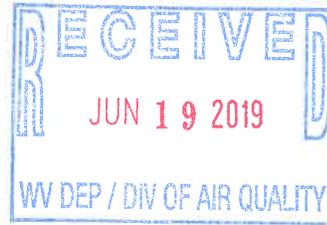




Pleasants Energy, LLC  
10319 South Pleasants Highway  
St. Mary's, WV 26170



June 17, 2019

Carrie McCumbers  
West Virginia Department of Environmental Protection  
Division of Air Quality  
601 57<sup>th</sup> Street, SE  
Charleston, WV, 25304

Re: Pleasants Energy, LLC  
Pleasants Energy Facility  
Title V Permit Renewal Application  
Permit Number: R30-07300022-2014

Dear Ms. McCumbers:

Pleasants Energy, LLC (Pleasants Energy) is submitting this Title V Permit Renewal application for the Pleasants Energy facility, located near Waverly, West Virginia. The Pleasants Energy facility is a 300-megawatt simple-cycle electric generating station that currently operates under Title V permit number R30-07300022-2014. The renewal application is due by June 22, 2019 and the Title V permit expires on December 22, 2019.

The Title V permit for Pleasants Energy is currently on public notice to incorporate a Class I Administrative Update for R14-0034B, issued on March 28, 2019. Once the Title V Permit Modification is complete for R30-07300022-2014(MM01), this renewal application has no changes to the Title V operation permit.

This Title V renewal application includes the following documents in addition to the main facility Title V application form:

- Attachment B: Plot Plans
- Attachment C: Process Flow Diagrams
- Attachment D: Emission Unit Table
- Attachment E: Emission Unit Forms
- Attachment G: Pollution Control Device Forms
- Attachment I: Draft Permit Language
- Attachment J: Detailed Emission Calculations

As WV DEP proceeds with the evaluation process, please contact the following persons with questions or for additional information:

Gerald Gatti  
Pleasants Energy, LLC  
10319 South Pleasants Highway  
St. Mary's, WV 26170  
Phone: 304-665-4201  
Gerald.Gatti@vistraenergy.com

Mary Hauner-Davis  
Burns & McDonnell  
9400 Ward Parkway  
Kansas City, MO 64114  
Phone: 816-822-4252  
mhauner@burnsmcd.com

If we can be of any assistance to facilitate your staff's efforts, please do not hesitate to contact me or our consultant, Mary Hauner-Davis at the phone and emails addresses listed above.

Thank you for your time and efforts on this project.

Sincerely,



Gerald Gatti  
Plant Manager

Enclosure

cc: Mary Hauner-Davis, Burns & McDonnell  
Gary Vierling, Pleasants Energy

# Title V Renewal Application

**Pleasants Energy, LLC**

**Waverly Power Plant  
Project No. 115663**

**Revision 0  
June 2019**



<b>11. Mailing Address</b>		
Street or P.O. Box: 10319 South Pleasants Highway		
City: St. Mary's	State: WV	Zip: 26170
Telephone Number: (304) 221-4201	Fax Number: (304) 662-4218	

<b>12. Facility Location</b>		
Street: 10319 South Pleasants Highway	City: St. Mary's	County: Pleasants
UTM Easting: 468.629 km	UTM Northing: 4,353.573 km	Zone: <input checked="" type="checkbox"/> 17 or <input type="checkbox"/> 18
Directions: From 1 <sup>st</sup> Street in Waverly, West Virginia, head east on Highway 2, approximately 1 mile from Waverly Street. The facility is located on the south side of Highway 2.		
Portable Source? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No		
Is facility located within a nonattainment area? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	If yes, for what air pollutants? N/A	
Is facility located within 50 miles of another state? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	If yes, name the affected state(s). Ohio	
Is facility located within 100 km of a Class I Area <sup>1</sup> ? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	If yes, name the area(s).	
If no, do emissions impact a Class I Area <sup>1</sup> ? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No		
<sup>1</sup> Class I areas include Dolly Sods and Otter Creek Wilderness Areas in West Virginia, and Shenandoah National Park and James River Face Wilderness Area in Virginia.		

<b>13. Contact Information</b>		
<b>Responsible Official:</b> Gerald Gatti		<b>Title:</b> Plant Manager
<b>Street or P.O. Box:</b> 10319 South Pleasants Highway		
<b>City:</b> St. Mary's	<b>State:</b> WV	<b>Zip:</b> 26170
<b>Telephone Number:</b> (304) 665-4201		<b>Fax Number:</b> (304) 665-4218
<b>E-mail address:</b> Gerald.Gatti@VistraEnergy.com		
<b>Environmental Contact:</b> Gary Vierling		<b>Title:</b> Combustion Turbine Specialist
<b>Street or P.O. Box:</b> 10319 South Pleasants Highway		
<b>City:</b> St. Mary's	<b>State:</b> WV	<b>Zip:</b> 26170
<b>Telephone Number:</b> (304) 665-4206		<b>Fax Number:</b> (304) 665-4218
<b>E-mail address:</b> Gary.Vierling@VistraEnergy.com		
<b>Application Preparer:</b> Mary Hauner-Davis		<b>Title:</b> Air Permitting Specialist
<b>Company:</b> Burns & McDonnell Engineering Company, Inc.		
<b>Street or P.O. Box:</b> 9400 Ward Parkway		
<b>City:</b> Kansas City	<b>State:</b> MO	<b>Zip:</b> 64114
<b>Telephone Number:</b> (816) 822-4252		<b>Fax Number:</b> (816) 822-3911
<b>E-mail address:</b> mhauner@burnsmcd.com		

**14. Facility Description**

List all processes, products, NAICS and SIC codes for normal operation, in order of priority. Also list any process, products, NAICS and SIC codes associated with any alternative operating scenarios if different from those listed for normal operation.

Process	Products	NAICS	SIC
Simple-cycle combustion turbines	Electricity	221112	4911
Emergency generators	Electricity	221112	4911

**Provide a general description of operations.**

The Pleasants Energy LLC facility generates electricity from two simple-cycle combustion turbines. In addition, five emergency diesel generators are used to start the turbines as needed. The combustion turbines combust natural gas with diesel fuel as backup.

15. Provide an **Area Map** showing plant location as **ATTACHMENT A**.

16. Provide a **Plot Plan(s)**, e.g. scaled map(s) and/or sketch(es) showing the location of the property on which the stationary source(s) is located as **ATTACHMENT B**. For instructions, refer to "Plot Plan - Guidelines."

17. Provide a detailed **Process Flow Diagram(s)** showing each process or emissions unit as **ATTACHMENT C**. Process Flow Diagrams should show all emission units, control equipment, emission points, and their relationships.

**Section 2: Applicable Requirements**

<b>18. Applicable Requirements Summary</b>	
Instructions: Mark all applicable requirements.	
<input type="checkbox"/> SIP	<input type="checkbox"/> FIP
<input checked="" type="checkbox"/> Minor source NSR (45CSR13)	<input checked="" type="checkbox"/> PSD (45CSR14)
<input checked="" type="checkbox"/> NESHAP (45CSR34)	<input type="checkbox"/> Nonattainment NSR (45CSR19)
<input checked="" type="checkbox"/> Section 111 NSPS	<input checked="" type="checkbox"/> Section 112(d) MACT standards
<input type="checkbox"/> Section 112(g) Case-by-case MACT	<input type="checkbox"/> 112(r) RMP
<input type="checkbox"/> Section 112(i) Early reduction of HAP	<input type="checkbox"/> Consumer/commercial prod. reqts., section 183(e)
<input type="checkbox"/> Section 129 Standards/Reqts.	<input type="checkbox"/> Stratospheric ozone (Title VI)
<input type="checkbox"/> Tank vessel reqt., section 183(f)	<input type="checkbox"/> Emissions cap 45CSR§30-2.6.1
<input type="checkbox"/> NAAQS, increments or visibility (temp. sources)	<input type="checkbox"/> 45CSR27 State enforceable only rule
<input type="checkbox"/> 45CSR4 State enforceable only rule	<input checked="" type="checkbox"/> Acid Rain (Title IV, 45CSR33)
<input type="checkbox"/> Emissions Trading and Banking (45CSR28)	<input type="checkbox"/> Compliance Assurance Monitoring (40CFR64)
<input checked="" type="checkbox"/> CAIR NO <sub>x</sub> Annual Trading Program (45CSR39)	<input checked="" type="checkbox"/> CAIR NO <sub>x</sub> Ozone Season Trading Program (45CSR40)
<input checked="" type="checkbox"/> CAIR SO <sub>2</sub> Trading Program (45CSR41)	

<b>19. Non Applicability Determinations</b>
<p><b>List all requirements which the source has determined not applicable and for which a permit shield is requested. The listing shall also include the rule citation and the reason why the shield applies.</b></p> <p>NSPS, 40 CFR 60, Subpart TTTT. The combustion turbines were installed prior to the applicability date.</p> <p>NSPS, 40 CFR 60, Subpart GG. The combustion turbines were modified after the applicable dates and the turbine are now subject to Subpart KKKK instead of GG.</p> <p>NESHAP, 40 CFR 63, Subpart YYYY. The Pleasants Energy facility is not a major source of HAPs.</p>
<input checked="" type="checkbox"/> Permit Shield

**20. Facility-Wide Applicable Requirements**

List all facility-wide applicable requirements. For each applicable requirement, include the underlying rule/regulation citation and/or construction permit with the condition number. (Note: Title V permit condition numbers alone are not the underlying applicable requirements).

See Attachment

Permit Shield

For all facility-wide applicable requirements listed above, provide monitoring/testing / recordkeeping / reporting which shall be used to demonstrate compliance. If the method is based on a permit or rule, include the condition number and/or citation. (Note: Each requirement listed above must have an associated method of demonstrating compliance. If there is not already a required method in place, then a method must be proposed.)

See Attachment

Are you in compliance with all facility-wide applicable requirements?  Yes  No

If no, complete the **Schedule of Compliance Form** as **ATTACHMENT F**.





Section 3: Facility-Wide Emissions

<b>23. Facility-Wide Emissions Summary [Tons per Year]</b>	
<b>Criteria Pollutants</b>	<b>Potential Emissions</b>
Carbon Monoxide (CO)	477.4
Nitrogen Oxides (NO <sub>x</sub> )	465.8
Lead (Pb)	0.0065
Particulate Matter (PM <sub>2.5</sub> ) <sup>1</sup>	83.5
Particulate Matter (PM <sub>10</sub> ) <sup>1</sup>	83.5
Total Particulate Matter (TSP)	83.5
Sulfur Dioxide (SO <sub>2</sub> )	13.8
Volatile Organic Compounds (VOC)	21.0
<b>Hazardous Air Pollutants<sup>2</sup></b>	<b>Potential Emissions</b>
Formaldehyde	1.97
Toluene	1.27
Xylene	0.62
Manganese	0.42
Total HAPs	5.29
<b>Regulated Pollutants other than Criteria and HAP</b>	<b>Potential Emissions</b>
CO <sub>2</sub> e	1,140,748
H <sub>2</sub> SO <sub>4</sub>	6.0

<sup>1</sup>PM<sub>2.5</sub> and PM<sub>10</sub> are components of TSP. \*

<sup>2</sup>For HAPs that are also considered PM or VOCs, emissions should be included in both the HAPs section and the Criteria Pollutants section.

