements of this rule for NO_x and PM/PM₁₀/PM_{2.5} emissions includes compliance with the requirements of OAC rule 3745-31-11 through 20.



Compliance with the requirements of this rule for VOC is equivalent to the rolling, 12-month emission limitation established in OAC rule 3745-31-05(D).

- 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, 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, PE/PM₁₀/PM_{2.5}, SO₂, and VOC emissions from this air contaminant source since the uncontrolled potential to emit for NO_x, PE/PM₁₀/PM_{2.5}, SO₂, and VOC is less than 10 tons per year each.

- d. All particulate emissions are assumed to be less than 2.5 microns in diameter. The PM₁₀/PM_{2.5} emissions limitations include both filterable and condensable particulate emissions.
- e. The Lb/MMBtu and pound per hour, 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 specified by this rule is less stringent than the limitation established by OAC rule 3745-31-11 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. Pursuant to 40 CFR 60.42b(k)(2), this rule exempts units firing gaseous fuel (natural gas) from the SO₂ emission limitation. Also, this rule does not establish a PM emission limitation for natural gas-fired units. This rule does require recordkeeping pursuant to 40 CFR 60.45b(k) and 40 CFR 60.49b(r).
- i. This emissions unit is subject to the applicable provisions of Subpart Db of the New Source Performance Standards (NSPS) as promulgated by the United States Environmental Protection Agency, 40 CFR Part 60. The application and



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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 fuel consumption for this emissions unit shall not exceed 600,000 MMBtu 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 fuel consumption levels specified in the following table:

<u>Month(s)</u>	<u>Maximum Allowable Cumulative Fuel Consumption (MMBtu)</u>
1	108,000
1-2	216,000
1-3	324,000
1-4	432,000
1-5	540,000
1-6	600,000
1-7	600,000
1-8	600,000
1-9	600,000
1-10	600,000
1-11	600,000
1-12	600,000

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

- l. The permittee is exempt from the requirements of OAC rule 3745-110-03(A) through (G), since this emissions will be issued a PTI that is subject to BACT.
 - m. The permittee shall employ ULN burners in this emissions unit.
 - n. OAC rule 3745-18-06 does not establish a sulfur dioxide emission limitation for this "fuel burning equipment" because it only employs natural gas as fuel.
- c) Operational Restrictions
- (1) The permittee shall burn only natural gas 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 fuel consumption for each month in MMBtu;
 - 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 fuel consumption in MMBtu;
 - c. the CO, NO_x, PE/PM₁₀/PM_{2.5}, VOC, CO_{2e} and H₂SO₄ emission rate for each month of operations; and
 - d. 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, PE/PM₁₀/PM_{2.5}, VOC, CO_{2e} and H₂SO₄ 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 fuel consumption in MMBtu for each calendar month.

- (3) See 40 CFR Part 60, Subpart Db (40 CFR 60.40b - 49b).

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 60.49b(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 fuel consumption 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 fuel consumption; and



- b. all exceedances of the rolling, 12-month CO, NO_x, PE/PM₁₀/PM_{2.5}, VOC, CO_{2e} and H₂SO₄ emission rates.

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 Db (40 CFR 60.40b – 49b).
- (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 0.037 Lb/MMBtu of heat input, 5.55 pounds per hour, and 11.10 tons per rolling, 12-month period.

Applicable Compliance Method:

The Lb/MMBtu emission limitation is based on manufacturer's data. The hourly emission limitation was developed by multiplying the maximum heat input (150 MMBtu/hr) by the CO emission factor supplied by the manufacturer (0.037 Lb/MMBtu).

The annual emission limitation was developed by multiplying the hourly emission limitation (5.55 pounds per hour) by the maximum annual operating hours (4,000 hours per year. This 4000 hours per year value is equivalent to the 600,000 MMBtu, per rolling, 12-month period value.) 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.

- b. Emission Limitation:

NO_x emissions shall not exceed 0.011 Lb/MMBtu of heat input, 1.65 pounds per hour, and 3.30 tons per rolling, 12-month period.

Applicable Compliance Method:

The Lb/MMBtu emission limitation is based on manufacturer's data. The hourly emission limitation was developed by multiplying the maximum heat input (150 MMBtu/hr) by the NO_x emission factor supplied by the manufacturer (0.011 Lb/MMBtu).

The annual emission limitation was developed by multiplying the hourly emission limitation (1.65 pounds per hour) by the maximum annual operating hours (4,000



hours per year. This 4000 hours per year value is equivalent to the 600,000 MMBtu, per rolling, 12-month period value.) 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.

c. Emission Limitation:

PE, PM₁₀, and PM_{2.5} shall not exceed 0.007 Lb/MMBtu of heat input, 1.05 pounds per hour, and 2.10 tons per rolling, 12-month period.

Applicable Compliance Method:

The Lb/MMBtu emission limitation is based on manufacturer's data and AP-42 emission factors. The hourly emission limitation was developed by multiplying the maximum heat input (150 MMBtu/hr) by the PE/PM₁₀/PM_{2.5} emission factor supplied by the manufacturer (0.007 Lb/MMBtu).

If required, the permittee shall demonstrate compliance with the Lb/MMBtu and hourly emission limitation using Methods 1-5, 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 (1.05 pounds per hour) by the maximum annual operating hours (4,000 hours per year. This 4000 hours per year value is equivalent to the 600,000 MMBtu, per rolling, 12-month period value.) 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:

The permittee shall install a burner that is designed to meet 1.4E-03 Lb SO₂/MMBtu of heat input based on the source design characteristic.

Applicable Compliance Method:

The Lb/MMBtu source design characteristic was established based on using pipeline quality natural gas having a maximum sulfur content of 0.5 grains per 100 cubic feet according to the following calculation. The source design characteristic was developed by multiplying the maximum sulfur content of natural gas (0.5 grain S/100 scf) by the molecular weight of SO₂ (64.07 Lb SO₂/Lb-mole) divided by the molecular weight of sulfur (32.06 Lb S/Lb-mole) divided by (7,000 grains/Lb), divided by (1,020 Btu/scf), and multiplied by (10⁶ Btu/MMBtu).

If required, the permittee shall demonstrate compliance with the Lb/MMBtu source design characteristic 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.



e. Emission Limitation:

VOC emissions shall not exceed 1.50 tons per rolling, 12-month period.

Applicable Compliance Method:

If required, the permittee shall demonstrate compliance with the Lb/MMBtu and hourly emission limitation 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 (0.75 pound per hour) by the maximum annual operating hours (4,000 hours per year. This 4000 hours per year value is equivalent to the 600,000 MMBtu, per rolling, 12-month period value.) 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:

Sulfuric acid mist (H_2SO_4) emissions shall not exceed 1.7E-04 Lb/MMBtu, 0.03 pound per hour, and 0.06 ton per rolling, 12-month period.

Applicable Compliance Method:

The Lb/MMBtu emission limitation is based on the assumption that 20% of the SO_2 emissions are converted to SO_3 on a mass basis and 100% of the SO_3 emissions are converted to H_2SO_4 when combined with water vapor by the following calculation:

$$(1.4E-03 \text{ Lb } SO_2/\text{MMBtu})(0.1 \text{ Lb } SO_3/\text{Lb } SO_2)(98 \text{ Lb } H_2SO_4/80 \text{ Lb } SO_3) = 1.7E-04 \text{ Lb } H_2SO_4/\text{MMBtu}$$

Multiply the Lb H_2SO_4 /MMBtu (1.7E-04 Lb/MMBtu) by the maximum heat input (150 MMBtu/hr) to determine the maximum hourly H_2SO_4 emissions (0.03 pound per hour), and multiply by the maximum annual hours of operation (4,000 hours per year. This 4000 hours per year value is equivalent to the 600,000 MMBtu, per rolling, 12-month period value.) divided by 2,000 Lbs/ton to determine the annual H_2SO_4 emissions (0.06 ton/yr).

