Enbridge
5400 Westheimer Court
Houston, Texas 77056

October 1, 2021

Kentucky Department for Environmental Protection
Division for Air Quality – Chemical Section
Ms. Hollie Delaney
300 Sower Boulevard, 2nd Floor
Frankfort, Kentucky 40601

RE: Title V Operating Permit – Title V Renewal Application
Cross-Reference to "Source-Wide" June 2019 Significant Revision Application
Texas Eastern Transmission, LP
Danville Compressor Station
(ID 21-137-00008) (Agency Interest 44065)

Dear Ms. Delaney:

Texas Eastern Transmission, LP (Texas Eastern) owns and operates a natural gas compressor station in Danville, Lincoln County, Kentucky (Danville Compressor Station). The facility is classified as a major source under both the Title V operating permit program and Prevention of Significant Deterioration (PSD) construction permitting program and currently operates in accordance with the combined construction and operating permit V-16-056, issued by the Kentucky Division of Air Quality (KDAQ) on April 3, 2017. As the permit expires on April 3, 2022, a renewal application for the permit must be submitted at least six months prior to the permit expiration date, or by October 3, 2021. As explained in 401 KAR 52:020 Section 4(2)(c), Kentucky's regulations allow applicants to limit the scope of a renewal application to information that is new or different from the most recent source-wide permit application. On June 28, 2019, Texas Eastern submitted a source-wide Title V permit significant revision application requesting authority to install continuous emissions monitoring systems (CEMS) for nitrogen oxides (NO_X) on the GE Frame 3 turbines and supplement Kentucky's Emission Inventory System (KyEIS) process ID's for combustion sources equipped with add-on control systems at the Danville Compressor Station. Texas Eastern proposed these changes to obtain additional operational flexibility, while maintaining (i.e., requesting no change) the existing facility-wide potential to emit estimates which are all below PSD major modification thresholds.

As recently discussed with KDAQ, the current significant revision application is still undergoing review and negotiations on specific terms and conditions within the permit are ongoing. In light of this ongoing review of the most recent source-wide application and considering the contents of the prior significant revision satisfy the applicable requirements of 401 KAR 52:020 Sections 4 and 5 associated with complete revision/renewal applications, Texas Eastern does not believe submittal of a separate Title V renewal application is necessary or required at this time. Rather, Texas Eastern is submitting this Title V renewal application letter and attached DEP7007 AI form to simply cross-reference the contents of the June 2019 significant revision application and subsequent communications and information exchanges with KDAQ. In addition to the June 2019 significant revision, Texas Eastern has submitted one other off-permit change notification that was approved in February 2018. Any necessary Title V permit changes covered in this off-permit change notification would also need to be incorporated into the issued Title V significant revision/renewal permit. No other physical or operational changes are being pursued through the Title V renewal process, and Texas Eastern is not aware of any permit revisions needed at this time outside of those items covered in the June 2019 significant revision application. Based on this streamlined Title V renewal approach, this document and the permit record for the June 2019 significant revision application constitute the renewal application for the Danville Compressor Station, as required under Condition G.2.a. of the existing permit and 401 KAR 52:020, Section 12.

If you have any questions regarding this Title V renewal submission, please feel free to contact me at (713) 627-5791 or via email at chuck.zukor@enbridge.com.

Sincerely,



Chuck Zukor
Senior Engineer, Air Projects

cc: Mr. Robert Arnold, Enbridge – Director of Field Operations Central Region (electronic)
Mr. Phillip Wiedenfeld, Enbridge – Air Monitoring and Reporting (electronic)

Division for Air Quality

300 Sower Boulevard

Frankfort, KY 40601

(502) 564-3999

DEP7007AI

Administrative Information

___ Section AI.1: Source Information

___ Section AI.2: Applicant Information

___ Section AI.3: Owner Information

___ Section AI.4: Type of Application

___ Section AI.5: Other Required Information

___ Section AI.6: Signature Block

___ Section AI.7: Notes, Comments, and Explanations

Additional Documentation

__ Additional Documentation attached

Source Name: Texas Eastern Transmission, LP - Daville Compressor Station

KY EIS (AFS) #: 21-137-00008

Permit #: V-16-056

Agency Interest (AI) ID: 44065

Date: September 30, 2021

Section AI.1: Source Information

Physical Location Address:	**Street:**	1745 Airport Road				
	City:	Danville	**County:**	Lincoln	**Zip Code:**	40422
Mailing Address:	**Street or P.O. Box:**	PO Box 1642				
	City:	Houston	**State:**	TX	**Zip Code:**	77251

Standard Coordinates for Source Physical Location

Longitude: 37.579727° (decimal degrees) **Latitude:** 84.754952° (decimal degrees)

Primary (NAICS) Category: Pipeline Transmission of Natural Gas **Primary NAICS #:** 486210

Classification (SIC) Category: Natural Gas Transmission **Primary SIC #:** 4922

Briefly discuss the type of business conducted at this site: Compressor Station for natural gas pipline that delivers natrual gas delivered to customers.

Description of Area Surrounding Source: _X_ Rural Area __ Industrial Park __ Residential Area __ Urban Area __ Industrial Area __ Commercial Area

Is any part of the source located on federal land? __ Yes _X_ No

Number of Employees: ~20

Approximate distance to nearest residence or commercial property: *~250 feet*

Property Area: ~33 acres

Is this source portable? __ Yes _X_ No

What other environmental permits or registrations does this source currently hold or need to obtain in Kentucky?

NPDES/KPDES:	__ Currently Hold	__ Need	__ N/A	Refer to previous permit list submitted with source - wide applications
Solid Waste:	__ Currently Hold	__ Need	__ N/A	
RCRA:	__ Currently Hold	__ Need	__ N/A	
UST:	__ Currently Hold	__ Need	__ N/A	

Type of Regulated Waste Activity:

__ Mixed Waste Generator __ Generator __ Recycler __ Other: _____

__ U.S. Importer of Hazardous Waste __ Transporter __ Treatment/Storage/Disposal Facility X__ N/A

Section AI.2: Applicant Information

Applicant Name: Texas Eastern Transmission, LP

Title: (if individual)

Mailing Address:
Street or P.O. Box: PO Box 1642
City: Houston **State:** TX **Zip Code:** 77251

Email: (if individual)

Phone: 713-627-5400

Technical Contact

Name: Chuck Zukor

Title: Sr. Engineer, Safety & Reliability / Air Projects

Mailing Address:
Street or P.O. Box: PO Box 1642
City: Houston **State:** TX **Zip Code:** 77251

Email: chuck.zukor@engbridge.com

Phone: 713-627-5791

Air Permit Contact for Source

Name: Phillip Wiedenfeld

Title: Supervisor, Air Monitoring and Reporting

Mailing Address:
Street or P.O. Box: PO Box 1642
City: Houston **State:** TX **Zip Code:** 77251

Email: phillip.wiedenfeld@enbridge.com

Phone: 713-627-6608

Section AI.3: Owner Information

X__ **Owner same as applicant**

Name: _____

Title: _____

Mailing Address: **Street or P.O. Box:** _____

City: _____ **State:** _____ **Zip Code:** _____

Email: _____

Phone: _____

List names of owners and officers of the company who have an interest in the company of 5% or more.

Name	Position

Section AI.4: Type of Application

Current Status: _X Title V __ Conditional Major __ State-Origin __ General Permit __ Registration __ None

Requested Action: *(check all that apply)*

__ Name Change __ Initial Registration __ Significant Revision __ Administrative Permit Amendment
X__ Renewal Permit __ Revised Registration __ Minor Revision __ Initial Source-wide OperatingPermit
__ 502(b)(10) Change __ Extension Request __ Addition of New Facility __ Portable Plant Relocation Notice
__ Revision __ Off Permit Change __Landfill Alternate Compliance Submittal __ Modification of Existing Facilities
__ Ownership Change __ Closure

Requested Status: _X Title V __ Conditional Major __ State-Origin __ PSD __ NSR __ Other: _____

Is the source requesting a limitation of potential emissions? __ Yes _X_ No

Pollutant:	Requested Limit:	Pollutant:	Requested Limit:
__ Particulate Matter		__ Single HAP	
__ Volatile Organic Compounds (VOC)		__ Combined HAPs	
__ Carbon Monoxide		__ Air Toxics (40 CFR 68, Subpart F)	
__ Nitrogen Oxides		__ Carbon Dioxide	
__ Sulfur Dioxide		__ Greenhouse Gases (GHG)	
__ Lead		__ Other	

For New Construction:

Proposed Start Date of Construction: *(MM/YYYY)* N/A

Proposed Operation Start-Up Date: *(MM/YYYY)* N/A

For Modifications:

Proposed Start Date of Modification: *(MM/YYYY)*

Proposed Operation Start-Up Date: *(MM/YYYY)*

Applicant is seeking coverage under a permit shield. __ Yes X_ No

Identify any non-applicable requirements for which permit shield is sought on a separate attachment to the application.

Section AI.5 Other Required Information

Indicate the documents attached as part of this application:

__ DEP7007A Indirect Heat Exchangers and Turbines
__ DEP7007B Manufacturing or Processing Operations
__ DEP7007C Incinerators and Waste Burners
__ DEP7007F Episode Standby Plan
__ DEP7007J Volatile Liquid Storage
__ DEP7007K Surface Coating or Printing Operations
__ DEP7007L Mineral Processes
__ DEP7007M Metal Cleaning Degreasers
__ DEP7007N Source Emissions Profile
__ DEP7007P Perchloroethylene Dry Cleaning Systems
__ DEP7007R Emission Offset Credit
__ DEP7007S Service Stations
__ DEP7007T Metal Plating and Surface Treatment Operations
__ DEP7007V Applicable Requirements and Compliance Activities
__ DEP7007Y Good Engineering Practice and Stack Height Determination
__ DEP7007AA Compliance Schedule for Non-complying Emission Units
__ DEP7007BB Certified Progress Report
__ DEP7007CC Compliance Certification
__ DEP7007DD Insignificant Activities
__ DEP7007EE Internal Combustion Engines
__ DEP7007FF Secondary Aluminum Processing
__ DEP7007GG Control Equipment
__ DEP7007HH Haul Roads
__ Confidentiality Claim
__ Ownership Change Form
__ Secretary of State Certificate
__ Flowcharts or diagrams depicting process
__ Digital Line Graphs (DLG) files of buldings, roads, etc.
__ Site Map
__ Map or drawing depicting location of facility
__ Safety Data Sheet (SDS)
__ Emergency Response Plan
__ Other: _____

Section AI.6: Signature Block

I, the undersigned, hereby certify under penalty of law, that I am a responsible official*, and that I have personally examined, and am familiar with, the 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 information is on knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false or incomplete information, including the possibility of fine or imprisonment.



Authorized Signature

09/30/2021

Date

Robert Arnold

Type or Printed Name of Signatory

Director Field Operations Central Region

Title of Signatory

*Responsible official as defined by 401 KAR 52:001.

Section AI.7: Notes, Comments, and Explanations

Enbridge
5400 Westheimer Court
Houston, Texas 77056

June 28, 2019

Kentucky Department for Environmental Protection
Division for Air Quality – Permit Support Section
300 Sower Boulevard, 2nd Floor
Frankfort, Kentucky 40601

RE: Title V Operating Permit – Significant Modification Application
Install CEMS and Add Operational Flexibility Updates
Texas Eastern Transmission, LP
Danville Compressor Station
(ID 21-137-00008) (Agency Interest 44065)

Dear Permit Support Section:

Texas Eastern Transmission, LP (Texas Eastern) is submitting this Title V permit significant modification application to install NOx CEMS on the GE Frame 3 turbines and supplement Kentucky's Emission Inventory System (KyEIS) process ID's for combustion sources equipped with add-control systems at the Danville Compressor Station. The proposed additional KyEIS process ID's are for the existing:

- Three Clark HBA-8T reciprocating engines equipped with oxidation catalysts (OxCat),
- Two Frame 3 turbines equipped with OxCat and selective catalytic reduction (SCR) control systems, and
- One Frame 5 turbine equipped with OxCat.

Texas Eastern is proposing these changes to obtain additional operational flexibility, while maintaining (i.e., requesting no change) the existing facility-wide potential to emit estimates which are all below Prevention of Significant Deterioration (PSD) major modification thresholds.

If you have any questions regarding this request, please feel free to contact me at (713) 627-5791 or via email chuck.zukor@enbridge.com.

Sincerely,

Chuck Zukor
Senior Engineer, Air Projects

cc: Mr. Reagan Mayces, Enbridge –Air Projects (electronic)
Mr. Phillip Wiedenfeld, Enbridge – Air Monitoring and Reporting (electronic)

TITLE V SIGNIFICANT MODIFICATION APPLICATION

Texas Eastern Transmission, LP > Danville Compressor Station



Prepared By:

TRINITY CONSULTANTS
1800 West Loop South
Suite 1000
Houston, TX 77027
(713) 552-1360

June 2019

Project 174402.0133

Trinity Consultants

EHS solutions delivered uncommonly well

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1. OVERVIEW

Texas Eastern Transmission, LP, (Texas Eastern) owns and operates a natural gas compressor station in Danville, Lincoln County, Kentucky (Danville Compressor Station). Texas Eastern submitted a Title V permit significant modification application in April 2016 to authorize modifications at the facility related to the Acess-Adair Lebanon Extension (AALE) project. The project included pollution controls and operational limitations on various combustion equipment in order to ensure that project emission increases were less than the Significant Emission Rate (SER) for a major modification at a major source for PSD as shown in Table 1-1 below:

Table 1-1: AALE Project Emissions Increase Summary

Pollutants	Baseline Actual Emissions 2008-2009 (tpy)	Post Project Potential to Emit (tpy)	Net Emissions Increase (tpy)	PSD Major Modification Threshold (tpy)	Above Threshold?
NOx	1,713.2	1,223.1	-490.1	40	No
CO	178.8	248.5	69.7	100	No
VOC	56.99	93.70	36.71	40	No
$PM_{10}/PM_{2.5}$	19.49	27.29	7.80	15/10	No
SO_2	2.16	5.43	3.27	40	No
CO_2e	124,198	252,437	128,239	-	No

On April 3, 2017 the Kentucky Division for Air Quality (Division) issued Title V Permit V-16-056 authorizing the project and in November of 2017 the project was placed into service. At this time Texas Eastern is requesting modifications to the permit to:

- Install CEMS for direct measurement of oxides of nitrogen (NOx) on the two GE, Frame 3 turbine exhaust stacks to replace the existing parametric monitoring system,
- Obtain emission limits corresponding to various operating scenarios,
- Clarify emissions compliance demonstrations for emission units equipped with catalyst control systems, and
- Clarify and revise various Title V monitoring, testing, recordkeeping, and monitoring requirements.

The more substantive modifications can be more fully understood by the details shown in Table 1-2 below:

Table 1-2: Emission Limitations and Basis

Pollutant	Frame 3 Turbines Equipped with OxCat + SCR Controls		Frame 5 Turbine Equipped with OxCat Controls	
	Emission Limitation	**Demonstration**	**Emission Limitation**	**Demonstration**
CO	12.5 ppmvd @ 15% O_2 (A) *Normal Operation*	Periodic Stack Testing	12.5 ppmvd @ 15% O_2 (A) *Normal Operation*	Periodic Stack Testing
	3.13 lb/hr (B) *Normal Operation*	Representations & Parametric monitoring	5.77 lb/hr (B) *Normal Operation*	Representations & Parametric monitoring
	690 lb/hr (C) *Uncontrolled 1*	Representations & Parametric monitoring	4,522 lb/hr (C) *Uncontrolled*	Representations & Parametric monitoring
	Site-wide tpy (D)	12-month rolling total	Site-wide tpy (D)	12-month rolling total
NOx	25 ppmvd @ 15% O_2 (A)	Initial Stack Test to Demonstrate Control System Performance	N/A *Uncontrolled NOx*	
	18 lb/hr (E) *Normal Operation*	CEMS: 30-day equivalent (prior 720 hours) rolling average limit		
	82 lb/hour (F) *Uncontrolled 2*	CEMS: 12-month rolling hourly average		
	Site-wide tpy (D)	12-month rolling total	Site-wide tpy (D)	12-month rolling total
Other PSD Pollutants	Site-wide tpy (D)	12-month rolling total	Site-wide tpy (D)	12-month rolling total

(A) Stack Test (Average of three, 1-hr test runs), normal operations >90% load and when all catalyst control systems are operating at design performance levels. **Excludes** turbine startup, turbine shutdown, maintenance, low load, and low ambient air temperature periods when catalyst control system design performance temperatures have not been achieved.

(B) Short Term CO Normal (i.e., controlled) Emissions Limit: **Excludes** turbine startup, turbine shutdown, maintenance, low load, and low ambient air temperature periods when OxCat design performance temperature has not been achieved. Hourly CO normal emission rate based on 0.01°F when OxCat is achieving design performance level.

(C) Worst Case CO Hourly Emissions Limit for "Uncontrolled 1 or Uncontrolled": Applicable **only** to turbine startup, turbine shutdown, maintenance, low load, and low ambient air temperature periods when OxCat design performance temperature has not been achieved. Alternatively an emission limitation based on hours/year may be considered. Hourly CO "Uncontrolled 1 or Uncontrolled" emission rate based on two turbine startups and two turbine shutdowns at 0.01°F when OxCat is NOT achieving design performance level.

(D) PSD Avoidance Emission CAP: Site-wide annual emissions, as represented in the April 2016 air permit application.

(E) Short Term CEMS, NOx Normal (i.e., controlled) Emissions Limit: **Excludes** turbine startup, turbine shutdown, maintenance, low load and low ambient air temperature periods, and when ammonia injection temperature permissive has been achieved. Hourly NOx normal emission rate based on 0.01°F for a GE Frame 3 and NOx concentration of 42 ppmvd at 15% O_2.

(F) Worst Case CEMS, NOx Emissions Limit for "Uncontrolled 2": Applicable **only** to turbine startup, turbine shutdown, maintenance, low load and low temperature periods, and when ammonia injection temperature permissive has not been achieved. Alternatively an emission limitation based on hours/year may be considered. Hourly NOx "Uncontrolled 2" emission rate based on the severe low ambient air temperature (i.e. below -20°F), KyEIS Process ID 3, fuel flow rate for a GE Frame 3 turbine.

The proposed permit modifications will not be a modification with respect to PSD as the original 2016 permit application basis will be used to establish limits in alignment with the departments 2017 decision. The station will continue to remain a PSD major source after the project. The following information is included as part of this application submittal:

- Section 2 provides a brief description of the facility and permitted emission sources;
- Section 3 provides a summary of proposed changes in this permitting action;
- Section 4 summarizes the emissions calculation methodologies;
- Section 5 details the federal and state regulatory applicability analysis;
- Appendix A includes facility diagram;
- Appendix B includes documentation of emissions calculations;
- Appendix C includes the Division's DEP7007 series AI to DD application forms related to the proposed project;
- Appendix D provides a Redline/Strikeout copy of proposed changes to existing Title V permit; and
- Appendix E provides a reproduced copy of a March 13, 2019 letter for the basis of site-wide annual emission limitations.

2.1. OPERATIONS

Texas Eastern transports natural gas via underground pipelines between the Gulf Coast region of the United States to the Northeast and Mid-Atlantic states. At several points along the pipeline, the gas must be recompressed to ensure that it continues to move bi-directionally along the pipeline and can be delivered to customers at serviceable pressures.

The Danville Compressor Station, located in Lincoln County, is one of three (3) Texas Eastern compressor stations in the state. An area map of the site location is provided in Appendix A.

Gas is compressed at the Danville Compressor Station using three (3) gas turbine-driven centrifugal compressors and ten (10) reciprocating engine-driven compressors. The facility also has two (2) natural gas-fired emergency generators. The gas turbines and reciprocating compressor engines exclusively burn pipeline quality natural gas from Texas Eastern's pipeline network.

The Danville Compressor Station is a major source with respect to the federal Prevention of Significant Deterioration (PSD) permitting program due to emissions of oxides of nitrogen (NOx) and carbon monoxide (CO) being above the major source thresholds (i.e. greater than 250 tpy).

The station is also a Title V major source for NOx, CO, volatile organic compounds (VOC) (i.e., greater than 100 tpy), and hazardous air pollutants (HAP) (i.e., greater than 10 tpy of any single HAP/greater than 25 tpy of all HAP). The currently permitted emissions sources at the facility include:

- Seven (7) 1,760 horsepower (hp) Clark HBA-8 natural gas-fired compressor engines (Emission Unit 01);
- Three (3) 2,050 hp Clark HBA-8T natural gas-fired compressor engines equipped with oxidation catalyst (OxCat) control system (Emission Unit 02);
- Two (2) 8,000 hp[1] General Electric (GE) Frame 3 natural gas-fired combustion turbines equipped with OxCat and selective catalyst reduction (SCR) control systems (Emission Unit 03);
- One (1) 18,500 hp[2] GE Frame 5 natural gas-fired combustion turbine equipped with OxCat control system (Emission Unit 04);
- One (1) 1,462 hp Caterpillar G3516 auxiliary emergency generator (Emission Unit 05);
- One (1) 1,102 hp Caterpillar G3512 auxiliary emergency generator (Emission Unit 06); and
- Fugitive Emissions from Piping Components (PC-1 through PC-4), Station Gas Releases (GR-ST), and Pipeline Gas Releases (GR-PL) all referenced as (Emission Unit 07)

Various support activities are performed at the Danville Compressor Station to maintain proper operation of the equipment. The site also includes additional support equipment such as nine (9) separators are used to collect pipeline liquids from the transmission pipelines. The pipeline liquids are stored in tanks until they are transported by tank truck off-site. Very small emissions result from tank working/breathing losses, and from tank truck loading.

[1] The horsepower rating for the turbines represents the National Electrical Manufacturers Association (NEMA) rating.

[2] Ibid.

These sources of emissions from the Danville Compressor Station are considered to be **Insignificant Activities** and are summarized below:

- One (1) 560 gallon diesel storage tank;
- One (1) 8,800 gallon lube oil storage tank;
- One (1) 16,920 gallon oily sump water storage tank;
- One (1) 940 gallon glycol/water storage tank;
- Eight (8) comfort heaters, each with a capacity less than 1 MMBtu/hr;
- Two (2) 1,100 gallon pipeline liquids storage tanks;
- Five (5) 2,480 gallon pipeline liquids storage tanks;
- Fugitive emissions from truck loading;
- One (1) Natural gas fired boiler, 150 hp (6.28 MMBtu/hr)
- Two (2) HVAC boilers less than 1 MMBtu/hr, each
- Two (2) water heaters, less than 1 MMBtu/hr, each
- Two (2) ovens, less than 1 MMBtu/hr, each
- One (1) Oil storage tank, 560 gallon
- One (1) Coolant storage tank, 940 gallon
- One (1) Oily water storage tank, 20,300 gallon
- One (1) Oily water storage tank, 12,690 gallon
- One (1) Parts washer, 0.32 gallon /hr (6.84 lb/ gallon)
- Nine (9) separator vessels (≤ 300 gallons each)
- Two (2) NOx CEMS sample handling box exhausts (***Proposed***)

2.2. EMISSIONS SUMMARY

As a result of this project, Texas Eastern anticipates no changes in the site-wide PTE at the Danville Compressor Station, as show in Table 2-1 below:

Table 2-1: Pre- and Post-Project Site-Wide PTE

Pollutant	Site-Wide PTE (tpy)		
	Before Permitting	After Permitting	Change in Emissions
NO_X	1,225.3	1,225.3	0.00
CO	250.4	250.4	0.00
VOC	202.9	202.9	0.00
$PM_{10}/PM_{2.5}$	27.4	27.4	0.00
SO_2	5.4	5.4	0.00
CO_2e	326,387	326,387	0.00
Total HAPs	48.9	48.9	0.00

Texas Eastern is requesting modifications to the permit to:

- Install CEMS for direct measurement of oxides of nitrogen (NOx) on the two GE, Frame 3 turbine exhaust stacks to replace the existing parametric monitoring system,
- Obtain emission limits corresponding to various operating scenarios,
- Clarify emissions compliance demonstrations for emission units equipped with catalyst control systems, and
- Clarify and revise various Title V monitoring, testing, recordkeeping, and monitoring requirements.

A further discussion of each of these proposed changes are presented in the following sections.

3.1. GE FRAME 3 TURBINES (EU 03)

3.1.1. Install NOx CEMS

Texas Eastern proposes to install a NOx Continuous Emissions Monitoring System (CEMS) on each of the two, GE Frame 3 turbines (Emission Unit 03) in order to measure actual NOx emissions in the Frame 3 exhaust stacks in lieu of the existing parametric monitoring program established in the Frame 3 NOx CAM plans.

The CEMS will be installed and operated in accordance with Appendix B of 40 CFR Subpart 60. Texas Eastern anticipates that the operation of the CEMS will allow for real-time record-keeping.

With the installation of the NOx CEMS, the CAM requirements under 40 CFR Part 64 still apply. However, the requirement of maintain NOx CAM plans for the Frame 3 turbines will no longer be required. CAM will be demonstrated via the development and implementation of a CEMS QA/QC document in accordance with Appendix B of 40 CFR Part 60 and the corresponding Performance Specifications.

A new point source will be associated with each CEMS sample handling box installed on the two Frame 3 turbine exhaust stacks. Thus, a total of two new CEMS exhaust stacks will exist. Emissions from these two new CEMS exhaust stack will generate trivial amounts of turbine exhaust (natural gas combustion products) and certified NOx calibration gases. The CEMS exhaust ports are deemed as Insignificant Activities and are included on the updated form DEP7007DD.

3.1.2. GE Frame 3 Process ID's and Emission Limitations

3.1.2.1. *Process ID's Discussion*

Texas Eastern is proposing additional KyEIS process ID's and emission limitations for the Frame 3 turbines (Emission Unit 03). Additional emission limitations are necessary to characterize the operation of the turbines during possible periods of maintenance, startup, shutdown, low ambient temperature, low catalyst temperature and/or reduced load operating periods.

Table 3-1: GE Frame 3 Turbines (EU 03) KyEIS Process ID's

GE Frame 3 Turbines		
Generic Name	**KyEIS Process ID**	**Description**
Normal	1	All operation other than Low Temperature, Severe Low Temperature, startup and shutdown when SCR catalyst temperature is 20 °F above NH_3 Permissive Temp
Low Temperature	2	Ambient Temperatures from -20 °F < T < 0 °F
Severe Low Temperature	3	Ambient Temperatures less than -20 °F
Turbine Startup	4	Operations from start of combustion until the end of the turbine startup sequence
Turbine Shutdown	5	Operations from the initiation of shutdown until combustion stops
Uncontrolled 1	6	Low Catalyst Temperature/Reduced Turbine Load Operation – No OxCat Control and No SCR Control
Uncontrolled 2	7	Low Catalyst Temperature/Reduced Turbine Load Operation – Only OxCat Control (No SCR Control)

3.1.2.2. *Emission Limitation Discussion*

Texas Eastern voluntarily installed both SCR and OxCat on the Frame 3 turbines in order to limit emissions below the Significant Emission Rate (SER) for PSD applicability. Beyond PSD applicability and general emissions minimization considerations there are no federal or state requirements specifying a specific emission limit for the turbines.

At typical ambient temperatures (greater than 32°F) and typical compressor load requirements (greater than 4,000 hp) the GE Frame 3 SCR and OxCat control systems achieve the design performance associated with normal operating emission limits. However, the variability in compressor demand and variability in ambient air conditions may require operation outside of the design performance ranges. The following overview identifies the common scenarios in which alternative emission limits may be required.

- **Start Up and Shut Down Operations** – during startup and shutdown catalyst temperatures may be insufficient for design destruction and ammonia injection permissives may not be achieved due to load or temperature variance associated with these activities
- **Maintenance** - tuning of the turbine combustion systems and/or ammonia injection system may require operating outside of the design conditions.
- **Low Catalyst Temperature due to low load** - When pipeline business demands and associated pipeline conditions require less than full power, turbine power output is reduced by lowering the power turbine inlet temperature. This change in power turbine inlet temperature also reduces the turbine exhaust gas temperature. As a result catalyst temperatures may be insufficient for design destruction and ammonia injection permissives may not be achieved.
- **Low Catalyst Temperature due to low ambient temperature and load factors** - As a result catalyst temperatures may be insufficient for design destruction and ammonia injection permissives may not be achieved.

Operation in these alternative emission limit modes is infrequent, but not avoidable. Texas Eastern is not incentivized to operate at sustained reduced loads because Texas Eastern will incur greater maintenance and operating costs. In other words, it does not make economic sense to operate two or more turbines at reduced

loads when the same load could be accommodated by operating a single turbine at a higher load. Further, when operating at these alternative emission limits, Texas Eastern "consumes" annual emission allowances at a greater rate which will restrict future operations. Thus, Texas Eastern is incentivized to minimize the time spent operating in these modes. Additional technical explanation can be provided upon request.

For the GE Frame 3 turbines, Texas Eastern is proposing additional emission limitations for Emission Unit 03 to characterize the turbines and catalyst control systems during periods of normal operations (KyEIS Process ID 1) and periods of uncontrolled catalyst control system operations (KyEIS Process IDs 6 and 7). In addition, CO, NOx, and other PSD pollutant emissions from the GE Frame 3 turbines will be included in a proposed, site-wide annual emission limit (a PSD avoidance emissions cap) based on emission representations in the April 2016 air permit application.

Table 3-2: GE Frame 3 Turbines (EU 03) Emission Limitations

Pollutant	GE Frame 3 Turbines		
	Emission Limitation	**Generic Name**	**Demonstration**
CO	12.5 ppmvd @ 15% O_2 (A)	Normal	Periodic Stack Testing
	3.13 lb/hr (B)	Normal	Parametric monitoring
	690 lb/hr (C)	Uncontrolled 1	Representations & Parametric monitoring
	tpy (D)	Site-wide	12-month rolling total
NOx	25 ppmvd @ 15% O_2 (A)	Normal	Initial Stack Test to Demonstrate Control System Performance
	18 lb/hr (E)	Normal	CEMS monitoring (30 day equivalent [prior 720 hours] rolling average limit)
	82 lb/hour (F)	Low Temp Severe Low Temp Start Up Shutdown Uncontrolled 1 Uncontrolled 2	CEMS monitoring 12-month rolling hourly average
	tpy (D)	Site-wide	12-month rolling total
Other PSD Pollutants	tpy (D)	Site-wide	12-month rolling total

(A) Stack Test (Average of three, 1-hr test runs), normal operations >90% load and when all catalyst control systems are operating at design performance levels. **Excludes** turbine startup, turbine shutdown, maintenance, low load, and low ambient air temperature periods when catalyst control system design performance temperatures have not been achieved.

(B) Short Term CO Normal (i.e., controlled) Emissions Limit: **Excludes** turbine startup, turbine shutdown, maintenance, low load, and low ambient air temperature periods when OxCat design performance temperature has not been achieved. Hourly CO normal emission rate based on 0.01°F for a GE Frame 3 (TABLE B-1Ak – Normal Maximum Hourly when OxCat is achieving design performance level).

(C) Worst Case CO Hourly Emissions Limit for "Uncontrolled 1": Applicable **only** to turbine startup, turbine shutdown, maintenance, low load, and low ambient air temperature periods when OxCat design performance temperature has not been achieved. Alternatively an emission limitation based on hours/year may be considered. Hourly CO "Uncontrolled 1" emission rate based on two turbine startups and two turbine shutdowns at 0.01°F for a GE Frame 3 (TABLE B-1Ai – Combined Operations, Maximum Hourly when OxCat is not achieving design performance level).

(D) PSD Avoidance Emission CAP: Site-wide annual emissions, as represented in the April 2016 air permit application.

(E) Short Term CEMS, NOx Normal (i.e., controlled) Emissions Limit: **Excludes** turbine startup, turbine shutdown, maintenance, low load and low ambient air temperature periods, and when ammonia injection temperature permissive has not been achieved. Hourly NOx normal emission rate based on 0.01°F for a GE Frame 3 and NOx concentration of 42 ppmvd at 15% O_2.

(F) Worst Case CEMS, NOx Emissions Limit for "Uncontrolled 2": Applicable **only** to turbine startup, turbine shutdown, maintenance, low load and low temperature periods, and when ammonia injection temperature permissive has not been achieved. Alternatively an emission limitation based on hours/year may be considered. Hourly NOx "Uncontrolled 2" emission rate based on the severe low ambient air temperature (i.e. below -20°F), KyEIS Process ID 3, fuel flow rate for a GE Frame 3 turbine.

3.1.3. GE Frame 3 Monitoring Requirements

In addition to the CEM system, Texas Eastern is proposing operating a monitoring system as follows:

Table 3-3: GE Frame 3 Turbines (EU 03) Monitoring Requirements

GE Frame 3 Turbines				
Parameter to be Monitored	**Related Pollutants**	**Indicator Range**	**Purpose of Range**	**Frequency Period**
Fuel (MMscf)	Criteria and HAP	Actual < Limit	Emissions Estimation	Monthly and 12-month rolling total
OxCat Catalyst Temperature (°F) (inlet or outlet)	CO, VOC, and HAP	Actual Temp > Vendor or Stack Test	Define Process ID	Continuous
SCR Catalyst Temperature (inlet or outlet)	NOx	Actual Temp + 20 degF > NH_3 Permissive Temp	Define Process ID	Continuous

3.1.4. GE Frame 3 Recordkeeping Requirements

In addition to the CEM system, Texas Eastern is proposing the recordkeeping requirements as follows:

Table 3-4: Frame 3 Turbines (EU 03) Recordkeeping Requirements

Record Kept	Frequency Period
Total Fuel Consumption (MMscf)	Monthly and 12-month rolling total
OxCat Catalyst Temperature (°F) (inlet or outlet)	4-hour rolling average
SCR Catalyst Temperature (inlet or outlet)	4-hour rolling average
Ammonia Injection Variance	4-hour rolling average
Hours (or Duration) Turbine Spent in Each Process ID	Monthly and 12-month rolling total
Emission Inventory Calculations	Monthly and 12-month rolling total
Turbine Maintenace Records	Per Event
Catalyst Maintenace Records	Per Event
Turbine Stack Test Reports	Per Event

3.2. GE FRAME 5 TURBINE (EU 04)

3.2.1. GE Frame 5 Process ID's and Emission Limitations

3.2.1.1. *Process ID's Discussion*

Texas Eastern is proposing additional KyEIS process ID's and emission limitations for the Frame 5 turbine (Emission Unit 04). Additional emission limitations are necessary to characterize the operation of the turbines during possible periods of maintenance, startup, shutdown, low ambient temperature, low catalyst temperature and/or reduced load operating periods.

Table 3-5: GE Frame 5 turbine (EU 04) KyEIS Process ID's

GE Frame 5 turbine		
Generic Name	**KyEIS Process ID**	**Description**
Normal	1	All operation other than Low Temperature, Severe Low Temperature, startup and shutdown when catalyst temperature is above low range identified by vendor or stack test.
Low Temperature	2	Ambient Temperatures from -20 °F < T < 0 °F
Severe Low Temperature	3	Ambient Temperatures less than -20 °F
Turbine Startup	4	Operations from start of combustion until the end of the turbine startup sequence
Turbine Shutdown	5	Operations from the initiation of shutdown until combustion stops
Uncontrolled	6	Low Catalyst Temperature/Reduced Turbine Load Operation – No OxCat Control

3.2.1.2. *Emission Limitation Discussion*

Texas Eastern voluntarily installed an OxCat on the Frame 5 turbine in order to limit emissions below the Significant Emission Rate (SER) for PSD applicability. Beyond PSD applicability and general emissions minimization considerations there are no federal or state requirements specifying a specific emission limit for the turbines.

As discussed in the previous section for Frame 3 turbines, there are similar common scenarios in which alternative emission limits may be required for:

- Start Up and Shut Down Operations,
- Maintenance,
- Low Catalyst Temperature due to low load , and
- Low Catalyst Temperature due to low ambient temperature and load factors.

Operation in these alternative emission limit modes is infrequent, but not avoidable. Texas Eastern is not incentivized to operate at sustained reduced loads because Texas Eastern will incur greater maintenance and operating costs. In other words, it does not make economic sense to operate two or more turbines at reduced loads when the same load could be accommodated by operating a single turbine at a higher load. Further, when operating at these alternative emission limits, Texas Eastern "consumes" annual emission allowances at a

greater rate which will restrict future operations. Thus, Texas Eastern is incentivized to minimize the time spent operating in these modes. Additional technical explanation can be provided upon request.

For the GE Frame 5 turbine, Texas Eastern is proposing additional emission limitations for Emission Unit 04 to characterize the turbine and OxCat control system during periods of normal operations (KyEIS Process ID 1) and periods of uncontrolled catalyst control system operations (KyEIS Process IDs 6). In addition, CO, NOx, and other PSD pollutant emissions from the GE Frame 5 turbine will be included in a proposed, site-wide annual emission limit (a PSD avoidance emissions cap) based on emission representations in the April 2016 air permit application.

Table 3-6: Frame 5 turbine (EU 04) Emission Limitations

Pollutant	GE Frame 5 turbine		
	Emission Limitation	**Generic Name**	**Demonstration**
CO	12.5 ppmvd @ 15% O_2 (A)	Normal	Periodic Stack Testing
	5.77 lb/hr (B)	Normal	Parametric monitoring
	4,522 lb/hr (C)	Uncontrolled	Representations & Parametric monitoring
	tpy (D)	Site-wide	12-month rolling total
NOx	170 ppmvd @ 15% O_2 (A)	Normal	Initial Stack Testing
	tpy (D)	Site-wide	12-month rolling total
Other PSD Pollutants	tpy (D)	Site-wide	12-month rolling total

(A) Stack Test (Average of three, 1-hr test runs), normal operations >90% load and when all catalyst control systems are operating at design performance levels. **Excludes** turbine startup, turbine shutdown, maintenance, low load, and low ambient air temperature periods when catalyst control system design performance temperatures have not been achieved.

(B) Short Term CO Normal (i.e., controlled) Emissions Limit: **Excludes** turbine startup, turbine shutdown, maintenance, low load, and low ambient air temperature periods when OxCat design performance temperature has not been achieved. Hourly CO normal emission rate based on 0.01°F for a GE Frame 5 (TABLE B-1Bk – Normal Maximum Hourly when OxCat is achieving design performance level).

(C) Worst Case CO Hourly Emissions Limit for "Uncontrolled": Applicable **only** to turbine startup, turbine shutdown, maintenance, low load, and low ambient air temperature periods when OxCat design performance temperature has not been achieved. Alternatively an emission limitation based on hours/year may be considered. Hourly CO "Uncontrolled" emission rate based on two turbine startups and two turbine shutdowns at 0.01°F for a GE Frame 5 (TABLE B-1Bi – Combined Operations, Maximum Hourly when OxCat is NOT achieving design performance level).

(D) PSD Avoidance Emission CAP: Site-wide annual emissions, as represented in the April 2016 air permit application.

3.2.2. Frame 5 Monitoring Requirements

Texas Eastern is proposing operating a monitoring system as follows:

Table 3-7: GE Frame 5 turbine (EU 04) Monitoring Requirements

GE Frame 5 Turbine				
Parameter to be Monitored	**Related Pollutants**	**Indicator Range**	**Purpose of Range**	**Frequency Period**
Fuel (MMscf)	Criteria and HAP	Actual < Limit	Emissions Estimation	Monthly and 12-month rolling total
OxCat Catalyst Temperature (°F) (inlet or outlet)	CO, VOC, and HAP	Actual Temp > Vendor or Stack Test	Define Process ID	4-hour rolling average

3.2.3. Frame 5 Recordkeeping Requirements

Texas Eastern is proposing the recordkeeping requirements as follows:

Table 3-8: GE Frame 5 Turbine (EU 04) Recordkeeping Requirements

Record Kept	Frequency Period
Total Fuel Consumption (MMscf)	Monthly and 12-month rolling total
OxCat Catalyst Temperature (°F) (inlet or outlet)	4-hour rolling average
Hours (or Duration) Turbine Spent in Each Process ID	Monthly and 12-month rolling total
Emission Inventory Calculations	Monthly and 12-month rolling total
Turbine Maintenace Records	Per Event
Catalyst Maintenace Records	Per Event
Turbine Stack Test Reports	Per Event

3.3. CLARK HBA-8T (EU 02)

3.3.1. Clark HBA-8T Process ID's and Emission Limitations

Texas Eastern is proposing an additional KyEIS process ID for the Clark HBA-8Ts reciprocating engines (Emission Unit 02 [Engines 8 through 10]) which were retrofitted with lean combustion equipment and equipped with OxCat control systems as part of the previous AALE project.

3.3.1.1. *Process ID's Discussion*

Texas Eastern is proposing one additional KyEIS process ID for the Clark HBA-8Ts reciprocating engines (Emission Unit 02) equipped with OxCat control systems, as shown below in Table 3-9. The additional KyEIS process ID 2 is necessary to characterize the uncontrolled operation of the reciprocating engines during possible periods of maintenance, catalyst low temperature, and/or engine reduced load operating periods in which the OxCat system may not achieve design performance specifications and design control efficiencies for CO, VOC, and HAP.

Table 3-9: Clark HBA-8T (EU 02) KyEIS Process ID's

Clark HBA-8T		
Generic Name	**KyEIS Process ID**	**Description**
Normal	1	All operation other than uncontrolled
Uncontrolled	2	Maintenance, startup, shutdown and catalyst low temperature operating periods

Actual control efficiencies associated with the OxCat control system are not a binary function (e.g., completely on or completely off). At operating temperatures less than the respective OxCat vendor-supplied design or stack test verified operating temperatures, the OxCat control system is capable of providing pollutant emissions reductions, but at a lesser level of reduction than at the design or stack tested verified level. In order to be conservative, when the OxCat system is operating below the respective OxCat performance specifications, Texas Eastern is assuming zero percent control from the OxCat control system for accounting purposes against the proposed site-wide PSD avoidance annual pollutant emission limits (tpy).
Alternative emission limitations and additional monitoring and recordkeeping may be necessary to support the proposed process ID.

3.4. UPDATES AND REVISIONS TO VARIOUS TITLE V REQUIREMENTS

Refer to Appendix D to this application for a redline/strikeout copy of the current Title V permit (V-16-056) with the proposed updates and revisions suggested by Texas Eastern.

This section provides a summary of the calculation methodology used to estimate potential emissions for the three (3) turbines and ten (10) engines. Appendix B provides the detailed emission calculations for the project.

4.1. TURBINE EMISSIONS

Emissions are estimated for operation during normal steady-state operating conditions, operation during startup and shutdown events, and operation during cold weather events (temperatures below 0 °F) as described in the following sections.

4.1.1. Turbine Normal Steady-State Operation Hourly Emissions

The following tables provide a summary of the emission factors used for each pollutant during normal steady-state operation for each type of turbine. Potential emissions associated with these emission factors are provided in Tables 4-1 and 4-2.

In order to calculate hourly emissions during normal operation, the emission factors provided in these tables are converted to factors in pounds per million standard cubic feet (lb/MMscf), if not already in those units, and multiplied by the maximum fuel consumption, as described in subsequent sections.

4.1.1.1. *Turbine Emissions Factors – NO_X, CO, and TOC*

NO_X, CO, and TOC emitted by the combustion turbines during normal operation are calculated based on vendor–supplied emission rates provided in Appendix B. Although TOC is not a criteria pollutant, it is used to derive the emission factors for VOC, CH_4 (a greenhouse gas), and organic hazardous air pollutants (HAP). Vendor data for several ambient temperatures and vendor literature for emissions were compiled to develop the data listed below:

- Fuel: Lower Heating Value (BTU/scf);
- Turbine Performance: Net Output Power (hp), Heat Input at LHV (MMBTU/hr), Heat Rate at LHV (BTU/hp-hr);
- Exhaust Parameters: Exhaust Temperature (°F), Water Fraction (%), O_2 Content (%, dry), Molecular Weight (lb/lb-mol), Flowrate (lb/hr and acfm); and
- Vendor Supplied Emission Rates for NO_X, CO and TOC (ppmvd @ 15% O_2).

Table 4-1– GE Frame 3 Emission Factors – Normal Operations[3]

Pollutant	Pre-Control *	Post-Control	Source
NO_X	184 ppmvd @ 15% O_2	25 ppmvd @ 15% O_2	Vendor guaranteed emission rate
CO	50 ppmvd @ 15% O_2	12.5 ppmvd @ 15% O_2	Vendor guaranteed emission rate
VOC	17.21 lb/MMscf	13.28 lb/MMscf	Based on vendor data for TOC, scaled to VOC based on ratio of TOC:VOC (0.011:0.0021 lb/MMBtu) in Table 3.1-2a of AP-42 (April 2000)
CH_4	70.48 lb/MMscf	70.48 lb/MMscf	Based on vendor data for TOC, scaled to CH_4 based on ratio of TOC:CH_4 (0.011:0.0086 lb/MMBtu) in Table 3.1-2a of AP-42 (April 2000)
$PM_{10}/PM_{2.5}$	6.73 lb/MMscf	6.73 lb/MMscf	Table 3.1-2a of AP-42 (April 2000)[4]
SO_2	3.47 lb/MMscf	3.47 lb/MMscf	Table 3.1-2a of AP-42 (April 2000)
CO_2	120,017 lb/MMscf	120,017 lb/MMscf	40 CFR 98, Subpart C, Table C-1 (effective January 2014)
N_2O	0.23 lb/MMscf	0.23 lb/MMscf	40 CFR 98, Subpart C, Table C-2 (effective January 2014)
Total HAPs	Multiple HAP factors	See Appendix B	Table 3.1-3 of AP-42 (April 2000). Organic HAPs were scaled using vendor data and AP-42 emission rates for TOC

*The emission factors provided in this table represent the outlet emissions from the stack during normal operation at temperatures above 0 °F.

[3] Note that emissions calculations included in past applications may be based on extrapolating the turbine performance curves. Although there is no change in the method of calculation, the performance curves are now digitized and extrapolated online resulting in slightly different emission factors. The heat rate and maximum heat input of the turbines is also slight different for this reason.

[4] Texas Eastern has applied the conservative AP-42 emission factor for all operating conditions pre- and post-project for the turbines at the Danville Compressor Station. It is assumed that the small amount of ammonium salts that may be created from the un-reacted reductant and sulfites from the SCR/OxCat are captured in this conservative emission factor. Additionally, formation of these ammonium salts is minimized by combusting pipeline-quality natural gas.

Table 4-2 – GE Frame 5 Emission Factors – Normal Operations

Pollutant	Pre-Control *	Post-Control	Source
NO_X	170 ppmvd @ 15% O_2	170 ppmvd @ 15% O_2	Vendor guaranteed emission rate
CO	50 ppmvd @ 15% O_2	12.5 ppmvd @ 15% O_2	Vendor guaranteed emission rate
VOC	13.43 lb/MMscf	10.36 lb/MMscf	Based on vendor data for TOC, scaled to VOC based on ratio of TOC:VOC (0.011:0.0021 lb/MMBtu) in Table 3.1-2a of AP-42 (April 2000)
CH_4	54.99 lb/MMscf	54.99 lb/MMscf	Based on vendor data for TOC, scaled to CH_4 based on ratio of TOC:CH_4 (0.011:0.0086 lb/MMBtu) in Table 3.1-2a of AP-42 (April 2000)
$PM_{10}/PM_{2.5}$	6.73 lb/MMscf	6.73 lb/MMscf	Table 3.1-2a of AP-42 (April 2000)[5]
SO_2	3.47 lb/MMscf	3.47 lb/MMscf	Table 3.1-2a of AP-42 (April 2000)
CO_2	120,017 lb/MMscf	120,017 lb/MMscf	40 CFR 98, Subpart C, Table C-1 (effective January 2014)
N_2O	0.23 lb/MMscf	0.23 lb/MMscf	40 CFR 98, Subpart C, Table C-2 (effective January 2014)
Total HAPs	Multiple HAP factors	See Appendix B	Table 3.1-3 of AP-42 (April 2000). Organic HAPs were scaled using vendor data and AP-42 emission rates for TOC

*The emission factors provided in this table represent outlet emissions from the stack during normal operation at temperatures above 0 °F.

Operating and emissions data at other ambient temperatures are estimated by fitting the data to a curve that best represents the data and interpolating/extrapolating to the desired temperatures. The mass emission rates of NO_X, CO, and TOC at a given load decrease with increasing ambient temperature conditions (i.e., fuel consumption at 100% load is highest at lower ambient temperatures). As such, short-term, maximum hourly emission rates are estimated based on operating and emissions data at 0.01 °F to provide the most conservative estimate for normal operations. Annual emissions estimates are based on the annual average ambient conditions at the Danville Compressor Station. For annual emissions estimates, the operating data (turbine performance and exhaust gas parameters) are interpolated to estimate emissions at the average annual ambient temperature at the station.[6] The emission factor at a given ambient temperature is calculated as illustrated in Equation 4-1 through Equation 4-3:

[6] A weighted daily average ambient temperature is used in estimating potential annual emissions for the Danville Compressor Station and is based on meteorological information in USEPA's TANKS 4.09d database. To determine ambient temperatures, the meteorological stations in closest proximity to the station are reviewed, and the station with the lowest ambient temperature is conservatively selected. The average annual temperature at the Danville Compressor Station is 54.86 °F.

Equation 4-1:

$$[NO_x, CO, UHC]\ EF\ (ppmw) = [ppmvd, 15\%\ O_2] \times [nonwater\%] \times \left[\frac{20.9 - (\ vol\%\ O_2, dry\ \times 100)}{5.9}\right] = ppmw$$

Equation 4-2:

$$[NO_x, CO, UHC]\ hourly\ emissions\ \left(\frac{lb}{hr}\right) @\ T = \left[\frac{ppmw}{1,000,000}\right] \times \left[\frac{lb\ exhaust}{hr}\right]_T \times \left[\frac{\frac{lb\ pollutant}{lbmol}}{\left[\frac{lb\ exhaust}{lbmol}\right]_T}\right] = \left[\frac{lb\ pollutant}{hr}\right]_T$$

Equation 4-3:

$$[NO_x, CO, UHC]\ EF\ @\ T = \left[\frac{lb}{hr}\right]_T \times \left[\frac{1,000,000\ \frac{scf}{MMscf}}{\left[\frac{scf\ fuel}{hr}\right]_T}\right] = \left[\frac{lb}{MMscf}\right]_T$$

Where: *EF = Emission Factor*
T = ambient temperature
Maximum hourly emissions estimated at T = 0 °F

4.1.1.2. *Turbine Emission Factors – VOC, CH_4, and HAPs*

VOC, CH_4, and HAP emitted by combustion turbines are calculated using the vendor-supplied TOC emission rate[7] and EPA AP-42 emission factors, as VOC, CH_4, and HAPs are constituents of TOC. The TOC emission factor in terms of lb/MMscf, at a given ambient temperature, is calculated as outlined in the previous section.

Standard emission factors for VOC, CH_4, HAPs, and TOC from stationary gas turbines are provided in Chapter 3.1 of EPA's Compilation of Air Pollutant Emissions Factors (AP-42). Table 3.1-2a of AP-42 (version dated April 2000) provides emission factors of 0.0021 lb VOC per MMBtu, 0.0086 lb CH_4 per MMBtu, and 0.011 lb TOC per MMBtu from natural gas-fired turbines. Table 3.1-3 of AP-42 (version dated April 2000) provides emission factors for HAPs emitted from natural gas-fired turbines. These HAPs include:

- 1,3-butadiene;
- Acetaldehyde;
- Acrolein;
- Benzene;
- Ethylbenzene;
- Formaldehyde;
- Naphthalene;
- Polycyclic aromatic hydrocarbons (PAH);
- Propylene oxide;
- Toluene; and

[7] Vendor supplied emission rates are summarized in Appendix B, Tables B-1Ab, B-1Ad, B-1Ae, B-1Bb, B-1Bd, and B-1Be.

- Xylenes.

A total HAP emission factor is calculated as the sum of all individual HAP emission factors.