**Section 4: Insignificant Activities**

<b>24. Insignificant Activities (Check all that apply)</b>	
<input checked="" type="checkbox"/>	1. Air compressors and pneumatically operated equipment, including hand tools.
<input checked="" type="checkbox"/>	2. Air contaminant detectors or recorders, combustion controllers or shutoffs.
<input checked="" type="checkbox"/>	3. Any consumer product used in the same manner as in normal consumer use, provided the use results in a duration and frequency of exposure which are not greater than those experienced by consumer, and which may include, but not be limited to, personal use items; janitorial cleaning supplies, office supplies and supplies to maintain copying equipment.
<input checked="" type="checkbox"/>	4. Bathroom/toilet vent emissions.
<input checked="" type="checkbox"/>	5. Batteries and battery charging stations, except at battery manufacturing plants.
<input type="checkbox"/>	6. Bench-scale laboratory equipment used for physical or chemical analysis, but not lab fume hoods or vents. Many lab fume hoods or vents might qualify for treatment as insignificant (depending on the applicable SIP) or be grouped together for purposes of description.
<input type="checkbox"/>	7. Blacksmith forges.
<input type="checkbox"/>	8. Boiler water treatment operations, not including cooling towers.
<input type="checkbox"/>	9. Brazing, soldering or welding equipment used as an auxiliary to the principal equipment at the source.
<input type="checkbox"/>	10. CO <sub>2</sub> lasers, used only on metals and other materials which do not emit HAP in the process.
<input type="checkbox"/>	11. Combustion emissions from propulsion of mobile sources, except for vessel emissions from Outer Continental Shelf sources.
<input checked="" type="checkbox"/>	12. Combustion units designed and used exclusively for comfort heating that use liquid petroleum gas or natural gas as fuel.
<input checked="" type="checkbox"/>	13. Comfort air conditioning or ventilation systems not used to remove air contaminants generated by or released from specific units of equipment.
<input checked="" type="checkbox"/>	14. Demineralized water tanks and demineralizer vents.
<input type="checkbox"/>	15. Drop hammers or hydraulic presses for forging or metalworking.
<input type="checkbox"/>	16. Electric or steam-heated drying ovens and autoclaves, but not the emissions from the articles or substances being processed in the ovens or autoclaves or the boilers delivering the steam.
<input type="checkbox"/>	17. Emergency (backup) electrical generators at residential locations.
<input type="checkbox"/>	18. Emergency road flares.
<input checked="" type="checkbox"/>	19. Emission units which do not have any applicable requirements and which emit criteria pollutants (CO, NO <sub>x</sub> , SO <sub>2</sub> , VOC and PM) into the atmosphere at a rate of less than 1 pound per hour and less than 10,000 pounds per year aggregate total for each criteria pollutant from all emission units.  Please specify all emission units for which this exemption applies along with the quantity of criteria pollutants emitted on an hourly and annual basis:  <u>T1 fuel oil storage tank (2,250,000 gallons), VOC emissions &lt;0.5 lb/hr and 744 lb/yr</u> <u>T2 Oil-water separator (8000 gallons), VOC emissions negligible</u> <u>T3- Portable gasoline storage tank (300 gallons), VOC emissions negligible</u> <u>T4- Portable diesel storage tank (300 gallons), VOC emissions negligible</u>  _____ _____ _____ _____ _____

24. Insignificant Activities (Check all that apply)	
<input type="checkbox"/>	<p>20. Emission units which do not have any applicable requirements and which emit hazardous air pollutants into the atmosphere at a rate of less than 0.1 pounds per hour and less than 1,000 pounds per year aggregate total for all HAPs from all emission sources. This limitation cannot be used for any source which emits dioxin/furans nor for toxic air pollutants as per 45CSR27.</p> <p>Please specify all emission units for which this exemption applies along with the quantity of hazardous air pollutants emitted on an hourly and annual basis:</p> <p>_____</p> <p>_____</p> <p>_____</p> <p>_____</p> <p>_____</p>
<input type="checkbox"/>	21. Environmental chambers not using hazardous air pollutant (HAP) gases.
<input checked="" type="checkbox"/>	22. Equipment on the premises of industrial and manufacturing operations used solely for the purpose of preparing food for human consumption.
<input type="checkbox"/>	23. Equipment used exclusively to slaughter animals, but not including other equipment at slaughterhouses, such as rendering cookers, boilers, heating plants, incinerators, and electrical power generating equipment.
<input type="checkbox"/>	24. Equipment used for quality control/assurance or inspection purposes, including sampling equipment used to withdraw materials for analysis.
<input type="checkbox"/>	25. Equipment used for surface coating, painting, dipping or spray operations, except those that will emit VOC or HAP.
<input checked="" type="checkbox"/>	26. Fire suppression systems.
<input checked="" type="checkbox"/>	27. Firefighting equipment and the equipment used to train firefighters.
<input type="checkbox"/>	28. Flares used solely to indicate danger to the public.
<input checked="" type="checkbox"/>	29. Fugitive emission related to movement of passenger vehicle provided the emissions are not counted for applicability purposes and any required fugitive dust control plan or its equivalent is submitted.
<input type="checkbox"/>	30. Hand-held applicator equipment for hot melt adhesives with no VOC in the adhesive formulation.
<input checked="" type="checkbox"/>	31. Hand-held equipment for buffing, polishing, cutting, drilling, sawing, grinding, turning or machining wood, metal or plastic.
<input type="checkbox"/>	32. Humidity chambers.
<input type="checkbox"/>	33. Hydraulic and hydrostatic testing equipment.
<input type="checkbox"/>	34. Indoor or outdoor kerosene heaters.
<input checked="" type="checkbox"/>	35. Internal combustion engines used for landscaping purposes.
<input type="checkbox"/>	36. Laser trimmers using dust collection to prevent fugitive emissions.
<input type="checkbox"/>	37. Laundry activities, except for dry-cleaning and steam boilers.
<input type="checkbox"/>	38. Natural gas pressure regulator vents, excluding venting at oil and gas production facilities.
<input type="checkbox"/>	39. Oxygen scavenging (de-aeration) of water.
<input type="checkbox"/>	40. Ozone generators.

24. Insignificant Activities (Check all that apply)	
<input checked="" type="checkbox"/>	41. Plant maintenance and upkeep activities (e.g., grounds-keeping, general repairs, cleaning, painting, welding, plumbing, re-tarring roofs, installing insulation, and paving parking lots) provided these activities are not conducted as part of a manufacturing process, are not related to the source's primary business activity, and not otherwise triggering a permit modification. (Cleaning and painting activities qualify if they are not subject to VOC or HAP control requirements. Asphalt batch plant owners/operators must still get a permit if otherwise requested.)
<input type="checkbox"/>	42. Portable electrical generators that can be moved by hand from one location to another. "Moved by Hand" means that it can be moved without the assistance of any motorized or non-motorized vehicle, conveyance, or device.
<input checked="" type="checkbox"/>	43. Process water filtration systems and demineralizers.
<input type="checkbox"/>	44. Repair or maintenance shop activities not related to the source's primary business activity, not including emissions from surface coating or de-greasing (solvent metal cleaning) activities, and not otherwise triggering a permit modification.
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/> Repairs or maintenance where no structural repairs are made and where no new air pollutant emitting facilities are installed or modified.
<input type="checkbox"/>	46. Routing calibration and maintenance of laboratory equipment or other analytical instruments.
<input type="checkbox"/>	47. Salt baths using nonvolatile salts that do not result in emissions of any regulated air pollutants. Shock chambers.
<input type="checkbox"/>	48. Shock chambers.
<input type="checkbox"/>	49. Solar simulators.
<input type="checkbox"/>	50. Space heaters operating by direct heat transfer.
<input type="checkbox"/>	51. Steam cleaning operations.
<input type="checkbox"/>	52. Steam leaks.
<input type="checkbox"/>	53. Steam sterilizers.
<input type="checkbox"/>	54. Steam vents and safety relief valves.
<input type="checkbox"/>	55. Storage tanks, reservoirs, and pumping and handling equipment of any size containing soaps, vegetable oil, grease, animal fat, and nonvolatile aqueous salt solutions, provided appropriate lids and covers are utilized.
<input checked="" type="checkbox"/>	56. Storage tanks, vessels, and containers holding or storing liquid substances that will not emit any VOC or HAP. Exemptions for storage tanks containing petroleum liquids or other volatile organic liquids should be based on size limits such as storage tank capacity and vapor pressure of liquids stored and are not appropriate for this list.
<input type="checkbox"/>	57. Such other sources or activities as the Director may determine.
<input checked="" type="checkbox"/>	58. Tobacco smoking rooms and areas.
<input type="checkbox"/>	59. Vents from continuous emissions monitors and other analyzers.

*Section 5: Emission Units, Control Devices, and Emission Points*

<b>25. Equipment Table</b>
Fill out the <b>Title V Equipment Table</b> and provide it as <b>ATTACHMENT D</b> .
<b>26. Emission Units</b>
For each emission unit listed in the <b>Title V Equipment Table</b> , fill out and provide an <b>Emission Unit Form</b> as <b>ATTACHMENT E</b> .
For each emission unit not in compliance with an applicable requirement, fill out a <b>Schedule of Compliance Form</b> as <b>ATTACHMENT F</b> .
<b>27. Control Devices</b>
For each control device listed in the <b>Title V Equipment Table</b> , fill out and provide an <b>Air Pollution Control Device Form</b> as <b>ATTACHMENT G</b> .
For any control device that is required on an emission unit in order to meet a standard or limitation for which the potential pre-control device emissions of an applicable regulated air pollutant is greater than or equal to the Title V Major Source Threshold Level, refer to the <b>Compliance Assurance Monitoring (CAM) Form(s)</b> for CAM applicability. Fill out and provide these forms, if applicable, for each Pollutant Specific Emission Unit (PSEU) as <b>ATTACHMENT H</b> .

**Section 6: Certification of Information**

**28. Certification of Truth, Accuracy and Completeness and Certification of Compliance**

*Note: This Certification must be signed by a responsible official. The original, signed in blue ink, must be submitted with the application. Applications without an original signed certification will be considered as incomplete.*

**a. Certification of Truth, Accuracy and Completeness**

I certify that I am a responsible official (as defined at 45CSR§30-2.38) and am accordingly authorized to make this submission on behalf of the owners or operators of the source described in this document and its attachments. I certify under penalty of law that I have personally examined and am familiar with the statements and information submitted in this document and all its attachments. Based on my inquiry of those individuals with primary responsibility for obtaining the information, I certify that the statements and information are to the best of my knowledge and belief true, accurate, and complete. I am aware that there are significant penalties for submitting false statements and information or omitting required statements and information, including the possibility of fine and/or imprisonment.

**b. Compliance Certification**

Except for requirements identified in the Title V Application for which compliance is not achieved, I, the undersigned hereby certify that, based on information and belief formed after reasonable inquiry, all air contaminant sources identified in this application are in compliance with all applicable requirements.

**Responsible official (type or print)**

Name: Gerald Gatti

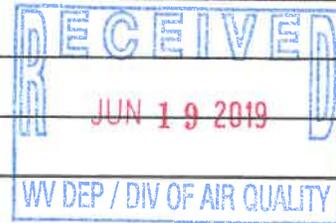
Title: Plant Manager

**Responsible official's signature:**

Signature:  Signature Date: 6/17/19  
 (Must be signed and dated in blue ink)

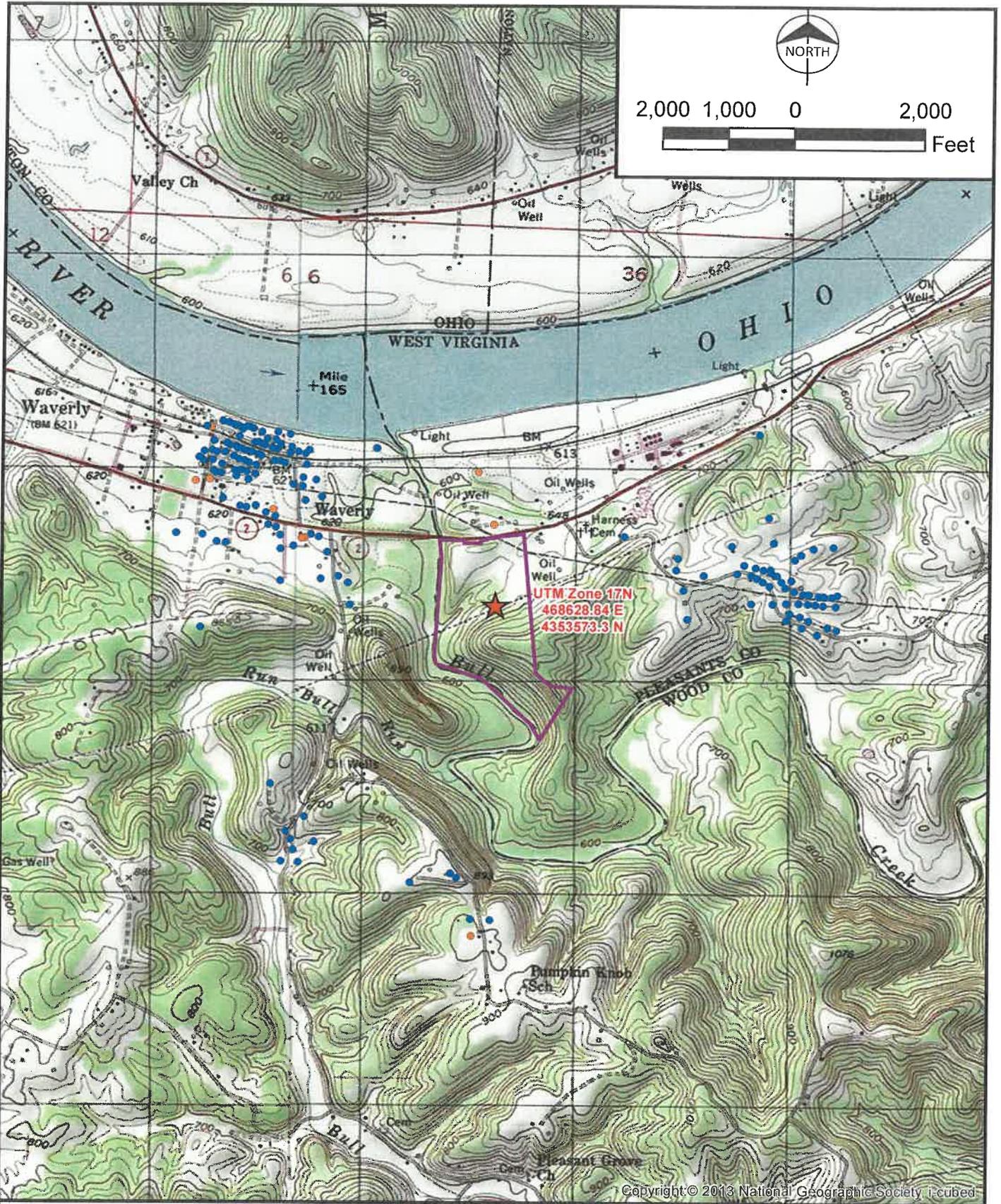
**Note: Please check all applicable attachments included with this permit application:**