If required, the permittee shall demonstrate compliance with the Lb/MMBtu and pound per hour emissions limitations 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.

g. Emission Limitation:

Carbon dioxide equivalent (CO_2e) emissions shall not exceed 35,895 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 product of the maximum natural gas usage (150 MMBtu/hr) multiplied by the summation of the AP-42 emission factors from Table 1.4-2 dated 7/1998 [120,000 Lb CO₂/MMscf, 0.64 Lb N₂O/MMscf, and 2.3 Lb CH₄/MMscf, each multiplied by their respective global warming potentials (1, 298, and 25; Table A-1 to Subpart A of 40 CFR 98, 11/29/2013)], divided by 1005 MMBtu/MMscf, multiplied by the maximum annual hours of operation (4,000 hours per year. This 4000 hours per year value is equivalent to the 600,000 MMBtu, per rolling, 12-month period value.) and divided by 2,000 pounds per ton:

$$\begin{aligned} & \left(150 \frac{\text{mmBtu}}{\text{hr}}\right) \times \left[\left(120,000 \frac{\text{lb CO}_2}{\text{mmscf}} \times (1)\right) + \left(0.64 \frac{\text{lb N}_2\text{O}}{\text{mmscf}} (298)\right) \right. \\ & \quad \left. + \left(2.3 \frac{\text{lb CH}_4}{\text{mmscf}} (25)\right) \right] \times \left(\frac{\text{mmscf}}{1005 \text{ mmBtu}}\right) \times \left(4,000 \frac{\text{hrs}}{\text{hr}}\right) \times \left(\frac{\text{ton}}{2,000 \text{ lb}}\right) \\ & = 35,895 \frac{\text{tons}}{\text{yr}} \end{aligned}$$

Since the CO₂e emissions are estimated to consist of more than 99% CO₂, compliance with this emission limitation will be assumed provided that the Lb/scf CO₂ 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 CO₂ emission rate.

h. Emission Limitation:

Visible emissions shall not exceed 20% opacity as a 6-minute average, except as provided by rule.

Applicable Compliance Method:

If required, compliance with the stack visible particulate emissions limitation shall be determined through visible emissions observations performed in accordance with Method 9 of 40 CFR Part 60, Appendix A.

(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 emissions limitations:
 - i. CO emissions in pound per hour and Lb/MMBtu; and



- ii. NO_x emissions in pound per hour and Lb/MMBtu.

The emission testing shall also be conducted to determine the CO₂ emission rate in Lb/MMBtu.

- 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 CO₂, 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 appropriate Ohio EPA District Office or local air agency. 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 appropriate Ohio EPA District Office or local air agency. 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 District Office's or local air agency's refusal to accept the results of the emission test(s).
- f. Personnel from the appropriate Ohio EPA District Office or local air agency 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 appropriate Ohio EPA District Office or local air agency 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 Office or local air agency.



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g) Miscellaneous Requirements

(1) None.



2. P001, CT+HRSG M501JAC or M501GAC

Operations, Property and/or Equipment Description:

Combined-cycle combustion turbine generator (CTG) with heat recovery steam generator (HRSG), natural gas-fired, including duct burners (DB).

- 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)(10) through d)(13) and e)(5).
- 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) and OAC rule 3745-31-05(A)(3)	The permittee shall install combustion devices in the CTG and DB that are designed to meet 1.4E-03 Lb SO ₂ /MMBtu of heat input based on the source design characteristic. See b)(2)b.
b.	OAC rule 3745-31-05(D) Synthetic Minor to avoid Nonattainment Area New Source Review (NAA-NSR) for NO _x and VOC	The NO _x emissions shall not exceed 88.4 TPY based on a rolling 12-month summation. The VOC emissions shall not exceed 92.3 TPY based on a rolling 12-month summation. See b)(2)c. through e., b)(2)u. and b)(2)v.
c.	OAC rule 3745-31-11 through 20	CO ₂ e emissions shall not exceed 880 Lb/MW-hr and 375,130 Lbs/hr gross energy output, @ ISO conditions, 100% load, without duct firing. See b)(2)c, b)(2)d., b)(2)e., b)(2)g. through b)(2)i., b)(2)r. through t., and c)(1).
d.	OAC rule 3745-17-07(A)(1)	Visible particulate emissions from the stack serving this emissions unit shall not exceed 20 percent opacity as a 6-minute average, except as specified by rule.



	Applicable Rules/Requirements	Applicable Emissions Limitations/Control Measures
e.	OAC rule 3745-17-11(B)(4)	See b)(2)j.
f.	OAC rule 3745-18-06(A)	See b)(2)l.
g.	OAC rule 3745-110-03(K)(20)	exemption - see b)(2)n.
h.	OAC rule 3745-114	See d)(10) through d)(13)
i.	40 CFR Part 60, Subpart A	See b)(2)m.
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 emissions limitations/control measures specified in this section.]	See b)(2)k. and b)(2)o.
k.	40 CFR Part 63, Subpart YYYY	See b)(2)p.
l.	40 CFR Part 63, Subpart JJJJJ	See b)(2)q.

(2) Additional Terms and Conditions

- a. All Applicable Emission Limitations and/or Control measures specified in this Section of the permit for Emissions Unit P001 consist of the worst-case (highest emitting) scenario considering the permittee may install either the Mitsubishi M501GAC or M501JAC as outlined in Application A0050480 for PTI P0116610.
- b. Compliance with the requirements of this rule for CO, NO_x, PE, PM₁₀, and PM_{2.5} are equivalent to the requirements of OAC rule 3745-31-11 through 20.

Compliance with the requirements of this rule for VOC are equivalent to the rolling, 12-month emission limitation established in OAC rule 3745-31-05(D).
- c. To ensure enforceability of the rolling, 12-month emissions limitations 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 emission levels specified in the following table:

Month(s)	Maximum Allowable Cumulative Emissions (Tons)				
	CO	NO _x	PE/PM ₁₀ /PM _{2.5}	VOC	H ₂ SO ₄
1	24.9	8.8	5.9	9.2	1.4
1-2	49.8	17.7	11.9	18.5	2.8



Maximum Allowable Cumulative Emissions (Tons)					
Month(s)	CO	NOx	PE/PM10/PM2.5	VOC	H₂SO₄
1-3	74.7	26.5	17.8	27.7	4.2
1-4	99.6	35.4	23.8	36.9	5.6
1-5	124.6	44.2	29.7	46.2	7.0
1-6	149.5	53.0	35.6	55.4	8.4
1-7	174.4	61.9	41.6	64.6	9.8
1-8	199.3	70.7	47.5	73.8	11.2
1-9	224.2	79.6	53.5	83.1	12.6
1-10	249.1	88.4	59.4	92.3	14.0
1-11	249.1	88.4	59.4	92.3	14.0
1-12	249.1	88.4	59.4	92.3	14.0

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

- d. 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.
- e. The permittee shall employ lean pre-mix or DLN burners in this emissions unit.
- f. All particulate emissions are assumed to be less than 2.5 microns in diameter. The PM₁₀/PM_{2.5} emissions limitations include both filterable and condensable particulate emissions.
- g. The permittee shall comply with the following emissions 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	16.8	-



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Allowable Emissions				
Pollutant	Operating Mode^a	Emission Rate^{b,e}	Emission rate, Lb/hr^b	Emission rate, tons per rolling, 12-month period
	CT only	2.0 ^c	13.2	-
	All operating modes, including startup periods	-	-	249.1
	NOx	CT with DB	2.0 ^c	27.7
	CT only	2.0 ^c	21.8	-
	All operating modes, including startup periods			88.4
	PE/PM ₁₀ /PM _{2.5}	CT with DB	5.70E-03 ^d	20.0
CT only		3.80E-03 ^d	10.8	-
All operating modes, including startup periods		-	-	59.4
H ₂ SO ₄	CT with DB	1.1E-03 ^d	4.3	-
	CT only	1.1E-03 ^d	3.5	-
	All operating modes, including startup periods	-	-	14.0
CO ₂ e	All operating modes, including startup periods	-	-	1,626,781
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. Emissions limitations are based on an hourly average.				

- h. The permittee shall comply with the following requirements during periods of startup and shutdown:



Emissions Limitations During Startup and Shutdown (Lbs/hr)^a				
	Cold Startup	Hot Startup^b	Warm Startup	Shutdown^b
CO	1762.8	1108.0	1432.9	602.0
NO_x	58.3	32.0	46.2	28.0
VOC	675.7	374.0	508.4	298.0
<p>^a Pound per hour emissions rates as presented are averaged over the duration of the event where the duration of a cold start is 142.5 minutes, the duration of a warm start is 103 minutes, and it has been assumed that the CTs are at their respective maximum potential emission rates (100% load) for the balance of the averaging period that they are not in start-up or shutdown mode.</p> <p>The duration of a hot start is 22.8 minutes, and the duration of a shutdown is 12.5 minutes.</p> <p>^b Emissions Limitations in units of pounds per event.</p>				

“Cold Startup” is defined as a combustion turbine startup that occurs more than 48 hours after a combustion turbine shutdown. The period of startup is defined as the lesser of the first 150 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 [see g) where data point is defined.] 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 30 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 48 hours of a combustion turbine shutdown. The period of startup is defined as the lesser of the first 110 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 where in compliance with the ppmvd emission limitations for CO and NO_x.

- i. The design plant base heat rate shall not exceed 7,341 Btu/kW-hr HHV, gross (ISO conditions without duct firing).



