

Commonwealth of Kentucky
Division for Air Quality
STATEMENT OF BASIS / SUMMARY

Title V, Operating
Permit: V-24-029
Texas Gas Transmission, LLC - Hardinsburg Compressor Station
514 US Highway 60 West
Hardinsburg , KY 40143
October 11, 2024

Durga Patil, Permit Review Branch
SOURCE ID: 21-027-00022
AGENCY INTEREST: 46028
ACTIVITY: APE20210001

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SECTION 1 – SOURCE DESCRIPTION

SIC Code and description: 4922, Natural Gas Transmission

Single Source Det. Yes No If Yes, Affiliated Source AI:

Source-wide Limit Yes No If Yes, See Section 4, Table A

28 Source Category Yes No If Yes, Category:

County: Breckinridge

Nonattainment Area N/A PM₁₀ PM_{2.5} CO NO_x SO₂ Ozone Lead
If yes, list Classification:

PTE* greater than 100 tpy for any criteria air pollutant Yes No
If yes, for what pollutant(s)?
 PM₁₀ PM_{2.5} CO NO_x SO₂ VOC

PTE* greater than 250 tpy for any criteria air pollutant Yes No
If yes, for what pollutant(s)?
 PM₁₀ PM_{2.5} CO NO_x SO₂ VOC

PTE* greater than 10 tpy for any single hazardous air pollutant (HAP) Yes No
If yes, list which pollutant(s): formaldehyde

PTE* greater than 25 tpy for combined HAP Yes No

*PTE does not include self-imposed emission limitations.

Description of Facility:

Natural gas enters the station by pipeline, is compressed, and is then re-introduced to the pipeline and transmitted to various downstream delivery points that include other compressor stations or natural gas distribution systems.

The Hardinsburg Station employs seven (7) natural gas, two stroke lean burn (2SLB), reciprocating internal combustion engines (RICE) and three combustion turbines to drive 10 natural gas compressors that provide the pressure to transport natural gas through the transmission pipelines. There are three four stroke rich burn (4SRB) RICE that power two emergency electricity generators and one small non-emergency auxiliary air compressor.

The facility has emissions greater than the major source threshold for NO_x and hazardous air pollutants (HAPs). The facility is also PSD major source for NO_x emissions. The facility has over 200,000 tpy of CO_{2e} emissions.

SECTION 2 – CURRENT APPLICATION AND EMISSION SUMMARY FORM

Permit Number: V-24-029

Activities: APE20210001

Received: February 10, 2021

Application Complete Date(s): June 4, 2021

Permit Action: Initial Renewal Significant Rev Minor Rev Administrative

Construction/Modification Requested? Yes No NSR Applicable? Yes No

Previous 502(b)(10) or Off-Permit Changes incorporated with this permit action Yes No

Description of Action:

APE20220001: Off-permit change

- The application received July 5, 2022 is for the replacement of the existing fuel gas heater (EU 016 BL01) of 3.0 mmBtu/hr with a new heater (Hurst Low Pressure Steam Boiler) (EU 016R BL06) of 2.94 mmBtu/hr and addition of an insignificant activity 0.5 mmBtu/hr LAARS MT2H-500 (BL07) hot water heater. BL06 is subject to item 1 of Table 3 of 40 CFR 63, Subpart DDDDD. BL07 is a heater as defined in 40 CFR 63, Subpart DDDDD and so is exempt from the requirements of the MACT and is subject o 401 KAR 63:020.

APE20210001: Renewal

Texas Gas Transmission, LLC applied for renewal of the operating permit V-15-047 with request for the following changes:

- Update of designation of TB04b which was identified as replacement for TB04. The facility ID is TB06.
- Update to fugitive component count and addition of 40 CFR 60, Subpart OOOOa to the permit.
- Updating description with rated capacity and heat input for Compressor Turbine #5 (TB05) based on ISO standards too.
- Addition of HAP emissions to the emissions profile for all turbines.
- Correcting capacity for insignificant Lube Oil tank from 6,496 gallons to 6,254 gallons.
- Correcting stack heights for TB05 and AX02