<input checked="" type="checkbox"/>	ATTACHMENT A: Area Map
<input checked="" type="checkbox"/>	ATTACHMENT B: Plot Plan(s)
<input checked="" type="checkbox"/>	ATTACHMENT C: Process Flow Diagram(s)
<input checked="" type="checkbox"/>	ATTACHMENT D: Equipment Table
<input checked="" type="checkbox"/>	ATTACHMENT E: Emission Unit Form(s)
<input type="checkbox"/>	ATTACHMENT F: Schedule of Compliance Form(s)
<input checked="" type="checkbox"/>	ATTACHMENT G: Air Pollution Control Device Form(s)
<input type="checkbox"/>	ATTACHMENT H: Compliance Assurance Monitoring (CAM) Form(s)



*All of the required forms and additional information can be found and downloaded from, the DEP website at [www.dep.wv.gov/dag](http://www.dep.wv.gov/dag), requested by phone (304) 926-0475, and/or obtained through the mail.*

## **Attachment B - Plot Plans**



Path: R:\GDF\_Suez...\_835\_Pleasantis\_Engn\GIS\DataFiles\ArcDocs\PSD Report\Figure B-1 Area Map.mxd ecrobins 1/28/2015  
 COPYRIGHT © 2015 BURNS & McDONNELL ENGINEERING COMPANY, INC.

**Legend**

- Business
- House
- †† Cemetery
- ★ Project Location
- Property Boundary



**Figure A-1**  
**Area Map**  
**Pleasantis Energy, LLC**

Path: Z:\Clients\EN\...ynergy\100558\_Pleasants\Jorant\Studies\Geospatial\Data\Files\ArcDocs\Figure B-3 Property Boundary...xd mnelson 9/13/2017  
COPYRIGHT © 2017 BURNS & MCDONNELL ENGINEERING COMPANY, INC.

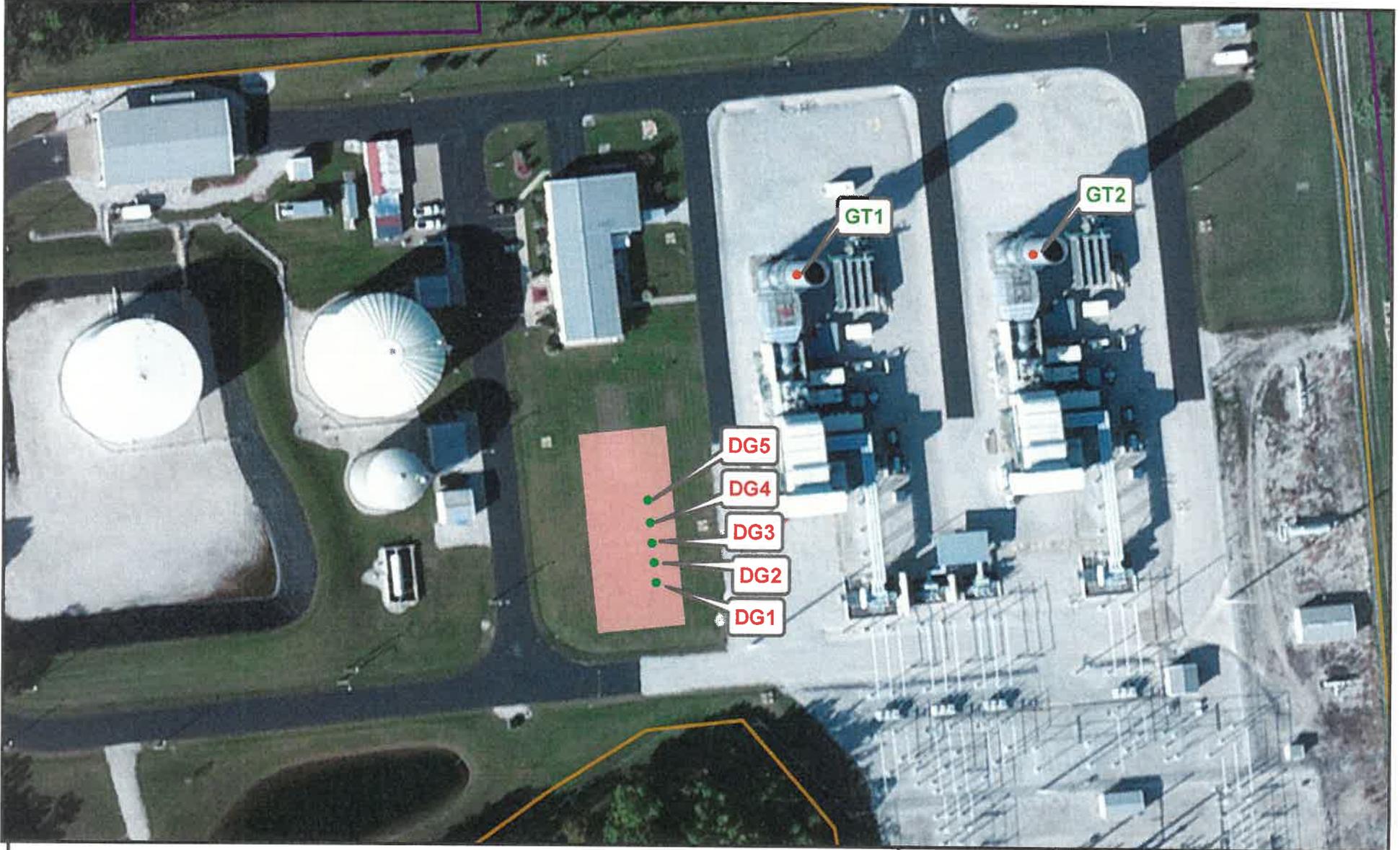


### Legend

 Property Boundary



Figure A-2  
Property Boundary  
Pleasants Energy, LLC



**Legend**

-  Fence Line
-  Combustion Turbine
-  Generator Building
-  Emergency Generator
-  Property Boundary

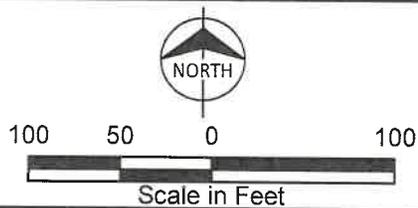
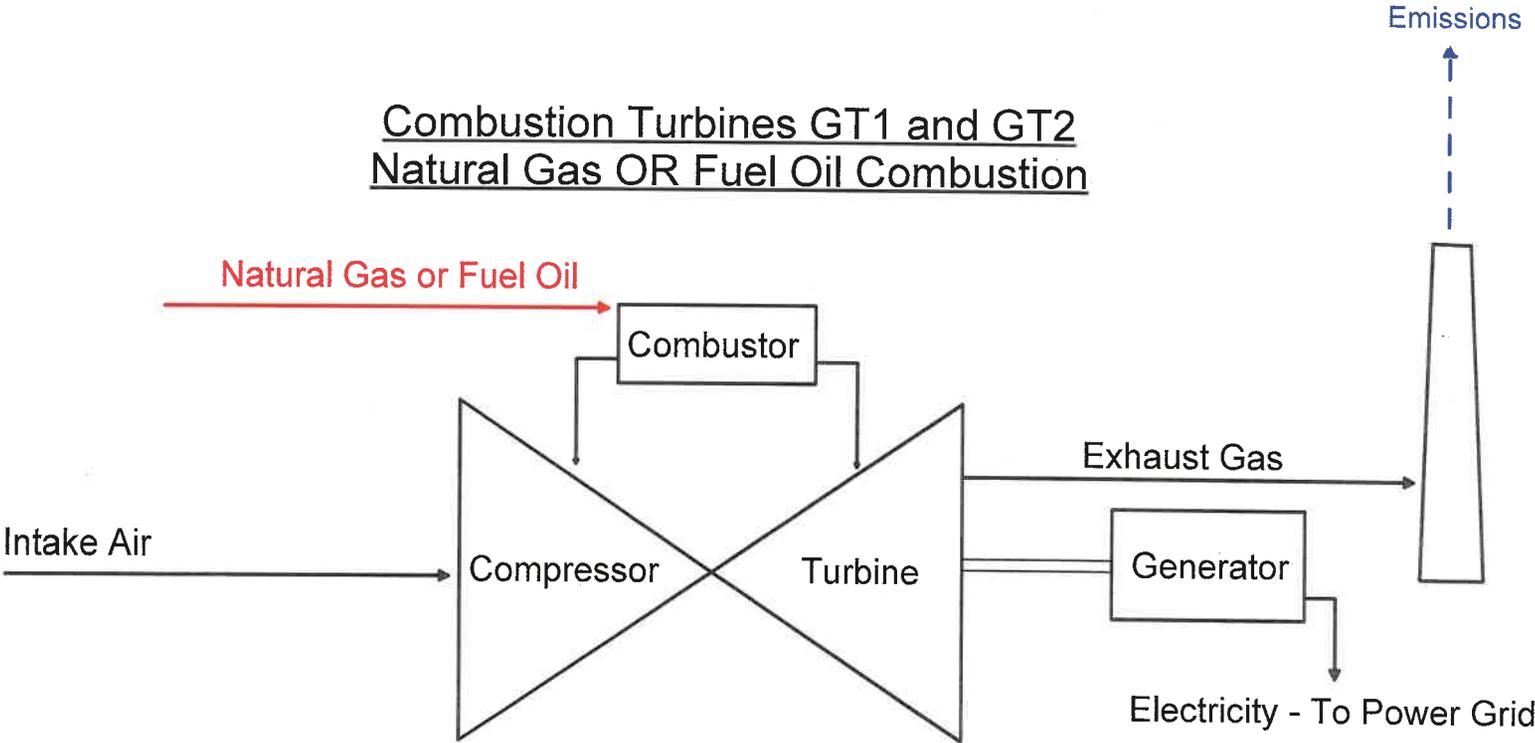