- j. The emission limitation specified by this rule is less stringent than the limitation established by OAC rule 3745-31-11 through 20.
- k. The emission limitation specified by this rule is less stringent than the limitation established by ORC 3704.03(T) and OAC rule 3745-31-05(A)(3) for SO₂ and OAC rule 3745-31-11 through 3745-31-20 for NO_x.
- l. This emissions unit is exempt from the requirements of this rule, since only natural gas is burned.
- m. 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.
- n. The permittee is exempt from the requirements of OAC rule 3745-110-03(A) through (G), since this emissions will be issued a PTI that is subject to BACT.
- o. 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.
- p. 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.
- q. The duct burner is exempt from the requirements of this rule per 40 CFR 63.11195(e) due to combusting only natural gas.
- r. The 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). 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 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 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.



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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.

- s. The 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 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.

- t. The continuous emission monitoring system consists 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.
- u. The permittee shall comply with the following emissions limitations:

Allowable Emissions				
Pollutant	Operating Mode^a	Emission Rate^{b,d}	Emission rate, Lb/hr^b	Emission rate, tons per rolling, 12-month period
VOC	CT With DB	1.5 ^c	7.2	-
	CT only	1.0 ^c	3.8	-



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Allowable Emissions				
Pollutant	Operating Mode^a	Emission Rate^{b,d}	Emission rate, Lb/hr^b	Emission rate, tons per rolling, 12-month period
	All operating modes, including startup periods	-	-	92.3
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. Emissions limitations are based on an hourly average.				

- v. Ongoing compliance with the VOC emission limitation shall be based on the following calculation:

$$(VOC = [(\#CS)(1,294(lbs *)/CS) + (\#WS)(304(lbs *)/WS) + (\#HS)(304(lbs *)/HS) + (\#Shut)(240(lbs *)/Shut) + (\#SSDB)(6.6(lbs *)/hr) + (\#SSNDB)(3.4(lbs *)/hr)]) / (2000 lbs/ton)$$

Where:

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

#CS = number of cold startups per rolling, 12-month period

#WS = number of warm startups per rolling, 12-month period

#HS = number of hot startups per rolling, 12-month period

#Shut = number of shutdowns per rolling, 12-month period

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

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

*Or the permittee shall use the most recent emissions rate data in pounds per event and/or pounds per hour obtained via emission testing results, vendor-supplied data, etc.

c) Operational Restrictions

- (1) The permittee shall only burn pipeline quality 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) The permittee shall use one of the following to demonstrate the potential sulfur emissions do not exceed 1.4E-03 Lb. of SO₂/MMBtu of heat input:
 - 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 0.5 grains of sulfur or less per 100 standard cubic feet, resulting in potential sulfur emissions of 1.4E-03 Lb SO₂/MMBtu heat input, or less;
 - b. representative fuel sampling data which show that the sulfur content of the fuel does not exceed 1.4E-03 Lb SO₂/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 1.4E-03 Lb. of SO₂/MMBtu standard.
- (3) The permittee shall maintain monthly records of the following information:
 - a. the CO, NO_x, PE/PM₁₀/PM_{2.5}, VOC, CO_{2e} and H₂SO₄ emission rate for each month of operations; 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, PE/PM₁₀/PM_{2.5}, VOC, CO_{2e} and H₂SO₄ 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, PE/PM₁₀/PM_{2.5}, VOC, CO_{2e} and H₂SO₄ emissions for each calendar month.
- (4) 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, 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;
 - i. the total duration of steady-state operation with duct burner firing in hours per rolling, 12-month period;
- (5) 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.
- (6) 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.

- (7) 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.
- (8) 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.

- (9) The permittee shall calculate and record the monthly CO₂ emissions from the continuous flow and moisture content monitors using the procedures set forth in 40 CFR Part 75, Appendix G. From this data, the permittee shall calculate the CO₂ emissions per rolling, 12-month period.
- (10) The Permit to Install application for this emissions unit, P001, 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):

$$TLV/10 \times 8/X \times 5/Y = 4 TLV/XY = MAGLC$$

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

Toxic Contaminant: ammonia

TLV (mg/m³): 17.41

Maximum Hourly Emission Rate (Lbs/hr): 25.6, ammonia “slip”, M501J, Winter 100% fired

Predicted 1-Hour Maximum Ground-Level Concentration (ug/m³): 3.17

MAGLC (ug/m³): 414.524

Toxic Contaminant: formaldehyde

TLV (mg/m³): 0.27

Maximum Hourly Emission Rate (Lbs/hr): 0.70, M501J, Winter 100% fired

Predicted 1-Hour Maximum Ground-Level Concentration (ug/m³): 0.09

MAGLC (ug/m³): 6.5

Toxic Contaminant: n-hexane

TLV (mg/m³): 176.23

Maximum Hourly Emission Rate (Lbs/hr): 0.74, M501G, Winter 100% fired

Predicted 1-Hour Maximum Ground-Level Concentration (ug/m³): 0.09

MAGLC (ug/m³): 4196

Toxic Contaminant: toluene

TLV (mg/m³): 75.36

Maximum Hourly Emission Rate (Lbs/hr): 0.47, M501J, Winter 100% fired

Predicted 1-Hour Maximum Ground-Level Concentration (ug/m³): 0.06

MAGLC (ug/m³): 1794

The permittee, has demonstrated that emissions of each Air Toxic from emissions unit(s) P001 are calculated to be less than eighty per cent of the maximum acceptable ground level concentration (MAGLC) each; 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).

- (11) 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.

- (12) 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.
- (13) 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.
- (14) See 40 CFR Part 60, Subpart KKKK (40 CFR 60.4300 – 60.4420).
- (15) The permittee shall maintain monthly records of the following information:
- a. the natural gas usage rate in MMBtu 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 natural gas usage rate in MMBtu.

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 natural gas usage rate in MMBtu for each calendar month.

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 comply with the following quarterly reporting requirements for the emissions unit and its continuous NOx 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 NOx 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

- (3) 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

- (4) 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.
- (5) 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.

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



- (7) The permittee shall submit quarterly deviation (excursion) reports that identify all exceedances of the rolling, 12-month CO, NO_x, PE/PM₁₀/PM_{2.5}, VOC, CO_{2e} and H₂SO₄ emission rates.

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

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 13.2 Lbs/hr when the duct burner is not in operation; and, 2.0 ppmvd at 15% oxygen as an hourly average and 16.8 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.

The permittee shall demonstrate compliance 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. See f)(2) for emission testing requirement.

b. Emission Limitation:

CO emissions from this emissions unit shall not exceed 249.1 tons per rolling, 12-month period.

Applicable Compliance Method:

This emissions limitation is based on the following anticipated worst case emissions:

10 cold startups per year, with a minimum downtime preceding cold startup of 48 hours, a cold startup duration of 142.5 minutes, and maximum CO emissions of 3365 pounds during each cold startup event;

52 warm startups per year, with a minimum downtime preceding warm startup of 8 hours, a warm startup duration of 102.5 minutes, and maximum CO emissions of 2235 pounds during each warm startup event;



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208 hot startups per year, with a minimum downtime preceding hot startup of 0 hours, a hot startup duration of 22.8 minutes, and maximum CO emissions of 869 pounds during each hot startup event;

270 shutdowns per year, with a shutdown duration of 12.5 minutes, and maximum CO emissions of 393 pounds during each shutdown event; and

hourly CO emissions at average ambient conditions with duct firing during 100 percent load steady state operation of 14.6 Lbs/hr based on manufacturer's data and steady state operating hours.

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

$$\frac{\left[\left(10 \frac{CS}{yr} \right) \left(3,365 \frac{lbs}{CS} \right) + \left(52 \frac{WS}{yr} \right) \left(2,235 \frac{lbs}{WS} \right) + \left(208 \frac{HS}{yr} \right) \left(869 \frac{lbs}{HS} \right) + \left(270 \frac{Shut}{yr} \right) \left(393 \frac{lbs}{Shut} \right) + \left(4,200 \frac{hrs}{yr} \right) \left(14.6 \frac{lbs}{hr} \right) \right]}{2000 \frac{lbs}{ton}} =$$

249.1 TPY CO

Where:

CS = cold starts

WS= warm starts

HS = hot starts

Shut = shutdown

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

c. Emission Limitation:

CO emissions from this emissions unit shall not exceed 1762.8 Lbs/hr during cold startup, 1108.0 Lbs/event during hot startup, 1432.9 Lbs/hr during warm startup, and 602 Lbs/event 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 21.8 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 27.7 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.

The permittee shall demonstrate compliance using Methods 1 thru 4 and 7E of 40 CFR Part 60, Appendix A, and the procedures specified in 40 CFR 60.4400. Alternative U.S. EPA approved test methods may be used with prior approval from the Ohio EPA. See f)(2) for emission testing requirement.

e. Emission Limitation:

NO_x emissions shall not exceed 88.4 tons per rolling, 12-month period.