V-24-029 Emission Summary				
Pollutant	2023 Actual (tpy)	Previous PTE V-15-047 (tpy)	Change (tpy)	Revised PTE V-24-029 (tpy)
CO	25.14	168.86	0.14	169
NO _x	469.2	1,568.5	0.22	1,568.72
PT	8.01	26.5	0.06	26.56
PM ₁₀	8.01	26.5	0.06	26.56
PM _{2.5}	8.01	26.5	0.06	26.56
SO ₂	0.129	1.1	--	1.1
VOC	19.70	60.2	0.04	63.26
Lead	7.55E-06	1.37E-05	0.08E-05	1.45E-05

V-24-029 Emission Summary				
Pollutant	2023 Actual (tpy)	Previous PTE V-15-047 (tpy)	Change (tpy)	Revised PTE V-24-029 (tpy)
Greenhouse Gases (GHGs)				
Carbon Dioxide	26,748	213,426	201	213,627
Methane	232.7	588.7	--	625
Nitrous Oxide	23.3	58.9	--	58.9
CO ₂ Equivalent (CO ₂ e)		245,703	202	246,811
Hazardous Air Pollutants (HAPs)				
Acetaldehyde	1.24	3.13	---	3.13
Acrolein	1.24	3.13	---	3.13
Benzene	--	0.13	0.01	0.14
Formaldehyde	8.96	24.94	--	24.94
Hexane; N-Hexane	--	0.21	0.07	0.28
Methanol	0.40	1.00	--	1.00
Pentane	--	--	0.16	0.16
Toluene	--	0.18	0.01	0.19
Combined HAPs:	--	32.72	0.26	32.98

SECTION 3 – EMISSIONS, LIMITATIONS AND BASIS

Emission Unit EU 002 (TB03) Diffusion Flame Regenerative Cycle Compressor TB03 Turbine #3				
Pollutant	Emission Limit or Standard	Regulatory Basis for Emission Limit or Standard	Emission Factor Used and Basis	Compliance Method
SO ₂	0.015 % by volume at 15% O ₂ and on a dry basis OR Shall not burn any fuel which contains total sulfur in excess of 0.8% by weight (8000ppmw)	40 CFR 60.333(a) or (b)	0.6 lb/mmscf AP-42, Chapter 3.1, Table 3.1-2	Keep on site current tariff sheet specifying the maximum total sulfur content of the fuel
Initial Construction Date: 1983				
Process Description: Diffusion Flame Regenerative Cycle Compressor TB03: Turbine #3 Manufacturer: General Electric M3122R Date Constructed: 1983 Rated Output: 12,090 brake horsepower (bhp) @ NEMA Conditions Heat Input: 89.80 mmBTU/hr @NEMA conditions Fuel: Natural Gas				
Applicable Regulation: 401 KAR 60:005, Section 2(2)(pp), 40 C.F.R. 60.330 through 60.335 (Subpart GG), Standards of Performance for Stationary Gas Turbines, applies to affected facilities (all stationary gas turbines) with a heat input at peak load equal to or greater than 10.7 gigajoules (10 million Btu) per hour, based on lower heating value of the fuel fired and which commences onstruction, modification, or reconstruction after October 3, 1977, is subject to the requirements of this part except as provided in 40 CFR 60.332(e) and (j).				
State-Origin Requirements: 401 KAR 63:020 – Potentially hazardous matter or toxic substances. This regulation is applicable to each affected facility which emits or may emit potentially hazardous matter or toxic substances, provided such emissions are not elsewhere subject to provisions of an administrative regulation of the Division for Air Quality.				
Comments:				
<ul style="list-style-type: none"> ➤ Regenerative cycle gas turbines with a heat input less than or equal to 107.2 gigajoules per hour (100 million Btu/hour) are exempt from NO_x requirement in 40 CFR 60.332(a). ➤ A current tariff sheet specifying the maximum total sulfur content of the fuel shall be kept on-site. ➤ Maintain records of monthly brake horsepower-hours and twelve (12) month rolling brake horsepower-hours, calculated on a monthly basis, for the turbine; and monthly facility-wide fuel usage. ➤ Emission factor for NO_x, CO and VOC emissions from the turbine is derived from Vendor test data, while all others are from AP-42, Chapter 3.1, Tables 3.1-2a or Table 3.1-3 and greenhouse gases are from 40 CFR Part 98, Subpart C, Table C-1, C-2. 				