Figure B-1  
Facility Plot Plan  
Pleasants Energy, LLC

## **Attachment C - Process Flow Diagrams**

# Pleasants Energy, LLC Combustion Turbine Process Flow Diagram

Combustion Turbines GT1 and GT2  
Natural Gas OR Fuel Oil Combustion



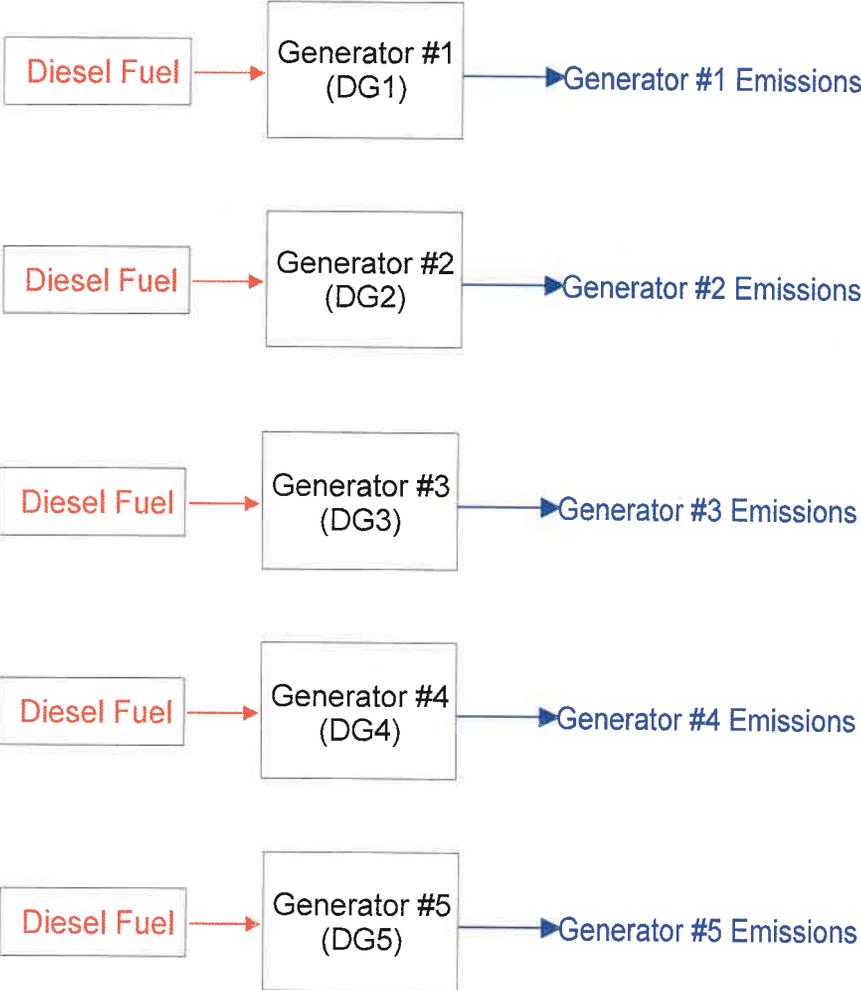
→ Natural Gas or Fuel Oil

- - - - - → Emissions



Figure B-4  
Combustion Turbine  
Process Flow  
Diagram

# Pleasants Energy, LLC Generators Process Flow Diagram



→ Diesel Fuel  
→ Emissions

## **Attachment D - Emission Unit Table**



## **Attachment E - Emission Unit Forms**

## ATTACHMENT E - Emission Unit Form

<b>ATTACHMENT E - Emission Unit Form</b>			
<i>Emission Unit Description</i>			
<b>Emission unit ID number:</b> EP1, EP2	<b>Emission unit name:</b> GT1, GT2	<b>List any control devices associated with this emission unit:</b>  None	
<b>Provide a description of the emission unit (type, method of operation, design parameters, etc.):</b> General Electric Model 7FA Turbines (GT1 and GT2) – Natural gas combustion			
<b>Manufacturer:</b> GE	<b>Model number:</b> 7FA	<b>Serial number:</b>	
<b>Construction date:</b> 2001	<b>Installation date:</b> 2001	<b>Modification date(s):</b> 2018 (GT1), 2019 (GT2)	
<b>Design Capacity (examples: furnaces - tons/hr, tanks - gallons):</b> 2,013 MMBtu/hr (gas) 2,180 MMBtu/hr (diesel)			
<b>Maximum Hourly Throughput:</b> 1.54 MMCF/hr natural gas consumption	<b>Maximum Annual Throughput:</b> 19,082 x 10 <sup>6</sup> SCF/Year for both combustion turbines combined, including diesel combustion (where 889 cubic feet of natural gas equals each gallon of diesel. 8,410,714 gallons diesel	<b>Maximum Operating Schedule:</b> 24 hr/day See fuel limit in applicable requirements	
<b>Fuel Usage Data (fill out all applicable fields)</b>			
<b>Does this emission unit combust fuel?</b> <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No		<b>If yes, is it?</b>  <input type="checkbox"/> Indirect Fired <input checked="" type="checkbox"/> Direct Fired	
<b>Maximum design heat input and/or maximum horsepower rating:</b> 2,013 MMBtu/hr (gas) 2,180 MMBtu/hr (diesel)		<b>Type and Btu/hr rating of burners:</b> N/A	
<b>List the primary fuel type(s) and if applicable, the secondary fuel type(s). For each fuel type listed, provide the maximum hourly and annual fuel usage for each.</b>  Natural gas – 1.54 MMCF/hr and 19,082 x 10 <sup>6</sup> SCF/year for both combustion turbines combined, including fuel oil combustion (where 1 gallon of fuel oil equals 889 SCF of natural gas) See GT-fuel oil form for fuel oil combustion information.			
<b>Describe each fuel expected to be used during the term of the permit.</b>			
Fuel Type	Max. Sulfur Content	Max. Ash Content	BTU Value
Natural gas	0.5 grains per 100 scf	N/A	1020 Btu/scf

<b>Emissions Data</b>			
Criteria Pollutants	Potential Emissions*		
	PPH	TPY	
Carbon Monoxide (CO)	33.9	See Attachment J	
Nitrogen Oxides (NO <sub>x</sub> )	68.9	See Attachment J	
Lead (Pb)		See Attachment J	
Particulate Matter (PM <sub>2.5</sub> )	15.9	See Attachment J	
Particulate Matter (PM <sub>10</sub> )	15.9	See Attachment J	
Total Particulate Matter (TSP)	15.9	See Attachment J	
Sulfur Dioxide (SO <sub>2</sub> )	2.7	See Attachment J	
Volatile Organic Compounds (VOC)	3.2	See Attachment J	
Hazardous Air Pollutants	Potential Emissions		
	PPH	TPY	
Total HAPs (Natural gas combustion)	0.94	See Attachment J	
Regulated Pollutants other than Criteria and HAP	Potential Emissions		
	PPH	TPY	
CO <sub>2</sub> e	223,611	See Attachment J	
H <sub>2</sub> SO <sub>4</sub>	0.41	See Attachment J	
*PPH emissions are based on the maximum natural gas emissions, excluding startup and shutdown, per combustion turbine. See Attachment J for more details on emissions.			
<b>List the method(s) used to calculate the potential emissions (include dates of any stack tests conducted, versions of software used, source and dates of emission factors, etc.).</b>			
<p>NO<sub>x</sub>, CO, PM/PM<sub>10</sub>/PM<sub>2.5</sub>, SO<sub>2</sub>, and VOC emission rates based on Vendor data for uprate of turbine  HAP emission rates based on AP-42 Section 3.1, Updated 2/2000. Natural gas formaldehyde emission factor from Sims Roy EPA Memo "Hazardous Air Pollutant (HAP) Emission Control Technology for New Stationary Combustion  CO<sub>2</sub>e emissions based on 40 CFR 98 Subpart C-Greenhouse Gas Reporting Rule  H<sub>2</sub>SO<sub>4</sub> emissions determined by Mass Balance  See Attachment J - Supporting Emissions Calculations for further detail</p>			

***Applicable Requirements***

List all applicable requirements for this emission unit. For each applicable requirement, include the underlying rule/regulation citation and/or **construction permit** with the condition number. *(Note: Title V permit condition numbers alone are not the underlying applicable requirements)*. If an emission limit is calculated based on the type of source and design capacity or if a standard is based on a design parameter, this information should also be included.

See attached table for Applicable Requirements.

Permit Shield

For all applicable requirements listed above, provide monitoring/testing/recordkeeping/reporting which shall be used to demonstrate compliance. If the method is based on a permit or rule, include the condition number or citation. **(Note: Each requirement listed above must have an associated method of demonstrating compliance. If there is not already a required method in place, then a method must be proposed.)**

See attached table for monitoring/testing/recordkeeping/reporting that is used to demonstrate compliance with Applicable Requirements.

Are you in compliance with all applicable requirements for this emission unit?  Yes  No

If no, complete the **Schedule of Compliance Form** as **ATTACHMENT F**.

## ATTACHMENT E - Emission Unit Form

**Emission Unit Description**

<b>Emission unit ID number:</b> EP1, EP2	<b>Emission unit name:</b> GT1, GT2	<b>List any control devices associated with this emission unit:</b> None
---	--	---

**Provide a description of the emission unit (type, method of operation, design parameters, etc.):**  
General Electric Model 7FA Turbines (GT1 and GT2) – Fuel oil (diesel) combustion.

<b>Manufacturer:</b> GE	<b>Model number:</b> 7FA	<b>Serial number:</b>
----------------------------	-----------------------------	-----------------------

<b>Construction date:</b> 2001	<b>Installation date:</b> 2001	<b>Modification date(s):</b> 2018 (GT1), 2019 (GT2)
-----------------------------------	-----------------------------------	--

**Design Capacity (examples: furnaces - tons/hr, tanks - gallons):**  
2,013 MMBtu/hr (gas)  
2,180 MMBtu/hr (diesel)

<b>Maximum Hourly Throughput:</b> 14,748 gal/hour diesel consumption (each turbine)	<b>Maximum Annual Throughput:</b> 8,410, 714 gal/year combined limit for both combustion turbines combined	<b>Maximum Operating Schedule:</b> 24 hr/day See fuel limit in applicable requirements
--	---	--

**Fuel Usage Data (fill out all applicable fields)**

<b>Does this emission unit combust fuel?</b> <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	<b>If yes, is it?</b> <input type="checkbox"/> Indirect Fired <input checked="" type="checkbox"/> Direct Fired
--	---

<b>Maximum design heat input and/or maximum horsepower rating:</b> 2,013 MMBtu/hr (gas) 2,180 MMBtu/hr (diesel)	<b>Type and Btu/hr rating of burners:</b> N/A
---	--

**List the primary fuel type(s) and if applicable, the secondary fuel type(s). For each fuel type listed, provide the maximum hourly and annual fuel usage for each.**  
Diesel – 14,748 gal/hour (each turbine) and 8,410,714 gal/year (combined annual limit for both combustion turbines)  
See natural gas form for GT1 and GT2 - natural gas for natural gas information

**Describe each fuel expected to be used during the term of the permit.**

Fuel Type	Max. Sulfur Content	Max. Ash Content	BTU Value
Distillate fuel oil (diesel)	15 ppm	N/A	140,000 Btu/gal

<b>Emissions Data</b>		
Criteria Pollutants	Potential Emissions	
	PPH*	TPY
Carbon Monoxide (CO)	76	See Attachment J
Nitrogen Oxides (NO <sub>x</sub> )	470	See Attachment J
Lead (Pb)	0.02	See Attachment J
Particulate Matter (PM <sub>2.5</sub> )	41	See Attachment J
Particulate Matter (PM <sub>10</sub> )	41	See Attachment J
Total Particulate Matter (TSP)	41	See Attachment J
Sulfur Dioxide (SO <sub>2</sub> )	3.27	See Attachment J
Volatile Organic Compounds (VOC)	20	See Attachment J
Hazardous Air Pollutants	Potential Emissions	
	PPH	TPY
Total HAPs	2.63	See Attachment J
Regulated Pollutants other than Criteria and HAP	Potential Emissions	
	PPH	TPY
CO <sub>2e</sub>	337,813	See Attachment J
H <sub>2</sub> SO <sub>4</sub>	17.7	See Attachment J
*PPH emissions are based on the maximum emissions while combusting diesel, excluding startup and shutdown, per combustion turbine. See Attachment J for more details on emissions.		
<b>List the method(s) used to calculate the potential emissions (include dates of any stack tests conducted, versions of software used, source and dates of emission factors, etc.).</b>		
NO <sub>x</sub> , CO, PM/PM <sub>10</sub> /PM <sub>2.5</sub> , SO <sub>2</sub> , and VOC emission rates based on Vendor data for uprate of turbine HAP emission rates based on AP-42 Section 3.1, Updated 2/2000. CO <sub>2e</sub> emissions based on 40 CFR 98 Subpart C Greenhouse Gas Reporting Rule H <sub>2</sub> SO <sub>4</sub> emissions determined by Mass Balance See Attachment J - Supporting Emissions Calculatations for further detail		

***Applicable Requirements***

List all applicable requirements for this emission unit. For each applicable requirement, include the underlying rule/regulation citation and/or construction permit with the condition number. (Note: Title V permit condition numbers alone are not the underlying applicable requirements). If an emission limit is calculated based on the type of source and design capacity or if a standard is based on a design parameter, this information should also be included.

See attached table for Applicable Requirements.

Permit Shield

For all applicable requirements listed above, provide monitoring/testing/recordkeeping/reporting which shall be used to demonstrate compliance. If the method is based on a permit or rule, include the condition number or citation. (Note: Each requirement listed above must have an associated method of demonstrating compliance. If there is not already a required method in place, then a method must be proposed.)

See attached table for monitoring/testing/recordkeeping/reporting that is used to demonstrate compliance with Applicable Requirements.

Are you in compliance with all applicable requirements for this emission unit?  Yes  No

If no, complete the Schedule of Compliance Form as ATTACHMENT F.