Ratios of VOC, CH_4, and HAP to TOC from the AP-42 factors are applied to the TOC factor derived from vendor information to obtain emission factors for VOC, CH_4, and HAP. For normal operation, the uncontrolled VOC, CH_4, and HAP factors are derived as follows:

Equation 4-4:

$$\boldsymbol{VOC, CH_4, HAP\ EF = \frac{lb\ TOC}{MMscf} \times \frac{\left(\frac{lb\ pollutant}{MMBtu} \times 1{,}020\ \frac{MMBtu}{MMscf}\right)}{\left(0.011 \frac{lb\ UHC}{MMBtu} \times 1{,}020\ \frac{MMBtu}{MMscf}\right)} = \frac{lb}{MMscf}}$$

A percent control is applied to each of the individual constituent compounds for VOC, CH_4, and HAP emission factors to account for the control from the OxCat. The applied percentage of control efficiency for each pollutant as a result of the OxCat can be found in Table B-1Aj for the Frame 3 turbines and Table B-1Bj for the Frame 5 turbine in Appendix B.

4.1.1.3. *Turbine Emission Factors – PM_{10}, $PM_{2.5}$, and SO_2*

Particulate matter less than 10 microns in diameter (PM_{10}), particulate matter less than 2.5 microns in diameter ($PM_{2.5}$), and sulfur dioxide (SO_2) emitted by the combustion turbines during normal operation are calculated based on the emission factors listed in Table 3.1-2a of AP-42 (version dated April 2000) for stationary gas turbines. The AP-42 emission factors are converted to lb/MMscf as follows:

Equation 4-5:

$$\boldsymbol{[PM_{10}, PM_{2.5}\ or\ SO_2]\ EF = \left[\frac{lb}{MMBtu}\right] \times \left[1{,}020\ \frac{MMBtu}{MMscf}\right] = \left[\frac{lb}{MMscf}\right]}$$

4.1.1.4. *Turbine Emission Factors – CO_2, N_2O, and CO_2e*

Emission factors for CO_2 and nitrous oxide (N_2O) emitted by the combustion of natural gas are calculated based on the emission factors provided for pipeline natural gas combustion in 40 CFR Part 98, Subpart C, Tables C-1 and C-2, as follows:[8]

Equation 4-6:

$$\boldsymbol{[CO_2]\ EF = \left[53.06 \frac{kg}{MMBtu}\right] \times \left[2.2046 \frac{lb}{kg}\right] \times \left[1{,}026 \frac{MMBtu}{MMscf}\right] = \left[120{,}161 \frac{lb\ CO_2}{MMscf}\right]}$$

For conservatism, it was assumed that a chemical reaction will occur as a result of the OxCat controlling CO emissions to produce CO_2. Texas Eastern quantified the additional CO_2 emissions using the following equation:

Equation 4-7:

[8] Note that emission factors utilized the corresponding natural gas heating value from the same subpart or reference (Part 98 for GHG, AP-42 for other factors). In this way, the factors and heating value are consistent with each other, although slightly different heating values were referenced for different factors.

$$CO_2\ Emissions\ \left(\frac{lb}{hr}\right) = CO_2\ EF\left(\frac{lb\ CO_2}{MMscf}\right) * Fuel\ Consumption\ \left(\frac{MMscf}{hr}\right) + [CO\ Emissions\left(\frac{lb\ CO}{hr}\right) * 75\%\ CO\ Control * \frac{Molecular\ Weight_{CO2}}{Molecular\ Weight_{CO}}]$$

Equation 4-8:

$$[\boldsymbol{N_2O}]\ \boldsymbol{EF} = \left[\mathbf{0.0001}\frac{\boldsymbol{kg}}{\boldsymbol{MMBtu}}\right] \times \left[\mathbf{2.2046}\frac{\boldsymbol{lb}}{\boldsymbol{kg}}\right] \times \left[\mathbf{1,026}\frac{\boldsymbol{MMBtu}}{\boldsymbol{MMscf}}\right] = \left[\mathbf{0.23}\frac{\boldsymbol{lb\ N_2O}}{\boldsymbol{MMscf}}\right]$$

Total GHG emissions in terms of CO_2 equivalents (CO_2e) are equal to the sum of all individual GHGs emitted by the turbines, accounting for the respective global warming potential (GWP) of each GHG. The GWPs used to calculate CO_2e emissions for each pollutant emitted by the project are contained in the following table.

Table 4-3 – Applicable Global Warming Potentials

Pollutant*	GWP**
CO_2	1
CH_4	25
N_2O	298

* Only those GHGs for which quantifiable emissions increases are expected due to this project are listed.
** GWPs are based on a 100-year time horizon, as identified in Table A-1 to 40 CFR Part 98, Subpart A as amended on November 29, 2013, and effective January 1, 2014, to incorporate revised GWPs as published in the Intergovernmental Panel on Climate Change (IPCC) 4th Assessment Report (AR4). *See* 78 Fed Reg 71903-71981.

As such, the CO_2e factor is derived as follows:

Equation 4-9:

$$[\boldsymbol{CO_2e}\ ]\boldsymbol{EF} = \left[\frac{\boldsymbol{lb\ CO_2}}{\boldsymbol{MMscf}} \times \mathbf{1}\ \boldsymbol{GWP}\right] + \left[\frac{\boldsymbol{lb\ CH_4}}{\boldsymbol{MMscf}} \times \mathbf{25}\ \boldsymbol{GWP}\right] + \left[\frac{\boldsymbol{lb\ N_2O}}{\boldsymbol{MMscf}} \times \mathbf{298}\ \boldsymbol{GWP}\right] = \left[\frac{\boldsymbol{lb\ CO_2e}}{\boldsymbol{MMscf}}\right]$$

4.1.2. Turbine Startup and Shutdown Hourly Emissions

Emissions during startups and shutdowns are calculated based on vendor-specified transient operation profiles, which are used to determine the maximum pound per startup or shutdown event as described in further detail in the following sections.

4.1.2.1. *Turbine Startup Operation*

The startup process for the Frame 3 turbines takes approximately 16 minutes from the initiation of startup to normal operation. This includes approximately 5.5 minutes of ignition-idle operation and 10.5 minutes of loading/thermal stabilization operation.[9] The startup process for the Frame 5 turbine takes approximately 45

[9] These are referred to as "Step 2" and "Step 3", respectively in the emissions calculations in Appendix B. Step 1 of turbine startup includes energizing the starter and observing the RPM until the ignition range is reached. During Step 1, ignition and combustion have not yet occurred in the turbine, and thus the turbine combustor is not yet a source of air emissions.

minutes from the initiation of startup to normal operation. This includes approximately 15 minutes of ignition-idle operation and approximately 30 minutes of loading/thermal stabilization operation.

The following tables include a summary of the emission factors used for each pollutant during the ignition-idle and loading/thermal stabilization phases of each startup event. It is assumed that the OxCat will not yet have a measurable destruction or removal efficiency (DRE) during startup, as it is designed to meet control specifications only during normal operation. It is also assumed that the SCR for the Frame 3 turbines will not be operated during startup.

Table 4-4 – Frame 3 Turbines Emission Factors – Startup Operation

Pollutant	Ignition-Idle Phase Emission Factor from Source*	Loading/Thermal Stabilization Phase Emission Factor from Source*	Source
NO_X	110 ppmvd at 15% O_2	125 ppmvd at 15% O_2	Based on vendor data[10]
CO	10,000 ppmvd at 15% O_2	9,000 ppmvd at 15% O_2	Based on vendor data[11]
VOC	1,000 ppmvd TOC at 15% O_2 0.011 lb_{TOC}/MMBtu (HHV) : 0.0021 lb_{VOC}/MMBtu (HHV)	900 ppmvd TOC at 15% O_2 0.011 lb_{TOC}/MMBtu (HHV) : 0.0021 lb_{VOC}/MMBtu (HHV)	Based on vendor data for TOC, scaled to VOC based on ratio of TOC:VOC in Table 3.1-2a of AP-42 (April 2000)
CH_4	1,000 ppmvd TOC at 15% O_2 0.011 lb_{TOC}/MMBtu (HHV) : 0.0086 lb_{CH4}/MMBtu (HHV)	1,000 ppmvd TOC at 15% O_2 0.011 lb_{TOC}/MMBtu (HHV) : 0.0086 lb_{CH4}/MMBtu (HHV)	Based on vendor data for TOC, scaled to CH_4 based on ratio of TOC:CH_4 in Table 3.1-2a of AP-42 (April 2000)
$PM_{10}/PM_{2.5}$	Same as normal operation		
SO_2	Same as normal operation		
CO_2	Same as normal operation		
N_2O	Same as normal operation		
Total HAPs	1,000 ppmvd TOC at 15% O_2 Multiple HAP factors	900 ppmvd TOC at 15% O_2 Multiple HAP factors	Based on vendor data for TOC, scaled to HAP based on ratio of TOC:HAP in Table 3.1-2a of AP-42 (April 2000)

*The emission factors provided in this table represent uncontrolled emissions. The Frame 3 turbines will be equipped with OxCat and SCR, however it is assumed that these will not be in operation nor have a measurable DRE during startups.

[10] Vendor data is summarized in Appendix B.

[11] Ibid.

Table 4-5 – Frame 5 Turbine Emission Factors – Startup Operation

Pollutant	Ignition-Idle Phase Emission Factor from Source*	Loading/Thermal Stabilization Phase Emission Factor from Source*	Source
NO_X	110 ppmvd at 15% O_2	125 ppmvd at 15% O_2	Based on vendor data[12]
CO	10,000 ppmvd at 15% O_2	9,000 ppmvd at 15% O_2	Based on vendor data[13]
VOC	1,000 ppmvd TOC at 15% O_2 0.011 lb_{TOC}/MMBtu (HHV) : 0.0021 lb_{VOC}/MMBtu (HHV)	900 ppmvd TOC at 15% O_2 0.011 lb_{TOC}/MMBtu (HHV) : 0.0021 lb_{VOC}/MMBtu (HHV)	Based on vendor data for TOC, scaled to VOC based on ratio of TOC:VOC in Table 3.1-2a of AP-42 (April 2000)
CH_4	1,000 ppmvd TOC at 15% O_2 0.011 lb_{TOC}/MMBtu (HHV) : 0.0086 lb_{CH4}/MMBtu (HHV)	1,000 ppmvd TOC at 15% O_2 0.011 lb_{TOC}/MMBtu (HHV) : 0.0086 lb_{CH4}/MMBtu (HHV)	Based on vendor data for TOC, scaled to CH_4 based on ratio of TOC:CH_4 in Table 3.1-2a of AP-42 (April 2000)
$PM_{10}/PM_{2.5}$	Same as normal operation		
SO_2	Same as normal operation		
CO_2	Same as normal operation		
N_2O	Same as normal operation		
Total HAPs	1,000 ppmvd TOC at 15% O_2 Multiple HAP factors	900 ppmvd TOC at 15% O_2 Multiple HAP factors	Based on vendor data for TOC, scaled to HAP based on ratio of TOC:HAP in Table 3.1-2a of AP-42 (April 2000)

*The emission factors provided in this table represent uncontrolled emissions. The Frame 5 turbines will be equipped with an OxCat, however it is assumed that the OxCat will not have a measurable DRE during startups.

All pollutants emitted by the combustion turbines during startup events are calculated based on the same methodology that is used to calculate emissions during normal operation. However, rather than calculate a lb/MMscf emission factor, pounds per startup event (lb/event) are calculated for each pollutant based on the fuel consumed during the 5.5-minute ignition-idle phase and during the 10.5-minute loading/thermal stabilization phase for the Frame 3 turbines and the 15-minute ignition-idle phase and 30-minute loading/thermal stabilization phase for the Frame 5 turbine as follows:

[12] Vendor data is summarized in Appendix B.

[13] Ibid.

Equation 4-10:

$$EF_i \; during \; SU \; event = \left[\frac{lb \; Pollutant \; i}{MMscf}\right] \times \left[\frac{scf \; fuel}{event}\right] \times \left[\frac{MMscf}{1,000,000 \; scf}\right] = \left[\frac{lb \; Pollutant \; i}{event}\right]$$

Where: EF is the emission factor for pollutant "i"

It should be noted that emission factors for pollutants that are listed as ppm in the tables above, are converted to lb/MMscf in the same manner as they were converted to lb/MMscf for calculations of emissions during steady-state operation of the turbines. Texas Eastern conservatively assumes that 2 full startups will occur within a single hour (on a mass-emissions basis) even if the duration of 2 full startups exceeds an hour.

4.1.2.2. *Turbine Shutdown Operation*

The shutdown process takes approximately 9 minutes from normal operation to shutdown for the Frame 3 turbines and 42.5 minutes for the Frame 5 turbine. The shutdown event consists of deloading/thermal stabilization operation. It is assumed that the OxCat will be operational during shutdown and therefore the same control efficiencies for CO and VOC during normal operation are applied to shutdown operation. As a conservative calculation, it is assumed that the SCR on the Frame 3 turbines will not be in operation during shutdown. The calculation for shutdowns is similar to that for startups as shown previously, utilizing the same emission rates identified during loading/thermal stabilization for startup but with control efficiency applied for the OxCat.

4.1.3. **Turbine Annual Potential Emissions**

The emission factors described in the previous sections are multiplied by the following activity data to estimate annual potential emissions for the turbines:

- **Normal, Steady-State Operation**: Annual fuel consumption as estimated from vendor-provided turbine parameters at the annual average ambient temperature for the Danville Compressor Station. Annual PTE estimates assume 100% utilization (8,760 hours per year). CO, VOC, and HAP PTE estimates take the control efficiency of the OxCat into account. Further, since an OxCat provides more complete conversion of CO to CO_2, the controlled portion of the CO emissions is added back to the CO_2 emissions rate. Note however, that this increase is a small fraction of the overall CO_2 emissions. NO_X estimates for the Frame 3 turbines take into account the control from the SCRs.

- **Startup/Shutdown Operation**: The number of startup and shutdown events is conservatively estimated at 156 startup and 156 shutdown events per year for each turbine. No credit for control by the OxCat is accounted for in the estimation of startup emissions even though the OxCat inlet temperature should reach the effective temperature very quickly. It is assumed that the OxCat will be effective during shutdown since the OxCat inlet temperature shouldn't drop below the effective temperature until after the fuel is cut off. No credit for control by the SCRs on the Frame 3 turbines is accounted for in either startup or shutdown calculations.

- **Cold Weather Operation:** The number of cold weather events is estimated at 7 hours per year with ambient temperature below 0 °F; 6 hours between 0 °F and -20 °F, and 1 hour of which the ambient temperature is below -20 °F. The annual emissions during the cumulative cold weather events for the Frame 3 turbines and the Frame 5 turbine are based on the total fuel consumption for each turbine during the cold weather events.

For some pollutants, hourly emission rates from the combustion turbine are higher during normal steady-state operation than they are during startup and shutdown. However, for other pollutants, emission rates may be higher during startup and shutdown than during normal operation. Appendix B Tables B-1Ai, B-1Aj, B-1Ak, B-1Bi, and B-1Bj provide a comparison of short-term emissions under various operating conditions for each turbine, respectively. As such, maximum annual emissions for the turbine are the maximum of potential combinations of normal, startup (SU), shutdown (SD), and low temperature operation as summarized in the following equations.

Equation 4-11:

$$Normal\frac{ton}{yr} = \left[Average\ Normal\frac{lb}{hr}\right] \times \left[\frac{8,760\ hr}{yr}\right] \times \left[\frac{ton}{2,000\ lb}\right]$$

Equation 4-12:

$$Normal\ and\ SU\ and\ SD\ \frac{ton}{yr} = \left[startup\frac{ton}{yr}\right] + \left[shutdown\frac{ton}{yr}\right] + \left(\left[normal\frac{ton}{yr} \times \frac{1 - startup\ hrs - shutdown\ hrs}{8760}\right]\right)$$

Equation 4-13:

$$Annual\ PTE\ \left(\frac{ton}{yr}\right)_{Pollutant\ i} = \text{MAX}\left[Normal\left(\frac{ton}{yr}\right), Normal\ and\ SU\ and\ SD\ \left(\frac{ton}{yr}\right), Low\ Tempetature\ \left(\frac{ton}{yr}\right)\right]_i$$

4.2. RECIPROCATING INTERNAL COMBUSTION ENGINE EMISSIONS

Texas Eastern has limite the potential operation of the group of Clark HBA-8 engines (emission units 01 – 07). The limit is the combined operation of all seven of the Clark HBA-8 engines to a fuel consumption cap of 249,488,235 scf/yr combined, which is about 25% of the total group's capacity. Each individual unit will still have the capability to operate continuously (8,760 hr/yr) but the operation of the group of engines as a whole will not exceed this capacity. The seven engines are used interchangeably since each engine is the same model and has the same horsepower. Therefore, a group fuel consumption cap would be appropriate for these engines.

As part of the AALE project, clean burn technology and an OxCat were installed on each of the Clark HBA-8T engines (emission units 08 – 10). The operation of the Clark HBA-8T engines can operate 8,760 hr/yr independently of the other engines' operation.

In addition to the two groups of engines described above, the project will also place a Caterpillar G3512 natural gas-fired emergency generator (1,102 hp) into service. The emissions from the emergency generator are included in Appendix B.

The following tables provide information on the emission factors used to calculate emissions from the two groups of Clark engines.

Table 4-6 – Clark HBA-8 Engine Emission Factors

Pollutant	Emission Factor from Source	Source
NO_X	4,768 lb/MMscf	Vendor Data
CO	334 lb/MMscf	Vendor Data
VOC	174 lb/MMscf 1.47 lb_{TOC}/MMBtu (HHV) : 0.118 lb_{VOC}/MMBtu (HHV)	Based on vendor data for TOC, scaled to VOC based on ratio of TOC:VOC in Table 3.2-1 of AP-42 (July 2000)
CH_4	2,105 lb/MMscf 1.47 lb_{TOC}/MMBtu (HHV) : 1.25 lb_{CH4}/MMBtu (HHV)	Based on vendor data for TOC, scaled to CH_4 based on ratio of TOC:CH_4 in Table 3.2-1 of AP-42 (July 2000)
$PM_{10}/PM_{2.5}$	49.3 lb/MMscf	Table 3.2-2 of AP-42 (total of filterable and condensable)
SO_2	0.60 lb/MMscf	Table 3.2-2 of AP-42
CO_2	102,017 lb/MMscf	40 CFR 98, Subpart C, Table C-1
N_2O	0.23 lb/MMscf	40 CFR 98, Subpart C, Table C-2
Total HAPs	2,381 lb/MMscf TOC Multiple HAP factors	Based on vendor data for TOC, scaled to HAPs based on ratio of TOC:HAPs in Table 3.2-1 of AP-42 (July 2000)

Table 4-7 – Clark HBA-8T Engine Emission Factors (Post-Project)

Pollutant	Emission Factor from Source	Source
NO_X	266 lb/MMscf	Vendor Data
CO	280 lb/MMscf	Vendor Data (represents 58% control of uncontrolled factor of 665.73 lb/MMscf)
VOC	266 lb/MMscf 1.47 lb_{TOC}/MMBtu (HHV) : 0.118 lb_{VOC}/MMBtu (HHV)	Based on vendor data for TOC, scaled to VOC based on ratio of TOC:VOC in Table 3.2-1 of AP-42 (July 2000) and then adjusted for control based on vendor specifications for the OxCat.
CH_4	3,222 lb/MMscf 1.47 lb_{TOC}/MMBtu (HHV) : 1.25 lb_{CH4}/MMBtu (HHV)	Based on vendor data for TOC, scaled to CH_4 based on ratio of TOC:CH_4 in Table 3.2-1 of AP-42 (July 2000) and then adjusted for control based on vendor specifications for the OxCat.
$PM_{10}/PM_{2.5}$	49.3 lb/MMscf	Table 3.2-2 of AP-42 (total of filterable and condensable)
SO_2	0.60 lb/MMscf	Table 3.2-2 of AP-42
CO_2	102,017 lb/MMscf	40 CFR 98, Subpart C, Table C-1 (lb/hr emissions are adjusted to account for oxidation of CO to CO_2 in same manner as was completed for the turbines)
N_2O	0.23 lb/MMscf	40 CFR 98, Subpart C, Table C-2
Total HAPs	3,644 lb/MMscf TOC Multiple HAP factors	Based on vendor data for TOC, scaled to HAPs based on ratio of TOC:HAPs in Table 3.2-1 of AP-42 (July 2000) and then adjusted for control based on vendor specifications for the OxCat.

In order to calculate hourly emissions, the emission factors provided in the table are multiplied by the hourly fuel consumption of the engines. Maximum short term emission rates represent 110% of the rated capacity

while annual capacities are based on 100% of the rated capacity. The following sections summarize the methods used to obtain the emission rates for each pollutant emitted from the engines.

4.2.1. Reciprocating Internal Combustion Engine Emission Factors – NO_X, CO, PM_{10}, $PM_{2.5}$, and SO_2

NO_X, CO, PM_{10}, $PM_{2.5}$, and SO_2 emitted by the natural gas-fired engines are calculated based on emission factors derived from vendor data (for NO_X and CO) and AP-42 Table 3.2-2 (for PM_{10}, $PM_{2.5}$, and SO_2). Emissions from the group of Clark HBA-8 engines (emission units 01 – 07) are determined by multiplying the referenced emission factor by the maximum hourly fuel consumption rate for each engine and then by 8,760 hr/yr to compute the maximum annual emissions from each engine. As part of this project, Texas Eastern has limited the maximum annual operation of the group of Clark HBA-8 engines to fuel consumption based on approximately 15,330 hr/yr of full load operation. Therefore, to calculate the potential emissions from the entire group, the hourly emission rates are multiplied by 15,330 hr/yr (all engines are utilizing the same emission factors).

For NO_X, PM_{10}, $PM_{2.5}$, and SO_2 emissions from the group of Clark HBA-8T engines (emission units 08 – 10), the potential emissions are calculated in the same manner as the emissions from the group of Clark HBA-8 engines except Texas Eastern has not limited the potential operation of this group of engines. Since Texas Eastern has installed OxCats on each of the Clark HBA-8T engines, a control efficiency of 58% is taken on the uncontrolled rate of CO emissions. Other than the credit taken for OxCat control, CO emission are calculated in the same manner as NO_X, PM_{10}, $PM_{2.5}$, and SO_2.

4.2.2. Reciprocating Internal Combustion Engine Emission Factors – VOC, CH_4, and HAP

VOC, CH_4, and HAP emissions are calculated by taking a ratio of each pollutant to the TOC emissions from vendor data based on the ratio of the emission factors for each specified in AP-42 Table 3.2-1. This method was described in detail for the estimation of the emissions of the same pollutants from the turbines. It should be noted that for the Clark HBA-8T engines, the ratio was computed before applying the control efficiency associated with the OxCat. Therefore, since the OxCat controls each pollutant to a different degree, the final controlled emission rates do not reflect the ratio of emission factors in AP-42 like the uncontrolled emission rates do. See Appendix B for detailed emission calculations.

4.2.3. Reciprocating Internal Combustion Engine Emission Factors – CO_2, N_2O, and CO_2e

CO_2 and N_2O emitted by the reciprocating internal combustion engines are calculated based on the emission factors listed in 40 CFR 98, Subpart C, Tables C-1 and C-2. Equation 4-6 and Equation 4-8 show how factors in lb/MMscf are derived for these pollutants. GHGs emitted from the engines include CO_2, CH_4, and N_2O. CO_2e emissions are calculated using the GWPs provided in Table 2-2. As noted for the turbines, the oxidation of CO from the addition of OxCat will cause an increase in CO_2 emissions from the source. Therefore, to account for this, CO_2 from the Clark HBA-8T engines is adjusted in the same manner as shown in Equation 4-7 for the turbines.

The Danville Compressor Station is subject to certain federal and state air regulations. This section of the application summarizes the air permitting requirements and the key air quality regulations that apply.

5.1. FEDERAL REGULATIONS

5.1.1. Title V Operating Permit Program

40 CFR Part 70 establishes the federal Title V operating permits program. Kentucky has incorporated the provisions of this federal program in state regulation, ADEM Admin. Code r. 335-3-16, *Major Source Operating Permits.* The Title V program was established as part of the 1990 Clean Air Act Amendments and is in the federal regulations at 40 CFR Part 70-71. The Title V program requires that all new and existing major sources of air emissions obtain federally approved state administered operating permits. A major source as defined under the Title V program is a facility that has the potential to emit either more than 100 tpy for any criteria pollutant, more than 10 tpy for any single hazardous air pollutant (HAP), or more than 25 tpy for all HAP.

GHG have been regulated under the Title V operating permit program beginning with the issuance of U.S. EPA's *Tailoring Rule*; however, the Supreme Court of the United States (SCOTUS) issued a ruling limiting U.S. EPA's authority to regulate GHG under this program. Therefore, greenhouse gas emissions shall not be considered as a criteria for determining a major source under the Title V program.

As shown in Table 3, potential emissions of NO_X, CO, and VOC exceed the Title V major source threshold of 100 tpy. Therefore, the Facility is submitting this Title V permit renewal application and will continue to comply with the applicable requirements of the Title V program upon issuance of the Title V Renewal Permit.

5.1.2. New Source Review

New Source Review (NSR) requires that federal construction permitting of new emission sources or modifications to existing emission sources be completed when a project results in a significant net emission increase Two distinct NSR permitting programs apply depending on whether the facility is located in an attainment or nonattainment area for a particular pollutant. Nonattainment NSR (NNSR) permitting applies to new construction or modifications that result in emission increases of a particular pollutant for which the area in which the facility is located is classified as "nonattainment" for that pollutant. The PSD permitting program applies to project increases of those pollutants for which the area the facility is located in is classified as "attainment" or "unclassifiable".

The Danville Compressor Station is located in Lincoln County, which has been classified as in attainment with the NAAQS or unclassifiable for all regulated pollutants.[14] Therefore, the station is not subject to NNSR permitting requirements for any criteria pollutants. The station is potentially subject to PSD permitting requirements.

Under PSD permitting rules, the major source threshold is 250 tpy for criteria pollutants, unless the facility is listed specifically in 40 CFR 52.21 as having a lower 100 tpy threshold. Natural gas compressor stations are not on the list of 28 named source categories; as such, the PSD major source thresholds are 250 tpy for all criteria

[14] 40 CFR 81.301.

pollutants.[15] GHG have been regulated under the PSD permitting program beginning with the issuance of U.S. EPA's *Tailoring Rule*; however, the SCOTUS issued a ruling limiting U.S. EPA's authority to regulate GHG under this program. Therefore, greenhouse gases shall not be considered for purposes of determining a major source under the PSD program.

Currently, the facility-wide PTE of NO_X, and CO is greater than the PSD major source threshold of 250 tpy; therefore, the station is a major source under the PSD program. Any emissions increase at the compressor station resulting from a physical change is required to be evaluated against the PSD permitting program. Since the proposed project will not result in a physical change to the existing emission sources, Texas Eastern is not required to perform an updated PSD applicability analysis. Thus, the permitting requirements under PSD have not been triggered.

5.1.3. **New Source Performance Standards (NSPS) – 40 CFR Part 60**

NSPS require new, modified, or reconstructed sources to control emissions to the level achievable by the best-demonstrated technology as specified in the applicable provisions. Additionally, any source subject to an NSPS is also subject to the general provisions of Subpart A, except as noted. The following is a discussion of applicable and select non-applicable subparts for the Danville Compressor Station.

5.1.3.1. *40 CFR 60 Subpart A – General Provisions*

Any source subject to a source-specific NSPS is also subject to the general provisions of NSPS Subpart A, unless specifically excluded. NSPS Subpart A requires initial notification, performance testing, recordkeeping and monitoring, provides reference methods, and mandates general control device requirements for all other subparts as applicable.

5.1.3.2. *40 CFR 60 Subpart Kb - Volatile Organic Liquid Storage Vessels*

NSPS Subpart Kb applies to storage vessels with a capacity greater than or equal to 75 cubic meters (m^3) (approximately 19,800 gallons) that are used to store volatile organic liquids, for which construction, reconstruction, or modification is commenced after July 23, 1984. The storage vessels associated with the Facility are not subject to NSPS Subpart Kb as the vessels are all well below the capacity threshold.

5.1.3.3. *40 CFR 60 Subpart GG – Gas Turbines*

NSPS Subpart GG applies to gas-fired turbines with a heat input at peak load equal to or greater than 10 MMBtu/hr (based on lower heating value) for which construction, reconstruction, or modification is commenced after October 3, 1977. The Frame 3 and Frame 5 turbines have a capacity exceeding 10 MMBtu/hr and all were installed prior to 1977 and have not been modified or reconstructed since that time. Therefore, the Frame 3 and Frame 5 turbines are not subject to the requirements under NSPS Subpart GG.

[15] "Fossil fuel-fired steam electric plants of more than 250 MMBtu/hr input" and "Fossil-fuel boilers (or combination thereof) totaling more than 250 MMBtu/hr heat input" are both on the list of 28 named source categories. The total natural gas heat input capacity for the Barton Compressor Station (including the turbine and emergency generator) are less than 250 MMBtu/hr heat input, as such, it is not on the list of 28.

5.1.3.4. *40 CFR Part 60 Subpart IIII – Standards of Performance for Stationary Compression Ignition Internal Combustion Engines*

NSPS Subpart IIII provides performance standards for stationary compression ignition (CI) internal combustion engine (ICE) manufacturers, owners, and operators. For owners and operators of CI ICE, NSPS Subpart IIII provides performance standards for CI ICE that commence construction, reconstruction, or modification after July 11, 2005. None of the Internal Combustion Engines at the compressor station are CI engines. Thus, this regulation does not apply to the Danville Compressor Station.

5.1.3.5. *40 CFR 60 Subpart JJJJ – Stationary Spark Ignition Internal Combustion Engines*

NSPS Subpart JJJJ regulates criteria pollutant emissions from stationary SI ICE constructed after June 12, 2006, where constructed is the date the engine is ordered by the owner or operator, and manufactured after January 1, 2009 (for emergency engines with a maximum engine power greater than 25 hp).[16] The two natural gas-fired Caterpillar emergency generators (Emission Units 05 and 06) at the Danville Compressor Station are subject to this regulation since both engines were installed after the NSPS applicability date. Texas Eastern will continue to comply with the applicable NSPS Subpart JJJJ requirements as listed in the current Title V permit.

5.1.3.6. *40 CFR 60 Subpart KKKK – Stationary Combustion Turbines*

NSPS Subpart KKKK regulates emissions from any new stationary combustion turbine that was constructed, modified, or reconstructed after February 18, 2005 and has a heat input capacity of 10 MMBtu/hr or greater (based on higher heating value). The Frame 3 and Frame 5 turbines each have a capacity exceeding 10 MMBtu/hr, but each were installed prior to February 18, 2005, and have not been modified or reconstructed since that time. Therefore, the Frame 3 and Frame 5 turbines are not subject to the requirements under NSPS Subpart KKKK.

5.1.3.7. *40 CFR 60 Subpart OOOO – Natural Gas Production, Transmission and Distribution*

NSPS Subpart OOOO establishes emission standards and compliance schedules for the control of VOC and SO_2 emissions from affected facilities that commence construction, modification or reconstruction after August 23, 2011. Affected facilities include certain units and operations located between the wellhead and the point of custody transfer to the natural gas transmission and storage segment. "Custody transfer" is defined under 40 CFR 60.5430 as the transfer of natural gas after processing and/or treatment in the producing operations, or from storage vessels or automatic transfer facilities or other such equipment, including product loading racks, to pipelines or any other forms of transportation.

"Natural gas transmission" is defined under 40 CFR 60.5430 as the pipelines used for long distance transport of natural gas (excluding processing). Specific equipment used in natural gas transmission includes the land, mains, valves, meters, boosters, regulators, storage vessels, dehydrators, compressors, and their driving units and appurtenances, and equipment used for transporting gas from a production plant, delivery point of purchased gas, gathering system, storage area, or other wholesale source of gas to one or more distribution area(s). Texas Eastern gains custody of natural gas from production operations, or at "the point of custody transfer." Texas Eastern and its operations, including the Danville Compressor Station, are located in the natural gas transmission segment.

Affected facilities include storage vessels located in the natural gas transmission and storage segment that have the potential for VOC emissions equal to or greater than 6 tpy. The Danville Compressor Station does not operate

[16] 40 CFR 60.4230(a)(4)(iii)&(iv)

any storage vessels which have the potential to emit 6 tpy or more of VOC. Also, units at the facility were put into operation before August 23, 2011. Therefore, NSPS Subpart OOOO does not apply to the Danville Compressor Station.

5.1.3.8. *40 CFR 60 Subpart OOOOa – Natural Gas Production, Transmission and Distribution*

NSPS OOOOa establishes emission standards and compliance schedules for the control of greenhouse gases (GHG) from affected facilities in the oil and natural gas industry. On March 1, 2018, EPA announced changes to NSPS OOOOa regarding monitoring of fugitive equipment leaks as part of its reconsideration of certain aspects of the promulgated rule based on petitions received from industry. Since the proposed changes do not directly affect the Danville Compressor Station, and all other requirements of NSPS OOOOa are still in effect, EPA's reconsideration is not expected to affect the applicability of NSPS OOOOa for this compressor station, as discussed below.

As initially promulgated, the collection of fugitive equipment components from new or modified natural gas compressor stations are subject to LDAR-like requirements under NSPS OOOOa. In addition, the rule also includes requirements for other affected facilities at natural gas transmission compressor stations, including centrifugal compressors with wet seals, storage vessels, pneumatic pumps and continuous bleed pneumatic controllers.

Texas Eastern is not proposing any new continuous bleed pneumatic controllers at the Danville Compressor Station. In addition, as defined in 40 CFR 60.5365a(j), the collection of fugitive equipment components is considered to be "modified" only if the natural gas transmission compressor station adds new or increased compression capacity. Since at the Danville Compressor Station is not undergoing any increase in compression capacity as part of this permitting effort, this project does not result in a modification of the collection of fugitive equipment components.

Texas Eastern is also not adding any additional storage vessel capacity as part of this permit application. Therefore, in accordance with 40 CFR 60.5365a(j), and 40 CFR 60.5365a(e), Subpart OOOOa does not apply to this facility. Therefore, NSPS Subpart OOOOa does not apply to the Danville Compressor Station.

5.1.4. National Emission Standards for Hazardous Air Pollutants (NESHAP) for Source Categories (also known as Maximum Achievable Control Technology (MACT) Standards) – 40 CFR Part 63

NESHAP or MACT standards apply to major sources of HAPs or specifically designated area sources. A major source of HAPs is defined as having potential emissions in excess of 10 tpy for any individual HAP, and/or 25 tpy for total HAPs. The Danville Compressor Station is a major source of HAPs, and therefore Texas Eastern has reviewed the applicability of the following standards.

5.1.4.1. *40 CFR Part 63 Subpart A – General Provisions*

NESHAP Subpart A, General Provisions, contains national emission standards for HAP defined in Section 112(b) of the Clean Air Act. All affected sources, which are subject to another NESHAP, are subject to the general provisions of NESHAP Subpart A, unless specifically excluded by the source-specific NESHAP. Subpart A is applicable because 40 CFR Part 63 Subpart ZZZZ is applicable (see below).

5.1.4.2. *40 CFR 63 Subpart HH - Oil and Natural Gas Production Facilities*

Per 63.760(a) and (b), for major and area sources of HAP, NESHAP Subpart HH applies to facilities that process, upgrade, or store hydrocarbon liquids. For area sources, the affected source includes each triethylene glycol (TEG) dehydration unit located at a facility that meets the criteria specified in paragraph (a) of this section. Also, the natural gas production facility to which the rule applies ends at the point that the natural gas enters a facility in the natural gas transmission and storage category per 63.760(a)(3). The Danville Compressor Station does not operate a TEG dehydration unit and the station is considered a natural gas transmission and storage facility; therefore, NESHAP Subpart HH does not apply.

5.1.4.3. *40 CFR 63 Subpart YYYY – Combustion Turbines*

This rule establishes emission and operating limits for new or reconstructed stationary combustion turbines located at HAP major sources. The Danville Compressor Station is a major source of HAP, but the Frame 3 and Frame 5 turbines were installed prior to the NESHAP Subpart YYYY applicability date and have not been reconstructed since that time. Therefore, NESHAP Subpart YYYY does not apply at this time.

5.1.4.4. *40 CFR 63 Subpart ZZZZ - Reciprocating Internal Combustion Engines (RICE)*

NESHAP Subpart ZZZZ, also known as the reciprocating internal combustion engine (RICE) MACT, regulates HAP emissions from RICE at major and area sources of HAP. The two new Caterpillar emergency generators were installed in 2016-2017; as such they are classified as new affected sources under NESAHP ZZZZ. Texas Eastern will continue to comply with the applicable NESHAP Subpart ZZZZ requirements as listed in the current Title V permit.

5.1.5. **Mandatory Greenhouse Gas Reporting Rule – 40 CFR Part 98**

40 CFR Part 98 establishes mandatory greenhouse gas (GHG) reporting requirements for facilities that directly emit GHGs. The GHG reporting requirements and related monitoring and recordkeeping requirements apply to any facility that has an aggregate maximum rated heat input capacity of the stationary fuel combustion units of 30 MMBTU/hr or greater and has actual emissions of 25,000 metric tons of CO_2e or more per year in combined emissions from all stationary fuel combustion sources. The Danville Compressor Station has an aggregate maximum rated heat input capacity of the stationary fuel combustion units at the facility greater than 30 MMBTU/hr and has a CO_2e PTE greater than 25,000 metric tons per year. Therefore, the Danville Compressor Station will continue to comply with the requirements of 40 CFR Part 98.

5.1.6. **Risk Management Plan**

Subpart B of 40 CFR 68 outlines requirements for risk management prevention plans pursuant to Section 112(r) of the Clean Air Act. Applicability of the subpart is determined based on the type and quantity of chemicals stored at a facility. The Danville Compressor Station does not exceed the threshold quantity for any of the chemicals and is, therefore, not subject to 40 CFR 68 Subpart B. Texas Eastern is subject to the General Duty Clause under the Clean Air Act Section 112(r)(1), which states:[17]

> *"The owners and operators of stationary sources producing, processing, handling or storing such substances [i.e., a chemical in 40 CFR part 68 or any other extremely hazardous substance] have a general duty [in the same manner and to the same extent as the general duty clause in the Occupational Safety and Health Act (OSHA)] to identify hazards which may result from (such) releases using appropriate hazard assessment*

[17] The duty to comply with the RMP is also included in General Proviso 26 of the current permit.

techniques, to design and maintain a safe facility taking such steps as are necessary to prevent releases, and to minimize the consequences of accidental releases which do occur."

5.1.7. **Stratospheric Ozone Protection Regulations**

The requirements originating from Title VI of the Clean Air Act, entitled *Protection of Stratospheric Ozone*, are contained in 40 CFR Part 82. 40 CFR Part 82 Subpart F, *Recycling and Emissions Reduction*, potentially applies if the facility maintains, repairs, services, or dispose s of appliances that utilize Class I or Class II ozone depleting substances. Subpart F generally requires persons completing the repairs, service, or disposal to be properly certified. An appropriately certified technician will complete all repairs, service, and disposal of ozone depleting substances from the air conditioners at the facility. Subparts A through E and Subparts G and H are not applicable to the Facility. The Facility will continue to comply with 40 CFR Part 82, as appropriate.[18]

5.1.8. **Compliance Assurance Monitoring**

Under 40 CFR 64, the CAM Regulations, facilities are required to prepare and submit monitoring plans for certain emission units with the Title V application. The CAM Plans provide an on-going and reasonable assurance of compliance with emission limits. Under the general applicability criteria, this regulation only applies to emission units that use a control device to achieve compliance with an emission limit and whose pre-controlled emission levels exceed the major source thresholds under the Title V permitting program.

For an emission unit whose post-controlled emissions are greater than the major source thresholds (referred to as large pollutant-specific emission units [PSEU] in the rule) at a facility that already has a Title V operating permit, a CAM plan is required to be submitted with the next Title V operating permit significant modification application for the subject large PSEU(s) or with the next Title V operating permit renewal application, whichever is first. For emission units whose post-controlled emissions are less than the major source emission thresholds, a CAM plan is not required to be submitted until the next Title V operating permit renewal application.[19]

The CAM regulations specifically exempt certain emission limits from being considered for CAM applicability. Specifically, limits or standards proposed by U.S. EPA after November 15, 1990, pursuant to section 111 and section 112 of the Clean Air Act are not considered.[20] Neither are emission limits for which "a part 70 or 71 permit specifies a continuous compliance determination method, as defined in 40 CFR 64.1."[21]

The Access-Adair Lebanon Extension project involved the addition of clean burn technology[22] and OxCat on Clark HBA-8T engines (Emission Unit 02 [Engines 08-10]). Since clean burn technology is not considered a control device under CAM, the engines will not be subject to CAM requirements for NO_X. Since the PTE for CO and VOC prior to the installation of the OxCat is under the major source threshold, the engines are also not subject to CAM requirements for CO and VOC.

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[18] The duty to comply with the Title VI requirements is also included in General Proviso 25 of the current permit.

[19] 40 CFR 64.5(a)-(b).

[20] 40 CFR 64.2(b)(1)(i).

[21] 40 CFR 64.2(b)(1)(vi).

[22] Clean burn technology is not considered a control device under CAM based on response by EPA on Page 14 of https://www3.epa.gov/airtoxics/cam/rtcpart3.pdf

Under the Access-Adair Lebanon Extension project, the three existing turbines were equipped with a SCR and OxCat on the two GE Frame 3 gas combustion turbines, and the addition of an OxCat on the one GE Frame 5 gas combustion turbine. The Frame 3 turbines will be subject to CAM requirements since the PTE for NOx prior to the installation of the SCR control system is over the CAM major source threshold (>100 tpy). However, the Frame 3 turbines will not be subject to CAM requirements for CO emissions since the PTE for CO prior to the installation of the OxCat is under the major source threshold (<100 tpy).

The GE Frame 5 turbine will not have an emissions control device for NO_X post-project, and is hence not subject to CAM for NO_X. The Frame 5 turbine will be subject to CAM requirements for CO emissions since the PTE for CO prior to the installation of the OxCat control system is over the CAM major source threshold (>100 tpy).

5.2. KENTUCKY REGULATIONS

Emissions from the Danville Compressor Station emission units are subject to certain Kentucky Administrative Regulations (401 KAR), which are appropriately cited within Permit Number V-16-056. There have been no newly promulgated 401 KAR requirements enacted that are applicable to the Danville Compressor Station since the last permit issuance.

5.2.1. 401 KAR 51:150, NO_X Requirements for Stationary Internal Combustion Engines

This regulation details NO_X limitations for stationary ICE for engines emitting more than 1 ton per day (tpd) of NO_X during the period between May 1 and September 30, 1997, or the ozone season. The potential NO_X emissions of the seven engines listed under Emission Unit 01 were greater than 1 tpd during the 1997 ozone season; however, the regulatory requirement is based on actual NO_X emissions and not potential emissions from that period. These engines were not included in the NO_X SIP Call Engine inventory as emitting more than 1 tpd of NO_X during the average ozone season day in 1997. Therefore, this regulation is not applicable to the engines at the Danville Compressor Station.

5.2.2. 401 KAR 59:050, New Storage Vessels for Petroleum Liquids

401 KAR 59:050 applies to storage vessels for petroleum liquids which: have a storage capacity greater than 2,195 liters (580 gallons) and less than or equal to 151,400 liters (40,000 gallons) that commenced on or after April 9, 1972 and prior to July 24, 1984; have a storage capacity less than 40,000 liters (10,567 gallons) commenced on or after July 24, 1984 and is located in an urban county designated nonattainment for ozone or any other county and is part of a major source of VOC; have a storage capacity greater than 151,400 liters (40,000 gallons) that commenced on or after April 9, 1972 and prior to July 24, 1984; have a storage capacity greater than 151,400 liters (40,000 gallons) commenced on or after May 19, 1978 and prior to July 24, 1984.

The proposed project will not require the addition of any petroleum storage tanks at the Danville Compressor Station; therefore, this regulation is not applicable.

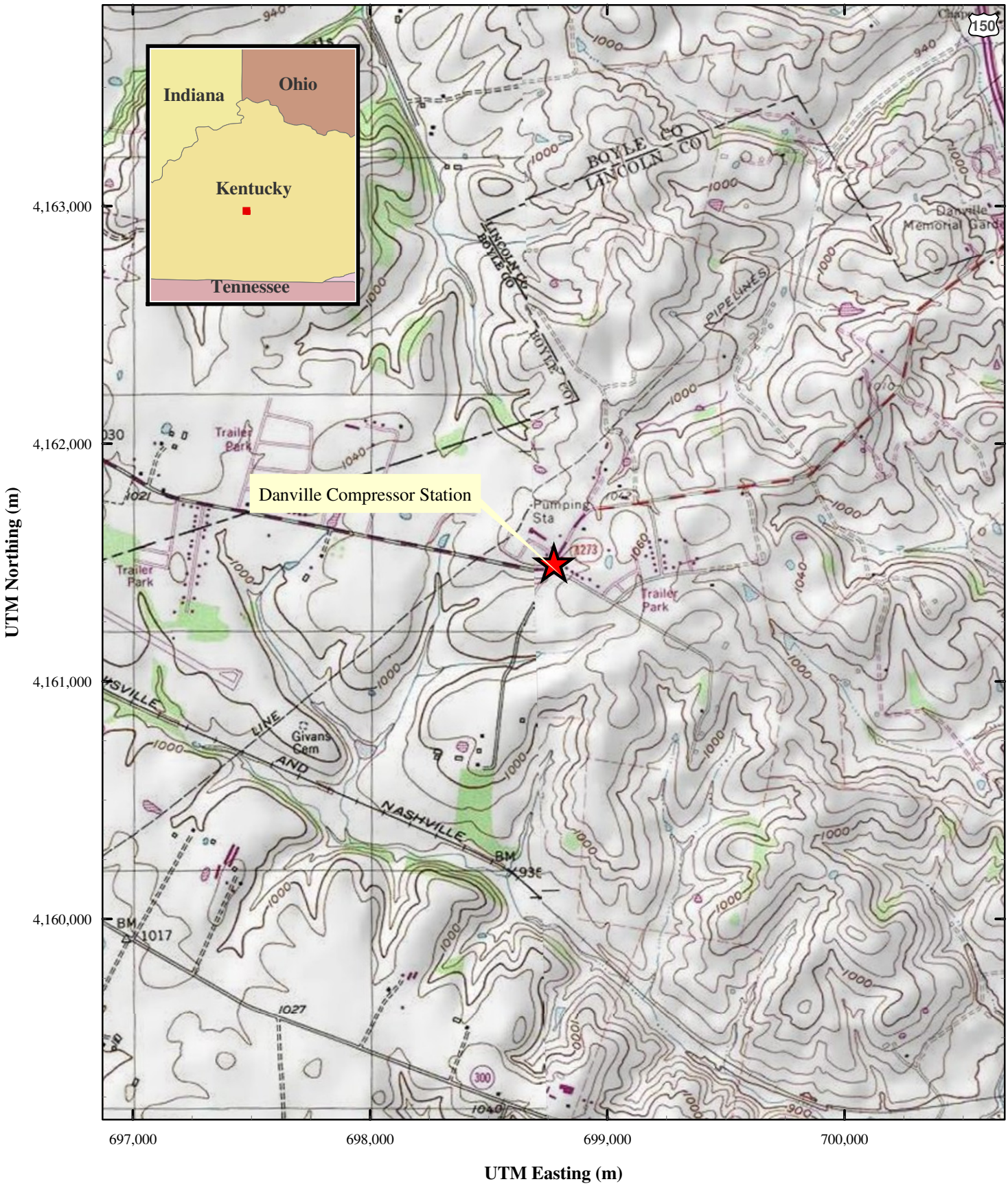
5.2.3. Incorporation of Federal Regulations by Reference

The following federal regulations are incorporated in 401 KAR by reference and were addressed previously in this application:

- 401 KAR 51:017 – PSD
- 401 KAR 60:005 – NSPS
- 401 KAR 63:002 – NESHAP

APPENDIX A: FACILITY DIAGRAMS

Figure A-1. Facility Area Map
Texas Eastern Transmission, LP - Danville, Lincoln County, Kentucky



Coordinates reflect UTM projection Zone 16, NAD83.