Emission Unit EU 003 (TB05) Lean Premix Regenerative Cycle Compressor Turbine TB05 Turbine #5				
Pollutant	Emission Limit or Standard	Regulatory Basis for Emission Limit or Standard	Emission Factor Used and Basis	Compliance Method
SO ₂	0.015 % by volume at 15% O ₂ and on a dry basis OR Shall not burn any fuel which contains total sulfur in excess of 0.8% by weight (8000ppmw)	40 CFR 60.333(a) OR 40 CFR 60.333(b)	0.6 lb/mmscf AP-42, Chapter 3.1, Table 3.1-2	Keep on site current tariff sheet specifying the maximum total sulfur content of the fuel
NO _x	$STD = 0.0150 \frac{(14.4)}{Y}$	40 CFR 60.332(a)(2)	101.0 lb/mmscf; Vendor test data	Testing every 5 years

STD = allowable ISO corrected (if required as given in 40 CFR 60.335(b)(1)) NO_x emission concentration (percent by volume at 15 percent oxygen and on a dry basis)

Y = manufacturer's rated heat rate at manufacturer's rated load (kilojoules per watt hour) or, actual measured heat rate based on lower heating value of fuel as measured at actual peak load for the facility

Initial Construction Date: 1999

Process Description:

Lean Premix Regenerative Cycle Compressor Turbine TB05: Turbine #5

Date Constructed: 1999

Manufacturer: Solar Mars T15000S

Rated Output: 13,083 bhp @ NEMA Conditions [14,550 bhp at ISO conditions]

Heat Input: 103.36 mmBTU/hr @ NEMA conditions [112.35mmBtu/hr at ISO conditions]

Fuel: Natural Gas

Manufacturer's Rated Heat Rate at Manufacturer's Rated Load:

10.92 kJ/W-hr (7,722 BTU/bhp-hr) @ ISO Conditions

Applicable Regulation:

401 KAR 60:005, Section 2(2)(pp), 40 C.F.R. 60.330 through 60.335 (Subpart GG), Standards of Performance for Stationary Gas Turbines, applies to affected facilities (all stationary gas turbines) with a heat input at peak load equal to or greater than 10.7 gigajoules (10 million Btu) per hour, based on lower heating value of the fuel fired and which commences onstruction, modification, or reconstruction after October 3, 1977, is subject to the requirements of this part except as provided in 40 CFR 60.332(e) and (j).

State-Origin Requirements:

401 KAR 63:020 Potentially hazardous matter or toxic substances, is applicable to each affected facility which emits or may emit potentially hazardous matter or toxic substances, provided such emissions are not elsewhere subject to provisions of an administrative regulation of the Division for Air Quality.

Comments:

- A current tariff sheet specifying the maximum total sulfur content of the fuel shall be kept on-site.
- Maintain records of monthly brake horsepower-hours and twelve (12) month rolling brake horsepower-hours, calculated on a monthly basis, for the turbine; and monthly facility-wide fuel usage.
- Emission factor for NO_x, CO and VOC emissions from the turbine is derived from Vendor test data, while all others are from AP-42, Chapter 3.1, Tables 3.1-2a or Table 3.1-3 and greenhouse gases are from 40 CFR Part 98, Subpart C, Table C-1, C-2.

Emission Unit EU 012(TB06) Lean Premix Regenerative Cycle Compressor Turbine TB06 Turbine #6				
Pollutant	Emission Limit or Standard	Regulatory Basis for Emission Limit or Standard	Emission Factor Used and Basis	Compliance Method
SO ₂	0.015 % by volume at 15% O ₂ and on a dry basis OR Shall not burn any fuel which contains total sulfur in excess of 0.8% by weight (8000ppmw)	40 CFR 60.330(a)(1) OR 40 CFR 60.330(a)(2)	0.6 lb/mmscf AP-42, Chapter 3.1, Table 3.1-2	Keep on site current tariff sheet specifying the maximum total sulfur content of the fuel
NO _x	25 ppm at 15% O ₂ OR 150 ng/J of useful output (1.2 lb/MWh)	40 CFR 60.4320(a)	61.0 lb/mmscf Vendor provided spec. sheet	Initial and annual testing
formaldehyde	91 ppbv or less at 15-percent O ₂ , except during turbine startup	40 CFR 63.6100 and Table 1 item 1	2.50 lb/mmscf Vendor provided spec. sheet	Initial and annual testing and monitoring of parameters

Initial Construction Date: 1999

Process Description:

