

**STAFF DRAFT ACTION DETERMINATION
FOR THE APPLICATION OF
PSEG WATERFORD ENERGY FACILITY - PSEG WATERFORD ENERGY, LLC'S
PREVENTION OF SIGNIFICANT DETERIORATION (PSD)
AIR PERMIT TO INSTALL NO. 06-06206 FOR
THREE 160 MEGAWATTS NATURAL GAS FIRED
GENERAL ELECTRIC 7FA TURBINES TO BE LOCATED IN
WATERFORD TOWNSHIP IN WASHINGTON, COUNTY, OHIO**

January 30, 2001

**Ohio Environmental Protection Agency
Division of Air Pollution Control
122 South Front Street
Columbus, Ohio 43215**

Facility Description

PSEG Waterford Energy, LLC is proposing to build an electric generating station. The station will be constructed in two phases.

Phase 1 will consist of the installation and operation of three 160 megawatts (rated at average summer peak conditions) gas fired General Electric (GE) 7FA, Model PG7241(FA) combustion turbines burning natural gas equipped with GE's state-of-art Dry Low NO_x (DLN) combustors at 9 ppm at 15% oxygen operating at three potential scenarios (50% load, 0 degrees F; 75% load, 59 degrees F; 100% load, 93 degrees F, a temporary two-cell mechanical draft cooling tower, a 1,000 kW emergency generator, and a 290 kW emergency fire pump. Total facility output is about 500 MW and will operate less than 1,700 hours per year.

During phase 2, PSEG Waterford Energy, LLC will operate the three 160 megawatts gas fired General Electric 7FA turbines in combined cycle mode (with three heat recovery steam generators with supplemental natural gas fired duct burners) after the first year equipped with Selective Catalyst Reduction (SCR) at 3.5 ppm at 15% oxygen operating at three potential scenarios (50% load, 0 degrees F; 75% load, 59 degrees F; 100% load, 93 degrees F.

Also included during phase 2's installation are the following operations: a 13-cell wet cooling tower, a gas-fired 93.2 mmBTU/hr auxiliary boiler operating at less than 1000 hours per year, a 1000 kilowatt (KW) back-up diesel generator operating at less than 52 hours per year, and a small diesel 290 kW firewater pump operating at less than 52 hours per year. Total facility output during phase 2 operations are about 850 MW.

This facility is to be located in Waterford Township, Washington, County, Ohio near the village of Beverly.

Air Quality Designations

Under Section 107 of the Clean Air Act as of June 24, 1992, the area which contains the proposed facility was classified as attainment for all of the criteria pollutants, i.e., total suspended particulates, particulate matter less than 10 microns, sulfur dioxide, nitrogen oxides, carbon monoxide, lead, and volatile organic compounds (ozone).

New Source Review (NSR)/PSD Applicability

While operating the turbines in simple cycle mode during phase 1, the PSEG Waterford Energy Facility would be classified as a "major" stationary source because the potential emissions exceed 250 tons per year of one of the criteria pollutants (nitrogen oxide (NO_x)) threshold level in an attainment area and thus would be classified as a major stationary air source under the federal Prevention of Significant Deterioration (PSD) program.

In this case, since the facility is now classified as a "major" stationary source for PSD by the above analysis, any additional pollutants that would emit a regulated pollutant at a rate in excess of the significance levels would require the facility to perform a PSD analysis for those pollutants. Table 1 shows the potential emissions during phase 1.

Table 1

<u>Pollutant</u>	<u>Tons/Year #</u>	<u>Significant Level</u>
Nitrogen Oxides (NO ₂)	1,019	40
Sulfur Dioxide (SO ₂)	160	40
Particulate Matter*	242	15
Carbon Monoxide (CO)	478	100
Volatile Organic Compounds(VOC)	50.1	40
Sulfuric Acid Mist (H ₂ SO ₄)	6.3	7

* Particulate Matter and Particulate Matter <10 are assumed to be the same.

"PSEG Waterford Facility" has chosen to accept facility wide mass emissions restrictions below PSD threshold levels while operating during phase 1. That is, 163.2 tons per year of NO_x, 84.2 tons per year of CO, 8.2 tons per year of VOC, 45.9 tons per year of PM *, 30.6 tons per year of SO₂, and, 1.2 ton per year of H₂SO₄. But, the applicant was advised for purposes of this application that since this permitting action would occur within or near one year that USEPA might consider phase 1 and 2 as one project for purposes of PSD review. Therefore, the NO_x and CO accepted emissions levels divided by three (that is, three turbine emissions units because in this case cost effectiveness is based upon individual amount of emissions generated by a single turbine) will be used in the cost effectiveness BACT analysis to demonstrate whether additional controls will be required over what is being proposed by the applicant, not the potential to emit emission levels listed in Table 1.

The result is that "PSEG Waterford Facility" submitted a PSD analysis for the following pollutants: NO_x, VOC, PM*, SO₂, and CO.

National Emission Standards for Hazardous Air Pollutants (NESHAP) Part 63, 112(g) and Ohio Administrative Code (OAC) rule 3745-31-28 Applicability

Currently there are no standards that have been promulgated for this project. If no standard has been promulgated, then the project is evaluated based upon the amount of Hazardous Air Pollutants emitted. If over the threshold levels, then a Maximum Achievable Control Technology (MACT) determination must be submitted for review.

The PSEG Waterford facility will be accepting HAP emission restrictions to levels below to avoid submitting a MACT determination.

While operating the turbines in combined cycle mode during phase 2, the PSEG Waterford Energy Facility is classified as a "major" stationary source because the potential emissions exceed 250 tons per year of one of the criteria pollutants (NO_x) and is also one of the 28 source categories because it will generate steam and therefore triggers the 100 tons per year threshold level in an attainment area and thus be classified as a major source under the federal Prevention of Significant Deterioration (PSD) program.

Sulfuric acid mist (H₂SO₄) will be emitted as a PSD regulated non-criteria pollutant.

In this case, since the facility is classified as a "major" stationary source for PSD, and then any addition that would emit a regulated pollutant at a rate in excess of the significance levels would require the facility to perform a PSD analysis for those pollutants.

Table 2 shows the emissions from the proposed installation.

<u>Pollutant</u>	<u>Tons/Year</u>	<u>Significant Level</u>
Nitrogen Oxides (NO ₂)	579.73	40
Sulfur Dioxide (SO ₂)	173.1	40
Particulate Matter*	343.5	15
Carbon Monoxide (CO)	966.0	100
Volatile Organic Compounds(VOC)	96.1	40
Sulfuric Acid Mist (H ₂ SO ₄)	7.0	7

* Particulate Matter and Particulate Matter <10 are assumed to be the same.

Based upon the above information, PSD review is required for NO_x, SO₂, PM, CO, and VOC.

"PSEG Waterford Facility" has chosen to accept the following emissions levels while operating during phase 2: 443 tons per year of NO_x, 1104.6 tons per year of CO, 95.7 tons per year of VOC, 300 tons per year of PM *, 169.7 tons per year of SO₂, and, 6.8 tons per year of H₂SO₄. The NO_x and CO accepted emissions levels divided by three (that is, three turbine emissions units minus emissions unit P001 emissions because in this case cost effectiveness is based upon individual amount of emissions generated by a single turbine) will be used in the cost effectiveness BACT analysis to demonstrate whether additional controls will be required over what is being proposed by the applicant, not the potential to emit emission levels listed in Table 2.

New Source Performance Standards (NSPS) Applicability

While operating the turbines in simple cycle mode during phase 1, each of the simple cycle gas fired combustion turbines is subject to 40 CFR 60 Subpart GG.

The Stationary Gas Turbine NSPS applies to emissions for NO_x and SO₂. The emission standard for NO_x emissions applicable to the combustion turbine [from the equation in 40 CFR 60.332(a)(1)] is 0.0075 percent by volume (75 ppmv) at 15 percent oxygen on a dry basis. This standard is applicable to either fuel oil or natural gas combustion. The emission standard for SO₂ emissions applicable to the combustion turbine [from the equation in 40 CFR 60.333(b)] is 0.015 percent by volume (150 ppmv) at 15 percent oxygen on a dry basis. SO₂ emissions from combustion turbines are further limited by 40 CFR 60.333(b) which prohibits burning fuel that contains sulfur in excess of 0.8 percent by weight.

While operating the turbines in combined cycle mode during phase 2, each of the combined cycle gas fired combustion turbines/HRSG augmented with supplementary natural gas fired duct burners is subject to 40 CFR 60 Subpart GG, "Standards of Performance for Stationary Gas Turbines" and 40 CFR 60 Subpart Da, "Standards of Performance for Electric Utility Steam Generating Units for Which Construction is Commenced After September 18, 1978".

The auxiliary boiler (93.2 mmBTU/hr on an HHV) is subject to 40 CFR 60 Subpart Dc, "Standards of Performance for Small Industrial/Comerica/Institutional Steam Generating Units".

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The duct burners associated with this project are exempt from this applicability due to these units meeting the definition of electric steam generating unit.

The PSEG Waterford Facility will be accepting HAP emission restrictions to levels below to avoid submitting a MACT determination.

Control Technology Review

While operating the turbines in simple cycle mode during phrase 1, the "PSEG Waterford Facility" submitted a case-by-case Best Available Control Technology (BACT) analysis for the following pollutant: NO_x, SO₂, PM* CO, and VOC. The application used a "top-down" approach to determine an appropriate level of control.

BACT Review

Control of Nitrogen Oxides

Combustion Turbines

The new installation "PSEG Waterford Facility" looked at the following control technologies for nitrogen oxides:

- ◆ Combustion Controls - Lean Combustion and Reduced Residence Times;
- ◆ Combustion Controls - Lean Premix Combustion (DLN);
- ◆ Wet Controls - Water and Steam Injection;
- ◆ Selective Catalytic Reduction - (Back end control);
- ◆ Selective Non-Catalytic Reduction (SNCR) - (Back end control);
- ◆ Catalytic Oxidation Absorption - SCONO_x - (Back end control); and ,
- ◆ Catalytic Combustion - XONON catalytic (flame less)combustion - (Front end control).

Combustion Controls - Lean Combustion and Reduced Residence Times

Historically, gas combustion turbine generator combustors were designed for operation with unit (1) primary zone equivalence ratios (an equivalence ration of one indicates a stoichiometric ratio of fuel and air). However, with fuel-lean combustion (sub-stoichiometric conditions), the additional excess air cools the flame and reduces the rate of thermal NO_x formation. With reduced residence time combustors, dilution air is added sooner than with standard combustors resulting in the combustion gases being at a high temperature for a shorter time, thus reducing the rate of thermal NO_x formation. Note that with reduced residence time in the combustor there is a potential for incomplete combustion and the formation of additional CO and VOC emissions along with flame stability problems. Thus, in order to avoid such increases in the emissions of CO and VOCs, certain additional changes to promote better fuel-air mixing also need to be incorporated along with reduced residence time in the combustor - - placement of air ports, design of circulation flow patterns in the combustor and a shorter combustor length.

Combustion Controls - Lean Premix Combustion (DLN)

Due to wide variations in air-to-fuel ratios (A/F ratio) in conventional combustors, combustion of localized fuel-rich pockets produce significant levels of NO_x emissions. In lean premixed combustion design, the air and fuel are premixed at very lean A/F ratios prior to introduction into the combustor. The excess air in the well mixed lean mixture acts as a heat sink, which lowers the combustion temperature and reduces NO_x formation rates. Since some A/F ratios can approach the lean flammability limits, in order to minimize CO emissions a pilot flame is incorporated into the combustor design.

Wet Controls - Water and Steam Injection

Water injection directly into the flame area of the combustion turbine generator combustor provides a heat sink that lowers the flame temperature and reduces thermal NO_x formation. The water injection rate is typically described on a mass basis by a water-to-fuel ratio (WFR). Higher WFRs translate to greater NO_x reductions, but may also increase emissions of CO and hydrocarbons, reduce combustion turbine generator combustion efficiency and increase maintenance requirements.

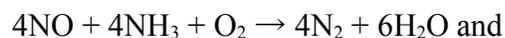
In order to derive maximum control system performance, the injected water must be atomized and sprayed in a configuration that provides a homogeneous mixture of water droplets and fuel in the combustor.

Thus, an optimal combustor geometry and nozzle design is very critical to the desired performance of the control system, otherwise improper mixing yields localized hot spots in the combustor that produce increase NO_x emissions.

Steam Injection is essentially the same principle to reduce NO_x emissions as water injection, except steam replaces water as the injected fluid. The injection system is also similar to that for water injection, but the water pump is replaced by a heat recovery steam generator (HRSG) that recovers the gas combustion turbine generator exhaust heat and generates steam.

Selective Catalytic Reduction (SCR) - (Back end control)

SCR is an add-on control which utilizes the injection of ammonia (NH₃) into the exhaust gas stream, which then passes through a catalyst to convert the NO_x and NH₃ into nitrogen and water. The general chemical reactions are:



The reactions take place on the surface of a catalyst. The function of the catalyst is to effectively lower the activation energy of the NO_x decomposition reaction. Technical factors related to this technology include the catalyst reactor design, optimum operating temperature, sulfur content of the fuel, and design of the ammonia (NH_3) injection system.

An SCR system is composed of an ammonia storage tank, ammonia forwarding pumps and controls, an injection grid (system nozzles that spray ammonia into the exhaust gas ductwork), a reactor which contains the catalyst and instrumentation, and electronic controls. An injection grid disperses NH_3 in the flue gas upstream of the catalyst, and NH_3 and NO_x are reduced to N_2 and water in the catalyst reactor. This control techniques reduces both thermal NO_x and fuel NO_x in the exhaust streams.

The optimum operating temperature for a vanadium-titanium catalyst has been shown to be in the range of 550° to 800°F . Another catalyst system employs a zeolite-based system that can supposedly handle high temperatures in the range of 790° to $1,100^\circ\text{F}$ which is within the proposed simple cycle mode operation depending on the ambient temperature. Applications where heat recovery steam generation is used, SCR catalyst and ammonia injection grids are typically installed between tube bundles within the HRSG where the flue gas temperature remains with the required temperature range during base load operation.

The SCR process is also subject to catalyst deactivation over time. Catalyst deactivation occurs through two primary mechanisms: physical deactivation and chemical poisoning. Physical deactivation is generally the result either of prolonged exposure to excessive temperatures or masking of the catalyst due to entrainment of particulate from ambient air or internal contaminants. Chemical poisoning is caused by the irreversible reaction of the catalyst with a contaminant in the gas stream and is a permanent conditions. Catalyst suppliers typically only guarantee a 3-year lifetime to very low emission level, high performance catalyst systems.

SCR manufacturers typically estimate 20 parts per million (ppm) or more of unreacted ammonia emissions (ammonia slip) when operating at very high efficiency levels. The ammonia is injected into the exhaust stream in excess of stoichiometric amounts to achieve maximum conversion of NO_x . Although this reduces NO_x emissions substantially, a significant quantity of ammonia is not reacted, passes through the SCR reactor and is exhausted to the atmosphere. Thus, there is a clear emissions trade-off between NO_x and ammonia in NO_x reduction applications of SCR.

The firing of diesel fuel and other sulfur-bearing fuels produces SO_3 which may oxidize to sulfite (SO_2) in the catalyst reactor. This SO_3 reacts with ammonia in the exhaust to form ammonium salts, resulting in additional particulate matter emissions. The SO_3 can also form H_2SO_4 in the exhaust, resulting in acid mist emissions. The conversion of SO_3 to H_2SO_4 is directly proportional to the NO_x reduction of the catalyst. Therefore, application of an SCR will increase emissions of other pollutants.

Selective Non-Catalytic Reduction (SNCR) - (Back end control)

SNCR technology involves using ammonia or urea injection in a fashion similar to SCR technology but at a higher temperature window range of 1600° to 2200 ° F. The following chemical reaction occurs without the presents of catalyst :



Since the temperature range is around 1,100 ° F, this technology would not be feasible for either operating in simple or combined cycle modes.

Catalytic Oxidation Absorption - SCONO_x - (Back end control)

An emerging technology called SCONO_x, offers the promise of reducing NO_x emissions to values less than 3 ppm. EPA on July 2, 1997 indicated that SCONO_x as a back end catalyst which operates without ammonia has been demonstrated in practice as Lowest Achievable Emission Rate (LAER) as part of a Non attainment Review permit analysis in California on a 23 MW combined-cycle turbine installation with NO_x emissions at 2-2.5 ppm. In December, 1999, EPA Region I issued a letter to the States covered by Region I stating that his technology is considered technically feasible.

The SCONO_x system uses an oxidation/absorption/regeneration cycle across a catalyst bed to achieve back end reductions of NO_x. Unlike SCR, the system does not require ammonia as reagent and involves parallel catalyst beds that are alternately taken off-line for regeneration through means of mechanical dampers.

According to Goal Line, the SCONO_xTM catalyst works by simultaneously oxidizing CO to CO₂, NO to NO₂, and then absorbing NO₂. The NO₂ is absorbed into a potassium carbonate catalyst coating as KNO₂ and KNO₃. When a catalyst module begins to become "loaded" with potassium nitrates and nitrites, it is taken off-line and isolated from the flue gas stream with mechanical campers for regeneration.

Once the module has been isolated from the oxygen rich turbine exhaust, natural gas is used to generate hydrogen gas. An absence of oxygen is necessary to retain the reducing properties necessary for regeneration. It should be noted that four percent is about the lower flammability limit for hydrogen, so it is important that piping and air seals around dampers do not leak. Hydrogen reacts with potassium nitrites and nitrates during regeneration to form H₂O and N₂ that is emitted from the stack.

SCONO_xTM is an emerging and very new technology. According to Goal Line, the first generation system (Mod 1) was based on a moving hood design that was used for proof of concept. This research led to the development of a second generation prototype (Mod 2) which has operated for over a year on a 23 MW General Electric LM 2500 turbine at the Federal facility operated by Goal Line's parent, Sunlaw Energy. A June 1999 newsletter from Goal Line announced that on May 29, an authority to construct was issued to the PG&E Generating La Paloma Project. The La Paloma FDOC states "Currently, it is uncertain, due to commercial availability issues, if

SCONO_xTM will be installed on the fourth gas turbine.... The availability of SCONO_xTM for this project is contingent on ABB's ability to scale up and test the SCONO_xTM system in a time period consistent with La Paloma's schedule." This is an affirmative determination that SCONO_xTM is not yet ready for widespread application to 160 MW turbines.

SCONO_xTM catalyst is subject to the same fouling or masking degradation that is experienced by any catalyst operating in a turbine exhaust stream. Trace impurities either ingested from ambient air or internal sources gradually accumulate on the surface of the catalyst, eventually masking or poisoning active catalyst sites over time. This is why catalyst performance is known to degrade or "age" over time. As one example, a catalyst system operating on a similar size cogeneration unit at MIT in Cambridge, Massachusetts, experienced total catalyst failure after only several hundred hours of oil fired operation. It turned out that a trace element contained in an oil additive being supplied by the turbine manufacturer was discovered to be an aggressive catalyst poison. In an event, it is well demonstrated that all catalysts begin life at their highest level of reactivity, resulting in very low emissions when first installed. Goal Line reports that they have had to take periodic outages to wash the catalyst; apparently SO₂ present in natural gas is sufficient to mask the active catalyst sites. Goal Line has developed an SO₂ "guard bed" called SCOSO_x to be installed on future systems such as La Paloma, but this component is not fully proven. As stated previously, catalyst aging is also experienced with conventional SCR catalysts; however, with these systems the operating experience exists to confidently predict catalyst life and catalyst replacement cost.

Another area of concern is that the SCONO_xTM process is dependent on numerous hot side dampers and gas seals that must cycle every 10-15 minutes. According to Goal Line's literature, at the scale of the Federal facility, this involves approximately eight mechanical dampers cycling about 4 times per hour, or 32 damper movements per hour. At ten times the scale, an equivalent system for the Project would involve about one damper movement every ten seconds, 8,760 hours per year. While further research and development (R&D) may be done during scale up at La Paloma in an effort to reduce the number of moving parts, the SCONO_xTM system requires many mechanical linkages, activators, and damper seals which must operate reliably with a hostile flue gas environment. This, in combination with lack of long-term demonstration and the specter of a 10:1 scale up results in associated concerns with long-term availability. The La Paloma beta test will serve as a valuable R&D process to demonstrate that SCONO_xTM can be scaled-up and eventually be guaranteed commercially for a project such as PSEG Waterford facility also provide the CEM data to determine if a large scale SCONO_xTM application can meet 2-2.5 ppm NO_x on a continuous basis.

Commercial Availability

SCONO_xTM does not represent a commercially mature control technology for application to the PSEG Waterford Facility. On December 1, 1999 ABB Alstrom Power issued a press release making a commercial offering for SCONOTM on combined-cycle turbines. In order for the PSEG Waterford Facility to obtain the financing needed to construct this project, Goal Line or its licensee would typically have to post performance bonds, and would have to provide meaningful financial guarantees for performance and long-term system availability, including remedies and liquidated damages. Further, the unknowns associated with any pollution control system which is the first of its kind, and which has no long-term company or operating history, represents a level of risk that would alter the ability to reasonably finance the project. Although there are several

technical feasibility concerns with this technology, an economic analysis was conducted for completeness.

XONON catalytic (flame less)combustion - (Front end control)

Another emerging technology, **XONON**, is a catalytic (flameless) combustion technology which potentially capable of reducing gas turbine NO_x emissions to around 3-5 ppm. The XONON combustion technology is being sold commercially for certain (i.e., smaller) engine models and is not yet being offered for larger turbines, such as the 160 MW GE units proposed for the "PSEG Waterford Facility" new installation.

Unlike SCONO_x or SCR, flameless combustion requires no down-stream clean up device, but rather prevents the formation of thermal NO_x during combustion of the fuel. This technique avoids the need for ammonia injection and avoids system efficiency losses due to catalyst back pressure. The **XONON** technology actually replaces the traditional diffusion or lean pre-mix combustion cans of the combustion turbine. Hence, this represents the only catalytic control technology that may be a reasonable retrofit to existing units.

Technical Analysis

According to literature provided by Catalytica, XONON™ combustors have reduced combustion turbine NO_x emissions to as low as 3 ppm in laboratory and pilot tests. Unlike SCONO_x™ or SCR, flameless combustion requires no down-stream clean up device, but rather prevents the formation of thermal NO_x during combustion of the fuel. This technique avoids the need for ammonia injection and avoids system efficiency losses due to catalyst back pressure. The XONON™ technology actually replaces the traditional diffusion or lean pre-mix combustion cans of the combustion turbine. Hence, this represents the only catalytic control technology that may be a reasonable retrofit to existing units.

In a typical combustor, fuel and air are burned at flame temperatures that may approach 2,700°F. Since the NO_x formation rate is exponential with flame temperature above about 2,000°F, thermal NO_x is formed within the combustors. The combustor exhaust is then diluted with cooling air to get the gas temperature below 2,400°F, which is the upper temperature limit of the metal parts that make up the power turbine. With the XONON™ system, a fuel/air mixture is oxidized across several small catalyst beds to "burn" fuel at less than the flame temperature at which thermal NO_x formation begins. The XONON™ combustor does, however, utilize a partial flame downstream to complete the combustion process (burnout zone) and unavoidable small amounts of NO_x emissions are generated within this zone. Resulting emissions are being guaranteed at 5 ppm for some small turbine applications (less than 3 MW) and have been demonstrated as low as 3 ppm under test conditions. Like all catalysts, the XONON™ combustor catalyst performance can be expected to "age" with time. Unlike other catalysts, the XONON™ combustors can be easily changed out with a simple combustor replacement.

Commercial Availability

XONON™ does not currently represent an available control technology for the GE Frame 7 FA

(or any other 160 MW class turbine). While XONON™ is being sold commercially for certain (mostly smaller) engine models, it is not yet offered for large industrial gas turbines. According to Catalytica, a joint venture agreement is in place with GE to eventually develop XONON™ as Original Equipment Manufacturer (OEM) and retrofit equipment for the entire GE turbine line. It is critical to note that General Electric does not currently offer an XONON™ combustor option for 7FA or any other large industrial turbine. Therefore, XONON™ does not represent an available control technology for this project.

Economic Analysis

Since the XONON™ combustors are not offered commercially for the turbines in the size range selected for the PSEG Waterford Facility and GE cannot provide cost data, an economic analysis could not be performed.

In summary, recent advances in the state of art have resulted in dry low NO_x combustors which limit peak flame temperature and excess oxygen with lean, pre-mix flames that achieve equal or better NO_x control without the addition of water or steam and due SCONOX not being cost effective and XONON™ combustors are not offered commercially for the turbines in the size range selected, PSEG Waterford Facility will be using dry low NO_x combustors to control NO_x emissions emitted from the three 160MW gas fired turbines. Therefore, BACT is proposed to be a NO_x emission rate of 9 ppmvd at 15 percent O₂ when operating in simple cycle mode.

Control of Carbon Monoxide

Formation

Carbon monoxide (CO) is formed as a result of incomplete combustion of fuel. Control of CO is accomplished by providing adequate fuel residence time and high temperature in the combustion zone to ensure complete combustion. These control factors, however, also tend to result in increased emissions of NO_x. Conversely, a low NO_x emission rate achieved through flame temperature control (by water injection or dry lean pre-mix) can result in higher levels of CO emissions. Thus, a compromise is established whereby the flame temperature reduction is set to achieve the lowest NO_x emission rate possible while optimizing CO emission rates.

Gas Turbines - Ranking of Available Control Techniques

CO emissions from gas turbines are a function of oxygen availability (excess air), flame temperature, residence time at flame temperature, combustion zone design, and turbulence. Alternative CO methods include exhaust gas back end controls such as catalytic oxidation, and front end methods such as combustion control wherein CO formation is suppressed within the combustors.

A review of USEPA's RACT/BACT/LAER Clearinghouse indicates several levels of CO control, which may be achieved for natural gas-fired gas turbines. Potential emission levels and control technologies have been identified and ranked as follows:

- ◆ 2 to 6 ppm: CO oxidation catalyst
- ◆ 10 to 25 ppm: Combustion control for natural gas firing; oxidation catalyst for distillate oil firing

A review of recent CO BACT determination in Region V indicates only one project that required the installation of an oxidation catalyst as LAER. These levels of control are evaluated in terms of Best Available Control Technology in the following sections.

- ◆ LAER: 2 to 6 ppm CO with Catalytic Oxidation

The most stringent CO control level available for gas turbines has been achieved with the use of an oxidation catalyst system, which can remove up to 90 percent of CO in the flue gas stream. According to the list of turbines in the RACT/BACT/LAER Clearinghouse with limits on CO, the lowest emission level listed in the Clearinghouse is 2.0 ppm for Mystic Station in Massachusetts. A CO oxidation catalyst is therefore concluded to represent the top control technology for CO control from natural gas-fired, combined-cycle turbines.

It should be noted that the makers SCONOXTM provide a conventional oxidation catalyst as part of their scope of supply. This is necessary to make the absorption catalyst work, but is not unique or different from CO catalytic oxidation technology reviewed in this section.

Technical Analysis

As with SCR catalyst technology for NO_x control, oxidation catalyst systems seek to remove pollutants from turbine exhaust gas rather than limiting pollutant formation at the source. Unlike an SCR catalyst system, which requires the use of ammonia as a reducing agent, oxidation catalyst technology does not require the introduction of additional chemicals for the reaction to proceed. Rather, the oxidation of CO to CO₂ utilizes the excess air present in the turbine exhaust; the activation energy required for the reaction to proceed is lowered in the presence of the catalyst. Technical factors relating to this technology include the catalyst reactor design, optimum operating temperature, back-pressure loss to the system, catalyst life, and potential collateral increases in emissions of PM₁₀.

As with SCR, CO catalytic oxidation reactors operate in a relatively narrow temperature range. Optimum operating temperatures for base metal systems generally fall into the range of 700°F to 900°F. At lower temperatures, CO conversion efficiency falls off rapidly. Above 1,200°F, catalyst sintering may occur, thus causing permanent damage to the catalyst. For this reason, the CO catalyst is strategically placed within the HRSG for proper turbine exhaust lateral distribution

(it is important to evenly distribute gas flow across the catalyst) and proper operating temperature at base load design conditions. Operation with duct burners on or off, at part load, or during start-up/shut-down can result in other than optimum temperatures and reduced control efficiency.

Catalyst systems are subject to loss of activity over time. Since the catalyst itself is the most costly part of the installation, the cost of catalyst replacement has been accounted for on an annualized basis. Depending on the actual installation, catalyst life may vary from the manufacturer's typical 3-year guarantee to a 5- to 6-year predicted life. Periodic testing of catalyst material is necessary to predict actual catalyst life for any given installation. The following economic analysis assumes that catalyst will be replaced every 3 years per vendor guarantee. This system would also be expected to control a small undetermined amount of hydrocarbon (VOC) emissions.