Applicable Compliance Method:

This emissions limitation is based on the following anticipated worst case emissions:

hourlyNO_x emissions, at average ambient conditions with duct firing during 100 percent load steady state operation, of 25.3 Lbs/hr with DB firing and 19.3 Lbs/hr without DB firing based on manufacturer's data and steady state operating hours.

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

$$\frac{\left[\left(8500\frac{hrs}{yr}\right)(0.25)\left(25.3\frac{lbs}{hr}\right)+\left(8500\frac{hrs}{yr}\right)(0.75)\left(19.3\frac{lbs}{hr}\right)\right]}{2000\frac{lbs}{ton}} = 88.4 \text{ TPY NO}_x$$

Ongoing compliance with the NO_x emission limitations shall be demonstrated through the data collected as required in the Monitoring and Record keeping Section of this permit

f. Emission Limitations:

NO_x emissions from this emissions unit shall not exceed:



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58.3 Lbs/hr during cold startup and 46.2 Lbs/hr during warm startup, averaged over the duration of the event(s); and

32.0 Lbs/event during hot startup, and 28.0 Lbs/event during shutdown.

Applicable Compliance Method:

These emissions limitations are based on manufacturer's data. Ongoing compliance with the NOx 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:

PE, PM₁₀ emissions, and PM_{2.5} emissions shall not exceed 3.80E-03 Lb/MMBtu of heat input and 10.8 Lbs/hr when the duct burner is not in operation; and PE, PM₁₀ emissions, and PM_{2.5} emissions shall not exceed 5.70E-03 Lb/MMBtu of heat input and 20.0 Lbs/hr when the duct burner is in operation.

Applicable Compliance Method:

These emissions limitations are based on manufacturer's data. The permittee shall demonstrate compliance with these emissions limitations using Methods 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. See f)(2) for emission testing requirement.

h. Emission Limitation:

PE, PM₁₀ emissions, and PM_{2.5} emissions from this emissions unit shall not exceed 59.4 tons per rolling, 12-month period.

Applicable Compliance Method:

This emissions limitation is based on the following anticipated worst case emissions:

hourly PE/PM₁₀/PM_{2.5} emissions, at ISO conditions during steady state operation, of 18.9 Lbs/hr with DB firing and 9.4 Lbs/hr without DB firing based on manufacturer's data and steady state operating hours.

The allowable annual emission rate was determined by the following calculation:

$$\frac{\left[\left(8400 \frac{\text{hrs}}{\text{yr}}\right)(0.50)\left(18.9 \frac{\text{lbs}}{\text{hr}}\right) + \left(8400 \frac{\text{hrs}}{\text{yr}}\right)(0.50)\left(9.4 \frac{\text{lbs}}{\text{hr}}\right)\right]}{2000 \frac{\text{lbs}}{\text{ton}}} = 59.4 \text{TPY}$$

PE/PM₁₀/PM_{2.5}



Ongoing compliance with the PE/PM10/PM2.5 emission limitations shall be demonstrated through the data collected as required in the Monitoring and Record keeping Section of this permit.

i. Emission Limitation:

The permittee shall install combustion devices in the CTG and DB that are designed to meet 1.4E-03 Lb SO₂/MMBtu of heat input based on the source design characteristic.

Applicable Compliance Method:

The Lb/MMBtu source design characteristic was established based on using pipeline quality natural gas having a maximum sulfur content of 0.5 grains per 100 cubic feet according to the following calculation. The source design characteristic was developed by multiplying the maximum sulfur content of natural gas (0.5 grain S/100 scf) by the molecular weight of SO₂ (64.07 Lb SO₂/Lb-mole) divided by the molecular weight of sulfur (32.06 Lb S/Lb-mole) divided by (7,000 grains/Lb), divided by (1,020 Btu/scf), and multiplied by (10⁶ Btu/MMBtu).

Compliance shall be demonstrated according to 40 CFR 60.4415.

j. Emission Limitation:

VOC emissions shall not exceed 1.0 ppmvd at 15% oxygen as an hourly average and 3.8 Lbs/hr when the duct burner is not in operation; and, VOC emissions shall not exceed 1.5 ppmvd at 15% oxygen as an hourly average and 7.2 Lbs/hr when the duct burner is in operation.

Applicable Compliance Method:

These emissions limitations are based on manufacturer's data. 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. See f)(2) for emission testing requirement.

k. Emission Limitation:

VOC emissions shall not exceed 92.3 tons per rolling, 12-month period.

Applicable Compliance Method:

This emissions limitation is based on the following anticipated worst case emissions:



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10 cold startups per year, with a minimum downtime preceding cold startup of 48 hours, a cold startup duration of 142.5 minutes, and maximum VOC emissions of 1294 pounds during each cold startup event;

52 warm startups per year, with a minimum downtime preceding warm startup of 8 hours, a warm startup duration of 22.8 minutes, and maximum VOC emissions of 304 pounds during each warm startup event;

208 hot startups per year, with a minimum downtime preceding hot startup of 0 hours, a hot startup duration of 22.8 minutes, and maximum VOC emissions of 304 pounds during each hot startup event;

270 shutdowns per year, with a shutdown duration of 12.5 minutes, and maximum VOC emissions of 240 pounds during each shutdown event; and

hourly VOC emissions at average ambient conditions with duct firing during 100 percent load steady state operation of 6.6 Lbs/hr based on manufacturer's data and steady state operating hours.

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

$$\frac{\left[\left(10 \frac{CS}{yr} \right) \left(1,294 \frac{lbs}{CS} \right) + \left(52 \frac{WS}{yr} \right) \left(304 \frac{lbs}{WS} \right) + \left(208 \frac{HS}{yr} \right) \left(304 \frac{lbs}{HS} \right) + \left(270 \frac{Shut}{yr} \right) \left(240 \frac{lbs}{Shut} \right) + \left(4,200 \frac{hrs}{yr} \right) \left(6.6 \frac{lbs}{hr} \right) \right]}{2000 \frac{lbs}{ton}} =$$

92.3 TPY VOC

Where:

CS = cold starts

WS = warm starts

HS = hot starts

Shut = shutdowns

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

$$VOC = \frac{\left[(\#CS) \left(1,294 \frac{lbs^*}{CS} \right) + (\#WS) \left(304 \frac{lbs^*}{WS} \right) + (\#HS) \left(304 \frac{lbs^*}{HS} \right) + (\#Shut) \left(240 \frac{lbs^*}{Shut} \right) + (\#SSDB) \left(6.6 \frac{lbs^*}{hr} \right) + (\#SSNDB) \left(3.4 \frac{lbs^*}{hr} \right) \right]}{2000 \frac{lbs}{ton}}$$

Where:

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

#CS = number of cold startups per rolling, 12-month period

#WS = number of warm startups per rolling, 12-month period



#HS = number of hot startups per rolling, 12-month period

#Shut = number of shutdowns per rolling, 12-month period

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

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

*Or the permittee shall use the most recent emissions rate data in pounds per event and/or pounds per hour obtained via emission testing results, vendor-supplied data, etc.

I. Emission Limitations:

VOC emissions from this emissions unit shall not exceed:

675.7 Lbs/hr during cold startup and 508.4 Lbs/hr during warm startup, averaged over the duration of the event(s); and

374.0 Lbs/event during hot startup, and 298.0 Lbs/event during shutdown.

Applicable Compliance Method:

These emissions limitations are based on manufacturer's data. If required, the permittee shall demonstrate compliance with these emission limitations 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.

m. Emission Limitation:

H₂SO₄ emissions shall not exceed 1.1E-03 Lb/MMBtu of heat input and 3.5 Lbs/hr when the duct burner is not in operation; and, H₂SO₄ emissions shall not exceed 1.1E-03 Lb/MMBtu of heat input and 4.3 Lbs/hr when the duct burner is in operation.

These emissions limitations are based on manufacturer's data. The permittee shall demonstrate compliance 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. See f)(2) for emission testing requirement.

n. Emission Limitation:

H₂SO₄ emissions shall not exceed 14.0 tons per rolling, 12-month period.



Applicable Compliance Method:

This emission limitation was developed by multiplying the short-term allowable H₂SO₄ emission limitation (1.1E-03 Lb/MMBtu) by the maximum steady state fuel usage (25,534,234 MMBtu/yr), 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.

o. Emission Limitation:

CO₂e emissions shall not exceed 880 Lb/MW-hr and 375,130 Lbs/hr gross energy output, @ ISO conditions, 100% load, without duct firing, and 1,626,781 tons per rolling, 12-month period.