## ATTACHMENT E - Emission Unit Form

**Emission Unit Description**

<b>Emission unit ID number:</b> EP3, EP4, EP5, EP6, EP7	<b>Emission unit name:</b> DG1, DG2, DG3, DG4, DG5	<b>List any control devices associated with this emission unit:</b> SCR1, SCR2, SCR3, SCR4, SCR5
--	---	---

**Provide a description of the emission unit (type, method of operation, design parameters, etc.):**  
Caterpillar C175-16 Tier IV Certified Diesel Generator

<b>Manufacturer:</b> Caterpillar	<b>Model number:</b>	<b>Serial number:</b>
-------------------------------------	----------------------	-----------------------

<b>Construction date:</b> 01/14/2015	<b>Installation date:</b> 05/01/2015	<b>Modification date(s):</b> 11/24/2015 - Minor source permit date changing engines from emergency to non-emergency capability 03/13/2018 – PSD construction permit date changing engines back to emergency only
---	---	--

**Design Capacity (examples: furnaces - tons/hr, tanks - gallons):**  
3 MW

<b>Maximum Hourly Throughput:</b> 208.8 gal/hour per generator	<b>Maximum Annual Throughput:</b> 20,880 gal/year per generator	<b>Maximum Operating Schedule:</b> 24 hours/day, 100 hours per year per engine
---	--	---

**Fuel Usage Data (fill out all applicable fields)**

<b>Does this emission unit combust fuel?</b> <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	<b>If yes, is it?</b>  <input type="checkbox"/> Indirect Fired <input checked="" type="checkbox"/> Direct Fired
--	---

<b>Maximum design heat input and/or maximum horsepower rating:</b> 4,376 hp	<b>Type and Btu/hr rating of burners:</b>  N/A
--	--

**List the primary fuel type(s) and if applicable, the secondary fuel type(s). For each fuel type listed, provide the maximum hourly and annual fuel usage for each.**  
208.8 gal/hour diesel fuel per generator  
20,880 gal/year diesel fuel per generator

**Describe each fuel expected to be used during the term of the permit.**

Fuel Type	Max. Sulfur Content	Max. Ash Content	BTU Value
Diesel	0.0015% (Ultra low sulfur diesel fuel)	N/A	140,000 Btu/gal

<b>Emissions Data</b>		
Criteria Pollutants	Potential Emissions (per generator)	
	PPH	TPY
Carbon Monoxide (CO)	25.18	1.26
Nitrogen Oxides (NO <sub>x</sub> )	4.82	0.24
Lead (Pb)		
Particulate Matter (PM <sub>2.5</sub> )	0.72	0.04
Particulate Matter (PM <sub>10</sub> )	0.72	0.04
Total Particulate Matter (TSP)	0.72	0.04
Sulfur Dioxide (SO <sub>2</sub> )	0.05	2.66 x 10 <sup>-3</sup>
Volatile Organic Compounds (VOC)	2.88	0.14
Hazardous Air Pollutants	Potential Emissions (per generator)	
	PPH	TPY
Total HAPs	0.13	0.01
Regulated Pollutants other than Criteria and HAP	Potential Emissions (per generator)	
	PPH	TPY
CO <sub>2e</sub>	4,680.26	234.01
H <sub>2</sub> SO <sub>4</sub>	8.13 x 10 <sup>-3</sup>	4.06 x 10 <sup>-4</sup>
<p><b>List the method(s) used to calculate the potential emissions (include dates of any stack tests conducted, versions of software used, source and dates of emission factors, etc.).</b></p> <p>NO<sub>x</sub>, CO, PM/PM<sub>10</sub>/PM<sub>2.5</sub> and VOC emission rates based on NSPS Subpart IIII Limits  SO<sub>2</sub> and HAP emission rates based on AP-42 Section 3.4 (10/96) Table 3.4-1  CO<sub>2e</sub> emissions based on 40 CFR 98 Subpart C Greenhouse Gas Reporting Rule  H<sub>2</sub>SO<sub>4</sub> emissions determined by Mass Balance  See Attachment J - Supporting Emissions Calculations for further detail</p>		

***Applicable Requirements***

List all applicable requirements for this emission unit. For each applicable requirement, include the underlying rule/regulation citation and/or construction permit with the condition number. (*Note: Title V permit condition numbers alone are not the underlying applicable requirements*). If an emission limit is calculated based on the type of source and design capacity or if a standard is based on a design parameter, this information should also be included.

See attached table for Applicable Requirements.

Permit Shield

For all applicable requirements listed above, provide monitoring/testing/recordkeeping/reporting which shall be used to demonstrate compliance. If the method is based on a permit or rule, include the condition number or citation. (*Note: Each requirement listed above must have an associated method of demonstrating compliance. If there is not already a required method in place, then a method must be proposed.*)

See attached table for monitoring/testing/recordkeeping/reporting that is used to demonstrate compliance with Applicable Requirements.

Are you in compliance with all applicable requirements for this emission unit?  Yes  No

If no, complete the **Schedule of Compliance Form** as **ATTACHMENT F**.

Title V Permit Condition	Compliance Item	Monitoring Requirements	Testing	Recordkeeping Requirements	Reporting Requirements
<b>Combustion Turbines</b>					
4.1.1 - 4.1.4	Emission limitations and startup/shutdown limitations [Permit R14-0034A, Requirement 4.1], BACT limitations [45CSR14, R14-0034A]	4.1.5. Install and operate a system to monitor NOx from the combustion turbines [40 CFR 60.13 or 40 CFR 75] CEMS shall be designed, installed, operated and maintained in accordance with 40 CFR 60.13 or 40 CFR 75. 4.2.6. Monitor the type of fuel and number or startup/shutdown events to comply with 4.1.3 [R14-0034A]	4.3.1. Perform EPA approved stack testing on at least one turbine within 180 days of issuance of permit in order to comply with the emission limitations of 4.1.1 and 4.1.2. Testing is required for fuel oil and natural gas [R14-0034A]. 4.3.3. Testing required under 40 CFR 60, Subpart KKKK shall be performed.	4.4.7. Compliance with NOx emission limit shall be determined using CEMS and compliance with all other limits shall be determined by multiplying monthly hours of operation by the applicable hourly limit [R14-0034A]. 4.4.8. Record the type and number of each startup/shutdown event and the duration of each event [R14-0034A]	4.5.1. Submit notifications and reports required under 40 CFR 60 Subparts KKKK [§60.4375]. Includes performance tests, excess emissions for operation, startup, shutdown, and malfunction.
4.1.5	Fuel limitation (natural gas and fuel oil limits) of 19,082 x 10 <sup>6</sup> SCF/year of natural gas on a rolling 12-month basis for both turbines combined. Whenever fuel oil is combusted the limit shall be reduced by 889 cubic feet of natural gas for each gallon of fuel oil combusted. Fuel oil is limited to 8,410,714 gallons per year for both turbines combined [45CSR13, R13R14-2373 0034 §A.4., 45CSR§30-5.1.c.]	4.2.1. Keep daily records of the amount of fuel burned [R14-0034A]		4.4.9. Record the type and amount of fuel used by each turbine on an hourly basis [R14-0034A]	
4.1.6	When low sulfur distillate fuel oil is fired, water injection shall be utilized to control NOx [45CSR16, 40 CFR §60.11(d), 45CSR13, R13-2373 §B.5]				
4.1.7	Dry low NOx combustion system when firing natural gas requirement [45CSR13, R13-2373 §A.6.]				
4.1.8	Annual average sulfur content of distillate oil limit is 15 ppm.[45CSR13, R13-2373 §A.7.]	4.2.2. Monitor sulfur content of the fuel being fired in the turbines [40 CFR §60.17, §60.4360, §60.4415]		4.2.1. Keep daily records of the amount of fuel burned [R14-0034A §]	
4.1.9	Annual average sulfur content of natural gas limit is 0.5 grains per 100 scf [45CSR13, R13-2373 §A.8.]	4.2.2. Monitor sulfur content of the fuel being fired in the turbines [40 CFR §60.17, §60.4360, §60.4415]		4.2.1. Keep daily records of the amount of fuel burned [R14-0034A §]	
4.1.10	Combustion turbines subject to 4.1.11 and 4.1.12 [§60.4305(a)]				
4.1.11	NOx limitation [45CSR16; 40 CFR §60.332(a)(1) & (b), 45CSR13, R13-2373 §B.5.]	4.2.5. Install and operate a CEMS to comply with NOx limits of conditions 4.1.1 and 4.1.2 [R14-0034A, 40 CFR §60.13, 40 CFR §75]		4.4.11. Record the CEMS readings required by 4.2.5 to determine compliance with the NOx limits [R14-0034A]	
4.1.12	SO <sub>2</sub> limitation [§60.4330(a)]				
4.1.13	BACT limits (45CSR14) and Startup/Shutdown limits (R14-0034A)			4.4.11. Record the CEMS readings required by 4.2.5 to determine compliance with the NOx limits [R14-0034A]	4.5.1. Report all excess emissions and monitor downtime in accordance with 40 C.F.R. §60.7(c). Excess emissions shall be reported for all periods of unit operation, including startup, shutdown, and malfunction. [45CSR16, 40 CFR §60.334(f) and 60.7(c); 45CSR13, R13-2373 §B.8.]
4.1.27	Acid Rain Permit requirements [45CSR§8, 40 CFR Parts 72, 73, 74, 75, 76, 77, 78.]				
	General monitoring requirements			4.4.1. Record of Monitoring - Keep records of monitoring information of analysis as per this requirement to show compliance [R14-0034A] 4.4.2. Record of Maintenance of Air Pollution Control Equipment - Maintain accurate records of all required pollution control equipment inspection and/or preventative maintenance procedures [R14-0034A] 4.4.3. Record of Malfunctions of Air Pollution Equipment - Keep the records listed in this requirement for all air pollution control equipment malfunctions [R14-0034A]	

Title V Permit Condition	Compliance Item	Monitoring Requirements	Recordkeeping Requirements	Reporting Requirements
<b>Blackstart Generators</b>				
4.1	Emission limitations [R14-0034A]		4.4.1. Record Monthly Emissions [R14-0034A]	
4.1.14	Operating Hours limitations (limited to 100 hours per year per generator) [R14-0034A]	4.2.4. Operating Hours Monitoring [R14-0034A]	4.4.10. Operating Hours Records [R14-0034A]	
4.1.15	NBPS Emission limitations: [R14-0034A, 40 CFR 60 Subpart IIII]			
4.1.16	Comply with 40 CFR Subpart 63 Subpart ZZZZ by complying with 40 CFR 60 Subpart IIII [§63.6590(c)(1), R14-0034A]  Subpart IIII Compliance: Emission limits as per Title V Permit item 4.1.15 [§60.4204(b)] **The diesel generators have been Tier IV certified by the manufacturer (Caterpillar) to meet these emission levels.		Documentation from the manufacturer that the engine is certified to meet the emission standards [§60.4214(a)(2)(iii)]	4.5.1. Submit reports and notifications required under 40 CFR 60 Subpart IIII [§60.4214].
4.1.17	Fuel Sulfur Limitations [R14-0034A]	4.2.3. Fuel Sulfur Testing [R14-0034A]	4.4.1. Records of Monitoring (fuel sulfur testing) [R14-0034A].	
4.1.18	Proper Operation and Maintenance of Pollution Control Equipment [R14-0034A, 45CSR§13-5.11.]		4.4.2. Record of Maintenance [R14-0034A] 4.4.3. Record of Malfunctions [R14-0034A]	