Environmental Analysis

A CO catalyst will also oxidize other species within the turbine exhaust. For example, sulfur in natural gas (fuel sulfur and mercaptans added as an odorant) is oxidized to gaseous SO₂ within the combustor, and a percentage is further oxidized to SO₃ across a CO catalyst (30% conversion is assumed). SO₃ will then be emitted and/or combined with water to form H₂ SO₄ (sulfuric acid mist) or ammonia to form ammonia salts (PM₁₀) in the exhaust stack. These sulfates condense in the gas stream or in the atmosphere as additional PM₁₀ (and PM_{2.5}). Thus, an oxidation catalyst would reduce emissions of CO and to some extent VOC, but would increase emissions of PM₁₀ and PM_{2.5}.

Economic Analysis

The total capital investment for installation of an oxidation catalyst system per turbine application was estimated to be \$2,306,000. The total annualized capital costs and O&M costs for control (CO control efficiency of 60%) were \$416,000 per turbine with a cost effectiveness of \$12,500 per ton of CO removed for 1,700 hours per year of operation.

Summary

The use of an oxidation catalyst to control emissions of CO from the turbines would result in collateral increases in PM₁₀ (and PM_{2.5}) emissions, is not cost effective, and therefore does not represent BACT for the Project.

BACT for the project will be 9 ppmvd.

Control of Sulfur Dioxide

Combustion Turbines

SO₂ is emitted from the combustion turbines as a result of the oxidation of the sulfur in the fuel.

FDG technology is one technology that is used to control SO₂ emitted from various combustion sources. An FGD system could be comprised of either a spray dryer which uses lime as a reagent followed by particulate control (baghouse or electrostatic precipitator) or a wet scrubber which uses limestone as a reagent. Installation of such systems is an established technology principally on coal-fired and high sulfur oil-fired steam-electric generating stations. FGD systems have not been installed on combustion turbines because of technical and cost factors associated with treating large volumes of high temperature gas containing relatively low levels of SO₂. FGD systems typically operate at an inlet temperature of approximately 400 to 500°F. In addition, FGD systems are not typically effective for streams with low SO₂ concentrations such as the flue gas stream from the proposed turbines. The concentration of SO₂ in the exhaust gas is the driving force for the reaction between SO₂ and the reagent. Therefore, removal efficiencies are significantly reduced with lower inlet concentrations of SO₂.

FGD systems also have energy and environmental impacts associated with their operation. A significant amount of energy is required to operate a FGD system due to the pressure drop over the scrubbers. There are also environmental impacts (e.g., bulk materials handling, wastewater discharges, and solid waste management) due to the disposal of the spent reagent and the high water use required for a wet scrubbing system.

Traditional flue gas desulfurization (FGD) acid gas controls such as wet scrubbers, spray dryer absorbers (SDA) and dry sorbent injection technology has not been proposed for similar applications due to high temperature regimes with thermal cycling, elevated pressure drop impedances which has significant back pressure implications resulting in severe operational impacts, and very low emissions rates coupled with significant air volumes.

For the technical reason and energy and environmental impacts presented above FGD systems are excluded from further consideration in the Project BACT analysis.

Potential emission levels and control technologies have been identified and ranked as follows:

- ◆ Fuel spec: Clean Burn Fuel;
- ◆ Good Combustion Practice/Combustion Control; and,
- ◆ Low - Sulfur Fuel

Fuel spec: Clean Burn Fuel

Among traditional fuels, natural gas is considered a clean burn fuel since it has a very low potential for generating SO₂ emissions. The proposed project will utilize only natural gas as the primary fuel for all three simple-cycle turbines.

Good Combustion Practice/Combustion Control

The project operators will maintain the turbines in good working order per manufacturer's guidance and implement good combustion practice to minimize SO₂ emissions. Since the turbines will be equipped with low NO_x burners that are the state-of-art currently which will provide good combustion practices and thus should achieve lower SO₂ emissions

Low - Sulfur Fuel

The only fuel for the proposed project combustion turbine units is natural gas which has a negligible sulfur content of 2 grains/100 scf.

In summary, the NSPS established maximum allowable SO₂ emissions associated with combustion turbines requires either an SO₂ emissions limitation of 150 ppmvd at 15 percent O₂ or a maximum fuel content of 0.8 percent by weight (40 CFR 60, Subpart GG). Gas firing results in SO₂ emissions at approximately 1 ppmvd. Therefore, the very low SO₂ emission rate that results from the use of natural gas as the sole fuel represents BACT control for SO₂ emissions from the combustion turbine along with good combustion practices mentioned above.

Control of Hydrocarbons and Trace Organics

Formation

Non-methane hydrocarbons (also referred to as volatile organic compounds or VOCs) and trace organics are emitted from gas-fired turbines as a result of incomplete combustion of fuel. Control of these pollutants is accomplished by providing adequate fuel residence time and high temperature in the combustion zone to ensure complete combustion.

Gas Turbines

Potential emission levels and control technologies have been identified and ranked as follows:

- ◆ Fuel spec: Clean Burn Fuel;
- ◆ Good Combustion Practice/Combustion Control; and,
- ◆ VOC Oxidation Catalyst

Fuel spec: Clean Burn Fuel

The proposed project will utilize only natural gas as the primary fuel for all three simple cycle turbines. Natural gas is considered a clean burn fuel since it has a very low potential for generating VOC emissions.

Good Combustion Practice/Combustion Control

The project operators will maintain the turbines in good working order per manufacturer's guidance and implement good combustion practice to minimize VOC emissions. Since the turbines will be equipped with low NO_x burners that are the state-of-art currently which will provide good combustion practices and thus should achieve lower VOC emissions.

VOC Oxidation Catalyst

An oxidation catalyst designed to control CO would provide a side benefit of controlling a portion of the VOC emissions. The level of control is dependent on the content of the natural gas. To date, vendors have not been willing to provide guarantees on oxidation catalysts for VOC control. The next level of control is combustion controls where VOC emissions are minimized by optimizing fuel mixing, excess air, and combustion temperature to assure complete combustion of the fuel.

The same technical factors that apply to the use of oxidation catalyst technology for control of CO emissions (narrow operating temperature range, loss of catalyst activity over time, and system pressure losses) apply to the use of this technology for collateral control of VOC. Since the Project will not employ a CO catalyst, the collateral reductions in VOC are not available.

Since an oxidation catalyst was shown to not be cost effective for control of CO, it would not be cost effective for control of VOCs at a much lower emission rate (20% of the CO annual emissions) and lower control efficiency. An oxidation catalyst is therefore no longer considered as a BACT option for this Project.

BACT for controlling VOC emissions is proposed as maintenance of the turbines in good working order, implementation of good combustion practice with the use of state-of-art GE Dry Low-NO_x combustor technology and use of a clean burning natural gas fuel as the only fuel to meet a VOC emissions rate of 1.4 ppmvd per turbine.

Control of Particulate Matter

Combustion Turbines

Emissions of PM and particulate matter less than PM₁₀ from the combustion turbine result from inert solids contained in the fuel, unburned fuel hydrocarbons which agglomerate to form particles, and mineral matter in the water injected during diesel oil firing. All of the particulate matter emitted from the turbine is expected to be less than 10 micrometers in diameter.

When the New Source Performance Standard for Stationary Gas Turbines (40 CFR 60 Subpart GG) was promulgated in 1979, the EPA recognized that "particulate emissions from stationary

gas turbines are minimal," and noted that particulate control devices are not typically installed on gas turbines and that the cost of installing a particulate control device is prohibitive. Performance standards for particulate control of stationary gas turbines were, therefore, not proposed or promulgated.

Natural gas is a clean burning fuel. Natural gas contains essentially no inert solids (ash). Clean fuels are required for combustion turbines in order to prevent damage to the turbine blades and other high precision turbine components. The installation of a particulate control device on a turbine firing clean fuels is considered to be impractical. Additionally, the small size of the particulates (100% 1 μ , AP-42, Section 3.1) make add-on controls technically infeasible.

Given the high combustion efficiency of the turbines and the firing of clean fuels, PM emissions will be very low. PM/PM₁₀ emissions from the Project will be less than 0.02 lb/10⁶ Btu. The Project proposes the use of natural gas as the sole fuel and good combustion practices as BACT for particulate matter.

The most stringent particulate control method demonstrated for gas turbines is the use of low ash fuel (such as natural gas or low sulfur transportation diesel). No add-on control technologies are listed in the RACT/BACT/LAER Clearinghouse listings for combustion turbines. Proper combustion control and the firing of fuels with negligible or zero ash content is the predominant control method listed.

Add-on controls, such as ESPs or baghouses, have never been applied to commercial gas/oil fired turbines or diesels engines. The use of ESPs and baghouse filters is considered technically infeasible, and does not represent an available control technology.

Control of Nitrogen Oxides, Carbon Oxides, Sulfur Dioxides, Volatile Organic Compounds, and Particulate Matter*

Emergency Diesel Generators

The emissions source will be used only for emergency situations, if any. The source is being permitted for 494 mmBTU/hr based upon 52 hours of operation per year for a weekly operational check.

Due to the projected emissions rate being less than 1.0 ton per year, BACT will be good working order and operation per manufacturer's specifications with an emissions rate of less than 1.0 tons per year.

Emergency Diesel Firewater Pump

The emissions source will be used only for emergency situations, if any. The source is being permitted for 52 hours of operation per year for a weekly operational check.

Due to the projected emissions rate being less than 1.0 ton per year, BACT will be good working order and operation per manufacturer's specifications with an emissions rate of less than 1.0 tons per year.

* Particulate Matter and Particulate Matter <10 are assumed to be the same.

While operating the turbines in combined cycle mode during phase 2

Under phase 2, the proposed plant will convert the three simple-cycle 160 MW turbines equipped with low NO_x burners to combined-cycle operation. This conversion involves the addition of a separate heat recovery steam generator (HRSG) for each turbine which each HRSG is equipped with a 360 mmBTU/hr natural gas duct burner. Downstream of the turbine and duct burner in each of the turbine HRSG assemblies will be a Selective Catalytic Reduction (SCR) system for further reduction of NO_x.

As part of the application for any emissions unit regulated under the PSD requirements, an analysis must be conducted that demonstrates that Best Available Control Technology (BACT) will be employed. In this case, the BACT analysis was conducted for NO_x, SO₂, PM*, CO, and VOC.

* Particulate Matter and Particulate Matter <10 are assumed to be the same.

Potential control alternatives are the following:

Control of Nitrogen Oxides

Combustion Combined Cycle Turbines

- ◆ Wet Controls - Water and Steam Injection;
- ◆ Dry Low NO_x (DLN) Combustor Technology;
- ◆ Combustion Controls - Lean Premix Combustion (DLN);
- ◆ Selective Catalytic Reduction - (Back end control);
- ◆ Selective Non-Catalytic Reduction (SNCR) - (Back end control);
- ◆ SCONO_x Catalytic Oxidation/Absorption -- (Back end control); and ,
- ◆ Catalytic Combustion - XONON catalytic (flame less) combustion - (Front end control).

Wet Controls - Water and Steam Injection

See explanation under simple cycle mode.

In addition to the explanation under simple cycle mode, because the proposed will be equipped with low NO_x combustors that reduce NO_x emissions to 9 ppm at 15% oxygen, which is lower than that attainable with wet control, this control alternative utilizing water or steam injection will

be precluded from further consideration in this BACT analysis.

Dry Low NOx (DLN) Combustor Technology

See explanation under simple cycle mode.

Selective Catalytic Reduction

See explanation under simple cycle mode.

In addition to the explanation under simple cycle mode, both the turbines operating in the combine cycle mode will be equipped with DLN and SCR technology with a NO_x emissions rate of 3.5 ppm at 15% oxygen.

Selective Non-Catalytic Reduction

See explanation under simple cycle mode.

SCONO_x Catalytic Oxidation/Absorption

See explanation under simple cycle mode.

Catalytic Combustion - XONON catalytic (flame less) combustion - (Front end control)

See explanation under simple cycle mode.

Control of Carbon Monoxide

Combustion Combined Cycle Turbines

- ◆ Combustion Control; and,
- ◆ CO Oxidation Catalysts.

Combustion Control

See explanation under simple cycle mode.

CO Oxidation Catalysts

See explanation under simple cycle mode.

In addition to the explanation under simple cycle mode, the PSEG Waterford Facility indicated several combined cycle similar facilities to theirs. But there is not clear precedence of application of CO Oxidation Catalyst in recent permits.

Control of Sulfur Dioxide

Combustion Combined Cycle Turbines

- ◆ Fuel Spec: Clean Burn Fuel;
- ◆ Good Combustion Practice/Combustion; and,
- ◆ Low-Sulfur Fuel.

See explanation under simple cycle mode. Also, note that in simple cycle mode the emissions rate is 11, where as, in combined cycle it is 13 pounds per hour.

Control of Volatile Organic Compounds

Combustion Combined Cycle Turbines

- ◆ Combustion Control; and,
- ◆ VOC Oxidation Catalysts.

See explanation under simple cycle mode.

See explanation under simple cycle mode. Also, note that in simple cycle mode the emissions rate is 1.4 ppmvd, where as, in combined cycle it is 2.5 ppmvd.

Control of Particulate Matter*

* Particulate Matter and Particulate Matter <10 are assumed to be the same.

Combustion Combined Cycle Turbines

- ◆ Fuel Spec: Clean Burning Fuel;
- ◆ Good Combustion Practice/Combination Control; and,
- ◆ Low-Sulfur Fuel.

See explanation under simple cycle mode.

Also, note that in simple cycle mode the emissions rate is 18 pounds per hour, where as, in combined cycle it is 25 pounds per hour.

Duct Burners

SCR system represents BACT (and LAER) for the proposed project duct burners. NO_x emissions during duct firing will be controlled to 3.5 ppmvd.

Auxiliary Boiler

The proposed auxiliary boiler will incorporate a NO_x emission limit of 0.11 lb/MMBtu that will be achieved natural gas. Given the limited operation (500 hours per year) and the small capacity of this boiler (46.6 MMBtu/hr on an HHV basis) the installation of add on NO_x controls such as SCR, would not be cost effective. The firing of natural gas as the sole fuel represents BACT for the proposed auxiliary boiler.

Diesel Firewater Pump and Back-up Generator

EPA's Alternative Control Technology (ACT) document for reciprocating engines (EPA, 1996) lists back end techniques such as SCR as well as combustion control techniques such as ignition retard for NO_x control from diesel engines. The ACT concludes that add-on controls are not cost effective for "emergency diesel engines that operate less than 500 hours/year". Therefore, neither back endo nor combustion controls represent NO_x BACT for the diesel firewater pump and back-up diesel engine.

Control of Sulfur Dioxide

Combustion Turbines

SO₂ is emitted from the combustion turbines as a result of the oxidation of the sulfur in the fuel. The emissions of SO₂ from the firing of diesel fuel in the turbines will be proportional to the sulfur content of the fuel. Alternatives for controlling SO₂ from combustion sources include the use of various low sulfur fuel oils, such as diesel, and the addition of flue gas desulfurization (FDG) systems. These alternatives are more fully described below.

FDG is technology used to control SO₂ emitted from various combustion sources. An FGD system could be comprised of either a spray dryer which uses lime as a reagent followed by particulate control (baghouse or electrostatic precipitator) or a wet scrubber which uses limestone as a reagent. Installation of such systems is an established technology principally on coal-fired and high sulfur oil-fired steam-electric generating stations. FGD systems have not been installed on combustion turbines because of technical and cost factors associated with treating large volumes of high temperature gas containing relatively low levels of SO₂. FDG systems typically operate at an inlet temperature of approximately 400 to 500^oF. In addition, FGD systems are not typically effective for streams with low SO₂ concentrations such as the flue gas stream from the proposed turbines. The concentration of SO₂ in the exhaust gas is the driving force for the reaction between SO₂ and the reagent. Therefore, removal efficiencies are significantly reduced with lower inlet concentrations of SO₂.

FGD systems also have energy and environmental impacts associated with their operation. A significant amount of energy is required to operate a FGD system due to the pressure drop over the scrubbers. There are also environmental impacts (e.g., bulk materials handling, wastewater discharges, and solid waste management) due to the disposal of the spent reagent and the high water use required for a wet scrubbing system.

For the technical reason and energy and environmental impacts presented above FGD systems are excluded from further consideration in the Project BACT analysis.

With the rejection of FGD and BACT for SO₂ the Project evaluated the use of low and very low sulfur fuels. The use of these fuels has established records of compliance when used in combustion equipment such as high efficiency combustion turbines and boilers. The NSPS established maximum allowable SO₂ emissions associated with combustion turbines requires either an SO₂ emissions limitation of 150 ppmvd at 15 percent O₂ or a maximum fuel content of 0.8 percent by weight (40 CFR 60, Subpart GG). Gas firing results in SO₂ emissions at approximately 1 ppmvd. Therefore, the very low SO₂ emission rate that results from the use of natural gas as the sole fuel represents BACT control for SO₂ emissions from the combustion turbine.

Duct Burners and Auxiliary Boiler

The duct burners and auxiliary boiler will exclusively fire pipeline quality natural gas with an annual average sulfur content of 2 grains per 100 scf. The most stringent method of control for SO₂ that has been demonstrated for combustion sources is limiting operation to pipeline quality natural gas only. The use of pipeline natural gas as the exclusive fuel is, therefore, representative of BACT for SO₂ from the gas turbines, duct burners and auxiliary boiler.

Diesel Firewater Pump and Back-up Generator

The only technique available for diesel engines that operate 500 hours or less per year, is the use of low sulfur fuel. Therefore, the use of very low sulfur diesel fuel (0.05%) represents BACT for SO₂ from the diesel firewater pump and back-up diesel generator.

Duct Burners

Information received from the vendor is that duct burners will increase the CO emissions. This level of emissions was evaluated separately and in conjunction with the turbine emissions. For the turbines alone, the oxidation catalyst has already been shown to be not cost effective. Using the proposed CO emission limit for the duct burners alone results in an incremental cost effectiveness for the duct burners of more than \$9,000 per ton. Based on a review of recent CO BACT determinations, this is not cost effectiveness. Therefore, good combustion control; therefore represents BACT for CO from the Project's duct burners.

Auxiliary Boiler

The auxiliary boiler will employ good combustion control for CO that has been determined to represent BACT for this source type.

Diesel Firewater Pump and Back-up Generator

Add on controls for CO emissions have never been applied to emergency diesel engines that operate less than 500 hours/year. Combustion control is concluded to represent BACT for the PSEG Waterford facility firewater pump and back-up generator.

Control of Particulate Matter

Combustion Turbines, Duct Burners, Auxiliary Boiler, Diesel Fire Pump, and Back-up Generator

Emissions of PM and particulate matter less than PM₁₀ from the combustion turbine result from inert solids contained in the fuel, unburned fuel hydrocarbons which agglomerate to form particles, and mineral matter in the water injected during diesel oil firing. All of the particulate matter emitted from the turbine is expected to be less than 10 micrometers in diameter.

When the New Source Performance Standard for Stationary Gas Turbines (40 CFR 60 Subpart GG) was promulgated in 1979, the EPA recognized that "particulate emissions from stationary gas turbines are minimal," and noted that particulate control devices are not typically installed on gas turbines and that the cost of installing a particulate control device is prohibitive. Performance standards for particulate control of stationary gas turbines were, therefore, not proposed or promulgated.

Natural gas is a clean burning fuel. Natural gas contains essentially no inert solids (ash). Clean fuels are required for combustion turbines in order to prevent damage to the turbine blades and other high precision turbine components. The installation of a particulate control device on a turbine firing clean fuels is considered to be impractical. Additionally, the small size of the particulates (100% 1 μ , AP-42, Section 3.1) make add-on controls technically infeasible.

Given the high combustion efficiency of the turbines and the firing of clean fuels, PM emissions will be very low. PM/PM₁₀ emissions from the Project will be less than 0.02 lb/10⁶ Btu. The Project proposes the use of natural gas as the sole fuel and good combustion practices as BACT for particulate matter.

The most stringent particulate control method demonstrated for gas turbines, duct burners, small boilers or diesel engines is the use of low ash fuel (such as natural gas or low sulfur transportation diesel). No add-on control technologies are listed in the RACT/BACT/LAER Clearinghouse listings for combustion turbines. Proper combustion control and the firing of fuels with negligible

or zero ash content (natural gas for the turbine duct burners and auxiliary boiler and low sulfur transportation diesel for the firewater pump and back-up diesel generator) is the predominant control method listed.

Add-on controls, such as ESPs or baghouses, have never been applied to commercial gas/oil fired turbines or diesels engines. The use of ESPs and baghouse filters is considered technically infeasible, and does not represent an available control technology.

Summary

The use of negligible or zero ash fuels such as natural gas and low sulfur diesel and good combustion control is concluded to represent BACT for PM₁₀ control for the proposed gas turbines, duct burners auxiliary boiler and diesel engines. These operational controls will limit PM₁₀ emissions (EPA Reference Method 5/202) to approximately 28 lbs/hr per turbine, including duct burners.

Cooling Tower

Cooling towers are designed to efficiently evaporate water. As water evaporates, it absorbs heat, causing the remaining water to become colder. The cold water is then circulated in non-contact heat exchangers to remove heat from the steam condenser. Water not lost to evaporation in the cooling tower is used for non-contact cooling of the steam turbine condenser. This water will likely contain dissolved solids such as calcium, sodium and potassium. As the water is evaporated in the cooling tower, these total dissolved solids (TDS) tend to concentrate in the water that remains circulating within the cooling tower.

To improve evaporation rate, cooling towers are designed to induce a flow of fresh air across a large wetted surface area (called "fill"). This induced airflow, however, entrains some of the fine water droplets that carry out of the tower, referred to as drift. These fine droplets subsequently evaporate in the ambient air, but when they do they liberate the total dissolved solids that were formerly in solution as emissions of particulate and PM₁₀.

The technologies which are available to control PM₁₀ emissions from evaporative cooling towers are limited to devices which seek to minimize drift. Known as Drift Eliminators, this technology represents the top level of control of PM₁₀ emissions from evaporative cooling towers. Drift Eliminators typically consist of layers of plastic chevrons located within the tower to knock out and coalesce fine water droplets before they can be emitted to the atmosphere.

The PSEG Waterford facility evaluated drift performance guarantees based on state-of-the-art Drift Eliminators. Based on this, a guaranteed level of 0.001 percent of circulating water flow was obtained for this project. This level of control results in a potential annual emission of PM₁₀ from the cooling tower of 8.6 tpy. Drift Eliminators are therefore concluded to represent BACT for PM₁₀ for the Project.

Control of Hydrocarbons and Trace Organics

Formation

Non-methane hydrocarbons (also referred to as volatile organic compounds or VOCs) and trace organics are emitted from gas-fired turbines as a result of incomplete combustion of fuel. Control of these pollutants is accomplished by providing adequate fuel residence time and high temperature in the combustion zone to ensure complete combustion.

Gas Turbines

An oxidation catalyst designed to control CO would provide a side benefit of controlling a portion of the VOC emissions. The level of control is dependent on the content of the natural gas. To date, vendors have not been willing to provide guarantees on oxidation catalysts for VOC control. The next level of control is combustion controls where VOC emissions are minimized by optimizing fuel mixing, excess air, and combustion temperature to assure complete combustion of the fuel.

The same technical factors that apply to the use of oxidation catalyst technology for control of CO emissions (narrow operating temperature range, loss of catalyst activity over time, and system pressure losses) apply to the use of this technology for collateral control of VOC. Since the Project will not employ a CO catalyst, the collateral reductions in VOC are not available.

Since an oxidation catalyst was shown to not be cost effective for control of CO, it would not be cost effective for control of VOCs at a much lower emission rate (20% of the CO annual emissions) and lower control efficiency. An oxidation catalyst is therefore no longer considered as a BACT option for this Project. The proposed emission rate (1.4 ppmvd without duct firing and less than 10 ppmvd with duct firing), based on operational controls only is in the same range as facilities which also employ oxidation catalyst. Therefore, this level of operational control is concluded to represent BACT for the PSEG Waterford facility.

Duct Burners and Auxiliary Boiler

The duct burners and auxiliary boiler will employ good combustion control for emissions of a VOC, with a VOC emission rate of 0.03 and 0.014 lb/MMBtu, respectively. The use of natural gas and good combustion control represent BACT for VOC from the duct burners and auxiliary boiler.

Diesel Firewater Pump and Back-up Generator

Add on control technology is not available for control of VOC emissions from diesel engines which operate less than 500 hours/yr. Good combustion control practices, therefore, represent

BACT for VOC from the Project's diesel fire pump and back-up diesel engine.

Control of Other Non-Criteria Pollutants

The combustion of natural gas and diesel fuel may release trace amounts of a number of non-criteria pollutants. One of the PSD regulated pollutants (sulfuric acid mist) requires a BACT analysis as defined by EPA. Sulfuric acid (H_2SO_4) emissions are based on a conservative estimate that assumes 10 percent of the SO_2 is converted to SO_3 and all the SO_3 converts to sulfuric acid. It is further based on the fact that the turbines, duct burners, and auxiliary boiler will fire natural gas only. The diesel fire pump and back-up generator will fire low sulfur diesel fuel (<0.05% sulfur). It is proposed that BACT for SO_2 also represents BACT for sulfuric acid mist.

Summary

The proposed BACT for the PSEG Waterford facility is summarized in Tables 5-2 and 5-3, below.

Table 5-2: Proposed BACT Limits - Combustion Turbine

Pollutant	Selected Controls	Proposed BACT
NO _x	Gas as sole fuel, DLN combustors, & SCR	3.5 ppmvd at 15% O ₂
SO ₂	Gas as sole fuel	2 grains S/100 CF gas
CO	Good combustion practices	14.2 ppmvd @ 15% O ₂
VOC	Good combustion practices	9.9 ppmvd
PM/PM ₁₀	Gas as sole fuel & good combustion practices	0.019 lb/MMBtu

Table 5-3: Proposed BACT Limits - Ancillary Equipment

Pollutant	Auxiliary Boiler	Diesel Engines	Cooling Tower
NO _x	Gas as sole fuel & Low NO _x Burners (0.11 lb/MMBtu)	Operating hours ≤ 500 hr/yr	N/A
SO ₂	Gas as sole fuel	≤ 0.05 wt % sulfur oil	N/A
CO	Good combustion (0.135 lb/MMBtu)	Operating hours ≤ 500 hr/yr	N/A
VOC	Good combustion (0.014 lb/MMBtu)	Operating hours ≤ 500 hr/yr	N/A
PM/PM ₁₀	Gas as sole fuel (0.009 lb/MMBtu)	Operating hours ≤ 500 hr/yr	Drift eliminator ≤ 0.001%

Ambient Air Quality Monitoring Requirements

The PSEG Waterford facility installation is located in Air Quality Control Region (AQCR) 177. The area is attainment or attainment/unclassifiable for total suspended particulates, particulate matter less than 10 microns, sulfur dioxide, nitrogen oxides, carbon monoxide, volatile organic compounds (ozone) and lead.

U.S. EPA regulations require a year of ambient air quality data to be obtained as part of the PSD application. An applicant may conduct monitoring on-site, model to demonstrate a "de minimus" impact, or used existing air quality data to fill some of the requirements of a PSD ambient air quality analysis. If monitoring is required, U.S. EPA has set up specific conditions on the acceptability of existing air quality monitors is to ensure the monitor is representative of air quality in the area.

In this instance, PSEG Waterford Energy, LLC has conducted ambient air quality modeling that predicts the ambient air quality impact of the source(s) to be less than the monitoring de minimus concentrations for NO₂, PM₁₀, SO₂, and CO. Therefore, Duke Energy Washington, LLC would not be required to conduct pre-application monitoring. A summary is below:

<u>Pollutant</u>	<u>Period</u>	<u>Monitoring Averaging Predicted Concentration</u>	<u>Monitoring De Minimus Concentration</u>
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NO ₂	Annual*	0.23 ug/m ³	14 ug/m ³
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CO	8-hour high	25.9 ug/m ³	575 ug/m ³
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PM ₁₀	24-hour high	1.9 ug/m ³	10 ug/m ³
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SO ₂	24-hour high**	2.9 ug/m ³	13 ug/m ³
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*Annual average based on weighted oil-fired (500 hours) and gas-fired (2,000 hours) impacts.

**SO₂ and NO₂ impacts based on 8 AM to 8 PM oil-fired operation.

Modeling

Air quality dispersion modeling was conducted to assess the effect of these sources on ambient air quality standards and PSD increments. The U.S. EPA Industrial Source Complex-Short Term (ISCST3, Version 97363) model was used for the refined modeling analysis. This refined modeling was performed after SCREEN3 modeling indicated significant impacts from the Project. The purpose of the refined modeling was to demonstrate that project impacts were insignificant and that PSD and NAAQS analyses would be unnecessary.

The ISCST3, Version 97363 model was the appropriate model for this analysis, based on the need to model simple to intermediate terrain, the need to incorporate building wake effects, the need to predict both short-term and long-term (annual) average concentrations, and the need to incorporate impacts from multiple and separated emissions units.

The ISCST3, Version 97363 model was run with the regulatory default options (stack-tip downwash, buoyancy-induced dispersion, final plume rise), default wind speed profile categories, default potential temperature gradient, and no pollutant decay. Building downwash was assessed using either the Huber-Snyder or Schulman-Sire downwash methodology, depending on the stack and nearby building heights.