Applicable Compliance Method:

The allowable hourly emission rate was determined by the following calculation:

$$855 \text{ Lbs CO}_2\text{e/MW-hr} \times \text{CT gross power, } 439 \text{ MW} = 375,130 \text{ Lbs CO}_2\text{e}$$

The permittee shall conduct emissions testing using Methods 1, 2, 3A and 4 of 40 CFR Part 60, Appendix A to determine the hourly CO₂ emission rate. See f)(2) for emission testing requirement.

Since the CO₂e emissions are estimated to consist of more than 99% CO₂, compliance with this emission limitation will be assumed provided that the hourly CO₂ emission rate does not exceed 371,833 Lbs/hr gross energy output, @ ISO conditions, 100% load, without duct firing,

The allowable annual emission rate was determined by the following calculation:

$$\text{CO}_2\text{e} = \frac{\left[\left(\text{fuel} \frac{\text{MMBtu}}{\text{yr}} \right) \left(120.243 \frac{\text{Lb CO}_2}{\text{MMBtu}} \right) (1) + \left(\text{fuel} \frac{\text{MMBtu}}{\text{yr}} \right) \left(0.0086 \frac{\text{Lb CH}_4}{\text{MMBtu}} \right) (25) + \left(\text{fuel} \frac{\text{MMBtu}}{\text{yr}} \right) \left(0.0030 \frac{\text{Lb N}_2\text{O}}{\text{MMBtu}} \right) (298) \right]}{2000 \frac{\text{lbs}}{\text{ton}}}$$

$$= 1,549,315 \text{ TPY CO}_2\text{e}$$

Where:

CO₂e = Equivalent CO₂ emissions;

Fuel = maximum fuel usage, natural gas, 25,534,234 MMBtu/yr; and

the associated global warming potential for each pollutant (CO₂=1, CH₄=25, N₂O=298 from Table A-1 of 40 CFR 98, November 29, 2013).

The Allowable Emissions includes a 5% margin for CT degradation in thermal efficiency:

$$1,549,315 \text{ TPY CO}_2\text{e} + [(1,549,315 \text{ TPY CO}_2\text{e})(0.05)] = 1,626,781 \text{ TPY CO}_2\text{e}$$



Since the CO₂e emissions are estimated to consist of more than 99% CO₂, compliance with this emission limitation will be assumed provided that the rolling, 12-month CO₂ emissions as calculated in section d) above do not exceed 1,611,914 tons per rolling, 12-month period.

p. Emission Limitation:

Visible particulate emissions from any stack serving this emissions unit shall not exceed 20 percent opacity as a 6-minute average.

Applicable Compliance Method:

If required, the permittee shall demonstrate compliance with this emissions limitation using Method 9 of 40 CFR Part 60, Appendix A. Alternative U.S. EPA approved test methods may be approved with prior approval from Ohio EPA.

(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, PE, PM₁₀, PM_{2.5}, VOC, and H₂SO₄, in the appropriate averaging period(s).

The emission testing shall also be conducted to determine a site-specific emission factor for CO₂.

- 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 PE, Method 5 of 40 CFR Part 60, Appendix A;

For PM₁₀ and PM_{2.5}, Methods 201A and 202 of 40 CFR Part 52, Appendix M;

For SO₂, 40 CFR 60.4415;

For VOC, 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;

For H₂SO₄, Methods 1 thru 4 and 8 of 40 CFR Part 60, Appendix A; and

For CO₂, 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 appropriate Ohio EPA District Office or local air agency. 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 appropriate Ohio EPA District Office or local air agency. 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 District Office's or local air agency's refusal to accept the results of the emission test(s).
 - f. Personnel from the appropriate Ohio EPA District Office or local air agency 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 appropriate Ohio EPA District Office or local air agency 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 Office or local air agency.
- (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 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 appropriate Ohio EPA District Office or local air agency 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 appropriate Ohio EPA 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, 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 emissions 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 appropriate Ohio EPA District Office or local air agency 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 appropriate Ohio EPA 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.



Draft Permit-to-Install
Middletown Energy Center
Permit Number: P0116610
Facility ID: 1409001151

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g) Miscellaneous Requirements

- (1) ISO conditions are 288 degrees Kelvin (15 degrees Celsius), 60% relative humidity and 101.3 kilopascals pressure.
- (2) One CEM data point is equivalent to one-minute of data.



3. P002, Emergency Generator

Operations, Property and/or Equipment Description:

Emergency diesel engine powered standby generator, rated at 1,100 kilowatts.

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	The permittee shall equip the combustion engine such that SO ₂ emissions shall not exceed 5.50E-03 g/hp-hr based on the source design characteristic. 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 3745-31-05(D) Synthetic Minor to avoid Nonattainment Area New Source Review (NAA-NSR) for NO _x and VOC	The NO _x emissions shall not exceed 7.25 TPY based on a rolling 12-month summation. The VOC emissions shall not exceed 0.26 TPY based on a rolling 12-month summation. see b)(2)e.
d.	OAC rule 3745-31-11 through 20	CO emissions shall not exceed 2.61 g/hp-hr, 8.49 Lbs/hr, and 2.12 tons per rolling, 12-month period. NO _x emissions shall not exceed 8.92 g/hp-hr, 29.01 Lbs/hr, and 7.25 tons per rolling, 12-month period. PE, PM ₁₀ , and PM _{2.5} emissions shall not exceed 0.236 g/hp-hr, 0.77 Lb./hr, and 0.19 ton per rolling, 12-month period.



	Applicable Rules/Requirements	Applicable Emissions Limitations/Control Measures
		<p>Sulfuric acid mist (H₂SO₄) emissions shall not exceed 6.74E-04 g/hp-hr, 2.19 E-03 Lb/hr and 5.48E-04 ton per rolling, 12-month period.</p> <p>Carbon dioxide equivalent (CO₂e) emissions shall not exceed 474 tons per rolling, 12-month period.</p> <p>see b)(2)d. and b)(2)e.</p>
e.	OAC rule 3745-17-07(A)(1)	Visible particulate emissions from the stack serving this emissions unit shall not exceed 20 percent opacity as a 6-minute average.
f.	OAC rule 3745-17-11(B)(5)(a)	see b)(2)f.
g.	OAC rule 3745-18-06(G)	see b)(2)j.
h.	OAC rule 3745-110-03(K)(20)	exemption – see b)(2)g.
i.	40 CFR Part 60, Subpart A (40 CFR 60.1-19)	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 60.1-19 apply.
j.	<p>40 CFR Part 60, Subpart IIII (40 CFR 60.4200–4219)</p> <p>[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.]</p>	<p>see b)(2)h. and b)(2)k.</p> <p>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.</p> <p>[60.4205(b) and 60.4207(b)]</p>
k.	<p>40 CFR Part 63, Subpart ZZZZ (40 CFR 63.6580-63.6675)</p> <p>[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.]</p>	<p>see b)(2)i.</p> <p>[63.6590(c), (c)(1)]</p>



(2) Additional Terms and Conditions

- a. BAT for CO, NO_x, and PE/PM₁₀/PM_{2.5} emissions is equivalent to the BACT requirements established through OAC rules 3745-31-11 through 20. BAT for VOC is equivalent to the requirements established through OAC rule 3745-31-05(D).
- 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. These rule paragraphs apply once U.S. EPA approves the December 1, 2006 version of OAC rule 3745-31-05 as part of the State Implementation Plan.
 - i. The Best Available Technology (BAT) requirements under OAC rule 3745-31-05(A)(3) do not apply to the SO₂ emissions from this air contaminant source since the uncontrolled potential to emit for SO₂ is less than 10 TPY.
 - ii. The Best Available Technology (BAT) requirements under OAC rule 3745-31-05(A)(3) do not apply to the CO, NO_x, and PE/PM₁₀/PM_{2.5} emissions from this air contaminant source since the uncontrolled potential to emit for CO, NO_x, and PE/PM₁₀/PM_{2.5} is less than 10 TPY, each, taking into account the federally enforceable emissions limitations and operating hours restriction specified by OAC rule 3745-31-11 through 20.
- d. All particulate emissions are assumed to be less than 2.5 microns in diameter. The PM₁₀/PM_{2.5} emissions 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:



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<u>Month(s)</u>	<u>Maximum Allowable Cumulative Operating Hours</u>
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 specified by this rule is less stringent than the emission limitation established by OAC rule 3745-31-11 through 20.
- g. The permittee is exempt from the requirements of OAC rule 3745-110-03(A) through (G) since this emissions will be issued a PTI that is subject to BACT.
- h. Owners and operators of 2007 model year and later emergency stationary CI ICE with a displacement of less than 30 liters per cylinder that are not fire pump engines must comply with the emission standards for new nonroad CI engines in §60.4202, for all pollutants, for the same model year and maximum engine power for their 2007 model year and later emergency stationary CI ICE.