Trinity Consultants

APPENDIX B: EMISSION CALCULATIONS

TABLE A-1
Potential to Emit
Emissions

Emission Source				Rated Capacity	Potential to Emit (tpy)										Data
ID	FIN	EPN	Description		CO_{2-e}	NO_X	CO	$PM_{10/2.5}$	SO_2	VOC (Total)	HAP (Total)	Benzene	Formaldehyde	Hexane (n-)	Sources
DANV TBC 01	DANV TBC 01	DANV TBC 01	Turbine	8,000 bhp (NEMA)	41,911	39.0047	28.4198	2.3125	1.1913	4.7865	1.7296	0.0250	1.0722		TABLE B-1Ak
DANV TBC 02	DANV TBC 02	DANV TBC 02	Turbine	8,000 bhp (NEMA)	41,911	39.0047	28.4198	2.3125	1.1913	4.7865	1.7296	0.0250	1.0722		TABLE B-1Ak
DANV TBC 03	DANV TBC 03	DANV TBC 03	Turbine	18,500 bhp (NEMA)	99,403	489.6386	85.2276	5.5038	2.8353	9.4510	3.4515	0.0494	2.1496		TABLE B-1Bj
DANV EN 01	DANV EN 01	DANV EN 01	IC Engine	1,760 bhp (NEMA)	12,311	339.8942	23.7926	3.5125	0.0428	12.4018	8.2309	0.2008	5.7125	0.0461	TABLE C-1A
DANV EN 02	DANV EN 02	DANV EN 02	IC Engine	1,760 bhp (NEMA)	12,311	339.8942	23.7926	3.5125	0.0428	12.4018	8.2309	0.2008	5.7125	0.0461	TABLE C-1A
DANV EN 03	DANV EN 03	DANV EN 03	IC Engine	1,760 bhp (NEMA)	12,311	339.8942	23.7926	3.5125	0.0428	12.4018	8.2309	0.2008	5.7125	0.0461	TABLE C-1A
DANV EN 04	DANV EN 04	DANV EN 04	IC Engine	1,760 bhp (NEMA)	12,311	339.8942	23.7926	3.5125	0.0428	12.4018	8.2309	0.2008	5.7125	0.0461	TABLE C-1A
DANV EN 05	DANV EN 05	DANV EN 05	IC Engine	1,760 bhp (NEMA)	12,311	339.8942	23.7926	3.5125	0.0428	12.4018	8.2309	0.2008	5.7125	0.0461	TABLE C-1A
DANV EN 06	DANV EN 06	DANV EN 06	IC Engine	1,760 bhp (NEMA)	12,311	339.8942	23.7926	3.5125	0.0428	12.4018	8.2309	0.2008	5.7125	0.0461	TABLE C-1A
DANV EN 07	DANV EN 07	DANV EN 07	IC Engine	1,760 bhp (NEMA)	12,311	339.8942	23.7926	3.5125	0.0428	12.4018	8.2309	0.2008	5.7125	0.0461	TABLE C-1A
DANV EN 01 - 07			IC Engines	bhp (NEMA)	21,545	594.8148	41.6370	6.1469	0.0748	21.7031	14.4041	0.3513	9.9969	0.0806	TABLE C-1C
DANV EN 08	DANV EN 08	DANV EN 08	IC Engine	2,050 bhp (NEMA)	14,960	19.7950	20.7847	3.6630	0.0446	14.0117	7.3544	0.2243	4.5590	0.0566	TABLE C-1Db
DANV EN 09	DANV EN 09	DANV EN 09	IC Engine	2,050 bhp (NEMA)	14,960	19.7950	20.7847	3.6630	0.0446	14.0117	7.3544	0.2243	4.5590	0.0566	TABLE C-1Db
DANV EN 10	DANV EN 10	DANV EN 10	IC Engine	2,050 bhp (NEMA)	14,960	19.7950	20.7847	3.6630	0.0446	14.0117	7.3544	0.2243	4.5590	0.0566	TABLE C-1Db
DANV ENGEN 03	DANV ENGEN 03	DANV ENGEN 03	IC Engine	1,462 bhp	400	1.6116	1.6921	0.0614	0.0019	0.2820	0.2813	0.0137	0.1780		TABLE C-1C
DANV ENGEN 04	DANV ENGEN 04	DANV ENGEN 04	IC Engine	1,102 bhp	544	1.2147	2.4295	0.0220	0.0013	1.0889	0.6584	0.0040	0.4815	0.0101	TABLE C-1D
DANV HVAC 01	DANV HVAC 01	DANV HVAC 01	Boilers/Heaters	0.112 MMBTU/hr (output)	62	0.0484	0.0206	0.0039	0.0003	0.0042	0.0010	0.0000	0.0000	0.0009	TABLE D-1A
DANV HVAC 02	DANV HVAC 02	DANV HVAC 02	Boilers/Heaters	0.112 MMBTU/hr (output)	62	0.0484	0.0206	0.0039	0.0003	0.0042	0.0010	0.0000	0.0000	0.0009	TABLE D-1B
DANV SHTR 01	DANV SHTR 01	DANV SHTR 01	Boilers/Heaters	0.120 MMBTU/hr (output)	77	0.0605	0.0258	0.0049	0.0004	0.0053	0.0012	0.0000	0.0000	0.0012	TABLE D-1C
DANV SHTR 02	DANV SHTR 02	DANV SHTR 02	Boilers/Heaters	0.120 MMBTU/hr (output)	77	0.0605	0.0258	0.0049	0.0004	0.0053	0.0012	0.0000	0.0000	0.0012	TABLE D-1C
DANV SHTR 03	DANV SHTR 03	DANV SHTR 03	Boilers/Heaters	0.140 MMBTU/hr (output)	90	0.0706	0.0301	0.0057	0.0005	0.0061	0.0014	0.0000	0.0001	0.0014	TABLE D-1D
DANV SHTR 04	DANV SHTR 04	DANV SHTR 04	Boilers/Heaters	0.100 MMBTU/hr (output)	64	0.0505	0.0215	0.0041	0.0003	0.0044	0.0010	0.0000	0.0000	0.0010	TABLE D-1E
DANV SHTR 05	DANV SHTR 05	DANV SHTR 05	Boilers/Heaters	0.110 MMBTU/hr (output)	71	0.0553	0.0235	0.0045	0.0004	0.0048	0.0011	0.0000	0.0000	0.0011	TABLE D-1F
DANV SHTR 06	DANV SHTR 06	DANV SHTR 06	Boilers/Heaters	0.025 MMBTU/hr (output)	15	0.0121	0.0052	0.0010	0.0001	0.0011	0.0002	0.0000	0.0000	0.0002	TABLE D-1G
DANV SHTR 07	DANV SHTR 07	DANV SHTR 07	Boilers/Heaters	0.100 MMBTU/hr (output)	64	0.0505	0.0215	0.0041	0.0003	0.0044	0.0010	0.0000	0.0000	0.0010	TABLE D-1H
DANV SHTR 08	DANV SHTR 08	DANV SHTR 08	Boilers/Heaters	0.100 MMBTU/hr (output)	64	0.0505	0.0215	0.0041	0.0003	0.0044	0.0010	0.0000	0.0000	0.0010	TABLE D-1H
DANV WHTR 01	DANV WHTR 01	DANV WHTR 01	Boilers/Heaters	0.026 MMBTU/hr (output)	17	0.0135	0.0058	0.0011	0.0001	0.0012	0.0003	0.0000	0.0000	0.0003	TABLE D-1I
DANV WHTR 02	DANV WHTR 02	DANV WHTR 02	Boilers/Heaters	0.031 MMBTU/hr (output)	21	0.0161	0.0069	0.0013	0.0001	0.0014	0.0003	0.0000	0.0000	0.0003	TABLE D-1J
DANV OVEN 01	DANV OVEN 01	DANV OVEN 01	Boilers/Heaters	0.007 MMBTU/hr (output)	41	0.0319	0.0136	0.0026	0.0002	0.0028	0.0006	0.0000	0.0000	0.0006	TABLE D-1K
DANV OVEN 02	DANV OVEN 02	DANV OVEN 02	Boilers/Heaters	0.007 MMBTU/hr (output)	41	0.0319	0.0136	0.0026	0.0002	0.0028	0.0006	0.0000	0.0000	0.0006	TABLE D-1L
DANV SV01A	DANV SV01A	DANV SV01A	Separator Vessel	300 gal (accumulation)	7					0.1375	0.0086	0.0021		0.0040	TABLE F-2A
DANV SV01B	DANV SV01B	DANV SV01B	Separator Vessel	300 gal (accumulation)	7					0.1375	0.0086	0.0021		0.0040	TABLE F-2B
DANV SV01C	DANV SV01C	DANV SV01C	Separator Vessel	300 gal (accumulation)	7					0.1375	0.0086	0.0021		0.0040	TABLE F-2C
DANV SV02	DANV SV02	DANV SV02	Separator Vessel	177 gal (accumulation)	62					2.3440	0.1405	0.0290		0.0989	TABLE F-2D and TABLE E-4A
DANV SV03A	DANV SV03A	DANV SV03A	Separator Vessel	163 gal (accumulation)	4					0.0749	0.0047	0.0011		0.0022	TABLE F-2E
DANV SV03B	DANV SV03B	DANV SV03B	Separator Vessel	235 gal (accumulation)	6					0.1084	0.0068	0.0016		0.0031	TABLE F-2F
DANV SV04S	DANV SV04S	DANV SV04S	Separator Vessel	43 gal (accumulation)	1					0.0171	0.0011	0.0003		0.0005	TABLE F-2G
DANV SV04D	DANV SV04D	DANV SV04D	Separator Vessel	43 gal (accumulation)	1					0.0171	0.0011	0.0003		0.0005	TABLE F-2H
DANV SV07	DANV SV07	DANV SV07	Separator Vessel	33 gal (accumulation)	1					0.0171	0.0011	0.0003		0.0005	TABLE F-2I
DANV TK V05A	DANV TK V05A	DANV TK V05A	Storage Tank	1,100 gal	16					0.2974	0.0185	0.0045		0.0086	TABLE F-2J
DANV TK V05B	DANV TK V05B	DANV TK V05B	Storage Tank	1,100 gal	16					0.2974	0.0185	0.0045		0.0086	TABLE F-2K
DANV TK V05C	DANV TK V05C	DANV TK V05C	Storage Tank	2,480 gal	33					0.6205	0.0386	0.0093		0.0179	TABLE F-2L
DANV TK V05D	DANV TK V05D	DANV TK V05D	Storage Tank	2,480 gal	33					0.6205	0.0386	0.0093		0.0179	TABLE F-2M
DANV TK V05E	DANV TK V05E	DANV TK V05E	Storage Tank	2,480 gal	33					0.6205	0.0386	0.0093		0.0179	TABLE F-2N
DANV TK V05F	DANV TK V05F	DANV TK V05F	Storage Tank	2,480 gal	33					0.6205	0.0386	0.0093		0.0179	TABLE F-2O
DANV TK V05G	DANV TK V05G	DANV TK V05G	Storage Tank	2,480 gal	33					0.6205	0.0386	0.0093		0.0179	TABLE F-2P
DANV TK LO01	DANV TK LO01	DANV TK LO01	Storage Tank	8,800 gal						0.0408					TABLE F-2Q
DANV TK LO02	DANV TK LO02	DANV TK LO02	Storage Tank	560 gal						0.0026					TABLE F-2R
DANV TK EC01	DANV TK EC01	DANV TK EC01	Storage Tank	940 gal						0.0004	0.0004				TABLE F-2S
DANV TK EC02	DANV TK EC02	DANV TK EC02	Storage Tank	940 gal						0.0004	0.0004				TABLE F-2T
DANV TK OW01	DANV TK OW01	DANV TK OW01	Storage Tank	16,920 gal						0.0785					TABLE F-2U
DANV TK OW02	DANV TK OW02	DANV TK OW02	Storage Tank	20,300 gal						0.0941					TABLE F-2V
DANV TK OW03	DANV TK OW03	DANV TK OW03	Storage Tank	12,690 gal						0.0589					TABLE F-2W
DANV TK DF01	DANV TK DF01	DANV TK DF01	Storage Tank	560 gal						0.0002					TABLE F-2X
DANV TL PL	DANV TL PL	DANV TL PL	Truck Loading	135 gal/min	3					0.0476	0.0030	0.0007		0.0014	TABLE F-2Y
DANV TL LO	DANV TL LO	DANV TL LO	Truck Loading	135 gal/min						0.0020					TABLE F-2Z
DANV TL EC	DANV TL EC	DANV TL EC	Truck Loading	135 gal/min						0.0000	0.0000				TABLE F-2AA
DANV TL OW	DANV TL OW	DANV TL OW	Truck Loading	135 gal/min						0.0106					TABLE F-2AB
DANV GR	DANV GR ST	DANV GR ST	Gas Release Events	Natural Gas	72,637					95.4385	2.6973	0.3072		2.1183	TABLE G-1B
	DANV GR PL	DANV GR PL	Gas Release Events	Natural Gas											
DANV PC	DANV PC NG	DANV PC NG	Piping Components	Natural Gas	2,090					2.7458	0.0776	0.0088		0.0609	TABLE H-1Aa
	DANV PC PL	DANV PC PL	Piping Components	Pipeline Liquids	0					9.5835	1.3956	0.1382		0.1625	TABLE H-1Ab
	DANV PC OIL	DANV PC OIL	Piping Components	Oil						3.4594					TABLE H-1Ac
	DANV PC GLY	DANV PC GLY	Piping Components	Coolant											TABLE H-1Ad
DANV PW	DANV PW	DANV PW	Parts Washer	Remote Reservoir						0.4103					TABLE I-1
TOTAL					326,387	1,225.2747	250.4357	27.3965	5.4334	202.8476	48.9151	1.6908	28.6278	2.8394	

GE FRAME 3 DATA

TABLE B-1Ab
Manufacturer's Operating and Emissions Data
Normal Operations
PTE - 100% Fuel Utilization at 100% Power Output

Parameters			Curve Fitting			Vendor Data						
Ambient	Temperature	°F	-20.00	-20.00	54.86	-0.01	0.01	20.00	40.00	60.00	80.00	100.00
	Altitude	ft	0	0	0	0	0	0	0	0	0	0
	Pressure	psia	14.702	14.702	14.702	14.702	14.702	14.702	14.702	14.702	14.702	14.702
	Relative Humidity	%	60%	60%	60%	60%	60%	60%	60%	60%	60%	60%
	Specific Humidity	$lb_{H2O}/lb_{Dry\ Air}$	0.0003	0.0003	0.0048	0.0006	0.0006	0.0013	0.0028	0.0058	0.0124	0.0262
Fuel	Lower Heating Value (LHV)	BTU/scf	923.1	923.1	923.1	923.1	923.1	923.1	923.1	923.1	923.1	923.1
	Higher Heating Value (HHV)	BTU/scf	1,025.7	1,025.7	1,025.7	1,025.7	1,025.7	1,025.7	1,025.7	1,025.7	1,025.7	1,025.7
Turbine	Net Output Power	hp	12,467	12,467	9,110	11,570	11,570	10,674	9,778	8,881	8,001	6,967
	Fuel Consumption	scf/hr	97,293	97,293	77,977	91,860	91,860	86,431	81,479	76,794	72,316	66,233
	Heat Input at LHV	MMBTU/hr	89.81	89.81	71.98	84.80	84.80	79.78	75.21	70.89	66.76	61.14
	Heat Input at HHV	MMBTU/hr	99.79	99.79	79.98	94.22	94.22	88.65	83.57	78.77	74.17	67.93
	Heat Rate at LHV	BTU/hp-hr	7,204	7,204	7,901	7,329	7,329	7,475	7,692	7,982	8,343	8,776
	Heat Rate at HHV	BTU/hp-hr	8,004	8,004	8,779	8,143	8,143	8,305	8,547	8,869	9,270	9,751
Exhaust	Temperature	°F	499	499	565	516	516	533	551	569	584	593
	Water Fraction	%, by vol	4.76%	4.76%	5.50%	4.86%	4.86%	4.96%	5.18%	5.65%	6.52%	8.12%
	Non-Water Fraction	%, by vol	95.24%	95.24%	94.50%	95.14%	95.14%	95.04%	94.82%	94.35%	93.48%	91.88%
	O_2 Content	%, by vol (dry)	17.19%	17.19%	17.28%	17.20%	17.20%	17.21%	17.24%	17.30%	17.37%	17.47%
	Molecular Weight	lb/lb-mol	28.68	28.68	28.58	28.66	28.66	28.64	28.62	28.56	28.46	28.28
	Flow Rate	lb/hr	449,049	449,049	379,564	429,867	429,867	410,703	392,488	375,220	358,899	343,527
		scfm (1 atm, 68°F)	100,797	100,797	85,358	96,423	96,423	92,203	88,158	84,442	81,112	78,130
		acfm	183,003	183,003	165,638	178,197	178,197	173,396	168,765	164,567	160,343	155,724
NO_X Emissions		lb/lb-mol	46.01	46.01	46.01	46.01	46.01	46.01	46.01	46.01	46.01	46.01
		ppmvd, 15% O_2	184	184	184	184	184	184	184	184	184	184
		ppmvw	110.20	110.20	106.57	109.74	109.74	109.29	108.06	105.93	102.75	98.21
		lb/hr	79.39	79.39	65.12	75.73	75.73	72.11	68.19	64.03	59.62	54.89
CO Emissions		lb/lb-mol	28.01	28.01	28.01	28.01	28.01	28.01	28.01	28.01	28.01	28.01
		ppmvd, 15% O_2	200	200	50	200	50	50	50	50	50	50
		ppmvw	119.82	119.82	28.97	119.33	29.83	29.71	29.38	28.80	27.93	26.70
		lb/hr	52.55	52.55	10.78	50.13	12.53	11.93	11.28	10.60	9.87	9.08
UHC Emissions		lb/lb-mol	18.37	18.37	18.37	18.37	18.37	18.37	18.37	18.37	18.37	18.37
		ppmvd, 15% O_2	75	50	50	50	50	50	50	50	50	50
		ppmvw	44.93	29.96	28.97	29.83	29.83	29.71	29.38	28.80	27.93	26.70
		lb/hr	12.93	8.62	7.07	8.22	8.22	7.83	7.40	6.95	6.47	5.96

NOTES

1. Operating and emissions data was provided by the manufacturer for the following ambient temperatures: 0°F, 20°F, 40°F, 60°F, 80°F, and 100°F.
   Specific Humidity is estimate using curve fitting equation: $6.15E\text{-}04e^{3.75E\text{-}02T}$
   All other parameter values estimated using cubic spline.
2. Pollutant concentrations (ppmvd at 15% O2) for 0°F and -20°F based on information provided in a document published by the manufacturer.
3. Ambient pressure and humidity will vary. However, it is believed that any variation would not affect compliance with the proposed emission representations.
4. The heating value of the natural gas used to fuel the turbine will vary. However, it is believed that any variation would not affect compliance with the proposed emission representations.

TABLE B-1Ac
Gas-Fired Turbines
Emission Estimates
Normal Operations
PTE - 100% Fuel Utilization at 100% Power Output

Make	GE				
Model	MS3802D				
Normal Operating Load	100%				
Fuel	Natural Gas				
Fuel Higher Heating Value (HHV)	1,020 BTU/scf			1,020 BTU/scf	
Ambient Temperature	54.86 °F			0.01 °F	
Power Output	9,110 bhp (mech.)			11,570 bhp (mech.)	
	6,794 kW (elec.)			8,628 kW (elec.)	
Heat Rate at HHV	8,779 BTU/hp-hr			8,143 BTU/hp-hr	
Operating Hours	8,760 hrs/yr				
Fuel Consumption	78,410 scfh			92,370 scfh	
	686.869 MMscf/yr				
Heat Input at HHV	79.98 MMBTU/hr			94.22 MMBTU/hr	
	700,607 MMBTU/yr	Average	Maximum		Maximum
NO_X	830.51 lb/MMscf	65.1198 lb/hr	285.2247 tpy	819.89 lb/MMscf	75.7333 lb/hr
CO	137.44 lb/MMscf	10.7765 lb/hr	47.2013 tpy	135.68 lb/MMscf	12.5330 lb/hr
SO_2	3.47 lb/MMscf	0.2719 lb/hr	1.1910 tpy	3.47 lb/MMscf	0.3203 lb/hr
$PM_{10/2.5}$	6.73 lb/MMscf	0.5279 lb/hr	2.3120 tpy	6.73 lb/MMscf	0.6218 lb/hr
$CO_{2\text{-}e}$	121,847 lb/MMscf	9,554 lb/hr	41,846 tpy	121,824 lb/MMscf	11,253 lb/hr
CO_2	120,017 lb/MMscf	9,411 lb/hr	41,218 tpy	120,017 lb/MMscf	11,086 lb/hr
N_2O	0.23 lb/MMscf	0.0177 lb/hr	0.0777 tpy	0.23 lb/MMscf	0.0209 lb/hr
TOC (Total)	90.15 lb/MMscf	7.0683 lb/hr	30.9593 tpy	88.99 lb/MMscf	8.2204 lb/hr
Methane	70.48 lb/MMscf	5.5262 lb/hr	24.2046 tpy	69.58 lb/MMscf	6.4268 lb/hr
Ethane	2.46 lb/MMscf	0.1928 lb/hr	0.8443 tpy	2.43 lb/MMscf	0.2242 lb/hr
VOC (Total)	17.21 lb/MMscf	1.3494 lb/hr	5.9104 tpy	16.99 lb/MMscf	1.5693 lb/hr
VOC (non-HAP)	8.79 lb/MMscf	0.6893 lb/hr	3.0190 tpy	8.68 lb/MMscf	0.8016 lb/hr
HAP (Total)	8.42 lb/MMscf	0.6601 lb/hr	2.8914 tpy	8.31 lb/MMscf	0.7677 lb/hr
Acetaldehyde	3.28E-01 lb/MMscf	0.0257 lb/hr	0.1126 tpy	3.24E-01 lb/MMscf	0.0299 lb/hr
Acrolein	5.24E-02 lb/MMscf	0.0041 lb/hr	0.0180 tpy	5.18E-02 lb/MMscf	0.0048 lb/hr
Benzene	9.83E-02 lb/MMscf	0.0077 lb/hr	0.0338 tpy	9.71E-02 lb/MMscf	0.0090 lb/hr
Biphenyl					
Butadiene (1,3-)	3.52E-03 lb/MMscf	0.0003 lb/hr	0.0012 tpy	3.48E-03 lb/MMscf	0.0003 lb/hr
Carbon Tetrachloride					
Chlorobenzene					
Chloroform					
Dichloropropene (1,3-)					
Ethylbenzene	2.62E-01 lb/MMscf	0.0206 lb/hr	0.0901 tpy	2.59E-01 lb/MMscf	0.0239 lb/hr
Ethylene Dibromide					
Formaldehyde	5.82E+00 lb/MMscf	0.4562 lb/hr	1.9983 tpy	5.74E+00 lb/MMscf	0.5306 lb/hr
Hexane (n-)					
Methanol					
Methylene Chloride					
Methylnaphthalene (2-)					
Naphthalene	1.07E-02 lb/MMscf	0.0008 lb/hr	0.0037 tpy	1.05E-02 lb/MMscf	0.0010 lb/hr
PAH	1.80E-02 lb/MMscf	0.0014 lb/hr	0.0062 tpy	1.78E-02 lb/MMscf	0.0016 lb/hr
Phenol					
Propylene Oxide	2.38E-01 lb/MMscf	0.0186 lb/hr	0.0816 tpy	2.35E-01 lb/MMscf	0.0217 lb/hr
Styrene					
Tetrachloroethane (1,1,2,2-)					
Toluene	1.07E+00 lb/MMscf	0.0835 lb/hr	0.3659 tpy	1.05E+00 lb/MMscf	0.0971 lb/hr
Trichloroethane (1,1,2-)					
Trimethylpentane (2,2,4-)					
Vinyl Chloride					
Xylenes	5.24E-01 lb/MMscf	0.0411 lb/hr	0.1801 tpy	5.18E-01 lb/MMscf	0.0478 lb/hr

NOTES

1. Fuel higher heating value selected to correspond to AP-42 emissions factors.
2. Manufacturer provided operating and emissions data (TABLE B-1Ab).
3. The annual emissions are based on a representative annual average ambient temperature (TABLE B-1Aa).
   Maximum hourly emissions are based on an ambient temperature of 0°F.
4. NOX, CO, and TOC (Total) emission factor based on Vendor Guarantee.
5. CO2 and N2O emission factors based on 40 CFR 98, Subpart C, Table C-1 and 40 CFR 98, Subpart C, Table C-2, respectively.
6. SO2 emission factor based on AP-42, Section 3.1 (Revised 4/00), Table 3.1-2a.
7. PM10/2.5 emission factor based on AP-42, Section 3.1 (Revised 4/00), Table 3.1-2a, not Solar's PIL 171 dated 06/01/2012 (173% greater).
8. Methane, Ethane, and VOC (Total) emissions based on scaling of AP-42, Section 3.1 (Revised 4/00), Table 3.1-2a using Vendor Guarantee.
   Speciated VOC (non-HAP) emissions based on scaling of AP-42, Section 3.1 (Revised 4/00), Table 3.1-2a using Vendor Guarantee.
   $EF_{Scaled} = (EF_{AP42})(EF_{TOC}/EF_{TOC\text{-}AP42})$

TABLE B-1Ad
Manufacturer's Operating and Emissions Data
Startup/Shutdown Step 2: Iginition-Idle
PTE - 100% Fuel Utilization at 100% Power Output

Parameters			Interpolated	Vendor Data					
Ambient	Temperature	°F	54.86	0.01	20.00	40.00	60.00	80.00	100.00
	Altitude	ft	0	0	0	0	0	0	0
	Pressure	psia	14.702	14.702	14.702	14.702	14.702	14.702	14.702
	Relative Humidity	%	60%	60%	60%	60%	60%	60%	60%
	Specific Humidity	$lb_{H2O}/lb_{Dry\ Air}$	0.0048	0.0006	0.0013	0.0028	0.0058	0.0124	0.0262
Fuel	Lower Heating Value (LHV)	BTU/scf	923.1	923.1	923.1	923.1	923.1	923.1	923.1
	Higher Heating Value (HHV)	BTU/scf	1,025.7	1,025.7	1,025.7	1,025.7	1,025.7	1,025.7	1,025.7
Turbine	Net Output Power	hp	911	1,157	1,067	978	888	800	697
	Fuel Consumption	scf/hr	27,304	29,965	28,352	27,623	27,247	27,141	26,353
	Heat Input at LHV	MMBTU/hr	25.20	27.66	26.17	25.50	25.15	25.05	24.33
	Heat Input at HHV	MMBTU/hr	28.00	30.73	29.08	28.33	27.95	27.84	27.03
	Heat Rate at LHV	BTU/hp-hr	27,674	23,907	24,519	26,079	28,319	31,311	34,916
	Heat Rate at HHV	BTU/hp-hr	30,749	26,563	27,244	28,977	31,466	34,790	38,795
Exhaust	Temperature	°F	469	430	443	457	473	489	500
	Water Fraction	%, by vol	3.59%	2.86%	2.99%	3.24%	3.75%	4.72%	6.44%
	Non-Water Fraction	%, by vol	96.41%	97.14%	97.01%	96.76%	96.25%	95.28%	93.56%
	O_2 Content	%, by vol (dry)	19.30%	19.27%	19.26%	19.27%	19.31%	19.30%	19.31%
	Molecular Weight	lb/lb-mol	28.70	28.78	28.77	28.74	28.68	28.57	28.38
	Flow Rate	lb/hr	205,940	218,604	209,302	206,172	205,909	205,417	205,084
		scfm (1 atm, 68°F)	46,123	48,822	46,782	46,134	46,144	46,240	46,455
		acfm	81,095	82,288	80,008	80,065	81,519	83,102	84,406
NO_X Emissions		lb/lb-mol	46.01	46.01	46.01	46.01	46.01	46.01	46.01
		ppmvd, 15% O_2	110	110	110	110	110	110	110
		ppmvw	28.76	29.52	29.65	29.38	28.61	28.50	27.75
		lb/hr	9.50	10.32	9.93	9.70	9.45	9.43	9.23
CO Emissions		lb/lb-mol	28.01	28.01	28.01	28.01	28.01	28.01	28.01
		ppmvd, 15% O_2	10,000	10,000	10,000	10,000	10,000	10,000	10,000
		ppmvw	2,614.42	2,683.89	2,695.88	2,671.28	2,600.58	2,591.24	2,523.15
		lb/hr	525.49	571.01	549.35	536.75	522.97	521.85	510.71
UHC Emissions		lb/lb-mol	18.37	18.37	18.37	18.37	18.37	18.37	18.37
		ppmvd, 15% O_2	1,000	1,000	1,000	1,000	1,000	1,000	1,000
		ppmvw	261.44	268.39	269.59	267.13	260.06	259.12	252.32
		lb/hr	34.47	37.45	36.03	35.21	34.30	34.23	33.50

NOTES

1. Footnotes 1 thru 4 of TABLE B-1Ab.

TABLE B-1Ae
Manufacturer's Operating and Emissions Data
Startup/Shutdown Step 3: Loading/Thermal Stabilization
PTE - 100% Fuel Utilization at 100% Power Output

Parameters			Interpolated	Vendor Data					
Ambient	Temperature	°F	54.86	0.01	20.00	40.00	60.00	80.00	100.00
	Altitude	ft	0	0	0	0	0	0	0
	Pressure	psia	14.702	14.702	14.702	14.702	14.702	14.702	14.702
	Relative Humidity	%	60%	60%	60%	60%	60%	60%	60%
	Specific Humidity	$lb_{H2O}/lb_{Dry\ Air}$	0.0048	0.0006	0.0013	0.0028	0.0058	0.0124	0.0262
Fuel	Lower Heating Value (LHV)	BTU/scf	923.1	923.1	923.1	923.1	923.1	923.1	923.1
	Higher Heating Value (HHV)	BTU/scf	1,025.7	1,025.7	1,025.7	1,025.7	1,025.7	1,025.7	1,025.7
Turbine	Net Output Power	hp	2,732	3,471	3,202	2,933	2,664	2,400	2,090
	Fuel Consumption	scf/hr	38,144	43,827	41,081	39,202	37,840	36,701	34,739
	Heat Input at LHV	MMBTU/hr	35.21	40.46	37.92	36.19	34.93	33.88	32.07
	Heat Input at HHV	MMBTU/hr	39.12	44.95	42.14	40.21	38.81	37.64	35.63
	Heat Rate at LHV	BTU/hp-hr	12,887	11,656	11,843	12,337	13,110	14,114	15,343
	Heat Rate at HHV	BTU/hp-hr	14,319	12,951	13,158	13,708	14,567	15,682	17,047
Exhaust	Temperature	°F	514	480	492	504	518	532	538
	Water Fraction	%, by vol	4.31%	3.69%	3.80%	4.00%	4.46%	5.37%	7.02%
	Non-Water Fraction	%, by vol	95.69%	96.31%	96.20%	96.00%	95.54%	94.63%	92.98%
	O_2 Content	%, by vol (dry)	18.54%	18.41%	18.44%	18.48%	18.56%	18.61%	18.68%
	Molecular Weight	lb/lb-mol	28.66	28.73	28.72	28.69	28.64	28.53	28.35
	Flow Rate	lb/hr	231,462	251,537	240,118	233,765	230,738	227,471	225,061
		scfm (1 atm, 68°F)	51,927	56,305	53,753	52,400	51,790	51,274	51,066
		acfm	95,787	100,235	96,886	95,586	95,931	96,313	96,493
NO_X Emissions		lb/lb-mol	46.01	46.01	46.01	46.01	46.01	46.01	46.01
		ppmvd, 15% O_2	125	125	125	125	125	125	125
		ppmvw	47.83	50.84	50.12	49.15	47.37	45.85	43.75
		lb/hr	17.77	20.48	19.28	18.43	17.56	16.82	15.98
CO Emissions		lb/lb-mol	28.01	28.01	28.01	28.01	28.01	28.01	28.01
		ppmvd, 15% O_2	9,000	9,000	9,000	9,000	9,000	9,000	9,000
		ppmvw	3,443.64	3,660.63	3,608.75	3,538.71	3,410.72	3,301.22	3,150.28
		lb/hr	779.08	897.71	845.10	807.62	769.67	737.25	700.50
UHC Emissions		lb/lb-mol	18.37	18.37	18.37	18.37	18.37	18.37	18.37
		ppmvd, 15% O_2	900	900	900	900	900	900	900
		ppmvw	344.36	366.06	360.87	353.87	341.07	330.12	315.03
		lb/hr	51.10	58.88	55.43	52.97	50.48	48.36	45.95

NOTES

1. Footnotes 1 thru 4 of TABLE B-1Ab.

TABLE B-1Af
Gas-Fired Turbines
Emission Estimates
Startup
PTE - 100% Fuel Utilization at 100% Power Output

Make	GE				
Model	MS3802D				
Fuel	Natural Gas				
Ambient Temperature	54.86 °F			0.01 °F	
Maximum Event Frequency		2 events/hr	156 events/yr		2 events/hr
Maximum Startup Time		32.00 min/hr	41.60 hrs/yr		32.00 min/hr
Fuel Consumption		18,356 scf/hr	1.43 MMscf/yr		20,833 scf/hr
		Average	Maximum		Maximum
NO_X	3.9809 lbs/event	7.9617 lb/hr	0.3105 tpy	4.5299 lbs/event	9.0597 lb/hr
CO	184.5090 lbs/event	369.0181 lb/hr	14.3917 tpy	209.4414 lbs/event	418.8829 lb/hr
SO_2	0.0318 lbs/event	0.0637 lb/hr	0.0025 tpy	0.0361 lbs/event	0.0722 lb/hr
$PM_{10/2.5}$	0.0618 lbs/event	0.1236 lb/hr	0.0048 tpy	0.0701 lbs/event	0.1402 lb/hr
CO_{2-e}	1,339 lbs/event	2,677 lb/hr	104 tpy	1,519 lbs/event	3,039 lb/hr
CO_2	1,102 lbs/event	2,203 lb/hr	86 tpy	1,250 lbs/event	2,500 lb/hr
N_2O	0.0021 lbs/event	0.0042 lb/hr	0.0002 tpy	0.0024 lbs/event	0.0047 lb/hr
TOC (Total)	12.1020 lbs/event	24.2039 lb/hr	0.9440 tpy	13.7373 lbs/event	27.4746 lb/hr
Methane	9.4615 lbs/event	18.9231 lb/hr	0.7380 tpy	10.7401 lbs/event	21.4801 lb/hr
Ethane	0.3301 lbs/event	0.6601 lb/hr	0.0257 tpy	0.3747 lbs/event	0.7493 lb/hr
VOC (Total)	2.3104 lbs/event	4.6207 lb/hr	0.1802 tpy	2.6226 lbs/event	5.2451 lb/hr
VOC (non-HAP)	1.1801 lbs/event	2.3603 lb/hr	0.0921 tpy	1.3396 lbs/event	2.6792 lb/hr
HAP (Total)	1.1302 lbs/event	2.2605 lb/hr	0.0882 tpy	1.2830 lbs/event	2.5659 lb/hr
Acetaldehyde	4.40E-02 lbs/event	0.0880 lb/hr	0.0034 tpy	5.00E-02 lbs/event	0.0999 lb/hr
Acrolein	7.04E-03 lbs/event	0.0141 lb/hr	0.0005 tpy	7.99E-03 lbs/event	0.0160 lb/hr
Benzene	1.32E-02 lbs/event	0.0264 lb/hr	0.0010 tpy	1.50E-02 lbs/event	0.0300 lb/hr
Biphenyl					
Butadiene (1,3-)	4.73E-04 lbs/event	0.0009 lb/hr	0.0000 tpy	5.37E-04 lbs/event	0.0011 lb/hr
Carbon Tetrachloride					
Chlorobenzene					
Chloroform					
Dichloropropene (1,3-)					
Ethylbenzene	3.52E-02 lbs/event	0.0704 lb/hr	0.0027 tpy	4.00E-02 lbs/event	0.0799 lb/hr
Ethylene Dibromide					
Formaldehyde	7.81E-01 lbs/event	1.5623 lb/hr	0.0609 tpy	8.87E-01 lbs/event	1.7734 lb/hr
Hexane (n-)					
Methanol					
Methylene Chloride					
Methylnaphthalene (2-)					
Naphthalene	1.43E-03 lbs/event	0.0029 lb/hr	0.0001 tpy	1.62E-03 lbs/event	0.0032 lb/hr
PAH	2.42E-03 lbs/event	0.0048 lb/hr	0.0002 tpy	2.75E-03 lbs/event	0.0055 lb/hr
Phenol					
Propylene Oxide	3.19E-02 lbs/event	0.0638 lb/hr	0.0025 tpy	3.62E-02 lbs/event	0.0724 lb/hr
Styrene					
Tetrachloroethane (1,1,2,2-)					
Toluene	1.43E-01 lbs/event	0.2860 lb/hr	0.0112 tpy	1.62E-01 lbs/event	0.3247 lb/hr
Trichloroethane (1,1,2-)					
Trimethylpentane (2,2,4-)					
Vinyl Chloride					
Xylenes	7.04E-02 lbs/event	0.1408 lb/hr	0.0055 tpy	7.99E-02 lbs/event	0.1599 lb/hr

NOTES

1. Emissions of NOx, CO, and UHC are estimated using information provided in TABLE B-1Ad and TABLE B-1Ae.

	54.86 °F		0.01 °F	
	Step 2	Step 3	Step 2	Step 3
Duration	5.50 min/event	10.50 min/event	5.50 min/event	10.50 min/event
NO_X	0.8704 lb/event	3.1105 lb/event	0.9458 lb/event	3.5841 lb/event
CO	48.1700 lb/event	136.3390 lb/event	52.3427 lb/event	157.0988 lb/event
UHC	3.1595 lb/event	8.9425 lb/event	3.4332 lb/event	10.3041 lb/event
Fuel	2,503 scf/event	6,675 scf/event	2,747 scf/event	7,670 scf/event

2. Footnotes 4 thru 8 of TABLE B-1Ac.
3. The frequency of startup events was provided by Technical Services.

TABLE B-1Ag
Gas-Fired Turbines
Emission Estimates
Shutdown
PTE - 100% Fuel Utilization at 100% Power Output

Make	GE				
Model	MS3802D				
Fuel	Natural Gas				
Ambient Temperature	54.86 °F			0.01 °F	
Maximum Event Frequency		2 events/hr	156 events/yr		2 events/hr
Maximum Startup Time		18.00 min/hr	23.40 hrs/yr		18.00 min/hr
Fuel Consumption		11,443 scf/hr	0.89 MMscf/yr		13,148 scf/hr
		Average	Maximum		Maximum
NO_X	2.6661 lbs/event	5.3322 lb/hr	0.2080 tpy	3.0721 lbs/event	6.1442 lb/hr
CO	116.8620 lbs/event	233.7240 lb/hr	9.1152 tpy	134.6561 lbs/event	269.3122 lb/hr
SO_2	0.0198 lbs/event	0.0397 lb/hr	0.0015 tpy	0.0228 lbs/event	0.0456 lb/hr
$PM_{10/2.5}$	0.0385 lbs/event	0.0770 lb/hr	0.0030 tpy	0.0443 lbs/event	0.0885 lb/hr
CO_{2-e}	837 lbs/event	1,674 lb/hr	65 tpy	962 lbs/event	1,924 lb/hr
CO_2	687 lbs/event	1,373 lb/hr	54 tpy	789 lbs/event	1,578 lb/hr
N_2O	0.0013 lbs/event	0.0026 lb/hr	0.0001 tpy	0.0015 lbs/event	0.0030 lb/hr
TOC (Total)	7.6650 lbs/event	15.3300 lb/hr	0.5979 tpy	8.8321 lbs/event	17.6642 lb/hr
Methane	5.9926 lbs/event	11.9853 lb/hr	0.4674 tpy	6.9051 lbs/event	13.8102 lb/hr
Ethane	0.2090 lbs/event	0.4181 lb/hr	0.0163 tpy	0.2409 lbs/event	0.4818 lb/hr
VOC (Total)	1.4633 lbs/event	2.9266 lb/hr	0.1141 tpy	1.6861 lbs/event	3.3723 lb/hr
VOC (non-HAP)	0.7475 lbs/event	1.4949 lb/hr	0.0583 tpy	0.8613 lbs/event	1.7225 lb/hr
HAP (Total)	0.7159 lbs/event	1.4317 lb/hr	0.0558 tpy	0.8249 lbs/event	1.6497 lb/hr
Acetaldehyde	2.79E-02 lbs/event	0.0557 lb/hr	0.0022 tpy	3.21E-02 lbs/event	0.0642 lb/hr
Acrolein	4.46E-03 lbs/event	0.0089 lb/hr	0.0003 tpy	5.14E-03 lbs/event	0.0103 lb/hr
Benzene	8.36E-03 lbs/event	0.0167 lb/hr	0.0007 tpy	9.64E-03 lbs/event	0.0193 lb/hr
Biphenyl					
Butadiene (1,3-)	3.00E-04 lbs/event	0.0006 lb/hr	0.0000 tpy	3.45E-04 lbs/event	0.0007 lb/hr
Carbon Tetrachloride					
Chlorobenzene					
Chloroform					
Dichloropropene (1,3-)					
Ethylbenzene	2.23E-02 lbs/event	0.0446 lb/hr	0.0017 tpy	2.57E-02 lbs/event	0.0514 lb/hr
Ethylene Dibromide					
Formaldehyde	4.95E-01 lbs/event	0.9895 lb/hr	0.0386 tpy	5.70E-01 lbs/event	1.1401 lb/hr
Hexane (n-)					
Methanol					
Methylene Chloride					
Methylnaphthalene (2-)					
Naphthalene	9.06E-04 lbs/event	0.0018 lb/hr	0.0001 tpy	1.04E-03 lbs/event	0.0021 lb/hr
PAH	1.53E-03 lbs/event	0.0031 lb/hr	0.0001 tpy	1.77E-03 lbs/event	0.0035 lb/hr
Phenol					
Propylene Oxide	2.02E-02 lbs/event	0.0404 lb/hr	0.0016 tpy	2.33E-02 lbs/event	0.0466 lb/hr
Styrene					
Tetrachloroethane (1,1,2,2-)					
Toluene	9.06E-02 lbs/event	0.1812 lb/hr	0.0071 tpy	1.04E-01 lbs/event	0.2088 lb/hr
Trichloroethane (1,1,2-)					
Trimethylpentane (2,2,4-)					
Vinyl Chloride					
Xylenes	4.46E-02 lbs/event	0.0892 lb/hr	0.0035 tpy	5.14E-02 lbs/event	0.1028 lb/hr

NOTES

1. Emissions of NOx, CO, and UHC are estimated using information provided in TABLE B-1Ad and TABLE B-1Ae.

	54.86 °F		0.01 °F	
	Step 2	Step 3	Step 2	Step 3
Duration	0.00 min/event	9.00 min/event	0.00 min/event	9.00 min/event
NO_X	0.0000 lb/event	2.6661 lb/event	0.0000 lb/event	3.0721 lb/event
CO	0.0000 lb/event	116.8620 lb/event	0.0000 lb/event	134.6561 lb/event
UHC	0.0000 lb/event	7.6650 lb/event	0.0000 lb/event	8.8321 lb/event
Fuel	0 scf/event	5,722 scf/event	0 scf/event	6,574 scf/event

2. Footnotes 4 thru 8 of TABLE B-1Ac.
3. The frequency of startup events was provided by Technical Services.

TABLE B-1Ah
Gas-Fired Turbines
Emission Estimates
Low Temperatures
PTE - 100% Fuel Utilization at 100% Power Output

Make	GE					
Model	MS3802D					
Normal Operating Load	100%					
Fuel	Natural Gas					
Fuel Higher Heating Value (HHV)	1,020 BTU/scf			1,020 BTU/scf		
Ambient Temperature	-20.00 °F			-20.00 °F		
Power Output	12,467 bhp (mech.)			12,467 bhp (mech.)		
	9,297 kW (elec.)			9,297 kW (elec.)		
Heat Rate at HHV	8,004 BTU/hp-hr			8,004 BTU/hp-hr		
Operating Hours	6 hrs/yr			1 hrs/yr		
Fuel Consumption	97,834 scfh			97,834 scfh		
	0.587 MMscf/yr			0.098 MMscf/yr		
Heat Input at HHV	99.79 MMBTU/hr	0°F ≥ T > -20°F		99.79 MMBTU/hr	T ≤ -20°F	
	599 MMBTU/yr	Hourly	Annual	100 MMBTU/yr	Hourly	Annual
NO_X	811.43 lb/MMscf	79.3855 lb/hr	0.2382 tpy	811.43 lb/MMscf	79.3855 lb/hr	0.0397 tpy
CO	537.13 lb/MMscf	52.5494 lb/hr	0.1576 tpy	537.13 lb/MMscf	52.5494 lb/hr	0.0263 tpy
SO_2	3.47 lb/MMscf	0.3393 lb/hr	0.0010 tpy	3.47 lb/MMscf	0.3393 lb/hr	0.0002 tpy
$PM_{10/2.5}$	6.73 lb/MMscf	0.6586 lb/hr	0.0020 tpy	6.73 lb/MMscf	0.6586 lb/hr	0.0003 tpy
CO_{2-e}	121,806 lb/MMscf	11,917 lb/hr	36 tpy	122,667 lb/MMscf	12,001 lb/hr	6 tpy
CO_2	120,017 lb/MMscf	11,742 lb/hr	35 tpy	120,017 lb/MMscf	11,742 lb/hr	6 tpy
N_2O	0.23 lb/MMscf	0.0221 lb/hr	0.0001 tpy	0.23 lb/MMscf	0.0221 lb/hr	0.0000 tpy
TOC (Total)	88.08 lb/MMscf	8.6168 lb/hr	0.0259 tpy	132.11 lb/MMscf	12.9252 lb/hr	0.0065 tpy
Methane	68.86 lb/MMscf	6.7368 lb/hr	0.0202 tpy	103.29 lb/MMscf	10.1052 lb/hr	0.0051 tpy
Ethane	2.40 lb/MMscf	0.2350 lb/hr	0.0007 tpy	3.60 lb/MMscf	0.3525 lb/hr	0.0002 tpy
VOC (Total)	16.81 lb/MMscf	1.6450 lb/hr	0.0049 tpy	25.22 lb/MMscf	2.4675 lb/hr	0.0012 tpy
VOC (non-HAP)	8.59 lb/MMscf	0.8403 lb/hr	0.0025 tpy	12.88 lb/MMscf	1.2604 lb/hr	0.0006 tpy
HAP (Total)	8.23 lb/MMscf	0.8048 lb/hr	0.0024 tpy	12.34 lb/MMscf	1.2071 lb/hr	0.0006 tpy
Acetaldehyde	3.20E-01 lb/MMscf	0.0313 lb/hr	0.0001 tpy	4.80E-01 lb/MMscf	0.0470 lb/hr	0.0000 tpy
Acrolein	5.12E-02 lb/MMscf	0.0050 lb/hr	0.0000 tpy	7.69E-02 lb/MMscf	0.0075 lb/hr	0.0000 tpy
Benzene	9.61E-02 lb/MMscf	0.0094 lb/hr	0.0000 tpy	1.44E-01 lb/MMscf	0.0141 lb/hr	0.0000 tpy
Biphenyl						
Butadiene (1,3-)	3.44E-03 lb/MMscf	0.0003 lb/hr	0.0000 tpy	5.16E-03 lb/MMscf	0.0005 lb/hr	0.0000 tpy
Carbon Tetrachloride						
Chlorobenzene						
Chloroform						
Dichloropropene (1,3-)						
Ethylbenzene	2.56E-01 lb/MMscf	0.0251 lb/hr	0.0001 tpy	3.84E-01 lb/MMscf	0.0376 lb/hr	0.0000 tpy
Ethylene Dibromide						
Formaldehyde	5.68E+00 lb/MMscf	0.5562 lb/hr	0.0017 tpy	8.53E+00 lb/MMscf	0.8343 lb/hr	0.0004 tpy
Hexane (n-)						
Methanol						
Methylene Chloride						
Methylnaphthalene (2-)						
Naphthalene	1.04E-02 lb/MMscf	0.0010 lb/hr	0.0000 tpy	1.56E-02 lb/MMscf	0.0015 lb/hr	0.0000 tpy
PAH	1.76E-02 lb/MMscf	0.0017 lb/hr	0.0000 tpy	2.64E-02 lb/MMscf	0.0026 lb/hr	0.0000 tpy
Phenol						
Propylene Oxide	2.32E-01 lb/MMscf	0.0227 lb/hr	0.0001 tpy	3.48E-01 lb/MMscf	0.0341 lb/hr	0.0000 tpy
Styrene						
Tetrachloroethane (1,1,2,2-)						
Toluene	1.04E+00 lb/MMscf	0.1018 lb/hr	0.0003 tpy	1.56E+00 lb/MMscf	0.1528 lb/hr	0.0001 tpy
Trichloroethane (1,1,2-)						
Trimethylpentane (2,2,4-)						
Vinyl Chloride						
Xylenes	5.12E-01 lb/MMscf	0.0501 lb/hr	0.0002 tpy	7.69E-01 lb/MMscf	0.0752 lb/hr	0.0000 tpy

NOTES

1. Fuel higher heating value selected to correspond to AP-42 emissions factors.
2. Operating hours for low ambient temperatures best on best fit of available data (see TABLE B-1Aa).
3. Manufacturer provided data on: power output, heat rate, along with NOx, CO, and UHC (or TOC) emissions.
4. Footnotes 4 thru 8 of TABLE B-1Ac.

ALL UNCONTROLLED EMISSION RATES
FOR GE FRAME 3 TURBINE

TABLE B-1Ai
Gas-Fired Turbines
Maximum Emission Estimates
Normal Operations, Startup, Shutdown, and Low Temperature Operations
PTE - 100% Fuel Utilization at 100% Power Output

Make	GE																	
Model	MS3802D																	
Normal Operating Load	100%																	
Operations	Normal			Startup			Shutdown			Startup/Shutdown w/ Normal			Low Temperatures			Combined Operations		
Maximum Annual Combined Event Frequency	8,760 hrs/yr			42 hrs/yr			23 hrs/yr			8,760 hrs/yr			7 hrs/yr			8,760 hrs/yr		
	Hourly		Maximum	Hourly		Maximum	Hourly		Maximum	Hourly			Hourly		Maximum	Hourly		Maximum
Pollutant	Average	Maximum	Annual	Average	Maximum	Annual	Average	Maximum	Annual	Average	Maximum	Maximum Annual	Average	Maximum	Annual	Average	Maximum	Annual
NO_X	65.1198 lb/hr	75.7333 lb/hr	285.2247 tpy	7.9617 lb/hr	9.0597 lb/hr	0.3105 tpy	5.3322 lb/hr	6.1442 lb/hr	0.2080 tpy	65.1198 lb/hr	75.7333 lb/hr	285.2247 tpy	79.3855 lb/hr	79.3855 lb/hr	0.2778 tpy	65.1312 lb/hr	79.3855 lb/hr	285.2746 tpy
CO	10.7765 lb/hr	12.5330 lb/hr	47.2013 tpy	369.0181 lb/hr	418.8829 lb/hr	14.3917 tpy	233.7240 lb/hr	269.3122 lb/hr	9.1152 tpy	16.0635 lb/hr	690.2839 lb/hr	70.3580 tpy	52.5494 lb/hr	52.5494 lb/hr	0.1839 tpy	16.0968 lb/hr	690.2839 lb/hr	70.5042 tpy
SO_2	0.2719 lb/hr	0.3203 lb/hr	1.1910 tpy	0.0637 lb/hr	0.0722 lb/hr	0.0025 tpy	0.0397 lb/hr	0.0456 lb/hr	0.0015 tpy	0.2719 lb/hr	0.3203 lb/hr	1.1910 tpy	0.3393 lb/hr	0.3393 lb/hr	0.0012 tpy	0.2720 lb/hr	0.3393 lb/hr	1.1913 tpy
$PM_{10/2.5}$	0.5279 lb/hr	0.6218 lb/hr	2.3120 tpy	0.1236 lb/hr	0.1402 lb/hr	0.0048 tpy	0.0770 lb/hr	0.0885 lb/hr	0.0030 tpy	0.5279 lb/hr	0.6218 lb/hr	2.3120 tpy	0.6586 lb/hr	0.6586 lb/hr	0.0023 tpy	0.5280 lb/hr	0.6586 lb/hr	2.3125 tpy
CO_{2-e}	9,554 lb/hr	11,253 lb/hr	41,846 tpy	2,677 lb/hr	3,039 lb/hr	104 tpy	1,674 lb/hr	1,924 lb/hr	65 tpy	9,554 lb/hr	11,253 lb/hr	41,846 tpy	11,929 lb/hr	12,001 lb/hr	42 tpy	9,556 lb/hr	12,001 lb/hr	41,855 tpy
CO_2	9,411 lb/hr	11,086 lb/hr	41,218 tpy	2,203 lb/hr	2,500 lb/hr	86 tpy	1,373 lb/hr	1,578 lb/hr	54 tpy	9,411 lb/hr	11,086 lb/hr	41,218 tpy	11,742 lb/hr	11,742 lb/hr	41 tpy	9,412 lb/hr	11,742 lb/hr	41,226 tpy
N_2O	0.0177 lb/hr	0.0209 lb/hr	0.0777 tpy	0.0042 lb/hr	0.0047 lb/hr	0.0002 tpy	0.0026 lb/hr	0.0030 lb/hr	0.0001 tpy	0.0177 lb/hr	0.0209 lb/hr	0.0777 tpy	0.0221 lb/hr	0.0221 lb/hr	0.0001 tpy	0.0177 lb/hr	0.0221 lb/hr	0.0777 tpy
TOC (Total)	7.0683 lb/hr	8.2204 lb/hr	30.9593 tpy	24.2039 lb/hr	27.4746 lb/hr	0.9440 tpy	15.3300 lb/hr	17.6642 lb/hr	0.5979 tpy	7.3679 lb/hr	46.5088 lb/hr	32.2714 tpy	9.2323 lb/hr	12.9252 lb/hr	0.0323 tpy	7.3696 lb/hr	46.5088 lb/hr	32.2790 tpy
Methane	5.5262 lb/hr	6.4268 lb/hr	24.2046 tpy	18.9231 lb/hr	21.4801 lb/hr	0.7380 tpy	11.9853 lb/hr	13.8102 lb/hr	0.4674 tpy	5.7604 lb/hr	36.3614 lb/hr	25.2304 tpy	7.2180 lb/hr	10.1052 lb/hr	0.0253 tpy	5.7617 lb/hr	36.3614 lb/hr	25.2363 tpy
Ethane	0.1928 lb/hr	0.2242 lb/hr	0.8443 tpy	0.6601 lb/hr	0.7493 lb/hr	0.0257 tpy	0.4181 lb/hr	0.4818 lb/hr	0.0163 tpy	0.2009 lb/hr	1.2684 lb/hr	0.8801 tpy	0.2518 lb/hr	0.3525 lb/hr	0.0009 tpy	0.2010 lb/hr	1.2684 lb/hr	0.8803 tpy
VOC (Total)	1.3494 lb/hr	1.5693 lb/hr	5.9104 tpy	4.6207 lb/hr	5.2451 lb/hr	0.1802 tpy	2.9266 lb/hr	3.3723 lb/hr	0.1141 tpy	1.4066 lb/hr	8.8790 lb/hr	6.1609 tpy	1.7625 lb/hr	2.4675 lb/hr	0.0062 tpy	1.4069 lb/hr	8.8790 lb/hr	6.1624 tpy
VOC (non-HAP)	0.6893 lb/hr	0.8016 lb/hr	3.0190 tpy	2.3603 lb/hr	2.6792 lb/hr	0.0921 tpy	1.4949 lb/hr	1.7225 lb/hr	0.0583 tpy	0.7185 lb/hr	4.5353 lb/hr	3.1470 tpy	0.9003 lb/hr	1.2604 lb/hr	0.0032 tpy	0.7187 lb/hr	4.5353 lb/hr	3.1477 tpy
HAP (Total)	0.6601 lb/hr	0.7677 lb/hr	2.8914 tpy	2.2605 lb/hr	2.5659 lb/hr	0.0882 tpy	1.4317 lb/hr	1.6497 lb/hr	0.0558 tpy	0.6881 lb/hr	4.3436 lb/hr	3.0139 tpy	0.8622 lb/hr	1.2071 lb/hr	0.0030 tpy	0.6883 lb/hr	4.3436 lb/hr	3.0147 tpy
Acetaldehyde	2.57E-02 lb/hr	2.99E-02 lb/hr	1.13E-01 tpy	8.80E-02 lb/hr	9.99E-02 lb/hr	3.43E-03 tpy	5.57E-02 lb/hr	6.42E-02 lb/hr	2.17E-03 tpy	2.68E-02 lb/hr	1.69E-01 lb/hr	1.17E-01 tpy	3.36E-02 lb/hr	4.70E-02 lb/hr	1.18E-04 tpy	2.68E-02 lb/hr	1.69E-01 lb/hr	1.17E-01 tpy
Acrolein	4.11E-03 lb/hr	4.78E-03 lb/hr	1.80E-02 tpy	1.41E-02 lb/hr	1.60E-02 lb/hr	5.49E-04 tpy	8.92E-03 lb/hr	1.03E-02 lb/hr	3.48E-04 tpy	4.29E-03 lb/hr	2.71E-02 lb/hr	1.88E-02 tpy	5.37E-03 lb/hr	7.52E-03 lb/hr	1.88E-05 tpy	4.29E-03 lb/hr	2.71E-02 lb/hr	1.88E-02 tpy
Benzene	7.71E-03 lb/hr	8.97E-03 lb/hr	3.38E-02 tpy	2.64E-02 lb/hr	3.00E-02 lb/hr	1.03E-03 tpy	1.67E-02 lb/hr	1.93E-02 lb/hr	6.52E-04 tpy	8.04E-03 lb/hr	5.07E-02 lb/hr	3.52E-02 tpy	1.01E-02 lb/hr	1.41E-02 lb/hr	3.53E-05 tpy	8.04E-03 lb/hr	5.07E-02 lb/hr	3.52E-02 tpy
Biphenyl																		
Butadiene (1,3-)	2.76E-04 lb/hr	3.21E-04 lb/hr	1.21E-03 tpy	9.46E-04 lb/hr	1.07E-03 lb/hr	3.69E-05 tpy	5.99E-04 lb/hr	6.91E-04 lb/hr	2.34E-05 tpy	2.88E-04 lb/hr	1.82E-03 lb/hr	1.26E-03 tpy	3.61E-04 lb/hr	5.05E-04 lb/hr	1.26E-06 tpy	2.88E-04 lb/hr	1.82E-03 lb/hr	1.26E-03 tpy
Carbon Tetrachloride																		
Chlorobenzene																		
Chloroform																		
Dichloropropene (1,3-)																		
Ethylbenzene	2.06E-02 lb/hr	2.39E-02 lb/hr	9.01E-02 tpy	7.04E-02 lb/hr	7.99E-02 lb/hr	2.75E-03 tpy	4.46E-02 lb/hr	5.14E-02 lb/hr	1.74E-03 tpy	2.14E-02 lb/hr	1.35E-01 lb/hr	9.39E-02 tpy	2.69E-02 lb/hr	3.76E-02 lb/hr	9.40E-05 tpy	2.14E-02 lb/hr	1.35E-01 lb/hr	9.39E-02 tpy
Ethylene Dibromide																		
Formaldehyde	4.56E-01 lb/hr	5.31E-01 lb/hr	2.00E+00 tpy	1.56E+00 lb/hr	1.77E+00 lb/hr	6.09E-02 tpy	9.89E-01 lb/hr	1.14E+00 lb/hr	3.86E-02 tpy	4.76E-01 lb/hr	3.00E+00 lb/hr	2.08E+00 tpy	5.96E-01 lb/hr	8.34E-01 lb/hr	2.09E-03 tpy	4.76E-01 lb/hr	3.00E+00 lb/hr	2.08E+00 tpy
Hexane (n-)																		
Methanol																		
Methylene Chloride																		
Methylnaphthalene (2-)																		
Naphthalene	8.35E-04 lb/hr	9.71E-04 lb/hr	3.66E-03 tpy	2.86E-03 lb/hr	3.25E-03 lb/hr	1.12E-04 tpy	1.81E-03 lb/hr	2.09E-03 lb/hr	7.07E-05 tpy	8.71E-04 lb/hr	5.50E-03 lb/hr	3.81E-03 tpy	1.09E-03 lb/hr	1.53E-03 lb/hr	3.82E-06 tpy	8.71E-04 lb/hr	5.50E-03 lb/hr	3.81E-03 tpy
PAH	1.41E-03 lb/hr	1.64E-03 lb/hr	6.19E-03 tpy	4.84E-03 lb/hr	5.49E-03 lb/hr	1.89E-04 tpy	3.07E-03 lb/hr	3.53E-03 lb/hr	1.20E-04 tpy	1.47E-03 lb/hr	9.30E-03 lb/hr	6.45E-03 tpy	1.85E-03 lb/hr	2.59E-03 lb/hr	6.46E-06 tpy	1.47E-03 lb/hr	9.30E-03 lb/hr	6.46E-03 tpy
Phenol																		
Propylene Oxide	1.86E-02 lb/hr	2.17E-02 lb/hr	8.16E-02 tpy	6.38E-02 lb/hr	7.24E-02 lb/hr	2.49E-03 tpy	4.04E-02 lb/hr	4.66E-02 lb/hr	1.58E-03 tpy	1.94E-02 lb/hr	1.23E-01 lb/hr	8.51E-02 tpy	2.43E-02 lb/hr	3.41E-02 lb/hr	8.52E-05 tpy	1.94E-02 lb/hr	1.23E-01 lb/hr	8.51E-02 tpy
Styrene																		
Tetrachloroethane (1,1,2,2-)																		
Toluene	8.35E-02 lb/hr	9.71E-02 lb/hr	3.66E-01 tpy	2.86E-01 lb/hr	3.25E-01 lb/hr	1.12E-02 tpy	1.81E-01 lb/hr	2.09E-01 lb/hr	7.07E-03 tpy	8.71E-02 lb/hr	5.50E-01 lb/hr	3.81E-01 tpy	1.09E-01 lb/hr	1.53E-01 lb/hr	3.82E-04 tpy	8.71E-02 lb/hr	5.50E-01 lb/hr	3.81E-01 tpy
Trichloroethane (1,1,2-)																		
Trimethylpentane (2,2,4-)																		
Vinyl Chloride																		
Xylenes	4.11E-02 lb/hr	4.78E-02 lb/hr	1.80E-01 tpy	1.41E-01 lb/hr	1.60E-01 lb/hr	5.49E-03 tpy	8.92E-02 lb/hr	1.03E-01 lb/hr	3.48E-03 tpy	4.29E-02 lb/hr	2.71E-01 lb/hr	1.88E-01 tpy	5.37E-02 lb/hr	7.52E-02 lb/hr	1.88E-04 tpy	4.29E-02 lb/hr	2.71E-01 lb/hr	1.88E-01 tpy

NOTES

1. See TABLE B-1Ac, TABLE B-1Af, TABLE B-1Ag, and TABLE B-1Ah.
2. If $E(t)_{normal} > E(t)_{transient}$, then $E(8{,}760\ hrs/yr)_{all} = E(8{,}760\ hrs/yr)_{normal}$
   Otherwise, $E(8{,}760\ hrs/yr)_{all} = E(8{,}760\ hrs/yr)_{normal} - E(t)_{normal} + E(t)_{transient}$.
   where t = the duration of transient operation.