The ISCST3, Version 97363 model was run utilizing the National Weather Service meteorological data processed using the U.S. EPA PCRAMMET program. OEPA provided five years of the most recent PCRAMMET processed meteorological data on their bulletin board system. Following OEPA modeling guidance concerning representative meteorological data for various counties, the Cincinnati Surface, Dayton Upper Air (1987-1991) PCRAMMET data were

used in the refined modeling analysis.

Building wake effects will influence emissions from stacks with heights less than Good Engineering Practice (GEP). The ISCST3, Version 97363 model requires input of building heights and projected building widths for 36 wind directions. The U.S. EPA Building Profile Input Program (BPIP) was used to determine the direction-specific building dimensions.

Modeling Results/Increment Analysis

Modeling at 100%, 75% and 50% loads, for natural gas, and using stack parameters based on average as well as extreme ambient temperatures, was performed to determine the worst case impacts for each pollutant. The results are as follows: The maximum predicted annual and 24-hour average PM₁₀ concentration of 0.03 and 1.9 ug/m³, respectively, were below the corresponding significant impact increments of 1 and 5 ug/m³. Therefore, no additional dispersion modeling analyses for PM₁₀ were necessary for PM.

The maximum predicted 1-hour and 8-hour CO concentration of 34.9 and 25.9 ug/m³ respectively were below the corresponding significant impact increments of 2000 and 500 ug/m³. Therefore, no additional dispersion modeling analysis were necessary for CO.

The maximum predicted annual NO₂ concentration of 0.23 ug/m³ was below the corresponding significant impact increment of 1.0 ug/m³. Therefore no additional dispersion analysis was necessary for NO₂.

The maximum predicted annual, 24-hour and 3-hour average SO₂ concentrations of 0.02, 2.9 and 14.5 ug/m³ were below the corresponding significant impact increments of 1.0, 5.0 and 25.0 ug/m³. Therefore, no additional dispersion modeling analysis was necessary for SO₂.

Secondary Impact

The closest Class I area to the PSEG Waterford facility is the Mammoth Cave National Park (Kentucky) which is approximately 247 km to the southwest. Federal PSD regulation regulations require that the reviewing authority provide written notification of projects which may affect a Class 1 area. "May effect" is typically interpreted by EPA as a major source or major modification within 100 kilometers. Since the PSEG Waterford facility is located greater than 100 kilometers from any Class I area, and all modeled impacts are below Significant Impact Levels, the PSEG Waterford facility was not subject to the visibility analysis modeling.

Most of the designated vegetation screening levels are equivalent to or exceed NAAQS and/or PSD increments, so that satisfaction of NAAQS and PSD increment assures compliance with sensitive vegetation screening levels. For SO₂ 3-hour and annual averaging periods, sensitive screening levels are more stringent than comparable NAAQS standards. The results demonstrate maximum concentrations are well below sensitive levels.

The project is to employ approximately 15 permanent positions during operations and an average of 200 people during construction. It is not expected that there will be regional population, commercial, or industrial growth associated with this project.

Conclusions

Based upon analysis of the permit to install application and its supporting documentation provided by PSEG Waterford Energy. LLC, the Ohio EPA staff has determined that the proposed increase will comply with all applicable State and Federal environmental regulations and that the requirements for BACT are satisfied. Therefore, the Ohio EPA staff recommends that a permit to install be issued to PSEG Waterford Energy. LLC.



State of Ohio Environmental Protection Agency

Street /

Address:
zarus Gov.
Center

**RE: DRAFT PERMIT TO INSTALL
WASHINGTON COUNTY
Application No: 06-06206**

CERTIFIED MAIL

DATE: 1/30/2001

PSEG Waterford Energy LLC
Mick Mastilovic
35 Waterview Blvd
Parsippany, NJ 07054

You are hereby notified that the Ohio Environmental Protection Agency has made a draft action recommending that the Director issue a Permit to Install for the air contaminant source(s) [emissions unit(s)] shown on 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 proposed installation. A public notice concerning the draft permit will appear in the Ohio EPA Weekly Review and the newspaper in the county where the facility will be located. Public comments will be accepted by the field office within 30 days of the date of publication in the newspaper. Any comments you have on the draft permit should be directed to the appropriate field office within the comment period. A copy of your comments should also be mailed to Robert Hodanbosi, Division of Air Pollution Control, Ohio EPA, P.O. Box 1049, Columbus, OH, 43266-0149.

A Permit to Install may be issued in proposed or final form based on the draft action, any written public comments received within 30 days of the public notice, or record of a public meeting if one is held. You will be notified in writing of a scheduled public meeting. Upon issuance of a final Permit to Install a fee of **\$1000** will be due. Please do not submit any payment now.

The Ohio EPA is urging companies to investigate pollution prevention and energy conservation. Not only will this reduce pollution and energy consumption, but it can also save you money. If you would like to learn ways you can save money while protecting the environment, please contact our Office of Pollution Prevention at (614) 644-3469. If you have any questions about this draft permit, please contact the field office where you submitted your application, or Mike Ahern, Field Operations & Permit Section at (614) 644-3631.

Very truly yours,

Thomas G. Rigo
Field Operations and Permit Section
Division of Air Pollution Control

CC: USEPA

SEDO

WV

PA



STATE OF OHIO ENVIRONMENTAL PROTECTION AGENCY

**Permit To Install
Terms and Conditions**

**Issue Date: To be entered upon final issuance
Effective Date: To be entered upon final issuance**

DRAFT PERMIT TO INSTALL 06-06206

Application Number: 06-06206
 APS Premise Number: 0684000213
 Permit Fee: **To be entered upon final issuance**
 Name of Facility: PSEG Waterford Energy LLC
 Person to Contact: Mick Mastilovic
 Address: 35 Waterview Blvd
 Parsippany, NJ 07054

Location of proposed air contaminant source(s) [emissions unit(s)]:

**Township Rd 32
Beverly, Ohio**

Description of proposed emissions unit(s):

Combined cycle combustion turbine system.

Description of proposed wastewater disposal system:

Cooling towers, oil/water separator, and heat exchange for combined cycle natural gas electric generating plant.

The Director has determined that a lowering of water quality in the Muskingum River is necessary. In accordance with OAC 3745-1-05, this decision was reached only after examining a series of technical alternatives, reviewing social and economic issues related to the degradation, and considering all public and appropriate intergovernmental comments. The lowering of water quality is necessary to accommodate important social or economic development in the area in which the water body is located.

The above named entity is hereby granted a Permit to Install for the above described **air emissions unit(s) and wastewater sources** 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 above described 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

Director

SECTION I

APPLICABLE AIR REQUIREMENTS

PSEG Waterford Energy LLC

Facility ID: 0684000213

PTI Application: 06-06206

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Part I - GENERAL TERMS AND CONDITIONS

A. State and Federally Enforceable Permit To Install General Terms and Conditions

1. Monitoring and Related Recordkeeping 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:
 - i. The date, place (as defined in the permit), and time of sampling or measurements.
 - ii. The date(s) analyses were performed.
 - iii. The company or entity that performed the analyses.
 - iv. The analytical techniques or methods used.
 - v. The results of such analyses.
 - vi. 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:
 - i. Reports of any required monitoring and/or recordkeeping of federally enforceable information shall be submitted to the appropriate Ohio EPA District Office or local air agency.
 - ii. 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 appropriate Ohio EPA District Office or local air agency. The written reports shall be submitted quarterly, i.e., by January 31, April 30, July 31, and October 31 of each year and shall cover the previous calendar quarters. See B.11 below if no deviations occurred during the quarter.

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- iii. Written reports, which identify any deviations from the federally enforceable monitoring, recordkeeping, and reporting requirements contained in this permit shall be submitted to the appropriate Ohio EPA District Office or local air agency every six months, i.e., 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.
- iv. 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.

2. 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 appropriate Ohio EPA District Office or local air 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).

3. 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.

4. 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.

5. Severability Clause

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.

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6. General Requirements

- a. The permittee must comply with all terms and conditions of this permit. Any noncompliance with the federally enforceable terms and conditions of this permit constitutes a violation of the Act, and is grounds for enforcement action or for permit revocation, revocation and reissuance, or modification, or for denial of a permit renewal application.
- 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, reopened, 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, reopening 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.

7. 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 this Permit To Install.

8. Federal and State Enforceability

Only those terms and conditions designated in this permit as federally enforceable, that 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, the State, and citizens under the Act. All other terms and conditions of this permit shall not be federally enforceable and shall be enforceable under State law only.

9. Compliance Requirements

- a. 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:
 - i. 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.
 - ii. 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.
 - iii. Inspect at reasonable times any facilities, equipment (including monitoring and air pollution control equipment), practices, or operations regulated or required under this permit.
 - iv. 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 appropriate Ohio EPA District Office or local air 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:
 - i. Dates for achieving the activities, milestones, or compliance required in any schedule of compliance, and dates when such activities, milestones, or compliance were achieved.
 - ii. 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.

10. Permit To Operate Application

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

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3745-77-08(C)(3)(d).

- b. If the permittee is required to apply for permit(s) pursuant to OAC Chapter 3745-35 , the source(s) identified in this Permit To Install is (are) permitted to operate for a period of up to one year from the date the source(s) commenced operation. Permission to operate is granted only if the facility complies with all requirements contained in this permit and all applicable air pollution laws, regulations, and policies. Pursuant to OAC Chapter 3745-35, the permittee shall submit a complete operating permit application within thirty (30) days after commencing operation of the source(s) covered by this permit.

11. Best Available Technology

As specified in OAC Rule 3745-31-05, all new sources must employ Best Available Technology (BAT). Compliance with the terms and conditions of this permit will fulfill this requirement.

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B. State Only Enforceable Permit To Install General Terms and Conditions

1. Compliance Requirements

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

2. Reporting Requirements Related to Monitoring and Recordkeeping 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 appropriate Ohio EPA District Office or local air 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 appropriate Ohio EPA District Office or local air 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, i.e., 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.)

3. Permit Transfers

Any transferee of this permit shall assume the responsibilities of the prior permit holder. The appropriate Ohio EPA District Office or local air agency must be notified in writing of any transfer of this permit.

4. 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.

5. Termination of Permit To Install

This permit to install shall terminate within eighteen months of the effective date of the permit to install if the owner or operator has not undertaken a continuing program of installation or modification or has not entered into a binding contractual obligation to undertake and complete within a reasonable time a continuing program of installation or modification. This deadline may

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be extended by up to 12 months if application is made to the Director within a reasonable time before the termination date and the party shows good cause for any such extension.

6. Construction of New Sources(s)

The proposed emissions unit(s) shall be constructed in strict accordance with the plans and application submitted for this permit to the Director of the Ohio Environmental Protection Agency. There may be no deviation from the approved plans without the express, written approval of the Agency. Any deviations from the approved plans or the above conditions may lead to such sanctions and penalties as provided under Ohio law. Approval of these plans does not constitute an assurance that the proposed facilities will operate in compliance with all Ohio laws and regulations. Additional facilities shall be installed upon orders of the Ohio Environmental Protection Agency if the proposed sources are inadequate or cannot meet applicable standards.

If the construction of the proposed emissions unit(s) has already begun or has been completed prior to the date the Director of the Environmental Protection Agency approves the permit application and plans, the approval does not constitute expressed or implied assurance that the proposed facility has been constructed in accordance with the approved plans. 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 the Permit to Install does not constitute an assurance that the proposed source will operate in compliance with all Ohio laws and regulations. Approval of the plans in any case is not to be construed as an approval of the facility as constructed and/or completed. Moreover, issuance of the Permit to Install 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 prove to be inadequate or cannot meet applicable standards.

7. 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.

8. 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).

9. Construction Compliance Certification

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The applicant shall provide Ohio EPA with a written certification (see enclosed form) that the facility has been constructed in accordance with the Permit To Install application and the terms and conditions of the Permit to Install. The certification shall be provided to Ohio EPA upon completion of construction but prior to startup of the source.

10. Additional Reporting Requirements When There Are No Deviations of Federally Enforceable Emission Limitations, Operational Restrictions, or Control Device Operating Parameter Limitations (See Section A of This Permit)

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

C. Permit To Install Summary of Allowable Emissions

The following information summarizes the total allowable emissions, by pollutant, based on the individual allowable emissions of each air contaminant source identified in this permit.

**SUMMARY (for informational purposes only)
TOTAL PERMIT TO INSTALL ALLOWABLE EMISSIONS**

<u>Pollutant</u>	<u>Tons Per Year</u>
NOx	163.2 (Phase I)
	443.0 (Phase II)
SO2	30.6 (Phase I)
	169.7 (Phase II)
CO	84.2 (Phase I)
	1104.6 (Phase II)
VOC	8.2 (Phase I)
	95.7 (Phase II)
PM	45.9 (Phase I)
	300.3 (Phase II)
Ammonia (NH3)	369.2 (Phase II)
Formaldehyde	0.5 (Phase I)
	2.6 (Phase II)
Sulfuric Acid	1.2 (Phase I)
	6.8 (Phase II)

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Part II - FACILITY SPECIFIC TERMS AND CONDITIONS

A. State and Federally Enforceable Permit To Install Facility Specific Terms and Conditions

None

B. State Only Enforceable Permit To Install Facility Specific Terms and Conditions

None

Part III - SPECIAL TERMS AND CONDITIONS FOR SPECIFIC EMISSIONS UNIT(S)

A. State and Federally Enforceable Section

I. Applicable Emissions Limitations and/or Control Requirements

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

Operations, Property,
and/or Equipment

Applicable Rules/Requirements

PHASE II ONLY

B001 - 93.2 MMBtu/hr
Natural Gas Fired Boiler

OAC rule 3745-31-05(A)(3)

40 CFR 60 Subpart Dc
OAC rule 3745-18-06(F)
OAC rule 3745-17-10(B)(1)

OAC rule 3745-17-07(A)

40 CFR 52.21
OAC rule 3745-31- (13) thru (20)

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<u>Applicable Emissions Limitations/Control Measures</u>	
The requirements of this rule also include compliance with the requirements of 40 CFR 60 Subpart Dc, OAC rule 3745-18-06(A), 3745-17-10(B)(1), OAC rule 3745-17-07(A), 40 CFR 52.21, and OAC 3745-31-(13) thru (20).	<p>heat input 0.50 lb/hr and 0.25 ton per year</p> <p>particulate matter (PM) emissions shall not exceed: 0.00739 lb/MMBtu actual heat input 0.69 lb/hr and 0.34 ton per year</p> <p>The emission limitations specified by these rules are less stringent than those established above;</p> <p>20% opacity as a six minute average, except as provided by rule</p>
nitrogen oxide (NO _x) emissions shall not exceed: 0.05 lb/MMBtu actual heat input 4.66 lb/hr and 2.3 ton per year	<p>Operational restriction, see Item A.II.2.</p> <p>The tons per rolling 12-month period shall not exceed :</p> <p>NO_x - 2.3 SO₂ - 0.03 PM - 0.34</p>
sulfur dioxide (SO ₂) emissions shall not exceed: 0.000584 lb/MMBtu actual heat input 0.054 lb/hr and 0.03 ton per year	<p>CO - 4.7 VOC - 0.25</p>
carbon monoxide (CO) emissions shall not exceed: 0.1 lb/MMBtu actual heat input 9.32 lb/hr and 4.7 ton per year	
volatile organic compounds (VOC) emissions shall not exceed: 0.00535 lb/MMBtu actual	

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2. Additional Terms and Conditions

2.a None

II. Operational Restrictions

1. The permittee shall burn only natural gas in this emission unit. The maximum sulfur content of the natural gas shall not exceed 2 grains per 100 standard cubic feet.
2. The maximum hourly fuel heat input for emissions unit B001 shall not exceed 93.2 MMBtu/hr. The maximum annual fuel heat input for emissions unit B001 shall not exceed 93,200 MMBtu, based upon a rolling, 12-month summation.

To ensure enforceability during the first 12 calendar months following the startup of this emissions unit, the permittee shall not exceed the monthly fuel heat input restrictions specified in the following table:

Month	Cumulative Fuel Heat Input (MMBtu)
1	69,341
1-2	93,200
1-3	93,200
1-4	93,200
1-5	93,200
1-6	93,200
1-7	93,200
1-8	93,200
1-9	93,200
1-10	93,200
1-11	93,200
1-12	93,200

After the first 12 calendar months following the startup of emissions unit B001, compliance with the annual fuel consumption restriction shall be based on a rolling, 12-month summation.

III. 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 monitor the sulfur content and gross calorific value of the fuel being fired in the emission unit. Fuel sampling and analysis shall be conducted according to the procedures and at the frequency specified by 40 CFR Part 75, Appendix D.

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3. The permittee shall maintain hourly records of the fuel quantity used (cubic feet) and the heat input (MMBtu/hr). During the first 12 calendar months of operation, the permittee shall also record the cumulative fuel heat input (MMBtu). Beginning after 12 months of operation of this emission unit, records of the rolling, 12-month summation of fuel heat input shall be maintained.

IV. Reporting Requirements

1. The permittee shall submit deviation (excursion) reports that identify each day when a fuel other than natural gas was burned in this emissions unit. Each report shall be submitted within 30 days after the deviation occurs.
2. The permittee shall submit deviation (excursion) reports that identify any record which shows that the sulfur content of the natural gas exceeded 2 grains per standard cubic foot. These reports are due by the date described in Part I - General Terms and Conditions of this permit under section (A)(2).
3. The permittee shall submit deviation (excursion) reports which identify all exceedances of the hourly fuel heat input limitation and the rolling, 12-month fuel heat input limitation and, for the first 12 calendar months of operation, all exceedances of the maximum allowable cumulative fuel heat input limitations. These reports are due by the date described in Part 1 - General Terms and Conditions of this permit under section (A)(2).
4. This emissions unit is subject to the applicable provisions of Subpart Dc of the New Source Performance Standards (NSPS) as promulgated by the United States Environmental Protection Agency, 40 CFR Part 60. The application and enforcement of these standards are delegated to the Ohio EPA. The requirements of 40 CFR Part 60 are also federally enforceable.

Pursuant to 40 CFR Part 60.7, 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. date of performance testing (if required, at least 30 days prior to testing).

Reports are to be sent to:

Ohio Environmental Protection Agency

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DAPC - Permit Management Unit

P. O. Box 163669

Columbus, Ohio 43216-3669

and

Ohio Environmental Protection Agency

Southeast District Office

Division of Air Pollution Control

2195 Front Street

Logan, Ohio 43138

5. PSD REQUIREMENTS

The source described in this Permit to Install is subject to the applicable provisions of the Prevention of Significant Deterioration (PSD) regulations as promulgated by the United States Environmental Protection Agency 40 CFR 52.21. The authority to apply and enforce the PSD regulations has been delegated to the Ohio Environmental Protection Agency. The terms and conditions of this permit and the requirements of the PSD regulations are also enforceable by the United States Environmental Protection Agency.

In accordance with 40 CFR 124.15, 124.19 and 124.20, the following shall apply: (1) the effective date of this permit shall be 30 days after the service of notice to any public commentors of the final decision to issue, modify, or revoke and re-issue the permit, unless the service of notice is by mail, in which case the effective date of the permit shall be 33 days after the service of notice; and (2) if an appeal is made to the Environmental Appeals Board of the United States Environmental Protection Agency, the effective date of the permit is suspended until such time as the appeal is resolved or denied.

Appeals will be addressed to:

United States Environmental Protection Agency

Environmental Appeals Board

401 M Street, SW (MC-113do)

Washington, DC 20460

V. Testing Requirements

1. Emission Limitation:

NO_x

0.05 lb/MMBtu, 4.66 lb/hr and 2.3 tons per year

Applicable Compliance Method:

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lb/MMBtu

Compliance shall be demonstrated using the AP-42 emission factor (0.05 lb NO_x /MMBtu).

lb/hr

Compliance shall be demonstrated by multiplying the AP-42 emission factor (0.05 lb NO_x /MMBtu) by the actual fuel heat input rate (MMBtu/hr)

tons per year

Compliance shall be demonstrated by multiplying the NO_x emission factor (0.05 lb NO_x/MMBtu) by the actual fuel heat input (MMBtu/yr) and dividing by 2000 lb/ton.

2. Emission Limitation:

SO₂

0.000584 lb/MMBtu, 0.054 lb/hr and 0.03 tons per year

Applicable Compliance Method:

lb/MMBtu

Compliance shall be demonstrated using the AP-42 emission factor (0.000584 lb SO₂ /MMBtu).

lb/hr

Compliance shall be demonstrated by multiplying the AP-42 emission factor (0.000584 lb SO₂ /MMBtu) by the actual fuel heat input rate (MMBtu/hr).

tons per year

Compliance shall be demonstrated by multiplying the SO₂ emission factor (0.000584 lb SO₂/MMBtu) by the actual fuel heat input (MMBtu/yr) and dividing by 2000 lb/ton.

3. Emission Limitation:

CO

0.10 lb/MMBtu, 9.32 lb/hr and 4.7 tons per year

Applicable Compliance Method:

lb/MMBtu

Compliance shall be demonstrated using the AP-42 emission factor (0.10 lb CO /MMBtu)

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lb/hr

Compliance shall be demonstrated by multiplying the AP-42 emission factor (0.10 lb CO /MMBtu) by the actual fuel heat input rate (MMBtu/hr).

tons per year

Compliance shall be demonstrated by multiplying the CO emission factor (0.10 lb CO /MMBtu) by the actual fuel heat input (MMBtu/yr) and dividing by 2000 lb/ton.

4. Emission Limitation:

VOC

0.00535 lb/MMBtu, 0.50 lb/hr and 0.25 tons per year

Applicable Compliance Method:

lb/MMBtu

Compliance shall be demonstrated using the AP-42 emission factor (0.00535 lb VOC /MMBtu).

lb/hr

Compliance shall be demonstrated by multiplying the AP-42 emission factor (0.00535 lb VOC /MMBtu) by the actual fuel heat input rate (MMBtu/hr).

tons per year

Compliance shall be demonstrated by multiplying the VOC emission factor (0.00535 lb VOC /MMBtu) by the actual fuel heat input (MMBtu/yr) and dividing by 2000 lb/ton.

5. Emission Limitation:

PM

0.00739 lb/MMBtu, 0.69 lb/hr and 0.34 ton per year

PSEG Waterford Energy LLC

Facility ID: 0684000213

PTI Application: 06-06206

Issued: To be entered upon final issuance

Applicable Compliance Method:

lb/MMBtu

Compliance shall be demonstrated using the AP-42 emission factor (0.00739 lb PM /MMBtu).

lb/hr

Compliance shall be demonstrated by multiplying the AP-42 emission factor (0.00739 lb PM /MMBtu) by the actual fuel heat input rate (MMBtu/hr).

tons per year

Compliance shall be demonstrated by multiplying the PM emission factor (0.00739 lb PM /MMBtu) by the actual fuel heat input (MMBtu/yr) and dividing by 2000 lb/ton.

6. Emission Limitation:

Tons per rolling 12 -month period shall not exceed :

NO_x - 2.3

SO₂ - 0.03

PM - 0.34

CO - 4.7

VOC - 0.25

Applicable Compliance Method:

Compliance with the annual emission limitations shall be determined by the record keeping required in Items A.III(2 and 3) and the AP-42 emission factors.

7. Emission Limitation:

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

Applicable Compliance Method:

If required, compliance shall be demonstrated by the method specified in OAC rule 3745-17-03(B)(1).

VI. Miscellaneous Requirements

None

PSEG Waterford Energy LLC

PTI Application: 06-06206

Issued: To be entered upon final issuance

Facility ID: 0684000213

B. State Only Enforceable Section

I. Applicable Emissions Limitations and/or Control Requirements

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

<u>Operations, Property, and/or Equipment</u>	<u>Applicable Rules/Requirements</u>	<u>Applicable Emissions Limitations/Control Measures</u>
B001 - 93.2 MMBtu/hr Natural Gas Fired Boiler		None

2. **Additional Terms and Conditions**

- 2.a None

II. Operational Restrictions

None

III. Monitoring and/or Recordkeeping Requirements

None

IV. Reporting Requirements

None

V. Testing Requirements

None

VI. Miscellaneous Requirements

None

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PTI A

Emissions Unit ID: P001

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Part III - SPECIAL TERMS AND CONDITIONS FOR SPECIFIC EMISSIONS UNIT(S)

A. State and Federally Enforceable Section

I. Applicable Emissions Limitations and/or Control Requirements

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

<u>Operations, Property, and/or Equipment</u>	
PHASE I	
P001 - GE 7FA Natural Gas Fired Dry Low NOx (DLN) Combustion Turbine	

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PTI A

Emissions Unit ID: P001

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PHASE II

Applicable Rules/Requirements

P001 - GE 7FA Natural Gas
Fired Dry Low NOx (DLN)
Combustion Turbine with
Duct Firing Operated in
Combined Cycle Mode and
Controlled by Selective
Catalytic Reduction (SCR)

OAC Rule 3745-31-05 (A)(3)

40 CFR part 60, Subpart GG

OAC rule 3745-18-06(F)

OAC Rule 3745-17-11 (B)(4)

OAC Rule 3745-17-07(A)

40 CFR 52.21

OAC rule 3745-31- (13) thru (20)

OAC Rule 3745-31-05 (A)(3)

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OAC Rule 3745-31-05 (A)(3)

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PTI A

Emissions Unit ID: P001

Issued: To be entered upon final issuance

	Applicable Emissions Limitations/Control Measures	TOTAL TONS PER YEAR - PHASE I (limited to 2,965,310 MMBtu/yr fuel heat input)
40 CFR part 60, Subpart GG		nitrogen oxides (NO _x) emissions shall not
40 CFR part 60, Subpart Da	The requirements of this rule also include compliance with the requirements of 40 CFR 60 Subpart GG, OAC rule 3745-18-06(F), 3745-17-11(B)(4), OAC rule 3745-17-07(A), 40 CFR 52.21, and OAC 3745-31- (13) thru (20).	exceed 54.4 tons per year
OAC rule 3745-18-06(F)		particulate matter (PM) emissions shall
OAC Rule 3745-17-11 (B)(4)		not exceed 15.3 tons per year
OAC Rule 3745-17-07(A)	PHASE I EMISSION LIMITS	sulfur dioxide (SO ₂) emissions shall not
40 CFR 52.21 OAC rule 3745-31- (13) thru (20)	nitrogen oxides (NO _x) emissions shall not exceed 9.0 ppmvd at 15% Oxygen and 64.0 lbs /hr	exceed 10.2 tons per year
	particulate matter (PM) emissions shall not exceed 18.0 lbs/hr	carbon monoxide (CO) emissions shall not exceed 28.1 tons per year
	sulfur dioxide (SO ₂) emissions shall not exceed 12.0 lbs/hr	volatile organic compounds (VOC) emissions shall not exceed 2.7 tons per year
40 CFR Part 75	carbon monoxide (CO) emissions shall not exceed 9.0 ppmvd and 33.0 lbs/hr	formaldehyde emissions shall not exceed 0.16 tons per year
OAC rule 3745-103		sulfuric acid emissions shall not exceed 0.41 tons per year
	volatile organic compounds (VOC) emissions shall not exceed 3.2 lbs/hr	Visible particulate emissions from any stack shall not exceed 10 percent opacity as a six-minute average
	formaldehyde emissions shall not exceed 0.19 lbs/hr	Operational restriction, see Item A.II.1.
	sulfuric acid emissions shall not exceed 0.48 lbs/hr	See Item A.I.2.b.
		See Item A.I.2.a.
		See Item A.I.2.a.
		See Item A.I.2.a.
		Operational restriction, see Item A.II.4.