Stationary CI ICE manufacturers must certify their 2007 model year and later emergency stationary CI ICE with a maximum engine power less than 2,237 KW (3,000 HP) and a displacement of less than 10 liters per cylinder that are not fire pump engines to the emission standards for all pollutants as specified in 40 CFR 89.112 and 40 CFR 89.113, for engines with a maximum engine power greater than or equal to 37 KW (50 HP).

40 CFR 89.112 contains the emission standards for new and in-use nonroad CI engines for NO_x, HC, NMHC + NO_x, CO, and PM. In lieu of the NO_x, NMHC + NO_x, and PM standards in Table 1 of §89.112, manufacturers may elect to include engine families in the averaging, banking, and trading program and set a Family Emission Limit (FEL) not to exceed the levels contained in Table 2 of §89.112. The FEL established by the manufacturer serves as the standard for that engine family.

40 CFR 89.113 contains the opacity standards for new and in-use nonroad CI engines.



- i. This emissions unit must meet the requirements of 40 CFR Part 60 Subpart IIII. No further requirements apply under this subpart.
 - j. The emission limitation established by this rule is less stringent than the limitation established in 40 CFR Part 60, Subpart IIII.
 - k. The permittee shall only combust 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.
- 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 CO, NO_x, PE/PM₁₀/PM_{2.5}, VOC, CO_{2e} and H₂SO₄ emission rate for each month of operations; 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, PE/PM₁₀/PM_{2.5}, VOC, CO_{2e} and H₂SO₄ emissions.
 - (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) For each shipment of 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.
 - (4) The permittee shall also maintain documentation of supplier verification that the diesel fuel as purchased has a minimum cetane index of 40 or a maximum aromatic content of 35 volume percent.
 - (5) 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 diesel fuel received for burning in this emissions unit which did not comply with the per gallon standards specified in b)(2);
 - 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; and
 - c. all exceedances of the rolling, 12-month emission limitation for CO, NO_x, PE/PM₁₀/PM_{2.5}, VOC, CO_{2e} and H₂SO₄ emissions.

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 2.61 g/hp-hr, 8.49 Lbs/hr, and 2.12 tons per rolling, 12-month period.

Applicable Compliance Method:

The g/hp-hr limitation is supplied in PTI Application A0050416 and based on the NSPS Subpart IIII requirement in §60.4202(a)(2) through §89.112 Table 1. The §89.112 requirement was converted to g/hp-hr by dividing the emission standard (3.5 g/KW-hr) by the unit conversion (1.34 hp-hr/KW-hr). The hourly emission limitation was developed by multiplying the maximum operating load (1475 HP) by the CO emission factor supplied by the manufacturer (2.61 g/hp-hr) and dividing by (453.59 g/Lb) to determine the hourly emissions.

If required, the permittee shall demonstrate compliance with the g/hp-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 (8.49 Lbs/hr) by the maximum annual operating hours (500 hrs/yr) and dividing by 2,000 pounds per ton. Compliance with the rolling, 12-month emission limitation shall be demonstrated by the recordkeeping in d)(1).

b. Emission Limitation:

NO_x emissions shall not exceed 8.92 g/hp-hr, 29.01 Lbs/hr, and 7.25 tons per rolling, 12-month period.

Applicable Compliance Method:

The g/hp-hr limitation is based on manufacturer's data supplied in PTI Application A0050416. The hourly emission limitation was developed by multiplying the maximum operating load (1475 HP) by the NO_x emission factor supplied by the manufacturer (8.92 g/hp-hr) divided by (453.59 g/Lb) to determine the hourly emissions.

If required, the permittee shall demonstrate compliance with the g/hp-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 (29.01 Lbs/hr) by the maximum annual operating hours (500 hrs/yr) and dividing by 2,000 pounds per ton. Compliance with the rolling, 12-month emission limitation shall be demonstrated by the recordkeeping in d)(1).

c. Emission Limitation:

PE, PM₁₀, and PM_{2.5} emissions shall not exceed 0.236 g/hp-hr, 0.77 Lbs/hr, and 0.19 tons per rolling, 12-month period.

Applicable Compliance Method:

The g/hp-hr limitation is based on manufacturer's data supplied in PTI Application A0050416. The hourly emission limitation was developed by multiplying the maximum operating load (1475 HP) by the PE/PM₁₀/PM_{2.5} emission factor supplied by the manufacturer (0.236 g/hp-hr) divided by (453.59 g/Lb) to determine the hourly emissions.

If required, the permittee shall demonstrate compliance with the g/hp-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 (0.77 Lb/hr) by the maximum annual operating hours (500 hrs/yr) and dividing by 2,000 pounds per ton. Compliance with the rolling, 12-month emission limitation shall be demonstrated by the recordkeeping in d)(1).



d. Emission Limitation:

The permittee shall equip the combustion engine such that SO₂ emissions shall not exceed 5.50E-03 g/hp-hr based on the source design characteristic.

Applicable Compliance Method:

The g/hp-hr limitation is supplied in PTI Application A0050416 as derived from the emission factor in AP-42, Fifth Ed., Large Stationary Diesel And All Stationary Dual-fuel Engines, Table 3.4-1, 10/96, using 0.0015 percent sulfur.

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.

e. Emission Limitation:

VOC emissions shall not exceed 0.26 tons per rolling, 12-month period.

Applicable Compliance Method:

The annual emission limitation was developed by multiplying the maximum hourly emissions (1.04 Lbs/hr) by the maximum annual operating hours (500 hrs/yr) and dividing by 2,000 pounds per ton. Compliance with the rolling, 12-month emission limitation shall be demonstrated by the recordkeeping in d)(1).

f. Emission Limitation:

Sulfuric acid mist (H₂SO₄) emissions shall not exceed 6.74E-04 g/hp-hr, 2.19 E-03 Lb/hr and 5.48E-04 ton per rolling, 12-month period.

Applicable Compliance Method:

The g/hp-hr limitation is based on a conservative estimate of 10% conversion of SO₂ to SO₃ and 100% conversion of SO₃ to H₂SO₄. The pound per hour emissions limitation was developed by multiplying the g/hp-hr allowable H₂SO₄ emission limitation (6.74E-04 g/hp-hr) by the maximum operating load (1475 HP) and divided by (453.59 g/Lb) to determine the hourly emissions.

If required, the permittee shall demonstrate compliance with the g/hp-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 H₂SO₄ emission limitation (2.19E-04 Lb/hr) by the maximum annual hours of operation (500 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.



g. Emission Limitation:

Carbon dioxide equivalent (CO₂e) emissions shall not exceed 474 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 multiplied by the emission factors for CO₂, N₂O, and CH₄, multiplied by the global warming potential for CO₂, N₂O, and CH₄ (1, 298, and 25, respectively from Table A-1 to Subpart A of 40 CFR 98).

The CO₂ emission factor was obtained from AP-42 Table 3.4-1 dated 10/96 (165 Lb/MMBtu). The N₂O emission factor was derived from AP-42 Table 1.3-8 dated 5/10 (0.26 Lb N₂O/10³ gal x 10³ gal/141.666E6 Btu x 1E6Btu/MMBtu = 0.00184 Lb N₂O/MMBtu). The CH₄ emission factor was obtained from AP-42 Table 3.4-1 dated 10/96 (0.09 Lb TOC/MMBtu x 0.09 Lb CH₄/Lb TOC = 0.0081 Lb CH₄/MMBtu).

$$\left(5716 \frac{MMBtu}{yr}\right) \times \left[\left(165 \frac{lb}{MMBtu}\right)(1) + \left(0.00184 \frac{lb}{MMBtu}\right)(298) + \left(0.0081 \frac{lb}{MMBtu}\right)(25) \right] \times \left(\frac{ton}{2,000lb}\right) = 474 \text{ tons/yr}$$

Since the CO₂e emissions are estimated to consist of more than 99% CO₂, compliance with this emission limitation will be assumed provided that the Lb/hp-hr CO₂ emission rate does not exceed 165 Lb/MMBtu. If required, the permittee shall conduct emission testing using Methods 1, 2, 3A and 4 of 40 CFR Part 60, Appendix A to determine the Lb/hp-hr CO₂ emission rate.

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)(3) 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)(4) shall serve as demonstration of compliance.



j. Emission Limitation:

Visible particulate emissions from the stack serving this emissions unit shall not exceed 20 percent opacity as a 6-minute average.

Applicable Compliance Method:

If required, the permittee shall demonstrate compliance according to Method 9 of 40 CFR Part 60, Appendix A.

k. Emission Limitation:

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.



4. P003, Emergency Fire Pump Engine

Operations, Property and/or Equipment Description:

Emergency diesel fire pump engine is rated at a maximum 260 BHP.