ONLY OxCat CONTROLLED EMISSION RATES
(REDUCTIONS ONLY FOR CO, VOC, & HAP)

TABLE B-1Aj
Gas-Fired Turbines
Maximum Emission Estimates
Normal Operations, Startup, Shutdown, and Low Temperature Operations
PTE - 100% Fuel Utilization at 100% Power Output

Make		GE																				
Model		MS3802D																				
Normal Operating Load		100%																				
Operations		Normal			Startup			Shutdown			Startup/Shutdown w/ Normal			Low Temperatures			Combined Operations					
Maximum Annual Combined Event Frequency		8,760 hrs/yr			42 hrs/yr			23 hrs/yr			8,760 hrs/yr			7 hrs/yr			8,760 hrs/yr					
Pollutant	Control Efficiency	Hourly		Maximum	Hourly		Maximum	Hourly		Maximum	Hourly		Maximum	Hourly		Maximum	Hourly		Maximum	Hourly		Maximum
		Average	Maximum	Annual	Average	Maximum	Annual	Average	Maximum	Annual	Average	Maximum	Annual	Average	Maximum	Annual	Average	Maximum	Annual	Average	Maximum	Annual
NO_X		65.1198 lb/hr	75.7333 lb/hr	285.2247 tpy	7.9617 lb/hr	9.0597 lb/hr	0.3105 tpy	5.3322 lb/hr	6.1442 lb/hr	0.2080 tpy	65.1198 lb/hr	75.7333 lb/hr	285.2247 tpy	79.3855 lb/hr	79.3855 lb/hr	0.2778 tpy	65.1312 lb/hr	79.3855 lb/hr	285.2746 tpy			
CO	75.00% by weight	2.6941 lb/hr	3.1332 lb/hr	11.8003 tpy	369.0181 lb/hr	418.8829 lb/hr	14.3917 tpy	58.4310 lb/hr	67.3281 lb/hr	2.2788 tpy	6.4802 lb/hr	486.7332 lb/hr	28.3833 tpy	13.1374 lb/hr	13.1374 lb/hr	0.0460 tpy	6.4885 lb/hr	486.7332 lb/hr	28.4198 tpy			
SO_2		0.2719 lb/hr	0.3203 lb/hr	1.1910 tpy	0.0637 lb/hr	0.0722 lb/hr	0.0025 tpy	0.0397 lb/hr	0.0456 lb/hr	0.0015 tpy	0.2719 lb/hr	0.3203 lb/hr	1.1910 tpy	0.3393 lb/hr	0.3393 lb/hr	0.0012 tpy	0.2720 lb/hr	0.3393 lb/hr	1.1913 tpy			
$PM_{10/2.5}$		0.5279 lb/hr	0.6218 lb/hr	2.3120 tpy	0.1236 lb/hr	0.1402 lb/hr	0.0048 tpy	0.0770 lb/hr	0.0885 lb/hr	0.0030 tpy	0.5279 lb/hr	0.6218 lb/hr	2.3120 tpy	0.6586 lb/hr	0.6586 lb/hr	0.0023 tpy	0.5280 lb/hr	0.6586 lb/hr	2.3125 tpy			
CO_{2-e}		9,567 lb/hr	11,268 lb/hr	41,902 tpy	2,677 lb/hr	3,039 lb/hr	104 tpy	1,949 lb/hr	2,242 lb/hr	76 tpy	9,567 lb/hr	11,268 lb/hr	41,902 tpy	11,991 lb/hr	12,063 lb/hr	42 tpy	9,569 lb/hr	12,719 lb/hr	41,911 tpy			
CO_2		9,423 lb/hr	11,101 lb/hr	41,274 tpy	2,203 lb/hr	2,500 lb/hr	86 tpy	1,649 lb/hr	1,895 lb/hr	64 tpy	9,423 lb/hr	11,101 lb/hr	41,274 tpy	11,804 lb/hr	11,804 lb/hr	41 tpy	9,425 lb/hr	11,804 lb/hr	41,282 tpy			
N_2O		0.0177 lb/hr	0.0209 lb/hr	0.0777 tpy	0.0042 lb/hr	0.0047 lb/hr	0.0002 tpy	0.0026 lb/hr	0.0030 lb/hr	0.0001 tpy	0.0177 lb/hr	0.0209 lb/hr	0.0777 tpy	0.0221 lb/hr	0.0221 lb/hr	0.0001 tpy	0.0177 lb/hr	0.0221 lb/hr	0.0777 tpy			
TOC (Total)	4.45% by weight	6.7541 lb/hr	7.8549 lb/hr	29.5831 tpy	24.2039 lb/hr	27.4746 lb/hr	0.9440 tpy	14.6485 lb/hr	16.8790 lb/hr	0.5713 tpy	7.0500 lb/hr	45.6627 lb/hr	30.8788 tpy	8.8219 lb/hr	12.3506 lb/hr	0.0309 tpy	7.0516 lb/hr	45.6627 lb/hr	30.8860 tpy			
Methane	0.00% by weight	5.5262 lb/hr	6.4268 lb/hr	24.2046 tpy	18.9231 lb/hr	21.4801 lb/hr	0.7380 tpy	11.9853 lb/hr	13.8102 lb/hr	0.4674 tpy	5.7604 lb/hr	36.3614 lb/hr	25.2304 tpy	7.2180 lb/hr	10.1052 lb/hr	0.0253 tpy	5.7617 lb/hr	36.3614 lb/hr	25.2363 tpy			
Ethane	2.00% by weight	0.1889 lb/hr	0.2197 lb/hr	0.8275 tpy	0.6601 lb/hr	0.7493 lb/hr	0.0257 tpy	0.4097 lb/hr	0.4721 lb/hr	0.0160 tpy	0.1970 lb/hr	1.2580 lb/hr	0.8630 tpy	0.2468 lb/hr	0.3455 lb/hr	0.0009 tpy	0.1971 lb/hr	1.2580 lb/hr	0.8632 tpy			
VOC (Total)	23.00% by weight	1.0390 lb/hr	1.2084 lb/hr	4.5510 tpy	4.6207 lb/hr	5.2451 lb/hr	0.1802 tpy	2.2535 lb/hr	2.5966 lb/hr	0.0879 tpy	1.0925 lb/hr	8.0432 lb/hr	4.7854 tpy	1.3571 lb/hr	1.9000 lb/hr	0.0048 tpy	1.0928 lb/hr	8.0432 lb/hr	4.7865 tpy			
VOC (non-HAP)	2.97% by weight	0.6688 lb/hr	0.7778 lb/hr	2.9293 tpy	2.3603 lb/hr	2.6792 lb/hr	0.0921 tpy	1.4505 lb/hr	1.6713 lb/hr	0.0566 tpy	0.6978 lb/hr	4.4802 lb/hr	3.0562 tpy	0.8735 lb/hr	1.2229 lb/hr	0.0031 tpy	0.6979 lb/hr	4.4802 lb/hr	3.0569 tpy			
HAP (Total)	4.39E-01 by weight	0.3703 lb/hr	0.4306 lb/hr	1.6217 tpy	2.2605 lb/hr	2.5659 lb/hr	0.0882 tpy	0.8030 lb/hr	0.9253 lb/hr	0.0313 tpy	0.3948 lb/hr	3.5630 lb/hr	1.7292 tpy	0.4836 lb/hr	0.6771 lb/hr	0.0017 tpy	0.3949 lb/hr	3.5630 lb/hr	1.7296 tpy			
Acetaldehyde	40.00% by weight	1.54E-02 lb/hr	1.79E-02 lb/hr	6.75E-02 tpy	8.80E-02 lb/hr	9.99E-02 lb/hr	3.43E-03 tpy	3.34E-02 lb/hr	3.85E-02 lb/hr	1.30E-03 tpy	1.64E-02 lb/hr	1.41E-01 lb/hr	7.18E-02 tpy	2.01E-02 lb/hr	2.82E-02 lb/hr	7.05E-05 tpy	1.64E-02 lb/hr	1.41E-01 lb/hr	7.18E-02 tpy			
Acrolein	25.00% by weight	3.08E-03 lb/hr	3.59E-03 lb/hr	1.35E-02 tpy	1.41E-02 lb/hr	1.60E-02 lb/hr	5.49E-04 tpy	6.69E-03 lb/hr	7.71E-03 lb/hr	2.61E-04 tpy	3.25E-03 lb/hr	2.43E-02 lb/hr	1.42E-02 tpy	4.03E-03 lb/hr	5.64E-03 lb/hr	1.41E-05 tpy	3.25E-03 lb/hr	2.43E-02 lb/hr	1.42E-02 tpy			
Benzene	30.00% by weight	5.40E-03 lb/hr	6.28E-03 lb/hr	2.36E-02 tpy	2.64E-02 lb/hr	3.00E-02 lb/hr	1.03E-03 tpy	1.17E-02 lb/hr	1.35E-02 lb/hr	4.57E-04 tpy	5.70E-03 lb/hr	4.45E-02 lb/hr	2.50E-02 tpy	7.05E-03 lb/hr	9.87E-03 lb/hr	2.47E-05 tpy	5.70E-03 lb/hr	4.45E-02 lb/hr	2.50E-02 tpy			
Biphenyl	0.00% by weight																					
Butadiene (1,3-)	23.00% by weight	2.13E-04 lb/hr	2.47E-04 lb/hr	9.32E-04 tpy	9.46E-04 lb/hr	1.07E-03 lb/hr	3.69E-05 tpy	4.61E-04 lb/hr	5.32E-04 lb/hr	1.80E-05 tpy	2.24E-04 lb/hr	1.65E-03 lb/hr	9.80E-04 tpy	2.78E-04 lb/hr	3.89E-04 lb/hr	9.73E-07 tpy	2.24E-04 lb/hr	1.65E-03 lb/hr	9.80E-04 tpy			
Carbon Tetrachloride	0.00% by weight																					
Chlorobenzene	0.00% by weight																					
Chloroform	0.00% by weight																					
Dichloropropene (1,3-)	0.00% by weight																					
Ethylbenzene	23.00% by weight	1.58E-02 lb/hr	1.84E-02 lb/hr	6.93E-02 tpy	7.04E-02 lb/hr	7.99E-02 lb/hr	2.75E-03 tpy	3.43E-02 lb/hr	3.96E-02 lb/hr	1.34E-03 tpy	1.66E-02 lb/hr	1.23E-01 lb/hr	7.29E-02 tpy	2.07E-02 lb/hr	2.90E-02 lb/hr	7.24E-05 tpy	1.67E-02 lb/hr	1.23E-01 lb/hr	7.29E-02 tpy			
Ethylene Dibromide	23.00% by weight																					
Formaldehyde	50.00% by weight	2.28E-01 lb/hr	2.65E-01 lb/hr	9.99E-01 tpy	1.56E+00 lb/hr	1.77E+00 lb/hr	6.09E-02 tpy	4.95E-01 lb/hr	5.70E-01 lb/hr	1.93E-02 tpy	2.45E-01 lb/hr	2.39E+00 lb/hr	1.07E+00 tpy	2.98E-01 lb/hr	4.17E-01 lb/hr	1.04E-03 tpy	2.45E-01 lb/hr	2.39E+00 lb/hr	1.07E+00 tpy			
Hexane (n-)	23.00% by weight																					
Methanol	30.00% by weight																					
Methylene Chloride	0.00% by weight																					
Methylnaphthalene (2-)	23.00% by weight																					
Naphthalene	18.00% by weight	6.85E-04 lb/hr	7.97E-04 lb/hr	3.00E-03 tpy	2.86E-03 lb/hr	3.25E-03 lb/hr	1.12E-04 tpy	1.49E-03 lb/hr	1.71E-03 lb/hr	5.79E-05 tpy	7.19E-04 lb/hr	5.09E-03 lb/hr	3.15E-03 tpy	8.95E-04 lb/hr	1.25E-03 lb/hr	3.13E-06 tpy	7.19E-04 lb/hr	5.09E-03 lb/hr	3.15E-03 tpy			
PAH	23.00% by weight	1.09E-03 lb/hr	1.27E-03 lb/hr	4.77E-03 tpy	4.84E-03 lb/hr	5.49E-03 lb/hr	1.89E-04 tpy	2.36E-03 lb/hr	2.72E-03 lb/hr	9.21E-05 tpy	1.14E-03 lb/hr	8.43E-03 lb/hr	5.01E-03 tpy	1.42E-03 lb/hr	1.99E-03 lb/hr	4.98E-06 tpy	1.14E-03 lb/hr	8.43E-03 lb/hr	5.01E-03 tpy			
Phenol	23.00% by weight																					
Propylene Oxide	0.00% by weight	1.86E-02 lb/hr	2.17E-02 lb/hr	8.16E-02 tpy	6.38E-02 lb/hr	7.24E-02 lb/hr	2.49E-03 tpy	4.04E-02 lb/hr	4.66E-02 lb/hr	1.58E-03 tpy	1.94E-02 lb/hr	1.23E-01 lb/hr	8.51E-02 tpy	2.43E-02 lb/hr	3.41E-02 lb/hr	8.52E-05 tpy	1.94E-02 lb/hr	1.23E-01 lb/hr	8.51E-02 tpy			
Styrene	0.00% by weight																					
Tetrachloroethane (1,1,2,2-)	0.00% by weight																					
Toluene	40.00% by weight	5.01E-02 lb/hr	5.83E-02 lb/hr	2.20E-01 tpy	2.86E-01 lb/hr	3.25E-01 lb/hr	1.12E-02 tpy	1.09E-01 lb/hr	1.25E-01 lb/hr	4.24E-03 tpy	5.33E-02 lb/hr	4.60E-01 lb/hr	2.33E-01 tpy	6.55E-02 lb/hr	9.17E-02 lb/hr	2.29E-04 tpy	5.33E-02 lb/hr	4.60E-01 lb/hr	2.33E-01 tpy			
Trichloroethane (1,1,2-)	0.00% by weight																					
Trimethylpentane (2,2,4-)	23.00% by weight																					
Vinyl Chloride	0.00% by weight																					
Xylenes	23.00% by weight	3.17E-02 lb/hr	3.68E-02 lb/hr	1.39E-01 tpy	1.41E-01 lb/hr	1.60E-01 lb/hr	5.49E-03 tpy	6.87E-02 lb/hr	7.91E-02 lb/hr	2.68E-03 tpy	3.33E-02 lb/hr	2.45E-01 lb/hr	1.46E-01 tpy	4.14E-02 lb/hr	5.79E-02 lb/hr	1.45E-04 tpy	3.33E-02 lb/hr	2.45E-01 lb/hr	1.46E-01 tpy			

NOTES

1. See TABLE B-1Ai.
2. It's assumed that oxidation catalyst will be ineffective during startup events.
3. $CO2 = CO2_{uncontrolled} + CE_{CO\text{-}control\ efficiency} * CO_{uncontrolled} * (MW_{CO2}/MW_{CO}) = CO2_{uncontrolled} + CE_{CO\text{-}control\ efficiency} * CO_{uncontrolled} * (44.0095/28.0101)$.

ALL SCR+OxCat CONTROLLED EMISSION RATES
(REDUCTIONS FOR NOx, CO, VOC, & HAP)

TABLE B-1Ak
Gas-Fired Turbines
Maximum Emission Estimates
Normal Operations, Startup, Shutdown, and Low Temperature Operations
PTE - 100% Fuel Utilization at 100% Power Output

Make		GE																		
Model		MS3802D																		
Normal Operating Load		100%																		
Operations		Normal			Startup			Shutdown			Startup/Shutdown w/ Normal			Low Temperatures			Combined Operations		
Maximum Annual Combined Event Frequency		8,760 hrs/yr			42 hrs/yr			23 hrs/yr			8,760 hrs/yr			7 hrs/yr			8,760 hrs/yr		
Pollutant	Control Efficiency	Hourly		Maximum	Hourly		Maximum	Hourly		Maximum	Hourly		Maximum	Hourly		Maximum	Hourly		Maximum
		Average	Maximum	Annual	Average	Maximum	Annual	Average	Maximum	Annual	Average	Maximum	Annual	Average	Maximum	Annual	Average	Maximum	Annual
NO_X	86.41% by weight	8.8509 lb/hr	10.2935 lb/hr	38.7671 tpy	7.9617 lb/hr	9.0597 lb/hr	0.3105 tpy	5.3322 lb/hr	6.1442 lb/hr	0.2080 tpy	8.9036 lb/hr	16.9195 lb/hr	38.9979 tpy	10.7899 lb/hr	10.7899 lb/hr	0.0378 tpy	8.9052 lb/hr	16.9195 lb/hr	39.0047 tpy
CO		2.6941 lb/hr	3.1332 lb/hr	11.8003 tpy	369.0181 lb/hr	418.8829 lb/hr	14.3917 tpy	58.4310 lb/hr	67.3281 lb/hr	2.2788 tpy	6.4802 lb/hr	486.7332 lb/hr	28.3833 tpy	13.1374 lb/hr	13.1374 lb/hr	0.0460 tpy	6.4885 lb/hr	486.7332 lb/hr	28.4198 tpy
SO_2		0.2719 lb/hr	0.3203 lb/hr	1.1910 tpy	0.0637 lb/hr	0.0722 lb/hr	0.0025 tpy	0.0397 lb/hr	0.0456 lb/hr	0.0015 tpy	0.2719 lb/hr	0.3203 lb/hr	1.1910 tpy	0.3393 lb/hr	0.3393 lb/hr	0.0012 tpy	0.2720 lb/hr	0.3393 lb/hr	1.1913 tpy
$PM_{10/2.5}$		0.5279 lb/hr	0.6218 lb/hr	2.3120 tpy	0.1236 lb/hr	0.1402 lb/hr	0.0048 tpy	0.0770 lb/hr	0.0885 lb/hr	0.0030 tpy	0.5279 lb/hr	0.6218 lb/hr	2.3120 tpy	0.6586 lb/hr	0.6586 lb/hr	0.0023 tpy	0.5280 lb/hr	0.6586 lb/hr	2.3125 tpy
CO_{2-e}		9,567 lb/hr	11,268 lb/hr	41,902 tpy	2,677 lb/hr	3,039 lb/hr	104 tpy	1,949 lb/hr	2,242 lb/hr	76 tpy	9,567 lb/hr	11,268 lb/hr	41,902 tpy	11,991 lb/hr	12,063 lb/hr	42 tpy	9,569 lb/hr	12,719 lb/hr	41,911 tpy
CO_2		9,423 lb/hr	11,101 lb/hr	41,274 tpy	2,203 lb/hr	2,500 lb/hr	86 tpy	1,649 lb/hr	1,895 lb/hr	64 tpy	9,423 lb/hr	11,101 lb/hr	41,274 tpy	11,804 lb/hr	11,804 lb/hr	41 tpy	9,425 lb/hr	11,804 lb/hr	41,282 tpy
N_2O		0.0177 lb/hr	0.0209 lb/hr	0.0777 tpy	0.0042 lb/hr	0.0047 lb/hr	0.0002 tpy	0.0026 lb/hr	0.0030 lb/hr	0.0001 tpy	0.0177 lb/hr	0.0209 lb/hr	0.0777 tpy	0.0221 lb/hr	0.0221 lb/hr	0.0001 tpy	0.0177 lb/hr	0.0221 lb/hr	0.0777 tpy
TOC (Total)		6.7541 lb/hr	7.8549 lb/hr	29.5831 tpy	24.2039 lb/hr	27.4746 lb/hr	0.9440 tpy	14.6485 lb/hr	16.8790 lb/hr	0.5713 tpy	7.0500 lb/hr	45.6627 lb/hr	30.8788 tpy	8.8219 lb/hr	12.3506 lb/hr	0.0309 tpy	7.0516 lb/hr	45.6627 lb/hr	30.8860 tpy
Methane		5.5262 lb/hr	6.4268 lb/hr	24.2046 tpy	18.9231 lb/hr	21.4801 lb/hr	0.7380 tpy	11.9853 lb/hr	13.8102 lb/hr	0.4674 tpy	5.7604 lb/hr	36.3614 lb/hr	25.2304 tpy	7.2180 lb/hr	10.1052 lb/hr	0.0253 tpy	5.7617 lb/hr	36.3614 lb/hr	25.2363 tpy
Ethane		0.1889 lb/hr	0.2197 lb/hr	0.8275 tpy	0.6601 lb/hr	0.7493 lb/hr	0.0257 tpy	0.4097 lb/hr	0.4721 lb/hr	0.0160 tpy	0.1970 lb/hr	1.2580 lb/hr	0.8630 tpy	0.2468 lb/hr	0.3455 lb/hr	0.0009 tpy	0.1971 lb/hr	1.2580 lb/hr	0.8632 tpy
VOC (Total)		1.0390 lb/hr	1.2084 lb/hr	4.5510 tpy	4.6207 lb/hr	5.2451 lb/hr	0.1802 tpy	2.2535 lb/hr	2.5966 lb/hr	0.0879 tpy	1.0925 lb/hr	8.0432 lb/hr	4.7854 tpy	1.3571 lb/hr	1.9000 lb/hr	0.0048 tpy	1.0928 lb/hr	8.0432 lb/hr	4.7865 tpy
VOC (non-HAP)		0.6688 lb/hr	0.7778 lb/hr	2.9293 tpy	2.3603 lb/hr	2.6792 lb/hr	0.0921 tpy	1.4505 lb/hr	1.6713 lb/hr	0.0566 tpy	0.6978 lb/hr	4.4802 lb/hr	3.0562 tpy	0.8735 lb/hr	1.2229 lb/hr	0.0031 tpy	0.6979 lb/hr	4.4802 lb/hr	3.0569 tpy
HAP (Total)		0.3703 lb/hr	0.4306 lb/hr	1.6217 tpy	2.2605 lb/hr	2.5659 lb/hr	0.0882 tpy	0.8030 lb/hr	0.9253 lb/hr	0.0313 tpy	0.3948 lb/hr	3.5630 lb/hr	1.7292 tpy	0.4836 lb/hr	0.6771 lb/hr	0.0017 tpy	0.3949 lb/hr	3.5630 lb/hr	1.7296 tpy
Acetaldehyde		1.54E-02 lb/hr	1.79E-02 lb/hr	6.75E-02 tpy	8.80E-02 lb/hr	9.99E-02 lb/hr	3.43E-03 tpy	3.34E-02 lb/hr	3.85E-02 lb/hr	1.30E-03 tpy	1.64E-02 lb/hr	1.41E-01 lb/hr	7.18E-02 tpy	2.01E-02 lb/hr	2.82E-02 lb/hr	7.05E-05 tpy	1.64E-02 lb/hr	1.41E-01 lb/hr	7.18E-02 tpy
Acrolein		3.08E-03 lb/hr	3.59E-03 lb/hr	1.35E-02 tpy	1.41E-02 lb/hr	1.60E-02 lb/hr	5.49E-04 tpy	6.69E-03 lb/hr	7.71E-03 lb/hr	2.61E-04 tpy	3.25E-03 lb/hr	2.43E-02 lb/hr	1.42E-02 tpy	4.03E-03 lb/hr	5.64E-03 lb/hr	1.41E-05 tpy	3.25E-03 lb/hr	2.43E-02 lb/hr	1.42E-02 tpy
Benzene		5.40E-03 lb/hr	6.28E-03 lb/hr	2.36E-02 tpy	2.64E-02 lb/hr	3.00E-02 lb/hr	1.03E-03 tpy	1.17E-02 lb/hr	1.35E-02 lb/hr	4.57E-04 tpy	5.70E-03 lb/hr	4.45E-02 lb/hr	2.50E-02 tpy	7.05E-03 lb/hr	9.87E-03 lb/hr	2.47E-05 tpy	5.70E-03 lb/hr	4.45E-02 lb/hr	2.50E-02 tpy
Biphenyl																			
Butadiene (1,3-)		2.13E-04 lb/hr	2.47E-04 lb/hr	9.32E-04 tpy	9.46E-04 lb/hr	1.07E-03 lb/hr	3.69E-05 tpy	4.61E-04 lb/hr	5.32E-04 lb/hr	1.80E-05 tpy	2.24E-04 lb/hr	1.65E-03 lb/hr	9.80E-04 tpy	2.78E-04 lb/hr	3.89E-04 lb/hr	9.73E-07 tpy	2.24E-04 lb/hr	1.65E-03 lb/hr	9.80E-04 tpy
Carbon Tetrachloride																			
Chlorobenzene																			
Chloroform																			
Dichloropropene (1,3-)																			
Ethylbenzene		1.58E-02 lb/hr	1.84E-02 lb/hr	6.93E-02 tpy	7.04E-02 lb/hr	7.99E-02 lb/hr	2.75E-03 tpy	3.43E-02 lb/hr	3.96E-02 lb/hr	1.34E-03 tpy	1.66E-02 lb/hr	1.23E-01 lb/hr	7.29E-02 tpy	2.07E-02 lb/hr	2.90E-02 lb/hr	7.24E-05 tpy	1.67E-02 lb/hr	1.23E-01 lb/hr	7.29E-02 tpy
Ethylene Dibromide																			
Formaldehyde		2.28E-01 lb/hr	2.65E-01 lb/hr	9.99E-01 tpy	1.56E+00 lb/hr	1.77E+00 lb/hr	6.09E-02 tpy	4.95E-01 lb/hr	5.70E-01 lb/hr	1.93E-02 tpy	2.45E-01 lb/hr	2.39E+00 lb/hr	1.07E+00 tpy	2.98E-01 lb/hr	4.17E-01 lb/hr	1.04E-03 tpy	2.45E-01 lb/hr	2.39E+00 lb/hr	1.07E+00 tpy
Hexane (n-)																			
Methanol																			
Methylene Chloride																			
Methylnaphthalene (2-)																			
Naphthalene		6.85E-04 lb/hr	7.97E-04 lb/hr	3.00E-03 tpy	2.86E-03 lb/hr	3.25E-03 lb/hr	1.12E-04 tpy	1.49E-03 lb/hr	1.71E-03 lb/hr	5.79E-05 tpy	7.19E-04 lb/hr	5.09E-03 lb/hr	3.15E-03 tpy	8.95E-04 lb/hr	1.25E-03 lb/hr	3.13E-06 tpy	7.19E-04 lb/hr	5.09E-03 lb/hr	3.15E-03 tpy
PAH		1.09E-03 lb/hr	1.27E-03 lb/hr	4.77E-03 tpy	4.84E-03 lb/hr	5.49E-03 lb/hr	1.89E-04 tpy	2.36E-03 lb/hr	2.72E-03 lb/hr	9.21E-05 tpy	1.14E-03 lb/hr	8.43E-03 lb/hr	5.01E-03 tpy	1.42E-03 lb/hr	1.99E-03 lb/hr	4.98E-06 tpy	1.14E-03 lb/hr	8.43E-03 lb/hr	5.01E-03 tpy
Phenol																			
Propylene Oxide		1.86E-02 lb/hr	2.17E-02 lb/hr	8.16E-02 tpy	6.38E-02 lb/hr	7.24E-02 lb/hr	2.49E-03 tpy	4.04E-02 lb/hr	4.66E-02 lb/hr	1.58E-03 tpy	1.94E-02 lb/hr	1.23E-01 lb/hr	8.51E-02 tpy	2.43E-02 lb/hr	3.41E-02 lb/hr	8.52E-05 tpy	1.94E-02 lb/hr	1.23E-01 lb/hr	8.51E-02 tpy
Styrene																			
Tetrachloroethane (1,1,2,2-)																			
Toluene		5.01E-02 lb/hr	5.83E-02 lb/hr	2.20E-01 tpy	2.86E-01 lb/hr	3.25E-01 lb/hr	1.12E-02 tpy	1.09E-01 lb/hr	1.25E-01 lb/hr	4.24E-03 tpy	5.33E-02 lb/hr	4.60E-01 lb/hr	2.33E-01 tpy	6.55E-02 lb/hr	9.17E-02 lb/hr	2.29E-04 tpy	5.33E-02 lb/hr	4.60E-01 lb/hr	2.33E-01 tpy
Trichloroethane (1,1,2-)																			
Trimethylpentane (2,2,4-)																			
Vinyl Chloride																			
Xylenes		3.17E-02 lb/hr	3.68E-02 lb/hr	1.39E-01 tpy	1.41E-01 lb/hr	1.60E-01 lb/hr	5.49E-03 tpy	6.87E-02 lb/hr	7.91E-02 lb/hr	2.68E-03 tpy	3.33E-02 lb/hr	2.45E-01 lb/hr	1.46E-01 tpy	4.14E-02 lb/hr	5.79E-02 lb/hr	1.45E-04 tpy	3.33E-02 lb/hr	2.45E-01 lb/hr	1.46E-01 tpy

NOTES

1. See TABLE B-1Aj.
2. It's assumed that SCR will be ineffective during startup and shutdown events.

GE FRAME 5 DATA

TABLE B-1Bb
Manufacturer's Operating and Emissions Data
Normal Operations
PTE - 100% Fuel Utilization at 100% Power Output

Parameters			Curve Fitting			Vendor Data						
Ambient	Temperature	°F	-20.00	-20.00	54.86	-0.01	0.01	20.00	40.00	60.00	80.00	100.00
	Altitude	ft	0	0	0	0	0	0	0	0	0	0
	Pressure	psia	14.702	14.702	14.702	14.702	14.702	14.702	14.702	14.702	14.702	14.702
	Relative Humidity	%	60%	60%	60%	60%	60%	60%	60%	60%	60%	60%
	Specific Humidity	$lb_{H2O}/lb_{Dry\ Air}$	0.0003	0.0003	0.0048	0.0006	0.0006	0.0013	0.0028	0.0058	0.0124	0.0262
Fuel	Lower Heating Value (LHV)	BTU/scf	923.1	923.1	923.1	923.1	923.1	923.1	923.1	923.1	923.1	923.1
	Higher Heating Value (HHV)	BTU/scf	1,025.7	1,025.7	1,025.7	1,025.7	1,025.7	1,025.7	1,025.7	1,025.7	1,025.7	1,025.7
Turbine	Net Output Power	hp	27,093	27,093	21,509	25,804	25,804	24,517	22,868	21,031	19,183	17,497
	Fuel Consumption	scf/hr	218,566	218,566	185,599	211,142	211,142	203,726	192,930	182,994	171,977	159,641
	Heat Input at LHV	MMBTU/hr	201.76	201.76	171.33	194.91	194.91	188.06	178.09	168.92	158.75	147.36
	Heat Input at HHV	MMBTU/hr	224.18	224.18	190.36	216.56	216.56	208.96	197.88	187.69	176.39	163.74
	Heat Rate at LHV	BTU/hp-hr	7,447	7,447	7,965	7,553	7,553	7,671	7,788	8,032	8,276	8,422
	Heat Rate at HHV	BTU/hp-hr	8,274	8,274	8,850	8,392	8,392	8,523	8,653	8,924	9,195	9,358
Exhaust	Temperature	°F	557	557	625	574	574	590	609	630	649	662
	Water Fraction	%, by vol	4.76%	4.76%	5.50%	4.86%	4.86%	4.96%	5.18%	5.65%	6.52%	8.12%
	Non-Water Fraction	%, by vol	95.24%	95.24%	94.50%	95.14%	95.14%	95.04%	94.82%	94.35%	93.48%	91.88%
	O_2 Content	%, by vol (dry)	17.19%	17.19%	17.28%	17.20%	17.20%	17.21%	17.24%	17.30%	17.37%	17.47%
	Molecular Weight	lb/lb-mol	28.68	28.68	28.58	28.66	28.66	28.64	28.62	28.56	28.46	28.28
	Flow Rate	lb/hr	823,901	823,901	704,884	791,741	791,741	759,613	728,018	696,956	666,426	636,430
		scfm (1 atm, 68°F)	184,890	184,890	158,520	177,594	177,594	170,534	163,523	156,847	150,613	144,745
		acfm	356,162	356,162	325,574	347,655	347,655	339,157	330,946	323,722	316,224	307,491
NO_X Emissions		lb/lb-mol	46.01	46.01	46.01	46.01	46.01	46.01	46.01	46.01	46.01	46.01
		ppmvd, 15% O_2	170	170	170	170	170	170	170	170	170	170
		ppmvw	101.85	101.85	98.49	101.43	101.43	101.01	99.88	97.91	94.96	90.77
		lb/hr	134.62	134.62	111.77	128.92	128.92	123.26	116.89	109.93	102.31	93.98
CO Emissions		lb/lb-mol	28.01	28.01	28.01	28.01	28.01	28.01	28.01	28.01	28.01	28.01
		ppmvd, 15% O_2	200	200	50	200	50	50	50	50	50	50
		ppmvw	119.82	119.82	28.97	119.33	29.83	29.71	29.38	28.80	27.93	26.70
		lb/hr	96.42	96.42	20.01	92.33	23.08	22.07	20.93	19.68	18.32	16.83
UHC Emissions		lb/lb-mol	18.37	18.37	18.37	18.37	18.37	18.37	18.37	18.37	18.37	18.37
		ppmvd, 15% O_2	75	50	50	50	50	50	50	50	50	50
		ppmvw	44.93	29.96	28.97	29.83	29.83	29.71	29.38	28.80	27.93	26.70
		lb/hr	23.71	15.81	13.13	15.14	15.14	14.48	13.73	12.91	12.02	11.04

NOTES

1. Operating and emissions data was provided by the manufacturer for the following ambient temperatures: 0°F, 20°F, 40°F, 60°F, 80°F, and 100°F.
   Specific Humidity is estimate using curve fitting equation: $6.15E\text{-}04e^{3.75E\text{-}02T}$
   All other parameter values estimated using cubic spline.
2. Pollutant concentrations (ppmvd at 15% O2) for 0°F and -20°F based on information provided in a document published by the manufacturer.
3. Ambient pressure and humidity will vary. However, it is believed that any variation would not affect compliance with the proposed emission representations.
4. The heating value of the natural gas used to fuel the turbine will vary. However, it is believed that any variation would not affect compliance with the proposed emission representations.

TABLE B-1Bc
Gas-Fired Turbines
Emission Estimates
Normal Operations
PTE - 100% Fuel Utilization at 100% Power Output

Make	GE				
Model	MS5181R				
Normal Operating Load	100%				
Fuel	Natural Gas				
Fuel Higher Heating Value (HHV)	1,020 BTU/scf			1,020 BTU/scf	
Ambient Temperature	54.86 °F			0.01 °F	
Power Output	21,509 bhp (mech.)			25,804 bhp (mech.)	
	16,039 kW (elec.)			19,243 kW (elec.)	
Heat Rate at HHV	8,850 BTU/hp-hr			8,392 BTU/hp-hr	
Operating Hours	8,760 hrs/yr				
Fuel Consumption	186,630 scfh			212,315 scfh	
	1,634.875 MMscf/yr				
Heat Input at HHV	190.36 MMBTU/hr			216.56 MMBTU/hr	
	1,667,573 MMBTU/yr	Average	Maximum		Maximum
NO_X	598.89 lb/MMscf	111.7714 lb/hr	489.5586 tpy	607.21 lb/MMscf	128.9202 lb/hr
CO	107.23 lb/MMscf	20.0130 lb/hr	87.6570 tpy	108.72 lb/MMscf	23.0836 lb/hr
SO_2	3.47 lb/MMscf	0.6472 lb/hr	2.8349 tpy	3.47 lb/MMscf	0.7363 lb/hr
$PM_{10/2.5}$	6.73 lb/MMscf	1.2564 lb/hr	5.5030 tpy	6.73 lb/MMscf	1.4293 lb/hr
$CO_{2\text{-}e}$	121,460 lb/MMscf	22,668 lb/hr	99,286 tpy	121,479 lb/MMscf	25,792 lb/hr
CO_2	120,017 lb/MMscf	22,399 lb/hr	98,107 tpy	120,017 lb/MMscf	25,482 lb/hr
N_2O	0.23 lb/MMscf	0.0422 lb/hr	0.1849 tpy	0.23 lb/MMscf	0.0480 lb/hr
TOC (Total)	70.33 lb/MMscf	13.1266 lb/hr	57.4943 tpy	71.31 lb/MMscf	15.1405 lb/hr
Methane	54.99 lb/MMscf	10.2626 lb/hr	44.9501 tpy	55.75 lb/MMscf	11.8371 lb/hr
Ethane	1.92 lb/MMscf	0.3580 lb/hr	1.5680 tpy	1.94 lb/MMscf	0.4129 lb/hr
VOC (Total)	13.43 lb/MMscf	2.5060 lb/hr	10.9762 tpy	13.61 lb/MMscf	2.8905 lb/hr
VOC (non-HAP)	6.86 lb/MMscf	1.2800 lb/hr	5.6066 tpy	6.95 lb/MMscf	1.4764 lb/hr
HAP (Total)	6.57 lb/MMscf	1.2259 lb/hr	5.3696 tpy	6.66 lb/MMscf	1.4140 lb/hr
Acetaldehyde	2.56E-01 lb/MMscf	0.0477 lb/hr	0.2091 tpy	2.59E-01 lb/MMscf	0.0551 lb/hr
Acrolein	4.09E-02 lb/MMscf	0.0076 lb/hr	0.0335 tpy	4.15E-02 lb/MMscf	0.0088 lb/hr
Benzene	7.67E-02 lb/MMscf	0.0143 lb/hr	0.0627 tpy	7.78E-02 lb/MMscf	0.0165 lb/hr
Biphenyl					
Butadiene (1,3-)	2.75E-03 lb/MMscf	0.0005 lb/hr	0.0022 tpy	2.79E-03 lb/MMscf	0.0006 lb/hr
Carbon Tetrachloride					
Chlorobenzene					
Chloroform					
Dichloropropene (1,3-)					
Ethylbenzene	2.05E-01 lb/MMscf	0.0382 lb/hr	0.1673 tpy	2.07E-01 lb/MMscf	0.0440 lb/hr
Ethylene Dibromide					
Formaldehyde	4.54E+00 lb/MMscf	0.8473 lb/hr	3.7110 tpy	4.60E+00 lb/MMscf	0.9773 lb/hr
Hexane (n-)					
Methanol					
Methylene Chloride					
Methylnaphthalene (2-)					
Naphthalene	8.31E-03 lb/MMscf	0.0016 lb/hr	0.0068 tpy	8.43E-03 lb/MMscf	0.0018 lb/hr
PAH	1.41E-02 lb/MMscf	0.0026 lb/hr	0.0115 tpy	1.43E-02 lb/MMscf	0.0030 lb/hr
Phenol					
Propylene Oxide	1.85E-01 lb/MMscf	0.0346 lb/hr	0.1516 tpy	1.88E-01 lb/MMscf	0.0399 lb/hr
Styrene					
Tetrachloroethane (1,1,2,2-)					
Toluene	8.31E-01 lb/MMscf	0.1551 lb/hr	0.6795 tpy	8.43E-01 lb/MMscf	0.1789 lb/hr
Trichloroethane (1,1,2-)					
Trimethylpentane (2,2,4-)					
Vinyl Chloride					
Xylenes	4.09E-01 lb/MMscf	0.0764 lb/hr	0.3345 tpy	4.15E-01 lb/MMscf	0.0881 lb/hr

NOTES

1. Fuel higher heating value selected to correspond to AP-42 emissions factors.
2. Manufacturer provided operating and emissions data (TABLE B-1Bb).
3. The annual emissions are based on a representative annual average ambient temperature (TABLE B-1Ba).
   Maximum hourly emissions are based on an ambient temperature of 0°F.
4. NOX, CO, and TOC (Total) emission factor based on Vendor Guarantee.
5. CO2 and N2O emission factors based on 40 CFR 98, Subpart C, Table C-1 and 40 CFR 98, Subpart C, Table C-2, respectively.
6. SO2 emission factor based on AP-42, Section 3.1 (Revised 4/00), Table 3.1-2a.
7. PM10/2.5 emission factor based on AP-42, Section 3.1 (Revised 4/00), Table 3.1-2a, not Solar's PIL 171 dated 06/01/2012 (173% greater).
8. Methane, Ethane, and VOC (Total) emissions based on scaling of AP-42, Section 3.1 (Revised 4/00), Table 3.1-2a using Vendor Guarantee.
   Speciated VOC (non-HAP) emissions based on scaling of AP-42, Section 3.1 (Revised 4/00), Table 3.1-2a using Vendor Guarantee.
   $EF_{Scaled} = (EF_{AP42})(EF_{TOC}/EF_{TOC\text{-}AP42})$

TABLE B-1Bd
Manufacturer's Operating and Emissions Data
Startup/Shutdown Step 2: Iginition-Idle
PTE - 100% Fuel Utilization at 100% Power Output

Parameters			Interpolated	Vendor Data					
Ambient	Temperature	°F	54.86	0.01	20.00	40.00	60.00	80.00	100.00
	Altitude	ft	0	0	0	0	0	0	0
	Pressure	psia	14.702	14.702	14.702	14.702	14.702	14.702	14.702
	Relative Humidity	%	60%	60%	60%	60%	60%	60%	60%
	Specific Humidity	$lb_{H2O}/lb_{Dry\ Air}$	0.0048	0.0006	0.0013	0.0028	0.0058	0.0124	0.0262
Fuel	Lower Heating Value (LHV)	BTU/scf	923.1	923.1	923.1	923.1	923.1	923.1	923.1
	Higher Heating Value (HHV)	BTU/scf	1,025.7	1,025.7	1,025.7	1,025.7	1,025.7	1,025.7	1,025.7
Turbine	Net Output Power	hp	2,151	2,580	2,452	2,287	2,103	1,918	1,750
	Fuel Consumption	scf/hr	64,996	68,875	66,827	65,408	64,926	64,544	63,517
	Heat Input at LHV	MMBTU/hr	60.00	63.58	61.69	60.38	59.93	59.58	58.63
	Heat Input at HHV	MMBTU/hr	66.66	70.64	68.54	67.09	66.59	66.20	65.15
	Heat Rate at LHV	BTU/hp-hr	27,891	24,639	25,161	26,403	28,497	31,059	33,510
	Heat Rate at HHV	BTU/hp-hr	30,990	27,376	27,957	29,337	31,663	34,510	37,234
Exhaust	Temperature	°F	518	478	491	505	524	544	558
	Water Fraction	%, by vol	3.59%	2.86%	2.99%	3.24%	3.75%	4.72%	6.44%
	Non-Water Fraction	%, by vol	96.41%	97.14%	97.01%	96.76%	96.25%	95.28%	93.56%
	O_2 Content	%, by vol (dry)	19.30%	19.27%	19.26%	19.27%	19.31%	19.30%	19.31%
	Molecular Weight	lb/lb-mol	28.70	28.78	28.77	28.74	28.68	28.57	28.38
	Flow Rate	lb/hr	382,445	402,631	387,113	382,425	382,468	381,430	379,945
		scfm (1 atm, 68°F)	85,654	89,922	86,526	85,573	85,710	85,862	86,064
		acfm	158,652	159,769	155,761	156,277	159,611	163,138	165,892
NO_X Emissions		lb/lb-mol	46.01	46.01	46.01	46.01	46.01	46.01	46.01
		ppmvd, 15% O_2	110	110	110	110	110	110	110
		ppmvw	28.76	29.52	29.65	29.38	28.61	28.50	27.75
		lb/hr	17.63	19.00	18.36	17.99	17.55	17.51	17.10
CO Emissions		lb/lb-mol	28.01	28.01	28.01	28.01	28.01	28.01	28.01
		ppmvd, 15% O_2	10,000	10,000	10,000	10,000	10,000	10,000	10,000
		ppmvw	2,614.42	2,683.89	2,695.88	2,671.28	2,600.58	2,591.24	2,523.15
		lb/hr	975.87	1,051.70	1,016.04	995.62	971.40	969.00	946.16
UHC Emissions		lb/lb-mol	18.37	18.37	18.37	18.37	18.37	18.37	18.37
		ppmvd, 15% O_2	1,000	1,000	1,000	1,000	1,000	1,000	1,000
		ppmvw	261.44	268.39	269.59	267.13	260.06	259.12	252.32
		lb/hr	64.01	68.98	66.64	65.30	63.71	63.56	62.06

NOTES

1. Footnotes 1 thru 4 of TABLE B-1Bb.

TABLE B-1Be
Manufacturer's Operating and Emissions Data
Startup/Shutdown Step 3: Loading/Thermal Stabilization
PTE - 100% Fuel Utilization at 100% Power Output