Emissions Unit ID: P001

<p>The tons per rolling 12-month period shall not exceed :</p>	<p>ammonia (NH3) emissions shall not exceed 26.0 lbs/hr</p>	<p>30.6 lbs/hr formaldehyde emissions shall not exceed 0.21 lbs/hr</p>
<p>NOx - 54.4 SO2 - 10.2 PM - 15.3 CO - 28.1 VOC - 2.7</p>	<p>formaldehyde emissions shall not exceed 0.19 lbs/hr</p>	<p>sulfuric acid emissions shall not exceed 0.56 lbs/hr</p>
<p>EMISSION LIMITS WITHOUT DUCT BURNER FIRING - PHASE II</p>	<p>EMISSION LIMITS WITH DUCT BURNER FIRING - PHASE II</p>	<p>STARTUP AND SHUTDOWN EMISSIONS - PHASE II (see Item A.II.3.)</p>
<p>The requirements of this rule also include compliance with the requirements of 40 CFR 60 Subpart GG, OAC rule 3745-18-06(F), 3745-17-11(B)(4), OAC rule 3745-17-07(A), 40 CFR 52.21, and OAC 3745-31-(13) thru (20).</p>	<p>The requirements of this rule also include compliance with the requirements of 40 CFR 60 Subpart Da and GG, OAC rule 3745-18-06(F), 3745-17-11(B)(4), OAC rule 3745-17-07(A), 40 CFR 52.21, and OAC 3745-31-(13) thru (20).</p>	<p>nitrogen oxides (NO_x) emissions shall not exceed 27.4 tons per year carbon monoxide (CO) emissions shall not exceed 150.1 tons per year volatile organic compounds (VOC) emissions shall not exceed 10.6 tons per year TOTAL TONS PER YEAR - PHASE II (duct burner limited to 1.44 x 10⁶ MMBtu per year fuel heat input)</p>
<p>nitrogen oxides (NO_x) emissions shall not exceed 3.5 ppmvd at 15% Oxygen and 25.0 lbs /hr</p>	<p>nitrogen oxides (NO_x) emissions shall not exceed 3.5 ppmvd at 15% Oxygen and 30.0 lbs /hr</p>	<p>nitrogen oxides (NO_x) emissions shall not exceed 146.9 tons per year</p>
<p>particulate matter (PM) emissions shall not exceed 21.0 lbs/hr</p>	<p>particulate matter (PM) emissions shall not exceed 25.0 lbs/hr</p>	<p>particulate matter (PM) emissions shall not exceed 100.0 tons per year</p>
<p>sulfur dioxide (SO₂) emissions shall not exceed 12.0 lbs/hr</p>	<p>sulfur dioxide (SO₂) emissions shall not exceed 14.0 lbs/hr</p>	<p>sulfur dioxide (SO₂) emissions shall not exceed 56.6 tons per year</p>
<p>carbon monoxide (CO) emissions shall not exceed 9.0 ppmvd and 33.0 lbs/hr</p>	<p>carbon monoxide (CO) emissions shall not exceed 15.0 ppmvd and 69.0 lbs/hr</p>	<p>carbon monoxide (CO) emissions shall not exceed 366.6 tons per year</p>
<p>volatile organic compounds (VOC) emissions shall not exceed 3.2 lbs/hr</p>	<p>volatile organic compounds (VOC) emissions shall not exceed 6.8 lbs/hr</p>	<p>volatile organic compounds (VOC) emissions shall not exceed 31.8 tons per year ammonia (NH3) emissions shall not exceed</p>

PSEG

PTI A

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123.1 tons per year | See Item A.I.2.c.

formaldehyde emissions shall not exceed
0.87 tons per year

sulfuric acid emissions shall not exceed
2.3 tons per year

Visible particulate emissions from any stack shall not exceed 10 percent opacity as a six-minute average

Operational restriction, see Item A.II.1.

See Item A.I.2.b.

See Item A.I.2.a.

See Item A.I.2.a.

See Item A.I.2.a.

See Item A.I.2.a.

Operational restriction, see Item A.II.5.

The tons per rolling 12-month period shall not exceed :

NO_x - 146.9

SO₂ - 56.6

PM - 100.0

CO - 366.6

VOC - 31.8

See Item A.I.2.c.

Emissions Unit ID: P001

2. Additional Terms and Conditions

- 2.a** The emissions limit based on this applicable rule is equivalent to or less stringent than the limit established pursuant to OAC rule 3745-31-05.
- 2.b** The emissions limits based on this applicable rule are equivalent to or less stringent than the limits established pursuant to OAC rule 3745-31-05. Except as provided for in the terms and conditions in this permit, the permittee is not exempt from meeting any additional requirements of 40 CFR Part 60, Subpart GG.
- 2.c** If the permittee is subject to the requirements of 40 CFR Part 75 concerning acid rain, the permittee shall ensure that any effected 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.

II. Operational Restrictions

- 1.** The permittee shall burn only natural gas in this emissions unit. The maximum sulfur content of the natural gas shall not exceed 2 grains per 100 standard cubic feet.
- 2.** The permit to install for this emissions unit (P001) was evaluated based on actual materials (typically coatings and clean up materials) and the design parameters of the emissions unit's exhaust system, as specified by the permittee in the air permit to install application. The Ohio EPA's "Review of New Sources of Air Toxic Emissions" policy (Air Toxic Policy) was applied for each pollutant emitted by this emissions unit using data from the permit to install application and the SCREEN 3.0 model (or other Ohio EPA approved model). The predicted 1-hour maximum ground-level concentration to the Maximum Acceptable Ground-Level Concentration (MAGLC). The following summarizes the results of the modeling:

Pollutant: Formaldehyde

TLV (ug/m³): 273 (Converted from the STEL)

Maximum Hourly Emission Rate (lbs/hr): 0.70*

Predicted 1-Hour Maximum Ground-Level Concentration (ug/m³): 1.16MAGLC (ug/m³): 3.68

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Pollutant: Sulfuric Acid

TLV (ug/m3): 1000

Maximum Hourly Emission Rate (lbs/hr): 1.68*

Predicted 1-Hour Maximum Ground-Level Concentration (ug/m3): 1.74

MAGLC (ug/m3): 10.0

Pollutant: Ammonia

TLV (ug/m3): 17000

Maximum Hourly Emission Rate (lbs/hr): 91.8*

Predicted 1-Hour Maximum Ground-Level Concentration (ug/m3): 94.7

MAGLC (ug/m3): 180

* This was modeled for emissions units P001, P002 and P003 combined.

Physical changes to or changes in the method of operation of the emissions unit after its installation or modification could affect the parameters used to determine whether or not the "Air Toxic Policy" is satisfied. Consequently, prior to making a change that could impact such parameters, the permittee shall conduct an evaluation to determine that the "Air Toxic Policy" will still be satisfied. If, upon evaluation, the permittee determines that the "Air Toxic Policy" will not be satisfied, the permittee will not make the change. Changes that can affect the parameters used in applying the "Air Toxic Policy" include 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 compound with a lower Threshold Limit Value (TLV), as indicated in the most recent version of the handbook entitled "American Conference of Governmental Industrial Hygienists (ACGIH)," than the lowest TLV value specified in the above table;
- b. changes in the composition of the materials, or use of new materials, that would result in an increase in emissions of any pollutant with a listed TLV that was proposed in the application and modeled; and
- c. physical changes to the emissions unit or its exhaust parameters (e.g., increased/decreased exhaust flow, changes in stack height, changes in stack diameter, etc.).

If the permittee determines that the "Air Toxic Policy" 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(VV)(1)(a)(ii), and a modification of the existing permit to install will not be required. If the change(s) is (are) defined as a modification under other provisions of the modification definition (other than (VV)(1)(a)(ii)), then the permittee shall obtain a final permit to install prior

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to the change.

The permittee shall collect, record and retain the following information when it conducts evaluations to determine that the changed emissions unit will still satisfy the "Air Toxic Policy:"

- a. a description of the parameters changed (composition of materials, new pollutants emitted, change in stack/exhaust parameters, etc.);
 - b. documentation of its evaluation and determination that the changed emissions unit still satisfies the "Air Toxic Policy"; and
 - c. where computer modeling is performed, a copy of the resulting computer model runs that show the results of the application of the "Air Toxic Policy" for the change.
3. Startup and shutdown shall be defined as when the unit is running at less than 50% of electric load, but under no circumstances shall startups exceed 250 minutes in duration and shutdowns shall not exceed 2 hours in duration. The total of all hot, warm and cold startups (as defined below) and shutdowns shall be limited to 286 cycles (one startup and one shutdown) per year.

Hot Start - startup occurs within eight (8) hours after plant shutdown

Warm Start - startup occurs between eight (8) hours to seventy-two (72) hours after a plant shutdown

Cold Start - startup occurs more than seventy-two (72) hours after a plant shutdown

Each startup and shutdown shall be limited to the following:

Pollutant Total lbs / Cycle

NOx	418
CO	1127
VOC	97

During Phase I, startup / shutdown emissions are not anticipated to increase above levels defined during normal operation of the simple cycle turbines.

4. During Phase I, the maximum hourly fuel heat input for emission unit P001 shall not exceed 1744.3 MMBtu/hr and the annual maximum fuel heat input shall not exceed 2,965,310 MMBtu per year based upon a rolling, 12-month summation. Due to this operational restriction, CEMs will not be installed until Phase II.

To ensure enforceability during the first 12 calendar months following the startup of this emissions unit, the permittee shall not exceed the monthly heat input restrictions specified in the

following table:

Month	Cumulative Fuel Heat Input (MMBtu)
1	1,297,759
1-2	2,595,518
1-3	2,965,310
1-4	2,965,310
1-5	2,965,310
1-6	2,965,310
1-7	2,965,310
1-8	2,965,310
1-9	2,965,310
1-10	2,965,310
1-11	2,965,310
1-12	2,965,310

If Phase I extends beyond the first 12 calendar months following the startup of emissions unit P001, compliance with the annual fuel heat input restriction shall be based on a rolling, 12-month summation.

5. During Phase II, the maximum hourly combustion turbine fuel heat input shall not exceed 1744.3 MMBtu/hr.

The maximum hourly fuel heat input of the duct burner for emission unit P001 shall not exceed 360 MMBtu/hr. The maximum annual fuel heat input of the duct burner shall not exceed 1.44×10^6 MMBtu per year, based upon a rolling, 12-month summation.

To ensure enforceability during the first 12 calendar months following the startup of the duct burner, the permittee shall not exceed the monthly duct burner fuel heat input restrictions specified in the following table:

Month	Cumulative Fuel Heat Input (MMBtu)
1	0.26784×10^6
1-2	0.53568×10^6
1-3	0.80352×10^6
1-4	1.07136×10^6
1-5	1.44×10^6
1-6	1.44×10^6
1-7	1.44×10^6
1-8	1.44×10^6
1-9	1.44×10^6

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1-10	1.44 x 10 ⁶
1-11	1.44 x 10 ⁶
1-12	1.44 x 10 ⁶

After the first 12 calendar months following the startup of the duct burner, compliance with the annual fuel heat input restriction shall be based on a rolling, 12-month summation.

6. Continuous NO_x Monitoring - Certified Systems
Statement of Certification (Phase II Only)

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 6 for approval by the Ohio EPA, Central Office.

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 such emissions unit, the permittee shall conduct certification tests of such equipment pursuant to the appropriate sections of ORC section 3704.03(I), 40 CFR Part 60, Appendix B, Performance Specification 6, and 40 CFR Part 75. Personnel from 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. In accordance with OAC rule 3745-15-04, all copies of the test results shall be submitted to the appropriate Ohio EPA District Office or local air agency within 30 days after the test is completed. Copies of the test results shall be sent to the appropriate Ohio EPA District Office or local air agency and the Ohio EPA, Central Office. Certification of the continuous NO_x monitoring system shall be granted upon determination by the Ohio EPA, Central Office that the system meets all requirements of the appropriate sections of ORC section 3704.03(I), 40 CFR Part 60, Appendix B, Performance Specification 6, and 40 CFR Part 75.

7. Within 180 days of the effective date of this permit, the permittee shall develop a written quality assurance/quality control plan for the continuous NO_x monitoring system designed to ensure continuous valid and representative readings of NO_x emissions in units of the applicable standard. The plan shall follow the requirements of the appropriate sections 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 NO_x monitoring system must be kept on site and available for inspection during regular office hours.

8. Continuous CO Monitoring - Certified Systems
Statement of Certification (Phase II Only)

Prior to the installation of the continuous CO monitoring system, the permittee shall submit

Emissions Unit ID: P001

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 and 6 for approval by the Ohio EPA, Central Office.

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 such emissions unit, the permittee shall conduct certification tests of the continuous CO monitoring system pursuant to ORC section 3704.03(I), 40 CFR Part 60, Appendix B, Performance Specification 4 and 6. Personnel from 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. In accordance with OAC rule 3745-15-04, all copies of the test results shall be submitted to the appropriate Ohio EPA District Office or local air agency within 30 days after the test is completed. Copies of the test results shall be sent to the appropriate Ohio EPA District Office or local air agency and the Ohio EPA, Central Office. Certification of the continuous CO monitoring system shall be granted upon determination by the Ohio EPA Central Office that the system meets all requirements of ORC section 3704.03(I) and 40 CFR Part 60, Appendix B, Performance Specification 4 and 6.

9. Within 180 days of the effective date of this permit, the permittee shall develop a written quality assurance/quality control plan for the continuous CO monitoring system designed to ensure continuous valid and representative readings of CO. 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 CO monitoring system must be kept on site and available for inspection during regular office hours.

10. Continuous O₂ or CO₂ Monitoring - Certified Systems
Statement of Certification (Phase II Only)

Prior to the installation of the continuous O₂ or CO₂ 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 3 for approval by the Ohio EPA, Central Office.

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 such emissions unit, the permittee shall conduct certification tests of such equipment pursuant to the appropriate sections of ORC section 3704.03(I), 40 CFR Part 60, Appendix B, Performance Specification 3, and 40 CFR Part 75. Personnel from 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. In accordance with OAC rule 3745-15-04, all copies of the test results shall be submitted to the appropriate Ohio EPA District Office or local air agency within 30 days after the test is completed. Copies of the test results shall be sent to the appropriate Ohio EPA District Office or local air agency and the Ohio EPA, Central Office.

Certification of the continuous O₂ or CO₂ monitoring system shall be granted upon determination by the Ohio EPA, Central Office that the system meets all requirements of the appropriate

Emissions Unit ID: P001

sections of ORC section 3704.03(I), 40 CFR Part 60, Appendix B, Performance Specification 3, and 40 CFR Part 75.

11. Within 180 days of the effective date of this permit, the permittee shall develop a written quality assurance/quality control plan for the continuous O₂ or CO₂ monitoring system designed to ensure continuous valid and representative readings of O₂ or CO₂ emissions in units of the applicable standard. The plan shall follow the requirements of the appropriate sections 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 O₂ or CO₂ monitoring system must be kept on site and available for inspection during regular office hours.

III. Monitoring and/or Recordkeeping Requirements

1. **Phase I and II:** The permittee shall maintain monthly records of the following information for each emissions unit:
 - a. The natural gas usage rate for each month (in standard cubic feet).
 - b. Hours of operation of the combustion turbine
 - c. Hours of operation of the duct burner (Phase II)
 - d. Monthly fuel heat input (MMBtu) to the combustion turbine
 - e. Monthly fuel heat input (MMBtu) to the duct burner (Phase II)
 - f. During the first 12 calendar months of operation, the permittee shall also record the cumulative fuel heat input to each combustion turbine and duct burner. Beginning after 12 months of operation of the emission unit, records of the rolling, 12-month summation of fuel heat input shall be maintained.
2. **Phase I and II:** The permittee shall maintain hourly records of the following information for each emissions unit:
 - a. Hourly fuel heat input (MMBtu) to the combustion turbine
 - b. Hourly fuel heat input (MMBtu) to the duct burner (Phase II)
3. **Phase II:** The permittee shall operate and maintain existing equipment to continuously monitor and record NO_x from this emissions unit in units of the applicable standard. Such continuous monitoring and recording equipment shall comply with the requirements of the appropriate sections specified in 40 CFR Part 60.13 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, parts per million NO_x on an instantaneous (one-minute) basis, emissions of NO_x in units of the applicable standard in the appropriate averaging period (e.g.,

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hourly, hourly rolling, 3-hour, daily, 30-day rolling, etc.), results of daily zero/span calibration checks, and magnitude of manual calibration adjustments.

4. **Phase II:** The permittee shall operate and maintain equipment to continuously monitor and record CO from this emissions unit in units of the applicable standard. Such continuous monitoring and recording equipment shall comply with the requirements specified in 40 CFR Part 60.13 .

The permittee shall maintain records of all data obtained by the continuous CO monitoring system including, but not limited to, parts per million CO on an instantaneous (one minute) basis, emissions of CO in units of the applicable standard in the appropriate averaging period (e.g., hourly, hourly rolling, 3-hour, daily, 30-day rolling, annual, etc.), results of daily zero/span calibration checks, and magnitude of manual calibration adjustments.

5. **Phase II:** The permittee shall operate and maintain equipment to continuously monitor and record O₂ or CO₂ from this emissions unit in percent O₂ or CO₂. Such continuous monitoring and recording equipment shall comply with the requirements in the appropriate sections specified in 40 CFR Part 60.13 and 40 CFR Part 75.

The permittee shall maintain records of all data obtained by the continuous O₂ or CO₂ monitoring system including, but not limited to, percent O₂ or CO₂ on an instantaneous (one-minute) basis, emissions of O₂ or CO₂ in units of the applicable standard in the appropriate averaging period (e.g., hourly, hourly rolling, 3-hour, daily, 30-day rolling, etc.), results of daily zero/span calibration checks, and magnitude of manual calibration adjustments.

6. **Phase II:** The permittee shall install, calibrate, operate, and maintain continuous monitoring systems to monitor and record the average hourly fuel consumption of the combustion turbine and duct burner. The fuel flow monitoring systems comply with the requirements of 40 CFR Part 75, Appendix D.
7. **Phase I and II:** The permittee shall monitor the sulfur content and gross calorific value of the fuel being fired in the combustion turbine and duct burner. Fuel sampling and analysis shall be conducted according to the procedures and at the frequency specified by 40 CFR Part 75, Appendix D.
8. **Phase II:** The permittee shall determine the hourly heat input rate to the combustion turbine and duct burner from the fuel flow rate as determined in term A.III.6 and fuel gross calorific value as determined in term A.III.7. The heat input rate shall be calculated in accordance with the procedures in Section 5 of 40 CFR Part 75, Appendix F.
9. **Phase II:** The permittee shall maintain records of the following information for each emissions

Emissions Unit ID: P001

unit:

- a. Number of startups, type of startup (hot, warm or cold) and the duration of each startup.
- b. Number of shutdowns, and the duration of each shutdown.
- c. During the first 12 calendar months of operation, the permittee shall also record the cumulative number of startups and shutdowns and the associated startup and shutdown emissions for each emissions unit calculated as described in Item V.2.(a,d and e). Beginning after 12 months of operation of the emission unit, records of the rolling, 12-month summation of the number of startups and shutdowns and the associated startup and shutdown emissions shall be maintained.

- 10. Phase II:** The permittee shall maintain hourly records of the following information for this emissions unit:

in lb(s)/hr emissions rate for NO_x and CO as obtained from terms III.3. and III.4. based upon an hourly averaging period as allowed in the appropriate sections of 40 CFR Part 60.

- 11. Phase II:** The permittee shall maintain monthly records of the following information for this emissions unit:

- a. the operating hours;
- b. during the first 12 calendar months of operation, the permittee shall record the cumulative operating hours for each calendar month; and
- c. beginning after the first 12 calendar months of operation, the rolling, 12-month summation of the operating hours.
- d. during the first 12 calendar months of operation, the cumulative NO_x and CO emissions, in tons (obtained by summing the values recorded under condition III.10. and dividing by 2000); and
- e. beginning after the first 12 calendar months of operation, the rolling, 12-month NO_x and CO emissions, in tons

12. PSD REQUIREMENTS

The source described in this Permit to Install is subject to the applicable provisions of the Prevention of Significant Deterioration (PSD) regulations as promulgated by the United States Environmental Protection Agency 40 CFR 52.21. The authority to apply and enforce the PSD regulations has been delegated to the Ohio Environmental Protection Agency. The terms and conditions of this permit and the requirements of the PSD regulations are also enforceable by the United States Environmental Protection Agency.

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In accordance with 40 CFR 124.15, 124.19 and 124.20, the following shall apply: (1) the effective date of this permit shall be 30 days after the service of notice to any public commentors of the final decision to issue, modify, or revoke and re-issue the permit, unless the service of notice is by mail, in which case the effective date of the permit shall be 33 days after the service of notice; and (2) if an appeal is made to the Environmental Appeals Board of the United States Environmental Protection Agency, the effective date of the permit is suspended until such time as the appeal is resolved or denied.

Appeals will be addressed to:
United States Environmental Protection Agency
Environmental Appeals Board
401 M Street, SW (MC-113do)
Washington, DC 20460

IV. Reporting Requirements - Phase I and II

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 occurred.
2. The permittee shall submit deviation (excursion) reports which identify all exceedances of the Phase I hourly and rolling, 12-month allowable combustion turbine fuel heat input levels and, for the first 12 calendar months of operation, all exceedances of the maximum allowable cumulative combustion turbine heat input levels. These reports are due by the date described in Part 1 - General Terms and Conditions of this permit under section (A)(2).
3. The permittee shall submit deviation (excursion) reports which identify all exceedances of the Phase II hourly combustion turbine fuel heat input limitation and the hourly and rolling, 12-month duct burner fuel heat input limitations and, for the first 12 calendar months of operation, all exceedances of the maximum cumulative duct burner fuel heat input levels. These reports are due by the date described in Part 1 - General Terms and Conditions of this permit under section (A)(2).
4. Pursuant to OAC rules 3745-15-04, 3745-35-02, and ORC sections 3704.03(I) and 3704.031 and 40 CFR Parts 60.7 and 60.13(h), 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 the date, commencement and completion times, duration, magnitude, reason (if known), and corrective actions taken (if any), of all instances of NO_x values in excess of the applicable limits specified in 40 CFR Part 76 and any limitations specified in the terms and conditions of this permit or variance. These reports shall also contain the total NO_x emissions for the calendar quarter (in tons).

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 any continuous NO_x monitoring system downtime while the emissions unit was on line (date, time, duration and reason) along with any corrective action(s) taken. The permittee shall provide the emissions unit operating time during the reporting period and the date, time, reason and corrective action(s) taken for each time period of emissions unit and control equipment malfunctions. The total operating time of the emissions unit and the total operating time of the analyzer while the emissions unit was on line shall also be included in the quarterly report.

If there are no excess emissions during the calendar quarter, the permittee shall submit a statement to that effect along with the emissions unit operating time during the reporting period and the date, time, reason, and corrective action(s) taken for each time period of emissions unit, control equipment, and/or monitoring system malfunctions. The total operating time of the emissions unit and the total operating time of the analyzer while the emissions unit was on line also shall be included in the quarterly report. These quarterly excess emission reports shall be submitted by January 30, April 30, July 30, and October 30 of each year and shall address the data obtained during the previous calendar quarter.

5. Pursuant to OAC rules 3745-15-04, 3745-35-02, and ORC sections 3704.03(I) and 3704.031, the permittee shall submit a summary of the excess emission report pursuant to 40 CFR Part 60.7. The summary shall be submitted to the appropriate Ohio EPA District Office or local air agency within 30 days following the end of each calendar quarter in a manner prescribed by the Director.
6. Pursuant to OAC rules 3745-15-04, 3745-35-02, and ORC sections 3704.03(I) and 3704.031 and 40 CFR Parts 60.7 and 60.13(h), 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 the date, commencement and completion times, duration, magnitude, reason (if known), and corrective actions taken (if any) of all instances of CO values in excess of any applicable limitation(s) specified in OAC Chapter 3745-21, 40 CFR Part 60, or any limitation(s) specified in the terms and conditions of this permit, in units of the standard. These reports shall also contain the total CO emissions for the calendar quarter (in tons).

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 any continuous CO monitoring system downtime while the emissions unit was on line (date, time, duration and reason) along with any corrective action(s) taken. The permittee shall provide the emissions unit operating time during the reporting period and the date, time, reason and corrective action(s) taken for each time period of emissions unit and control equipment malfunctions. The total operating time of the emissions unit and the total operating time of the analyzer while the emissions unit was on line shall also be included in the quarterly report.

If there are no excess emissions during the calendar quarter, the permittee shall submit a statement to that effect along with the emissions unit operating time during the reporting period and the date, time, reason, and corrective action(s) taken for each time period of emissions unit, control equipment, and/or monitoring system malfunctions. The total operating time of the emissions unit

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and the total operating time of the analyzer while the emissions unit was on line shall also be included in the quarterly report. These quarterly excess emission reports shall be submitted by January 30, April 30, July 30, and October 30 of each year and shall address the data obtained during the previous calendar quarter.

7. Pursuant to 40 CFR Parts 60.7 and 60.13(h), 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 continuous O₂ or CO₂ monitoring system downtime while the emissions unit was on line (date, time, duration and reason) along with any corrective action(s) taken. The permittee shall provide the emissions unit operating time during the reporting period and the date, time, reason and corrective action(s) taken for each time period of emissions unit malfunctions. The total operating time of the emissions unit and the total operating time of the analyzer while the emissions unit was on line shall be included in the quarterly report. These quarterly reports shall be submitted by January 30, April 30, July 30, and October 30 of each year and shall address the data obtained during the previous calendar quarter.
8. The permittee shall submit deviation (excursion) reports that identify any record which shows that the sulfur content of the natural gas exceeded 2 grains per standard cubic foot. These reports are due by the date described in Part I - General Terms and Conditions of this permit under section (A)(2).
9. The permittee shall submit deviation (excursion) reports that identify each time when this emissions unit was not in compliance with the startup and shutdown requirements of condition II.3. above or the annual startup and shutdown emissions limitations calculated as described in Item V.2.(a,d and e). These reports are due by the date described in Part I - General Terms and Conditions of this permit under section (A)(2).
10. In lieu of the excess emissions reports required under 40 CFR Part 60.334, the permittee shall submit excess emissions reports for emissions unit P001 in accordance with this permit.
11. This emissions unit is subject to the applicable provisions of Subpart Da. and GG 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.

Pursuant to 40 CFR Part 60.7, 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. date of performance testing (if required, at least 30 days prior to testing).

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Reports are to be sent to:

Ohio Environmental Protection Agency

DAPC - Permit Management Unit

P. O. Box 163669

Columbus, Ohio 43216-3669

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and

Ohio Environmental Protection Agency
Southeast District Office
Division of Air Pollution Control
2195 Front Street
Logan, Ohio 43138

V. Testing Requirements - Phase I and II

1. 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 such emissions unit.
 - b. The emission testing shall be conducted to demonstrate compliance with the NO_x and CO outlet concentration, and the mass emissions limitations for NO_x,* CO, Formaldehyde, VOC, PM and visible emission limitations.
 - c. The following test method(s) shall be employed to demonstrate compliance with the above emissions limitations: for NO_x, Method 20 of 40 CFR Part 60, Appendix A; for PM, Method 5 of 40 CFR Part 60, Appendix A; for visible emission limitations, Method 9 of 40 CFR Part 60, Appendix A; for Formaldehyde, SW-846 Method 0011; for VOC Method 25 of 40 CFR Part 60, Appendix A; and for CO Method 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.
 - d. The testing shall be conducted while the emissions unit is operating at or near its maximum capacity with and without duct burner firing, unless otherwise specified or approved by Ohio EPA or local air agency.
 - e. Not later than 30 days prior to the proposed test date(s), the permittee shall submit an "Intent to Test" notification to the Ohio EPA, Southeast District Office. The "Intent to Test" notification shall describe in detail the proposed test methods and procedures, the emissions unit operating parameters, the time(s) and date(s) of the test(s), and the person(s) who will be conducting the test(s). Failure to submit such notification for review and approval prior to the test(s) may result in the Ohio EPA, Southeast District Office refusal to accept the results of the emission test(s).

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- f. Personnel from the Ohio EPA, Southeast District Office shall be permitted to witness the test(s), examine the testing equipment, and acquire data and information necessary to ensure that the operation of the emissions unit and the testing procedures provide a valid characterization of the emissions from the emissions unit and/or the performance of the control equipment.
- g. A comprehensive written report on the results of the emissions test(s) shall be signed by the person or persons responsible for the tests and submitted to the Ohio EPA, Southeast District Office within 30 days following completion of the test(s). The permittee may request additional time for the submittal of the written report, where warranted, with prior approval from the Ohio EPA, Southeast District Office.

* Using the test methods and procedures required under 40 CFR Part 60.335.

- 2. Compliance with the allowable emission limitations in this permit shall be determined according to the following methods:

- a. Emission Limitation - NO_x

Phase I:

NO_x emissions shall not exceed 9.0 ppmvd at 15% Oxygen
64.0 lbs/hr
54.4 tons per year

Phase II:

NO_x emissions shall not exceed 3.5 ppmvd at 15% Oxygen
25.0 lbs/hr without duct burner firing
30.0 lbs/hr with duct burner firing
146.9 tons per year, which includes 27.4 tpy for startups and shutdowns

Applicable Compliance Method

Initial compliance with the allowable outlet concentration, and the lbs/hr emission limitations shall be demonstrated by the performance testing as described in condition V.1. and continual compliance with those limitations shall be demonstrated by the use of the CEM (Phase II) in condition III.3. based upon an hourly averaging period as allowed in 40 CFR Part 60. During Phase I, compliance with the annual emission limitation shall be determined by multiplying the emission factor supplied by the permittee (0.0367 lb NO_x/MMBtu) by the actual fuel heat input (MMBtu/yr) and dividing by 2000 lbs/ton.

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During Phase II, compliance with the annual emission limitation shall be determined by summing the emissions demonstrated through the record keeping required in condition III.11. (CEM measured emissions) with the start-up and shut-down emissions. The annual emissions associated with start-up and shut-down shall be determined using the record keeping required in condition III.9. and the following calculation.