Lean Premix Regenerative Cycle Compressor Turbine TB06: Turbine #6
 Manufacturer: Solar Mars 100-T15000S
 Proposed Construction Date: Mid 2016
 Rated Capacity: 14,199 bhp @ ISO Standard Conditions
 Fuel Input: 111.24 mmBTU/hr @ ISO Standard Conditions
 Fuel: Natural Gas
 Control Equipment: NO_x control integral to the turbine's design

Applicable Regulation:

401 KAR 60:005, Section 2(2)(ffff), 40 C.F.R. 60.4300 through 60.4420, Table 1 (Subpart KKKK), Standards of Performance for Stationary Combustion Turbines. This regulation is applicable to units with a heat input at peak load equal to or greater than 10.7 gigajoules (10 MMBtu) per hour, based on the higher heating value of the fuel, which commenced construction, modification, or reconstruction after February 18, 2005

401 KAR 63:002, Section 2(4)(dddd), 40 C.F.R. 63.6080 through 63.6175, Tables 1 through 7 (Subpart YYYY), National Emission Standards for Hazardous Air Pollutants for Stationary Combustion Turbines. This regulation applies to stationary combustion turbine located at a major source of HAP emissions.

Comments:

- Stationary combustion turbines regulated under this subpart are exempt from the requirements of 40 CFR 60, Subpart GG.
- A current tariff sheet specifying the maximum total sulfur content of the fuel shall be kept on-site.
- Maintain records of monthly brake horsepower-hours and twelve (12) month rolling brake horsepower-hours, calculated on a monthly basis, for the turbine; and monthly facility-wide fuel usage.
- Emission factor for NO_x, CO and VOC emissions from the turbine is derived from Vendor test data, while all others are from AP-42, Chapter 3.1, Tables 3.1-2a or Table 3.1-3 and greenhouse gases are from 40 CFR Part 98, Subpart C, Table C-1, C-2.

**Emission Unit EU 012(TB06) Lean Premix Regenerative Cycle Compressor Turbine TB06
 Turbine #6**

- With the stay for standards for gas fired subcategories identified in NESHAP Supart YYYY being removed lifted as as March 9, 2022, EU 012 is subject to the requirements of formaldehyde limit for new lean premix gas-fired stationary combustion turbine have been added in the renewal permit V-24-029. The permittee does not use a an oxidation catalyst on the turbine and so required to maintain any operating limitations and monitor parameters continuously as per the petition submitted to the Administrator. A petition was submitted pursuant to 40 CFR 63.6120(f) on 5/17/2022 with the parameters identified as the inlet air temperature (T₁)and gas producer turbine speed (%NGP) and the facility currently is adhering to monitoring these parameters, in addition to initial and annual performance test for formaldehyde. The initial notification for start of turbine was submitted 9/13/2016, the notification of compliance status was submitted 9/15/22 and annual test have been conducted as shown in **3. Testing Requirements\Results** table in this document.

Emission Unit: EU 001 (RC01); EU 005 (RC02); EU 006 (RC03); EU 007 (RC04); EU 008 (RC05); EU 009 (RC06) and EU 010 (RC07)

Initial Construction Date: Various, see below

Process Description:

Seven(7)Reciprocating Internal Combustion Engines (RICE):Compressor Engines (RC01) through (RC07), Two Stroke Lean Burn (2SLB) Spark Ignition (SI).Rated Capacity: 1,550 bhp each; Fuel: Natural gas.

EU 001 (RC01)	Cooper-Bessemer-Model GMW-6TF	1951
EU 005 (RC02)	Cooper-Bessemer-Model GMW-6TF	1951
EU 006 (RC03)	Cooper-Bessemer-Model GMW-6TF	1951
EU 007 (RC04)	Cooper-Bessemer-Model GMW-6TF	1952
EU 008 (RC05)	Cooper-Bessemer-Model GMW-6TF	1952
EU 009 (RC06)	Cooper-Bessemer-Model GMW-6TF	1952
EU 010 (RC07)	Cooper-Bessemer-Model GMWA-6	1959

Applicable Regulation:

401 KAR 63:002, Section 2(4)(eeee), 40 C.F.R. 63.6580 through 63.6675, Tables 1a through 8, and Appendix A (Subpart ZZZZ), National Emission Standards for Hazardous Air Pollutants for Stationary Reciprocating Internal Combustion Engines.