## Facility-Wide Applicable Requirements

Title V Permit Condition	Regulation Citation	Regulation Description	Monitoring / Testing / Recordkeeping / Reporting
3.1.1	45 CSR 6-3.1	Open burning prohibited	NA
3.1.2	45 CSR 6-3.2	Open burning exemptions	NA
3.1.3	45 CSR 34	Asbestos inspection and removal	Records will be kept if asbestos is removed
3.1.4	45 CSR 4-3.1 State-Enforceable only	No objectionable odors	NA
3.1.5	45 CSR 11-5.2	Standby plan for reducing emissions	NA
3.1.6	W.Va. Code 22-5-4(a)(14)	Annual emissions inventory submittal	Annual report will be submitted
3.1.7	C.F.R. 82, Subpart F	Ozone-depleting substances	NA
3.1.8	40 C.F.R. 68	Risk Management Plan	NA
3.1.9	45 CSR 39-6.1.b, 20.1, 23.2, and 24.1	CAIR NOx Annual Trading Program	The permittee shall comply with the standard requirements set forth in the CAIR Permit Application and the CAIR permit requirements set forth in 45 CSR 39 for each CAIR NOx Annual source
3.1.10	45 CSR 39-6.1.b, 20.1, 23.2, and 24.1	CAIR NOx Ozone Season Trading Program	The permittee shall comply with the standard requirements set forth in the CAIR Permit Application and the CAIR permit requirements set forth in 45 CSR 40 for each CAIR NOx Ozone Season source
3.1.11	45 CSR 41-6.1.b, 20.1, 23.2, and 24.1	CAIR SO2 Trading Program	The permittee shall comply with the standard requirements set forth in the CAIR Permit Application and the CAIR permit requirements set forth in 45 CSR 40 for each CAIR NOx Ozone Season source
3.2	R14-0034B	Monitoring Requirements	Annual emissions limits are based on 12-month rolling averages
3.3	WV Code 22-5-4(a)(14-15) and 45 CSR 13	Testing Requirements	Stack tests will be conducted as required with results submitted within 60 days of completion Protocols and notifications will be submitted 30 days in advance of tests
3.4.1	45 CSR 30-5.1.c.2.A	Recordkeeping Requirements-Monitoring information	Records of all monitoring information will be kept
3.4.2	45 CSR 30-5.1.c.2.B	Recordkeeping Requirements-Retention of records	Records will be kept for 5 years
3.4.3	45 CSR 30-5.1.c. State-Enforceable only	Odors	Records of all odor compliants will be kept
3.5.1	45CSR§§30-4.4. and 5.1.c.3.D	Certification of required documents by a responsible official	Reports will be certified as required
3.5.2	45CSR 30-5.1.c.3.E	Confidential submission of reporting	NA
3.5.3	NA	Procedure and address for submissions	NA
3.5.4	45 CSR 30-8	Certified emissions statement	Reports will be certified as required
3.5.5	45 CSR 30-5.3.e	Compliance certification	Reports will be certified as required
3.5.6	45 CSR 30-5.1.c.3.A	Semi-annual monitoring reports	Semi-annual deviation and monitoring reports will be submitted
3.5.7	NA	Emergencies	NA
3.5.8	45 CSR 30-5.1.c.3.B and c.3.C	Deviations	NA
3.5.9	45 CSR 30-4.3.h.1.B	New applicable requirements	NA
3.6	NA	Compliance Plan	NA
3.7	45 CSR 30-5.6	Permit Shield	NA

**Attachment F -  
Schedule of Compliance Form  
(not applicable)**

**Attachment G -  
Air Pollution  
Control Device  
Forms**

## ATTACHMENT G - Air Pollution Control Device Form

**Control device ID number:**  
SCR1, SCR2, SCR3, SCR4, SCR5

**List all emission units associated with this control device.**  
DG1, DG2, DG3, DG4, DG5

**Manufacturer:**  
Caterpillar Clean Emissions  
Module

**Model number:**  
N/A

**Installation date:**  
05/01/2015

**Type of Air Pollution Control Device:**

- |   |  |  |
|---|--|--|
| <input type="checkbox"/> Baghouse/Fabric Filter               | <input type="checkbox"/> Venturi Scrubber      | <input type="checkbox"/> Multiclone  |
| <input type="checkbox"/> Carbon Bed Adsorber                  | <input type="checkbox"/> Packed Tower Scrubber | <input type="checkbox"/> Single Cyclone  |
| <input type="checkbox"/> Carbon Drum(s)                       | <input type="checkbox"/> Other Wet Scrubber    | <input type="checkbox"/> Cyclone Bank  |
| <input type="checkbox"/> Catalytic Incinerator                | <input type="checkbox"/> Condenser             | <input type="checkbox"/> Settling Chamber  |
| <input type="checkbox"/> Thermal Incinerator                  | <input type="checkbox"/> Flare                 | <input checked="" type="checkbox"/> Other (describe) <u>Selective Catalytic Reduction (SCR) system</u> |
| <input type="checkbox"/> Wet Plate Electrostatic Precipitator |  | <input type="checkbox"/> Dry Plate Electrostatic Precipitator  |

**List the pollutants for which this device is intended to control and the capture and control efficiencies.**

Pollutant	Capture Efficiency	Control Efficiency
NOx	N/A	Controlled NOx rate: 0.5 g/hp-hr

**Explain the characteristic design parameters of this control device (flow rates, pressure drops, number of bags, size, temperatures, etc.).**

The SCR system consists of a SCR catalyst that uses an air-assist diesel exhaust fluid (DEF) injection to convert NOx emissions into nitrogen and water.

**Is this device subject to the CAM requirements of 40 C.F.R. 64?**  Yes  No

If Yes, **Complete ATTACHMENT H**

If No, **Provide justification.**

**Describe the parameters monitored and/or methods used to indicate performance of this control device.**

Monitoring of the SCR system is performed as required by 40 CFR 60 Subpart IIII.

**Attachment H –  
CAM  
(not applicable)**

**Attachment I –  
Draft Permit Language  
(not applicable since there are no changes  
from March 2019 Title V Modification)**

**Attachment J - Detailed Emission  
Calculations**

Pleasants Energy, LLC - Uprate Project

Overall Project Emissions Increase and Post-Project Facility Total Emissions

Project Emissions Estimates (Maximum Potential to Emit)

Pollutant	Emissions Each Combustion Turbine (tpy)	Total Project Emissions (tpy) <sup>a,b</sup>	PSD Significant Emission Rates
NOx	232.3	<b>464.6</b>	40
CO	235.5	<b>471.1</b>	100
PM	41.7	<b>83.3</b>	25
PM <sub>10</sub>	41.7	<b>83.3</b>	15
PM <sub>2.5</sub>	41.7	<b>83.3</b>	10
VOC	10.1	20.3	40
SO <sub>2</sub>	6.9	13.8	40
Lead	0.0	6.5E-03	0.6
H <sub>2</sub> SO <sub>4</sub>	1.1	2.1	7
CO <sub>2</sub> e	569,789	<b>1,139,578</b>	75,000
Total HAPs	2.6	5.3	--

(a) Emissions are based on worst-case emissions from any operating scenario. Based on fuel limit of 19,082,000,000 SCF of gas plus fuel oil for both turbines combined. Includes startup and shutdown emissions.

(b) Numbers in bold indicate the PSD significance level is exceeded

Total Facility Emissions After Project (Existing and Project Sources)

Pollutant	Existing Emissions		Project Emissions	Facility Total After Project
	Diesel Generators (Five Generators) <sup>a</sup> (tpy)	Diesel Storage Tank (tpy)	Total Project Emissions (Combustion Turbines) (tpy)	Total Emissions (tpy)
NOx	1.2	--	464.6	<b>465.8</b>
CO	6.3	--	471.1	<b>477.4</b>
PM/PM <sub>10</sub>	0.2	--	83.3	<b>83.5</b>
PM <sub>10</sub>	0.2	--	83.3	<b>83.5</b>
PM <sub>2.5</sub>	0.2	--	83.3	<b>83.5</b>
VOC	0.7	6.9E-04	20.3	<b>21.0</b>
SO <sub>2</sub>	1.3E-02	--	13.8	<b>13.8</b>
Lead	--	--	6.5E-03	<b>6.5E-03</b>
H <sub>2</sub> SO <sub>4</sub>	2.0E-03	--	2.1	<b>2.1</b>
CO <sub>2</sub> e	1,170	--	1,139,578	<b>1,140,748</b>
Total HAPs	3.2E-02	--	5.3	<b>5.3</b>

(a) Emissions based on 5 diesel generators limited to 100 hours each.

Pleasants Energy, LLC - Uprate Project  
HAPs Emissions - Existing and Project Emissions for Natural Gas and Fuel Oil Operation

Hours of Operation

Combustion Turbine Natural Gas Operation (2) =	3,275	hours per year per combustion turbine
Combustion Turbine Fuel Oil Operation (2) =	260	hours per year per combustion turbine
Tier IV Diesel Generator (5) =	100	hours per year per generator

Fuel Usage

Generators - Diesel		hp	mmBtu/hr	
Tier IV Diesel Generator =	4,376		28.6	
Number of diesel generators =	5			
Combustion Turbines		mmBtu/hr	mmCF/hr	1,020 MMBtu/MMcf
Natural Gas Operation (Each) =	1,910		1,872	Gas heat content value from AP-42 Section 1.4, updated 7/98
Fuel Oil Operation (each) =	2,065			
Number of Combustion Turbines =	2			

Project HAPs (Natural Gas and Fuel Oil)	
HAP	Maximum Potential Emissions tpy
Formaldehyde	1.41
Toluene	0.82
Manganese	0.42
<b>TOTAL Project HAPs</b>	<b>3.75</b>

Largest HAP  
2nd Largest  
3rd Largest

Total Facility HAPs (Existing + Project)	
HAP	Maximum Potential Emissions tpy
Formaldehyde	1.41
Toluene	0.82
Manganese	0.42
<b>TOTAL Facility HAPs</b>	<b>3.78</b>

\*Natural Gas Only is Worst Case Scenario

Chemical	CAS	POM?	Existing HAPS				Project Emissions						Totals			
			Fuel Oil - Diesel Generators		Combined Generator Emissions (5 Generators) (tpy)	Total Existing HAPS (tpy)	Natural Gas - Internal Combustion			Fuel Oil - Internal Combustion			Total Project HAPS (tpy)	Total Facility HAPS (Existing + Project) (tpy)		
			Emission Factor <sup>a</sup> (lb/MMBtu)	One Generator (lb/hr)			(tpy)	Emission Factor <sup>b</sup> (lb/MMBtu)	One Combustion Turbine Emissions (lb/hr)	(tpy)	Combined Combustion Turbine Emissions (2) (tpy)	Emission Factor <sup>b</sup> (lb/MMBtu)			One Combustion Turbine Emissions (lb/hr)	(tpy)
Acenaphthene	83-32-9	POM	4.68E-06	1.34E-04	6.69E-06	3.35E-05	3.3E-05									3.35E-05
Acenaphthylene	203-96-8	POM	9.23E-06	2.64E-04	1.32E-05	6.60E-05	6.6E-05									6.60E-05
Acetaldehyde	75-07-0		2.52E-05	7.21E-04	3.60E-05	1.80E-04	1.8E-04	4.0E-05	7.6E-02	1.3E-01	2.5E-01					2.50E-01
Acrolein	107-02-8		7.88E-05	2.25E-03	1.13E-04	5.64E-04	5.6E-04	6.4E-06	1.2E-02	2.0E-02	4.0E-02					4.00E-02
Anthracene	120-12-7	POM	1.23E-06	3.52E-05	1.78E-06	8.80E-06	8.8E-06									8.80E-06
Arsenic												1.10E-05	2.3E-02	3.0E-03	5.9E-03	5.91E-03
Benz(a)anthracene	56-55-3	POM	6.22E-07	1.78E-05	8.90E-07	4.45E-06	4.4E-06									4.45E-06
Benzene	71-43-2		7.76E-04	2.22E-02	1.11E-03	5.55E-03	5.5E-03	1.2E-05	2.3E-02	3.8E-02	7.5E-02	5.5E-05	1.1E-01	1.5E-02	3.0E-02	1.05E-01
Benzo(a)pyrene	50-32-8	POM	2.57E-07	7.35E-06	3.68E-07	1.84E-06	1.8E-06									1.84E-06
Benzo(b)fluoranthene	205-99-2	POM	1.10E-06	3.15E-05	1.57E-06	7.87E-06	7.9E-06									7.87E-06
Benzo(g,h,i)perylene	191-24-2	POM	5.56E-07	1.59E-05	7.95E-07	3.98E-06	4.0E-06									3.98E-06
Benzo(k)fluoranthene	205-82-3	POM	2.18E-07	6.24E-06	3.12E-07	1.56E-06	1.6E-06									1.56E-06
Beryllium																
1,3-Butadiene	106-99-0							4.3E-07	8.2E-04	1.3E-03	2.7E-03	3.10E-07	6.4E-04	8.3E-05	1.7E-04	1.66E-04
Cadmium												1.6E-05	3.3E-02	4.3E-03	8.6E-03	1.13E-02
Chromium												4.80E-06	9.9E-03	1.3E-03	2.6E-03	2.58E-03
Chrysene	218-01-9	POM	1.53E-06	4.38E-05	2.19E-06	1.09E-05	1.1E-05					1.10E-05	2.3E-02	3.0E-03	5.9E-03	5.91E-03
Dibenz(a,h)anthracene	53-70-3	POM	3.46E-07	9.90E-06	4.95E-07	2.47E-06	2.5E-06									1.09E-05
Ethyl benzene	100-41-4							3.2E-05	6.1E-02	1.0E-01	2.0E-01					2.47E-06
Fluoranthene	206-44-0	POM	4.03E-06	1.15E-04	5.76E-06	2.88E-05	2.9E-05									2.00E-01
Fluorene	86-73-7	POM	1.28E-05	3.66E-04	1.83E-05	9.15E-05	9.2E-05									2.88E-05
Formaldehyde	500-00-0		7.89E-05	2.28E-03	1.13E-04	5.64E-04	5.6E-04	2.0E-04	3.9E-01	6.3E-01	1.3E+00	2.8E-04	5.8E-01	7.5E-02	1.5E-01	1.41E+00
Indeno(1,2,3-cd)pyrene	193-39-5	POM	4.14E-07	1.18E-05	5.92E-07	2.96E-06	3.0E-06									1.41
Manganese												7.9E-04	1.6E+00	2.1E-01	4.2E-01	2.96E-06
Mercury												1.20E-06	2.5E-03	3.2E-04	6.4E-04	4.24E-01
Naphthalene	91-20-3		1.30E-04	3.72E-03	1.86E-04	9.30E-04	9.3E-04	1.3E-06	2.5E-03	4.1E-03	8.1E-03	3.5E-05	7.2E-02	9.4E-03	1.9E-02	6.44E-04
Nickel												4.60E-06	9.5E-03	1.2E-03	2.5E-03	2.69E-02
PAH								2.2E-06	4.2E-03	6.9E-03	1.4E-02	4.0E-05	8.3E-02	1.1E-02	2.1E-02	2.47E-03
Phenanthrene	85-01-8	POM	4.08E-05	1.17E-03	5.84E-05	2.92E-04	2.9E-04									3.52E-02
Propylene			2.79E-03	7.98E-02	3.98E-03	2.00E-02	2.0E-02									2.92E-04
Pyrene	129-00-0	POM	3.71E-06	1.06E-04	5.31E-06	2.65E-05	2.7E-05									2.00E-02
Selenium												2.50E-05	5.2E-02	6.7E-03	1.3E-02	2.65E-05
Toluene	108-88-3		2.81E-04	8.04E-03	4.02E-04	2.01E-03	2.0E-03	1.3E-04	2.5E-01	4.1E-01	8.1E-01					1.34E-02
Xylene	1330-20-7		1.93E-04	5.52E-03	2.76E-04	1.38E-03	1.4E-03	6.4E-05	1.2E-01	2.0E-01	4.0E-01					8.13E-01
<b>TOTAL</b>				<b>0.13</b>	<b>0.01</b>	<b>0.03</b>	<b>0.03</b>		<b>0.94</b>	<b>1.53</b>	<b>3.07</b>		<b>2.63</b>	<b>0.34</b>	<b>0.68</b>	<b>3.75</b>