Annual Startup / Shutdown Emissions (tpy) = [(# of cold starts x 418 lbs. per start) + (# of warm starts x 144 lbs. per start) + (# of hot starts x 114 lbs. per start)] / 2000 lbs. per ton

b. Emission Limitation - PM

PM emissions shall not exceed:

Phase I:

18.0 lbs/hr
15.3 tons per year

Phase II:

21.0 lbs/hr without duct burner firing
25.0 lbs/hr with duct burner firing
100.0 tons per year

Applicable Compliance Method

Compliance with the lbs/hr emission limitations shall be demonstrated by the performance testing as described in condition V.1. Compliance with the annual emission limitation shall be determined by multiplying the emission rates (in lb/MMBtu as determined by taking the allowable emission rate in lb/hr divided by the maximum heat input in MMBtu/hr) for operation with and without the duct burner firing by the associated actual fuel heat input (MMBtu/yr), dividing by 2000 lbs/ton and summing the values.

c. Emission Limitation - SO₂

SO₂ emissions shall not exceed:

Phase I:

12.0 lbs/hr
10.2 tons per year

Phase II:

12.0 lbs/hr without duct burner firing
14.0 lbs/hr with duct burner firing
56.6 tons per year

Applicable Compliance Method

Compliance with the hourly emission limitation shall be determined by the record keeping required in condition III. 1., 2., and 8. If required, the permittee shall demonstrate compliance by emission testing in accordance with approved US EPA test methods. Compliance with the annual emission limitation shall be determined by multiplying the

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emission factor supplied by the permittee (0.0069 lb/MMBtu without duct burner firing; 0.00665 lb/MMBtu with duct burner firing) by the associated actual fuel heat input (MMBtu/yr), dividing by 2000 lbs/ton and summing the values.

d. Emission Limitation - VOC

VOC emissions shall not exceed:

Phase I:

3.2 lbs/hr
2.7 tons per year

Phase II:

3.2 lbs/hr without duct burner firing
6.8 lbs/hr with duct burner firing
31.8 tons per year, which includes 10.6 tpy for startups and shutdowns

Applicable Compliance Method

Compliance with the lbs/hr limitations shall be demonstrated by the performance testing described in condition V.1. Compliance with the annual emission limitation shall be determined by multiplying the emission rates (in lb/MMBtu as determined by taking the allowable emission rate in lb/hr divided by the maximum heat input in MMBtu/hr) for operation with and without the duct burner firing by the associated actual fuel heat input (MMBtu/yr), dividing by 2000 lbs/ton, summing the values and adding the start-up and shut-down emissions. The annual emissions associated with start-up and shut-down shall be determined using the record keeping required in condition III.9. and the following calculation.

$$\text{Annual Startup / Shutdown Emissions (tpy)} = [(\# \text{ of cold starts} \times 97 \text{ lbs. per start}) + (\# \text{ of warm starts} \times 74 \text{ lbs. per start}) + (\# \text{ of hot starts} \times 34 \text{ lbs. per start})] / 2000 \text{ lbs. per ton}$$
e. Emission Limitation - CO

CO emissions shall not exceed:

Phase I:

9.0 ppmvd

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33.0 lbs/hr

28.1 tons per year

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Phase II:

9.0 ppmvd without duct burner firing
 15.0 ppmvd with duct burner firing
 33.0 lbs/hr without duct burner firing
 69.0 lbs/hr with duct burner firing
 366.6 tons per year, which includes 150.1 tpy for startups and shutdowns

Applicable Compliance Method

Initial compliance with the allowable outlet concentration, and the lbs/hr emission limitations shall be demonstrated by the performance testing as described in condition V.1 and continual compliance with those limitations shall be demonstrated by the use of the CEM (Phase II) in condition III.4. based upon an hourly averaging period as allowed in 40 CFR Part 60. During Phase I, compliance with the annual emission limitation shall be determined by multiplying the emission factor supplied by the permittee (0.01892 lb CO/MMBtu) by the actual fuel heat input (MMBtu/yr) and dividing by 2000 lbs/ton. During Phase II, compliance with the annual emission limitation shall be determined by summing the emissions demonstrated through the record keeping required in condition III.11(CEM measured emissions) with the start-up and shut-down emissions. The annual emissions associated with start-up and shut-down shall be determined using the record keeping required in condition III.9. and the following calculation.

Annual Startup / Shutdown Emissions (tpy) = [(# of cold starts x 1101 lbs. per start) + (# of warm starts x 1127 lbs. per start) + (# of hot starts x 349 lbs. per start)] / 2000 lbs. per ton

f. Emission Limitation - ammonia (NH₃)

ammonia (NH₃) emissions shall not exceed:

Phase II:

26.0 lbs/hr without duct burner firing
 30.6 lbs/hr with duct burner firing
 123.1 tons per year

Applicable Compliance Method

Compliance with the lbs/hr emission limitation shall be demonstrated by multiplying the

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emission factor provided by the permittee (0.0149 lb ammonia/MMBtu without duct burner firing; 0.01454 lb ammonia/MMBtu with duct burner firing) by the associated fuel heat input (MMBtu/hr). If required, the permittee shall demonstrate compliance by emission testing in accordance with approved US EPA test methods. Compliance with the annual emission limitation shall be determined by multiplying the aforementioned emission rate (lb/MMBtu) by the associated total actual fuel heat input (MMBtu/yr), dividing by 2000 lbs/ton and summing the values.

g. Emission Limitation - formaldehyde

formaldehyde emissions shall not exceed:

Phase I:

0.19 lbs/hr
0.16 tons per year

Phase II:

0.19 lbs/hr without duct burner firing
0.21 lbs/hr with duct burner firing
0.87 tons per year

Applicable Compliance Method

Compliance with the lbs/hr emission limitations shall be demonstrated by the performance testing described in condition V.1. Compliance with the annual emission limitation shall be determined by multiplying the emission rates (in lb/MMBtu as determined by taking the allowable emission rate in lb/hr divided by the maximum heat input in MMBtu/hr) for operation with and without the duct burner firing by the associated actual fuel heat input (MMBtu/yr), dividing by 2000 lbs/ton and summing the values.

h. Emission Limitation - sulfuric acid (H₂SO₄)

sulfuric acid emissions shall not exceed:

Phase I:

0.48 lbs/hr
0.41 tons per year

Phase II:

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0.48 lbs/hr without duct burner firing
0.56 lbs/hr with duct burner firing
2.3 tons per year

Applicable Compliance Method

Compliance with the lb/hr emission limitation shall be demonstrated by multiplying the emission factor supplied by the permittee (0.000275 lb sulfuric acid/MMBtu heat input without duct burner firing; 0.000266 lb sulfuric acid/MMBtu heat input with duct burner firing) by the associated fuel heat input (MMBtu/hr). If required, the permittee shall demonstrate compliance by emission testing in accordance with approved US EPA test methods. Compliance with the annual emission limitation shall be determined by multiplying the aforementioned emission rates (lb/MMBtu) by the associated actual fuel heat input (MMBtu/yr), dividing by 2000 lbs/ton and summing the values.

i. Emission Limitation

Visible particulate emissions from any stack shall not exceed 10 percent opacity as a six-minute average.

Applicable Compliance Method

Compliance with the visible emissions limitation established by this permit shall be determined by Method 9, 40 CFR Part 60, Appendix A.

VI. Miscellaneous Requirements

1. In accordance with good engineering practices, the SCR unit on emissions unit P001 shall be installed, operated and maintained in accordance with the manufacturer's recommendations, with any modifications deemed necessary by the permittee. The permittee shall maintain on site a copy of the operation & maintenance manual, as provided by the manufacturer.

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

<u>Operations, Property, and/or Equipment</u>	<u>Applicable Rules/Requirements</u>	<u>Applicable Emissions Limitations/Control Measures</u>
PHASE I		
P001 - GE 7FA Natural Gas Fired Dry Low NOx (DLN) Combustion Turbine	None	None
PHASE II		
P001 - GE 7FA Natural Gas Fired Dry Low NOx (DLN) Combustion Turbine with Duct Firing Operated in Combined Cycle Mode and Controlled by Selective Catalytic Reduction (SCR)	None	None

2. Additional Terms and Conditions

2.a None

II. Operational Restrictions

None

III. Monitoring and/or Recordkeeping Requirements

None

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IV. Reporting Requirements

None

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V. Testing Requirements

None

VI. Miscellaneous Requirements

None

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Part III - SPECIAL TERMS AND CONDITIONS FOR SPECIFIC EMISSIONS UNIT(S)

A. State and Federally Enforceable Section

I. Applicable Emissions Limitations and/or Control Requirements

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

Operations, Property, and/or Equipment
<p>PHASE I</p> <p>P002 - GE 7FA Natural Gas Fired Dry Low NOx (DLN) Combustion Turbine</p>

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PHASE II

Applicable Rules/Requirements

P002 - GE 7FA Natural Gas
Fired Dry Low NOx (DLN)
Combustion Turbine with
Duct Firing Operated in
Combined Cycle Mode and
Controlled by Selective
Catalytic Reduction (SCR)

OAC Rule 3745-31-05 (A)(3)

40 CFR part 60, Subpart GG

OAC rule 3745-18-06(F)

OAC Rule 3745-17-11 (B)(4)

OAC Rule 3745-17-07(A)

40 CFR 52.21

OAC rule 3745-31- (13) thru (20)

OAC Rule 3745-31-05 (A)(3)

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OAC Rule 3745-31-05 (A)(3)

OAC Rule 3745-31-05
(A)(3)

OAC Rule 3745-31-05 (A)(3)

OAC Rule 3745-31-05 (A)(3)

OAC Rule 3745-31-05 (A)(3)

OAC Rule 3745-31-05 (A)(3)

	Applicable Emissions Limitations/Control Measures	TOTAL TONS PER YEAR - PHASE I (limited to 2,965,310 MMBtu/yr fuel heat input)
40 CFR part 60, Subpart GG		nitrogen oxides (NO _x) emissions shall not exceed 54.4 tons per year
40 CFR part 60, Subpart Da	The requirements of this rule also include compliance with the requirements of 40 CFR 60 Subpart GG, OAC rule 3745-18-06(F), 3745-17-11(B)(4), OAC rule 3745-17-07(A), 40 CFR 52.21, and OAC 3745-31- (13) thru (20).	particulate matter (PM) emissions shall not exceed 15.3 tons per year
OAC rule 3745-18-06(F)		sulfur dioxide (SO ₂) emissions shall not exceed 10.2 tons per year
OAC Rule 3745-17-11 (B)(4)		carbon monoxide (CO) emissions shall not exceed 28.1 tons per year
OAC Rule 3745-17-07(A)	PHASE I EMISSION LIMITS	
40 CFR 52.21	nitrogen oxides (NO _x) emissions shall not exceed 9.0 ppmvd at 15% Oxygen	volatile organic compounds (VOC) emissions shall not exceed 2.7 tons per year
OAC rule 3745-31- (13) thru (20)	and 64.0 lbs /hr	formaldehyde emissions shall not exceed 0.16 tons per year
40 CFR Part 75	particulate matter (PM) emissions shall not exceed 18.0 lbs/hr	sulfuric acid emissions shall not exceed 0.41 tons per year
OAC rule 3745-103	sulfur dioxide (SO ₂) emissions shall not exceed 12.0 lbs/hr	
OAC rule 3745-103	carbon monoxide (CO) emissions shall not exceed 9.0 ppmvd and 33.0 lbs/hr	Visible particulate emissions from any stack shall not exceed 10 percent opacity as a six-minute average
OAC rule 3745-103	volatile organic compounds (VOC) emissions shall not exceed 3.2 lbs/hr	Operational restriction, see Item A.II.1.
OAC rule 3745-103	formaldehyde emissions shall not exceed 0.19 lbs/hr	See Item A.I.2.b.
OAC rule 3745-103	sulfuric acid emissions shall not exceed 0.48 lbs/hr	See Item A.I.2.a.
OAC rule 3745-103		See Item A.I.2.a.
OAC rule 3745-103		See Item A.I.2.a.
OAC rule 3745-103		Operational restriction, see Item A.II.4.

<p>The tons per rolling 12-month period shall not exceed :</p>	<p>9.0 ppmvd and 33.0 lbs/hr</p>	<p>carbon monoxide (CO) emissions shall not exceed 15.0 ppmvd and 69.0 lbs/hr</p>
<p>NO_x - 54.4 SO₂ - 10.2 PM - 15.3 CO - 28.1 VOC - 2.7</p>	<p>volatile organic compounds (VOC) emissions shall not exceed 3.2 lbs/hr</p>	<p>volatile organic compounds (VOC) emissions shall not exceed 6.8 lbs/hr</p>
<p>EMISSION LIMITS WITHOUT DUCT BURNER FIRING - PHASE II</p>	<p>ammonia (NH₃) emissions shall not exceed 26.0 lbs/hr</p>	<p>ammonia (NH₃) emissions shall not exceed 30.6 lbs/hr</p>
<p>The requirements of this rule also include compliance with the requirements of 40 CFR 60 Subpart GG, OAC rule 3745-18-06(F), 3745-17-11(B)(4), OAC rule 3745-17-07(A), 40 CFR 52.21, and OAC 3745-31-(13) thru (20).</p>	<p>formaldehyde emissions shall not exceed 0.19 lbs/hr</p>	<p>formaldehyde emissions shall not exceed 0.21 lbs/hr</p>
<p>nitrogen oxides (NO_x) emissions shall not exceed 3.5 ppmvd at 15% Oxygen and 25.0 lbs /hr</p>	<p>sulfuric acid emissions shall not exceed 0.48 lbs/hr</p>	<p>sulfuric acid emissions shall not exceed 0.56 lbs/hr</p>
<p>particulate matter (PM) emissions shall not exceed 21.0 lbs/hr</p>	<p>EMISSION LIMITS WITH DUCT BURNER FIRING - PHASE II</p>	<p>STARTUP AND SHUTDOWN EMISSIONS - PHASE II (see Item A.II.3.)</p>
<p>sulfur dioxide (SO₂) emissions shall not exceed 12.0 lbs/hr</p>	<p>The requirements of this rule also include compliance with the requirements of 40 CFR 60 Subpart Da and GG, OAC rule 3745-18-06(F), 3745-17-11(B)(4), OAC rule 3745-17-07(A), 40 CFR 52.21, and OAC 3745-31-(13) thru (20).</p>	<p>nitrogen oxides (NO_x) emissions shall not exceed 27.4 tons per year</p>
<p>carbon monoxide (CO) emissions shall not exceed</p>	<p>nitrogen oxides (NO_x) emissions shall not exceed 3.5 ppmvd at 15% Oxygen and 30.0 lbs /hr</p>	<p>carbon monoxide (CO) emissions shall not exceed 150.1 tons per year</p>
<p>sulfur dioxide (SO₂) emissions shall not exceed 12.0 lbs/hr</p>	<p>particulate matter (PM) emissions shall not exceed 25.0 lbs/hr</p>	<p>volatile organic compounds (VOC) emissions shall not exceed 10.6 tons per year</p>
<p>sulfur dioxide (SO₂) emissions shall not exceed 14.0 lbs/hr</p>	<p>sulfur dioxide (SO₂) emissions shall not exceed 14.0 lbs/hr</p>	<p>TOTAL TONS PER YEAR - PHASE II (duct burner limited to 1.44 x 10⁶ MMBtu per year fuel heat input)</p>
<p>carbon monoxide (CO) emissions shall not exceed</p>	<p>sulfur dioxide (SO₂) emissions shall not exceed 14.0 lbs/hr</p>	<p>nitrogen oxides (NO_x) emissions shall not exceed 146.9 tons per year</p>
<p>carbon monoxide (CO) emissions shall not exceed</p>	<p>sulfur dioxide (SO₂) emissions shall not exceed 14.0 lbs/hr</p>	<p>particulate matter (PM) emissions shall not exceed 100.0 tons per year</p>

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sulfur dioxide (SO ₂) emissions shall not exceed 56.6 tons per year	The tons per rolling 12-month period shall not exceed : NO _x - 146.9 SO ₂ - 56.6
carbon monoxide (CO) emissions shall not exceed 366.6 tons per year	PM - 100.0 CO - 366.6 VOC - 31.8 See Item A.I.2.c.
volatile organic compounds (VOC) emissions shall not exceed 31.8 tons per year	See Item A.I.2.c.
ammonia (NH ₃) emissions shall not exceed 123.1 tons per year	
formaldehyde emissions shall not exceed 0.87 tons per year	
sulfuric acid emissions shall not exceed 2.3 tons per year	
Visible particulate emissions from any stack shall not exceed 10 percent opacity as a six-minute average	
Operational restriction, see Item A.II.1.	
See Item A.I.2.b.	
See Item A.I.2.a.	
Operational restriction, see Item A.II.5.	

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2. Additional Terms and Conditions

- 2.a** The emissions limit based on this applicable rule is equivalent to or less stringent than the limit established pursuant to OAC rule 3745-31-05.
- 2.b** The emissions limits based on this applicable rule are equivalent to or less stringent than the limits established pursuant to OAC rule 3745-31-05. Except as provided for in the terms and conditions in this permit, the permittee is not exempt from meeting any additional requirements of 40 CFR Part 60, Subpart GG.
- 2.c** If the permittee is subject to the requirements of 40 CFR Part 75 concerning acid rain, the permittee shall ensure that any effected 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.

II. Operational Restrictions

- 1.** The permittee shall burn only natural gas in this emissions unit. The maximum sulfur content of the natural gas shall not exceed 2 grains per 100 standard cubic feet.
- 2.** The permit to install for this emissions unit (P002) was evaluated based on actual materials (typically coatings and clean up materials) and the design parameters of the emissions unit's exhaust system, as specified by the permittee in the air permit to install application. The Ohio EPA's "Review of New Sources of Air Toxic Emissions" policy (Air Toxic Policy) was applied for each pollutant emitted by this emissions unit using data from the permit to install application and the SCREEN 3.0 model (or other Ohio EPA approved model). The predicted 1-hour maximum ground-level concentration to the Maximum Acceptable Ground-Level Concentration (MAGLC). The following summarizes the results of the modeling:

Pollutant: Formaldehyde

TLV (ug/m³): 273 (Converted from the STEL)

Maximum Hourly Emission Rate (lbs/hr): 0.70*

Predicted 1-Hour Maximum Ground-Level Concentration (ug/m³): 1.16

MAGLC (ug/m³): 3.68

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Pollutant: Sulfuric Acid

TLV (ug/m3): 1000

Maximum Hourly Emission Rate (lbs/hr): 1.68*

Predicted 1-Hour Maximum Ground-Level Concentration (ug/m3): 1.74

MAGLC (ug/m3): 10.0

Pollutant: Ammonia

TLV (ug/m3): 17000

Maximum Hourly Emission Rate (lbs/hr): 91.8*

Predicted 1-Hour Maximum Ground-Level Concentration (ug/m3): 94.7

MAGLC (ug/m3): 180

* This was modeled for emissions units P001, P002 and P003 combined.

Physical changes to or changes in the method of operation of the emissions unit after its installation or modification could affect the parameters used to determine whether or not the "Air Toxic Policy" is satisfied. Consequently, prior to making a change that could impact such parameters, the permittee shall conduct an evaluation to determine that the "Air Toxic Policy" will still be satisfied. If, upon evaluation, the permittee determines that the "Air Toxic Policy" will not be satisfied, the permittee will not make the change. Changes that can affect the parameters used in applying the "Air Toxic Policy" include 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 compound with a lower Threshold Limit Value (TLV), as indicated in the most recent version of the handbook entitled "American Conference of Governmental Industrial Hygienists (ACGIH)," than the lowest TLV value specified in the above table;
- b. changes in the composition of the materials, or use of new materials, that would result in an increase in emissions of any pollutant with a listed TLV that was proposed in the application and modeled; and
- c. physical changes to the emissions unit or its exhaust parameters (e.g., increased/decreased exhaust flow, changes in stack height, changes in stack diameter, etc.).

If the permittee determines that the "Air Toxic Policy" 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(VV)(1)(a)(ii), and a modification of the existing permit to install will not be required. If the change(s) is (are) defined as a modification under other provisions of the modification definition (other than (VV)(1)(a)(ii)), then the permittee shall obtain a final permit to install prior to the change.

The permittee shall collect, record and retain the following information when it conducts evaluations to determine that the changed emissions unit will still satisfy the "Air Toxic Policy:"

- a. a description of the parameters changed (composition of materials, new pollutants emitted,

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change in stack/exhaust parameters, etc.);

- b. documentation of its evaluation and determination that the changed emissions unit still satisfies the "Air Toxic Policy"; and
 - c. where computer modeling is performed, a copy of the resulting computer model runs that show the results of the application of the "Air Toxic Policy" for the change.
3. Startup and shutdown shall be defined as when the unit is running at less than 50% of electric load, but under no circumstances shall startups exceed 250 minutes in duration and shutdowns shall not exceed 2 hours in duration. The total of all hot, warm and cold startups (as defined below) and shutdowns shall be limited to 286 cycles (one startup and one shutdown) per year.

Hot Start - startup occurs within eight (8) hours after plant shutdown

Warm Start - startup occurs between eight (8) hours to seventy-two (72) hours after a plant shutdown

Cold Start - startup occurs more than seventy-two (72) hours after a plant shutdown

Each startup and shutdown shall be limited to the following:

<u>Pollutant</u>	<u>Total lbs / Cycle</u>
NOx	418
CO	1127
VOC	97

During Phase I, startup / shutdown emissions are not anticipated to increase above levels defined during normal operation of the simple cycle turbines.

4. During Phase I, the maximum hourly fuel heat input for emission unit P002 shall not exceed 1744.3 MMBtu/hr and the annual maximum fuel heat input shall not exceed 2,965,310 MMBtu per year based upon a rolling, 12-month summation. Due to this operational restriction, CEMs will not be installed until Phase II.

To ensure enforceability during the first 12 calendar months following the startup of this emissions unit, the permittee shall not exceed the monthly heat input restrictions specified in the following table:

Month	Cumulative Fuel Heat Input (MMBtu)
1	1,297,759

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1-2	2,595,518
1-3	2,965,310
1-4	2,965,310
1-5	2,965,310
1-6	2,965,310
1-7	2,965,310
1-8	2,965,310
1-9	2,965,310
1-10	2,965,310
1-11	2,965,310
1-12	2,965,310

If Phase I extends beyond the first 12 calendar months following the startup of emissions unit P002, compliance with the annual fuel heat input restriction shall be based on a rolling, 12-month summation.

5. During Phase II, the maximum hourly combustion turbine fuel heat input shall not exceed 1744.3 MMBtu/hr.

The maximum hourly fuel heat input of the duct burner for emission unit P002 shall not exceed 360 MMBtu/hr. The maximum annual fuel heat input of the duct burner shall not exceed 1.44×10^6 MMBtu per year, based upon a rolling, 12-month summation.

To ensure enforceability during the first 12 calendar months following the startup of the duct burner, the permittee shall not exceed the monthly duct burner fuel heat input restrictions specified in the following table:

Month	Cumulative Fuel Heat Input (MMBtu)
1	0.26784×10^6
1-2	0.53568×10^6
1-3	0.80352×10^6
1-4	1.07136×10^6
1-5	1.44×10^6
1-6	1.44×10^6
1-7	1.44×10^6
1-8	1.44×10^6
1-9	1.44×10^6
1-10	1.44×10^6
1-11	1.44×10^6
1-12	1.44×10^6

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After the first 12 calendar months following the startup of the duct burner, compliance with the annual fuel heat input restriction shall be based on a rolling, 12-month summation.

**6. Continuous NO_x Monitoring - Certified Systems
Statement of Certification (Phase II Only)**

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 6 for approval by the Ohio EPA, Central Office.

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 such emissions unit, the permittee shall conduct certification tests of such equipment pursuant to the appropriate sections of ORC section 3704.03(I), 40 CFR Part 60, Appendix B, Performance Specification 6, and 40 CFR Part 75. Personnel from 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. In accordance with OAC rule 3745-15-04, all copies of the test results shall be submitted to the appropriate Ohio EPA District Office or local air agency within 30 days after the test is completed. Copies of the test results shall be sent to the appropriate Ohio EPA District Office or local air agency and the Ohio EPA, Central Office. Certification of the continuous NO_x monitoring system shall be granted upon determination by the Ohio EPA, Central Office that the system meets all requirements of the appropriate sections of ORC section 3704.03(I), 40 CFR Part 60, Appendix B, Performance Specification 6, and 40 CFR Part 75.

- 7.** Within 180 days of the effective date of this permit, the permittee shall develop a written quality assurance/quality control plan for the continuous NO_x monitoring system designed to ensure continuous valid and representative readings of NO_x emissions in units of the applicable standard. The plan shall follow the requirements of the appropriate sections 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 NO_x monitoring system must be kept on site and available for inspection during regular office hours.

**8. Continuous CO Monitoring - Certified Systems
Statement of Certification (Phase II Only)**

Prior to the installation of the continuous 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 and 6 for approval by the Ohio EPA, Central Office.

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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 such emissions unit, the permittee shall conduct certification tests of the continuous CO monitoring system pursuant to ORC section 3704.03(I), 40 CFR Part 60, Appendix B, Performance Specification 4 and 6. Personnel from 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. In accordance with OAC rule 3745-15-04, all copies of the test results shall be submitted to the appropriate Ohio EPA District Office or local air agency within 30 days after the test is completed. Copies of the test results shall be sent to the appropriate Ohio EPA District Office or local air agency and the Ohio EPA, Central Office. Certification of the continuous CO monitoring system shall be granted upon determination by the Ohio EPA Central Office that the system meets all requirements of ORC section 3704.03(I) and 40 CFR Part 60, Appendix B, Performance Specification 4 and 6.

9. Within 180 days of the effective date of this permit, the permittee shall develop a written quality assurance/quality control plan for the continuous CO monitoring system designed to ensure continuous valid and representative readings of CO. 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 CO monitoring system must be kept on site and available for inspection during regular office hours.
10. Continuous O₂ or CO₂ Monitoring - Certified Systems
Statement of Certification (Phase II Only)

Prior to the installation of the continuous O₂ or CO₂ 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 3 for approval by the Ohio EPA, Central Office.

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 such emissions unit, the permittee shall conduct certification tests of such equipment pursuant to the appropriate sections of ORC section 3704.03(I), 40 CFR Part 60, Appendix B, Performance Specification 3, and 40 CFR Part 75. Personnel from 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. In accordance with OAC rule 3745-15-04, all copies of the test results shall be submitted to the appropriate Ohio EPA District Office or local air agency within 30 days after the test is completed. Copies of the test results shall be sent to the appropriate Ohio EPA District Office or local air agency and the Ohio EPA, Central Office.

Certification of the continuous O₂ or CO₂ monitoring system shall be granted upon determination by the Ohio EPA, Central Office that the system meets all requirements of the appropriate sections of ORC section 3704.03(I), 40 CFR Part 60, Appendix B, Performance Specification 3, and 40 CFR Part 75.

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11. Within 180 days of the effective date of this permit, the permittee shall develop a written quality assurance/quality control plan for the continuous O₂ or CO₂ monitoring system designed to ensure continuous valid and representative readings of O₂ or CO₂ emissions in units of the applicable standard. The plan shall follow the requirements of the appropriate sections 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 O₂ or CO₂ monitoring system must be kept on site and available for inspection during regular office hours.

III. Monitoring and/or Recordkeeping Requirements

1. **Phase I and II:** The permittee shall maintain monthly records of the following information for each emissions unit:
 - a. The natural gas usage rate for each month (in standard cubic feet).
 - b. Hours of operation of the combustion turbine
 - c. Hours of operation of the duct burner (Phase II)
 - d. Monthly fuel heat input (MMBtu) to the combustion turbine
 - e. Monthly fuel heat input (MMBtu) to the duct burner (Phase II)
 - f. During the first 12 calendar months of operation, the permittee shall also record the cumulative fuel heat input to each combustion turbine and duct burner. Beginning after 12 months of operation of the emission unit, records of the rolling, 12-month summation of fuel heat input shall be maintained.
2. **Phase I and II:** The permittee shall maintain hourly records of the following information for each emissions unit:
 - a. Hourly fuel heat input (MMBtu) to the combustion turbine
 - b. Hourly fuel heat input (MMBtu) to the duct burner (Phase II)
3. **Phase II:** The permittee shall operate and maintain existing equipment to continuously monitor and record NO_x from this emissions unit in units of the applicable standard. Such continuous monitoring and recording equipment shall comply with the requirements of the appropriate sections specified in 40 CFR Part 60.13 and 40 CFR Part 75.

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The permittee shall maintain records of all data obtained by the continuous NO_x monitoring system including, but not limited to, parts per million NO_x on an instantaneous (one-minute) basis, emissions of NO_x in units of the applicable standard in the appropriate averaging period (e.g., hourly, hourly rolling, 3-hour, daily, 30-day rolling, etc.), results of daily zero/span calibration checks, and magnitude of manual calibration adjustments.

4. **Phase II:** The permittee shall operate and maintain equipment to continuously monitor and record CO from this emissions unit in units of the applicable standard. Such continuous monitoring and recording equipment shall comply with the requirements specified in 40 CFR Part 60.13 .

The permittee shall maintain records of all data obtained by the continuous CO monitoring system including, but not limited to, parts per million CO on an instantaneous (one minute) basis, emissions of CO in units of the applicable standard in the appropriate averaging period (e.g., hourly, hourly rolling, 3-hour, daily, 30-day rolling, annual, etc.), results of daily zero/span calibration checks, and magnitude of manual calibration adjustments.