Comments:

- Existing spark ignition 2 stroke lean burn (2SLB) stationary RICE with a site rating of more than 500 brake HP located at a major source of HAP emissions do not have to meet the requirements of 40 CFR 63, Subpart ZZZZ and of Subpart A of Part 63, including initial notification requirements.
- Maintain records of monthly brake horsepower-hours and twelve (12) month rolling brake horsepower-hours, calculated on a monthly basis, for each unit; and monthly facility-wide fuel usage.
- Emission factor for NO_x and CO for the seven 2SLB are from vendor test data, while the emission factors for other pollutants are from AP-42 Chapter 3.2, Table 3.2-1.

Emission Unit 013 (AX02) Emergency Generator	
Initial Construction Date: 1983	
Process Description:	
Emission Unit 013: AX02	
Station Emergency Generator:	
Waukesha:	H2476GU
RICE Engine:	SI 4SRB
Rated Capacity:	250 bhp
Fuel:	Natural Gas
Applicable Regulation:	
401 KAR 63:002, Section 2(4)(eeee), 40 C.F.R. 63.6580 through 63.6675, Tables 1a through 8, and Appendix A (Subpart ZZZZ), National Emission Standards for Hazardous Air Pollutants for Stationary Reciprocating Internal Combustion Engines. This unit applies to all RICE engines at major and area source of HAP emissions.	
Comments:	
<ul style="list-style-type: none"> ➤ Emission factors are taken from AP-42 Chapte 3.2, Table 3.2-3 for a l pollutants except NOx, CO and VOC which are from vendor test data. ➤ The unit is subject to work practice standards of Table 2c. item 6, for 4SRB stationary RICE in 40 CFR 63, subpart ZZZZ. 	

Emission Unit 014 (AX04) Non-Certified Turbine Emergency Generator				
Pollutant	Emission Limit or Standard	Regulatory Basis for Emission Limit or Standard	Emission Factor Used and Basis	Compliance Method
CO	2.0 g/hp-hr or 160 ppmvd at 15% O ₂	40 CFR 60 Subpart JJJJ, Table 1	1.62 g/bhp-hr (pre-control) 1.0 g/bhp-hr (post control) Vendor Data	Initial performance testing, and every 8760 hours or 3 years, whichever comes first.
NO _x	4.0 g/hp-hr or 540 ppmvd at 15% O ₂		25.72 g/bhp-hr (pre-control) 0.5 g/bhp-hr (post control) Vendor data	
VOC	1.0 g/hp-hr or 86 ppmvd at 15% O ₂		0.28 g/bhp-hr (pre-control) 014 g/bhp-hr (post control) Vendor data	
Initial Construction Date: 2016				
Process Description:				
Non-Certified Turbine Emergency Generator: EU 014 (AX04)				
Caterpillar ModelG3412 TA				
RICE Engine:	SI 4SRB			
Rated Capacity:	566 bhp			
Fuel:	Natural Gas			
Controls:	Non-Selective Catalytic Reduction (NSCR)			
Manufacture Date:	2016			

Emission Unit 014 (AX04) Non-Certified Turbine Emergency Generator

Applicable Regulation:

401 KAR 63:002, Section 2(4)(eeee), 40 C.F.R. 63.6580 through 63.6675, Tables 1a through 8, and Appendix A (Subpart ZZZZ), National Emission Standards for Hazardous Air Pollutants for Stationary Reciprocating Internal Combustion Engines. This regulation applies to all RICE engines at major and area source of HAP emissions.

401 KAR 60:005, Section 2(2)(eeee), 40 C.F.R. 60.4230 through 60.4248, Tables 1 through 4 (Subpart JJJJ), Standards of Performance for Stationary Spark Ignition Internal Combustion Engines. This regulation applies to owners and operators of stationary SI ICE that commences construction after June 12, 2006 where the stationary SI ICE are manufactured on or after July 1, 2007, for engines with a maximum engine power greater than or equal to 500HP.

Comments:

- The emission factors are taken from AP 42 Chapter 3 for 2 Stroke Rich Burn Engines.
- Unit is subject to emission standards in Table 1 of 40 CFR 60, Subpart JJJJ.