(a) Emission factors from AP-42, Section 3.4, 6/1996

(b) Emission factors for combustion turbines from AP-42 Section 3.1, Updated 4/2000. Natural gas formaldehyde emission factor from Sims Roy EPA Memo "Hazardous Air Pollutant (HAP) Emission Control Technology for New Stationary Combustion Turbines" 8/21/2001.

**Pleasants Energy, LLC - Uprate Project**  
**Natural Gas Potential Emissions for Turbines 1 & 2**

GT1 & GT2 Combustion Turbine Size	1,910	MMBtu/hr
Number of Combustion Turbines (GT1 & GT2)	2	
Natural Gas Operation	4,900	Hours per turbine
Number of Natural Gas Starts Per Turbine	365	May include up to 30 starts on fuel oil.
Natural gas heating value	1,020	MMBtu/MMcf

**Natural Gas Operation Emissions (lb/hr)**

Pollutant	100% Load Natural Gas Emission Rate (lb/MMBtu)	100% Load Natural Gas Emission Rate (lb/hr)	80% Load Natural Gas Emission Rate <sup>a</sup> (lb/hr)	60% Load Natural Gas Emission Rate <sup>a</sup> (lb/hr)	Natural Gas Start-up Emissions <sup>b</sup> (lb/hr)	Natural Gas Shutdown Emissions <sup>c</sup> (lb/hr)
NOx	--	68.9	54	44	125.5	107.2
CO	--	33.9	26	22	386.3	146.3
PM/PM <sub>10</sub> /PM <sub>2.5</sub>	--	15.9	15.9	15.9	18.0	18.0
VOC	--	3.2	2.4	3	7.0	6.4
SO <sub>2</sub>	--	2.7	--	--	2.7	2.7
H <sub>2</sub> SO <sub>4</sub>	--	0.41	--	--	0.41	0.41
Lead	--	--	--	--	--	--
CO <sub>2</sub>	117.0	223,380	--	--	223,380	223,380
N <sub>2</sub> O	2.20E-04	0.42	--	--	0.42	0.42
CH <sub>4</sub>	2.20E-03	4.21	--	--	4.2	4.2
CO <sub>2</sub> e	--	223,611	--	--	223,611	223,611

- (a) For modeling purposes only
- (b) Assumes start-up is 120 minutes.
- (c) Assumes shut-down is 60 minutes.

**Pleasants Energy, LLC - Uprate Project**  
**Natural Gas Potential Emissions for Turbines 1 & 2**

**Natural Gas Only Startup/Shutdown Emissions**

Pollutant	Start-up Emissions (lb/hr)	Shutdown Emissions (lb/hr)	Number of Starts Per Turbine	Start-up/Shutdown Emissions (tpy)	Total Start-up/Shutdown Emissions (Both turbines) (tpy)
NOx <sup>a</sup>	125.5	107.2	365	65.4	130.7
CO <sup>a</sup>	386.3	146.3	365	167.7	335.4
PM/PM <sub>10</sub> /PM <sub>2.5</sub>	15.90	15.90	365	8.7	17.4
VOC <sup>a</sup>	7.03	6.39	365	3.7	7.5
SO <sub>2</sub>	2.7	2.7	365	1.5	3.0
H <sub>2</sub> SO <sub>4</sub>	0.41	0.41	365	0.23	0.45
Lead	--	--	--	--	--
CO <sub>2</sub>	223,380	223,380	365	122,300	244,601
N <sub>2</sub> O	0.42	0.42	365	0.23	0.46
CH <sub>4</sub>	4.21	4.21	365	2.30	4.61
CO <sub>2</sub> e	223,611	223,611	365	122,427	244,854

- (a) Startup emissions based on CEMS data, and vendor load and startup profiles  
 (b) Includes shutdown emissions from "startup summary" plus an additional hour of normal emissions.

**Natural Gas Plus Fuel Oil Startup/Shutdown Emissions**

Pollutant	Number of Natural Gas Starts Per Turbine	Start-up/Shutdown Emissions Natural Gas (tpy)	Number of Fuel Oil Starts Per Turbine	Start-up/Shutdown Emissions Fuel Oil (tpy)	Total Start-up/Shutdown Emissions (Both turbines) (tpy) <sup>a</sup>
Nox	335	60.0	30	25.0	170.0
CO	335	153.9	30	10.0	327.9
PM/PM <sub>10</sub> /PM <sub>2.5</sub>	335	8.0	30	1.8	19.7
VOC	335	3.4	30	0.9	8.7
SO <sub>2</sub>	335	1.4	30	0.1	3.0
H <sub>2</sub> SO <sub>4</sub>	335	0.21	30	0.03	0.5
Lead	335	--	20	8.7E-04	0.002
CO <sub>2</sub>	335	112,248	30	15,150	254,796
N <sub>2</sub> O	335	0.21	30	0.12	0.67
CH <sub>4</sub>	335	2.12	30	0.61	5.46
CO <sub>2</sub> e	335	112,364	30	15,202	255,132

- (a) Includes 335 start-up/shut down on natural gas and 30 start-up/shut down on fuel oil to meet total of 365 starts per year.

**Stack Parameters for Combustion Turbines on Natural Gas**

Scenario	Height (feet)	Temp. (F)	Velocity (feet/sec)	Diameter (feet)	ACFM	Stack Discharge Type	Fuel
100% Load Natural Gas Operation	114.5	1131	148.2	18.00	2,260,000	Vertical	Natural Gas
80% Load Natural Gas Operation <sup>a</sup>	114.5	1097	139.58	18	--	Vertical	Natural Gas
60% Load Natural Gas Operation <sup>b</sup>	114.5	1143	130.96	18	--	Vertical	Natural Gas

- (a) 80% Load stack parameters are also used for Start-up stack parameters. 80% load stack parameters from original permit application  
 (b) 60% Load velocity is a 60% ratio of the 100% load velocity

**Pleasants Energy, LLC - Uprate Project  
Fuel Oil Potential Emissions for Turbines 1 & 2**

GT1 & GT2 Combustion Turbine Size	2,065	MMBtu/hr
Number of Combustion Turbines (GT1 & GT2)	2	
Fuel Oil Operation (Maximum)	260	Hours per turbine per year
Number of Fuel Oil Starts Per Turbine	30	
#2 Fuel Oil heating value	0.14	MMBtu/gal
Fuel Consumption Rate	14,748	gal/hr

**Fuel Oil Operation Emissions (lb/hr)**

Pollutant	100% Load Fuel Oil Emission Rate (lb/MMBtu)	100% Load Fuel Oil Emission Rate (lb/hr)	80% Load Fuel Oil Emission Rate <sup>a</sup> (lb/hr)	60% Load Fuel Oil Emission Rate <sup>a</sup> (lb/hr)	Start-up Emissions (lb/hr) <sup>b</sup>	Shutdown Emissions (lb/hr) <sup>c</sup>
NO <sub>x</sub>	--	470	391	240	561.6	543.1
CO	--	76	53	49	234.4	199.7
PM/PM <sub>10</sub> /PM <sub>2.5</sub>	--	41	39	39	41.0	41.0
VOC	--	20	20	20	21.1	21.0
SO <sub>2</sub>	--	3.27	87	--	3.3	3.3
H <sub>2</sub> SO <sub>4</sub>	--	0.6	--	--	0.6	0.6
Lead	1.4E-05	0.02	--	--	0.03	0.03
CO <sub>2</sub>	163.1	336,657	--	--	336,657	336,657
N <sub>2</sub> O	1.32E-03	2.7	--	--	2.7	2.7
CH <sub>4</sub>	6.61E-03	13.7	--	--	13.7	13.7
CO <sub>2</sub> e	-	337,813	--	--	337,813	337,813

(a) For modeling purposes only

(b) Assumes start-up is 120 minutes.

(c) Assumes shut-down is 60 minutes

**Pleasants Energy, LLC - Uprate Project  
Fuel Oil Potential Emissions for Turbines 1 & 2**

**Fuel Oil Startup Emissions**

Pollutant	Start-up Emissions (lb/hr) <sup>a</sup>	Shutdown Emissions (lb/hr) <sup>b</sup>	Number of Starts Per Turbine	Start-up/Shutdown Emissions (tpy)	Total Start-up/Shutdown Emissions (Both turbines) (tpy)
NOx	561.6	543.1	30	25.0	50.0
CO	234.4	199.7	30	10.0	20.1
PM/PM10/PM2.5	41.0	41.0	30	1.8	3.7
VOC	21.1	21.0	30	0.9	1.9
SO2	3.3	3.3	30	0.1	0.3
H2SO4	0.6	0.6	30	0.03	0.1
Lead	0.03	0.03	20	8.7E-04	1.7E-03
CO2	336,657	336,657	30	15,150	30,299
N2O	2.7	2.7	30	0.12	0.25
CH4	13.7	13.7	30	0.61	1.23
CO2e	337,813	337,813	30	15,202	30,403

(a) Startup emissions based on CEMS data, and vendor load and startup profiles

(b) Includes shutdown emissions from "startup summary" for 30 minutes and one hour of full load emissions.