5. **Phase II:** The permittee shall operate and maintain equipment to continuously monitor and record O₂ or CO₂ from this emissions unit in percent O₂ or CO₂. Such continuous monitoring and recording equipment shall comply with the requirements in the appropriate sections specified in 40 CFR Part 60.13 and 40 CFR Part 75.

The permittee shall maintain records of all data obtained by the continuous O₂ or CO₂ monitoring system including, but not limited to, percent O₂ or CO₂ on an instantaneous (one-minute) basis, emissions of O₂ or CO₂ in units of the applicable standard in the appropriate averaging period (e.g., hourly, hourly rolling, 3-hour, daily, 30-day rolling, etc.), results of daily zero/span calibration checks, and magnitude of manual calibration adjustments.

6. **Phase II:** The permittee shall install, calibrate, operate, and maintain continuous monitoring systems to monitor and record the average hourly fuel consumption of the combustion turbine and duct burner. The fuel flow monitoring systems comply with the requirements of 40 CFR Part 75, Appendix D.
7. **Phase I and II:** The permittee shall monitor the sulfur content and gross calorific value of the fuel being fired in the combustion turbine and duct burner. Fuel sampling and analysis shall be conducted according to the procedures and at the frequency specified by 40 CFR Part 75, Appendix D.
8. **Phase II:** The permittee shall determine the hourly heat input rate to the combustion turbine and duct burner from the fuel flow rate as determined in term A.III.6 and fuel gross calorific value as determined in term A.III.7. The heat input rate shall be calculated in accordance with the procedures in Section 5 of 40 CFR Part 75, Appendix F.
9. **Phase II:** The permittee shall maintain records of the following information for each emissions

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unit:

- a. Number of startups, type of startup (hot, warm or cold) and the duration of each startup.
- b. Number of shutdowns, and the duration of each shutdown.
- c. During the first 12 calendar months of operation, the permittee shall also record the cumulative number of startups and shutdowns and the associated startup and shutdown emissions for each emissions unit calculated as described in Item V.2.(a,d and e). Beginning after 12 months of operation of the emission unit, records of the rolling, 12-month summation of the number of startups and shutdowns and the associated startup and shutdown emissions shall be maintained.

- 10. Phase II:** The permittee shall maintain hourly records of the following information for this emissions unit:

in lb(s)/hr emissions rate for NO_x and CO as obtained from terms III.3. and III.4. based upon an hourly averaging period as allowed in the appropriate sections of 40 CFR Part 60.

- 11. Phase II:** The permittee shall maintain monthly records of the following information for this emissions unit:

- a. the operating hours;
- b. during the first 12 calendar months of operation, the permittee shall record the cumulative operating hours for each calendar month; and
- c. beginning after the first 12 calendar months of operation, the rolling, 12-month summation of the operating hours.
- d. during the first 12 calendar months of operation, the cumulative NO_x and CO emissions, in tons (obtained by summing the values recorded under condition III.10. and dividing by 2000); and
- e. beginning after the first 12 calendar months of operation, the rolling, 12-month NO_x and CO emissions, in tons

12. PSD REQUIREMENTS

The source described in this Permit to Install is subject to the applicable provisions of the Prevention of Significant Deterioration (PSD) regulations as promulgated by the United States Environmental Protection Agency 40 CFR 52.21. The authority to apply and enforce the PSD regulations has been delegated to the Ohio Environmental Protection Agency. The terms and conditions of this permit and the requirements of the PSD regulations are also enforceable by the United States Environmental Protection Agency.

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In accordance with 40 CFR 124.15, 124.19 and 124.20, the following shall apply: (1) the effective date of this permit shall be 30 days after the service of notice to any public commentors of the final decision to issue, modify, or revoke and re-issue the permit, unless the service of notice is by mail, in which case the effective date of the permit shall be 33 days after the service of notice; and (2) if an appeal is made to the Environmental Appeals Board of the United States Environmental Protection Agency, the effective date of the permit is suspended until such time as the appeal is resolved or denied.

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Appeals will be addressed to:
United States Environmental Protection Agency
Environmental Appeals Board
401 M Street, SW (MC-113do)
Washington, DC 20460

IV. Reporting Requirements - Phase I and II

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 occurred.
2. The permittee shall submit deviation (excursion) reports which identify all exceedances of the Phase I hourly and rolling, 12-month allowable combustion turbine fuel heat input levels and, for the first 12 calendar months of operation, all exceedances of the maximum allowable cumulative combustion turbine heat input levels. These reports are due by the date described in Part 1 - General Terms and Conditions of this permit under section (A)(2).
3. The permittee shall submit deviation (excursion) reports which identify all exceedances of the Phase II hourly combustion turbine fuel heat input limitation and the hourly and rolling, 12-month duct burner fuel heat input limitations and, for the first 12 calendar months of operation, all exceedances of the maximum cumulative duct burner fuel heat input levels. These reports are due by the date described in Part 1 - General Terms and Conditions of this permit under section (A)(2).
4. Pursuant to OAC rules 3745-15-04, 3745-35-02, and ORC sections 3704.03(I) and 3704.031 and 40 CFR Parts 60.7 and 60.13(h), 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 the date, commencement and completion times, duration, magnitude, reason (if known), and corrective actions taken (if any), of all instances of NO_x values in excess of the applicable limits specified in 40 CFR Part 76 and any limitations specified in the terms and conditions of this permit or variance. These reports shall also contain the total NO_x emissions for the calendar quarter (in tons).

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 any continuous NO_x monitoring system downtime while the emissions unit was on line (date, time, duration and reason) along with any corrective action(s) taken. The permittee shall provide the emissions unit operating time during the reporting period and the date, time, reason and corrective action(s) taken for each time period of emissions unit and control equipment malfunctions. The total

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operating time of the emissions unit and the total operating time of the analyzer while the emissions unit was on line shall also be included in the quarterly report.

If there are no excess emissions during the calendar quarter, the permittee shall submit a statement to that effect along with the emissions unit operating time during the reporting period and the date, time, reason, and corrective action(s) taken for each time period of emissions unit, control equipment, and/or monitoring system malfunctions. The total operating time of the emissions unit and the total operating time of the analyzer while the emissions unit was on line also shall be included in the quarterly report. These quarterly excess emission reports shall be submitted by January 30, April 30, July 30, and October 30 of each year and shall address the data obtained during the previous calendar quarter.

5. Pursuant to OAC rules 3745-15-04, 3745-35-02, and ORC sections 3704.03(I) and 3704.031, the permittee shall submit a summary of the excess emission report pursuant to 40 CFR Part 60.7. The summary shall be submitted to the appropriate Ohio EPA District Office or local air agency within 30 days following the end of each calendar quarter in a manner prescribed by the Director.
6. Pursuant to OAC rules 3745-15-04, 3745-35-02, and ORC sections 3704.03(I) and 3704.031 and 40 CFR Parts 60.7 and 60.13(h), 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 the date, commencement and completion times, duration, magnitude, reason (if known), and corrective actions taken (if any) of all instances of CO values in excess of any applicable limitation(s) specified in OAC Chapter 3745-21, 40 CFR Part 60, or any limitation(s) specified in the terms and conditions of this permit, in units of the standard. These reports shall also contain the total CO emissions for the calendar quarter (in tons).

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 any continuous CO monitoring system downtime while the emissions unit was on line (date, time, duration and reason) along with any corrective action(s) taken. The permittee shall provide the emissions unit operating time during the reporting period and the date, time, reason and corrective action(s) taken for each time period of emissions unit and control equipment malfunctions. The total operating time of the emissions unit and the total operating time of the analyzer while the emissions unit was on line shall also be included in the quarterly report.

If there are no excess emissions during the calendar quarter, the permittee shall submit a statement to that effect along with the emissions unit operating time during the reporting period and the date, time, reason, and corrective action(s) taken for each time period of emissions unit, control equipment, and/or monitoring system malfunctions. The total operating time of the emissions unit and the total operating time of the analyzer while the emissions unit was on line shall also be included in the quarterly report. These quarterly excess emission reports shall be submitted by January 30, April 30, July 30, and October 30 of each year and shall address the data obtained during the previous calendar quarter.

7. Pursuant to 40 CFR Parts 60.7 and 60.13(h), the permittee shall submit reports within 30 days

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following the end of each calendar quarter to the appropriate Ohio EPA District Office or local air agency documenting all instances of continuous O₂ or CO₂ monitoring system downtime while the emissions unit was on line (date, time, duration and reason) along with any corrective action(s) taken. The permittee shall provide the emissions unit operating time during the reporting period and the date, time, reason and corrective action(s) taken for each time period of emissions unit malfunctions. The total operating time of the emissions unit and the total operating time of the analyzer while the emissions unit was on line shall be included in the quarterly report. These quarterly reports shall be submitted by January 30, April 30, July 30, and October 30 of each year and shall address the data obtained during the previous calendar quarter.

8. The permittee shall submit deviation (excursion) reports that identify any record which shows that the sulfur content of the natural gas exceeded 2 grains per standard cubic foot. These reports are due by the date described in Part I - General Terms and Conditions of this permit under section (A)(2).
9. The permittee shall submit deviation (excursion) reports that identify each time when this emissions unit was not in compliance with the startup and shutdown requirements of condition II.3. above or the annual startup and shutdown emissions limitations calculated as described in Item V.2.(a,d and e). These reports are due by the date described in Part I - General Terms and Conditions of this permit under section (A)(2).
10. In lieu of the excess emissions reports required under 40 CFR Part 60.334, the permittee shall submit excess emissions reports for emissions unit P002 in accordance with this permit.
11. This emissions unit is subject to the applicable provisions of Subpart Da. and GG 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.

Pursuant to 40 CFR Part 60.7, 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. date of performance testing (if required, at least 30 days prior to testing).

Reports are to be sent to:

Ohio Environmental Protection Agency
DAPC - Permit Management Unit
P. O. Box 163669

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Columbus, Ohio 43216-3669

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and

Ohio Environmental Protection Agency

Southeast District Office

Division of Air Pollution Control

2195 Front Street

Logan, Ohio 43138

V. Testing Requirements - Phase I and II

1. 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 such emissions unit.
 - b. The emission testing shall be conducted to demonstrate compliance with the NO_x and CO outlet concentration, and the mass emissions limitations for NO_x,* CO, Formaldehyde, VOC, PM and visible emission limitations.
 - c. The following test method(s) shall be employed to demonstrate compliance with the above emissions limitations: for NO_x, Method 20 of 40 CFR Part 60, Appendix A; for PM, Method 5 of 40 CFR Part 60, Appendix A; for visible emission limitations, Method 9 of 40 CFR Part 60, Appendix A; for Formaldehyde, SW-846 Method 0011; for VOC Method 25 of 40 CFR Part 60, Appendix A; and for CO Method 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.
 - d. The testing shall be conducted while the emissions unit is operating at or near its maximum capacity with and without duct burner firing, unless otherwise specified or approved by Ohio EPA or local air agency.
 - e. Not later than 30 days prior to the proposed test date(s), the permittee shall submit an "Intent to Test" notification to the Ohio EPA, Southeast District Office. The "Intent to Test" notification shall describe in detail the proposed test methods and procedures, the emissions unit operating parameters, the time(s) and date(s) of the test(s), and the person(s) who will be conducting the test(s). Failure to submit such notification for review and approval prior to the test(s) may result in the Ohio EPA, Southeast District

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Office refusal to accept the results of the emission test(s).

- f. Personnel from the Ohio EPA, Southeast District Office shall be permitted to witness the test(s), examine the testing equipment, and acquire data and information necessary to ensure that the operation of the emissions unit and the testing procedures provide a valid characterization of the emissions from the emissions unit and/or the performance of the control equipment.
- g. A comprehensive written report on the results of the emissions test(s) shall be signed by the person or persons responsible for the tests and submitted to the Ohio EPA, Southeast District Office within 30 days following completion of the test(s). The permittee may request additional time for the submittal of the written report, where warranted, with prior approval from the Ohio EPA, Southeast District Office.

* Using the test methods and procedures required under 40 CFR Part 60.335.

- 2. Compliance with the allowable emission limitations in this permit shall be determined according to the following methods:

- a. Emission Limitation - NO_x

Phase I:

NO_x emissions shall not exceed 9.0 ppmvd at 15% Oxygen
 64.0 lbs/hr
 54.4 tons per year

Phase II:

NO_x emissions shall not exceed 3.5 ppmvd at 15% Oxygen
 25.0 lbs/hr without duct burner firing
 30.0 lbs/hr with duct burner firing
 146.9 tons per year, which includes 27.4 tpy for startups and shutdowns

Applicable Compliance Method

Initial compliance with the allowable outlet concentration, and the lbs/hr emission limitations shall be demonstrated by the performance testing as described in condition V.1. and continual compliance with those limitations shall be demonstrated by the use of the CEM (Phase II) in condition III.3. based upon an hourly averaging period as allowed in 40 CFR Part 60. During Phase I, compliance with the annual emission limitation shall be determined by multiplying the emission factor supplied by the permittee (0.0367 lb NO_x/MMBtu) by the actual fuel heat input (MMBtu/yr) and dividing by 2000 lbs/ton. During Phase II, compliance with the annual emission limitation shall be determined by summing the emissions demonstrated through the record keeping required in condition

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III.11(CEM measured emissions) with the start-up and shut-down emissions. The annual emissions associated with start-up and shut-down shall be determined using the record keeping required in condition III.9. and the following calculation.

Annual Startup / Shutdown Emissions (tpy) = [(# of cold starts x 418 lbs. per start) + (# of warm starts x 144 lbs. per start) + (# of hot starts x 114 lbs. per start)] / 2000 lbs. per ton

b. Emission Limitation - PM

PM emissions shall not exceed:

Phase I:

18.0 lbs/hr

15.3 tons per year

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Phase II:

21.0 lbs/hr without duct burner firing

25.0 lbs/hr with duct burner firing

100.0 tons per year

Applicable Compliance Method

Compliance with the lbs/hr emission limitations shall be demonstrated by the performance testing as described in condition V.1. Compliance with the annual emission limitation shall be determined by multiplying the emission rates (in lb/MMBtu as determined by taking the allowable emission rate in lb/hr divided by the maximum heat input in MMBtu/hr) for operation with and without the duct burner firing by the associated actual fuel heat input (MMBtu/yr), dividing by 2000 lbs/ton and summing the values.

c. Emission Limitation - SO₂

SO₂ emissions shall not exceed:

Phase I:

12.0 lbs/hr

10.2 tons per year

Phase II:

12.0 lbs/hr without duct burner firing

14.0 lbs/hr with duct burner firing

56.6 tons per year

Applicable Compliance Method

Compliance with the hourly emission limitation shall be determined by the record keeping required in condition III. 1., 2., and 8. If required, the permittee shall demonstrate compliance by emission testing in accordance with approved US EPA test methods. Compliance with the annual emission limitation shall be determined by multiplying the emission factor supplied by the permittee (0.0069 lb/MMBtu without duct burner firing; 0.00665 lb/MMBtu with duct burner firing) by the associated actual fuel heat input (MMBtu/yr), dividing by 2000 lbs/ton and summing the values.

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d. Emission Limitation - VOC

VOC emissions shall not exceed:

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Phase I:

3.2 lbs/hr
2.7 tons per year

Phase II:

3.2 lbs/hr without duct burner firing
6.8 lbs/hr with duct burner firing
31.8 tons per year, which includes 10.6 tpy for startups and shutdowns

Applicable Compliance Method

Compliance with the lbs/hr limitations shall be demonstrated by the performance testing described in condition V.1. Compliance with the annual emission limitation shall be determined by multiplying the emission rates (in lb/MMBtu as determined by taking the allowable emission rate in lb/hr divided by the maximum heat input in MMBtu/hr) for operation with and without the duct burner firing by the associated actual fuel heat input (MMBtu/yr), dividing by 2000 lbs/ton, summing the values and adding the start-up and shut-down emissions. The annual emissions associated with start-up and shut-down shall be determined using the record keeping required in condition III.9. and the following calculation.

Annual Startup / Shutdown Emissions (tpy) = [(# of cold starts x 97 lbs. per start) + (# of warm starts x 74 lbs. per start) + (# of hot starts x 34 lbs. per start)] / 2000 lbs. per ton

e. Emission Limitation - CO

CO emissions shall not exceed:

Phase I:

9.0 ppmvd
33.0 lbs/hr
28.1 tons per year

Phase II:

9.0 ppmvd without duct burner firing
15.0 ppmvd with duct burner firing

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33.0 lbs/hr without duct burner firing

69.0 lbs/hr with duct burner firing

366.6 tons per year, which includes 150.1 tpy for startups and shutdowns

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Applicable Compliance Method

Initial compliance with the allowable outlet concentration, and the lbs/hr emission limitations shall be demonstrated by the performance testing as described in condition V.1 and continual compliance with those limitations shall be demonstrated by the use of the CEM (Phase II) in condition III.4. based upon an hourly averaging period as allowed in 40 CFR Part 60. During Phase I, compliance with the annual emission limitation shall be determined by multiplying the emission factor supplied by the permittee (0.01892 lb CO/MMBtu) by the actual fuel heat input (MMBtu/yr) and dividing by 2000 lbs/ton. During Phase II, compliance with the annual emission limitation shall be determined by summing the emissions demonstrated through the record keeping required in condition III.11(CEM measured emissions) with the start-up and shut-down emissions. The annual emissions associated with start-up and shut-down shall be determined using the record keeping required in condition III.9. and the following calculation.

$$\text{Annual Startup / Shutdown Emissions (tpy)} = [(\# \text{ of cold starts} \times 1101 \text{ lbs. per start}) + (\# \text{ of warm starts} \times 1127 \text{ lbs. per start}) + (\# \text{ of hot starts} \times 349 \text{ lbs. per start})] / 2000 \text{ lbs. per ton}$$
f. Emission Limitation - ammonia (NH₃)

ammonia (NH₃) emissions shall not exceed:

Phase II:

26.0 lbs/hr without duct burner firing

30.6 lbs/hr with duct burner firing

123.1 tons per year

Applicable Compliance Method

Compliance with the lbs/hr emission limitation shall be demonstrated by multiplying the emission factor provided by the permittee (0.0149 lb ammonia/MMBtu without duct burner firing; 0.01454 lb ammonia/MMBtu with duct burner firing) by the associated fuel heat input (MMBtu/hr). If required, the permittee shall demonstrate compliance by emission testing in accordance with approved US EPA test methods. Compliance with the annual emission limitation shall be determined by multiplying the aforementioned emission rate (lb/MMBtu) by the associated total actual fuel heat input (MMBtu/yr), dividing by 2000 lbs/ton and summing the values.

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g. Emission Limitation - formaldehyde

formaldehyde emissions shall not exceed:

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Phase I:

0.19 lbs/hr

0.16 tons per year

Phase II:

0.19 lbs/hr without duct burner firing

0.21 lbs/hr with duct burner firing

0.87 tons per year

Applicable Compliance Method

Compliance with the lbs/hr emission limitations shall be demonstrated by the performance testing described in condition V.1. Compliance with the annual emission limitation shall be determined by multiplying the emission rates (in lb/MMBtu as determined by taking the allowable emission rate in lb/hr divided by the maximum heat input in MMBtu/hr) for operation with and without the duct burner firing by the associated actual fuel heat input (MMBtu/yr), dividing by 2000 lbs/ton and summing the values.

h. Emission Limitation - sulfuric acid (H₂SO₄)

sulfuric acid emissions shall not exceed:

Phase I:

0.48 lbs/hr

0.41 tons per year

Phase II:

0.48 lbs/hr without duct burner firing

0.56 lbs/hr with duct burner firing

2.3 tons per year

Applicable Compliance Method

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Compliance with the lb/hr emission limitation shall be demonstrated by multiplying the emission factor supplied by the permittee (0.000275 lb sulfuric acid/MMBtu heat input without duct burner firing; 0.000266 lb sulfuric acid/MMBtu heat input with duct burner firing) by the associated fuel heat input (MMBtu/hr). If required, the permittee shall demonstrate compliance by emission testing in accordance with approved US EPA test methods. Compliance with the annual emission limitation shall be determined by multiplying the aforementioned emission rates (lb/MMBtu) by the associated actual fuel heat input (MMBtu/yr), dividing by 2000 lbs/ton and summing the values.

i. Emission Limitation

Visible particulate emissions from any stack shall not exceed 10 percent opacity as a six-minute average.

Applicable Compliance Method

Compliance with the visible emissions limitation established by this permit shall be determined by Method 9, 40 CFR Part 60, Appendix A.

VI. Miscellaneous Requirements

1. In accordance with good engineering practices, the SCR unit on emissions unit P002 shall be installed, operated and maintained in accordance with the manufacturer's recommendations, with any modifications deemed necessary by the permittee. The permittee shall maintain on site a copy of the operation & maintenance manual, as provided by the manufacturer.

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B. State Only Enforceable Section

I. Applicable Emissions Limitations and/or Control Requirements

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

<u>Operations, Property, and/or Equipment</u>	<u>Applicable Rules/Requirements</u>	<u>Applicable Emissions Limitations/Control Measures</u>
PHASE I		
P002 - GE 7FA Natural Gas Fired Dry Low NOx (DLN) Combustion Turbine	None	None
PHASE II		
P002 - GE 7FA Natural Gas Fired Dry Low NOx (DLN) Combustion Turbine with Duct Firing Operated in Combined Cycle Mode and Controlled by Selective Catalytic Reduction (SCR)	None	None

2. Additional Terms and Conditions

2.a None

II. Operational Restrictions

None

III. Monitoring and/or Recordkeeping Requirements

None

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IV. Reporting Requirements

None

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V. Testing Requirements

None

VI. Miscellaneous Requirements

None

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PTI A

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Part III - SPECIAL TERMS AND CONDITIONS FOR SPECIFIC EMISSIONS UNIT(S)

A. State and Federally Enforceable Section

I. Applicable Emissions Limitations and/or Control Requirements

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

Operations, Property,
and/or Equipment

PHASE I

P003 - GE 7FA Natural Gas
Fired Dry Low NOx (DLN)
Combustion Turbine

PHASE II

Applicable Rules/Requirements

P003 - GE 7FA Natural Gas Fired Dry Low NOx (DLN) Combustion Turbine with Duct Firing Operated in Combined Cycle Mode and Controlled by Selective Catalytic Reduction (SCR)

OAC Rule 3745-31-05 (A)(3)

40 CFR part 60, Subpart GG

OAC rule 3745-18-06(F)

OAC Rule 3745-17-11 (B)(4)

OAC Rule 3745-17-07(A)

40 CFR 52.21

OAC rule 3745-31- (13) thru (20)

OAC Rule 3745-31-05 (A)(3)

OAC Rule 3745-31-05 (A)(3)

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OAC Rule 3745-31-05 (A)(3)

OAC Rule 3745-31-05 (A)(3)

OAC Rule 3745-31-05 (A)(3)

OAC Rule 3745-31-05
(A)(3)

40 CFR part 60, Subpart GG

40 CFR part 60, Subpart Da

OAC Rule 3745-31-05 (A)(3)

OAC rule 3745-18-06(F)

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OAC Rule 3745-17-11 (B)(4)	Applicable Emissions Limitations/Control Measures	TOTAL TONS PER YEAR - PHASE I (limited to 2,965,310 MMBtu/yr fuel heat input)
OAC Rule 3745-17-07(A)	The requirements of this rule also include compliance with the requirements of 40 CFR 60 Subpart GG, OAC rule 3745-18-06(F), 3745-17-11(B)(4), OAC rule 3745-17-07(A), 40 CFR 52.21, and OAC 3745-31- (13) thru (20).	nitrogen oxides (NO _x) emissions shall not exceed 54.4 tons per year
40 CFR 52.21 OAC rule 3745-31- (13) thru (20)		particulate matter (PM) emissions shall not exceed 15.3 tons per year
		sulfur dioxide (SO ₂) emissions shall not exceed 10.2 tons per year
	PHASE I EMISSION LIMITS	carbon monoxide (CO) emissions shall not exceed 28.1 tons per year
40 CFR Part 75	nitrogen oxides (NO _x) emissions shall not exceed 9.0 ppmvd at 15% Oxygen	volatile organic compounds (VOC) emissions shall not exceed 2.7 tons per year
OAC rule 3745-103	and 64.0 lbs /hr	
	particulate matter (PM) emissions shall not exceed 18.0 lbs/hr	formaldehyde emissions shall not exceed 0.16 tons per year
	sulfur dioxide (SO ₂) emissions shall not exceed 12.0 lbs/hr	sulfuric acid emissions shall not exceed 0.41 tons per year
	carbon monoxide (CO) emissions shall not exceed 9.0 ppmvd and 33.0 lbs/hr	Visible particulate emissions from any stack shall not exceed 10 percent opacity as a six-minute average
	volatile organic compounds (VOC) emissions shall not exceed 3.2 lbs/hr	Operational restriction, see Item A.II.1.
	formaldehyde emissions shall not exceed 0.19 lbs/hr	See Item A.I.2.b. See Item A.I.2.a.
	sulfuric acid emissions shall not exceed 0.48 lbs/hr	See Item A.I.2.a. See Item A.I.2.a.
		Operational restriction, see Item A.II.4.

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<p>The tons per rolling 12-month period shall not exceed :</p>	<p>9.0 ppmvd and 33.0 lbs/hr volatile organic compounds (VOC) emissions shall not exceed 3.2 lbs/hr</p>	<p>carbon monoxide (CO) emissions shall not exceed 15.0 ppmvd and 69.0 lbs/hr volatile organic compounds (VOC) emissions shall not exceed 6.8 lbs/hr</p>
<p>NO_x - 54.4 SO₂ - 10.2 PM - 15.3 CO - 28.1 VOC - 2.7</p>	<p>ammonia (NH₃) emissions shall not exceed 26.0 lbs/hr formaldehyde emissions shall not exceed 0.19 lbs/hr</p>	<p>ammonia (NH₃) emissions shall not exceed 30.6 lbs/hr formaldehyde emissions shall not exceed 0.21 lbs/hr</p>
<p>EMISSION LIMITS WITHOUT DUCT BURNER FIRING - PHASE II</p>	<p>sulfuric acid emissions shall not exceed 0.48 lbs/hr</p>	<p>sulfuric acid emissions shall not exceed 0.56 lbs/hr</p>
<p>The requirements of this rule also include compliance with the requirements of 40 CFR 60 Subpart GG, OAC rule 3745-18-06(F), 3745-17-11(B)(4), OAC rule 3745-17-07(A), 40 CFR 52.21, and OAC 3745-31-(13) thru (20).</p>	<p>EMISSION LIMITS WITH DUCT BURNER FIRING - PHASE II The requirements of this rule also include compliance with the requirements of 40 CFR 60 Subpart Da and GG, OAC rule 3745-18-06(F), 3745-17-11(B)(4), OAC rule 3745-17-07(A), 40 CFR 52.21, and OAC 3745-31-(13) thru (20).</p>	<p>STARTUP AND SHUTDOWN EMISSIONS - PHASE II (see Item A.II.3.) nitrogen oxides (NO_x) emissions shall not exceed 27.4 tons per year carbon monoxide (CO) emissions shall not exceed 150.1 tons per year</p>
<p>nitrogen oxides (NO_x) emissions shall not exceed 3.5 ppmvd at 15% Oxygen and 25.0 lbs /hr</p>	<p>nitrogen oxides (NO_x) emissions shall not exceed 3.5 ppmvd at 15% Oxygen and 30.0 lbs /hr</p>	<p>volatile organic compounds (VOC) emissions shall not exceed 10.6 tons per year</p>
<p>particulate matter (PM) emissions shall not exceed 21.0 lbs/hr</p>	<p>particulate matter (PM) emissions shall not exceed 25.0 lbs/hr</p>	<p>TOTAL TONS PER YEAR - PHASE II (duct burner limited to 1.44 x 10⁶ MMBtu per year fuel heat input)</p>
<p>sulfur dioxide (SO₂) emissions shall not exceed 12.0 lbs/hr</p>	<p>sulfur dioxide (SO₂) emissions shall not exceed 14.0 lbs/hr</p>	<p>nitrogen oxides (NO_x) emissions shall not exceed 146.9 tons per year</p>
<p>carbon monoxide (CO) emissions shall not exceed</p>	<p></p>	<p>particulate matter (PM) emissions shall not exceed 100.0 tons per year</p>

<p>sulfur dioxide (SO₂) emissions shall not exceed 56.6 tons per year</p>	<p>The tons per rolling 12-month period shall not exceed :</p>
<p>carbon monoxide (CO) emissions shall not exceed 366.6 tons per year</p>	<p>NOx - 146.9 SO₂ - 56.6 PM - 100.0 CO - 366.6 VOC - 31.8 See Item A.I.2.c.</p>
<p>volatile organic compounds (VOC) emissions shall not exceed 31.8 tons per year</p>	<p>See Item A.I.2.c.</p>
<p>ammonia (NH₃) emissions shall not exceed 123.1 tons per year</p>	
<p>formaldehyde emissions shall not exceed 0.87 tons per year</p>	
<p>sulfuric acid emissions shall not exceed 2.3 tons per year</p>	
<p>Visible particulate emissions from any stack shall not exceed 10 percent opacity as a six-minute average</p>	
<p>Operational restriction, see Item A.II.1.</p>	
<p>See Item A.I.2.b.</p>	
<p>See Item A.I.2.a.</p>	
<p>Operational restriction, see Item A.II.5.</p>	

Issued: To be entered upon final issuance**2. Additional Terms and Conditions**

- 2.a** The emissions limit based on this applicable rule is equivalent to or less stringent than the limit established pursuant to OAC rule 3745-31-05.
- 2.b** The emissions limits based on this applicable rule are equivalent to or less stringent than the limits established pursuant to OAC rule 3745-31-05. Except as provided for in the terms and conditions in this permit, the permittee is not exempt from meeting any additional requirements of 40 CFR Part 60, Subpart GG.
- 2.c** If the permittee is subject to the requirements of 40 CFR Part 75 concerning acid rain, the permittee shall ensure that any effected 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.