Parameters			Interpolated	Vendor Data					
Ambient	Temperature	°F	54.86	0.01	20.00	40.00	60.00	80.00	100.00
	Altitude	ft	0	0	0	0	0	0	0
	Pressure	psia	14.702	14.702	14.702	14.702	14.702	14.702	14.702
	Relative Humidity	%	60%	60%	60%	60%	60%	60%	60%
	Specific Humidity	$lb_{H2O}/lb_{Dry\ Air}$	0.0048	0.0006	0.0013	0.0028	0.0058	0.0124	0.0262
Fuel	Lower Heating Value (LHV)	BTU/scf	923.1	923.1	923.1	923.1	923.1	923.1	923.1
	Higher Heating Value (HHV)	BTU/scf	1,025.7	1,025.7	1,025.7	1,025.7	1,025.7	1,025.7	1,025.7
Turbine	Net Output Power	hp	6,453	7,741	7,355	6,860	6,309	5,755	5,249
	Fuel Consumption	scf/hr	90,797	100,738	96,831	92,824	90,169	87,280	83,731
	Heat Input at LHV	MMBTU/hr	83.81	92.99	89.38	85.69	83.24	80.57	77.29
	Heat Input at HHV	MMBTU/hr	93.13	103.32	99.32	95.21	92.48	89.52	85.88
	Heat Rate at LHV	BTU/hp-hr	12,988	12,012	12,153	12,490	13,192	14,000	14,725
	Heat Rate at HHV	BTU/hp-hr	14,431	13,347	13,503	13,878	14,658	15,556	16,361
Exhaust	Temperature	°F	569	534	545	556	574	591	601
	Water Fraction	%, by vol	4.31%	3.69%	3.80%	4.00%	4.46%	5.37%	7.02%
	Non-Water Fraction	%, by vol	95.69%	96.31%	96.20%	96.00%	95.54%	94.63%	92.98%
	O_2 Content	%, by vol (dry)	18.54%	18.41%	18.44%	18.48%	18.56%	18.61%	18.68%
	Molecular Weight	lb/lb-mol	28.66	28.73	28.72	28.69	28.64	28.53	28.35
	Flow Rate	lb/hr	429,840	463,287	444,108	433,607	428,588	422,383	416,955
		scfm (1 atm, 68°F)	96,431	103,705	99,418	97,196	96,199	95,209	94,607
		acfm	187,832	195,182	189,120	187,023	188,264	189,489	190,035
NO_X Emissions		lb/lb-mol	46.01	46.01	46.01	46.01	46.01	46.01	46.01
		ppmvd, 15% O_2	125	125	125	125	125	125	125
		ppmvw	47.83	50.84	50.12	49.15	47.37	45.85	43.75
		lb/hr	33.01	37.72	35.66	34.18	32.62	31.23	29.61
CO Emissions		lb/lb-mol	28.01	28.01	28.01	28.01	28.01	28.01	28.01
		ppmvd, 15% O_2	9,000	9,000	9,000	9,000	9,000	9,000	9,000
		ppmvw	3,443.64	3,660.63	3,608.75	3,538.71	3,410.72	3,301.22	3,150.28
		lb/hr	1,446.80	1,653.42	1,563.05	1,498.04	1,429.64	1,368.96	1,297.77
UHC Emissions		lb/lb-mol	18.37	18.37	18.37	18.37	18.37	18.37	18.37
		ppmvd, 15% O_2	900	900	900	900	900	900	900
		ppmvw	344.36	366.06	360.87	353.87	341.07	330.12	315.03
		lb/hr	94.90	108.45	102.52	98.26	93.77	89.79	85.12

NOTES

1. Footnotes 1 thru 4 of TABLE B-1Bb.

TABLE B-1Bf
Gas-Fired Turbines
Emission Estimates
Startup
PTE - 100% Fuel Utilization at 100% Power Output

Make	GE				
Model	MS5181R				
Fuel	Natural Gas				
Ambient Temperature	54.86 °F			0.01 °F	
Maximum Event Frequency		2 events/hr	104 events/yr		2 events/hr
Maximum Startup Time		90.00 min/hr	78.00 hrs/yr		90.00 min/hr
Fuel Consumption		123,295 scf/hr	6.41 MMscf/yr		135,176 scf/hr
		Average	Maximum		Maximum
NO_X	20.9121 lbs/event	41.8242 lb/hr	1.0874 tpy	23.6116 lbs/event	47.2232 lb/hr
CO	967.3695 lbs/event	1,934.7390 lb/hr	50.3032 tpy	1089.6378 lbs/event	2,179.2757 lb/hr
SO_2	0.2138 lbs/event	0.4276 lb/hr	0.0111 tpy	0.2344 lbs/event	0.4688 lb/hr
$PM_{10/2.5}$	0.4150 lbs/event	0.8300 lb/hr	0.0216 tpy	0.4550 lbs/event	0.9100 lb/hr
CO_{2-e}	8,643 lbs/event	17,286 lb/hr	449 tpy	9,513 lbs/event	19,026 lb/hr
CO_2	7,399 lbs/event	14,797 lb/hr	385 tpy	8,112 lbs/event	16,223 lb/hr
N_2O	0.0139 lbs/event	0.0279 lb/hr	0.0007 tpy	0.0153 lbs/event	0.0306 lb/hr
TOC (Total)	63.4498 lbs/event	126.8997 lb/hr	3.2994 tpy	71.4694 lbs/event	142.9388 lb/hr
Methane	49.6062 lbs/event	99.2125 lb/hr	2.5795 tpy	55.8761 lbs/event	111.7522 lb/hr
Ethane	1.7305 lbs/event	3.4609 lb/hr	0.0900 tpy	1.9492 lbs/event	3.8983 lb/hr
VOC (Total)	12.1132 lbs/event	24.2263 lb/hr	0.6299 tpy	13.6442 lbs/event	27.2883 lb/hr
VOC (non-HAP)	6.1873 lbs/event	12.3747 lb/hr	0.3217 tpy	6.9694 lbs/event	13.9387 lb/hr
HAP (Total)	5.9258 lbs/event	11.8516 lb/hr	0.3081 tpy	6.6748 lbs/event	13.3496 lb/hr
Acetaldehyde	2.31E-01 lbs/event	0.4615 lb/hr	0.0120 tpy	2.60E-01 lbs/event	0.5198 lb/hr
Acrolein	3.69E-02 lbs/event	0.0738 lb/hr	0.0019 tpy	4.16E-02 lbs/event	0.0832 lb/hr
Benzene	6.92E-02 lbs/event	0.1384 lb/hr	0.0036 tpy	7.80E-02 lbs/event	0.1559 lb/hr
Biphenyl					
Butadiene (1,3-)	2.48E-03 lbs/event	0.0050 lb/hr	0.0001 tpy	2.79E-03 lbs/event	0.0056 lb/hr
Carbon Tetrachloride					
Chlorobenzene					
Chloroform					
Dichloropropene (1,3-)					
Ethylbenzene	1.85E-01 lbs/event	0.3692 lb/hr	0.0096 tpy	2.08E-01 lbs/event	0.4158 lb/hr
Ethylene Dibromide					
Formaldehyde	4.10E+00 lbs/event	8.1908 lb/hr	0.2130 tpy	4.61E+00 lbs/event	9.2261 lb/hr
Hexane (n-)					
Methanol					
Methylene Chloride					
Methylnaphthalene (2-)					
Naphthalene	7.50E-03 lbs/event	0.0150 lb/hr	0.0004 tpy	8.45E-03 lbs/event	0.0169 lb/hr
PAH	1.27E-02 lbs/event	0.0254 lb/hr	0.0007 tpy	1.43E-02 lbs/event	0.0286 lb/hr
Phenol					
Propylene Oxide	1.67E-01 lbs/event	0.3346 lb/hr	0.0087 tpy	1.88E-01 lbs/event	0.3768 lb/hr
Styrene					
Tetrachloroethane (1,1,2,2-)					
Toluene	7.50E-01 lbs/event	1.4997 lb/hr	0.0390 tpy	8.45E-01 lbs/event	1.6893 lb/hr
Trichloroethane (1,1,2-)					
Trimethylpentane (2,2,4-)					
Vinyl Chloride					
Xylenes	3.69E-01 lbs/event	0.7383 lb/hr	0.0192 tpy	4.16E-01 lbs/event	0.8316 lb/hr

NOTES

1. Emissions of NOx, CO, and UHC are estimated using information provided in TABLE B-1Bd and TABLE B-1Be.

	54.86 °F		0.01 °F	
	Step 2	Step 3	Step 2	Step 3
Duration	15.00 min/event	30.00 min/event	15.00 min/event	30.00 min/event
NO_X	4.4082 lb/event	16.5039 lb/event	4.7508 lb/event	18.8608 lb/event
CO	243.9678 lb/event	723.4017 lb/event	262.9261 lb/event	826.7118 lb/event
UHC	16.0019 lb/event	47.4480 lb/event	17.2453 lb/event	54.2241 lb/event
Fuel	16,249 scf/event	45,398 scf/event	17,219 scf/event	50,369 scf/event

2. Footnotes 4 thru 8 of TABLE B-1Bc.
3. The frequency of startup events was provided by Technical Services.

TABLE B-1Bg
Gas-Fired Turbines
Emission Estimates
Shutdown
PTE - 100% Fuel Utilization at 100% Power Output

Make	GE				
Model	MS5181R				
Fuel	Natural Gas				
Ambient Temperature	54.86 °F			0.01 °F	
Maximum Event Frequency		2 events/hr	104 events/yr		2 events/hr
Maximum Startup Time		85.00 min/hr	73.67 hrs/yr		85.00 min/hr
Fuel Consumption		128,629 scf/hr	6.69 MMscf/yr		142,713 scf/hr
		Average	Maximum		Maximum
NO_X	23.3805 lbs/event	46.7610 lb/hr	1.2158 tpy	26.7195 lbs/event	53.4390 lb/hr
CO	1,024.8191 lbs/event	2,049.6383 lb/hr	53.2906 tpy	1171.1750 lbs/event	2,342.3500 lb/hr
SO_2	0.2230 lbs/event	0.4461 lb/hr	0.0116 tpy	0.2475 lbs/event	0.4949 lb/hr
$PM_{10/2.5}$	0.4330 lbs/event	0.8659 lb/hr	0.0225 tpy	0.4804 lbs/event	0.9607 lb/hr
CO_{2-e}	9,037 lbs/event	18,074 lb/hr	470 tpy	10,070 lbs/event	20,140 lb/hr
CO_2	7,719 lbs/event	15,438 lb/hr	401 tpy	8,564 lbs/event	17,128 lb/hr
N_2O	0.0145 lbs/event	0.0291 lb/hr	0.0008 tpy	0.0161 lbs/event	0.0323 lb/hr
TOC (Total)	67.2180 lbs/event	134.4359 lb/hr	3.4953 tpy	76.8175 lbs/event	153.6349 lb/hr
Methane	52.5522 lbs/event	105.1044 lb/hr	2.7327 tpy	60.0573 lbs/event	120.1146 lb/hr
Ethane	1.8332 lbs/event	3.6664 lb/hr	0.0953 tpy	2.0950 lbs/event	4.1900 lb/hr
VOC (Total)	12.8325 lbs/event	25.6650 lb/hr	0.6673 tpy	14.6651 lbs/event	29.3303 lb/hr
VOC (non-HAP)	6.5548 lbs/event	13.1096 lb/hr	0.3408 tpy	7.4909 lbs/event	14.9818 lb/hr
HAP (Total)	6.2777 lbs/event	12.5555 lb/hr	0.3264 tpy	7.1743 lbs/event	14.3485 lb/hr
Acetaldehyde	2.44E-01 lbs/event	0.4889 lb/hr	0.0127 tpy	2.79E-01 lbs/event	0.5587 lb/hr
Acrolein	3.91E-02 lbs/event	0.0782 lb/hr	0.0020 tpy	4.47E-02 lbs/event	0.0894 lb/hr
Benzene	7.33E-02 lbs/event	0.1467 lb/hr	0.0038 tpy	8.38E-02 lbs/event	0.1676 lb/hr
Biphenyl					
Butadiene (1,3-)	2.63E-03 lbs/event	0.0053 lb/hr	0.0001 tpy	3.00E-03 lbs/event	0.0060 lb/hr
Carbon Tetrachloride					
Chlorobenzene					
Chloroform					
Dichloropropene (1,3-)					
Ethylbenzene	1.96E-01 lbs/event	0.3911 lb/hr	0.0102 tpy	2.23E-01 lbs/event	0.4469 lb/hr
Ethylene Dibromide					
Formaldehyde	4.34E+00 lbs/event	8.6772 lb/hr	0.2256 tpy	4.96E+00 lbs/event	9.9164 lb/hr
Hexane (n-)					
Methanol					
Methylene Chloride					
Methylnaphthalene (2-)					
Naphthalene	7.94E-03 lbs/event	0.0159 lb/hr	0.0004 tpy	9.08E-03 lbs/event	0.0182 lb/hr
PAH	1.34E-02 lbs/event	0.0269 lb/hr	0.0007 tpy	1.54E-02 lbs/event	0.0307 lb/hr
Phenol					
Propylene Oxide	1.77E-01 lbs/event	0.3544 lb/hr	0.0092 tpy	2.03E-01 lbs/event	0.4050 lb/hr
Styrene					
Tetrachloroethane (1,1,2,2-)					
Toluene	7.94E-01 lbs/event	1.5888 lb/hr	0.0413 tpy	9.08E-01 lbs/event	1.8157 lb/hr
Trichloroethane (1,1,2-)					
Trimethylpentane (2,2,4-)					
Vinyl Chloride					
Xylenes	3.91E-01 lbs/event	0.7822 lb/hr	0.0203 tpy	4.47E-01 lbs/event	0.8939 lb/hr

NOTES

1. Emissions of NOx, CO, and UHC are estimated using information provided in TABLE B-1Bd and TABLE B-1Be.

	54.86 °F		0.01 °F	
	Step 2	Step 3	Step 2	Step 3
Duration	0.00 min/event	42.50 min/event	0.00 min/event	42.50 min/event
NO_X	0.0000 lb/event	23.3805 lb/event	0.0000 lb/event	26.7195 lb/event
CO	0.0000 lb/event	1024.8191 lb/event	0.0000 lb/event	1171.1750 lb/event
UHC	0.0000 lb/event	67.2180 lb/event	0.0000 lb/event	76.8175 lb/event
Fuel	0 scf/event	64,314 scf/event	0 scf/event	71,356 scf/event

2. Footnotes 4 thru 8 of TABLE B-1Bc.
3. The frequency of startup events was provided by Technical Services.

TABLE B-1Bh
Gas-Fired Turbines
Emission Estimates
Low Temperatures
PTE - 100% Fuel Utilization at 100% Power Output

Make	GE					
Model	MS5181R					
Normal Operating Load	100%					
Fuel	Natural Gas					
Fuel Higher Heating Value (HHV)	1,020 BTU/scf			1,020 BTU/scf		
Ambient Temperature	-20.00 °F			-20.00 °F		
Power Output	27,093 bhp (mech.)			27,093 bhp (mech.)		
	20,204 kW (elec.)			20,204 kW (elec.)		
Heat Rate at HHV	8,274 BTU/hp-hr			8,274 BTU/hp-hr		
Operating Hours	6 hrs/yr			1 hrs/yr		
Fuel Consumption	219,780 scfh			219,780 scfh		
	1.319 MMscf/yr			0.220 MMscf/yr		
Heat Input at HHV	224.18 MMBTU/hr	0°F ≥ T > -20°F		224.18 MMBTU/hr	T ≤ -20°F	
	1,345 MMBTU/yr	Hourly	Annual	224 MMBTU/yr	Hourly	Annual
NO_X	612.52 lb/MMscf	134.6192 lb/hr	0.4039 tpy	612.52 lb/MMscf	134.6192 lb/hr	0.0673 tpy
CO	438.69 lb/MMscf	96.4159 lb/hr	0.2892 tpy	438.69 lb/MMscf	96.4159 lb/hr	0.0482 tpy
SO_2	3.47 lb/MMscf	0.7622 lb/hr	0.0023 tpy	3.47 lb/MMscf	0.7622 lb/hr	0.0004 tpy
$PM_{10/2.5}$	6.73 lb/MMscf	1.4796 lb/hr	0.0044 tpy	6.73 lb/MMscf	1.4796 lb/hr	0.0007 tpy
CO_{2-e}	121,491 lb/MMscf	26,701 lb/hr	80 tpy	122,194 lb/MMscf	26,856 lb/hr	13 tpy
CO_2	120,017 lb/MMscf	26,377 lb/hr	79 tpy	120,017 lb/MMscf	26,377 lb/hr	13 tpy
N_2O	0.23 lb/MMscf	0.0497 lb/hr	0.0001 tpy	0.23 lb/MMscf	0.0497 lb/hr	0.0000 tpy
TOC (Total)	71.93 lb/MMscf	15.8098 lb/hr	0.0474 tpy	107.90 lb/MMscf	23.7147 lb/hr	0.0119 tpy
Methane	56.24 lb/MMscf	12.3604 lb/hr	0.0371 tpy	84.36 lb/MMscf	18.5406 lb/hr	0.0093 tpy
Ethane	1.96 lb/MMscf	0.4312 lb/hr	0.0013 tpy	2.94 lb/MMscf	0.6468 lb/hr	0.0003 tpy
VOC (Total)	13.73 lb/MMscf	3.0182 lb/hr	0.0091 tpy	20.60 lb/MMscf	4.5274 lb/hr	0.0023 tpy
VOC (non-HAP)	7.01 lb/MMscf	1.5417 lb/hr	0.0046 tpy	10.52 lb/MMscf	2.3126 lb/hr	0.0012 tpy
HAP (Total)	6.72 lb/MMscf	1.4765 lb/hr	0.0044 tpy	10.08 lb/MMscf	2.2148 lb/hr	0.0011 tpy
Acetaldehyde	2.62E-01 lb/MMscf	0.0575 lb/hr	0.0002 tpy	3.92E-01 lb/MMscf	0.0862 lb/hr	0.0000 tpy
Acrolein	4.19E-02 lb/MMscf	0.0092 lb/hr	0.0000 tpy	6.28E-02 lb/MMscf	0.0138 lb/hr	0.0000 tpy
Benzene	7.85E-02 lb/MMscf	0.0172 lb/hr	0.0001 tpy	1.18E-01 lb/MMscf	0.0259 lb/hr	0.0000 tpy
Biphenyl						
Butadiene (1,3-)	2.81E-03 lb/MMscf	0.0006 lb/hr	0.0000 tpy	4.22E-03 lb/MMscf	0.0009 lb/hr	0.0000 tpy
Carbon Tetrachloride						
Chlorobenzene						
Chloroform						
Dichloropropene (1,3-)						
Ethylbenzene	2.09E-01 lb/MMscf	0.0460 lb/hr	0.0001 tpy	3.14E-01 lb/MMscf	0.0690 lb/hr	0.0000 tpy
Ethylene Dibromide						
Formaldehyde	4.64E+00 lb/MMscf	1.0205 lb/hr	0.0031 tpy	6.96E+00 lb/MMscf	1.5307 lb/hr	0.0008 tpy
Hexane (n-)						
Methanol						
Methylene Chloride						
Methylnaphthalene (2-)						
Naphthalene	8.50E-03 lb/MMscf	0.0019 lb/hr	0.0000 tpy	1.28E-02 lb/MMscf	0.0028 lb/hr	0.0000 tpy
PAH	1.44E-02 lb/MMscf	0.0032 lb/hr	0.0000 tpy	2.16E-02 lb/MMscf	0.0047 lb/hr	0.0000 tpy
Phenol						
Propylene Oxide	1.90E-01 lb/MMscf	0.0417 lb/hr	0.0001 tpy	2.84E-01 lb/MMscf	0.0625 lb/hr	0.0000 tpy
Styrene						
Tetrachloroethane (1,1,2,2-)						
Toluene	8.50E-01 lb/MMscf	0.1868 lb/hr	0.0006 tpy	1.28E+00 lb/MMscf	0.2803 lb/hr	0.0001 tpy
Trichloroethane (1,1,2-)						
Trimethylpentane (2,2,4-)						
Vinyl Chloride						
Xylenes	4.19E-01 lb/MMscf	0.0920 lb/hr	0.0003 tpy	6.28E-01 lb/MMscf	0.1380 lb/hr	0.0001 tpy

NOTES

1. Fuel higher heating value selected to correspond to AP-42 emissions factors.
2. Operating hours for low ambient temperatures best on best fit of available data (see TABLE B-1Ba).
3. Manufacturer provided data on: power output, heat rate, along with NOx, CO, and UHC (or TOC) emissions.
4. Footnotes 4 thru 8 of TABLE B-1Bc.

ALL UNCONTROLLED EMISSION RATES
FOR GE FRAME 5 TURBINE

TABLE B-1Bi
Gas-Fired Turbines
Maximum Emission Estimates
Normal Operations, Startup, Shutdown, and Low Temperature Operations
PTE - 100% Fuel Utilization at 100% Power Output

Make	GE																	
Model	MS5181R																	
Normal Operating Load	100%																	
Operations	Normal			Startup			Shutdown			Startup/Shutdown w/ Normal			Low Temperatures			Combined Operations		
Maximum Annual Combined Event Frequency	8,760 hrs/yr			78 hrs/yr			74 hrs/yr			8,760 hrs/yr			7 hrs/yr			8,760 hrs/yr		
	Hourly		Maximum	Hourly		Maximum	Hourly		Maximum	Hourly			Hourly		Maximum	Hourly		Maximum
Pollutant	Average	Maximum	Annual	Average	Maximum	Annual	Average	Maximum	Annual	Average	Maximum	Maximum Annual	Average	Maximum	Annual	Average	Maximum	Annual
NO_X	111.7714 lb/hr	128.9202 lb/hr	489.5586 tpy	41.8242 lb/hr	47.2232 lb/hr	1.0874 tpy	46.7610 lb/hr	53.4390 lb/hr	1.2158 tpy	111.7714 lb/hr	128.9202 lb/hr	489.5586 tpy	134.6192 lb/hr	134.6192 lb/hr	0.4712 tpy	111.7896 lb/hr	134.6192 lb/hr	489.6386 tpy
CO	20.0130 lb/hr	23.0836 lb/hr	87.6570 tpy	1,934.7390 lb/hr	2,179.2757 lb/hr	50.3032 tpy	2,049.6383 lb/hr	2,342.3500 lb/hr	53.2906 tpy	43.3181 lb/hr	4,521.6257 lb/hr	189.7332 tpy	96.4159 lb/hr	96.4159 lb/hr	0.3375 tpy	43.3791 lb/hr	4,521.6257 lb/hr	190.0006 tpy
SO_2	0.6472 lb/hr	0.7363 lb/hr	2.8349 tpy	0.4276 lb/hr	0.4688 lb/hr	0.0111 tpy	0.4461 lb/hr	0.4949 lb/hr	0.0116 tpy	0.6472 lb/hr	0.9637 lb/hr	2.8349 tpy	0.7622 lb/hr	0.7622 lb/hr	0.0027 tpy	0.6473 lb/hr	0.9637 lb/hr	2.8353 tpy
$PM_{10/2.5}$	1.2564 lb/hr	1.4293 lb/hr	5.5030 tpy	0.8300 lb/hr	0.9100 lb/hr	0.0216 tpy	0.8659 lb/hr	0.9607 lb/hr	0.0225 tpy	1.2564 lb/hr	1.8707 lb/hr	5.5030 tpy	1.4796 lb/hr	1.4796 lb/hr	0.0052 tpy	1.2566 lb/hr	1.8707 lb/hr	5.5038 tpy
CO_{2-e}	22,668 lb/hr	25,792 lb/hr	99,286 tpy	17,286 lb/hr	19,026 lb/hr	449 tpy	18,074 lb/hr	20,140 lb/hr	470 tpy	22,668 lb/hr	39,167 lb/hr	99,286 tpy	26,723 lb/hr	26,856 lb/hr	94 tpy	22,671 lb/hr	39,167 lb/hr	99,300 tpy
CO_2	22,399 lb/hr	25,482 lb/hr	98,107 tpy	14,797 lb/hr	16,223 lb/hr	385 tpy	15,438 lb/hr	17,128 lb/hr	401 tpy	22,399 lb/hr	33,351 lb/hr	98,107 tpy	26,377 lb/hr	26,377 lb/hr	92 tpy	22,402 lb/hr	33,351 lb/hr	98,121 tpy
N_2O	0.0422 lb/hr	0.0480 lb/hr	0.1849 tpy	0.0279 lb/hr	0.0306 lb/hr	0.0007 tpy	0.0291 lb/hr	0.0323 lb/hr	0.0008 tpy	0.0422 lb/hr	0.0629 lb/hr	0.1849 tpy	0.0497 lb/hr	0.0497 lb/hr	0.0002 tpy	0.0422 lb/hr	0.0629 lb/hr	0.1849 tpy
TOC (Total)	13.1266 lb/hr	15.1405 lb/hr	57.4943 tpy	126.8997 lb/hr	142.9388 lb/hr	3.2994 tpy	134.4359 lb/hr	153.6349 lb/hr	3.4953 tpy	14.4506 lb/hr	296.5738 lb/hr	63.2936 tpy	16.9391 lb/hr	23.7147 lb/hr	0.0593 tpy	14.4536 lb/hr	296.5738 lb/hr	63.3069 tpy
Methane	10.2626 lb/hr	11.8371 lb/hr	44.9501 tpy	99.2125 lb/hr	111.7522 lb/hr	2.5795 tpy	105.1044 lb/hr	120.1146 lb/hr	2.7327 tpy	11.2977 lb/hr	231.8668 lb/hr	49.4841 tpy	13.2433 lb/hr	18.5406 lb/hr	0.0464 tpy	11.3001 lb/hr	231.8668 lb/hr	49.4945 tpy
Ethane	0.3580 lb/hr	0.4129 lb/hr	1.5680 tpy	3.4609 lb/hr	3.8983 lb/hr	0.0900 tpy	3.6664 lb/hr	4.1900 lb/hr	0.0953 tpy	0.3941 lb/hr	8.0884 lb/hr	1.7262 tpy	0.4620 lb/hr	0.6468 lb/hr	0.0016 tpy	0.3942 lb/hr	8.0884 lb/hr	1.7266 tpy
VOC (Total)	2.5060 lb/hr	2.8905 lb/hr	10.9762 tpy	24.2263 lb/hr	27.2883 lb/hr	0.6299 tpy	25.6650 lb/hr	29.3303 lb/hr	0.6673 tpy	2.7587 lb/hr	56.6186 lb/hr	12.0833 tpy	3.2338 lb/hr	4.5274 lb/hr	0.0113 tpy	2.7593 lb/hr	56.6186 lb/hr	12.0859 tpy
VOC (non-HAP)	1.2800 lb/hr	1.4764 lb/hr	5.6066 tpy	12.3747 lb/hr	13.9387 lb/hr	0.3217 tpy	13.1096 lb/hr	14.9818 lb/hr	0.3408 tpy	1.4092 lb/hr	28.9205 lb/hr	6.1721 tpy	1.6518 lb/hr	2.3126 lb/hr	0.0058 tpy	1.4095 lb/hr	28.9205 lb/hr	6.1734 tpy
HAP (Total)	1.2259 lb/hr	1.4140 lb/hr	5.3696 tpy	11.8516 lb/hr	13.3496 lb/hr	0.3081 tpy	12.5555 lb/hr	14.3485 lb/hr	0.3264 tpy	1.3496 lb/hr	27.6981 lb/hr	5.9112 tpy	1.5820 lb/hr	2.2148 lb/hr	0.0055 tpy	1.3499 lb/hr	27.6981 lb/hr	5.9125 tpy
Acetaldehyde	4.77E-02 lb/hr	5.51E-02 lb/hr	2.09E-01 tpy	4.61E-01 lb/hr	5.20E-01 lb/hr	1.20E-02 tpy	4.89E-01 lb/hr	5.59E-01 lb/hr	1.27E-02 tpy	5.25E-02 lb/hr	1.08E+00 lb/hr	2.30E-01 tpy	6.16E-02 lb/hr	8.62E-02 lb/hr	2.16E-04 tpy	5.26E-02 lb/hr	1.08E+00 lb/hr	2.30E-01 tpy
Acrolein	7.64E-03 lb/hr	8.81E-03 lb/hr	3.35E-02 tpy	7.38E-02 lb/hr	8.32E-02 lb/hr	1.92E-03 tpy	7.82E-02 lb/hr	8.94E-02 lb/hr	2.03E-03 tpy	8.41E-03 lb/hr	1.73E-01 lb/hr	3.68E-02 tpy	9.86E-03 lb/hr	1.38E-02 lb/hr	3.45E-05 tpy	8.41E-03 lb/hr	1.73E-01 lb/hr	3.68E-02 tpy
Benzene	1.43E-02 lb/hr	1.65E-02 lb/hr	6.27E-02 tpy	1.38E-01 lb/hr	1.56E-01 lb/hr	3.60E-03 tpy	1.47E-01 lb/hr	1.68E-01 lb/hr	3.81E-03 tpy	1.58E-02 lb/hr	3.24E-01 lb/hr	6.90E-02 tpy	1.85E-02 lb/hr	2.59E-02 lb/hr	6.47E-05 tpy	1.58E-02 lb/hr	3.24E-01 lb/hr	6.91E-02 tpy
Biphenyl																		
Butadiene (1,3-)	5.13E-04 lb/hr	5.92E-04 lb/hr	2.25E-03 tpy	4.96E-03 lb/hr	5.59E-03 lb/hr	1.29E-04 tpy	5.26E-03 lb/hr	6.01E-03 lb/hr	1.37E-04 tpy	5.65E-04 lb/hr	1.16E-02 lb/hr	2.47E-03 tpy	6.62E-04 lb/hr	9.27E-04 lb/hr	2.32E-06 tpy	5.65E-04 lb/hr	1.16E-02 lb/hr	2.47E-03 tpy
Carbon Tetrachloride																		
Chlorobenzene																		
Chloroform																		
Dichloropropene (1,3-)																		
Ethylbenzene	3.82E-02 lb/hr	4.40E-02 lb/hr	1.67E-01 tpy	3.69E-01 lb/hr	4.16E-01 lb/hr	9.60E-03 tpy	3.91E-01 lb/hr	4.47E-01 lb/hr	1.02E-02 tpy	4.20E-02 lb/hr	8.63E-01 lb/hr	1.84E-01 tpy	4.93E-02 lb/hr	6.90E-02 lb/hr	1.72E-04 tpy	4.20E-02 lb/hr	8.63E-01 lb/hr	1.84E-01 tpy
Ethylene Dibromide																		
Formaldehyde	8.47E-01 lb/hr	9.77E-01 lb/hr	3.71E+00 tpy	8.19E+00 lb/hr	9.23E+00 lb/hr	2.13E-01 tpy	8.68E+00 lb/hr	9.92E+00 lb/hr	2.26E-01 tpy	9.33E-01 lb/hr	1.91E+01 lb/hr	4.09E+00 tpy	1.09E+00 lb/hr	1.53E+00 lb/hr	3.83E-03 tpy	9.33E-01 lb/hr	1.91E+01 lb/hr	4.09E+00 tpy
Hexane (n-)																		
Methanol																		
Methylene Chloride																		
Methylnaphthalene (2-)																		
Naphthalene	1.55E-03 lb/hr	1.79E-03 lb/hr	6.79E-03 tpy	1.50E-02 lb/hr	1.69E-02 lb/hr	3.90E-04 tpy	1.59E-02 lb/hr	1.82E-02 lb/hr	4.13E-04 tpy	1.71E-03 lb/hr	3.50E-02 lb/hr	7.48E-03 tpy	2.00E-03 lb/hr	2.80E-03 lb/hr	7.01E-06 tpy	1.71E-03 lb/hr	3.50E-02 lb/hr	7.48E-03 tpy
PAH	2.63E-03 lb/hr	3.03E-03 lb/hr	1.15E-02 tpy	2.54E-02 lb/hr	2.86E-02 lb/hr	6.60E-04 tpy	2.69E-02 lb/hr	3.07E-02 lb/hr	6.99E-04 tpy	2.89E-03 lb/hr	5.93E-02 lb/hr	1.27E-02 tpy	3.39E-03 lb/hr	4.74E-03 lb/hr	1.19E-05 tpy	2.89E-03 lb/hr	5.93E-02 lb/hr	1.27E-02 tpy
Phenol																		
Propylene Oxide	3.46E-02 lb/hr	3.99E-02 lb/hr	1.52E-01 tpy	3.35E-01 lb/hr	3.77E-01 lb/hr	8.70E-03 tpy	3.54E-01 lb/hr	4.05E-01 lb/hr	9.21E-03 tpy	3.81E-02 lb/hr	7.82E-01 lb/hr	1.67E-01 tpy	4.47E-02 lb/hr	6.25E-02 lb/hr	1.56E-04 tpy	3.81E-02 lb/hr	7.82E-01 lb/hr	1.67E-01 tpy
Styrene																		
Tetrachloroethane (1,1,2,2-)																		
Toluene	1.55E-01 lb/hr	1.79E-01 lb/hr	6.79E-01 tpy	1.50E+00 lb/hr	1.69E+00 lb/hr	3.90E-02 tpy	1.59E+00 lb/hr	1.82E+00 lb/hr	4.13E-02 tpy	1.71E-01 lb/hr	3.50E+00 lb/hr	7.48E-01 tpy	2.00E-01 lb/hr	2.80E-01 lb/hr	7.01E-04 tpy	1.71E-01 lb/hr	3.50E+00 lb/hr	7.48E-01 tpy
Trichloroethane (1,1,2-)																		
Trimethylpentane (2,2,4-)																		
Vinyl Chloride																		
Xylenes	7.64E-02 lb/hr	8.81E-02 lb/hr	3.35E-01 tpy	7.38E-01 lb/hr	8.32E-01 lb/hr	1.92E-02 tpy	7.82E-01 lb/hr	8.94E-01 lb/hr	2.03E-02 tpy	8.41E-02 lb/hr	1.73E+00 lb/hr	3.68E-01 tpy	9.86E-02 lb/hr	1.38E-01 lb/hr	3.45E-04 tpy	8.41E-02 lb/hr	1.73E+00 lb/hr	3.68E-01 tpy

NOTES

1. See TABLE B-1Bc, TABLE B-1Bf, TABLE B-1Bg, and TABLE B-1Bh.
2. If $E(t)_{normal} > E(t)_{transient}$, then $E(8{,}760\ hrs/yr)_{all} = E(8{,}760\ hrs/yr)_{normal}$
   Otherwise, $E(8{,}760\ hrs/yr)_{all} = E(8{,}760\ hrs/yr)_{normal} - E(t)_{normal} + E(t)_{transient}$.
   where t = the duration of transient operation.

ONLY OxCat CONTROLLED EMISSION RATES
(REDUCTIONS ONLY FOR CO, VOC, & HAP)

TABLE B-1Bj
Gas-Fired Turbines
Maximum Emission Estimates
Normal Operations, Startup, Shutdown, and Low Temperature Operations
PTE - 100% Fuel Utilization at 100% Power Output

Make		GE																		
Model		MS5181R																		
Normal Operating Load		100%																		
Operations		Normal			Startup			Shutdown			Startup/Shutdown w/ Normal			Low Temperatures			Combined Operations		
Maximum Annual Combined Event Frequency		8,760 hrs/yr			78 hrs/yr			74 hrs/yr			8,760 hrs/yr			7 hrs/yr			8,760 hrs/yr		
Pollutant	Control Efficiency	Hourly		Maximum	Hourly		Maximum	Hourly		Maximum	Hourly		Maximum	Hourly		Maximum	Hourly		Maximum
		Average	Maximum	Annual	Average	Maximum	Annual	Average	Maximum	Annual	Average	Maximum	Annual	Average	Maximum	Annual	Average	Maximum	Annual
NO_X		111.7714 lb/hr	128.9202 lb/hr	489.5586 tpy	41.8242 lb/hr	47.2232 lb/hr	1.0874 tpy	46.7610 lb/hr	53.4390 lb/hr	1.2158 tpy	111.7714 lb/hr	128.9202 lb/hr	489.5586 tpy	134.6192 lb/hr	134.6192 lb/hr	0.4712 tpy	111.7896 lb/hr	134.6192 lb/hr	489.6386 tpy
CO	75.00% by weight	5.0033 lb/hr	5.7709 lb/hr	21.9143 tpy	1,934.7390 lb/hr	2,179.2757 lb/hr	50.3032 tpy	512.4096 lb/hr	585.5875 lb/hr	13.3226 tpy	19.4431 lb/hr	2,764.8632 lb/hr	85.1607 tpy	24.1040 lb/hr	24.1040 lb/hr	0.0844 tpy	19.4583 lb/hr	2,764.8632 lb/hr	85.2276 tpy
SO_2		0.6472 lb/hr	0.7363 lb/hr	2.8349 tpy	0.4276 lb/hr	0.4688 lb/hr	0.0111 tpy	0.4461 lb/hr	0.4949 lb/hr	0.0116 tpy	0.6472 lb/hr	0.9637 lb/hr	2.8349 tpy	0.7622 lb/hr	0.7622 lb/hr	0.0027 tpy	0.6473 lb/hr	0.9637 lb/hr	2.8353 tpy
$PM_{10/2.5}$		1.2564 lb/hr	1.4293 lb/hr	5.5030 tpy	0.8300 lb/hr	0.9100 lb/hr	0.0216 tpy	0.8659 lb/hr	0.9607 lb/hr	0.0225 tpy	1.2564 lb/hr	1.8707 lb/hr	5.5030 tpy	1.4796 lb/hr	1.4796 lb/hr	0.0052 tpy	1.2566 lb/hr	1.8707 lb/hr	5.5038 tpy
CO_{2-e}		22,692 lb/hr	25,819 lb/hr	99,389 tpy	17,286 lb/hr	19,026 lb/hr	449 tpy	20,489 lb/hr	22,901 lb/hr	533 tpy	22,692 lb/hr	41,927 lb/hr	99,389 tpy	26,837 lb/hr	26,969 lb/hr	94 tpy	22,695 lb/hr	41,927 lb/hr	99,403 tpy
CO_2		22,422 lb/hr	25,509 lb/hr	98,210 tpy	14,797 lb/hr	16,223 lb/hr	385 tpy	17,853 lb/hr	19,888 lb/hr	464 tpy	22,422 lb/hr	36,112 lb/hr	98,210 tpy	26,491 lb/hr	26,491 lb/hr	93 tpy	22,426 lb/hr	36,112 lb/hr	98,224 tpy
N_2O		0.0422 lb/hr	0.0480 lb/hr	0.1849 tpy	0.0279 lb/hr	0.0306 lb/hr	0.0007 tpy	0.0291 lb/hr	0.0323 lb/hr	0.0008 tpy	0.0422 lb/hr	0.0629 lb/hr	0.1849 tpy	0.0497 lb/hr	0.0497 lb/hr	0.0002 tpy	0.0422 lb/hr	0.0629 lb/hr	0.1849 tpy
TOC (Total)	4.45% by weight	12.5430 lb/hr	14.4675 lb/hr	54.9384 tpy	126.8997 lb/hr	142.9388 lb/hr	3.2994 tpy	128.4596 lb/hr	146.8051 lb/hr	3.3400 tpy	13.8417 lb/hr	289.7440 lb/hr	60.6266 tpy	16.1861 lb/hr	22.6605 lb/hr	0.0567 tpy	13.8446 lb/hr	289.7440 lb/hr	60.6393 tpy
Methane	0.00% by weight	10.2626 lb/hr	11.8371 lb/hr	44.9501 tpy	99.2125 lb/hr	111.7522 lb/hr	2.5795 tpy	105.1044 lb/hr	120.1146 lb/hr	2.7327 tpy	11.2977 lb/hr	231.8668 lb/hr	49.4841 tpy	13.2433 lb/hr	18.5406 lb/hr	0.0464 tpy	11.3001 lb/hr	231.8668 lb/hr	49.4945 tpy
Ethane	2.00% by weight	0.3508 lb/hr	0.4047 lb/hr	1.5367 tpy	3.4609 lb/hr	3.8983 lb/hr	0.0900 tpy	3.5931 lb/hr	4.1062 lb/hr	0.0934 tpy	0.3866 lb/hr	8.0046 lb/hr	1.6935 tpy	0.4527 lb/hr	0.6338 lb/hr	0.0016 tpy	0.3867 lb/hr	8.0046 lb/hr	1.6938 tpy
VOC (Total)	23.00% by weight	1.9296 lb/hr	2.2257 lb/hr	8.4517 tpy	24.2263 lb/hr	27.2883 lb/hr	0.6299 tpy	19.7621 lb/hr	22.5843 lb/hr	0.5138 tpy	2.1573 lb/hr	49.8727 lb/hr	9.4490 tpy	2.4900 lb/hr	3.4861 lb/hr	0.0087 tpy	2.1578 lb/hr	49.8727 lb/hr	9.4510 tpy
VOC (non-HAP)	2.97% by weight	1.2420 lb/hr	1.4326 lb/hr	5.4399 tpy	12.3747 lb/hr	13.9387 lb/hr	0.3217 tpy	12.7199 lb/hr	14.5365 lb/hr	0.3307 tpy	1.3695 lb/hr	28.4752 lb/hr	5.9982 tpy	1.6027 lb/hr	2.2438 lb/hr	0.0056 tpy	1.3697 lb/hr	28.4752 lb/hr	5.9995 tpy
HAP (Total)	4.39E-01 by weight	0.6876 lb/hr	0.7931 lb/hr	3.0117 tpy	11.8516 lb/hr	13.3496 lb/hr	0.3081 tpy	7.0421 lb/hr	8.0478 lb/hr	0.1831 tpy	0.7879 lb/hr	21.3974 lb/hr	3.4508 tpy	0.8873 lb/hr	1.2422 lb/hr	0.0031 tpy	0.7880 lb/hr	21.3974 lb/hr	3.4515 tpy
Acetaldehyde	40.00% by weight	2.86E-02 lb/hr	3.30E-02 lb/hr	1.25E-01 tpy	4.61E-01 lb/hr	5.20E-01 lb/hr	1.20E-02 tpy	2.93E-01 lb/hr	3.35E-01 lb/hr	7.63E-03 tpy	3.26E-02 lb/hr	8.55E-01 lb/hr	1.43E-01 tpy	3.70E-02 lb/hr	5.17E-02 lb/hr	1.29E-04 tpy	3.26E-02 lb/hr	8.55E-01 lb/hr	1.43E-01 tpy
Acrolein	25.00% by weight	5.73E-03 lb/hr	6.61E-03 lb/hr	2.51E-02 tpy	7.38E-02 lb/hr	8.32E-02 lb/hr	1.92E-03 tpy	5.87E-02 lb/hr	6.70E-02 lb/hr	1.53E-03 tpy	6.42E-03 lb/hr	1.50E-01 lb/hr	2.81E-02 tpy	7.39E-03 lb/hr	1.03E-02 lb/hr	2.59E-05 tpy	6.42E-03 lb/hr	1.50E-01 lb/hr	2.81E-02 tpy
Benzene	30.00% by weight	1.00E-02 lb/hr	1.16E-02 lb/hr	4.39E-02 tpy	1.38E-01 lb/hr	1.56E-01 lb/hr	3.60E-03 tpy	1.03E-01 lb/hr	1.17E-01 lb/hr	2.67E-03 tpy	1.13E-02 lb/hr	2.73E-01 lb/hr	4.94E-02 tpy	1.29E-02 lb/hr	1.81E-02 lb/hr	4.53E-05 tpy	1.13E-02 lb/hr	2.73E-01 lb/hr	4.94E-02 tpy
Biphenyl	0.00% by weight																		
Butadiene (1,3-)	23.00% by weight	3.95E-04 lb/hr	4.56E-04 lb/hr	1.73E-03 tpy	4.96E-03 lb/hr	5.59E-03 lb/hr	1.29E-04 tpy	4.05E-03 lb/hr	4.62E-03 lb/hr	1.05E-04 tpy	4.42E-04 lb/hr	1.02E-02 lb/hr	1.93E-03 tpy	5.10E-04 lb/hr	7.14E-04 lb/hr	1.78E-06 tpy	4.42E-04 lb/hr	1.02E-02 lb/hr	1.94E-03 tpy
Carbon Tetrachloride	0.00% by weight																		
Chlorobenzene	0.00% by weight																		
Chloroform	0.00% by weight																		
Dichloropropene (1,3-)	0.00% by weight																		
Ethylbenzene	23.00% by weight	2.94E-02 lb/hr	3.39E-02 lb/hr	1.29E-01 tpy	3.69E-01 lb/hr	4.16E-01 lb/hr	9.60E-03 tpy	3.01E-01 lb/hr	3.44E-01 lb/hr	7.83E-03 tpy	3.29E-02 lb/hr	7.60E-01 lb/hr	1.44E-01 tpy	3.79E-02 lb/hr	5.31E-02 lb/hr	1.33E-04 tpy	3.29E-02 lb/hr	7.60E-01 lb/hr	1.44E-01 tpy
Ethylene Dibromide	23.00% by weight																		
Formaldehyde	50.00% by weight	4.24E-01 lb/hr	4.89E-01 lb/hr	1.86E+00 tpy	8.19E+00 lb/hr	9.23E+00 lb/hr	2.13E-01 tpy	4.34E+00 lb/hr	4.96E+00 lb/hr	1.13E-01 tpy	4.91E-01 lb/hr	1.42E+01 lb/hr	2.15E+00 tpy	5.47E-01 lb/hr	7.65E-01 lb/hr	1.91E-03 tpy	4.91E-01 lb/hr	1.42E+01 lb/hr	2.15E+00 tpy
Hexane (n-)	23.00% by weight																		
Methanol	30.00% by weight																		
Methylene Chloride	0.00% by weight																		
Methylnaphthalene (2-)	23.00% by weight																		
Naphthalene	18.00% by weight	1.27E-03 lb/hr	1.47E-03 lb/hr	5.57E-03 tpy	1.50E-02 lb/hr	1.69E-02 lb/hr	3.90E-04 tpy	1.30E-02 lb/hr	1.49E-02 lb/hr	3.39E-04 tpy	1.42E-03 lb/hr	3.18E-02 lb/hr	6.20E-03 tpy	1.64E-03 lb/hr	2.30E-03 lb/hr	5.75E-06 tpy	1.42E-03 lb/hr	3.18E-02 lb/hr	6.21E-03 tpy
PAH	23.00% by weight	2.02E-03 lb/hr	2.33E-03 lb/hr	8.85E-03 tpy	2.54E-02 lb/hr	2.86E-02 lb/hr	6.60E-04 tpy	2.07E-02 lb/hr	2.37E-02 lb/hr	5.38E-04 tpy	2.26E-03 lb/hr	5.22E-02 lb/hr	9.90E-03 tpy	2.61E-03 lb/hr	3.65E-03 lb/hr	9.13E-06 tpy	2.26E-03 lb/hr	5.22E-02 lb/hr	9.90E-03 tpy
Phenol	23.00% by weight																		
Propylene Oxide	0.00% by weight	3.46E-02 lb/hr	3.99E-02 lb/hr	1.52E-01 tpy	3.35E-01 lb/hr	3.77E-01 lb/hr	8.70E-03 tpy	3.54E-01 lb/hr	4.05E-01 lb/hr	9.21E-03 tpy	3.81E-02 lb/hr	7.82E-01 lb/hr	1.67E-01 tpy	4.47E-02 lb/hr	6.25E-02 lb/hr	1.56E-04 tpy	3.81E-02 lb/hr	7.82E-01 lb/hr	1.67E-01 tpy
Styrene	0.00% by weight																		
Tetrachloroethane (1,1,2,2-)	0.00% by weight																		
Toluene	40.00% by weight	9.31E-02 lb/hr	1.07E-01 lb/hr	4.08E-01 tpy	1.50E+00 lb/hr	1.69E+00 lb/hr	3.90E-02 tpy	9.53E-01 lb/hr	1.09E+00 lb/hr	2.48E-02 tpy	1.06E-01 lb/hr	2.78E+00 lb/hr	4.64E-01 tpy	1.20E-01 lb/hr	1.68E-01 lb/hr	4.20E-04 tpy	1.06E-01 lb/hr	2.78E+00 lb/hr	4.65E-01 tpy
Trichloroethane (1,1,2-)	0.00% by weight																		
Trimethylpentane (2,2,4-)	23.00% by weight																		
Vinyl Chloride	0.00% by weight																		
Xylenes	23.00% by weight	5.88E-02 lb/hr	6.78E-02 lb/hr	2.58E-01 tpy	7.38E-01 lb/hr	8.32E-01 lb/hr	1.92E-02 tpy	6.02E-01 lb/hr	6.88E-01 lb/hr	1.57E-02 tpy	6.57E-02 lb/hr	1.52E+00 lb/hr	2.88E-01 tpy	7.59E-02 lb/hr	1.06E-01 lb/hr	2.66E-04 tpy	6.58E-02 lb/hr	1.52E+00 lb/hr	2.88E-01 tpy

NOTES

1. See TABLE B-1Bi.
2. It's assumed that oxidation catalyst will be ineffective during startup events.
3. $CO2 = CO2_{uncontrolled} + CE_{CO\text{-}control\ efficiency} * CO_{uncontrolled} * (MW_{CO2}/MW_{CO}) = CO2_{uncontrolled} + CE_{CO\text{-}control\ efficiency} * CO_{uncontrolled} * (44.0095/28.0101)$.