**Stack Parameters**

Scenario	Height (feet)	Temp. (F)	Velocity (feet/sec)	Diameter (feet)	ACFM	Stack Discharge Type	Fuel
100% Load Natural Gas Operation	114.5	1131	148.2	18.00	2,260,000	Vertical	Fuel Oil
80% Load Natural Gas Operation <sup>a</sup>	114.5	1158	141.66	18.00	--	Vertical	Fuel Oil
60% Load Natural Gas Operation <sup>b</sup>	114.5	1145	135.1	18.00	--	Vertical	Fuel Oil

(a) 80% Load stack parameters are also used for Start-up stack parameters. 80% load stack parameters from original permit application

**Pleasants Energy, LLC - Existing Emissions Calculations  
Emergency Generators Emissions Estimate**

**Tier IV Diesel Generators (5)**

Fuel Consumption, Each Generator (100% load)	208.8 Gal/hr
Heat Input, Each Generator	28.61 MMBtu/hr
Power Output, hp	4,376 hp
Power Output, kW	3000 kW
Sulfur Content of Fuel	0.0015 %
Displacement	5.29 L/cylinder
Annual Operation (per Engine)	100 hours/year (per engine)

**Stack Parameters**

Height (ft)	Temp. (F)	Velocity (ft/sec)	Diameter (ft)	ACFM	Stack Discharge Type	Fuel
45	882.2	124.98	2.00	23557.40	Vertical	Diesel

Pollutant	Emission Factors				Emissions (One Engine)		Emissions (Five Engines)	
	lb/hp hr	g/hp-hr	lb/MMBtu	Source	lb/hr	tpy	lb/hr	tpy
NOx	1.10E-03	0.50	--	NSPS <sup>C</sup>	4.82	0.24	24.10	1.21
CO	5.75E-03	2.61	--	NSPS <sup>C</sup>	25.18	1.26	125.90	6.29
PM/PM <sub>10</sub> /PM <sub>2.5</sub>	1.6E-04	0.07	--	NSPS <sup>C</sup>	0.72	0.04	3.60	0.18
VOC	6.58E-04	0.30	--	NSPS <sup>C</sup>	2.88	0.14	14.39	0.72
SO <sub>2</sub>	1.21E-05	0.01	--	AP-42 <sup>A</sup>	0.05	2.66E-03	0.27	0.01
H <sub>2</sub> SO <sub>4</sub>	--	--	--	Mass Balance	8.13E-03	4.06E-04	0.04	0.00
CO <sub>2</sub>	--	--	163.05	Part 98 <sup>B</sup>	4,664.26	233.21	23,321.28	1,166.06
N <sub>2</sub> O	--	--	1.32E-03	Part 98 <sup>B</sup>	0.04	0.00	0.19	0.01
CH <sub>4</sub>	--	--	6.61E-03	Part 98 <sup>B</sup>	0.19	0.01	0.95	0.05
CO <sub>2</sub> e	--	--	--		4,680.26	234.01	23,401.30	1170.07

<sup>A</sup> AP-42 Section 3.4 (10/96) Table 3.4-1

<sup>B</sup> Greenhouse Gas Reporting Rule- Subpart C of Part 98

<sup>C</sup> NSPS Subpart IIII Limits NSPS Limits - 40 CFR Part 60, Subpart IIII, (40 CFR 60.4201(c) and 40 CFR 1039.102 - Table 7)

	NOx	CO	PM	NMHC
g/kW-hr	0.67	3.5	0.10	0.40
g/hp-hr	0.50	2.61	0.07	0.30

Pleasants Energy, LLC - Uprate Project  
HAPs Emissions - Existing and Project Emissions for Natural Gas Only Operation

Hours of Operation		
Combustion Turbine Natural Gas Operation (2) =	5,096	hours per year per combustion turbine
Combustion Turbine Fuel Oil Operation (2) =	0	hours per year per combustion turbine
Tier IV Diesel Generator (5) =	100	hours per year per generator

Fuel Usage			
<b>Generators - Diesel</b>			
	hp	mmBtu/hr	
Tier IV Diesel Generator =	4,376	28.6	
Number of diesel generators =	5		
<b>Combustion Turbines</b>			
	mmBtu/hr	mmCF/hr	1,020 MMBtu/MMcf
Natural Gas Operation (Each) =	1,910	1.872	Gas heat content value from AP-42 Section 1.4, updated 7/98
Fuel Oil Operation (each) =	2,065		
Number of Combustion Turbines =	2		

Project HAPs (Natural Gas Only)	
HAP	Maximum Potential Emissions tpy
Formaldehyde	1.97
Toluene	1.27
Xylene	0.62
<b>TOTAL Project HAPs</b>	<b>4.77</b>

Total Facility HAPs (Existing + Project)	
HAP	Maximum Potential Emissions tpy
Formaldehyde	1.97
Toluene	1.27
Xylene	0.62
<b>TOTAL Facility HAPs</b>	<b>4.80</b>

Largest HAP  
2nd Largest  
3rd Largest

\*Natural Gas Only is Worst Case Scenario

Chemical	CAS	POM?	Existing HAPS					Project Emissions				Totals			
			Fuel Oil - Diesel Generators			Total Existing HAPS (tpy)	Natural Gas- Combustion Turbines		Fuel Oil - Combustion Turbines		Total Project HAPS (tpy)	Total Facility HAPS (Existing + Project) (tpy)			
			Emission Factor <sup>a</sup> (lb/MMBtu)	One Generator (lb/hr)	Combined Generator Emissions (5 Generators) (tpy)		Emission Factor <sup>b</sup> (lb/MMBtu)	One Combustion Turbine Emissions (lb/hr)	Combined Combustion Turbine Emissions(2) (tpy)	Emission Factor <sup>b</sup> (lb/MMBtu)			One Combustion Turbine Emissions (lb/hr)	Combined Combustion Turbine Emissions (2) (tpy)	
Acenaphthene	83-32-9	POM	4.68E-06	1.34E-04	6.69E-06	3.35E-05	3.3E-05							0.00E+00	3.35E-05
Acenaphthylene	203-96-8	POM	9.23E-06	2.64E-04	1.32E-05	6.60E-05	6.6E-05							0.00E+00	6.60E-05
Acetaldehyde	75-07-0		2.52E-05	7.21E-04	3.60E-05	1.80E-04	1.8E-04	4.0E-05	7.6E-02	1.9E-01	3.9E-01			3.89E-01	0.39
Acrolein	107-02-8		7.88E-05	2.25E-03	1.13E-04	5.64E-04	5.6E-04	6.4E-06	1.2E-02	3.1E-02	6.2E-02			6.23E-02	6.28E-02
Anthracene	120-12-7	POM	1.23E-06	3.62E-05	1.76E-06	8.80E-06	8.8E-06							0.00E+00	8.80E-06
Arsenic												1.10E-05	2.3E-02	0.0E+00	0.0E+00
Benz(a)anthracene	56-55-3	POM	6.22E-07	1.78E-05	8.90E-07	4.45E-06	4.4E-06							0.00E+00	4.45E-06
Benzene	71-43-2		7.76E-04	2.22E-02	1.11E-03	5.55E-03	5.5E-03	1.2E-05	2.3E-02	5.8E-02	1.2E-01	5.5E-05	1.1E-01	0.0E+00	1.17E-01
Benzo(a)pyrene	50-32-8	POM	2.57E-07	7.35E-06	3.68E-07	1.84E-06	1.8E-06							0.00E+00	1.84E-06
Benzo(b)fluoranthene	205-99-2	POM	1.10E-06	3.15E-05	1.57E-06	7.87E-06	7.9E-06							0.00E+00	7.87E-06
Benzo(g,h,i)perylene	191-24-2	POM	5.56E-07	1.59E-05	7.95E-07	3.98E-06	4.0E-06							0.00E+00	3.98E-06
Benzo(k)fluoranthene	205-82-3	POM	2.18E-07	6.24E-06	3.12E-07	1.56E-06	1.6E-06							0.00E+00	1.56E-06
Beryllium												3.10E-07	6.4E-04	0.0E+00	0.0E+00
1,3-Butadiene	106-99-0							4.3E-07	8.2E-04	2.1E-03	4.2E-03	1.6E-05	3.3E-02	0.0E+00	4.18E-03
Cadmium												4.80E-06	9.9E-03	0.0E+00	0.0E+00
Chromium												1.10E-05	2.3E-02	0.0E+00	0.0E+00
Chrysene	218-01-9	POM	1.53E-06	4.38E-05	2.19E-06	1.09E-05	1.1E-05							0.00E+00	1.09E-05
Dibenzo(a,h)anthracene	53-70-3	POM	3.46E-07	9.90E-06	4.95E-07	2.47E-06	2.5E-06							0.00E+00	2.47E-06
Ethyl benzene	100-41-4							3.2E-05	6.1E-02	1.6E-01	3.1E-01			3.11E-01	3.11E-01
Fluoranthene	206-44-0	POM	4.03E-06	1.15E-04	5.76E-06	2.88E-05	2.9E-05							0.00E+00	2.88E-05
Fluorene	86-73-7	POM	1.28E-05	3.66E-04	1.83E-05	9.15E-05	9.2E-05							0.00E+00	9.15E-05
Formaldehyde	500-00-0		7.89E-05	2.26E-03	1.13E-04	5.64E-04	5.6E-04	2.0E-04	3.9E-01	9.8E-01	2.0E+00	2.8E-04	5.8E-01	0.0E+00	1.97E+00
Indeno(1,2,3-cd)pyrene	193-39-5	POM	4.14E-07	1.18E-05	5.92E-07	2.96E-06	3.0E-06							0.00E+00	2.96E-06
Manganese												7.9E-04	1.6E+00	0.0E+00	0.0E+00
Mercury												1.20E-06	2.5E-03	0.0E+00	0.0E+00
Naphthalene	91-20-3		1.30E-04	3.72E-03	1.86E-04	9.30E-04	9.3E-04	1.3E-06	2.5E-03	6.3E-03	1.3E-02	3.5E-05	7.2E-02	0.0E+00	1.27E-02
Nickel												4.60E-06	9.5E-03	0.0E+00	0.0E+00
PAH								2.2E-06	4.2E-03	1.1E-02	2.1E-02	4.0E-05	8.3E-02	0.0E+00	2.14E-02
Phenanthrene	85-01-8	POM	4.08E-05	1.17E-03	5.84E-05	2.92E-04	2.9E-04							0.00E+00	2.92E-04
Propylene			2.79E-03	7.98E-02	3.99E-03	2.00E-02	2.0E-02							0.00E+00	2.00E-02
Pyrene	129-00-0	POM	3.71E-06	1.06E-04	5.31E-06	2.65E-05	2.7E-05							0.00E+00	2.65E-05
Selenium												2.50E-05	5.2E-02	0.0E+00	0.0E+00
Toluene	108-88-3		2.81E-04	8.04E-03	4.02E-04	2.01E-03	2.0E-03	1.3E-04	2.5E-01	6.3E-01	1.3E+00			1.27E+00	1.27
Xylene	1330-20-7		1.93E-04	5.52E-03	2.76E-04	1.38E-03	1.4E-03	6.4E-05	1.2E-01	3.1E-01	6.2E-01			6.23E-01	6.24E-01
<b>TOTAL</b>				<b>0.13</b>	<b>0.01</b>	<b>0.03</b>	<b>3.2E-02</b>		<b>0.94</b>	<b>2.39</b>	<b>4.77</b>		<b>2.63</b>	<b>0.00</b>	<b>4.77</b>

(a) Emission factors from AP-42, Section 3.4, 6/1996

(b) Emission factors for combustion turbines from AP-42 Section 3.1, Updated 4/2000. Natural gas formaldehyde emission factor from Sims Roy EPA Memo "Hazardous Air Pollutant (HAP) Emission Control Technology for New Stationary Combustion Turbines" 8/21/2001.

## Pleasants Energy, LLC - Existing Emissions Calculations Diesel Storage Tanks

### Description:

Horizontal Fixed Roof Tanks

### Assumptions for All tanks:

Weather - Columbus, Ohio data

Type - Horizontal Fixed Roof Tank

Color/Shade - White/White (Default)

Fuel - Distillate #2 Fuel Oil

Monthly Calculation - Throughput distributed evenly over the entire year

### Generator Fuel Oil Tanks (1)

Size: 2500 gallons

VOC Emissions <sup>1</sup>	
lb/yr	tpy
1.37	6.9E-04

<sup>1</sup> EPA TANKS program was run for VOC emissions from the fuel tank

**Pleasants Energy, LLC - Uprate Project**  
**H<sub>2</sub>SO<sub>4</sub> Emissions**

<b>Sulfuric Acid Mist Emissions</b>					
Assume 10% of SO <sub>2</sub> is converted to SO <sub>3</sub>		<b>Conversion Percent</b>		SO <sub>2</sub> + 1/2 O <sub>2</sub> = SO <sub>3</sub>	
Assume 100% of SO <sub>3</sub> is converted to H <sub>2</sub> SO <sub>4</sub>		10		SO <sub>3</sub> + H <sub>2</sub> O = H <sub>2</sub> SO <sub>4</sub>	
		100			
One unit					
	lb/hr SO <sub>2</sub>	lb/hr SO <sub>2</sub> converted to SO <sub>3</sub>	lb/hr SO <sub>3</sub> created	lb/hr H <sub>2</sub> SO <sub>4</sub> created	tons / year H <sub>2</sub> SO <sub>4</sub>
Tier IV Diesel Generator (one unit)	0.053	0.0053	0.0066	0.0081	0.00041
Combustion Turbine (one unit, natural gas)	2.7	0.27	0.34	0.41	1.01
Combustion Turbine (one unit, fuel oil)				0.6	0.078
				<b>Total H<sub>2</sub>SO<sub>4</sub></b>	<b>1.08</b>

Molecular Weights	
SO <sub>2</sub>	64.0638
SO <sub>3</sub>	80.0632
H <sub>2</sub> SO <sub>4</sub>	98.07848
SO <sub>4</sub>	96.0632



CREATE AMAZING.

Burns & McDonnell World Headquarters  
9400 Ward Parkway  
Kansas City, MO 64114  
O 816-333-9400  
F 816-333-3690  
[www.burnsmcd.com](http://www.burnsmcd.com)