II. Operational Restrictions

1. The permittee shall burn only natural gas in this emissions unit. The maximum sulfur content of the natural gas shall not exceed 2 grains per 100 standard cubic feet.
2. The permit to install for this emissions unit (P003) was evaluated based on actual materials (typically coatings and clean up materials) and the design parameters of the emissions unit's exhaust system, as specified by the permittee in the air permit to install application. The Ohio EPA's "Review of New Sources of Air Toxic Emissions" policy (Air Toxic Policy) was applied for each pollutant emitted by this emissions unit using data from the permit to install application and the SCREEN 3.0 model (or other Ohio EPA approved model). The predicted 1-hour maximum ground-level concentration to the Maximum Acceptable Ground-Level Concentration (MAGLC). The following summarizes the results of the modeling:

Pollutant: Formaldehyde

TLV (ug/m³): 273 (Converted from the STEL)

Maximum Hourly Emission Rate (lbs/hr): 0.70*

Predicted 1-Hour Maximum Ground-Level Concentration (ug/m³): 1.16

MAGLC (ug/m³): 3.68

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Pollutant: Sulfuric Acid

TLV (ug/m3): 1000

Maximum Hourly Emission Rate (lbs/hr): 1.68*

Predicted 1-Hour Maximum Ground-Level Concentration (ug/m3): 1.74

MAGLC (ug/m3): 10.0

Pollutant: Ammonia

TLV (ug/m3): 17000

Maximum Hourly Emission Rate (lbs/hr): 91.8*

Predicted 1-Hour Maximum Ground-Level Concentration (ug/m3): 94.7

MAGLC (ug/m3): 180

* This was modeled for emissions units P001, P002 and P003 combined.

Physical changes to or changes in the method of operation of the emissions unit after its installation or modification could affect the parameters used to determine whether or not the "Air Toxic Policy" is satisfied. Consequently, prior to making a change that could impact such parameters, the permittee shall conduct an evaluation to determine that the "Air Toxic Policy" will still be satisfied. If, upon evaluation, the permittee determines that the "Air Toxic Policy" will not be satisfied, the permittee will not make the change. Changes that can affect the parameters used in applying the "Air Toxic Policy" include 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 compound with a lower Threshold Limit Value (TLV), as indicated in the most recent version of the handbook entitled "American Conference of Governmental Industrial Hygienists (ACGIH)," than the lowest TLV value specified in the above table;
- b. changes in the composition of the materials, or use of new materials, that would result in an increase in emissions of any pollutant with a listed TLV that was proposed in the application and modeled; and
- c. physical changes to the emissions unit or its exhaust parameters (e.g., increased/decreased exhaust flow, changes in stack height, changes in stack diameter, etc.).

If the permittee determines that the "Air Toxic Policy" 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(VV)(1)(a)(ii), and a modification of the existing permit to install will not be required. If the change(s) is (are) defined as a modification under other provisions of the modification definition (other than (VV)(1)(a)(ii)), then the permittee shall obtain a final permit to install prior

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to the change.

The permittee shall collect, record and retain the following information when it conducts evaluations to determine that the changed emissions unit will still satisfy the "Air Toxic Policy:"

- a. a description of the parameters changed (composition of materials, new pollutants emitted, change in stack/exhaust parameters, etc.);
 - b. documentation of its evaluation and determination that the changed emissions unit still satisfies the "Air Toxic Policy"; and
 - c. where computer modeling is performed, a copy of the resulting computer model runs that show the results of the application of the "Air Toxic Policy" for the change.
3. Startup and shutdown shall be defined as when the unit is running at less than 50% of electric load, but under no circumstances shall startups exceed 250 minutes in duration and shutdowns shall not exceed 2 hours in duration. The total of all hot, warm and cold startups (as defined below) and shutdowns shall be limited to 286 cycles (one startup and one shutdown) per year.

Hot Start - startup occurs within eight (8) hours after plant shutdown

Warm Start - startup occurs between eight (8) hours to seventy-two (72) hours after a plant shutdown

Cold Start - startup occurs more than seventy-two (72) hours after a plant shutdown

Each startup and shutdown shall be limited to the following:

<u>Pollutant</u>	<u>Total lbs / Cycle</u>
NOx	418
CO	1127
VOC	97

During Phase I, startup / shutdown emissions are not anticipated to increase above levels defined during normal operation of the simple cycle turbines.

4. During Phase I, the maximum hourly fuel heat input for emission unit P003 shall not exceed 1744.3 MMBtu/hr and the annual maximum fuel heat input shall not exceed 2,965,310 MMBtu per year based upon a rolling, 12-month summation. Due to this operational restriction, CEMs will not be installed until Phase II.

To ensure enforceability during the first 12 calendar months following the startup of this emissions unit, the permittee shall not exceed the monthly heat input restrictions specified in the following table:

Month	Cumulative Fuel Heat Input (MMBtu)
1	1,297,759

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1-2	2,595,518
1-3	2,965,310
1-4	2,965,310
1-5	2,965,310
1-6	2,965,310
1-7	2,965,310
1-8	2,965,310
1-9	2,965,310
1-10	2,965,310
1-11	2,965,310
1-12	2,965,310

If Phase I extends beyond the first 12 calendar months following the startup of emissions unit P003, compliance with the annual fuel heat input restriction shall be based on a rolling, 12-month summation.

5. During Phase II, the maximum hourly combustion turbine fuel heat input shall not exceed 1744.3 MMBtu/hr.

The maximum hourly fuel heat input of the duct burner for emission unit P003 shall not exceed 360 MMBtu/hr. The maximum annual fuel heat input of the duct burner shall not exceed 1.44×10^6 MMBtu per year, based upon a rolling, 12-month summation.

To ensure enforceability during the first 12 calendar months following the startup of the duct burner, the permittee shall not exceed the monthly duct burner fuel heat input restrictions specified in the following table:

Month	Cumulative Fuel Heat Input (MMBtu)
1	0.26784×10^6
1-2	0.53568×10^6
1-3	0.80352×10^6
1-4	1.07136×10^6
1-5	1.44×10^6
1-6	1.44×10^6
1-7	1.44×10^6
1-8	1.44×10^6
1-9	1.44×10^6
1-10	1.44×10^6
1-11	1.44×10^6

1-12	1.44 x 10 ⁶
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After the first 12 calendar months following the startup of the duct burner, compliance with the annual fuel heat input restriction shall be based on a rolling, 12-month summation.

6. Continuous NO_x Monitoring - Certified Systems
Statement of Certification (Phase II Only)

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 6 for approval by the Ohio EPA, Central Office.

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 such emissions unit, the permittee shall conduct certification tests of such equipment pursuant to the appropriate sections of ORC section 3704.03(I), 40 CFR Part 60, Appendix B, Performance Specification 6, and 40 CFR Part 75. Personnel from 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. In accordance with OAC rule 3745-15-04, all copies of the test results shall be submitted to the appropriate Ohio EPA District Office or local air agency within 30 days after the test is completed. Copies of the test results shall be sent to the appropriate Ohio EPA District Office or local air agency and the Ohio EPA, Central Office. Certification of the continuous NO_x monitoring system shall be granted upon determination by the Ohio EPA, Central Office that the system meets all requirements of the appropriate sections of ORC section 3704.03(I), 40 CFR Part 60, Appendix B, Performance Specification 6, and 40 CFR Part 75.

7. Within 180 days of the effective date of this permit, the permittee shall develop a written quality assurance/quality control plan for the continuous NO_x monitoring system designed to ensure continuous valid and representative readings of NO_x emissions in units of the applicable standard. The plan shall follow the requirements of the appropriate sections 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 NO_x monitoring system must be kept on site and available for inspection during regular office hours.

8. Continuous CO Monitoring - Certified Systems
Statement of Certification (Phase II Only)

Prior to the installation of the continuous 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 and 6 for approval by the Ohio EPA, Central Office.

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 such emissions unit, the permittee shall

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conduct certification tests of the continuous CO monitoring system pursuant to ORC section 3704.03(I), 40 CFR Part 60, Appendix B, Performance Specification 4 and 6. Personnel from 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. In accordance with OAC rule 3745-15-04, all copies of the test results shall be submitted to the appropriate Ohio EPA District Office or local air agency within 30 days after the test is completed. Copies of the test results shall be sent to the appropriate Ohio EPA District Office or local air agency and the Ohio EPA, Central Office. Certification of the continuous CO monitoring system shall be granted upon determination by the Ohio EPA Central Office that the system meets all requirements of ORC section 3704.03(I) and 40 CFR Part 60, Appendix B, Performance Specification 4 and 6.

9. Within 180 days of the effective date of this permit, the permittee shall develop a written quality assurance/quality control plan for the continuous CO monitoring system designed to ensure continuous valid and representative readings of CO. 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 CO monitoring system must be kept on site and available for inspection during regular office hours.
10. Continuous O₂ or CO₂ Monitoring - Certified Systems
Statement of Certification (Phase II Only)

Prior to the installation of the continuous O₂ or CO₂ 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 3 for approval by the Ohio EPA, Central Office.

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 such emissions unit, the permittee shall conduct certification tests of such equipment pursuant to the appropriate sections of ORC section 3704.03(I), 40 CFR Part 60, Appendix B, Performance Specification 3, and 40 CFR Part 75. Personnel from 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. In accordance with OAC rule 3745-15-04, all copies of the test results shall be submitted to the appropriate Ohio EPA District Office or local air agency within 30 days after the test is completed. Copies of the test results shall be sent to the appropriate Ohio EPA District Office or local air agency and the Ohio EPA, Central Office.

Certification of the continuous O₂ or CO₂ monitoring system shall be granted upon determination by the Ohio EPA, Central Office that the system meets all requirements of the appropriate sections of ORC section 3704.03(I), 40 CFR Part 60, Appendix B, Performance Specification 3, and 40 CFR Part 75.

11. Within 180 days of the effective date of this permit, the permittee shall develop a written quality assurance/quality control plan for the continuous O₂ or CO₂ monitoring system designed to ensure continuous valid and representative readings of O₂ or CO₂ emissions in units of the applicable standard. The plan shall follow the requirements of the appropriate sections 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 O₂ or CO₂ monitoring system must be kept on site and available for inspection during regular office hours.

III. Monitoring and/or Recordkeeping Requirements

1. **Phase I and II:** The permittee shall maintain monthly records of the following information for each emissions unit:
 - a. The natural gas usage rate for each month (in standard cubic feet).
 - b. Hours of operation of the combustion turbine
 - c. Hours of operation of the duct burner (Phase II)
 - d. Monthly fuel heat input (MMBtu) to the combustion turbine
 - e. Monthly fuel heat input (MMBtu) to the duct burner (Phase II)
 - f. During the first 12 calendar months of operation, the permittee shall also record the cumulative fuel heat input to each combustion turbine and duct burner. Beginning after 12 months of operation of the emission unit, records of the rolling, 12-month summation of fuel heat input shall be maintained.
2. **Phase I and II:** The permittee shall maintain hourly records of the following information for each emissions unit:
 - a. Hourly fuel heat input (MMBtu) to the combustion turbine
 - b. Hourly fuel heat input (MMBtu) to the duct burner (Phase II)
3. **Phase II:** The permittee shall operate and maintain existing equipment to continuously monitor and record NO_x from this emissions unit in units of the applicable standard. Such continuous monitoring and recording equipment shall comply with the requirements of the appropriate sections specified in 40 CFR Part 60.13 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, parts per million NO_x on an instantaneous (one-minute) basis, emissions of NO_x in units of the applicable standard in the appropriate averaging period (e.g., hourly, hourly rolling, 3-hour, daily, 30-day rolling, etc.), results of daily zero/span calibration checks, and magnitude of manual calibration adjustments.

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4. **Phase II:** The permittee shall operate and maintain equipment to continuously monitor and record CO from this emissions unit in units of the applicable standard. Such continuous monitoring and recording equipment shall comply with the requirements specified in 40 CFR Part 60.13 .

The permittee shall maintain records of all data obtained by the continuous CO monitoring system including, but not limited to, parts per million CO on an instantaneous (one minute) basis, emissions of CO in units of the applicable standard in the appropriate averaging period (e.g., hourly, hourly rolling, 3-hour, daily, 30-day rolling, annual, etc.), results of daily zero/span calibration checks, and magnitude of manual calibration adjustments.

5. **Phase II:** The permittee shall operate and maintain equipment to continuously monitor and record O₂ or CO₂ from this emissions unit in percent O₂ or CO₂. Such continuous monitoring and recording equipment shall comply with the requirements in the appropriate sections specified in 40 CFR Part 60.13 and 40 CFR Part 75.

The permittee shall maintain records of all data obtained by the continuous O₂ or CO₂ monitoring system including, but not limited to, percent O₂ or CO₂ on an instantaneous (one-minute) basis, emissions of O₂ or CO₂ in units of the applicable standard in the appropriate averaging period (e.g., hourly, hourly rolling, 3-hour, daily, 30-day rolling, etc.), results of daily zero/span calibration checks, and magnitude of manual calibration adjustments.

6. **Phase II:** The permittee shall install, calibrate, operate, and maintain continuous monitoring systems to monitor and record the average hourly fuel consumption of the combustion turbine and duct burner. The fuel flow monitoring systems comply with the requirements of 40 CFR Part 75, Appendix D.
7. **Phase I and II:** The permittee shall monitor the sulfur content and gross calorific value of the fuel being fired in the combustion turbine and duct burner. Fuel sampling and analysis shall be conducted according to the procedures and at the frequency specified by 40 CFR Part 75, Appendix D.
8. **Phase II:** The permittee shall determine the hourly heat input rate to the combustion turbine and duct burner from the fuel flow rate as determined in term A.III.6 and fuel gross calorific value as determined in term A.III.7. The heat input rate shall be calculated in accordance with the procedures in Section 5 of 40 CFR Part 75, Appendix F.
9. **Phase II:** The permittee shall maintain records of the following information for each emissions unit:

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- a. Number of startups, type of startup (hot, warm or cold) and the duration of each startup.
 - b. Number of shutdowns, and the duration of each shutdown.
 - c. During the first 12 calendar months of operation, the permittee shall also record the cumulative number of startups and shutdowns and the associated startup and shutdown emissions for each emissions unit calculated as described in Item V.2.(a,d and e). Beginning after 12 months of operation of the emission unit, records of the rolling, 12-month summation of the number of startups and shutdowns and the associated startup and shutdown emissions shall be maintained.
- 10. Phase II:** The permittee shall maintain hourly records of the following information for this emissions unit:
- in lb(s)/hr emissions rate for NO_x and CO as obtained from terms III.3. and III.4. based upon an hourly averaging period as allowed in the appropriate sections of 40 CFR Part 60.
- 11. Phase II:** The permittee shall maintain monthly records of the following information for this emissions unit:
- a. the operating hours;
 - b. during the first 12 calendar months of operation, the permittee shall record the cumulative operating hours for each calendar month; and
 - c. beginning after the first 12 calendar months of operation, the rolling, 12-month summation of the operating hours.
 - d. during the first 12 calendar months of operation, the cumulative NO_x and CO emissions, in tons (obtained by summing the values recorded under condition III.10. and dividing by 2000); and
 - e. beginning after the first 12 calendar months of operation, the rolling, 12-month NO_x and CO emissions, in tons
- 12. PSD REQUIREMENTS**

The source described in this Permit to Install is subject to the applicable provisions of the Prevention of Significant Deterioration (PSD) regulations as promulgated by the United States Environmental Protection Agency 40 CFR 52.21. The authority to apply and enforce the PSD regulations has been delegated to the Ohio Environmental Protection Agency. The terms and

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conditions of this permit and the requirements of the PSD regulations are also enforceable by the United States Environmental Protection Agency.

In accordance with 40 CFR 124.15, 124.19 and 124.20, the following shall apply: (1) the effective date of this permit shall be 30 days after the service of notice to any public commentors of the final decision to issue, modify, or revoke and re-issue the permit, unless the service of notice is by mail, in which case the effective date of the permit shall be 33 days after the service of notice; and (2) if an appeal is made to the Environmental Appeals Board of the United States Environmental Protection Agency, the effective date of the permit is suspended until such time as the appeal is resolved or denied.

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Appeals will be addressed to:
United States Environmental Protection Agency
Environmental Appeals Board
401 M Street, SW (MC-113do)
Washington, DC 20460

IV. Reporting Requirements - Phase I and II

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 occurred.
2. The permittee shall submit deviation (excursion) reports which identify all exceedances of the Phase I hourly and rolling, 12-month allowable combustion turbine fuel heat input levels and, for the first 12 calendar months of operation, all exceedances of the maximum allowable cumulative combustion turbine heat input levels. These reports are due by the date described in Part 1 - General Terms and Conditions of this permit under section (A)(2).
3. The permittee shall submit deviation (excursion) reports which identify all exceedances of the Phase II hourly combustion turbine fuel heat input limitation and the hourly and rolling, 12-month duct burner fuel heat input limitations and, for the first 12 calendar months of operation, all exceedances of the maximum cumulative duct burner fuel heat input levels. These reports are due by the date described in Part 1 - General Terms and Conditions of this permit under section (A)(2).
4. Pursuant to OAC rules 3745-15-04, 3745-35-02, and ORC sections 3704.03(I) and 3704.031 and 40 CFR Parts 60.7 and 60.13(h), 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 the date, commencement and completion times, duration, magnitude, reason (if known), and corrective actions taken (if any), of all instances of NO_x values in excess of the applicable limits specified in 40 CFR Part 76 and any limitations specified in the terms and conditions of this permit or variance. These reports shall also contain the total NO_x emissions for the calendar quarter (in tons).

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 any continuous NO_x monitoring system downtime while the emissions unit was on line (date, time, duration and reason) along with any corrective action(s) taken. The permittee shall provide the emissions unit operating time during the reporting period and the date, time, reason and corrective action(s) taken for each time period of emissions unit and control equipment malfunctions. The total

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operating time of the emissions unit and the total operating time of the analyzer while the emissions unit was on line shall also be included in the quarterly report.

If there are no excess emissions during the calendar quarter, the permittee shall submit a statement to that effect along with the emissions unit operating time during the reporting period and the date, time, reason, and corrective action(s) taken for each time period of emissions unit, control equipment, and/or monitoring system malfunctions. The total operating time of the emissions unit and the total operating time of the analyzer while the emissions unit was on line also shall be included in the quarterly report. These quarterly excess emission reports shall be submitted by January 30, April 30, July 30, and October 30 of each year and shall address the data obtained during the previous calendar quarter.

5. Pursuant to OAC rules 3745-15-04, 3745-35-02, and ORC sections 3704.03(I) and 3704.031, the permittee shall submit a summary of the excess emission report pursuant to 40 CFR Part 60.7. The summary shall be submitted to the appropriate Ohio EPA District Office or local air agency within 30 days following the end of each calendar quarter in a manner prescribed by the Director.
6. Pursuant to OAC rules 3745-15-04, 3745-35-02, and ORC sections 3704.03(I) and 3704.031 and 40 CFR Parts 60.7 and 60.13(h), 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 the date, commencement and completion times, duration, magnitude, reason (if known), and corrective actions taken (if any) of all instances of CO values in excess of any applicable limitation(s) specified in OAC Chapter 3745-21, 40 CFR Part 60, or any limitation(s) specified in the terms and conditions of this permit, in units of the standard. These reports shall also contain the total CO emissions for the calendar quarter (in tons).

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 any continuous CO monitoring system downtime while the emissions unit was on line (date, time, duration and reason) along with any corrective action(s) taken. The permittee shall provide the emissions unit operating time during the reporting period and the date, time, reason and corrective action(s) taken for each time period of emissions unit and control equipment malfunctions. The total operating time of the emissions unit and the total operating time of the analyzer while the emissions unit was on line shall also be included in the quarterly report.

If there are no excess emissions during the calendar quarter, the permittee shall submit a statement to that effect along with the emissions unit operating time during the reporting period and the date, time, reason, and corrective action(s) taken for each time period of emissions unit, control equipment, and/or monitoring system malfunctions. The total operating time of the emissions unit and the total operating time of the analyzer while the emissions unit was on line shall also be included in the quarterly report. These quarterly excess emission reports shall be submitted by

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January 30, April 30, July 30, and October 30 of each year and shall address the data obtained during the previous calendar quarter.

7. Pursuant to 40 CFR Parts 60.7 and 60.13(h), 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 continuous O₂ or CO₂ monitoring system downtime while the emissions unit was on line (date, time, duration and reason) along with any corrective action(s) taken. The permittee shall provide the emissions unit operating time during the reporting period and the date, time, reason and corrective action(s) taken for each time period of emissions unit malfunctions. The total operating time of the emissions unit and the total operating time of the analyzer while the emissions unit was on line shall be included in the quarterly report. These quarterly reports shall be submitted by January 30, April 30, July 30, and October 30 of each year and shall address the data obtained during the previous calendar quarter.
8. The permittee shall submit deviation (excursion) reports that identify any record which shows that the sulfur content of the natural gas exceeded 2 grains per standard cubic foot. These reports are due by the date described in Part I - General Terms and Conditions of this permit under section (A)(2).
9. The permittee shall submit deviation (excursion) reports that identify each time when this emissions unit was not in compliance with the startup and shutdown requirements of condition II.3. above or the annual startup and shutdown emissions limitations calculated as described in Item V.2.(a,d and e). These reports are due by the date described in Part I - General Terms and Conditions of this permit under section (A)(2).
10. In lieu of the excess emissions reports required under 40 CFR Part 60.334, the permittee shall submit excess emissions reports for emissions unit P003 in accordance with this permit.
11. This emissions unit is subject to the applicable provisions of Subpart Da. and GG 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.

Pursuant to 40 CFR Part 60.7, 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. date of performance testing (if required, at least 30 days prior to testing).

Reports are to be sent to:

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Ohio Environmental Protection Agency
DAPC - Permit Management Unit
P. O. Box 163669
Columbus, Ohio 43216-3669

and

Ohio Environmental Protection Agency
Southeast District Office
Division of Air Pollution Control
2195 Front Street
Logan, Ohio 43138

V. Testing Requirements - Phase I and II

1. 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 such emissions unit.
 - b. The emission testing shall be conducted to demonstrate compliance with the NO_x and CO outlet concentration, and the mass emissions limitations for NO_x,* CO, Formaldehyde, VOC, PM and visible emission limitations.
 - c. The following test method(s) shall be employed to demonstrate compliance with the above emissions limitations: for NO_x, Method 20 of 40 CFR Part 60, Appendix A; for PM, Method 5 of 40 CFR Part 60, Appendix A; for visible emission limitations, Method 9 of 40 CFR Part 60, Appendix A; for Formaldehyde, SW-846 Method 0011; for VOC Method 25 of 40 CFR Part 60, Appendix A; and for CO Method 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.
 - d. The testing shall be conducted while the emissions unit is operating at or near its maximum capacity with and without duct burner firing, unless otherwise specified or approved by Ohio EPA or local air agency.
 - e. Not later than 30 days prior to the proposed test date(s), the permittee shall submit an "Intent to Test" notification to the Ohio EPA, Southeast District Office. The "Intent to Test" notification shall describe in detail the proposed test methods and procedures, the emissions unit operating parameters, the time(s) and date(s) of the test(s), and the person(s) who will be conducting the test(s). Failure to submit such notification for review and approval prior to the test(s) may result in the Ohio EPA, Southeast District Office refusal to accept the results of the emission test(s).

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- f. Personnel from the Ohio EPA, Southeast District Office shall be permitted to witness the test(s), examine the testing equipment, and acquire data and information necessary to ensure that the operation of the emissions unit and the testing procedures provide a valid characterization of the emissions from the emissions unit and/or the performance of the control equipment.
- g. A comprehensive written report on the results of the emissions test(s) shall be signed by the person or persons responsible for the tests and submitted to the Ohio EPA, Southeast District Office within 30 days following completion of the test(s). The permittee may request additional time for the submittal of the written report, where warranted, with prior approval from the Ohio EPA, Southeast District Office.

* Using the test methods and procedures required under 40 CFR Part 60.335.

2. Compliance with the allowable emission limitations in this permit shall be determined according to the following methods:

- a. Emission Limitation - NO_x

Phase I:

NO_x emissions shall not exceed 9.0 ppmvd at 15% Oxygen
64.0 lbs/hr
54.4 tons per year

Phase II:

NO_x emissions shall not exceed 3.5 ppmvd at 15% Oxygen
25.0 lbs/hr without duct burner firing
30.0 lbs/hr with duct burner firing
146.9 tons per year, which includes 27.4 tpy for startups and shutdowns

Applicable Compliance Method

Initial compliance with the allowable outlet concentration, and the lbs/hr emission limitations shall be demonstrated by the performance testing as described in condition V.1. and continual compliance with those limitations shall be demonstrated by the use of the CEM (Phase II) in condition III.3. based upon an hourly averaging period as allowed in 40 CFR Part 60. During Phase I, compliance with the annual emission limitation shall be determined by multiplying the emission factor supplied by the permittee (0.0367 lb NO_x/MMBtu) by the actual fuel heat input (MMBtu/yr) and dividing by 2000 lbs/ton.

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During Phase II, compliance with the annual emission limitation shall be determined by summing the emissions demonstrated through the record keeping required in condition III.11 (CEM measured emissions) with the start-up and shut-down emissions. The annual emissions associated with start-up and shut-down shall be determined using the record keeping required in condition III.9. and the following calculation.

Annual Startup / Shutdown Emissions (tpy) = [(# of cold starts x 418 lbs. per start) + (# of warm starts x 144 lbs. per start) + (# of hot starts x 114 lbs. per start)] / 2000 lbs. per ton

b. Emission Limitation - PM

PM emissions shall not exceed:

Phase I:

18.0 lbs/hr

15.3 tons per year

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Phase II:

21.0 lbs/hr without duct burner firing

25.0 lbs/hr with duct burner firing

100.0 tons per year

Applicable Compliance Method

Compliance with the lbs/hr emission limitations shall be demonstrated by the performance testing as described in condition V.1. Compliance with the annual emission limitation shall be determined by multiplying the emission rates (in lb/MMBtu as determined by taking the allowable emission rate in lb/hr divided by the maximum heat input in MMBtu/hr) for operation with and without the duct burner firing by the associated actual fuel heat input (MMBtu/yr), dividing by 2000 lbs/ton and summing the values.

c. Emission Limitation - SO₂

SO₂ emissions shall not exceed:

Phase I:

12.0 lbs/hr

10.2 tons per year

Phase II:

12.0 lbs/hr without duct burner firing

14.0 lbs/hr with duct burner firing

56.6 tons per year

Applicable Compliance Method

Compliance with the hourly emission limitation shall be determined by the record keeping required in condition III. 1., 2., and 8. If required, the permittee shall demonstrate compliance by emission testing in accordance with approved US EPA test methods. Compliance with the annual emission limitation shall be determined by multiplying the emission factor supplied by the permittee (0.0069 lb/MMBtu without duct burner firing; 0.00665 lb/MMBtu with duct burner firing) by the associated actual fuel heat input (MMBtu/yr), dividing by 2000 lbs/ton and summing the values.

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d. Emission Limitation - VOC

VOC emissions shall not exceed:

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Phase I:

3.2 lbs/hr
2.7 tons per year

Phase II:

3.2 lbs/hr without duct burner firing
6.8 lbs/hr with duct burner firing
31.8 tons per year, which includes 10.6 tpy for startups and shutdowns

Applicable Compliance Method

Compliance with the lbs/hr limitations shall be demonstrated by the performance testing described in condition V.1. Compliance with the annual emission limitation shall be determined by multiplying the emission rates (in lb/MMBtu as determined by taking the allowable emission rate in lb/hr divided by the maximum heat input in MMBtu/hr) for operation with and without the duct burner firing by the associated actual fuel heat input (MMBtu/yr), dividing by 2000 lbs/ton, summing the values and adding the start-up and shut-down emissions. The annual emissions associated with start-up and shut-down shall be determined using the record keeping required in condition III.9. and the following calculation.