Emission Unit 015 (AX03) Auxiliary Air Compressor

Initial Construction Date: 1993

Process Description:

Auxiliary Air Compressor: (non-emergency, non-black start) **EU 015 (AX03)**

Wisconsin W41770

RICE Engine: SI 4SRB

Rated Capacity: 35 bhp

Fuel: Natural Gas

Hours of Operation: 8760

Applicable Regulation:

401 KAR 63:002, Section 2(4)(eeee), 40 C.F.R. 63.6580 through 63.6675, Tables 1a through 8, and Appendix A (Subpart ZZZZ), National Emission Standards for Hazardous Air Pollutants for Stationary Reciprocating Internal Combustion Engines. This regulation applies to all RICE engines at major and area source of HAP emissions.

Comments:

- Emission factors are taken from AP-42 Chapter 3.2 for 4Stroke Rich Burn Engines.
- Unit is subject to work practice standards of Table 2c. item 7, for 4SRB stationary RICE in 40 CFR 63, Subpart ZZZZ)

Emission Unit 016R (BL06) and EU 017 (BL04)				
Pollutant	Emission Limit or Standard (for each)	Regulatory Basis for Emission Limit or Standard	Emission Factor Used and Basis	Compliance Method
PM	< 20% opacity	401 KAR 59:015 Section 4(2)	AP-42, Table 1.4-2	Assumed to be in compliance based on combustion of natural gas as fuel
	0.56 lb/mmBtu	401 KAR 59:015 Section 4(1)(a)		
SO ₂	3.0 lb/mmBtu	401 KAR 59:015, Section 5(1)(a)		

Initial Construction Date: see below

Process Description:
EU 016R (BL06)
 Hurst LPX Low Pressure Steam Boiler
 2.94 mmBTU/hr Process Heater for heating RICE(s) fuel
 Fuel: Natural Gas
 Date Constructed: 2022

EU 017 (BL04)
 Peerless 211A-16-N
 2.19 mmBTU/hr Process Heater for heating Turbine engine(s) fuel
 Fuel: Natural Gas
 Date Constructed: 1999

Applicable Regulation:
 401 KAR 59:015, New indirect heat exchangers. This regulation is applicable to each indirect heat exchanger having a heat input capacity greater than one (1) million BTU per hour (mmBtu/hr).

401 KAR 63:002 Section 2(4)(iiii), 40 C.F.R. 63.7480 through 63.7575, Tables 1 through 13 (Subpart DDDDD), National Emission Standards for Hazardous Air Pollutants for Major Sources: Industrial, Commercial, and Institutional Boilers and Process Heaters.

Comments:

- The permittee must complete tune-ups of each heater every five (5) years, as specified in 40 CFR 63.7540. [40 CFR 63.7500(e) and Table 3, item 1 of 40 CFR 63, Subpart DDDDD], for both the new and existing process heaters.
- BL06 replaces BL01 as stated in the off-permit change notification submitted July 5, 2022.
- Emission factor for both units for natural gas combustion are from AP-42, Chapter 1.4, Table 1.4-2 and Table 1.4-3 for HAPs.

Emission Unit FUG Pipeline components

Process Description:

Pipeline Component	Total
Valves	600
Pressure Relief Valves	24
Open Ended Lines	48
Connectors/Flanges	3,000
Compressor Seals	19

Applicable Regulation:

401 KAR 60:005, Section 2(2)(iiii), 40 C.F.R. 60.5360a through 60.5432a, Tables 1 through 3 (Subpart OOOOa), Standards of Performance for Crude Oil and Natural Gas Facilities for which Construction, Modification or Reconstruction Commenced After September 18, 2015 and On or Before December 6, 2022

State-Origin Requirements:

401 KAR 63:020 – Potentially hazardous matter or toxic substances. This regulation is applicable to each affected facility which emits or may emit potentially hazardous matter or toxic substances, provided such emissions are not elsewhere subject to provisions of an administrative regulation of the Division for Air Quality.

Comments:

The requirements of 40 CFR 60, Subpart OOOOa became applicable to the fugitive components at the facility when Compressor Turbine #6 was placed in service on September 2, 2016. Specifically the monitoring requirements found in 40 CFR 60.5397a have been incorporated into the V-24-029 permit.