EU 01: CLARK HBA-8
UNCONTROLLED
INDIVIDUAL UNIT

TABLE C-1A
2-Stroke Lean-Burn Reciprocating Engines
Hourly and Annual Emission Estimates
Uncontrolled

Type		2slb				
Service		Non-Emergency				
JJJJ Relevant Date		Remanufactured or Modified: NA or Before 06/12/2006				
ZZZZ Status		Existing RICE at Major HAP Source				
Make		Clark				
Model		HBA-08				
Fuel		Natural Gas				
Fuel Higher Heating Value (HHV)		1,020 BTU/scf			1,020 BTU/scf	
Ambient Temperature		80 °F			80 °F	
Power Output		1,760 bhp (mech.)			1,936 bhp (mech.)	
		kW (elec.)			kW (elec.)	
Heat Rate at HHV		9,432 BTU/hp-hr			9,432 BTU/hp-hr	
Operating Hours		8,760 hrs/yr				
Fuel Consumption		16,275 scfh			17,902 scfh	
		142.565 MMscf/yr				
Heat Input at HHV		16.60 MMBTU/hr			18.26 MMBTU/hr	
		145,416 MMBTU/yr	Uncontrolled			Uncontrolled
Pollutant	Control Efficiency	Uncontrolled	Average Hourly	Maximum Annual	Uncontrolled	Maximum Hourly
NO_X		4,768.28 lb/MMscf	77.6014 lb/hr	339.8942 tpy	4,768.28 lb/MMscf	85.3616 lb/hr
CO		333.78 lb/MMscf	5.4321 lb/hr	23.7926 tpy	333.78 lb/MMscf	5.9753 lb/hr
SO_2		0.60 lb/MMscf	0.0098 lb/hr	0.0428 tpy	0.60 lb/MMscf	0.0107 lb/hr
$PM_{10/2.5}$		49.28 lb/MMscf	0.8019 lb/hr	3.5125 tpy	49.28 lb/MMscf	0.8821 lb/hr
CO_{2-e}		172,713 lb/MMscf	2,811 lb/hr	12,311 tpy	172,713 lb/MMscf	3,092 lb/hr
CO_2		120,017 lb/MMscf	1,953 lb/hr	8,555 tpy	120,017 lb/MMscf	2,149 lb/hr
N_2O		0.23 lb/MMscf	0.0037 lb/hr	0.0161 tpy	0.23 lb/MMscf	0.0040 lb/hr
TOC (Total)		2,380.95 lb/MMscf	38.7488 lb/hr	169.7199 tpy	2,380.95 lb/MMscf	42.6237 lb/hr
Methane		2,105.11 lb/MMscf	34.2596 lb/hr	150.0572 tpy	2,105.11 lb/MMscf	37.6856 lb/hr
Ethane		101.86 lb/MMscf	1.6577 lb/hr	7.2609 tpy	101.86 lb/MMscf	1.8235 lb/hr
VOC (Total)		173.98 lb/MMscf	2.8315 lb/hr	12.4018 tpy	173.98 lb/MMscf	3.1146 lb/hr
VOC (non-HAP)		58.51 lb/MMscf	0.9523 lb/hr	4.1709 tpy	58.51 lb/MMscf	1.0475 lb/hr
HAP (Total)		115.47 lb/MMscf	1.8792 lb/hr	8.2309 tpy	115.47 lb/MMscf	2.0671 lb/hr
Acetaldehyde		1.13E+01 lb/MMscf	1.83E-01 lb/hr	8.03E-01 tpy	1.13E+01 lb/MMscf	2.02E-01 lb/hr
Acrolein		1.13E+01 lb/MMscf	1.84E-01 lb/hr	8.05E-01 tpy	1.13E+01 lb/MMscf	2.02E-01 lb/hr
Benzene		2.82E+00 lb/MMscf	4.58E-02 lb/hr	2.01E-01 tpy	2.82E+00 lb/MMscf	5.04E-02 lb/hr
Biphenyl		5.73E-03 lb/MMscf	9.33E-05 lb/hr	4.09E-04 tpy	5.73E-03 lb/MMscf	1.03E-04 lb/hr
Butadiene (1,3-)		1.19E+00 lb/MMscf	1.94E-02 lb/hr	8.49E-02 tpy	1.19E+00 lb/MMscf	2.13E-02 lb/hr
Carbon Tetrachloride		8.81E-02 lb/MMscf	1.43E-03 lb/hr	6.28E-03 tpy	8.81E-02 lb/MMscf	1.58E-03 lb/hr
Chlorobenzene		6.45E-02 lb/MMscf	1.05E-03 lb/hr	4.59E-03 tpy	6.45E-02 lb/MMscf	1.15E-03 lb/hr
Chloroform		6.84E-02 lb/MMscf	1.11E-03 lb/hr	4.87E-03 tpy	6.84E-02 lb/MMscf	1.22E-03 lb/hr
Dichloropropene (1,3-)		6.36E-02 lb/MMscf	1.03E-03 lb/hr	4.53E-03 tpy	6.36E-02 lb/MMscf	1.14E-03 lb/hr
Ethylbenzene		1.57E-01 lb/MMscf	2.55E-03 lb/hr	1.12E-02 tpy	1.57E-01 lb/MMscf	2.81E-03 lb/hr
Ethylene Dibromide		1.07E-01 lb/MMscf	1.73E-03 lb/hr	7.60E-03 tpy	1.07E-01 lb/MMscf	1.91E-03 lb/hr
Formaldehyde		8.01E+01 lb/MMscf	1.30E+00 lb/hr	5.71E+00 tpy	8.01E+01 lb/MMscf	1.43E+00 lb/hr
Hexane (n-)		6.46E-01 lb/MMscf	1.05E-02 lb/hr	4.61E-02 tpy	6.46E-01 lb/MMscf	1.16E-02 lb/hr
Methanol		3.60E+00 lb/MMscf	5.86E-02 lb/hr	2.57E-01 tpy	3.60E+00 lb/MMscf	6.45E-02 lb/hr
Methylene Chloride		2.13E-01 lb/MMscf	3.47E-03 lb/hr	1.52E-02 tpy	2.13E-01 lb/MMscf	3.82E-03 lb/hr
Methylnaphthalene (2-)		3.11E-02 lb/MMscf	5.06E-04 lb/hr	2.21E-03 tpy	3.11E-02 lb/MMscf	5.56E-04 lb/hr
Naphthalene		1.40E-01 lb/MMscf	2.28E-03 lb/hr	9.97E-03 tpy	1.40E-01 lb/MMscf	2.50E-03 lb/hr
PAH		1.95E-01 lb/MMscf	3.17E-03 lb/hr	1.39E-02 tpy	1.95E-01 lb/MMscf	3.48E-03 lb/hr
Phenol		6.11E-02 lb/MMscf	9.95E-04 lb/hr	4.36E-03 tpy	6.11E-02 lb/MMscf	1.09E-03 lb/hr
Propylene Oxide						
Styrene		7.96E-02 lb/MMscf	1.29E-03 lb/hr	5.67E-03 tpy	7.96E-02 lb/MMscf	1.42E-03 lb/hr
Tetrachloroethane (1,1,2,2-)		9.63E-02 lb/MMscf	1.57E-03 lb/hr	6.86E-03 tpy	9.63E-02 lb/MMscf	1.72E-03 lb/hr
Toluene		1.40E+00 lb/MMscf	2.28E-02 lb/hr	9.97E-02 tpy	1.40E+00 lb/MMscf	2.50E-02 lb/hr
Trichloroethane (1,1,2-)		7.65E-02 lb/MMscf	1.25E-03 lb/hr	5.45E-03 tpy	7.65E-02 lb/MMscf	1.37E-03 lb/hr
Trimethylpentane (2,2,4-)		1.23E+00 lb/MMscf	2.00E-02 lb/hr	8.76E-02 tpy	1.23E+00 lb/MMscf	2.20E-02 lb/hr
Vinyl Chloride		3.59E-02 lb/MMscf	5.84E-04 lb/hr	2.56E-03 tpy	3.59E-02 lb/MMscf	6.42E-04 lb/hr
Xylenes		3.89E-01 lb/MMscf	6.33E-03 lb/hr	2.77E-02 tpy	3.89E-01 lb/MMscf	6.97E-03 lb/hr

NOTES

1. Fuel higher heating value selected to correspond to AP-42 emissions factors.
2. Maximum hourly emissions based on 110% of rated capacity.
3. Vendor provided data on power output and heat rate.
4. SO2 and PM10/2.5 emission factors based on AP-42, Section 3.2 (Revised 7/00), Table 3.2-1.
5. CO2 and N2O emission factors based on 40 CFR 98, Subpart C, Table C-1 and 40 CFR 98, Subpart C, Table C-2, respectively.
6. NOX, CO and TOC (Total) emission factors based on Vendor Data.
7. TOC (Total) specie emissions are estimated based on scaling of AP-42 using vendor HC data.
   Emission factors based on: $EF_i = (EF_{HC}/EF_{TOC\text{-}AP42})\ (EF_{i\text{-}AP42})$

EU 01: CLARK HBA-8
UNCONTROLLED
25% CAP FOR UNITS 1 thru 7

TABLE C-1C
2-Stroke Lean-Burn Reciprocating Engines
Hourly and Annual Emission Estimates
Uncontrolled

Type		2slb				
Service		Non-Emergency				
JJJJ Relevant Date		Remanufactured or Modified: NA or Before 06/12/2006				
ZZZZ Status		Existing RICE at Major HAP Source				
Make		Clark				
Model		HBA-08				
Fuel		Natural Gas				
Fuel Higher Heating Value (HHV)		1,020 BTU/scf			1,020 BTU/scf	
Ambient Temperature		80 °F			80 °F	
Power Output		1,760 bhp (mech.)			1,936 bhp (mech.)	
		kW (elec.)			kW (elec.)	
Heat Rate at HHV		9,432 BTU/hp-hr			9,432 BTU/hp-hr	
Operating Hours		15,330 hrs/yr				
Fuel Consumption		16,275 scfh			17,902 scfh	
		249.488 MMscf/yr				
Heat Input at HHV		16.60 MMBTU/hr			18.26 MMBTU/hr	
		254,478 MMBTU/yr	Uncontrolled			Uncontrolled
Pollutant	Control Efficiency	Uncontrolled	Average Hourly	Maximum Annual	Uncontrolled	Maximum Hourly
NO_X		4,768.28 lb/MMscf	77.6014 lb/hr	594.8148 tpy	4,768.28 lb/MMscf	85.3616 lb/hr
CO		333.78 lb/MMscf	5.4321 lb/hr	41.6370 tpy	333.78 lb/MMscf	5.9753 lb/hr
SO_2		0.60 lb/MMscf	0.0098 lb/hr	0.0748 tpy	0.60 lb/MMscf	0.0107 lb/hr
$PM_{10/2.5}$		49.28 lb/MMscf	0.8019 lb/hr	6.1469 tpy	49.28 lb/MMscf	0.8821 lb/hr
CO_{2-e}		172,713 lb/MMscf	2,811 lb/hr	21,545 tpy	172,713 lb/MMscf	3,092 lb/hr
CO_2		120,017 lb/MMscf	1,953 lb/hr	14,971 tpy	120,017 lb/MMscf	2,149 lb/hr
N_2O		0.23 lb/MMscf	0.0037 lb/hr	0.0282 tpy	0.23 lb/MMscf	0.0040 lb/hr
TOC (Total)		2,380.95 lb/MMscf	38.7488 lb/hr	297.0098 tpy	2,380.95 lb/MMscf	42.6237 lb/hr
Methane		2,105.11 lb/MMscf	34.2596 lb/hr	262.6001 tpy	2,105.11 lb/MMscf	37.6856 lb/hr
Ethane		101.86 lb/MMscf	1.6577 lb/hr	12.7065 tpy	101.86 lb/MMscf	1.8235 lb/hr
VOC (Total)		173.98 lb/MMscf	2.8315 lb/hr	21.7031 tpy	173.98 lb/MMscf	3.1146 lb/hr
VOC (non-HAP)		58.51 lb/MMscf	0.9523 lb/hr	7.2991 tpy	58.51 lb/MMscf	1.0475 lb/hr
HAP (Total)		115.47 lb/MMscf	1.8792 lb/hr	14.4041 tpy	115.47 lb/MMscf	2.0671 lb/hr
Acetaldehyde		1.13E+01 lb/MMscf	1.83E-01 lb/hr	1.41E+00 tpy	1.13E+01 lb/MMscf	2.02E-01 lb/hr
Acrolein		1.13E+01 lb/MMscf	1.84E-01 lb/hr	1.41E+00 tpy	1.13E+01 lb/MMscf	2.02E-01 lb/hr
Benzene		2.82E+00 lb/MMscf	4.58E-02 lb/hr	3.51E-01 tpy	2.82E+00 lb/MMscf	5.04E-02 lb/hr
Biphenyl		5.73E-03 lb/MMscf	9.33E-05 lb/hr	7.15E-04 tpy	5.73E-03 lb/MMscf	1.03E-04 lb/hr
Butadiene (1,3-)		1.19E+00 lb/MMscf	1.94E-02 lb/hr	1.49E-01 tpy	1.19E+00 lb/MMscf	2.13E-02 lb/hr
Carbon Tetrachloride		8.81E-02 lb/MMscf	1.43E-03 lb/hr	1.10E-02 tpy	8.81E-02 lb/MMscf	1.58E-03 lb/hr
Chlorobenzene		6.45E-02 lb/MMscf	1.05E-03 lb/hr	8.04E-03 tpy	6.45E-02 lb/MMscf	1.15E-03 lb/hr
Chloroform		6.84E-02 lb/MMscf	1.11E-03 lb/hr	8.53E-03 tpy	6.84E-02 lb/MMscf	1.22E-03 lb/hr
Dichloropropene (1,3-)		6.36E-02 lb/MMscf	1.03E-03 lb/hr	7.93E-03 tpy	6.36E-02 lb/MMscf	1.14E-03 lb/hr
Ethylbenzene		1.57E-01 lb/MMscf	2.55E-03 lb/hr	1.96E-02 tpy	1.57E-01 lb/MMscf	2.81E-03 lb/hr
Ethylene Dibromide		1.07E-01 lb/MMscf	1.73E-03 lb/hr	1.33E-02 tpy	1.07E-01 lb/MMscf	1.91E-03 lb/hr
Formaldehyde		8.01E+01 lb/MMscf	1.30E+00 lb/hr	1.00E+01 tpy	8.01E+01 lb/MMscf	1.43E+00 lb/hr
Hexane (n-)		6.46E-01 lb/MMscf	1.05E-02 lb/hr	8.06E-02 tpy	6.46E-01 lb/MMscf	1.16E-02 lb/hr
Methanol		3.60E+00 lb/MMscf	5.86E-02 lb/hr	4.49E-01 tpy	3.60E+00 lb/MMscf	6.45E-02 lb/hr
Methylene Chloride		2.13E-01 lb/MMscf	3.47E-03 lb/hr	2.66E-02 tpy	2.13E-01 lb/MMscf	3.82E-03 lb/hr
Methylnaphthalene (2-)		3.11E-02 lb/MMscf	5.06E-04 lb/hr	3.88E-03 tpy	3.11E-02 lb/MMscf	5.56E-04 lb/hr
Naphthalene		1.40E-01 lb/MMscf	2.28E-03 lb/hr	1.74E-02 tpy	1.40E-01 lb/MMscf	2.50E-03 lb/hr
PAH		1.95E-01 lb/MMscf	3.17E-03 lb/hr	2.43E-02 tpy	1.95E-01 lb/MMscf	3.48E-03 lb/hr
Phenol		6.11E-02 lb/MMscf	9.95E-04 lb/hr	7.62E-03 tpy	6.11E-02 lb/MMscf	1.09E-03 lb/hr
Propylene Oxide						
Styrene		7.96E-02 lb/MMscf	1.29E-03 lb/hr	9.92E-03 tpy	7.96E-02 lb/MMscf	1.42E-03 lb/hr
Tetrachloroethane (1,1,2,2-)		9.63E-02 lb/MMscf	1.57E-03 lb/hr	1.20E-02 tpy	9.63E-02 lb/MMscf	1.72E-03 lb/hr
Toluene		1.40E+00 lb/MMscf	2.28E-02 lb/hr	1.74E-01 tpy	1.40E+00 lb/MMscf	2.50E-02 lb/hr
Trichloroethane (1,1,2-)		7.65E-02 lb/MMscf	1.25E-03 lb/hr	9.54E-03 tpy	7.65E-02 lb/MMscf	1.37E-03 lb/hr
Trimethylpentane (2,2,4-)		1.23E+00 lb/MMscf	2.00E-02 lb/hr	1.53E-01 tpy	1.23E+00 lb/MMscf	2.20E-02 lb/hr
Vinyl Chloride		3.59E-02 lb/MMscf	5.84E-04 lb/hr	4.47E-03 tpy	3.59E-02 lb/MMscf	6.42E-04 lb/hr
Xylenes		3.89E-01 lb/MMscf	6.33E-03 lb/hr	4.85E-02 tpy	3.89E-01 lb/MMscf	6.97E-03 lb/hr

NOTES

1. Fuel higher heating value selected to correspond to AP-42 emissions factors.
2. Maximum hourly emissions based on 110% of rated capacity.
3. Vendor provided data on power output and heat rate.
4. SO2 and PM10/2.5 emission factors based on AP-42, Section 3.2 (Revised 7/00), Table 3.2-1.
5. CO2 and N2O emission factors based on 40 CFR 98, Subpart C, Table C-1 and 40 CFR 98, Subpart C, Table C-2, respectively.
6. NOX, CO and TOC (Total) emission factors based on Vendor Data.
7. TOC (Total) specie emissions are estimated based on scaling of AP-42 using vendor HC data.
   Emission factors based on: $EF_i = (EF_{HC}/EF_{TOC\text{-}AP42})\ (EF_{i\text{-}AP42})$

EU 02: CLARK HBA-8T
UNCONTROLLED
UNITS 8 thru 10

TABLE C-1Da
2-Stroke Lean-Burn Reciprocating Engines
Hourly and Annual Emission Estimates
Uncontrolled

Type		2slb				
Service		Non-Emergency				
JJJJ Relevant Date		Remanufactured or Modified: NA or Before 06/12/2006				
ZZZZ Status		Existing RICE at Major HAP Source				
Make		Clark				
Model		HBA-08T				
Fuel		Natural Gas				
Fuel Higher Heating Value (HHV)		1,020 BTU/scf			1,020 BTU/scf	
Ambient Temperature		80 °F			80 °F	
Power Output		2,050 bhp (mech.)			2,255 bhp (mech.)	
		kW (elec.)			kW (elec.)	
Heat Rate at HHV		8,444 BTU/hp-hr			8,444 BTU/hp-hr	
Operating Hours		8,760 hrs/yr				
Fuel Consumption		16,972 scfh			18,669 scfh	
		148.672 MMscf/yr				
Heat Input at HHV		17.31 MMBTU/hr			19.04 MMBTU/hr	
		151,645 MMBTU/yr	Uncontrolled			Uncontrolled
Pollutant	Control Efficiency	Uncontrolled	Average Hourly	Maximum Annual	Uncontrolled	Maximum Hourly
NO_X		266.29 lb/MMscf	4.5194 lb/hr	19.7950 tpy	266.29 lb/MMscf	4.9713 lb/hr
CO		665.73 lb/MMscf	11.2985 lb/hr	49.4874 tpy	665.73 lb/MMscf	12.4284 lb/hr
SO_2		0.60 lb/MMscf	0.0102 lb/hr	0.0446 tpy	0.60 lb/MMscf	0.0112 lb/hr
$PM_{10/2.5}$		49.28 lb/MMscf	0.8363 lb/hr	3.6630 tpy	49.28 lb/MMscf	0.9199 lb/hr
CO_{2-e}		200,635 lb/MMscf	3,405 lb/hr	14,914 tpy	200,635 lb/MMscf	3,746 lb/hr
CO_2		120,017 lb/MMscf	2,037 lb/hr	8,922 tpy	120,017 lb/MMscf	2,241 lb/hr
N_2O		0.23 lb/MMscf	0.0038 lb/hr	0.0168 tpy	0.23 lb/MMscf	0.0042 lb/hr
TOC (Total)		3,644.22 lb/MMscf	61.8485 lb/hr	270.8963 tpy	3,644.22 lb/MMscf	68.0333 lb/hr
Methane		3,222.02 lb/MMscf	54.6831 lb/hr	239.5120 tpy	3,222.02 lb/MMscf	60.1514 lb/hr
Ethane		155.91 lb/MMscf	2.6460 lb/hr	11.5894 tpy	155.91 lb/MMscf	2.9106 lb/hr
VOC (Total)		266.29 lb/MMscf	4.5194 lb/hr	19.7950 tpy	266.29 lb/MMscf	4.9713 lb/hr
VOC (non-HAP)		89.56 lb/MMscf	1.5199 lb/hr	6.6573 tpy	89.56 lb/MMscf	1.6719 lb/hr
HAP (Total)		176.73 lb/MMscf	2.9995 lb/hr	13.1377 tpy	176.73 lb/MMscf	3.2994 lb/hr
Acetaldehyde		1.72E+01 lb/MMscf	2.93E-01 lb/hr	1.28E+00 tpy	1.72E+01 lb/MMscf	3.22E-01 lb/hr
Acrolein		1.73E+01 lb/MMscf	2.93E-01 lb/hr	1.29E+00 tpy	1.73E+01 lb/MMscf	3.23E-01 lb/hr
Benzene		4.31E+00 lb/MMscf	7.32E-02 lb/hr	3.20E-01 tpy	4.31E+00 lb/MMscf	8.05E-02 lb/hr
Biphenyl		8.78E-03 lb/MMscf	1.49E-04 lb/hr	6.52E-04 tpy	8.78E-03 lb/MMscf	1.64E-04 lb/hr
Butadiene (1,3-)		1.82E+00 lb/MMscf	3.09E-02 lb/hr	1.35E-01 tpy	1.82E+00 lb/MMscf	3.40E-02 lb/hr
Carbon Tetrachloride		1.35E-01 lb/MMscf	2.29E-03 lb/hr	1.00E-02 tpy	1.35E-01 lb/MMscf	2.52E-03 lb/hr
Chlorobenzene		9.87E-02 lb/MMscf	1.67E-03 lb/hr	7.33E-03 tpy	9.87E-02 lb/MMscf	1.84E-03 lb/hr
Chloroform		1.05E-01 lb/MMscf	1.78E-03 lb/hr	7.78E-03 tpy	1.05E-01 lb/MMscf	1.95E-03 lb/hr
Dichloropropene (1,3-)		9.73E-02 lb/MMscf	1.65E-03 lb/hr	7.23E-03 tpy	9.73E-02 lb/MMscf	1.82E-03 lb/hr
Ethylbenzene		2.40E-01 lb/MMscf	4.07E-03 lb/hr	1.78E-02 tpy	2.40E-01 lb/MMscf	4.48E-03 lb/hr
Ethylene Dibromide		1.63E-01 lb/MMscf	2.77E-03 lb/hr	1.21E-02 tpy	1.63E-01 lb/MMscf	3.04E-03 lb/hr
Formaldehyde		1.23E+02 lb/MMscf	2.08E+00 lb/hr	9.12E+00 tpy	1.23E+02 lb/MMscf	2.29E+00 lb/hr
Hexane (n-)		9.89E-01 lb/MMscf	1.68E-02 lb/hr	7.35E-02 tpy	9.89E-01 lb/MMscf	1.85E-02 lb/hr
Methanol		5.51E+00 lb/MMscf	9.35E-02 lb/hr	4.10E-01 tpy	5.51E+00 lb/MMscf	1.03E-01 lb/hr
Methylene Chloride		3.27E-01 lb/MMscf	5.54E-03 lb/hr	2.43E-02 tpy	3.27E-01 lb/MMscf	6.10E-03 lb/hr
Methylnaphthalene (2-)		4.76E-02 lb/MMscf	8.07E-04 lb/hr	3.53E-03 tpy	4.76E-02 lb/MMscf	8.88E-04 lb/hr
Naphthalene		2.14E-01 lb/MMscf	3.63E-03 lb/hr	1.59E-02 tpy	2.14E-01 lb/MMscf	3.99E-03 lb/hr
PAH		2.98E-01 lb/MMscf	5.05E-03 lb/hr	2.21E-02 tpy	2.98E-01 lb/MMscf	5.56E-03 lb/hr
Phenol		9.35E-02 lb/MMscf	1.59E-03 lb/hr	6.95E-03 tpy	9.35E-02 lb/MMscf	1.75E-03 lb/hr
Propylene Oxide						
Styrene		1.22E-01 lb/MMscf	2.07E-03 lb/hr	9.05E-03 tpy	1.22E-01 lb/MMscf	2.27E-03 lb/hr
Tetrachloroethane (1,1,2,2-)		1.47E-01 lb/MMscf	2.50E-03 lb/hr	1.10E-02 tpy	1.47E-01 lb/MMscf	2.75E-03 lb/hr
Toluene		2.14E+00 lb/MMscf	3.63E-02 lb/hr	1.59E-01 tpy	2.14E+00 lb/MMscf	3.99E-02 lb/hr
Trichloroethane (1,1,2-)		1.17E-01 lb/MMscf	1.99E-03 lb/hr	8.71E-03 tpy	1.17E-01 lb/MMscf	2.19E-03 lb/hr
Trimethylpentane (2,2,4-)		1.88E+00 lb/MMscf	3.19E-02 lb/hr	1.40E-01 tpy	1.88E+00 lb/MMscf	3.51E-02 lb/hr
Vinyl Chloride		5.49E-02 lb/MMscf	9.31E-04 lb/hr	4.08E-03 tpy	5.49E-02 lb/MMscf	1.02E-03 lb/hr
Xylenes		5.96E-01 lb/MMscf	1.01E-02 lb/hr	4.43E-02 tpy	5.96E-01 lb/MMscf	1.11E-02 lb/hr

NOTES

1. Fuel higher heating value selected to correspond to AP-42 emissions factors.
2. Maximum hourly emissions based on 110% of rated capacity.
3. Vendor provided data on power output and heat rate.
4. SO2 and PM10/2.5 emission factors based on AP-42, Section 3.2 (Revised 7/00), Table 3.2-1.
5. CO2 and N2O emission factors based on 40 CFR 98, Subpart C, Table C-1 and 40 CFR 98, Subpart C, Table C-2, respectively.
6. NOX, CO and TOC (Total) emission factors based on Vendor Data.
7. TOC (Total) specie emissions are estimated based on Vendor Data.
   Emission factors based on: $EF_i = (EF_{HC}/EF_{TOC\text{-}AP42})\ (EF_{i\text{-}AP42})$

EU 02: CLARK HBA-8T CONTROLLED with OxCat UNITS 8 thru 10

TABLE C-1Db
2-Stroke Lean-Burn Reciprocating Engines
Hourly and Annual Emission Estimates
Controlled

Type		2slb				
Service		Non-Emergency				
JJJJ Relevant Date		Remanufactured or Modified: NA or Before 06/12/2006				
ZZZZ Status		Existing RICE at Major HAP Source				
Make		Clark				
Model		HBA-08T				
Fuel		Natural Gas				
Fuel Higher Heating Value (HHV)		1,020 BTU/scf			1,020 BTU/scf	
Ambient Temperature		80 °F			80 °F	
Power Output		2,050 bhp (mech.)			2,255 bhp (mech.)	
		kW (elec.)			kW (elec.)	
Heat Rate at HHV		8,444 BTU/hp-hr			8,444 BTU/hp-hr	
Operating Hours		8,760 hrs/yr				
Fuel Consumption		16,972 scfh			18,669 scfh	
		148.672 MMscf/yr				
Heat Input at HHV		17.31 MMBTU/hr			19.04 MMBTU/hr	
		151,645 MMBTU/yr	Controlled			Controlled
Pollutant	Control Efficiency	Uncontrolled	Average Hourly	Maximum Annual	Uncontrolled	Maximum Hourly
NO_X		266.29 lb/MMscf	4.5194 lb/hr	19.7950 tpy	266.29 lb/MMscf	4.9713 lb/hr
CO	58.00% by weight	665.73 lb/MMscf	4.7454 lb/hr	20.7847 tpy	665.73 lb/MMscf	5.2199 lb/hr
SO_2		0.60 lb/MMscf	0.0102 lb/hr	0.0446 tpy	0.60 lb/MMscf	0.0112 lb/hr
$PM_{10/2.5}$		49.28 lb/MMscf	0.8363 lb/hr	3.6630 tpy	49.28 lb/MMscf	0.9199 lb/hr
CO_{2-e}		200,635 lb/MMscf	3,415 lb/hr	14,960 tpy	200,635 lb/MMscf	3,757 lb/hr
CO_2	-0.51% by weight	120,017 lb/MMscf	2,047 lb/hr	8,967 tpy	120,017 lb/MMscf	2,252 lb/hr
N_2O		0.23 lb/MMscf	0.0038 lb/hr	0.0168 tpy	0.23 lb/MMscf	0.0042 lb/hr
TOC (Total)	2.22% by weight	3,644.22 lb/MMscf	60.4752 lb/hr	264.8812 tpy	3,644.22 lb/MMscf	66.5227 lb/hr
Methane	0.00% by weight	3,222.02 lb/MMscf	54.6831 lb/hr	239.5120 tpy	3,222.02 lb/MMscf	60.1514 lb/hr
Ethane	2.00% by weight	155.91 lb/MMscf	2.5931 lb/hr	11.3576 tpy	155.91 lb/MMscf	2.8524 lb/hr
VOC (Total)	29.22% by weight	266.29 lb/MMscf	3.1990 lb/hr	14.0117 tpy	266.29 lb/MMscf	3.5189 lb/hr
VOC (non-HAP)	0.00% by weight	89.56 lb/MMscf	1.5199 lb/hr	6.6573 tpy	89.56 lb/MMscf	1.6719 lb/hr
HAP (Total)	44.02% by weight	176.73 lb/MMscf	1.6791 lb/hr	7.3544 tpy	176.73 lb/MMscf	1.8470 lb/hr
Acetaldehyde	40.00% by weight	1.72E+01 lb/MMscf	1.76E-01 lb/hr	7.69E-01 tpy	1.72E+01 lb/MMscf	1.93E-01 lb/hr
Acrolein	25.00% by weight	1.73E+01 lb/MMscf	2.20E-01 lb/hr	9.64E-01 tpy	1.73E+01 lb/MMscf	2.42E-01 lb/hr
Benzene	30.00% by weight	4.31E+00 lb/MMscf	5.12E-02 lb/hr	2.24E-01 tpy	4.31E+00 lb/MMscf	5.63E-02 lb/hr
Biphenyl	0.00% by weight	8.78E-03 lb/MMscf	1.49E-04 lb/hr	6.52E-04 tpy	8.78E-03 lb/MMscf	1.64E-04 lb/hr
Butadiene (1,3-)	23.00% by weight	1.82E+00 lb/MMscf	2.38E-02 lb/hr	1.04E-01 tpy	1.82E+00 lb/MMscf	2.62E-02 lb/hr
Carbon Tetrachloride	0.00% by weight	1.35E-01 lb/MMscf	2.29E-03 lb/hr	1.00E-02 tpy	1.35E-01 lb/MMscf	2.52E-03 lb/hr
Chlorobenzene	0.00% by weight	9.87E-02 lb/MMscf	1.67E-03 lb/hr	7.33E-03 tpy	9.87E-02 lb/MMscf	1.84E-03 lb/hr
Chloroform	0.00% by weight	1.05E-01 lb/MMscf	1.78E-03 lb/hr	7.78E-03 tpy	1.05E-01 lb/MMscf	1.95E-03 lb/hr
Dichloropropene (1,3-)	0.00% by weight	9.73E-02 lb/MMscf	1.65E-03 lb/hr	7.23E-03 tpy	9.73E-02 lb/MMscf	1.82E-03 lb/hr
Ethylbenzene	23.00% by weight	2.40E-01 lb/MMscf	3.14E-03 lb/hr	1.37E-02 tpy	2.40E-01 lb/MMscf	3.45E-03 lb/hr
Ethylene Dibromide	23.00% by weight	1.63E-01 lb/MMscf	2.13E-03 lb/hr	9.34E-03 tpy	1.63E-01 lb/MMscf	2.34E-03 lb/hr
Formaldehyde	50.00% by weight	1.23E+02 lb/MMscf	1.04E+00 lb/hr	4.56E+00 tpy	1.23E+02 lb/MMscf	1.14E+00 lb/hr
Hexane (n-)	23.00% by weight	9.89E-01 lb/MMscf	1.29E-02 lb/hr	5.66E-02 tpy	9.89E-01 lb/MMscf	1.42E-02 lb/hr
Methanol	30.00% by weight	5.51E+00 lb/MMscf	6.55E-02 lb/hr	2.87E-01 tpy	5.51E+00 lb/MMscf	7.20E-02 lb/hr
Methylene Chloride	0.00% by weight	3.27E-01 lb/MMscf	5.54E-03 lb/hr	2.43E-02 tpy	3.27E-01 lb/MMscf	6.10E-03 lb/hr
Methylnaphthalene (2-)	23.00% by weight	4.76E-02 lb/MMscf	6.21E-04 lb/hr	2.72E-03 tpy	4.76E-02 lb/MMscf	6.84E-04 lb/hr
Naphthalene	18.00% by weight	2.14E-01 lb/MMscf	2.98E-03 lb/hr	1.30E-02 tpy	2.14E-01 lb/MMscf	3.28E-03 lb/hr
PAH	23.00% by weight	2.98E-01 lb/MMscf	3.89E-03 lb/hr	1.70E-02 tpy	2.98E-01 lb/MMscf	4.28E-03 lb/hr
Phenol	23.00% by weight	9.35E-02 lb/MMscf	1.22E-03 lb/hr	5.35E-03 tpy	9.35E-02 lb/MMscf	1.34E-03 lb/hr
Propylene Oxide	0.00% by weight					
Styrene	0.00% by weight	1.22E-01 lb/MMscf	2.07E-03 lb/hr	9.05E-03 tpy	1.22E-01 lb/MMscf	2.27E-03 lb/hr
Tetrachloroethane (1,1,2,2-)	0.00% by weight	1.47E-01 lb/MMscf	2.50E-03 lb/hr	1.10E-02 tpy	1.47E-01 lb/MMscf	2.75E-03 lb/hr
Toluene	40.00% by weight	2.14E+00 lb/MMscf	2.18E-02 lb/hr	9.54E-02 tpy	2.14E+00 lb/MMscf	2.40E-02 lb/hr
Trichloroethane (1,1,2-)	0.00% by weight	1.17E-01 lb/MMscf	1.99E-03 lb/hr	8.71E-03 tpy	1.17E-01 lb/MMscf	2.19E-03 lb/hr
Trimethylpentane (2,2,4-)	23.00% by weight	1.88E+00 lb/MMscf	2.46E-02 lb/hr	1.08E-01 tpy	1.88E+00 lb/MMscf	2.70E-02 lb/hr
Vinyl Chloride	0.00% by weight	5.49E-02 lb/MMscf	9.31E-04 lb/hr	4.08E-03 tpy	5.49E-02 lb/MMscf	1.02E-03 lb/hr
Xylenes	23.00% by weight	5.96E-01 lb/MMscf	7.78E-03 lb/hr	3.41E-02 tpy	5.96E-01 lb/MMscf	8.56E-03 lb/hr

NOTES

1. See TABLE C-1Da.
2. Catalyst reduction efficiencies based on specifications provided to vendor.
3. $CO2 = CO2_{uncontrolled} + CE_{CO\text{-}control\ efficiency} * CO_{uncontrolled} * (MW_{CO2}/MW_{CO}) = CO2_{uncontrolled} + CE_{CO\text{-}control\ efficiency} * CO_{uncontrolled} * (44.0095/28.0101)$.

APPENDIX C: APPLICATION FORMS

Division for Air Quality

300 Sower Boulevard

Frankfort, KY 40601

(502) 564-3999

DEP7007AI

Administrative Information

___ Section AI.1: Source Information

___ Section AI.2: Applicant Information

___ Section AI.3: Owner Information

___ Section AI.4: Type of Application

___ Section AI.5: Other Required Information

___ Section AI.6: Signature Block

___ Section AI.7: Notes, Comments, and Explanations

Additional Documentation

__ Additional Documentation attached

Source Name: Texas Eastern Transmission, LP - Daville Compressor Station

KY EIS (AFS) #: 21-137-00008

Permit #: V-16-056

Agency Interest (AI) ID: 44065

Date: June 28, 2019

Section AI.1: Source Information

Physical Location Address: **Street:** 1745 Airport Road; **City:** Danville; **County:** Lincoln; **Zip Code:** 40422

Mailing Address: **Street or P.O. Box:** PO Box 1642; **City:** Houston; **State:** TX; **Zip Code:** 77251

Standard Coordinates for Source Physical Location

Longitude: 37.579727° (decimal degrees) **Latitude:** 84.754952° (decimal degrees)

Primary (NAICS) Category: Pipeline Transmission of Natural Gas **Primary NAICS #:** 486210

Classification (SIC) Category: Natural Gas Transmission **Primary SIC #:** 4922

Briefly discuss the type of business conducted at this site: Compressor Station for natural gas pipline that delivers natrual gas delivered to customers.

Description of Area Surrounding Source: _X_ Rural Area __ Industrial Park __ Residential Area __ Urban Area __ Industrial Area __ Commercial Area

Is any part of the source located on federal land? __ Yes _X_ No

Number of Employees: ~20

Approximate distance to nearest residence or commercial property: *~250 feet*

Property Area: ~33 acres

Is this source portable? __ Yes _X_ No

What other environmental permits or registrations does this source currently hold or need to obtain in Kentucky?

NPDES/KPDES:	__ Currently Hold	__ Need	__ N/A	Refer to previous permit list submitted with source - wide applications
Solid Waste:	__ Currently Hold	__ Need	__ N/A	
RCRA:	__ Currently Hold	__ Need	__ N/A	
UST:	__ Currently Hold	__ Need	__ N/A	

Type of Regulated Waste Activity: __ Mixed Waste Generator __ Generator __ Recycler __ Other: _____ __ U.S. Importer of Hazardous Waste __ Transporter __ Treatment/Storage/Disposal Facility X__ N/A

Section AI.2: Applicant Information

Applicant Name: Texas Eastern Transmission, LP

Title: (if individual)

Mailing Address: **Street or P.O. Box:** PO Box 1642
City: Houston **State:** TX **Zip Code:** 77251

Email: (if individual)

Phone: 713-627-5400

Technical Contact

Name: Chuck Zukor

Title: Sr. Engineer, Safety & Reliability / Air Projects

Mailing Address: **Street or P.O. Box:** PO Box 1642
City: Houston **State:** TX **Zip Code:** 77251

Email: chuck.zukor@engbridge.com

Phone: 713-627-5791

Air Permit Contact for Source

Name: Reagan Mayces

Title: Supervisor, Safety & Reliability / Air Projects

Mailing Address: **Street or P.O. Box:** PO Box 1642
City: Houston **State:** TX **Zip Code:** 77251

Email: reagan.mayces@enbridge.com

Phone: 713-627-4790

Section AI.3: Owner Information

X__ Owner same as applicant

Name:

Title:

Mailing Address: **Street or P.O. Box:**
City: **State:** **Zip Code:**

Email:

Phone:

List names of owners and officers of the company who have an interest in the company of 5% or more.

Name	Position

Section AI.4: Type of Application

Current Status: X Title V __ Conditional Major __ State-Origin __ General Permit __ Registration __ None

Requested Action: *(check all that apply)*

__ Name Change	__ Initial Registration	X Significant Revision	__ Administrative Permit Amendment
__ Renewal Permit	__ Revised Registration	__ Minor Revision	__ Initial Source-wide OperatingPermit
__ 502(b)(10) Change	__ Extension Request	__ Addition of New Facility	__ Portable Plant Relocation Notice
__ Revision	__ Off Permit Change	__Landfill Alternate Compliance Submittal	__ Modification of Existing Facilities
__ Ownership Change	__ Closure		

Requested Status: X Title V __ Conditional Major __ State-Origin __ PSD __ NSR __ Other: _____

Is the source requesting a limitation of potential emissions? X Yes __ No

Pollutant:	Requested Limit:	Pollutant:	Requested Limit:
X Particulate Matter	See application	__ Single HAP	
X Volatile Organic Compounds (VOC)	See application	__ Combined HAPs	
X Carbon Monoxide	See application	__ Air Toxics (40 CFR 68, Subpart F)	
X Nitrogen Oxides	See application	__ Carbon Dioxide	
__ Sulfur Dioxide		__ Greenhouse Gases (GHG)	
__ Lead		__ Other	

For New Construction:

Proposed Start Date of Construction: *(MM/YYYY)* N/A

Proposed Operation Start-Up Date: *(MM/YYYY)* N/A

For Modifications:

Proposed Start Date of Modification: *(MM/YYYY)*

Proposed Operation Start-Up Date: *(MM/YYYY)*

Applicant is seeking coverage under a permit shield. __ Yes X No

Identify any non-applicable requirements for which permit shield is sought on a separate attachment to the application.

Section AI.5 Other Required Information

Indicate the documents attached as part of this application:

X DEP7007A Indirect Heat Exchangers and Turbines	__ DEP7007CC Compliance Certification
__ DEP7007B Manufacturing or Processing Operations	X DEP7007DD Insignificant Activities
__ DEP7007C Incinerators and Waste Burners	X DEP7007EE Internal Combustion Engines
__ DEP7007F Episode Standby Plan	__ DEP7007FF Secondary Aluminum Processing
__ DEP7007J Volatile Liquid Storage	__ DEP7007GG Control Equipment
__ DEP7007K Surface Coating or Printing Operations	__ DEP7007HH Haul Roads
__ DEP7007L Mineral Processes	__ Confidentiality Claim
__ DEP7007M Metal Cleaning Degreasers	__ Ownership Change Form
X DEP7007N Source Emissions Profile	__ Secretary of State Certificate
__ DEP7007P Perchloroethylene Dry Cleaning Systems	__ Flowcharts or diagrams depicting process
__ DEP7007R Emission Offset Credit	__ Digital Line Graphs (DLG) files of buldings, roads, etc.
__ DEP7007S Service Stations	__ Site Map
__ DEP7007T Metal Plating and Surface Treatment Operations	__ Map or drawing depicting location of facility
__ DEP7007V Applicable Requirements and Compliance Activities	__ Safety Data Sheet (SDS)
__ DEP7007Y Good Engineering Practice and Stack Height Determination	__ Emergency Response Plan
__ DEP7007AA Compliance Schedule for Non-complying Emission Units	__ Other: _____
__ DEP7007BB Certified Progress Report	

Section AI.6: Signature Block

I, the undersigned, hereby certify under penalty of law, that I am a responsible official*, and that I have personally examined, and am familiar with, the 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 information is on knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false or incomplete information, including the possibility of fine or imprisonment.

Thomas V. Wooden

Authorized Signature

6/19/2019

Date

Thomas V. Wooden, Jr.

Type or Printed Name of Signatory

VP Gas Transmission Operations

Title of Signatory

*Responsible official as defined by 401 KAR 52:001.

Division for Air Quality

300 Sower Boulevard
Frankfort, KY 40601
(502) 564-3999

DEP7007A

Indirect Heat Exchangers and Turbines

___ Section A.1: General Information
___ Section A.2: Operating and Fuel Information
___ Section A.3: Notes, Comments, and Explanations

Additional Documentation

___ Complete DEP7007AI, DEP7007N, DEP7007V, and DEP7007GG.

____ Manufacturer's specifications

Source Name: Texas Eastern Transmission, LP - Danville Compressor Station
KY EIS (AFS) #: 21-137-00008
Permit #: V-16-056
Agency Interest (AI) ID: 44065
Date: June 28, 2019

Section A.1: General Information

Emission Unit #	Emission Unit Name	Process ID	Process Name	Identify General Type: Indirect Heat Exchanger, Gas Turbine, or Combustion Turbine	Indirect Heat Exchanger Configuration	Manufacturer	Model No./ Serial No.	Proposed/Actual Date of Construction Commencement *(MM/YYYY)*	SCC Code	SCC Units	Control Device ID	Stack ID
03-11	GE Frame 3 (21001)	1	Normal Op	Gas Turbine	NA	GE	Frame 3 / 127746	1961	20200201	MMscf	OxCat+SCR-3-11	3-11
03-11	GE Frame 3 (21001)	2	Low Temp Op	Gas Turbine	NA	GE	Frame 3 / 127746	1961	20200201	MMscf	OxCat+SCR-3-11	3-11
03-11	GE Frame 3 (21001)	3	Extreme Low Temp Op	Gas Turbine	NA	GE	Frame 3 / 127746	1961	20200201	MMscf	OxCat+SCR-3-11	3-11
03-11	GE Frame 3 (21001)	4	Start-up	Gas Turbine	NA	GE	Frame 3 / 127746	1961	39999997	lb/event	OxCat+SCR-3-11	3-11
03-11	GE Frame 3 (21001)	5	Shutdown	Gas Turbine	NA	GE	Frame 3 / 127746	1961	39999997	lb/event	OxCat+SCR-3-11	3-11
03-11	GE Frame 3 (21001)	6	Uncontrolled Both Ox+SCR	Gas Turbine	NA	GE	Frame 3 / 127746	1961	20200201	MMscf	OxCat+SCR-3-11	3-11
03-11	GE Frame 3 (21001)	7	Uncontrolled Only SCR	Gas Turbine	NA	GE	Frame 3 / 127746	1961	20200201	MMscf	OxCat+SCR-3-11	3-11
03-12	GE Frame 3 (21002)	1	Normal Op	Gas Turbine	NA	GE	Frame 3 / 127747	1961	20200201	MMscf	OxCat+SCR-3-12	3-12
03-12	GE Frame 3 (21002)	2	Low Temp Op	Gas Turbine	NA	GE	Frame 3 / 127747	1961	20200201	MMscf	OxCat+SCR-3-12	3-12
03-12	GE Frame 3 (21002)	3	Extreme Low Temp Op	Gas Turbine	NA	GE	Frame 3 / 127747	1961	20200201	MMscf	OxCat+SCR-3-12	3-12
03-12	GE Frame 3 (21002)	4	Start-up	Gas Turbine	NA	GE	Frame 3 / 127747	1961	39999997	lb/event	OxCat+SCR-3-12	3-12
03-12	GE Frame 3 (21002)	5	Shutdown	Gas Turbine	NA	GE	Frame 3 / 127747	1961	39999997	lb/event	OxCat+SCR-3-12	3-12
03-12	GE Frame 3 (21002)	6	Uncontrolled Both Ox+SCR	Gas Turbine	NA	GE	Frame 3 / 127747	1961	20200201	MMscf	OxCat+SCR-3-12	3-12
03-12	GE Frame 3 (21001)	7	Uncontrolled Only SCR	Gas Turbine	NA	GE	Frame 3 / 127747	1961	20200201	MMscf	OxCat+SCR-3-12	3-12
04-13	GE Frame 5 (21003)	1	Normal Op	Gas Turbine	NA	GE	Frame 5 / 179368	1969	20200201	MMscf	OxCat -4-13	4-13
04-13	GE Frame 5 (21003)	2	Low Temp Op	Gas Turbine	NA	GE	Frame 5 / 179368	1969	20200201	MMscf	OxCat -4-13	4-13
04-13	GE Frame 5 (21003)	3	Extreme Low Temp Op	Gas Turbine	NA	GE	Frame 5 / 179368	1969	20200201	MMscf	OxCat -4-13	4-13
04-13	GE Frame 5 (21003)	4	Start-up	Gas Turbine	NA	GE	Frame 5 / 179368	1969	39999997	lb/event	OxCat -4-13	4-13
04-13	GE Frame 5 (21003)	5	Shutdown	Gas Turbine	NA	GE	Frame 5 / 179368	1969	39999997	lb/event	OxCat -4-13	4-13
04-13	GE Frame 5 (21003)	6	Uncontrolled OxCat	Gas Turbine	NA	GE	Frame 5 / 179368	1969	20200201	MMscf	OxCat -4-13	4-13

Section A.2: Operating and Fuel Information

Emission Unit #	If multipurpose unit, identify the percentage of use by purpose				Rated Capacity Heat Input *(MMBTU/hr)*	Rated Capacity Power Output		Describe Operating Scenario (only if this unit will be used in different configurations)	Classify Fuel as Primary or Secondary	Identify Fuel Type: Coal, Natural Gas, Wood, Biomass, Landfill/Digester Gas, Fuel Oil # (specify 1-6), or Other	Heat Content (HHV)		Maximum Operating Hours	Ash Content *(%)*	Sulfur Content *(%)*
	Space Heat	Process Heat	Power	Emergency			*(Specify units: hp, MW, or lb steam/hr)*					*(Specify units: Btu/lb, Btu/gal, or Btu/scf)*			
03-11	NA	NA	100%	NA	94.22	8,000	HP	Normal Op	Primary	Natural Gas	1020	BTU/scf	8689	0	0.05
03-11	NA	NA	100%	NA	94.22	8,000	HP	Low Temp Op	Primary	Natural Gas	1020	BTU/scf	6	0	0.05
03-11	NA	NA	100%	NA	94.22	8,000	HP	Extreme Low Temp Op	Primary	Natural Gas	1020	BTU/scf	1	0	0.05
03-11	NA	NA	100%	NA	94.22	8,000	HP	Start-up	Primary	Natural Gas	1020	BTU/scf	156	0	0.05
03-11	NA	NA	100%	NA	94.22	8,000	HP	Shutdown	Primary	Natural Gas	1020	BTU/scf	156	0	0.05
03-11	NA	NA	100%	NA	94.22	8,000	HP	Uncontrolled Both Ox+SCR	Primary	Natural Gas	1020	BTU/scf	200	0	0.05
03-11	NA	NA	100%	NA	94.22	8,000	HP	Uncontrolled Only SCR	Primary	Natural Gas	1020	BTU/scf	200	0	0.05
03-12	NA	NA	100%	NA	94.22	8,000	HP	Normal Op	Primary	Natural Gas	1020	BTU/scf	8689	0	0.05
03-12	NA	NA	100%	NA	94.22	8,000	HP	Low Temp Op	Primary	Natural Gas	1020	BTU/scf	6	0	0.05
03-12	NA	NA	100%	NA	94.22	8,000	HP	Extreme Low Temp Op	Primary	Natural Gas	1020	BTU/scf	1	0	0.05
03-12	NA	NA	100%	NA	94.22	8,000	HP	Start-up	Primary	Natural Gas	1020	BTU/scf	156	0	0.05
03-12	NA	NA	100%	NA	94.22	8,000	HP	Shutdown	Primary	Natural Gas	1020	BTU/scf	156	0	0.05
03-12	NA	NA	100%	NA	94.22	8,000	HP	Uncontrolled Both Ox+SCR	Primary	Natural Gas	1020	BTU/scf	200	0	0.05
03-12	NA	NA	100%	NA	94.22	8,000	HP	Uncontrolled Only SCR	Primary	Natural Gas	1020	BTU/scf	200	0	0.05
04-13	NA	NA	100%	NA	94.22	8,000	HP	Normal Op	Primary	Natural Gas	1020	BTU/scf	8689	0	0.05
04-13	NA	NA	100%	NA	94.22	8,000	HP	Low Temp Op	Primary	Natural Gas	1020	BTU/scf	6	0	0.05
04-13	NA	NA	100%	NA	94.22	8,000	HP	Extreme Low Temp Op	Primary	Natural Gas	1020	BTU/scf	1	0	0.05
04-13	NA	NA	100%	NA	94.22	8,000	HP	Start-up	Primary	Natural Gas	1020	BTU/scf	156	0	0.05
04-13	NA	NA	100%	NA	94.22	8,000	HP	Shutdown	Primary	Natural Gas	1020	BTU/scf	156	0	0.05
04-13	NA	NA	100%	NA	94.22	8,000	HP	Uncontrolled OxCat	Primary	Natural Gas	1020	BTU/scf	200	0	0.05

Division for Air Quality

300 Sower Boulevard
Frankfort, KY 40601
(502) 564-3999

DEP7007EE

Internal Combustion Engines

___ Section EE.1: General Information
___ Section EE.2: Operating Information
___ Section EE.3: Design Information
___ Section EE.4: Fuel Information
___ Section EE.5: Emission Factor Information
___ Section EE.6: Notes, Comments, and Explanations

Additional Documentation

___ Complete DEP7007AI, DEP7007N, DEP7007V, and DEP7007GG

___ Attach EPA certification of the engine

Source Name: Texas Eastern Transmission, LP - Danville Compressor Station
KY EIS (AFS) #: 21- 137-00008
Permit #: V-16-056
Agency Interest (AI) ID: 44065
Date: June 28, 2019

Section EE.1: General Information

Emission Unit #	Emission Unit Name	Control Device ID	Stack ID	Manufacturer	Model Number	Model Year	Date of Manufacture	Proposed/Actual Date of Construction Commencement *(MM/YYYY)*	Date Reconstructed/ Modified	List Applicable Regulations
01-01	Clark HBA-8 ICE (20901)	NA	1-1	Clark	HBA-8	1952	1952	1952	NA	NESHAP Subpart ZZZZ
01-02	Clark HBA-8 ICE (20902)	NA	1-2	Clark	HBA-8	1952	1952	1952	NA	NESHAP Subpart ZZZZ
01-03	Clark HBA-8 ICE (20903)	NA	1-3	Clark	HBA-8	1952	1952	1952	NA	NESHAP Subpart ZZZZ
01-04	Clark HBA-8 ICE (20904)	NA	1-4	Clark	HBA-8	1952	1952	1952	NA	NESHAP Subpart ZZZZ
01-05	Clark HBA-8 ICE (20905)	NA	1-5	Clark	HBA-8	1952	1952	1952	NA	NESHAP Subpart ZZZZ
01-06	Clark HBA-8 ICE (20906)	NA	1-6	Clark	HBA-8	1956	1956	1956	NA	NESHAP Subpart ZZZZ
01-07	Clark HBA-8 ICE (20907)	NA	1-7	Clark	HBA-8	1956	1956	1956	NA	NESHAP Subpart ZZZZ
02-08	Clark HBA-8T ICE (20908)	OxCat-2-8	2-8	Clark	HBA-8T	1957	1957	1957	NA	NESHAP Subpart ZZZZ
02-09	Clark HBA-8T ICE (20909)	OxCat-2-9	2-9	Clark	HBA-8T	1957	1957	1957	NA	NESHAP Subpart ZZZZ
02-10	Clark HBA-8T ICE (20910)	OxCat-2-10	2-10	Clark	HBA-8T	1957	1957	1957	NA	NESHAP Subpart ZZZZ

Section EE.2: Operating Information

Emission Unit #	Engine Purpose (Identify if Non-Emergency, Emergency,Fire/Water Pump, Black-start engine for combustion turbine, Engine Testing)	Hours Operated	Is this engine a rental? *(Yes/No)*	Rental Time Period *(hrs)*	Alternate Operating Scenarios (Describe any operating scenarios in which the engine may be used in a different configuration)
01-01	Non Emergency	8760	No	NA	Annul Operations for EUs 01-01 thru 01-07 limited to an emission CAP equivalent to a group limit of 15,330 hr/yr. Any single engine may operate 8.760 hr/yr.
01-02	Non Emergency	8760	No	NA	Annul Operations for EUs 01-01 thru 01-07 limited to an emission CAP equivalent to a group limit of 15,330 hr/yr. Any single engine may operate 8.760 hr/yr.
01-03	Non Emergency	8760	No	NA	Annul Operations for EUs 01-01 thru 01-07 limited to an emission CAP equivalent to a group limit of 15,330 hr/yr. Any single engine may operate 8.760 hr/yr.
01-04	Non Emergency	8760	No	NA	Annul Operations for EUs 01-01 thru 01-07 limited to an emission CAP equivalent to a group limit of 15,330 hr/yr. Any single engine may operate 8.760 hr/yr.
01-05	Non Emergency	8760	No	NA	Annul Operations for EUs 01-01 thru 01-07 limited to an emission CAP equivalent to a group limit of 15,330 hr/yr. Any single engine may operate 8.760 hr/yr.
01-06	Non Emergency	8760	No	NA	Annul Operations for EUs 01-01 thru 01-07 limited to an emission CAP equivalent to a group limit of 15,330 hr/yr. Any single engine may operate 8.760 hr/yr.
01-07	Non Emergency	8760	No	NA	Annul Operations for EUs 01-01 thru 01-07 limited to an emission CAP equivalent to a group limit of 15,330 hr/yr. Any single engine may operate 8.760 hr/yr.
02-08	Non Emergency	8760	No	NA	KyEIS ID 1 = Normal Operations KyEIS ID2 = Uncontrolled Operations when OxCat is not achieving design performance level,
02-09	Non Emergency	8760	No	NA	KyEIS ID 1 = Normal Operations KyEIS ID2 = Uncontrolled Operations when OxCat is not achieving design performance level,
02-10	Non Emergency	8760	No	NA	KyEIS ID 1 = Normal Operations KyEIS ID2 = Uncontrolled Operations when OxCat is not achieving design performance level,

Section EE.3: Design Information

Emission Unit #	Engine Type (Identify all that apply: Commercial, Institutional Stationary, Non-Road)	Ignition Type (Identify if either Compression or Spark Ignition)	Engine Family (Identify all that apply: 2-stroke, 4-stroke, Rich Burn, Lean Burn)	Maximum Engine Power *(bhp)*	Maximum Engine Speed *(rpm)*	Total Displacement *(L)*	Number of Cylinders
01-01	Stationary	Spark Ignition	2-Stroke Lean Burn	1760	300		8
01-02	Stationary	Spark Ignition	2-Stroke Lean Burn	1760	300		8
01-03	Stationary	Spark Ignition	2-Stroke Lean Burn	1760	300		8
01-04	Stationary	Spark Ignition	2-Stroke Lean Burn	1760	300		8
01-05	Stationary	Spark Ignition	2-Stroke Lean Burn	1760	300		8
01-06	Stationary	Spark Ignition	2-Stroke Lean Burn	1760	300		8
01-07	Stationary	Spark Ignition	2-Stroke Lean Burn	1760	300		8
02-08	Stationary	Spark Ignition	2-Stroke Lean Burn	2050	300		8
02-09	Stationary	Spark Ignition	2-Stroke Lean Burn	2050	300		8
02-10	Stationary	Spark Ignition	2-Stroke Lean Burn	2050	300		8

Section EE.4: Fuel Information

Emission Unit #	Identify if Primary, Secondary, or Tertiary Fuel	Fuel Type (Identify if Diesel, Gasoline, Natural Gas, Liquefied Petroleum Gas (LPG), Landfill/Digester Gas, or Other)	Fuel Grade	Percent Time Used *(%)*	Maximum Fuel Consumption	Heat Content	Sulfur Content *(%)*	SCC Code	SCC Units
01-01	Primary	Natural Gas	NA	100	0.016 MMscf/hr	1020 BTU/scf	0.05	20200201	MMscf
01-02	Primary	Natural Gas	NA	100	0.016 MMscf/hr	1020 BTU/scf	0.05	20200201	MMscf
01-03	Primary	Natural Gas	NA	100	0.016 MMscf/hr	1020 BTU/scf	0.05	20200201	MMscf
01-04	Primary	Natural Gas	NA	100	0.016 MMscf/hr	1020 BTU/scf	0.05	20200201	MMscf
01-05	Primary	Natural Gas	NA	100	0.016 MMscf/hr	1020 BTU/scf	0.05	20200201	MMscf
01-06	Primary	Natural Gas	NA	100	0.016 MMscf/hr	1020 BTU/scf	0.05	20200201	MMscf
01-07	Primary	Natural Gas	NA	100	0.016 MMscf/hr	1020 BTU/scf	0.05	20200201	MMscf
02-08	Primary	Natural Gas	NA	100	0.017 MMscf/hr	1020 BTU/scf	0.05	20200201	MMscf
02-09	Primary	Natural Gas	NA	100	0.017 MMscf/hr	1020 BTU/scf	0.05	20200201	MMscf
02-10	Primary	Natural Gas	NA	100	0.017 MMscf/hr	1020 BTU/scf	0.05	20200201	MMscf

Section EE.5: Emission Factor Information

Emission factors expressed here are based on the potential to emit.