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	The permittee shall equip the combustion engine such that SO ₂ emissions shall not exceed 5.5E-03 g/hp-hr (1.21E-05 Lb/hp-hr) based on the source design characteristic. 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 3745-31-05(D) Synthetic Minor to avoid Nonattainment Area New Source Review (NAA-NSR) for NO _x and VOC	The NO _x emissions shall not exceed 0.43 TPY based on a rolling 12-month summation. The VOC emissions shall not exceed 0.017 TPY based on a rolling 12-month summation. see b)(2)e.
d.	OAC rule 3745-31-11 through 20	CO emissions shall not exceed 1.2 g/hp-hr, 0.69 pounds per hour (Lbs/hr), and 0.17 ton per rolling, 12-month period. NO _x emissions shall not exceed 3.0 g/hp-hr, 1.72 Lb/hr, and 0.43 ton per rolling, 12-month period. PE, PM ₁₀ , and PM _{2.5} emissions shall not exceed 0.15 g/hp-hr, 0.09 Lb/hr, and



	Applicable Rules/Requirements	Applicable Emissions Limitations/Control Measures
		0.023 ton per rolling, 12-month period. H ₂ SO ₄ emissions shall not exceed 6.7E-04 g/hp-hr, 3.9E-04 Lb/hr and 9.7E-05 ton per rolling, 12-month period CO ₂ e emissions shall not exceed 75 tons per rolling, 12-month period. see b)(2)d. and b)(2)e.
e.	OAC rule 3745-17-07(A)(1)	Visible particulate emissions from the stack serving this emissions unit shall not exceed 20 percent opacity as a 6-minute average.
f.	OAC rule 3745-17-11(B)(5)(a)	see b)(2)f.
g.	OAC rule 3745-18-06(G)	The emission limitation established by this rule is less stringent than the limitation established in 40 CFR Part 60, Subpart IIII.
h.	OAC rule 3745-110-03(K)(20)	exemption – see b)(2)g.
i.	40 CFR Part 60, Subpart A (40 CFR 60.1-19)	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 60.1-19 apply.
j.	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 3.0 g/hp-hr. PM emissions shall not exceed 0.15 g/hp-hr. see b)(2)h. [60.4202(d) and 60.4205(c)]
k.	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 emission	see b)(2)i [63.6590(c), (c)(1)]



	Applicable Rules/Requirements	Applicable Emissions Limitations/Control Measures
	limitation/control measures specified in this section.]	

(2) Additional Terms and Conditions

- a. BAT for CO, NOx, and PE/PM₁₀/PM_{2.5} emissions is equivalent to the BACT requirements established through OAC rules 3745-31-11 through 20. BAT for VOC is equivalent to the requirements established through OAC rule 3745-31-05(D).
- 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, NOx, PE/PM₁₀/PM_{2.5}, VOC and SO₂ emissions from this air contaminant source since the uncontrolled PTE for CO, NOx, PE/PM₁₀/PM_{2.5}, VOC and SO₂ is less than 10 TPY each.

- d. All particulate emissions are assumed to be less than 2.5 microns in diameter. The PM₁₀/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:



Effective Date: To be entered upon final issuance

<u>Month(s)</u>	<u>Maximum Allowable Cumulative Operating Hours</u>
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 specified by this rule is less stringent than the emission limitation established by OAC rule 3745-31-11 through 20.
- g. The permittee is exempt from the requirements of OAC rule 3745-110-03(A) through (G) since this emissions will be issued a PTI that is subject to BACT.
- h. The permittee shall only combust diesel fuel in this emissions unit meeting the following per gallon standards:
 - 15 ppm maximum sulfur content; and
 - 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 CO, NOx, PE/PM10/PM2.5, VOC, CO₂e and H₂SO₄ emission rate for each month of operations; 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, PE/PM₁₀/PM_{2.5}, VOC, CO_{2e} and H₂SO₄ emissions.
- (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) For each shipment of 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.
- (4) The permittee shall also maintain documentation of supplier verification that the diesel fuel as purchased has a minimum cetane index of 40 or a maximum aromatic content of 35 volume percent.
- (5) 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 diesel fuel received for burning in this emissions unit which did not comply with the per gallon standards specified in b)(2);
 - 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; and
 - c. all exceedances of the rolling, 12-month emission limitation for CO, NO_x, PE/PM₁₀/PM_{2.5}, VOC, CO_{2e} and H₂SO₄ emissions.

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 Limitations:

CO emissions shall not exceed 1.2 g/hp-hr, 0.69 pounds per hour (Lbs/hr), and 0.17 ton per rolling, 12-month period.

Applicable Compliance Method:

The g/hp-hr limitation is based on the engine manufacturer's specification for CO emissions, multiplied by a factor of 3. The hourly emission limitation was developed by multiplying the maximum operating load (260 hp) by the g/hp-hr CO emission limitation (1.2 g/hp-hr) divided by (453.59 g/Lb) to determine the hourly emissions.

If required, the permittee shall demonstrate compliance with the g/hp-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 (0.69 Lbs/hr) by the maximum annual operating hours (500 hrs/yr) and dividing by 2,000 pounds per ton. Compliance with the rolling, 12-month emission limitation shall be demonstrated by the recordkeeping in d)(1).

b. Emission Limitation:

NOx emissions shall not exceed 3.0 g/hp-hr, 1.72 Lbs/hr, and 0.43 ton per rolling, 12-month period.

Applicable Compliance Method:

The g/hp-hr limitation is based on the engine manufacturer's specification for NOx emissions. The hourly emission limitation was developed by multiplying the maximum operating load (260 hp) by the g/hp-hrNOx emission limitation (3.0 g/hp-hr) divided by (453.59 g/Lb) to determine the hourly emissions.

If required, the permittee shall demonstrate compliance with the g/hp-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 (1.72 Lbs/hr) by the maximum annual operating hours (500 hrs/yr) and dividing by 2,000 pounds per ton. Compliance with the rolling, 12-month emission limitation shall be demonstrated by the recordkeeping in d)(1).



c. Emission Limitation:

PE, PM₁₀, and PM_{2.5} emissions shall not exceed 0.15 g/hp-hr, 0.09 Lb/hr, and 0.023 ton per rolling, 12-month period.

Applicable Compliance Method:

The g/hp-hr limitation is based on the emission standard for PM from 40 CFR Part 60, Subpart IIII, Table 4. The hourly emission limitation was developed by multiplying the maximum operating load (260 hp) by the PM emission factor based on the Federal standard (0.15 g/hp-hr) divided by (453.59 g/Lb) to determine the hourly emissions.

If required, the permittee shall demonstrate compliance with the g/hp-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 (0.09 Lb/hr) by the maximum annual operating hours (500 hrs/yr) and dividing by 2,000 pounds per ton. Compliance with the rolling, 12-month emission limitation shall be demonstrated by the recordkeeping in d)(1).

d. Emission Limitation:

The permittee shall equip the combustion engine such that SO₂ emissions shall not exceed 5.5E-03 g/hp-hr (1.21E-05 Lb/hp-hr) based on the source design characteristic.

Applicable Compliance Method:

The g/hp-hr limitation is derived from the method supplied by the permittee in Application A0050416 for calculating SO₂ emissions taking into account the fuel sulfur content.

If required, the permittee shall demonstrate compliance with the g/hp-hr 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.

e. Emission Limitation:

The VOC emissions shall not exceed 0.017 TPY based on a rolling 12-month summation.

Applicable Compliance Method:

The annual emission limitation was developed by multiplying the maximum operating load (260 hp) by the engine manufacturer's specification for VOC emissions (0.12 g/hp-hr) divided by (453.59 g/Lb), and multiplied by the maximum annual operating hours (500 hrs/yr) and dividing by 2,000 pounds per



ton. Compliance with the rolling, 12-month emission limitation shall be demonstrated by the recordkeeping in d)(1).

f. Emission Limitation:

H₂SO₄ emissions shall not exceed 6.7E-04 g/hp-hr, 3.9E-04 Lb/hr and 9.7E-05 ton per rolling, 12-month period

Applicable Compliance Method:

The g/hp-hr limitation is based on a conservative estimate of 10% conversion of SO₂ to SO₃ and 100% conversion of SO₃ to H₂SO₄. The pound per hour emissions limitation was developed by multiplying the g/hp-hr allowable H₂SO₄ emission limitation (6.7E-04 g/hp-hr) by the maximum operating load (260 hp) and divided by 453.59 grams per pound to determine the hourly emissions (3.9E-04 Lb/hr).

If required, the permittee shall demonstrate compliance with the g/hp-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 H₂SO₄ emission limitation (3.9E-04 Lb/hr) by the maximum annual hours of operation (500 hours), and then dividing by 2,000 pounds per ton. Compliance with the rolling, 12-month emission limitation shall be demonstrated by the recordkeeping in d)(1).

g. Emission Limitation:

CO₂e emissions shall not exceed 75 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 maximum capacity multiplied by the emission factors for CO₂, N₂O, and CH₄, multiplied by the global warming potential for CO₂, N₂O, and CH₄ (1, 298, and 25, respectively from Table A-1 to Subpart A of 40 CFR 98).