Annual Startup / Shutdown Emissions (tpy) = [(# of cold starts x 97 lbs. per start) + (# of warm starts x 74 lbs. per start) + (# of hot starts x 34 lbs. per start)] / 2000 lbs. per ton

e. Emission Limitation - CO

CO emissions shall not exceed:

Phase I:

9.0 ppmvd
33.0 lbs/hr
28.1 tons per year

Phase II:

9.0 ppmvd without duct burner firing
15.0 ppmvd with duct burner firing

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33.0 lbs/hr without duct burner firing

69.0 lbs/hr with duct burner firing

366.6 tons per year, which includes 150.1 tpy for startups and shutdowns

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Applicable Compliance Method

Initial compliance with the allowable outlet concentration, and the lbs/hr emission limitations shall be demonstrated by the performance testing as described in condition V.1 and continual compliance with those limitations shall be demonstrated by the use of the CEM (Phase II) in condition III.4. based upon an hourly averaging period as allowed in 40 CFR Part 60. During Phase I, compliance with the annual emission limitation shall be determined by multiplying the emission factor supplied by the permittee (0.01892 lb CO/MMBtu) by the actual fuel heat input (MMBtu/yr) and dividing by 2000 lbs/ton. During Phase II, compliance with the annual emission limitation shall be determined by summing the emissions demonstrated through the record keeping required in condition III.11(CEM measured emissions) with the start-up and shut-down emissions. The annual emissions associated with start-up and shut-down shall be determined using the record keeping required in condition III.9. and the following calculation.

Annual Startup / Shutdown Emissions (tpy) = [(# of cold starts x 1101 lbs. per start) + (# of warm starts x 1127 lbs. per start) + (# of hot starts x 349 lbs. per start)] / 2000 lbs. per ton

f. Emission Limitation - ammonia (NH₃)

ammonia (NH₃) emissions shall not exceed:

Phase II:

26.0 lbs/hr without duct burner firing

30.6 lbs/hr with duct burner firing

123.1 tons per year

Applicable Compliance Method

Compliance with the lbs/hr emission limitation shall be demonstrated by multiplying the emission factor provided by the permittee (0.0149 lb ammonia/MMBtu without duct burner firing; 0.01454 lb ammonia/MMBtu with duct burner firing) by the associated fuel heat input (MMBtu/hr). If required, the permittee shall demonstrate compliance by emission testing in accordance with approved US EPA test methods. Compliance with the annual emission limitation shall be determined by multiplying the aforementioned emission rate (lb/MMBtu) by the associated total actual fuel heat input (MMBtu/yr), dividing by 2000 lbs/ton and summing the values.

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g. Emission Limitation - formaldehyde

formaldehyde emissions shall not exceed:

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Phase I:

0.19 lbs/hr
0.16 tons per year

Phase II:

0.19 lbs/hr without duct burner firing
0.21 lbs/hr with duct burner firing
0.87 tons per year

Applicable Compliance Method

Compliance with the lbs/hr emission limitations shall be demonstrated by the performance testing described in condition V.1. Compliance with the annual emission limitation shall be determined by multiplying the emission rates (in lb/MMBtu as determined by taking the allowable emission rate in lb/hr divided by the maximum heat input in MMBtu/hr) for operation with and without the duct burner firing by the associated actual fuel heat input (MMBtu/yr), dividing by 2000 lbs/ton and summing the values.

h. Emission Limitation - sulfuric acid (H₂SO₄)

sulfuric acid emissions shall not exceed:

Phase I:

0.48 lbs/hr
0.41 tons per year

Phase II:

0.48 lbs/hr without duct burner firing
0.56 lbs/hr with duct burner firing
2.3 tons per year

Applicable Compliance Method

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Compliance with the lb/hr emission limitation shall be demonstrated by multiplying the emission factor supplied by the permittee (0.000275 lb sulfuric acid/MMBtu heat input without duct burner firing; 0.000266 lb sulfuric acid/MMBtu heat input with duct burner firing) by the associated fuel heat input (MMBtu/hr). If required, the permittee shall demonstrate compliance by emission testing in accordance with approved US EPA test methods. Compliance with the annual emission limitation shall be determined by multiplying the aforementioned emission rates (lb/MMBtu) by the associated actual fuel heat input (MMBtu/yr), dividing by 2000 lbs/ton and summing the values.

i. Emission Limitation

Visible particulate emissions from any stack shall not exceed 10 percent opacity as a six-minute average.

Applicable Compliance Method

Compliance with the visible emissions limitation established by this permit shall be determined by Method 9, 40 CFR Part 60, Appendix A.

VI. Miscellaneous Requirements

1. In accordance with good engineering practices, the SCR unit on emissions unit P003 shall be installed, operated and maintained in accordance with the manufacturer's recommendations, with any modifications deemed necessary by the permittee. The permittee shall maintain on site a copy of the operation & maintenance manual, as provided by the manufacturer.

B. State Only Enforceable Section

I. Applicable Emissions Limitations and/or Control Requirements

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

<u>Operations, Property, and/or Equipment</u>	<u>Applicable Rules/Requirements</u>	<u>Applicable Emissions Limitations/Control Measures</u>
PHASE I		
P003 - GE 7FA Natural Gas Fired Dry Low NOx (DLN) Combustion Turbine	None	None
PHASE II		
P003 - GE 7FA Natural Gas Fired Dry Low NOx (DLN) Combustion Turbine with Duct Firing Operated in Combined Cycle Mode and Controlled by Selective Catalytic Reduction (SCR)	None	None

2. Additional Terms and Conditions

2.a None

II. Operational Restrictions

None

III. Monitoring and/or Recordkeeping Requirements

None

IV. Reporting Requirements

None

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V. Testing Requirements

None

VI. Miscellaneous Requirements

None

SECTION II

**APPLICABLE WASTEWATER
REQUIREMENTS**

PSEG Waterford Energy LLC**Facility ID: 0684000213****PTI Application: 06-06206****Issued: To be entered upon final issuance**

This permit shall expire if construction has not been initiated by the applicant within eighteen months of the effective date of this permit. By accepting this permit, the applicant acknowledges that this eighteen month period shall not be considered or construed as extending or having any effect whatsoever on any compliance schedule or deadline set forth in any administrative or court order issued to or binding upon the permit applicant, and the applicant shall abide by such compliance schedules or deadlines to avoid the initiation of additional legal action by the Ohio EPA.

The director of the Ohio Environmental Protection Agency, or his authorized representatives, may enter upon the premises of the above named applicant during construction and operation at any reasonable time for the purpose of making inspections, conducting tests, examining records, or reports pertaining to the construction, modification, or installation of the above described source of environmental pollutants.

Issuance of this permit does not relieve you of the duty of complying with all applicable federal, state, and local laws, ordinances, and regulations.

Any well, well point, pit, or other device installed for the purpose of lowering the ground water level to facilitate construction of this project shall be properly abandoned in accordance with the provisions of this plan or as directed by the director or his representative.

Any person installing any well, well point, pit or other device used for the purpose of removing ground water from an aquifer shall complete and file a Well Log and Drilling Report form with the Ohio Department of Natural Resources, Division of Water, within 30 days of the well completion in accordance with the Ohio Revised code Section 1521.01 and 1521.05. In addition, any such facility that has a capacity to withdraw waters of the state in an amount greater than 100,000 gallons per day from all sources shall be registered by the owner with the chief of the Division of Water, Ohio Department of Natural Resources, within three months after the facility is completed in accordance with Section 1521.16 of the Ohio Revised Code. For copies of the necessary well log, drilling report, or registration forms, please contact:

Ohio Department of Natural Resources
Fountain Square
Columbus, OH 43224-1387
(614) 265-6717

The proposed wastewater disposal system shall be constructed in strict accordance with the plans and application approved by the director of the Ohio Environmental Protection Agency. There shall be no deviation from these plans without the prior express, written approval of the agency. Any deviations from these plans or the above conditions may lead to such sanctions and penalties as provided for under Ohio law. Approval of this plan and issuance of this permit does not constitute an assurance by the Ohio Environmental Protection Agency that the proposed facilities will operate in compliance with all Ohio laws and regulations. Additional facilities shall be installed upon orders of the Ohio Environmental Protection Agency if the proposed sources are inadequate or cannot meet applicable standards.

This permit to install applies only to the wastewater treatment works listed above. The installation of drinking water supplies, air contaminant sources, or solid waste disposal facilities will require the submittal of a separate application to the director.

PSEG Waterford Energy LLC

Facility ID: 0684000213

PTI Application: 06-06206

Issued: To be entered upon final issuance

This permit applies to a wastewater disposal system designed to serve an average daily hydraulic flow of no more than 1,450,000 gallons.

No liquids, sludges, or toxic or hazardous substances other than those set forth in the approved permit shall be accepted for disposal without the prior written approval of the Ohio Environmental Protection Agency.

The proposed wastewater disposal system shall be constructed in strict accordance with the plans and application approved by the director of the Ohio Environmental Protection Agency. There shall be no deviation from these plans without the prior express, written approval of the agency. Any deviations from these plans or the above conditions may lead to such sanctions and penalties as provided for under Ohio law. Approval of this plan and issuance of this permit does not constitute an assurance by the Ohio Environmental Protection Agency that the proposed facilities will operate in compliance with all Ohio laws and regulations. Additional facilities shall be installed upon orders of the Ohio Environmental Protection Agency if the proposed sources are inadequate or cannot meet applicable standards.

The Southeast District Office of the Ohio Environmental Protection Agency shall be notified in writing as to (a) the construction starting date; (b) the construction completion date; and (c) the date the wastewater disposal system was placed into operation.

The owner, PSEG Waterford Energy, LLC, shall be responsible for proper operation and maintenance of the wastewater disposal system.

NEW SOURCE REVIEW FORM B

PTI Number: 06-06206

Facility ID: 0684000213

FACILITY NAME PSEG Waterford Energy LLC

FACILITY DESCRIPTION Simple (Phase I) and Combined (Phase II) Cycle Combustion Turbine System CITY/TWP Beverly

SIC CODE 4911 SCC CODE 1-01-006-02 EMISSIONS UNIT ID B001

EMISSIONS UNIT DESCRIPTION 93.2 MMBtu Per Hour Natural Gas Fired Boiler

DATE INSTALLED 12/2000

EMISSIONS: (Click on bubble help for Air Quality Descriptions)

Pollutants	Air Quality Description	Actual Emissions Rate		PTI Allowable	
		Short Term Rate	Tons Per Year	Short Term Rate	Tons Per Year
Particulate Matter	Attainment	0.00739 lb/MMBtu	0.34	0.00739 lb/MMBtu	0.34
PM ₁₀	Attainment				
Sulfur Dioxide	Attainment	0.000584 lb/MMBtu	0.027	0.000584 lb/MMBtu	0.027
Organic Compounds	Attainment	0.00535 lb/MMBtu	0.25	0.00535 lb/MMBtu	0.25
Nitrogen Oxides	Attainment	0.05 lb/MMBtu	2.33	0.05 lb/MMBtu	2.33
Carbon Monoxide	Attainment	0.1 lb/MMBtu	4.66	0.1 lb/MMBtu	4.66
Lead					
Other: Air Toxics					

APPLICABLE FEDERAL RULES:

NSPS? **Subpart Dc**

NESHAP?

PSD? **Y**

OFFSET POLICY?

WHAT IS THE BAT DETERMINATION, AND WHAT IS THE BASIS FOR THE DETERMINATION?

Enter Determination Natural Gas Fired Only

IS THIS SOURCE SUBJECT TO THE AIR TOXICS POLICY? No

OPTIONAL: WHAT IS THE CAPITAL COST OF CONTROL EQUIPMENT? \$NA

TOXIC AIR CONTAMINANTS

Ohio EPA's air toxics policy applies to contaminants for which the American Conference of Governmental Industrial Hygienists (ACGIH) has a listed threshold limit value.

AIR TOXICS MODELING PERFORMED*? _____ YES X NO

IDENTIFY THE AIR CONTAMINANTS: _____

NEW SOURCE REVIEW FORM B

PTI Number: 06-06206

Facility ID: 0684000213

FACILITY NAME PSEG Waterford Energy LLC

FACILITY DESCRIPTION Simple (Phase I) and Combined (Phase II) Cycle Combustion Turbine System CITY/TWP Beverly

SIC CODE 4911 SCC CODE 2-02-002-01 EMISSIONS UNIT ID P001

EMISSIONS UNIT DESCRIPTION GE 7FA Natural Gas Fired Dry Low NOx (DLN) Combustion Turbine

DATE INSTALLED 12/2000

EMISSIONS: (Click on bubble help for Air Quality Descriptions)

Pollutants	Air Quality Description	Actual Emissions Rate		PTI Allowable	
		Short Term Rate	Tons Per Year	Short Term Rate	Tons Per Year
Particulate Matter	Attainment	Phase I - 18 lb/hr Phase II - 21.0 lb/hr (25.0 lb/hr)	Phase I - 15.3 Phase II - 100.0	Phase I - 18 lb/hr Phase II - 21.0 lb/hr (25.0 lb/hr)	Phase I - 15.3 Phase II - 100.0
PM ₁₀					
Sulfur Dioxide	Attainment	Phase I - 12.0 lb/hr Phase II - 12.0 lb/hr (14.0 lb/hr)	Phase I - 10.2 Phase II - 56.6	Phase I - 12.0 lb/hr Phase II - 12.0 lb/hr (14.0 lb/hr)	Phase I - 10.2 Phase II - 56.6
Organic Compounds	Attainment	Phase I - 3.2 lb/hr Phase II - 3.2 lb/hr (6.8 lb/hr)	Phase I - 2.7 Phase II - 31.8*	Phase I - 3.2 lb/hr Phase II - 3.2 lb/hr (6.8 lb/hr)	Phase I - 2.7 Phase II - 31.8*
Nitrogen Oxides	Attainment	Phase I - 9.0 ppmvd at 15% O ₂ - 64.0 lb/hr Phase II - 3.5 ppmvd at 15% O ₂ - 25.0 lb/hr (30.0 lb/hr)	Phase I - 54.4 Phase II - 146.9*	Phase I - 9.0 ppmvd at 15% O ₂ - 64.0 lb/hr Phase II - 3.5 ppmvd at 15% O ₂ - 25.0 lb/hr (30.0 lb/hr)	Phase I - 54.4 Phase II - 146.9*
Carbon Monoxide	Attainment	Phase I - 9.0 ppmvd - 33.0 lb/hr Phase II - 9.0 (15.0) ppmvd - 33.0 lb/hr (69.0 lb/hr)	Phase I - 28.1 Phase II - 366.6*	Phase I - 9.0 ppmvd - 33.0 lb/hr Phase II - 9.0 (15.0) ppmvd - 33.0 lb/hr (69.0 lb/hr)	Phase I - 28.1 Phase II - 366.6*
Lead					
Other: Air Toxics	Ammonia (NH ₃) Formaldehyde Sulfuric Acid	PhII-26.0(30.6)lb/hr PhI - 0.19 lb/hr PhII-0.19(0.21)lb/hr PhI - 0.48 lb/hr PhII-0.48(0.56)lb/hr	123.1 0.16 0.87 0.41 2.3	PhII-26.0(30.6)lb/hr PhI - 0.19 lb/hr PhII-0.19(0.21)lb/hr PhI - 0.48 lb/hr PhII-0.48(0.56)lb/hr	123.1 0.16 0.87 0.41 2.3

() Emission rates with duct burner firing - 4000 hrs/yr * includes annual startup and shutdown emissions

NEW SOURCE REVIEW FORM B

PTI Number: 06-06206

Facility ID: 0684000213

FACILITY NAME PSEG Waterford Energy LLC

FACILITY DESCRIPTION Simple (Phase I) and Combined (Phase II) Cycle Combustion Turbine System CITY/TWP Beverly

APPLICABLE FEDERAL RULES:

NSPS? Subparts GG, Da NESHAP? Exempt from PSD? Y OFFSET POLICY? MACT < 10 tpy formaldehyde

WHAT IS THE BAT DETERMINATION, AND WHAT IS THE BASIS FOR THE DETERMINATION?

Enter Determination Phase I - Dry Low NOx Burners ; Phase II - Dry Low NOx Burners Controlled with Selective Catalytic Reduction; BACT (see staff determination)

IS THIS SOURCE SUBJECT TO THE AIR TOXICS POLICY? YES

OPTIONAL: WHAT IS THE CAPITAL COST OF CONTROL EQUIPMENT? Phase II - \$3,500,000

TOXIC AIR CONTAMINANTS

Ohio EPA's air toxics policy applies to contaminants for which the American Conference of Governmental Industrial Hygienists (ACGIH) has a listed threshold limit value.

AIR TOXICS MODELING PERFORMED*? X YES NO

IDENTIFY THE AIR CONTAMINANTS: Ammonia (NH3), Formaldehyde, Sulfuric Acid

NEW SOURCE REVIEW FORM B

PTI Number: 06-06206 Facility ID: 0684000213

FACILITY NAME PSEG Waterford Energy LLC

FACILITY DESCRIPTION Simple (Phase I) and Combined (Phase II) CITY/TWP Beverly
 Cycle Combustion Turbine System.

SIC CODE 4911 SCC CODE 2-02-002-01 EMISSIONS UNIT ID P002

EMISSIONS UNIT DESCRIPTION GE 7FA Natural Gas Fired Dry Low NOx (DLN) Combustion Turbine

DATE INSTALLED 12/2000

EMISSIONS: (Click on bubble help for Air Quality Descriptions)

Pollutants	Air Quality Description	Actual Emissions Rate		PTI Allowable	
		Short Term Rate	Tons Per Year	Short Term Rate	Tons Per Year
Particulate Matter	Attainment	Phase I - 18 lb/hr Phase II - 21.0 lb/hr (25.0 lb/hr)	Phase I - 15.3 Phase II - 100.0	Phase I - 18 lb/hr Phase II - 21.0 lb/hr (25.0 lb/hr)	Phase I - 15.3 Phase II - 100.0
PM ₁₀					
Sulfur Dioxide	Attainment	Phase I - 12.0 lb/hr Phase II - 12.0 lb/hr (14.0 lb/hr)	Phase I - 10.2 Phase II - 56.6	Phase I - 12.0 lb/hr Phase II - 12.0 lb/hr (14.0 lb/hr)	Phase I - 10.2 Phase II - 56.6
Organic Compounds	Attainment	Phase I - 3.2 lb/hr Phase II - 3.2 lb/hr (6.8 lb/hr)	Phase I - 2.7 Phase II - 31.8*	Phase I - 3.2 lb/hr Phase II - 3.2 lb/hr (6.8 lb/hr)	Phase I - 2.7 Phase II - 31.8*
Nitrogen Oxides	Attainment	Phase I - 9.0 ppmvd at 15% O ₂ - 64.0 lb/hr Phase II - 3.5 ppmvd at 15% O ₂ - 25.0 lb/hr (30.0 lb/hr)	Phase I - 54.4 Phase II - 146.9*	Phase I - 9.0 ppmvd at 15% O ₂ - 64.0 lb/hr Phase II - 3.5 ppmvd at 15% O ₂ - 25.0 lb/hr (30.0 lb/hr)	Phase I - 54.4 Phase II - 146.9*
Carbon Monoxide	Attainment	Phase I - 9.0 ppmvd - 33.0 lb/hr (69.0 lb/hr) Phase II - 9.0 (15.0) ppmvd	Phase I - 28.1 Phase II - 366.6*	Phase I - 9.0 ppmvd - 33.0 lb/hr (69.0 lb/hr) Phase II - 9.0 (15.0) ppmvd	Phase I - 28.1 Phase II - 366.6*
Lead					

NEW SOURCE REVIEW FORM B

PTI Number: 06-06206 Facility ID: 0684000213

FACILITY NAME PSEG Waterford Energy LLC

FACILITY DESCRIPTION Simple (Phase I) and Combined (Phase II) Cycle Combustion Turbine System. CITY/TWP Beverly

Other: Air Toxics	Ammonia (NH3)	PhII-26.0(30.6)lb/h	123.1	PhII-26.0(30.6)lb/h	123.1
	Formaldehyde	r	0.16	r	0.16
		PhI - 0.19 lb/hr	0.87	PhI - 0.19 lb/hr	0.87
	Sulfuric Acid	PhII-0.19(0.21)lb/h	0.41	PhII-0.19(0.21)lb/h	0.41
		r	2.3	r	2.3
		PhI - 0.48 lb/hr		PhI - 0.48 lb/hr	
		PhII-0.48(0.56)lb/h		PhII-0.48(0.56)lb/h	
		r		r	

() Emission rates with duct burner firing - 4000 hrs/yr * includes annual startup and shutdown emissions

APPLICABLE FEDERAL RULES:

NSPS? **Subparts GG, Da** NESHAP? **Exempt from** PSD? **Y** OFFSET POLICY?
MACT < 10 tpy formaldehyde

WHAT IS THE BAT DETERMINATION, AND WHAT IS THE BASIS FOR THE DETERMINATION?

Enter Determination Phase I - Dry Low NOx Burners ; Phase II - Dry Low NOx Burners Controlled with Selective Catalytic Reduction; BACT (see staff determination)

IS THIS SOURCE SUBJECT TO THE AIR TOXICS POLICY? YES

OPTIONAL: WHAT IS THE CAPITAL COST OF CONTROL EQUIPMENT? Phase II - \$3,500,000

TOXIC AIR CONTAMINANTS

Ohio EPA's air toxics policy applies to contaminants for which the American Conference of Governmental Industrial Hygienists (ACGIH) has a listed threshold limit value.

AIR TOXICS MODELING PERFORMED*? X YES NO

IDENTIFY THE AIR CONTAMINANTS: Ammonia (NH3), Formaldehyde, Sulfuric Acid

NEW SOURCE REVIEW FORM B

PTI Number: 06-06206

Facility ID: 0684000213

FACILITY NAME PSEG Waterford Energy LLC

FACILITY DESCRIPTION Simple (Phase I) and Combined (Phase II) Cycle Combustion Turbine System CITY/TWP Beverly

SIC CODE 4911 SCC CODE 2-02-002-01 EMISSIONS UNIT ID P003

EMISSIONS UNIT DESCRIPTION GE 7FA Natural Gas Fired Dry Low NOx (DLN) Combustion Turbine

DATE INSTALLED 12/2000

EMISSIONS: (Click on bubble help for Air Quality Descriptions)

Pollutants	Air Quality Description	Actual Emissions Rate		PTI Allowable	
		Short Term Rate	Tons Per Year	Short Term Rate	Tons Per Year
Particulate Matter	Attainment	Phase I - 18 lb/hr Phase II - 21.0 lb/hr (25.0 lb/hr)	Phase I - 15.3 Phase II - 100.0	Phase I - 18 lb/hr Phase II - 21.0 lb/hr (25.0 lb/hr)	Phase I - 15.3 Phase II - 100.0
PM ₁₀					
Sulfur Dioxide	Attainment	Phase I - 12.0 lb/hr Phase II - 12.0 lb/hr (14.0 lb/hr)	Phase I - 10.2 Phase II - 56.6	Phase I - 12.0 lb/hr Phase II - 12.0 lb/hr (14.0 lb/hr)	Phase I - 10.2 Phase II - 56.6
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Nitrogen Oxides	Attainment	Phase I - 9.0 ppmvd at 15% O ₂ - 64.0 lb/hr Phase II - 3.5 ppmvd at 15% O ₂ - 25.0 lb/hr (30.0 lb/hr)	Phase I - 54.4 Phase II - 146.9*	Phase I - 9.0 ppmvd at 15% O ₂ - 64.0 lb/hr Phase II - 3.5 ppmvd at 15% O ₂ - 25.0 lb/hr (30.0 lb/hr)	Phase I - 54.4 Phase II - 146.9*
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Lead					
Other: Air Toxics	Ammonia (NH ₃) Formaldehyde Sulfuric Acid	PhII-26.0(30.6)lb/hr PhI - 0.19 lb/hr PhII-0.19(0.21)lb/hr PhI - 0.48 lb/hr PhII-0.48(0.56)lb/hr	123.1 0.16 0.87 0.41 2.3	PhII-26.0(30.6)lb/hr PhI - 0.19 lb/hr PhII-0.19(0.21)lb/hr PhI - 0.48 lb/hr PhII-0.48(0.56)lb/hr	123.1 0.16 0.87 0.41 2.3

() Emission rates with duct burner firing - 4000 hrs/yr * includes annual startup and shutdown emissions

167 **NEW SOURCE REVIEW FORM B**

PTI Number: 06-06206 Facility ID: 0684000213

FACILITY NAME PSEG Waterford Energy LLC

FACILITY DESCRIPTION Simple (Phase I) and Combined (Phase II) Cycle Combustion Turbine System CITY/TWP Beverly

APPLICABLE FEDERAL RULES:

NSPS? Subparts GG, Da NESHAP? Exempt from PSD? Y OFFSET POLICY? MACT < 10 tpy formaldehyde

WHAT IS THE BAT DETERMINATION, AND WHAT IS THE BASIS FOR THE DETERMINATION?

Enter Determination Phase I - Dry Low NOx Burners ; Phase II - Dry Low NOx Burners Controlled with Selective Catalytic Reduction; BACT (see staff determination)

IS THIS SOURCE SUBJECT TO THE AIR TOXICS POLICY? YES

OPTIONAL: WHAT IS THE CAPITAL COST OF CONTROL EQUIPMENT? Phase II - \$3,500,000

TOXIC AIR CONTAMINANTS

Ohio EPA's air toxics policy applies to contaminants for which the American Conference of Governmental Industrial Hygienists (ACGIH) has a listed threshold limit value.

AIR TOXICS MODELING PERFORMED*? X YES NO

IDENTIFY THE AIR CONTAMINANTS: Ammonia (NH3), Formaldehyde, Sulfuric Acid

168 **NEW SOURCE REVIEW FORM B**

PTI Number: 06-06206

Facility ID: 0684000213

FACILITY NAME PSEG Waterford Energy LLC

FACILITY DESCRIPTION Simple (Phase I) and Combined (Phase II) Cycle Combustion Turbine System CITY/TWP Beverly

Ohio EPA Permit to Install Information Form Please describe below any documentation which is being submitted with this recommendation (must be sent the same day). Electronic items should be submitted with the e-mail transmitting the PTI terms, and in software that CO can utilize. If mailing any hard copy, this section must be printed as a cover page. All items must be clearly labeled indicating the PTI name and number. Submit **hard copy items to Pam McGraner**, AQM&P, DAPC, Central Office, and electronic files to airpti@epa.state.oh.us

Please fill out the following. If the checkbox does not work, replace it with an 'X'

	<u>Electronic</u>	<u>Additional information File Name Convention (your PTI # plus this letter)</u>	<u>Hard Copy</u>	<u>None</u>
<u>Calculations (required)</u>	<input checked="" type="checkbox"/>	0606206c.wpd	<input checked="" type="checkbox"/>	
<u>Modeling form/results</u>	<input type="checkbox"/>	0000000s.wpd	<input checked="" type="checkbox"/>	<input type="checkbox"/>
<u>PTI Application (complete or partial)*</u>	<input type="checkbox"/>	0000000a.wpd	<input checked="" type="checkbox"/>	<input type="checkbox"/>
<u>BAT Study</u>	<input type="checkbox"/>	0000000b.wpd	<input checked="" type="checkbox"/>	<input type="checkbox"/>
<u>Other/misc.</u>	<input type="checkbox"/>	0000000t.wpd	<input type="checkbox"/>	<input type="checkbox"/>

* Mandatory for netting, PSD, nonattainment NSR, 112(g), 21-07(G)(9)(g) and 21-09(U)(2)(f) - 2 complete copies.

Please complete (see comment bubble to the left for additional instructions):

NSR Discussion

NONE

Please complete for these type permits (For PSD/NSR Permit, place mouse over this text):

Synthetic Minor Determination and/or Netting Determination
Permit To Install ENTER PTI NUMBER HERE

A. Source Description

B. Facility Emissions and Attainment Status

C. Source Emissions

D. Conclusion

PLEASE PROVIDE ADDITIONAL NOTES OR COMMENTS AS NECESSARY:
SEE ATTACHED STAFF DETERMINATION

NEW SOURCE REVIEW FORM B

PTI Number: 06-06206 Facility ID: 0684000213

FACILITY NAME PSEG Waterford Energy LLC

FACILITY DESCRIPTION Simple (Phase I) and Combined (Phase II) CITY/TWP Beverly
Cycle Combustion Turbine System

Please complete:

**SUMMARY (for informational purposes only)
TOTAL PERMIT TO INSTALL ALLOWABLE EMISSIONS**

<u>Pollutant</u>	<u>Tons Per Year</u>
NOx	163.2 (Phase I) 443.0 (Phase II)
SO2	30.6 (Phase I) 169.7 (Phase II)
CO	84.2 (Phase I) 1104.6 (Phase II)
VOC	8.2 (Phase I) 95.7 (Phase II)
PM	45.9 (Phase I) 300.3 (Phase II)
Ammonia (NH3)	369.2 (Phase II)
Formaldehyde	0.5 (Phase I) 2.6 (Phase II)
Sulfuric Acid	1.2 (Phase I) 6.8 (Phase II)