Emission Unit #	Fuel	Pollutant	Emission Factor	Emission Factor Units	Source of Emission Factor
01-01 01-02 01-03 01-04 01-05 01-06 01-07	Natural Gas	CO	333.78	lb/MMscf	Vendor Data
01-01 01-02 01-03 01-04 01-05 01-06 01-07	Natural Gas	NOx	4,768.28	lb/MMscf	Vendor Data
01-01 01-02 01-03 01-04 01-05 01-06 01-07	Natural Gas	PM	49.28	lb/MMscf	AP-42, Section 3.2 (Revised 4/00), Table 3.2-2
01-01 01-02 01-03 01-04 01-05 01-06 01-07	Natural Gas	PM10	49.28	lb/MMscf	AP-42, Section 3.2 (Revised 4/00), Table 3.2-2
01-01 01-02 01-03 01-04 01-05 01-06 01-07	Natural Gas	PM2.5	49.28	lb/MMscf	AP-42, Section 3.2 (Revised 4/00), Table 3.2-2
01-01 01-02 01-03 01-04 01-05 01-06 01-07	Natural Gas	SO2	0.60	lb/MMscf	AP-42, Section 3.2 (Revised 4/00), Table 3.2-2
01-01 01-02 01-03 01-04 01-05 01-06 01-07	Natural Gas	VOC	173.98	lb/MMscf	Scaling of AP-42, Section 3.2 (7/02), Table 3.2-1 using Vendor Data
01-01 01-02 01-03 01-04 01-05 01-06 01-07	Natural Gas	Total HAPs	115.47	lb/MMscf	Scaling of AP-42, Section 3.2 (7/02), Table 3.2-1 using Vendor Data
01-01 01-02 01-03 01-04 01-05 01-06 01-07	Natural Gas	CO2	120,017.00	lb/MMscf	40 CFR 98, Subpart C, Table C-1
01-01 01-02 01-03 01-04 01-05 01-06 01-07	Natural Gas	CH4	2,105.11	lb/MMscf	Scaling of AP-42, Section 3.2 (7/02), Table 3.2-1 using Vendor Data
01-01 01-02 01-03 01-04 01-05 01-06 01-07	Natural Gas	N2O	0.23	lb/MMscf	40 CFR 98, Subpart C, Table C-2

Emission Unit #	Fuel	Pollutant	Emission Factor	Emission Factor Units	Source of Emission Factor
01-01 01-02 01-03 01-04 01-05 01-06 01-07	Natural Gas	CO2e	172,713.00	lb/MMscf	40 CFR 98, Subpart A, Table A-1
02-08 02-09 02-10	Natural Gas	CO	665.73	lb/MMscf	Vendor Data
02-08 02-09 02-10	Natural Gas	NOx	266.29	lb/MMscf	Vendor Data
02-08 02-09 02-10	Natural Gas	PM	49.28	lb/MMscf	AP-42, Section 3.2 (Revised 4/00), Table 3.2-2
02-08 02-09 02-10	Natural Gas	PM10	49.28	lb/MMscf	AP-42, Section 3.2 (Revised 4/00), Table 3.2-2
02-08 02-09 02-10	Natural Gas	PM2.5	49.28	lb/MMscf	AP-42, Section 3.2 (Revised 4/00), Table 3.2-2
02-08 02-09 02-10	Natural Gas	SO2	0.60	lb/MMscf	AP-42, Section 3.2 (Revised 4/00), Table 3.2-2
02-08 02-09 02-10	Natural Gas	VOC	266.29	lb/MMscf	Scaling of AP-42, Section 3.2 (7/02), Table 3.2-1 using Vendor Data
02-08 02-09 02-10	Natural Gas	Total HAPs	176.73	lb/MMscf	Scaling of AP-42, Section 3.2 (7/02), Table 3.2-1 using Vendor Data
02-08 02-09 02-10	Natural Gas	CO2	120,017.00	lb/MMscf	40 CFR 98, Subpart C, Table C-1
02-08 02-09 02-10	Natural Gas	CH4	3,222.02	lb/MMscf	Scaling of AP-42, Section 3.2 (7/02), Table 3.2-1 using Vendor Data
02-08 02-09 02-10	Natural Gas	N2O	0.23	lb/MMscf	40 CFR 98, Subpart C, Table C-2
02-08 02-09 02-10	Natural Gas	CO2e	200,635.00	lb/MMscf	40 CFR 98, Subpart A, Table A-1

N.1: Emission Summary

Emission Unit #	Emission Unit Name	Process ID	Process Name	Control Device Name	Control Device ID	Stack ID	Maximum Design Capacity *(SCC Units/hour)*	Average Design Capacity *(SCC Units/hour)*	Pollutant	Uncontrolled Emission Factor *(lb/SCC Units)*	Emission Factor Source (e.g. AP-42, Stack Test, Mass Balance)	Capture Efficiency *(%)*	Control Efficiency *(%)*	Hourly Emissions		Annual Emissions	
														Uncontrolled Potential *(lb/hr)*	Controlled Potential *(lb/hr)*	Uncontrolled Potential *(tons/yr)*	Controlled Potential *(tons/yr)*
01-01	Clark HBA-8 ICE (20901)	1	Normal Ops	NA	NA	1-1	0.017	0.016	CO	333.78	Vendor Data	NA	NA	5.61	NA	23.39	NA
01-01	Clark HBA-8 ICE (20901)	1	Normal Ops	NA	NA	1-1	0.017	0.016	NOx	4768.28	Vendor Data	NA	NA	80.11	NA	334.16	NA
01-01	Clark HBA-8 ICE (20901)	1	Normal Ops	NA	NA	1-1	0.017	0.016	PM	49.28	AP-42, Section 3.2 (Revised 4/00), Table 3.2-2	NA	NA	0.83	NA	3.45	NA
01-01	Clark HBA-8 ICE (20901)	1	Normal Ops	NA	NA	1-1	0.017	0.016	PM10	49.28	AP-42, Section 3.2 (Revised 4/00), Table 3.2-2	NA	NA	0.83	NA	3.45	NA
01-01	Clark HBA-8 ICE (20901)	1	Normal Ops	NA	NA	1-1	0.017	0.016	PM2.5	49.28	AP-42, Section 3.2 (Revised 4/00), Table 3.2-2	NA	NA	0.83	NA	3.45	NA
01-01	Clark HBA-8 ICE (20901)	1	Normal Ops	NA	NA	1-1	0.017	0.016	SO2	0.6	AP-42, Section 3.2 (Revised 4/00), Table 3.2-2	NA	NA	0.01	NA	0.04	NA
01-01	Clark HBA-8 ICE (20901)	1	Normal Ops	NA	NA	1-1	0.017	0.016	VOC	173.98	Scaling of AP-42, Section 3.2 (7/02), Table 3.2-1 using Vendor Data	NA	NA	2.92	NA	12.19	NA
01-01	Clark HBA-8 ICE (20901)	1	Normal Ops	NA	NA	1-1	0.017	0.016	Total HAPs	115.46897	Scaling of AP-42, Section 3.2 (7/02), Table 3.2-1 using Vendor Data	NA	NA	1.94	NA	8.09	NA
01-01	Clark HBA-8 ICE (20901)	1	Normal Ops	NA	NA	1-1	0.017	0.016	CO2	120017	40 CFR 98, Subpart C, Table C-1	NA	NA	2016.29	NA	8410.79	NA
01-01	Clark HBA-8 ICE (20901)	1	Normal Ops	NA	NA	1-1	0.017	0.016	CH4	2105.11	Scaling of AP-42, Section 3.2 (7/02), Table 3.2-1 using Vendor Data	NA	NA	35.37	NA	147.53	NA
01-01	Clark HBA-8 ICE (20901)	1	Normal Ops	NA	NA	1-1	0.017	0.016	N2O	0.2262	40 CFR 98, Subpart C, Table C-2	NA	NA	0.00	NA	0.02	NA
01-01	Clark HBA-8 ICE (20901)	1	Normal Ops	NA	NA	1-1	0.017	0.016	CO2e	172713	40 CFR 98, Subpart A, Table A-1	NA	NA	2901.58	NA	12103.73	NA
01-02	Clark HBA-8 ICE (20902)	1	Normal Ops	NA	NA	1-2	0.017	0.016	CO	333.78	Vendor Data	NA	NA	5.61	NA	23.39	NA
01-02	Clark HBA-8 ICE (20902)	1	Normal Ops	NA	NA	1-2	0.017	0.016	NOx	4,768.28	Vendor Data	NA	NA	80.11	NA	334.16	NA
01-02	Clark HBA-8 ICE (20902)	1	Normal Ops	NA	NA	1-2	0.017	0.016	PM	49.28	AP-42, Section 3.2 (Revised 4/00), Table 3.2-2	NA	NA	0.83	NA	3.45	NA
01-02	Clark HBA-8 ICE (20902)	1	Normal Ops	NA	NA	1-2	0.017	0.016	PM10	49.28	AP-42, Section 3.2 (Revised 4/00), Table 3.2-2	NA	NA	0.83	NA	3.45	NA
01-02	Clark HBA-8 ICE (20902)	1	Normal Ops	NA	NA	1-2	0.017	0.016	PM2.5	49.28	AP-42, Section 3.2 (Revised 4/00), Table 3.2-2	NA	NA	0.83	NA	3.45	NA

N.1: Emission Summary

Emission Unit #	Emission Unit Name	Process ID	Process Name	Control Device Name	Control Device ID	Stack ID	Maximum Design Capacity (SCC Units/hour)	Average Design Capacity (SCC Units/hour)	Pollutant	Uncontrolled Emission Factor (lb/SCC Units)	Emission Factor Source (e.g. AP-42, Stack Test, Mass Balance)	Capture Efficiency (%)	Control Efficiency (%)	Hourly Emissions		Annual Emissions	
														Uncontrolled Potential (lb/hr)	Controlled Potential (lb/hr)	Uncontrolled Potential (tons/yr)	Controlled Potential (tons/yr)
01-02	Clark HBA-8 ICE (20902)	1	Normal Ops	NA	NA	1-2	0.017	0.016	SO2	0.60	AP-42, Section 3.2 (Revised 4/00), Table 3.2-2	NA	NA	0.01	NA	0.04	NA
01-02	Clark HBA-8 ICE (20902)	1	Normal Ops	NA	NA	1-2	0.017	0.016	VOC	173.98	Scaling of AP-42, Section 3.2 (7/02), Table 3.2-1 using Vendor Data	NA	NA	2.92	NA	12.19	NA
01-02	Clark HBA-8 ICE (20902)	1	Normal Ops	NA	NA	1-2	0.017	0.016	Total HAPs	115.47	Scaling of AP-42, Section 3.2 (7/02), Table 3.2-1 using Vendor Data	NA	NA	1.94	NA	8.09	NA
01-02	Clark HBA-8 ICE (20902)	1	Normal Ops	NA	NA	1-2	0.017	0.016	CO2	120,017	40 CFR 98, Subpart C, Table C-1	NA	NA	2016.29	NA	8410.79	NA
01-02	Clark HBA-8 ICE (20902)	1	Normal Ops	NA	NA	1-2	0.017	0.016	CH4	2,105.11	Scaling of AP-42, Section 3.2 (7/02), Table 3.2-1 using Vendor Data	NA	NA	35.37	NA	147.53	NA
01-02	Clark HBA-8 ICE (20902)	1	Normal Ops	NA	NA	1-2	0.017	0.016	N2O	0.23	40 CFR 98, Subpart C, Table C-2	NA	NA	0.00	NA	0.02	NA
01-02	Clark HBA-8 ICE (20902)	1	Normal Ops	NA	NA	1-2	0.017	0.016	CO2e	172,713	40 CFR 98, Subpart A, Table A-1	NA	NA	2901.58	NA	12103.73	NA
01-03	Clark HBA-8 ICE (20903)	1	Normal Ops	NA	NA	1-3	0.017	0.016	CO	333.78	Vendor Data	NA	NA	5.61	NA	23.39	NA
01-03	Clark HBA-8 ICE (20903)	1	Normal Ops	NA	NA	1-3	0.017	0.016	NOx	4,768.28	Vendor Data	NA	NA	80.11	NA	334.16	NA
01-03	Clark HBA-8 ICE (20903)	1	Normal Ops	NA	NA	1-3	0.017	0.016	PM	49.28	AP-42, Section 3.2 (Revised 4/00), Table 3.2-2	NA	NA	0.83	NA	3.45	NA
01-03	Clark HBA-8 ICE (20903)	1	Normal Ops	NA	NA	1-3	0.017	0.016	PM10	49.28	AP-42, Section 3.2 (Revised 4/00), Table 3.2-2	NA	NA	0.83	NA	3.45	NA
01-03	Clark HBA-8 ICE (20903)	1	Normal Ops	NA	NA	1-3	0.017	0.016	PM2.5	49.28	AP-42, Section 3.2 (Revised 4/00), Table 3.2-2	NA	NA	0.83	NA	3.45	NA
01-03	Clark HBA-8 ICE (20903)	1	Normal Ops	NA	NA	1-3	0.017	0.016	SO2	0.60	AP-42, Section 3.2 (Revised 4/00), Table 3.2-2	NA	NA	0.01	NA	0.04	NA
01-03	Clark HBA-8 ICE (20903)	1	Normal Ops	NA	NA	1-3	0.017	0.016	VOC	173.98	Scaling of AP-42, Section 3.2 (7/02), Table 3.2-1 using Vendor Data	NA	NA	2.92	NA	12.19	NA
01-03	Clark HBA-8 ICE (20903)	1	Normal Ops	NA	NA	1-3	0.017	0.016	Total HAPs	115.47	Scaling of AP-42, Section 3.2 (7/02), Table 3.2-1 using Vendor Data	NA	NA	1.94	NA	8.09	NA
01-03	Clark HBA-8 ICE (20903)	1	Normal Ops	NA	NA	1-3	0.017	0.016	CO2	120,017	40 CFR 98, Subpart C, Table C-1	NA	NA	2016.29	NA	8410.79	NA
01-03	Clark HBA-8 ICE (20903)	1	Normal Ops	NA	NA	1-3	0.017	0.016	CH4	2,105.11	Scaling of AP-42, Section 3.2 (7/02), Table 3.2-1 using Vendor Data	NA	NA	35.37	NA	147.53	NA
01-03	Clark HBA-8 ICE (20903)	1	Normal Ops	NA	NA	1-3	0.017	0.016	N2O	0.23	40 CFR 98, Subpart C, Table C-2	NA	NA	0.00	NA	0.02	NA

N.1: Emission Summary

Emission Unit #	Emission Unit Name	Process ID	Process Name	Control Device Name	Control Device ID	Stack ID	Maximum Design Capacity *(SCC Units/hour)*	Average Design Capacity *(SCC Units/hour)*	Pollutant	Uncontrolled Emission Factor *(lb/SCC Units)*	Emission Factor Source (e.g. AP-42, Stack Test, Mass Balance)	Capture Efficiency *(%)*	Control Efficiency *(%)*	Hourly Emissions		Annual Emissions	
														Uncontrolled Potential *(lb/hr)*	Controlled Potential *(lb/hr)*	Uncontrolled Potential *(tons/yr)*	Controlled Potential *(tons/yr)*
01-03	Clark HBA-8 ICE (20903)	1	Normal Ops	NA	NA	1-3	0.017	0.016	CO2e	172,713	40 CFR 98, Subpart A, Table A-1	NA	NA	2901.58	NA	12103.73	NA
01-04	Clark HBA-8 ICE (20904)	1	Normal Ops	NA	NA	1-4	0.017	0.016	CO	333.78	Vendor Data	NA	NA	5.61	NA	23.39	NA
01-04	Clark HBA-8 ICE (20904)	1	Normal Ops	NA	NA	1-4	0.017	0.016	NOx	4,768.28	Vendor Data	NA	NA	80.11	NA	334.16	NA
01-04	Clark HBA-8 ICE (20904)	1	Normal Ops	NA	NA	1-4	0.017	0.016	PM	49.28	AP-42, Section 3.2 (Revised 4/00), Table 3.2-2	NA	NA	0.83	NA	3.45	NA
01-04	Clark HBA-8 ICE (20904)	1	Normal Ops	NA	NA	1-4	0.017	0.016	PM10	49.28	AP-42, Section 3.2 (Revised 4/00), Table 3.2-2	NA	NA	0.83	NA	3.45	NA
01-04	Clark HBA-8 ICE (20904)	1	Normal Ops	NA	NA	1-4	0.017	0.016	PM2.5	49.28	AP-42, Section 3.2 (Revised 4/00), Table 3.2-2	NA	NA	0.83	NA	3.45	NA
01-04	Clark HBA-8 ICE (20904)	1	Normal Ops	NA	NA	1-4	0.017	0.016	SO2	0.60	AP-42, Section 3.2 (Revised 4/00), Table 3.2-2	NA	NA	0.01	NA	0.04	NA
01-04	Clark HBA-8 ICE (20904)	1	Normal Ops	NA	NA	1-4	0.017	0.016	VOC	173.98	Scaling of AP-42, Section 3.2 (7/02), Table 3.2-1 using Vendor Data	NA	NA	2.92	NA	12.19	NA
01-04	Clark HBA-8 ICE (20904)	1	Normal Ops	NA	NA	1-4	0.017	0.016	Total HAPs	115.47	Scaling of AP-42, Section 3.2 (7/02), Table 3.2-1 using Vendor Data	NA	NA	1.94	NA	8.09	NA
01-04	Clark HBA-8 ICE (20904)	1	Normal Ops	NA	NA	1-4	0.017	0.016	CO2	120,017	40 CFR 98, Subpart C, Table C-1	NA	NA	2016.29	NA	8410.79	NA
01-04	Clark HBA-8 ICE (20904)	1	Normal Ops	NA	NA	1-4	0.017	0.016	CH4	2,105.11	Scaling of AP-42, Section 3.2 (7/02), Table 3.2-1 using Vendor Data	NA	NA	35.37	NA	147.53	NA
01-04	Clark HBA-8 ICE (20904)	1	Normal Ops	NA	NA	1-4	0.017	0.016	N2O	0.23	40 CFR 98, Subpart C, Table C-2	NA	NA	0.00	NA	0.02	NA
01-04	Clark HBA-8 ICE (20904)	1	Normal Ops	NA	NA	1-4	0.017	0.016	CO2e	172,713	40 CFR 98, Subpart A, Table A-1	NA	NA	2901.58	NA	12103.73	NA
01-05	Clark HBA-8 ICE (20905)	1	Normal Ops	NA	NA	1-5	0.017	0.016	CO	333.78	Vendor Data	NA	NA	5.61	NA	23.39	NA
01-05	Clark HBA-8 ICE (20905)	1	Normal Ops	NA	NA	1-5	0.017	0.016	NOx	4,768.28	Vendor Data	NA	NA	80.11	NA	334.16	NA
01-05	Clark HBA-8 ICE (20905)	1	Normal Ops	NA	NA	1-5	0.017	0.016	PM	49.28	AP-42, Section 3.2 (Revised 4/00), Table 3.2-2	NA	NA	0.83	NA	3.45	NA
01-05	Clark HBA-8 ICE (20905)	1	Normal Ops	NA	NA	1-5	0.017	0.016	PM10	49.28	AP-42, Section 3.2 (Revised 4/00), Table 3.2-2	NA	NA	0.83	NA	3.45	NA
01-05	Clark HBA-8 ICE (20905)	1	Normal Ops	NA	NA	1-5	0.017	0.016	PM2.5	49.28	AP-42, Section 3.2 (Revised 4/00), Table 3.2-2	NA	NA	0.83	NA	3.45	NA

N.1: Emission Summary

Emission Unit #	Emission Unit Name	Process ID	Process Name	Control Device Name	Control Device ID	Stack ID	Maximum Design Capacity (SCC Units/hour)	Average Design Capacity (SCC Units/hour)	Pollutant	Uncontrolled Emission Factor (lb/SCC Units)	Emission Factor Source (e.g. AP-42, Stack Test, Mass Balance)	Capture Efficiency (%)	Control Efficiency (%)	Hourly Emissions		Annual Emissions	
														Uncontrolled Potential (lb/hr)	Controlled Potential (lb/hr)	Uncontrolled Potential (tons/yr)	Controlled Potential (tons/yr)
01-05	Clark HBA-8 ICE (20905)	1	Normal Ops	NA	NA	1-5	0.017	0.016	SO2	0.60	AP-42, Section 3.2 (Revised 4/00), Table 3.2-2	NA	NA	0.01	NA	0.04	NA
01-05	Clark HBA-8 ICE (20905)	1	Normal Ops	NA	NA	1-5	0.017	0.016	VOC	173.98	Scaling of AP-42, Section 3.2 (7/02), Table 3.2-1 using Vendor Data	NA	NA	2.92	NA	12.19	NA
01-05	Clark HBA-8 ICE (20905)	1	Normal Ops	NA	NA	1-5	0.017	0.016	Total HAPs	115.47	Scaling of AP-42, Section 3.2 (7/02), Table 3.2-1 using Vendor Data	NA	NA	1.94	NA	8.09	NA
01-05	Clark HBA-8 ICE (20905)	1	Normal Ops	NA	NA	1-5	0.017	0.016	CO2	120,017	40 CFR 98, Subpart C, Table C-1	NA	NA	2016.29	NA	8410.79	NA
01-05	Clark HBA-8 ICE (20905)	1	Normal Ops	NA	NA	1-5	0.017	0.016	CH4	2,105.11	Scaling of AP-42, Section 3.2 (7/02), Table 3.2-1 using Vendor Data	NA	NA	35.37	NA	147.53	NA
01-05	Clark HBA-8 ICE (20905)	1	Normal Ops	NA	NA	1-5	0.017	0.016	N2O	0.23	40 CFR 98, Subpart C, Table C-2	NA	NA	0.00	NA	0.02	NA
01-05	Clark HBA-8 ICE (20905)	1	Normal Ops	NA	NA	1-5	0.017	0.016	CO2e	172,713	40 CFR 98, Subpart A, Table A-1	NA	NA	2901.58	NA	12103.73	NA
01-06	Clark HBA-8 ICE (20906)	1	Normal Ops	NA	NA	1-6	0.017	0.016	CO	333.78	Vendor Data	NA	NA	5.61	NA	23.39	NA
01-06	Clark HBA-8 ICE (20906)	1	Normal Ops	NA	NA	1-6	0.017	0.016	NOx	4,768.28	Vendor Data	NA	NA	80.11	NA	334.16	NA
01-06	Clark HBA-8 ICE (20906)	1	Normal Ops	NA	NA	1-6	0.017	0.016	PM	49.28	AP-42, Section 3.2 (Revised 4/00), Table 3.2-2	NA	NA	0.83	NA	3.45	NA
01-06	Clark HBA-8 ICE (20906)	1	Normal Ops	NA	NA	1-6	0.017	0.016	PM10	49.28	AP-42, Section 3.2 (Revised 4/00), Table 3.2-2	NA	NA	0.83	NA	3.45	NA
01-06	Clark HBA-8 ICE (20906)	1	Normal Ops	NA	NA	1-6	0.017	0.016	PM2.5	49.28	AP-42, Section 3.2 (Revised 4/00), Table 3.2-2	NA	NA	0.83	NA	3.45	NA
01-06	Clark HBA-8 ICE (20906)	1	Normal Ops	NA	NA	1-6	0.017	0.016	SO2	0.60	AP-42, Section 3.2 (Revised 4/00), Table 3.2-2	NA	NA	0.01	NA	0.04	NA
01-06	Clark HBA-8 ICE (20906)	1	Normal Ops	NA	NA	1-6	0.017	0.016	VOC	173.98	Scaling of AP-42, Section 3.2 (7/02), Table 3.2-1 using Vendor Data	NA	NA	2.92	NA	12.19	NA
01-06	Clark HBA-8 ICE (20906)	1	Normal Ops	NA	NA	1-6	0.017	0.016	Total HAPs	115.47	Scaling of AP-42, Section 3.2 (7/02), Table 3.2-1 using Vendor Data	NA	NA	1.94	NA	8.09	NA
01-06	Clark HBA-8 ICE (20906)	1	Normal Ops	NA	NA	1-6	0.017	0.016	CO2	120,017	40 CFR 98, Subpart C, Table C-1	NA	NA	2016.29	NA	8410.79	NA
01-06	Clark HBA-8 ICE (20906)	1	Normal Ops	NA	NA	1-6	0.017	0.016	CH4	2,105.11	Scaling of AP-42, Section 3.2 (7/02), Table 3.2-1 using Vendor Data	NA	NA	35.37	NA	147.53	NA
01-06	Clark HBA-8 ICE (20906)	1	Normal Ops	NA	NA	1-6	0.017	0.016	N2O	0.23	40 CFR 98, Subpart C, Table C-2	NA	NA	0.00	NA	0.02	NA

N.1: Emission Summary

Emission Unit #	Emission Unit Name	Process ID	Process Name	Control Device Name	Control Device ID	Stack ID	Maximum Design Capacity (SCC Units/hour)	Average Design Capacity (SCC Units/hour)	Pollutant	Uncontrolled Emission Factor (lb/SCC Units)	Emission Factor Source (e.g. AP-42, Stack Test, Mass Balance)	Capture Efficiency (%)	Control Efficiency (%)	Hourly Emissions		Annual Emissions	
														Uncontrolled Potential (lb/hr)	Controlled Potential (lb/hr)	Uncontrolled Potential (tons/yr)	Controlled Potential (tons/yr)
01-06	Clark HBA-8 ICE (20906)	1	Normal Ops	NA	NA	1-6	0.017	0.016	CO2e	172,713	40 CFR 98, Subpart A, Table A-1	NA	NA	2901.58	NA	12103.73	NA
01-07	Clark HBA-8 ICE (20907)	1	Normal Ops	NA	NA	1-7	0.017	0.016	CO	333.78	Vendor Data	NA	NA	5.61	NA	23.39	NA
01-07	Clark HBA-8 ICE (20907)	1	Normal Ops	NA	NA	1-7	0.017	0.016	NOx	4,768.28	Vendor Data	NA	NA	80.11	NA	334.16	NA
01-07	Clark HBA-8 ICE (20907)	1	Normal Ops	NA	NA	1-7	0.017	0.016	PM	49.28	AP-42, Section 3.2 (Revised 4/00), Table 3.2-2	NA	NA	0.83	NA	3.45	NA
01-07	Clark HBA-8 ICE (20907)	1	Normal Ops	NA	NA	1-7	0.017	0.016	PM10	49.28	AP-42, Section 3.2 (Revised 4/00), Table 3.2-2	NA	NA	0.83	NA	3.45	NA
01-07	Clark HBA-8 ICE (20907)	1	Normal Ops	NA	NA	1-7	0.017	0.016	PM2.5	49.28	AP-42, Section 3.2 (Revised 4/00), Table 3.2-2	NA	NA	0.83	NA	3.45	NA
01-07	Clark HBA-8 ICE (20907)	1	Normal Ops	NA	NA	1-7	0.017	0.016	SO2	0.60	AP-42, Section 3.2 (Revised 4/00), Table 3.2-2	NA	NA	0.01	NA	0.04	NA
01-07	Clark HBA-8 ICE (20907)	1	Normal Ops	NA	NA	1-7	0.017	0.016	VOC	173.98	Scaling of AP-42, Section 3.2 (7/02), Table 3.2-1 using Vendor Data	NA	NA	2.92	NA	12.19	NA
01-07	Clark HBA-8 ICE (20907)	1	Normal Ops	NA	NA	1-7	0.017	0.016	Total HAPs	115.47	Scaling of AP-42, Section 3.2 (7/02), Table 3.2-1 using Vendor Data	NA	NA	1.94	NA	8.09	NA
01-07	Clark HBA-8 ICE (20907)	1	Normal Ops	NA	NA	1-7	0.017	0.016	CO2	120,017	40 CFR 98, Subpart C, Table C-1	NA	NA	2016.29	NA	8410.79	NA
01-07	Clark HBA-8 ICE (20907)	1	Normal Ops	NA	NA	1-7	0.017	0.016	CH4	2,105.11	Scaling of AP-42, Section 3.2 (7/02), Table 3.2-1 using Vendor Data	NA	NA	35.37	NA	147.53	NA
01-07	Clark HBA-8 ICE (20907)	1	Normal Ops	NA	NA	1-7	0.017	0.016	N2O	0.23	40 CFR 98, Subpart C, Table C-2	NA	NA	0.00	NA	0.02	NA
01-07	Clark HBA-8 ICE (20907)	1	Normal Ops	NA	NA	1-7	0.017	0.016	CO2e	172,713	40 CFR 98, Subpart A, Table A-1	NA	NA	2901.58	NA	12103.73	NA
02-08	Clark HBA-8T ICE (20908)	1	Controlled CO-VOC-HAP	OxCat	OxCat-2-8	2-8	0.018	0.017	CO	665.73	Vendor Data	NA	58%	11.86	4.98	49.49	20.79
02-08	Clark HBA-8T ICE (20908)	1	Controlled CO-VOC-HAP	OxCat	OxCat-2-8	2-8	0.018	0.017	VOC	266.29	Vendor Data	NA	29%	4.75	3.36	19.80	14.01
02-08	Clark HBA-8T ICE (20908)	1	Controlled CO-VOC-HAP	OxCat	OxCat-2-8	2-8	0.018	0.017	Total HAPs	176.73	Vendor Data	NA	44%	3.15	1.76	13.14	7.35
02-08	Clark HBA-8T ICE (20908)	2	Uncontrolled	OxCat	OxCat-2-8	2-8	0.018	0.017	NOx	266.29	Vendor Data	NA	0.00%	4.75	NA	19.80	NA
02-08	Clark HBA-8T ICE (20908)	2	Uncontrolled	OxCat	OxCat-2-8	2-8	0.018	0.017	PM	49.28	AP-42, Section 3.2 (Revised 4/00), Table 3.2-2	NA	NA	0.88	NA	3.66	NA
02-08	Clark HBA-8T ICE (20908)	2	Uncontrolled	OxCat	OxCat-2-8	2-8	0.018	0.017	PM10	49.28	AP-42, Section 3.2 (Revised 4/00), Table 3.2-2	NA	NA	0.88	NA	3.66	NA

N.1: Emission Summary

Emission Unit #	Emission Unit Name	Process ID	Process Name	Control Device Name	Control Device ID	Stack ID	Maximum Design Capacity (SCC Units/hour)	Average Design Capacity (SCC Units/hour)	Pollutant	Uncontrolled Emission Factor (lb/SCC Units)	Emission Factor Source (e.g. AP-42, Stack Test, Mass Balance)	Capture Efficiency (%)	Control Efficiency (%)	Hourly Emissions		Annual Emissions	
														Uncontrolled Potential (lb/hr)	Controlled Potential (lb/hr)	Uncontrolled Potential (tons/yr)	Controlled Potential (tons/yr)
02-08	Clark HBA-8T ICE (20908)	2	Uncontrolled	OxCat	OxCat-2-8	2-8	0.018	0.017	PM2.5	49.28	AP-42, Section 3.2 (Revised 4/00), Table 3.2-2	NA	NA	0.88	NA	3.66	NA
02-08	Clark HBA-8T ICE (20908)	2	Uncontrolled	OxCat	OxCat-2-8	2-8	0.018	0.017	SO2	0.60	AP-42, Section 3.2 (Revised 4/00), Table 3.2-2	NA	NA	0.01	NA	0.04	NA
02-08	Clark HBA-8T ICE (20908)	2	Uncontrolled	OxCat	OxCat-2-8	2-8	0.018	0.017	CO2	120,017	40 CFR 98, Subpart C, Table C-1	NA	NA	2138.77	NA	8921.75	NA
02-08	Clark HBA-8T ICE (20908)	2	Uncontrolled	OxCat	OxCat-2-8	2-8	0.018	0.017	CH4	3,222.02	Scaling of AP-42, Section 3.2 (7/02), Table 3.2-1 using Vendor Data	NA	NA	57.42	NA	239.52	NA
02-08	Clark HBA-8T ICE (20908)	2	Uncontrolled	OxCat	OxCat-2-8	2-8	0.018	0.017	N2O	0.23	40 CFR 98, Subpart C, Table C-2	NA	NA	0.00	NA	0.02	NA
02-08	Clark HBA-8T ICE (20908)	2	Uncontrolled	OxCat	OxCat-2-8	2-8	0.018	0.017	CO2e	200,635	40 CFR 98, Subpart A, Table A-1	NA	NA	3575.44	NA	14914.68	NA
02-09	Clark HBA-8T ICE (20909)	1	Controlled CO-VOC-HAP	OxCat	OxCat-2-9	2-9	0.018	0.017	CO	665.73	Vendor Data	NA	58%	11.86	4.98	49.49	20.79
02-09	Clark HBA-8T ICE (20909)	1	Controlled CO-VOC-HAP	OxCat	OxCat-2-9	2-9	0.018	0.017	VOC	266.29	Vendor Data	NA	29%	4.75	3.36	19.80	14.01
02-09	Clark HBA-8T ICE (20909)	1	Controlled CO-VOC-HAP	OxCat	OxCat-2-9	2-9	0.018	0.017	Total HAPs	176.73	Vendor Data	NA	44%	3.15	1.76	13.14	7.35
02-09	Clark HBA-8T ICE (20909)	2	Uncontrolled	OxCat	OxCat-2-9	2-9	0.018	0.017	NOx	266.29	Vendor Data	NA	0.00%	4.75	NA	19.80	NA
02-09	Clark HBA-8T ICE (20909)	2	Uncontrolled	OxCat	OxCat-2-9	2-9	0.018	0.017	PM	49.28	AP-42, Section 3.2 (Revised 4/00), Table 3.2-2	NA	NA	0.88	NA	3.66	NA
02-09	Clark HBA-8T ICE (20909)	2	Uncontrolled	OxCat	OxCat-2-9	2-9	0.018	0.017	PM10	49.28	AP-42, Section 3.2 (Revised 4/00), Table 3.2-2	NA	NA	0.88	NA	3.66	NA
02-09	Clark HBA-8T ICE (20909)	2	Uncontrolled	OxCat	OxCat-2-9	2-9	0.018	0.017	PM2.5	49.28	AP-42, Section 3.2 (Revised 4/00), Table 3.2-2	NA	NA	0.88	NA	3.66	NA
02-09	Clark HBA-8T ICE (20909)	2	Uncontrolled	OxCat	OxCat-2-9	2-9	0.018	0.017	SO2	0.60	AP-42, Section 3.2 (Revised 4/00), Table 3.2-2	NA	NA	0.01	NA	0.04	NA
02-09	Clark HBA-8T ICE (20909)	2	Uncontrolled	OxCat	OxCat-2-9	2-9	0.018	0.017	CO2	120,017	40 CFR 98, Subpart C, Table C-1	NA	NA	2138.77	NA	8921.75	NA
02-09	Clark HBA-8T ICE (20909)	2	Uncontrolled	OxCat	OxCat-2-9	2-9	0.018	0.017	CH4	3,222.02	Scaling of AP-42, Section 3.2 (7/02), Table 3.2-1 using Vendor Data	NA	NA	57.42	NA	239.52	NA
02-09	Clark HBA-8T ICE (20909)	2	Uncontrolled	OxCat	OxCat-2-9	2-9	0.018	0.017	N2O	0.23	40 CFR 98, Subpart C, Table C-2	NA	NA	0.00	NA	0.02	NA
02-09	Clark HBA-8T ICE (20909)	2	Uncontrolled	OxCat	OxCat-2-9	2-9	0.018	0.017	CO2e	200,635	40 CFR 98, Subpart A, Table A-1	NA	NA	3575.44	NA	14914.68	NA
02-10	Clark HBA-8T ICE (20910)	1	Controlled CO-VOC-HAP	OxCat	OxCat-2-10	2-10	0.018	0.017	CO	665.73	Vendor Data	NA	58%	11.86	4.98	49.49	20.79

N.1: Emission Summary

Emission Unit #	Emission Unit Name	Process ID	Process Name	Control Device Name	Control Device ID	Stack ID	Maximum Design Capacity *(SCC Units/hour)*	Average Design Capacity *(SCC Units/hour)*	Pollutant	Uncontrolled Emission Factor *(lb/SCC Units)*	Emission Factor Source (e.g. AP-42, Stack Test, Mass Balance)	Capture Efficiency *(%)*	Control Efficiency *(%)*	Hourly Emissions		Annual Emissions	
														Uncontrolled Potential *(lb/hr)*	Controlled Potential *(lb/hr)*	Uncontrolled Potential *(tons/yr)*	Controlled Potential *(tons/yr)*
02-10	Clark HBA-8T ICE (20910)	1	Controlled CO-VOC-HAP	OxCat	OxCat-2-10	2-10	0.018	0.017	VOC	266.29	Vendor Data	NA	29%	4.75	3.36	19.80	14.01
02-10	Clark HBA-8T ICE (20910)	1	Controlled CO-VOC-HAP	OxCat	OxCat-2-10	2-10	0.018	0.017	Total HAPs	176.73	Vendor Data	NA	44%	3.15	1.76	13.14	7.35
02-10	Clark HBA-8T ICE (20910)	2	Uncontrolled	OxCat	OxCat-2-10	2-10	0.018	0.017	NOx	266.29	Vendor Data	NA	0.00%	4.75	NA	19.80	NA
02-10	Clark HBA-8T ICE (20910)	2	Uncontrolled	OxCat	OxCat-2-10	2-10	0.018	0.017	PM	49.28	AP-42, Section 3.2 (Revised 4/00), Table 3.2-2	NA	NA	0.88	NA	3.66	NA
02-10	Clark HBA-8T ICE (20910)	2	Uncontrolled	OxCat	OxCat-2-10	2-10	0.018	0.017	PM10	49.28	AP-42, Section 3.2 (Revised 4/00), Table 3.2-2	NA	NA	0.88	NA	3.66	NA
02-10	Clark HBA-8T ICE (20910)	2	Uncontrolled	OxCat	OxCat-2-10	2-10	0.018	0.017	PM2.5	49.28	AP-42, Section 3.2 (Revised 4/00), Table 3.2-2	NA	NA	0.88	NA	3.66	NA
02-10	Clark HBA-8T ICE (20910)	2	Uncontrolled	OxCat	OxCat-2-10	2-10	0.018	0.017	SO2	0.60	AP-42, Section 3.2 (Revised 4/00), Table 3.2-2	NA	NA	0.01	NA	0.04	NA
02-10	Clark HBA-8T ICE (20910)	2	Uncontrolled	OxCat	OxCat-2-10	2-10	0.018	0.017	CO2	120,017	40 CFR 98, Subpart C, Table C-1	NA	NA	2138.77	NA	8921.75	NA
02-10	Clark HBA-8T ICE (20910)	2	Uncontrolled	OxCat	OxCat-2-10	2-10	0.018	0.017	CH4	3,222.02	Scaling of AP-42, Section 3.2 (7/02), Table 3.2-1 using Vendor Data	NA	NA	57.42	NA	239.52	NA
02-10	Clark HBA-8T ICE (20910)	2	Uncontrolled	OxCat	OxCat-2-10	2-10	0.018	0.017	N2O	0.23	40 CFR 98, Subpart C, Table C-2	NA	NA	0.00	NA	0.02	NA
02-10	Clark HBA-8T ICE (20910)	2	Uncontrolled	OxCat	OxCat-2-10	2-10	0.018	0.017	CO2e	200,635	40 CFR 98, Subpart A, Table A-1	NA	NA	3575.44	NA	14914.68	NA
03-11	GE Frame 3 (21001)	1	Normal Op	OxCat+SCR	OxCat+SCR-3-11	3-11	0.08	0.078	CO	137.44	Vendor Guarantee	NA	75.00%	11.32	2.83	46.82	11.71
03-11	GE Frame 3 (21001)	1	Normal Op	OxCat+SCR	OxCat+SCR-3-11	3-11	0.08	0.078	NOx	830.51	Vendor Guarantee	NA	86.41%	68.38	9.29	282.93	38.46
03-11	GE Frame 3 (21001)	1	Normal Op	OxCat+SCR	OxCat+SCR-3-11	3-11	0.08	0.078	PM	6.73	AP-42, Section 3.1 (Revised 4/00), Table 3.1-2a	NA	NA	0.55	NA	2.29	NA
03-11	GE Frame 3 (21001)	1	Normal Op	OxCat+SCR	OxCat+SCR-3-11	3-11	0.08	0.078	PM10	6.73	AP-42, Section 3.1 (Revised 4/00), Table 3.1-2a	NA	NA	0.55	NA	2.29	NA
03-11	GE Frame 3 (21001)	1	Normal Op	OxCat+SCR	OxCat+SCR-3-11	3-11	0.08	0.078	PM2.5	6.73	AP-42, Section 3.1 (Revised 4/00), Table 3.1-2a	NA	NA	0.55	NA	2.29	NA
03-11	GE Frame 3 (21001)	1	Normal Op	OxCat+SCR	OxCat+SCR-3-11	3-11	0.08	0.078	SO2	3.47	AP-42, Section 3.1 (Revised 4/00), Table 3.1-2a	NA	NA	0.29	NA	1.18	NA
03-11	GE Frame 3 (21001)	1	Normal Op	OxCat+SCR	OxCat+SCR-3-11	3-11	0.08	0.078	VOC	17.21	Vendor Guarantee	NA	23.00%	1.42	1.09	5.86	4.51

N.1: Emission Summary

Emission Unit #	Emission Unit Name	Process ID	Process Name	Control Device Name	Control Device ID	Stack ID	Maximum Design Capacity *(SCC Units/hour)*	Average Design Capacity *(SCC Units/hour)*	Pollutant	Uncontrolled Emission Factor *(lb/SCC Units)*	Emission Factor Source (e.g. AP-42, Stack Test, Mass Balance)	Capture Efficiency *(%)*	Control Efficiency *(%)*	Hourly Emissions		Annual Emissions	
														Uncontrolled Potential *(lb/hr)*	Controlled Potential *(lb/hr)*	Uncontrolled Potential *(tons/yr)*	Controlled Potential *(tons/yr)*
03-11	GE Frame 3 (21001)	1	Normal Op	OxCat+SCR	OxCat+SCR-3-11	3-11	0.08	0.078	Formaldehyde	5.82	Scaling of AP-42, Section 3.1 (Revised 4/00), Table 3.1-3 using Vendor Guarantee	NA	50.00%	0.48	0.24	1.98	0.99
03-11	GE Frame 3 (21001)	1	Normal Op	OxCat+SCR	OxCat+SCR-3-11	3-11	0.08	0.078	CO2	120017.00	40 CFR 98, Subpart C, Table C-1	NA	NA	9881.56	NA	40886.15	NA
03-11	GE Frame 3 (21001)	1	Normal Op	OxCat+SCR	OxCat+SCR-3-11	3-11	0.08	0.078	CH4	70.48	Scaling of AP-42, Section 3.1 (Revised 4/00), Table 3.1-2a using Vendor Guarantee	NA	NA	5.80	NA	24.01	NA
03-11	GE Frame 3 (21001)	1	Normal Op	OxCat+SCR	OxCat+SCR-3-11	3-11	0.08	0.078	N2O	0.23	40 CFR 98, Subpart C, Table C-2	NA	NA	0.02	NA	0.08	NA
03-11	GE Frame 3 (21001)	1	Normal Op	OxCat+SCR	OxCat+SCR-3-11	3-11	0.08	0.078	CO2e	121847.00	40 CFR 98, Subpart A, Table A-1	NA	NA	10032.24	NA	41509.57	NA
03-11	GE Frame 3 (21001)	2	Low Temp Op	OxCat+SCR	OxCat+SCR-3-11	3-11	0.103	0.098	CO	537.1294	Vendor Guarantee	NA	75.00%	55.18	13.79	0.16	0.04
03-11	GE Frame 3 (21001)	2	Low Temp Op	OxCat+SCR	OxCat+SCR-3-11	3-11	0.103	0.098	NOx	811.4324	Vendor Guarantee	NA	86.41%	83.35	11.33	0.00	0.00
03-11	GE Frame 3 (21001)	2	Low Temp Op	OxCat+SCR	OxCat+SCR-3-11	3-11	0.103	0.098	PM	6.732	AP-42, Section 3.1 (Revised 4/00), Table 3.1-2a	NA	NA	0.69	NA	0.00	NA
03-11	GE Frame 3 (21001)	2	Low Temp Op	OxCat+SCR	OxCat+SCR-3-11	3-11	0.103	0.098	PM10	6.732	AP-42, Section 3.1 (Revised 4/00), Table 3.1-2a	NA	NA	0.69	NA	0.00	NA
03-11	GE Frame 3 (21001)	2	Low Temp Op	OxCat+SCR	OxCat+SCR-3-11	3-11	0.103	0.098	PM2.5	6.732	AP-42, Section 3.1 (Revised 4/00), Table 3.1-2a	NA	NA	0.69	NA	0.00	NA
03-11	GE Frame 3 (21001)	2	Low Temp Op	OxCat+SCR	OxCat+SCR-3-11	3-11	0.103	0.098	SO2	3.468	AP-42, Section 3.1 (Revised 4/00), Table 3.1-2a	NA	NA	0.36	NA	0.00	NA
03-11	GE Frame 3 (21001)	2	Low Temp Op	OxCat+SCR	OxCat+SCR-3-11	3-11	0.103	0.098	VOC	16.8145	Vendor Guarantee	NA	23.00%	1.73	1.33	0.00	0.00
03-11	GE Frame 3 (21001)	2	Low Temp Op	OxCat+SCR	OxCat+SCR-3-11	3-11	0.103	0.098	Formaldehyde	5.6849	Scaling of AP-42, Section 3.1 (Revised 4/00), Table 3.1-3 using Vendor Guarantee	NA	50.00%	0.58	0.29	0.00	0.00
03-11	GE Frame 3 (21001)	2	Low Temp Op	OxCat+SCR	OxCat+SCR-3-11	3-11	0.103	0.098	CO2	120017	40 CFR 98, Subpart C, Table C-1	NA	NA	12328.83	NA	0.00	NA
03-11	GE Frame 3 (21001)	2	Low Temp Op	OxCat+SCR	OxCat+SCR-3-11	3-11	0.103	0.098	CH4	68.8593	Scaling of AP-42, Section 3.1 (Revised 4/00), Table 3.1-2a using Vendor Guarantee	NA	NA	7.07	NA	0.00	NA
03-11	GE Frame 3 (21001)	2	Low Temp Op	OxCat+SCR	OxCat+SCR-3-11	3-11	0.103	0.098	N2O	0.2262	40 CFR 98, Subpart C, Table C-2	NA	NA	0.02	NA	0.00	NA
03-11	GE Frame 3 (21001)	2	Low Temp Op	OxCat+SCR	OxCat+SCR-3-11	3-11	0.103	0.098	CO2e	121806	40 CFR 98, Subpart A, Table A-1	NA	NA	12512.61	NA	0.00	NA