The CO₂ emission factor was obtained from AP-42 Table 3.3-1 dated 10/96 (164 Lb/MMBtu). The N₂O emission factor was derived from AP-42 Table 1.3-8 dated 5/10 (0.26 Lb N₂O/10³ gal x 10³ gal/141.666E6 Btu x 1E6Btu/MMBtu = 0.00184 Lb N₂O/MMBtu). The CH₄ emission factor was obtained from AP-42 Table 3.4-1 dated 10/96 (0.09 Lb TOC/MMBtu x 0.09 Lb CH₄/Lb TOC = 0.0081 Lb CH₄/MMBtu).



$$\left(900 \frac{MMBtu}{yr}\right) \times \left[\left(165 \frac{lb}{MMBtu}\right)(1) + \left(0.00184 \frac{lb}{MMBtu}\right)(298) + \left(0.0081 \frac{lb}{MMBtu}\right)(25) \right] \times \left(\frac{ton}{2,000lb}\right) = 75 \text{ tons/yr}$$

If required, the permittee shall conduct emission testing using Methods 1, 2, 3A and 4 of 40 CFR Part 60, Appendix A to determine the Lb/hp-hr CO₂ emission rate. Compliance with the rolling, 12-month emission limitation shall be demonstrated by the recordkeeping in d)(1).

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)(3) 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)(4) shall serve as demonstration of compliance.

j. Emission Limitation:

Visible particulate emissions from the stack serving this emissions unit shall not exceed 20 percent opacity as a 6-minute average.

Applicable Compliance Method:

If required, the permittee shall demonstrate compliance with this emission limitation according to Method 9 of 40 CFR Part 60, Appendix A.

k. Emission Limitation:

NMHC + NO_x emissions shall not exceed 3.0 g/hp-hr; and

PM emissions shall not exceed 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



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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.



5. P004, Cooling Tower

Operations, Property and/or Equipment Description:

8-cell mechanical draft wet cooling tower for steam turbine steam condensation.

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	see b)(2)a. and b.
b.	OAC rule 3745-31-05(A)(3)(b), as effective 12/01/2006	see b)(2)c.
c.	OAC rules 3745-31-11 through 20 (Prevention of Significant Deterioration of Air Quality)	<p>Particulate emissions (PE) shall not exceed 2.685 Lbs/hr and 11.76 TPY.</p> <p>PM₁₀ emissions shall not exceed 1.70 Lbs/hr and 7.47 TPY.</p> <p>PM_{2.5} emissions shall not exceed 0.006 Lbs/hr and 0.025 TPY.</p> <p>The permittee shall install a drift eliminator with a maximum drift rate of 0.0005% on this emissions unit.</p> <p>see c)(1).</p>
d.	OAC rule 3745-17-07(A)(1)	Visible particulate emissions from the stack serving this emissions unit shall not exceed 20 percent opacity as a 6-minute average.
e.	OAC rule 3745-17-11(B)	see b)(2)d.
f.	OAC rule 3745-31-05(A)(3) ORC 3704.03 <i>Applicable to PE.</i>	See b)(2)a.



(2) Additional Terms and Conditions

- a. The requirements of this rule are equivalent to the requirements of OAC rules 3745-31-11 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 PM₁₀ and PM_{2.5} emissions from this air contaminant source since the calculated annual emission rate for PM₁₀ and PM_{2.5} is less than 10 tons per year taking into account the federally enforceable limitation of 0.0005% drift and a maximum TDS concentration of 5800 ppm under OAC rules 3745-31-11 through 20.

- d. The emission limitation specified by this rule is less stringent than the emission limitation established by OAC rules 3745-31-11 through 20.

c) Operational Restrictions

- (1) The permittee shall maintain the total dissolved solids (TDS) concentration of the cooling water less than or equal to 5800 ppm.

d) Monitoring and/or Recordkeeping Requirements

- (1) The permittee shall properly install, operate, and maintain a conductivity meter or other equipment to continuously monitor and record the TDS concentration of the cooling tower water. The monitoring devices shall be installed, calibrated, operated, and maintained in accordance with the manufacturer's recommendations, instructions, and operating manuals.
- (2) Since the TDS data measured by TDS monitors is based on a correlation between conductivity and TDS, an exceedance measured by the TDS monitor is not a violation of the TDS operational restriction, but rather serves as an indicator to initiate corrective action by the permittee to reduce the TDS concentration.



- (3) The permittee shall maintain a record of all TDS exceedances and any corrective actions taken in effort to correct the exceedance(s).

e) Reporting Requirements

- (1) The permittee shall submit quarterly deviation (excursion) reports that identify all TDS readings in excess of 5800 ppm. The reports shall identify corrective action taken to reduce the TDS concentration.

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

- (2) Prior to startup, the permittee shall submit written documentation provided by the vendor/manufacturer, of the maximum drift rate of 0.0005% for the drift eliminator and the premise, basis, and justification for the drift rate.
- (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:

PE shall not exceed 2.685 Lbs/hr and 11.76 TPY.

Applicable Compliance Method:

The Lbs/hr PE emission limitation is based on multiplying the maximum re-circulating water flow rate (185,000 gal/min) by the density of water (8.34 Lbs/gal) multiplied by the decimal fraction drift rate (0.000005) multiplied by the maximum TDS concentration (5800 ppm) multiplied by 60 min/hr.

The annual emission limitation is based on multiplying the hourly emission limitation (2.685 Lbs/hr) by the maximum annual hours of operation (8,760 hrs/yr) and dividing by (2,000 Lbs/ton).

Compliance with the hourly and annual emissions limitation will be assumed provided that the TDS concentration recorded in d) remains below 5800 ppm.

b. Emission Limitation:

PM10 emissions shall not exceed 1.70 Lbs/hr and 7.47 tons per year.



Applicable Compliance Method:

The Lbs/hr PM10 emission limitation is based on multiplying the maximum re-circulating water flow rate (185,000 gal/min) by the density of water (8.34 Lbs/gal) multiplied by the decimal fraction drift rate (0.000005) multiplied by the maximum TDS concentration (5800 ppm) multiplied by 60 min/hr then multiplied by 63.4% (percentage of PM which is PM10).

The annual emission limitation is based on multiplying the hourly emission limitation (1.70 Lbs/hr) by the maximum annual hours of operation (8,760 hrs/yr) and dividing by (2,000 Lbs/ton).

Compliance with the hourly and annual emission limitation will be assumed provided that the TDS concentration recorded in d) remains below 5800 ppm.

c. Emission Limitation:

PM_{2.5} emissions shall not exceed 0.006 Lbs/hr and 0.025 ton per year.

Applicable Compliance Method:

The Lbs/hr PM2.5 emission limitation is based on multiplying the maximum re-circulating water flow rate (185,000 gal/min) by the density of water (8.34 Lbs/gal) multiplied by the decimal fraction drift rate (0.000005) multiplied by the maximum TDS concentration (5800 ppm) multiplied by 60 min/hr then multiplied by 0.22% (percentage of PM which is PM2.5).

The annual emission limitation is based on multiplying the hourly emission limitation (0.006 Lbs/hr) by the maximum annual hours of operation (8,760 hrs/yr) and dividing by (2,000 Lbs/ton).

Compliance with the hourly and annual emission limitation will be assumed provided that the TDS concentration recorded in d) remains below 5800 ppm

d. Emission Limitation:

The maximum drift rate shall not exceed 0.0005%.

Applicable Compliance Method:

Manufacturer's emission data shall be used to demonstrate compliance with this limitation.

Within 90 days of startup, the permittee shall submit to the Southwest Ohio Air Quality Agency written documentation provided by the vendor/manufacturer, of the maximum drift rate of 0.0005% for the drift eliminator and the premise, basis, and justification for the drift rate.



e. Emission Limitation:

The permittee shall maintain the TDS concentration of the cooling water less than or equal to 5800 ppm.

Applicable Compliance Method:

The monitoring and recordkeeping requirements under d)(1) and d)(2) shall serve as demonstration of compliance.

If required, compliance shall be demonstrated using test procedures that conform to regulation 40 CFR 136, "Test Procedures For The Analysis of Pollutants". Alternative U.S. EPA approved test methods may be used with prior written approval from the Ohio EPA.

f. Emission Limitation:

Visible particulate emissions shall not exceed 20% opacity as a 6-minute average.

Applicable Compliance Method:

If required, compliance with the stack visible particulate emission limitation shall be determined through visible emission observations performed in accordance with Method 9 of 40 CFR Part 60, Appendix A.

g) Miscellaneous Requirements

(1) None.