SECTION 3 – EMISSIONS, LIMITATIONS AND BASIS (CONTINUED)

Testing Requirements/Results

Emission Unit(s)	Control Device	Parameter	Regulatory Basis	Frequency	Test Method	Permit Limit ppm @ 15% O ₂	Test Result ppm @ 15% O ₂	Thruput and Operating Parameter(s) Established During Test	Activity Graybar	Date of last Compliance Testing
EU 012 (TB06)*	None	HCHO	40 CFR 63.6120	Annual	320	91	26.87	13,467 bhp	CMN20240001	6/18/2024
	Integral NOx control	NOx	40 CFR 60.4320(a) Table 1	Annual or every two years	7E	25	4.08			
EU 012 (TB06)*	None	HCHO	40 CFR 63.6120	Annual	320	91	55.10	12,148 bhp	CMN20230002	7/25/2023
EU 003 (TB05)	Solar Mars T15000S integral control	NOx**	40 CFR 60.332(a)(2) & 401 KAR 52:020, Section 10	Within 5 years of previous approved test	7E	198	65.48	11,788 bhp	CMN20230001	1/18/2023
EU 014 (AX04)	NSCR	NOx	40 CFR 60.4233(e) compliance	every 8,760 hrs or 3 years	7E	160	9.82	469 bhp	CMN20230001	1/18/2023
		CO			10	540	109.42			
		VOC			25A	86	2.89			
EU 012 (TB06)*	None	HCHO	40 CFR 63.6120	Initial	320	91	82.29	9,234 bhp	CMN20220002	7/28/2022
	Integral NOx control	NOx	40 CFR 60.4320(a) Table 1	Annual or every two years	7E	25	6.34			

Emission Unit(s)	Control Device	Parameter	Regulatory Basis	Frequency	Test Method	Permit Limit ppm @ 15% O ₂	Test Result ppm @ 15% O ₂	Thruput and Operating Parameter(s) Established During Test	Activity Graybar	Date of last Compliance Testing
EU 003 (TB05)	Solar Mars T15000S integral control	NOx**	40 CFR 60.332(a)(2) & 401 KAR 52:020, Section 10	Within 5 years of previous approved test	7E	198	Not tested as planned	13,083 bhp	CMN20220001	7/28/2022 proposed
EU 014 (AX04)	NSCR	NOx	40 CFR 60.4233(e) compliance	every 8,760 hrs or 3 years	7E	160	1.53	465.78 bhp	CMN20190001	1/8/2020
		CO			10	540	106.09			
		VOC			25A	86	0.10			
EU 012 (TB06)*	Integral NOx control	NOx	40 CFR 60.4320(a) Table 1	Annual or every two years	7E	25	6.88	13,082 bhp	CMN20180001	10/25/2018
EU 003 (TB05)	Solar Mars T15000S integral control	NOx (High Load)	40 CFR 60.332(a)(2) & 401 KAR 52:020, Section 10	Within 5 years of previous approved test	7E	198	25.15	12,000-13,000 bhp	CMN20170002	1/24/2017
		NOx (Mid-High Load)					24.87	11,000-12,000 bhp		
		NOx (Mid-Low Load)					24.70	10,000-11,000 bhp		
		NOx (Low Load)					25.38	9,000-10,000 bhp		
EU 014 (AX04)	NSCR	NOx	40 CFR 60.4233(e) compliance	every 8,760 hrs or 3 years	7E	160	1.58	469 bhp	CMN20170001	1/9/2017
		CO			10	540	88.35			
		VOC			320	86	18.85			
EU 012 (TB06)	Integral NOx control	NOx	40 CFR 60.4320(a) Table 1	Annual or every two years	7E	25	3.92	12,557 bhp	CMN20160001	11/1/2016

Footnotes:

*Previously identified as TB04/TB04b

** Due to the ambient condition, testing was limited to one load as opposed to four evenly spaced load points in the normal operating range of the gas turbine.

SECTION 4 – SOURCE INFORMATION AND REQUIREMENTS

Table A - Group Requirements:

N/A

Table B - Summary of Applicable Regulations:

Applicable Regulations	Emission Unit
401 KAR 59:015, New indirect heat exchangers	EU 017 (BL04) EU 018 (BL06)
401 KAR 63:020, <i>Potentially hazardous matter or toxic substances.</i>	002 (TB03) 003 (TB05)
401 KAR 60:005, Section 2(2)(pp), 40 C.F.R. 60.330 through 60.335 (Subpart GG), Standards of Performance for Stationary Gas Turbines	002 (TB03) 003 (TB05)
401 KAR 60:005, Section 2(2)(eeee), 40 C.F.R. 60.4230 through 60.4248, Tables 1 through 4 (Subpart JJJJ), Standards of Performance for Stationary Spark Ignition Internal Combustion Engines	EU 014 (AX04)
401 KAR 60:005, Section 2(2)(ffff), 40 C.F.R. 60.4300 through 60.4420, Table 1 (Subpart KKKK), Standards of Performance for Stationary Combustion Turbine	EU 012 (TB06)
401 KAR 63:002, Section 2(4)(dddd), 40 C.F.R. 63.6080 through 63.6175, Tables 1 through 7 (Subpart YYYY), National Emission Standards for Hazardous Air Pollutants for Stationary Combustion Turbines	EU 012 (TB06)
401 KAR 63:002, Section 2(4)(eeee), 40 C.F.R. 63.6580 through 63.6675, Tables 1a through 8, and Appendix A (Subpart ZZZZ), National Emission Standards for Hazardous Air Pollutants for Stationary Reciprocating Internal Combustion Engines	EU 001 (RC01) EU 005 (RC02) EU 006 (RC03) EU 007 (RC04) EU 008 (RC05) EU 009 (RC06) EU 010 (RC07) EU 013 (AX02) EU 014 (AX04) EU 015 (AX03)
401 KAR 63:002 Section 2(4)(iiii), 40 C.F.R. 63.7480 through 63.7575, Tables 1 through 13 (Subpart DDDDD), National Emission Standards for Hazardous Air Pollutants for Major Sources: Industrial, Commercial, and Institutional Boilers and Process Heaters	EU 017 (BL04) EU 016R (BL06)

Table C - Summary of Precluded Regulations:

N/A

Table D - Summary of Non Applicable Regulations:

N/A

Air Toxic Analysis

401 KAR 63:020, *Potentially Hazardous Matter or Toxic Substances*

The Division for Air Quality (Division) has performed SCREEN View on November 6, 2024 of potentially hazardous matter or toxic substances (ethylene glycol, Benzene, Ethyl Benzene, Hexane; N-Hexane, Toluene, Xylenes (Total), 2,2,4-Trimethylpentane and formaldehyde) that may be emitted by the facility based upon the process rates, material formulations, stack heights and other pertinent information provided by the applicant. Based upon this information, the Division has determined that the conditions outlined in this permit will assure compliance with the requirements of 401 KAR 63:020.

Single Source Determination

N/A

SECTION 5 – PERMITTING HISTORY

Permit	Permit Type	Activity#	Complete Date	Issuance Date	Summary of Action	PSD/Syn Minor
G-04-001	Renewal	APE20040001	11/8/2004	7/14/2005	Renewal	N/A
G-09-002	Renewal	APE20090001	2/11/2010	10/4/2010	Renewal	N/A
V-15-047	Renewal	APE20150001	7/22/2015	8/26/2016	Convert for G to Title V permit, added equipment – one Turbine, an emergency generator and a small boiler	N/A
	Minor Revision	APE20150003	7/29/2015			

SECTION 6 – PERMIT APPLICATION HISTORY

N/A

APPENDIX A – ABBREVIATIONS AND ACRONYMS

AAQS	– Ambient Air Quality Standards
BACT	– Best Available Control Technology
Btu	– British thermal unit
CAM	– Compliance Assurance Monitoring
CO	– Carbon Monoxide
Division	– Kentucky Division for Air Quality
ESP	– Electrostatic Precipitator
GHG	– Greenhouse Gas
HAP	– Hazardous Air Pollutant
HF	– Hydrogen Fluoride (Gaseous)
MSDS	– Material Safety Data Sheets
mmHg	– Millimeter of mercury column height
NAAQS	– National Ambient Air Quality Standards
NESHAP	– National Emissions Standards for Hazardous Air Pollutants
NO _x	– Nitrogen Oxides
NSR	– New Source Review
PM	– Particulate Matter
PM ₁₀	– Particulate Matter equal to or smaller than 10 micrometers
PM _{2.5}	– Particulate Matter equal to or smaller than 2.5 micrometers
PSD	– Prevention of Significant Deterioration
PTE	– Potential to Emit
SO ₂	– Sulfur Dioxide
TF	– Total Fluoride (Particulate & Gaseous)
VOC	– Volatile Organic Compounds