N.1: Emission Summary

Emission Unit #	Emission Unit Name	Process ID	Process Name	Control Device Name	Control Device ID	Stack ID	Maximum Design Capacity *(SCC Units/hour)*	Average Design Capacity *(SCC Units/hour)*	Pollutant	Uncontrolled Emission Factor *(lb/SCC Units)*	Emission Factor Source (e.g. AP-42, Stack Test, Mass Balance)	Capture Efficiency *(%)*	Control Efficiency *(%)*	Hourly Emissions		Annual Emissions	
														Uncontrolled Potential *(lb/hr)*	Controlled Potential *(lb/hr)*	Uncontrolled Potential *(tons/yr)*	Controlled Potential *(tons/yr)*
03-11	GE Frame 3 (21001)	3	Extreme Low Temp Op	OxCat+SCR	OxCat+SCR-3-11	3-11	0.103	0.098	CO	537.1294	Vendor Guarantee	NA	75.00%	55.18	13.79	0.03	0.01
03-11	GE Frame 3 (21001)	3	Extreme Low Temp Op	OxCat+SCR	OxCat+SCR-3-11	3-11	0.103	0.098	NOx	811.4324	Vendor Guarantee	NA	86.41%	83.35	11.33	0.04	0.01
03-11	GE Frame 3 (21001)	3	Extreme Low Temp Op	OxCat+SCR	OxCat+SCR-3-11	3-11	0.103	0.098	PM	6.732	AP-42, Section 3.1 (Revised 4/00), Table 3.1-2a	NA	NA	0.69	NA	0.00	NA
03-11	GE Frame 3 (21001)	3	Extreme Low Temp Op	OxCat+SCR	OxCat+SCR-3-11	3-11	0.103	0.098	PM10	6.732	AP-42, Section 3.1 (Revised 4/00), Table 3.1-2a	NA	NA	0.69	NA	0.00	NA
03-11	GE Frame 3 (21001)	3	Extreme Low Temp Op	OxCat+SCR	OxCat+SCR-3-11	3-11	0.103	0.098	PM2.5	6.732	AP-42, Section 3.1 (Revised 4/00), Table 3.1-2a	NA	NA	0.69	NA	0.00	NA
03-11	GE Frame 3 (21001)	3	Extreme Low Temp Op	OxCat+SCR	OxCat+SCR-3-11	3-11	0.103	0.098	SO2	3.468	AP-42, Section 3.1 (Revised 4/00), Table 3.1-2a	NA	NA	0.36	NA	0.00	NA
03-11	GE Frame 3 (21001)	3	Extreme Low Temp Op	OxCat+SCR	OxCat+SCR-3-11	3-11	0.103	0.098	VOC	16.8145	Vendor Guarantee	NA	23.00%	1.73	1.33	0.00	0.00
03-11	GE Frame 3 (21001)	3	Extreme Low Temp Op	OxCat+SCR	OxCat+SCR-3-11	3-11	0.103	0.098	Formaldehyde	5.6849	Scaling of AP-42, Section 3.1 (Revised 4/00), Table 3.1-3 using Vendor Guarantee	NA	50.00%	0.58	0.29	0.00	0.00
03-11	GE Frame 3 (21001)	3	Extreme Low Temp Op	OxCat+SCR	OxCat+SCR-3-11	3-11	0.103	0.098	CO2	120017	40 CFR 98, Subpart C, Table C-1	NA	NA	12328.83	NA	5.87	NA
03-11	GE Frame 3 (21001)	3	Extreme Low Temp Op	OxCat+SCR	OxCat+SCR-3-11	3-11	0.103	0.098	CH4	68.8593	Scaling of AP-42, Section 3.1 (Revised 4/00), Table 3.1-2a using Vendor Guarantee	NA	NA	7.07	NA	0.00	NA
03-11	GE Frame 3 (21001)	3	Extreme Low Temp Op	OxCat+SCR	OxCat+SCR-3-11	3-11	0.103	0.098	N2O	0.2262	40 CFR 98, Subpart C, Table C-2	NA	NA	0.02	NA	0.00	NA
03-11	GE Frame 3 (21001)	3	Extreme Low Temp Op	OxCat+SCR	OxCat+SCR-3-11	3-11	0.103	0.098	CO2e	121806	40 CFR 98, Subpart A, Table A-1	NA	NA	12512.61	NA	5.96	NA
03-11	GE Frame 3 (21001)	4	Start-up	OxCat+SCR	OxCat+SCR-3-11	3-11	2	2	CO	184.52	Vendor Guarantee	NA	0.00%	369.03	369.03	14.39	14.39
03-11	GE Frame 3 (21001)	4	Start-up	OxCat+SCR	OxCat+SCR-3-11	3-11	2	2	NOx	3.98	Vendor Guarantee	NA	0.00%	7.96	7.96	0.31	0.31
03-11	GE Frame 3 (21001)	4	Start-up	OxCat+SCR	OxCat+SCR-3-11	3-11	2	2	PM	0.06	AP-42, Section 3.1 (Revised 4/00), Table 3.1-2a	NA	NA	0.12	NA	0.00	NA
03-11	GE Frame 3 (21001)	4	Start-up	OxCat+SCR	OxCat+SCR-3-11	3-11	2	2	PM10	0.06	AP-42, Section 3.1 (Revised 4/00), Table 3.1-2a	NA	NA	0.12	NA	0.00	NA
03-11	GE Frame 3 (21001)	4	Start-up	OxCat+SCR	OxCat+SCR-3-11	3-11	2	2	PM2.5	0.06	AP-42, Section 3.1 (Revised 4/00), Table 3.1-2a	NA	NA	0.12	NA	0.00	NA

N.1: Emission Summary

Emission Unit #	Emission Unit Name	Process ID	Process Name	Control Device Name	Control Device ID	Stack ID	Maximum Design Capacity (SCC Units/hour)	Average Design Capacity (SCC Units/hour)	Pollutant	Uncontrolled Emission Factor (lb/SCC Units)	Emission Factor Source (e.g. AP-42, Stack Test, Mass Balance)	Capture Efficiency (%)	Control Efficiency (%)	Hourly Emissions		Annual Emissions	
														Uncontrolled Potential (lb/hr)	Controlled Potential (lb/hr)	Uncontrolled Potential (tons/yr)	Controlled Potential (tons/yr)
03-11	GE Frame 3 (21001)	4	Start-up	OxCat+SCR	OxCat+SCR-3-11	3-11	2	2	SO2	0.03	AP-42, Section 3.1 (Revised 4/00), Table 3.1-2a	NA	NA	0.06	NA	0.00	NA
03-11	GE Frame 3 (21001)	4	Start-up	OxCat+SCR	OxCat+SCR-3-11	3-11	2	2	VOC	2.31	Vendor Guarantee	NA	0.00%	4.62	4.62	0.18	0.18
03-11	GE Frame 3 (21001)	4	Start-up	OxCat+SCR	OxCat+SCR-3-11	3-11	2	2	Formaldehyde	0.78	Scaling of AP-42, Section 3.1 (Revised 4/00), Table 3.1-3 using Vendor Guarantee	NA	0.00%	1.56	1.56	0.06	0.06
03-11	GE Frame 3 (21001)	4	Start-up	OxCat+SCR	OxCat+SCR-3-11	3-11	2	2	CO2	1102.00	40 CFR 98, Subpart C, Table C-1	NA	NA	2204.00	NA	85.96	NA
03-11	GE Frame 3 (21001)	4	Start-up	OxCat+SCR	OxCat+SCR-3-11	3-11	2	2	CH4	9.46	Scaling of AP-42, Section 3.1 (Revised 4/00), Table 3.1-2a using Vendor Guarantee	NA	NA	18.92	NA	0.74	NA
03-11	GE Frame 3 (21001)	4	Start-up	OxCat+SCR	OxCat+SCR-3-11	3-11	2	2	N2O	0.00	40 CFR 98, Subpart C, Table C-2	NA	NA	0.00	NA	0.00	NA
03-11	GE Frame 3 (21001)	4	Start-up	OxCat+SCR	OxCat+SCR-3-11	3-11	2	2	CO2e	1339.00	40 CFR 98, Subpart A, Table A-1	NA	NA	2678.00	NA	104.44	NA
03-11	GE Frame 3 (21001)	5	Shutdown	OxCat+SCR	OxCat+SCR-3-11	3-11	2	2	CO	116.87	Vendor Guarantee	NA	75.00%	233.73	58.43335	9.12	2.28
03-11	GE Frame 3 (21001)	5	Shutdown	OxCat+SCR	OxCat+SCR-3-11	3-11	2	2	NOx	2.67	Vendor Guarantee	NA	0.00%	5.33	5.3324	0.21	0.21
03-11	GE Frame 3 (21001)	5	Shutdown	OxCat+SCR	OxCat+SCR-3-11	3-11	2	2	PM	0.04	AP-42, Section 3.1 (Revised 4/00), Table 3.1-2a	NA	NA	0.08	NA	0.00	NA
03-11	GE Frame 3 (21001)	5	Shutdown	OxCat+SCR	OxCat+SCR-3-11	3-11	2	2	PM10	0.04	AP-42, Section 3.1 (Revised 4/00), Table 3.1-2a	NA	NA	0.08	NA	0.00	NA
03-11	GE Frame 3 (21001)	5	Shutdown	OxCat+SCR	OxCat+SCR-3-11	3-11	2	2	PM2.5	0.04	AP-42, Section 3.1 (Revised 4/00), Table 3.1-2a	NA	NA	0.08	NA	0.00	NA
03-11	GE Frame 3 (21001)	5	Shutdown	OxCat+SCR	OxCat+SCR-3-11	3-11	2	2	SO2	0.02	AP-42, Section 3.1 (Revised 4/00), Table 3.1-2a	NA	NA	0.04	NA	0.00	NA
03-11	GE Frame 3 (21001)	5	Shutdown	OxCat+SCR	OxCat+SCR-3-11	3-11	2	2	VOC	1.46	Vendor Guarantee	NA	23.00%	2.93	2.253636	0.11	0.09
03-11	GE Frame 3 (21001)	5	Shutdown	OxCat+SCR	OxCat+SCR-3-11	3-11	2	2	Formaldehyde	0.50	Scaling of AP-42, Section 3.1 (Revised 4/00), Table 3.1-3 using Vendor Guarantee	NA	50.00%	0.99	0.495	0.04	0.02
03-11	GE Frame 3 (21001)	5	Shutdown	OxCat+SCR	OxCat+SCR-3-11	3-11	2	2	CO2	824.42	40 CFR 98, Subpart C, Table C-1	NA	NA	1648.85	NA	64.31	NA
03-11	GE Frame 3 (21001)	5	Shutdown	OxCat+SCR	OxCat+SCR-3-11	3-11	2	2	CH4	5.99	Scaling of AP-42, Section 3.1 (Revised 4/00), Table 3.1-2a using Vendor Guarantee	NA	NA	11.99	NA	0.47	NA

N.1: Emission Summary

Emission Unit #	Emission Unit Name	Process ID	Process Name	Control Device Name	Control Device ID	Stack ID	Maximum Design Capacity *(SCC Units/hour)*	Average Design Capacity *(SCC Units/hour)*	Pollutant	Uncontrolled Emission Factor *(lb/SCC Units)*	Emission Factor Source (e.g. AP-42, Stack Test, Mass Balance)	Capture Efficiency *(%)*	Control Efficiency *(%)*	Hourly Emissions		Annual Emissions	
														Uncontrolled Potential *(lb/hr)*	Controlled Potential *(lb/hr)*	Uncontrolled Potential *(tons/yr)*	Controlled Potential *(tons/yr)*
03-11	GE Frame 3 (21001)	5	Shutdown	OxCat+SCR	OxCat+SCR-3-11	3-11	2	2	N2O	0.00	40 CFR 98, Subpart C, Table C-2	NA	NA	0.00	NA	0.00	NA
03-11	GE Frame 3 (21001)	5	Shutdown	OxCat+SCR	OxCat+SCR-3-11	3-11	2	2	CO2e	974.63	40 CFR 98, Subpart A, Table A-1	NA	NA	1949.26	NA	76.02	NA
03-11	GE Frame 3 (21001)	6	Uncontrolled Both Ox+SCR	OxCat+SCR	OxCat+SCR-3-11	3-11	0.0823	0.078	CO	137.44	Vendor Guarantee	NA	0.00%	11.32	11.32	1.08	1.08
03-11	GE Frame 3 (21001)	6	Uncontrolled Both Ox+SCR	OxCat+SCR	OxCat+SCR-3-11	3-11	0.0823	0.078	NOx	830.51	Vendor Guarantee	NA	0.00%	68.38	68.38	6.51	6.51
03-11	GE Frame 3 (21001)	6	Uncontrolled Both Ox+SCR	OxCat+SCR	OxCat+SCR-3-11	3-11	0.0823	0.078	PM	6.73	AP-42, Section 3.1 (Revised 4/00), Table 3.1-2a	NA	NA	0.55	NA	0.05	NA
03-11	GE Frame 3 (21001)	6	Uncontrolled Both Ox+SCR	OxCat+SCR	OxCat+SCR-3-11	3-11	0.0823	0.078	PM10	6.73	AP-42, Section 3.1 (Revised 4/00), Table 3.1-2a	NA	NA	0.55	NA	0.05	NA
03-11	GE Frame 3 (21001)	6	Uncontrolled Both Ox+SCR	OxCat+SCR	OxCat+SCR-3-11	3-11	0.0823	0.078	PM2.5	6.73	AP-42, Section 3.1 (Revised 4/00), Table 3.1-2a	NA	NA	0.55	NA	0.05	NA
03-11	GE Frame 3 (21001)	6	Uncontrolled Both Ox+SCR	OxCat+SCR	OxCat+SCR-3-11	3-11	0.0823	0.078	SO2	3.47	AP-42, Section 3.1 (Revised 4/00), Table 3.1-2a	NA	NA	0.29	NA	0.03	NA
03-11	GE Frame 3 (21001)	6	Uncontrolled Both Ox+SCR	OxCat+SCR	OxCat+SCR-3-11	3-11	0.0823	0.078	VOC	17.21	Vendor Guarantee	NA	0.00%	1.42	1.42	0.13	0.13
03-11	GE Frame 3 (21001)	6	Uncontrolled Both Ox+SCR	OxCat+SCR	OxCat+SCR-3-11	3-11	0.0823	0.078	Formaldehyde	5.82	Scaling of AP-42, Section 3.1 (Revised 4/00), Table 3.1-3 using Vendor Guarantee	NA	0.00%	0.48	0.48	0.05	0.05
03-11	GE Frame 3 (21001)	6	Uncontrolled Both Ox+SCR	OxCat+SCR	OxCat+SCR-3-11	3-11	0.0823	0.078	CO2	120017.00	40 CFR 98, Subpart C, Table C-1	NA	NA	9881.56	NA	941.10	NA
03-11	GE Frame 3 (21001)	6	Uncontrolled Both Ox+SCR	OxCat+SCR	OxCat+SCR-3-11	3-11	0.0823	0.078	CH4	70.48	Scaling of AP-42, Section 3.1 (Revised 4/00), Table 3.1-2a using Vendor Guarantee	NA	NA	5.80	NA	0.55	NA
03-11	GE Frame 3 (21001)	6	Uncontrolled Both Ox+SCR	OxCat+SCR	OxCat+SCR-3-11	3-11	0.0823	0.078	N2O	0.23	40 CFR 98, Subpart C, Table C-2	NA	NA	0.02	NA	0.00	NA
03-11	GE Frame 3 (21001)	6	Uncontrolled Both Ox+SCR	OxCat+SCR	OxCat+SCR-3-11	3-11	0.0823	0.078	CO2e	121847.00	40 CFR 98, Subpart A, Table A-1	NA	NA	10032.24	NA	955.45	NA
03-11	GE Frame 3 (21001)	7	Uncontrolled Only SCR	OxCat+SCR	OxCat+SCR-3-11	3-11	0.0823	0.078	CO	137.44	Vendor Guarantee	NA	75.00%	11.32	2.83	1.08	0.27
03-11	GE Frame 3 (21001)	7	Uncontrolled Only SCR	OxCat+SCR	OxCat+SCR-3-11	3-11	0.0823	0.078	NOx	830.51	Vendor Guarantee	NA	0.00%	68.38	68.38	6.51	6.51
03-11	GE Frame 3 (21001)	7	Uncontrolled Only SCR	OxCat+SCR	OxCat+SCR-3-11	3-11	0.0823	0.078	PM	6.73	AP-42, Section 3.1 (Revised 4/00), Table 3.1-2a	NA	NA	0.55	NA	0.05	NA
03-11	GE Frame 3 (21001)	7	Uncontrolled Only SCR	OxCat+SCR	OxCat+SCR-3-11	3-11	0.0823	0.078	PM10	6.73	AP-42, Section 3.1 (Revised 4/00), Table 3.1-2a	NA	NA	0.55	NA	0.05	NA

N.1: Emission Summary

Emission Unit #	Emission Unit Name	Process ID	Process Name	Control Device Name	Control Device ID	Stack ID	Maximum Design Capacity *(SCC Units/hour)*	Average Design Capacity *(SCC Units/hour)*	Pollutant	Uncontrolled Emission Factor *(lb/SCC Units)*	Emission Factor Source (e.g. AP-42, Stack Test, Mass Balance)	Capture Efficiency *(%)*	Control Efficiency *(%)*	Hourly Emissions		Annual Emissions	
														Uncontrolled Potential *(lb/hr)*	Controlled Potential *(lb/hr)*	Uncontrolled Potential *(tons/yr)*	Controlled Potential *(tons/yr)*
03-11	GE Frame 3 (21001)	7	Uncontrolled Only SCR	OxCat+SCR	OxCat+SCR-3-11	3-11	0.0823	0.078	PM2.5	6.73	AP-42, Section 3.1 (Revised 4/00), Table 3.1-2a	NA	NA	0.55	NA	0.05	NA
03-11	GE Frame 3 (21001)	7	Uncontrolled Only SCR	OxCat+SCR	OxCat+SCR-3-11	3-11	0.0823	0.078	SO2	3.47	AP-42, Section 3.1 (Revised 4/00), Table 3.1-2a	NA	NA	0.29	NA	0.03	NA
03-11	GE Frame 3 (21001)	7	Uncontrolled Only SCR	OxCat+SCR	OxCat+SCR-3-11	3-11	0.0823	0.078	VOC	17.21	Vendor Guarantee	NA	23.00%	1.42	1.09	0.13	0.10
03-11	GE Frame 3 (21001)	7	Uncontrolled Only SCR	OxCat+SCR	OxCat+SCR-3-11	3-11	0.0823	0.078	Formaldehyde	5.82	Scaling of AP-42, Section 3.1 (Revised 4/00), Table 3.1-3 using Vendor Guarantee	NA	50.00%	0.48	0.24	0.05	0.02
03-11	GE Frame 3 (21001)	7	Uncontrolled Only SCR	OxCat+SCR	OxCat+SCR-3-11	3-11	0.0823	0.078	CO2	120017.00	40 CFR 98, Subpart C, Table C-1	NA	NA	9881.56	NA	941.10	NA
03-11	GE Frame 3 (21001)	7	Uncontrolled Only SCR	OxCat+SCR	OxCat+SCR-3-11	3-11	0.0823	0.078	CH4	70.48	Scaling of AP-42, Section 3.1 (Revised 4/00), Table 3.1-2a using Vendor Guarantee	NA	NA	5.80	NA	0.55	NA
03-11	GE Frame 3 (21001)	7	Uncontrolled Only SCR	OxCat+SCR	OxCat+SCR-3-11	3-11	0.0823	0.078	N2O	0.23	40 CFR 98, Subpart C, Table C-2	NA	NA	0.02	NA	0.00	NA
03-11	GE Frame 3 (21001)	7	Uncontrolled Only SCR	OxCat+SCR	OxCat+SCR-3-11	3-11	0.0823	0.078	CO2e	121847.00	40 CFR 98, Subpart A, Table A-1	NA	NA	10032.24	NA	955.45	NA
03-12	GE Frame 3 (21002)	1	Normal Op	OxCat+SCR	OxCat+SCR-3-12	3-12	0.08	0.078	CO	137.44	Vendor Guarantee	NA	75.00%	11.32	2.83	46.82	11.71
03-12	GE Frame 3 (21002)	1	Normal Op	OxCat+SCR	OxCat+SCR-3-12	3-12	0.08	0.078	NOx	830.51	Vendor Guarantee	NA	86.41%	68.38	9.29	282.93	38.46
03-12	GE Frame 3 (21002)	1	Normal Op	OxCat+SCR	OxCat+SCR-3-12	3-12	0.08	0.078	PM	6.73	AP-42, Section 3.1 (Revised 4/00), Table 3.1-2a	NA	NA	0.55	NA	2.29	NA
03-12	GE Frame 3 (21002)	1	Normal Op	OxCat+SCR	OxCat+SCR-3-12	3-12	0.08	0.078	PM10	6.73	AP-42, Section 3.1 (Revised 4/00), Table 3.1-2a	NA	NA	0.55	NA	2.29	NA
03-12	GE Frame 3 (21002)	1	Normal Op	OxCat+SCR	OxCat+SCR-3-12	3-12	0.08	0.078	PM2.5	6.73	AP-42, Section 3.1 (Revised 4/00), Table 3.1-2a	NA	NA	0.55	NA	2.29	NA
03-12	GE Frame 3 (21002)	1	Normal Op	OxCat+SCR	OxCat+SCR-3-12	3-12	0.08	0.078	SO2	3.47	AP-42, Section 3.1 (Revised 4/00), Table 3.1-2a	NA	NA	0.29	NA	1.18	NA
03-12	GE Frame 3 (21002)	1	Normal Op	OxCat+SCR	OxCat+SCR-3-12	3-12	0.08	0.078	VOC	17.21	Vendor Guarantee	NA	23.00%	1.42	1.09	5.86	4.51
03-12	GE Frame 3 (21002)	1	Normal Op	OxCat+SCR	OxCat+SCR-3-12	3-12	0.08	0.078	Formaldehyde	5.82	Scaling of AP-42, Section 3.1 (Revised 4/00), Table 3.1-3 using Vendor Guarantee	NA	50.00%	0.48	0.24	1.98	0.99
03-12	GE Frame 3 (21002)	1	Normal Op	OxCat+SCR	OxCat+SCR-3-12	3-12	0.08	0.078	CO2	120017.00	40 CFR 98, Subpart C, Table C-1	NA	NA	9881.56	NA	40886.15	NA

N.1: Emission Summary

Emission Unit #	Emission Unit Name	Process ID	Process Name	Control Device Name	Control Device ID	Stack ID	Maximum Design Capacity (SCC Units/hour)	Average Design Capacity (SCC Units/hour)	Pollutant	Uncontrolled Emission Factor (lb/SCC Units)	Emission Factor Source (e.g. AP-42, Stack Test, Mass Balance)	Capture Efficiency (%)	Control Efficiency (%)	Hourly Emissions		Annual Emissions	
														Uncontrolled Potential (lb/hr)	Controlled Potential (lb/hr)	Uncontrolled Potential (tons/yr)	Controlled Potential (tons/yr)
03-12	GE Frame 3 (21002)	1	Normal Op	OxCat+SCR	OxCat+SCR-3-12	3-12	0.08	0.078	CH4	70.48	Scaling of AP-42, Section 3.1 (Revised 4/00), Table 3.1-2a using Vendor Guarantee	NA	NA	5.80	NA	24.01	NA
03-12	GE Frame 3 (21002)	1	Normal Op	OxCat+SCR	OxCat+SCR-3-12	3-12	0.08	0.078	N2O	0.23	40 CFR 98, Subpart C, Table C-2	NA	NA	0.02	NA	0.08	NA
03-12	GE Frame 3 (21002)	1	Normal Op	OxCat+SCR	OxCat+SCR-3-12	3-12	0.08	0.078	CO2e	121847.00	40 CFR 98, Subpart A, Table A-1	NA	NA	10032.24	NA	41509.57	NA
03-12	GE Frame 3 (21002)	2	Low Temp Op	OxCat+SCR	OxCat+SCR-3-12	3-12	0.103	0.098	CO	537.1294	Vendor Guarantee	NA	75.00%	55.18	13.79	0.16	0.04
03-12	GE Frame 3 (21002)	2	Low Temp Op	OxCat+SCR	OxCat+SCR-3-12	3-12	0.103	0.098	NOx	811.4324	Vendor Guarantee	NA	86.41%	83.35	11.33	0.24	0.03
03-12	GE Frame 3 (21002)	2	Low Temp Op	OxCat+SCR	OxCat+SCR-3-12	3-12	0.103	0.098	PM	6.732	AP-42, Section 3.1 (Revised 4/00), Table 3.1-2a	NA	NA	0.69	NA	0.00	NA
03-12	GE Frame 3 (21002)	2	Low Temp Op	OxCat+SCR	OxCat+SCR-3-12	3-12	0.103	0.098	PM10	6.732	AP-42, Section 3.1 (Revised 4/00), Table 3.1-2a	NA	NA	0.69	NA	0.00	NA
03-12	GE Frame 3 (21002)	2	Low Temp Op	OxCat+SCR	OxCat+SCR-3-12	3-12	0.103	0.098	PM2.5	6.732	AP-42, Section 3.1 (Revised 4/00), Table 3.1-2a	NA	NA	0.69	NA	0.00	NA
03-12	GE Frame 3 (21002)	2	Low Temp Op	OxCat+SCR	OxCat+SCR-3-12	3-12	0.103	0.098	SO2	3.468	AP-42, Section 3.1 (Revised 4/00), Table 3.1-2a	NA	NA	0.36	NA	0.00	NA
03-12	GE Frame 3 (21002)	2	Low Temp Op	OxCat+SCR	OxCat+SCR-3-12	3-12	0.103	0.098	VOC	16.8145	Vendor Guarantee	NA	23.00%	1.73	1.33	0.00	0.00
03-12	GE Frame 3 (21002)	2	Low Temp Op	OxCat+SCR	OxCat+SCR-3-12	3-12	0.103	0.098	Formaldehyde	5.6849	Scaling of AP-42, Section 3.1 (Revised 4/00), Table 3.1-3 using Vendor Guarantee	NA	50.00%	0.58	0.29	0.00	0.00
03-12	GE Frame 3 (21002)	2	Low Temp Op	OxCat+SCR	OxCat+SCR-3-12	3-12	0.103	0.098	CO2	120017	40 CFR 98, Subpart C, Table C-1	NA	NA	12328.83	NA	35.23	NA
03-12	GE Frame 3 (21002)	2	Low Temp Op	OxCat+SCR	OxCat+SCR-3-12	3-12	0.103	0.098	CH4	68.8593	Scaling of AP-42, Section 3.1 (Revised 4/00), Table 3.1-2a using Vendor Guarantee	NA	NA	7.07	NA	0.02	NA
03-12	GE Frame 3 (21002)	2	Low Temp Op	OxCat+SCR	OxCat+SCR-3-12	3-12	0.103	0.098	N2O	0.2262	40 CFR 98, Subpart C, Table C-2	NA	NA	0.02	NA	0.00	NA
03-12	GE Frame 3 (21002)	2	Low Temp Op	OxCat+SCR	OxCat+SCR-3-12	3-12	0.103	0.098	CO2e	121806	40 CFR 98, Subpart A, Table A-1	NA	NA	12512.61	NA	35.75	NA
03-12	GE Frame 3 (21002)	3	Extreme Low Temp Op	OxCat+SCR	OxCat+SCR-3-12	3-12	0.103	0.098	CO	537.1294	Vendor Guarantee	NA	75.00%	55.18	13.79	0.03	0.01
03-12	GE Frame 3 (21002)	3	Extreme Low Temp Op	OxCat+SCR	OxCat+SCR-3-12	3-12	0.103	0.098	NOx	811.4324	Vendor Guarantee	NA	86.41%	83.35	11.33	0.04	0.01
03-12	GE Frame 3 (21002)	3	Extreme Low Temp Op	OxCat+SCR	OxCat+SCR-3-12	3-12	0.103	0.098	PM	6.732	AP-42, Section 3.1 (Revised 4/00), Table 3.1-2a	NA	NA	0.69	NA	0.00	NA

N.1: Emission Summary

Emission Unit #	Emission Unit Name	Process ID	Process Name	Control Device Name	Control Device ID	Stack ID	Maximum Design Capacity (SCC Units/hour)	Average Design Capacity (SCC Units/hour)	Pollutant	Uncontrolled Emission Factor (lb/SCC Units)	Emission Factor Source (e.g. AP-42, Stack Test, Mass Balance)	Capture Efficiency (%)	Control Efficiency (%)	Hourly Emissions		Annual Emissions	
														Uncontrolled Potential (lb/hr)	Controlled Potential (lb/hr)	Uncontrolled Potential (tons/yr)	Controlled Potential (tons/yr)
03-12	GE Frame 3 (21002)	3	Extreme Low Temp Op	OxCat+SCR	OxCat+SCR-3-12	3-12	0.103	0.098	PM10	6.732	AP-42, Section 3.1 (Revised 4/00), Table 3.1-2a	NA	NA	0.69	NA	0.00	NA
03-12	GE Frame 3 (21002)	3	Extreme Low Temp Op	OxCat+SCR	OxCat+SCR-3-12	3-12	0.103	0.098	PM2.5	6.732	AP-42, Section 3.1 (Revised 4/00), Table 3.1-2a	NA	NA	0.69	NA	0.00	NA
03-12	GE Frame 3 (21002)	3	Extreme Low Temp Op	OxCat+SCR	OxCat+SCR-3-12	3-12	0.103	0.098	SO2	3.468	AP-42, Section 3.1 (Revised 4/00), Table 3.1-2a	NA	NA	0.36	NA	0.00	NA
03-12	GE Frame 3 (21002)	3	Extreme Low Temp Op	OxCat+SCR	OxCat+SCR-3-12	3-12	0.103	0.098	VOC	16.8145	Vendor Guarantee	NA	23.00%	1.73	1.33	0.00	0.00
03-12	GE Frame 3 (21002)	3	Extreme Low Temp Op	OxCat+SCR	OxCat+SCR-3-12	3-12	0.103	0.098	Formaldehyde	5.6849	Scaling of AP-42, Section 3.1 (Revised 4/00), Table 3.1-3 using Vendor Guarantee	NA	50.00%	0.58	0.29	0.00	0.00
03-12	GE Frame 3 (21002)	3	Extreme Low Temp Op	OxCat+SCR	OxCat+SCR-3-12	3-12	0.103	0.098	CO2	120017	40 CFR 98, Subpart C, Table C-1	NA	NA	12328.83	NA	5.87	NA
03-12	GE Frame 3 (21002)	3	Extreme Low Temp Op	OxCat+SCR	OxCat+SCR-3-12	3-12	0.103	0.098	CH4	68.8593	Scaling of AP-42, Section 3.1 (Revised 4/00), Table 3.1-2a using Vendor Guarantee	NA	NA	7.07	NA	0.00	NA
03-12	GE Frame 3 (21002)	3	Extreme Low Temp Op	OxCat+SCR	OxCat+SCR-3-12	3-12	0.103	0.098	N2O	0.2262	40 CFR 98, Subpart C, Table C-2	NA	NA	0.02	NA	0.00	NA
03-12	GE Frame 3 (21002)	3	Extreme Low Temp Op	OxCat+SCR	OxCat+SCR-3-12	3-12	0.103	0.098	CO2e	121806	40 CFR 98, Subpart A, Table A-1	NA	NA	12512.61	NA	5.96	NA
03-12	GE Frame 3 (21002)	4	Start-up	OxCat+SCR	OxCat+SCR-3-12	3-12	2	2	CO	184.52	Vendor Guarantee	NA	0.00%	369.03	369.03	14.39	14.39
03-12	GE Frame 3 (21002)	4	Start-up	OxCat+SCR	OxCat+SCR-3-12	3-12	2	2	NOx	3.98	Vendor Guarantee	NA	0.00%	7.96	7.96	0.31	0.31
03-12	GE Frame 3 (21002)	4	Start-up	OxCat+SCR	OxCat+SCR-3-12	3-12	2	2	PM	0.06	AP-42, Section 3.1 (Revised 4/00), Table 3.1-2a	NA	NA	0.12	NA	0.00	NA
03-12	GE Frame 3 (21002)	4	Start-up	OxCat+SCR	OxCat+SCR-3-12	3-12	2	2	PM10	0.06	AP-42, Section 3.1 (Revised 4/00), Table 3.1-2a	NA	NA	0.12	NA	0.00	NA
03-12	GE Frame 3 (21002)	4	Start-up	OxCat+SCR	OxCat+SCR-3-12	3-12	2	2	PM2.5	0.06	AP-42, Section 3.1 (Revised 4/00), Table 3.1-2a	NA	NA	0.12	NA	0.00	NA
03-12	GE Frame 3 (21002)	4	Start-up	OxCat+SCR	OxCat+SCR-3-12	3-12	2	2	SO2	0.03	AP-42, Section 3.1 (Revised 4/00), Table 3.1-2a	NA	NA	0.06	NA	0.00	NA
03-12	GE Frame 3 (21002)	4	Start-up	OxCat+SCR	OxCat+SCR-3-12	3-12	2	2	VOC	2.31	Vendor Guarantee	NA	0.00%	4.62	4.62	0.18	0.18
03-12	GE Frame 3 (21002)	4	Start-up	OxCat+SCR	OxCat+SCR-3-12	3-12	2	2	Formaldehyde	0.78	Scaling of AP-42, Section 3.1 (Revised 4/00), Table 3.1-3 using Vendor Guarantee	NA	0.00%	1.56	1.56	0.06	0.06

N.1: Emission Summary

Emission Unit #	Emission Unit Name	Process ID	Process Name	Control Device Name	Control Device ID	Stack ID	Maximum Design Capacity *(SCC Units/hour)*	Average Design Capacity *(SCC Units/hour)*	Pollutant	Uncontrolled Emission Factor *(lb/SCC Units)*	Emission Factor Source (e.g. AP-42, Stack Test, Mass Balance)	Capture Efficiency *(%)*	Control Efficiency *(%)*	Hourly Emissions		Annual Emissions	
														Uncontrolled Potential *(lb/hr)*	Controlled Potential *(lb/hr)*	Uncontrolled Potential *(tons/yr)*	Controlled Potential *(tons/yr)*
03-12	GE Frame 3 (21002)	4	Start-up	OxCat+SCR	OxCat+SCR-3-12	3-12	2	2	CO2	1102.00	40 CFR 98, Subpart C, Table C-1	NA	NA	2204.00	NA	85.96	NA
03-12	GE Frame 3 (21002)	4	Start-up	OxCat+SCR	OxCat+SCR-3-12	3-12	2	2	CH4	9.46	Scaling of AP-42, Section 3.1 (Revised 4/00), Table 3.1-2a using Vendor Guarantee	NA	NA	18.92	NA	0.74	NA
03-12	GE Frame 3 (21002)	4	Start-up	OxCat+SCR	OxCat+SCR-3-12	3-12	2	2	N2O	0.00	40 CFR 98, Subpart C, Table C-2	NA	NA	0.00	NA	0.00	NA
03-12	GE Frame 3 (21002)	4	Start-up	OxCat+SCR	OxCat+SCR-3-12	3-12	2	2	CO2e	1339.00	40 CFR 98, Subpart A, Table A-1	NA	NA	2678.00	NA	104.44	NA
03-12	GE Frame 3 (21002)	5	Shutdown	OxCat+SCR	OxCat+SCR-3-12	3-12	2	2	CO	116.87	Vendor Guarantee	NA	75.00%	233.73	58.43335	9.12	2.28
03-12	GE Frame 3 (21002)	5	Shutdown	OxCat+SCR	OxCat+SCR-3-12	3-12	2	2	NOx	2.67	Vendor Guarantee	NA	0.00%	5.33	5.3324	0.21	0.21
03-12	GE Frame 3 (21002)	5	Shutdown	OxCat+SCR	OxCat+SCR-3-12	3-12	2	2	PM	0.04	AP-42, Section 3.1 (Revised 4/00), Table 3.1-2a	NA	NA	0.08	NA	0.00	NA
03-12	GE Frame 3 (21002)	5	Shutdown	OxCat+SCR	OxCat+SCR-3-12	3-12	2	2	PM10	0.04	AP-42, Section 3.1 (Revised 4/00), Table 3.1-2a	NA	NA	0.08	NA	0.00	NA
03-12	GE Frame 3 (21002)	5	Shutdown	OxCat+SCR	OxCat+SCR-3-12	3-12	2	2	PM2.5	0.04	AP-42, Section 3.1 (Revised 4/00), Table 3.1-2a	NA	NA	0.08	NA	0.00	NA
03-12	GE Frame 3 (21002)	5	Shutdown	OxCat+SCR	OxCat+SCR-3-12	3-12	2	2	SO2	0.02	AP-42, Section 3.1 (Revised 4/00), Table 3.1-2a	NA	NA	0.04	NA	0.00	NA
03-12	GE Frame 3 (21002)	5	Shutdown	OxCat+SCR	OxCat+SCR-3-12	3-12	2	2	VOC	1.46	Vendor Guarantee	NA	23.00%	2.93	2.253636	0.11	0.09
03-12	GE Frame 3 (21002)	5	Shutdown	OxCat+SCR	OxCat+SCR-3-12	3-12	2	2	Formaldehyde	0.50	Scaling of AP-42, Section 3.1 (Revised 4/00), Table 3.1-3 using Vendor Guarantee	NA	50.00%	0.99	0.495	0.04	0.02
03-12	GE Frame 3 (21002)	5	Shutdown	OxCat+SCR	OxCat+SCR-3-12	3-12	2	2	CO2	824.42	40 CFR 98, Subpart C, Table C-1	NA	NA	1648.85	NA	64.31	NA
03-12	GE Frame 3 (21002)	5	Shutdown	OxCat+SCR	OxCat+SCR-3-12	3-12	2	2	CH4	5.99	Scaling of AP-42, Section 3.1 (Revised 4/00), Table 3.1-2a using Vendor Guarantee	NA	NA	11.99	NA	0.47	NA
03-12	GE Frame 3 (21002)	5	Shutdown	OxCat+SCR	OxCat+SCR-3-12	3-12	2	2	N2O	0.00	40 CFR 98, Subpart C, Table C-2	NA	NA	0.00	NA	0.00	NA
03-12	GE Frame 3 (21002)	5	Shutdown	OxCat+SCR	OxCat+SCR-3-12	3-12	2	2	CO2e	974.63	40 CFR 98, Subpart A, Table A-1	NA	NA	1949.26	NA	76.02	NA
03-12	GE Frame 3 (21002)	6	Uncontrolled Both Ox+SCR	OxCat+SCR	OxCat+SCR-3-12	3-12	0.0823	0.078	CO	137.44	Vendor Guarantee	NA	0.00%	11.32	11.32	1.08	1.08
03-12	GE Frame 3 (21002)	6	Uncontrolled Both Ox+SCR	OxCat+SCR	OxCat+SCR-3-12	3-12	0.0823	0.078	NOx	830.51	Vendor Guarantee	NA	0.00%	68.38	68.38	6.51	6.51

N.1: Emission Summary

Emission Unit #	Emission Unit Name	Process ID	Process Name	Control Device Name	Control Device ID	Stack ID	Maximum Design Capacity (SCC Units/hour)	Average Design Capacity (SCC Units/hour)	Pollutant	Uncontrolled Emission Factor (lb/SCC Units)	Emission Factor Source (e.g. AP-42, Stack Test, Mass Balance)	Capture Efficiency (%)	Control Efficiency (%)	Hourly Emissions		Annual Emissions	
														Uncontrolled Potential (lb/hr)	Controlled Potential (lb/hr)	Uncontrolled Potential (tons/yr)	Controlled Potential (tons/yr)
03-12	GE Frame 3 (21002)	6	Uncontrolled Both Ox+SCR	OxCat+SCR	OxCat+SCR-3-12	3-12	0.0823	0.078	PM	6.73	AP-42, Section 3.1 (Revised 4/00), Table 3.1-2a	NA	NA	0.55	NA	0.05	NA
03-12	GE Frame 3 (21002)	6	Uncontrolled Both Ox+SCR	OxCat+SCR	OxCat+SCR-3-12	3-12	0.0823	0.078	PM10	6.73	AP-42, Section 3.1 (Revised 4/00), Table 3.1-2a	NA	NA	0.55	NA	0.05	NA
03-12	GE Frame 3 (21002)	6	Uncontrolled Both Ox+SCR	OxCat+SCR	OxCat+SCR-3-12	3-12	0.0823	0.078	PM2.5	6.73	AP-42, Section 3.1 (Revised 4/00), Table 3.1-2a	NA	NA	0.55	NA	0.05	NA
03-12	GE Frame 3 (21002)	6	Uncontrolled Both Ox+SCR	OxCat+SCR	OxCat+SCR-3-12	3-12	0.0823	0.078	SO2	3.47	AP-42, Section 3.1 (Revised 4/00), Table 3.1-2a	NA	NA	0.29	NA	0.03	NA
03-12	GE Frame 3 (21002)	6	Uncontrolled Both Ox+SCR	OxCat+SCR	OxCat+SCR-3-12	3-12	0.0823	0.078	VOC	17.21	Vendor Guarantee	NA	0.00%	1.42	1.42	0.13	0.13
03-12	GE Frame 3 (21002)	6	Uncontrolled Both Ox+SCR	OxCat+SCR	OxCat+SCR-3-12	3-12	0.0823	0.078	Formaldehyde	5.82	Scaling of AP-42, Section 3.1 (Revised 4/00), Table 3.1-3 using Vendor Guarantee	NA	0.00%	0.48	0.48	0.05	0.05
03-12	GE Frame 3 (21002)	6	Uncontrolled Both Ox+SCR	OxCat+SCR	OxCat+SCR-3-12	3-12	0.0823	0.078	CO2	120017.00	40 CFR 98, Subpart C, Table C-1	NA	NA	9881.56	NA	941.10	NA
03-12	GE Frame 3 (21002)	6	Uncontrolled Both Ox+SCR	OxCat+SCR	OxCat+SCR-3-12	3-12	0.0823	0.078	CH4	70.48	Scaling of AP-42, Section 3.1 (Revised 4/00), Table 3.1-2a using Vendor Guarantee	NA	NA	5.80	NA	0.55	NA
03-12	GE Frame 3 (21002)	6	Uncontrolled Both Ox+SCR	OxCat+SCR	OxCat+SCR-3-12	3-12	0.0823	0.078	N2O	0.23	40 CFR 98, Subpart C, Table C-2	NA	NA	0.02	NA	0.00	NA
03-12	GE Frame 3 (21002)	6	Uncontrolled Both Ox+SCR	OxCat+SCR	OxCat+SCR-3-12	3-12	0.0823	0.078	CO2e	121847.00	40 CFR 98, Subpart A, Table A-1	NA	NA	10032.24	NA	955.45	NA
03-12	GE Frame 3 (21002)	7	Uncontrolled Only SCR	OxCat+SCR	OxCat+SCR-3-12	3-12	0.0823	0.078	CO	137.44	Vendor Guarantee	NA	75.00%	11.32	2.83	1.08	0.27
03-12	GE Frame 3 (21002)	7	Uncontrolled Only SCR	OxCat+SCR	OxCat+SCR-3-12	3-12	0.0823	0.078	NOx	830.51	Vendor Guarantee	NA	0.00%	68.38	68.38	6.51	6.51
03-12	GE Frame 3 (21002)	7	Uncontrolled Only SCR	OxCat+SCR	OxCat+SCR-3-12	3-12	0.0823	0.078	PM	6.73	AP-42, Section 3.1 (Revised 4/00), Table 3.1-2a	NA	NA	0.55	NA	0.05	NA
03-12	GE Frame 3 (21002)	7	Uncontrolled Only SCR	OxCat+SCR	OxCat+SCR-3-12	3-12	0.0823	0.078	PM10	6.73	AP-42, Section 3.1 (Revised 4/00), Table 3.1-2a	NA	NA	0.55	NA	0.05	NA
03-12	GE Frame 3 (21002)	7	Uncontrolled Only SCR	OxCat+SCR	OxCat+SCR-3-12	3-12	0.0823	0.078	PM2.5	6.73	AP-42, Section 3.1 (Revised 4/00), Table 3.1-2a	NA	NA	0.55	NA	0.05	NA
03-12	GE Frame 3 (21002)	7	Uncontrolled Only SCR	OxCat+SCR	OxCat+SCR-3-12	3-12	0.0823	0.078	SO2	3.47	AP-42, Section 3.1 (Revised 4/00), Table 3.1-2a	NA	NA	0.29	NA	0.03	NA
03-12	GE Frame 3 (21002)	7	Uncontrolled Only SCR	OxCat+SCR	OxCat+SCR-3-12	3-12	0.0823	0.078	VOC	17.21	Vendor Guarantee	NA	23.00%	1.42	1.09	0.13	0.10

N.1: Emission Summary

Emission Unit #	Emission Unit Name	Process ID	Process Name	Control Device Name	Control Device ID	Stack ID	Maximum Design Capacity *(SCC Units/hour)*	Average Design Capacity *(SCC Units/hour)*	Pollutant	Uncontrolled Emission Factor *(lb/SCC Units)*	Emission Factor Source (e.g. AP-42, Stack Test, Mass Balance)	Capture Efficiency *(%)*	Control Efficiency *(%)*	Hourly Emissions		Annual Emissions	
														Uncontrolled Potential *(lb/hr)*	Controlled Potential *(lb/hr)*	Uncontrolled Potential *(tons/yr)*	Controlled Potential *(tons/yr)*
03-12	GE Frame 3 (21002)	7	Uncontrolled Only SCR	OxCat+SCR	OxCat+SCR-3-12	3-12	0.0823	0.078	Formaldehyde	5.82	Scaling of AP-42, Section 3.1 (Revised 4/00), Table 3.1-3 using Vendor Guarantee	NA	50.00%	0.48	0.24	0.05	0.02
03-12	GE Frame 3 (21002)	7	Uncontrolled Only SCR	OxCat+SCR	OxCat+SCR-3-12	3-12	0.0823	0.078	CO2	120017.00	40 CFR 98, Subpart C, Table C-1	NA	NA	9881.56	NA	941.10	NA
03-12	GE Frame 3 (21002)	7	Uncontrolled Only SCR	OxCat+SCR	OxCat+SCR-3-12	3-12	0.0823	0.078	CH4	70.48	Scaling of AP-42, Section 3.1 (Revised 4/00), Table 3.1-2a using Vendor Guarantee	NA	NA	5.80	NA	0.55	NA
03-12	GE Frame 3 (21002)	7	Uncontrolled Only SCR	OxCat+SCR	OxCat+SCR-3-12	3-12	0.0823	0.078	N2O	0.23	40 CFR 98, Subpart C, Table C-2	NA	NA	0.02	NA	0.00	NA
03-12	GE Frame 3 (21002)	7	Uncontrolled Only SCR	OxCat+SCR	OxCat+SCR-3-12	3-12	0.0823	0.078	CO2e	121847.00	40 CFR 98, Subpart A, Table A-1	NA	NA	10032.24	NA	955.45	NA
04-13	GE Frame 5 (21003)	1	Normal Op	OxCat	OxCat -4-13	4-13	0.20	0.187	CO	107.23	Vendor Guarantee	NA	75.00%	21.01	5.25	86.08	21.52
04-13	GE Frame 5 (21003)	1	Normal Op	OxCat	OxCat -4-13	4-13	0.20	0.187	NOx	598.90	Vendor Guarantee	NA	0.00%	117.37	117.37	480.77	480.77
04-13	GE Frame 5 (21003)	1	Normal Op	OxCat	OxCat -4-13	4-13	0.20	0.187	PM	6.73	AP-42, Section 3.1 (Revised 4/00), Table 3.1-2a	NA	NA	1.32	NA	5.40	NA
04-13	GE Frame 5 (21003)	1	Normal Op	OxCat	OxCat -4-13	4-13	0.20	0.187	PM10	6.73	AP-42, Section 3.1 (Revised 4/00), Table 3.1-2a	NA	NA	1.32	NA	5.40	NA
04-13	GE Frame 5 (21003)	1	Normal Op	OxCat	OxCat -4-13	4-13	0.20	0.187	PM2.5	6.73	AP-42, Section 3.1 (Revised 4/00), Table 3.1-2a	NA	NA	1.32	NA	5.40	NA
04-13	GE Frame 5 (21003)	1	Normal Op	OxCat	OxCat -4-13	4-13	0.20	0.187	SO2	3.47	AP-42, Section 3.1 (Revised 4/00), Table 3.1-2a	NA	NA	0.68	NA	2.78	NA
04-13	GE Frame 5 (21003)	1	Normal Op	OxCat	OxCat -4-13	4-13	0.20	0.187	VOC	13.43	Vendor Guarantee	NA	23.00%	2.63	2.03	10.78	8.30
04-13	GE Frame 5 (21003)	1	Normal Op	OxCat	OxCat -4-13	4-13	0.20	0.187	Formaldehyde	4.54	Scaling of AP-42, Section 3.1 (Revised 4/00), Table 3.1-3 using Vendor Guarantee	NA	50.00%	0.89	0.44	3.64	1.82
04-13	GE Frame 5 (21003)	1	Normal Op	OxCat	OxCat -4-13	4-13	0.20	0.187	CO2	120017.00	40 CFR 98, Subpart C, Table C-1	NA	NA	23519.72	NA	96344.98	NA
04-13	GE Frame 5 (21003)	1	Normal Op	OxCat	OxCat -4-13	4-13	0.20	0.187	CH4	54.99	Scaling of AP-42, Section 3.1 (Revised 4/00), Table 3.1-2a using Vendor Guarantee	NA	NA	10.78	NA	44.14	NA
04-13	GE Frame 5 (21003)	1	Normal Op	OxCat	OxCat -4-13	4-13	0.20	0.187	N2O	0.23	40 CFR 98, Subpart C, Table C-2	NA	NA	0.04	NA	0.18	NA
04-13	GE Frame 5 (21003)	1	Normal Op	OxCat	OxCat -4-13	4-13	0.20	0.187	CO2e	121460.00	40 CFR 98, Subpart A, Table A-1	NA	NA	23802.50	NA	97503.37	NA

N.1: Emission Summary

Emission Unit #	Emission Unit Name	Process ID	Process Name	Control Device Name	Control Device ID	Stack ID	Maximum Design Capacity *(SCC Units/hour)*	Average Design Capacity *(SCC Units/hour)*	Pollutant	Uncontrolled Emission Factor *(lb/SCC Units)*	Emission Factor Source (e.g. AP-42, Stack Test, Mass Balance)	Capture Efficiency *(%)*	Control Efficiency *(%)*	Hourly Emissions		Annual Emissions	
														Uncontrolled Potential *(lb/hr)*	Controlled Potential *(lb/hr)*	Uncontrolled Potential *(tons/yr)*	Controlled Potential *(tons/yr)*
04-13	GE Frame 5 (21003)	2	Low Temp Op	OxCat	OxCat -4-13	4-13	0.231	0.220	CO	438.6929	Vendor Guarantee	NA	75.00%	101.24	25.31	0.29	0.07
04-13	GE Frame 5 (21003)	2	Low Temp Op	OxCat	OxCat -4-13	4-13	0.231	0.220	NOx	612.5177	Vendor Guarantee	NA	0.00%	141.35	141.35	0.40	0.40
04-13	GE Frame 5 (21003)	2	Low Temp Op	OxCat	OxCat -4-13	4-13	0.231	0.220	PM	6.732	AP-42, Section 3.1 (Revised 4/00), Table 3.1-2a	NA	NA	1.55	NA	0.00	NA
04-13	GE Frame 5 (21003)	2	Low Temp Op	OxCat	OxCat -4-13	4-13	0.231	0.220	PM10	6.732	AP-42, Section 3.1 (Revised 4/00), Table 3.1-2a	NA	NA	1.55	NA	0.00	NA
04-13	GE Frame 5 (21003)	2	Low Temp Op	OxCat	OxCat -4-13	4-13	0.231	0.220	PM2.5	6.732	AP-42, Section 3.1 (Revised 4/00), Table 3.1-2a	NA	NA	1.55	NA	0.00	NA
04-13	GE Frame 5 (21003)	2	Low Temp Op	OxCat	OxCat -4-13	4-13	0.231	0.220	SO2	3.468	AP-42, Section 3.1 (Revised 4/00), Table 3.1-2a	NA	NA	0.80	NA	0.00	NA
04-13	GE Frame 5 (21003)	2	Low Temp Op	OxCat	OxCat -4-13	4-13	0.231	0.220	VOC	13.733	Vendor Guarantee	NA	23.00%	3.17	2.44	0.01	0.01
04-13	GE Frame 5 (21003)	2	Low Temp Op	OxCat	OxCat -4-13	4-13	0.231	0.220	Formaldehyde	4.6431	Scaling of AP-42, Section 3.1 (Revised 4/00), Table 3.1-3 using Vendor Guarantee	NA	50.00%	1.07	0.54	0.00	0.00
04-13	GE Frame 5 (21003)	2	Low Temp Op	OxCat	OxCat -4-13	4-13	0.231	0.220	CO2	120017	40 CFR 98, Subpart C, Table C-1	NA	NA	27696.20	NA	79.13	NA
04-13	GE Frame 5 (21003)	2	Low Temp Op	OxCat	OxCat -4-13	4-13	0.231	0.220	CH4	56.2399	Scaling of AP-42, Section 3.1 (Revised 4/00), Table 3.1-2a using Vendor Guarantee	NA	NA	12.98	NA	0.04	NA
04-13	GE Frame 5 (21003)	2	Low Temp Op	OxCat	OxCat -4-13	4-13	0.231	0.220	N2O	0.2262	40 CFR 98, Subpart C, Table C-2	NA	NA	0.05	NA	0.00	NA
04-13	GE Frame 5 (21003)	2	Low Temp Op	OxCat	OxCat -4-13	4-13	0.231	0.220	CO2e	121491	40 CFR 98, Subpart A, Table A-1	NA	NA	28036.36	NA	80.10	NA
04-13	GE Frame 5 (21003)	3	Extreme Low Temp Op	OxCat	OxCat -4-13	4-13	0.231	0.220	CO	438.6929	Vendor Guarantee	NA	75.00%	101.24	25.31	0.05	0.01
04-13	GE Frame 5 (21003)	3	Extreme Low Temp Op	OxCat	OxCat -4-13	4-13	0.231	0.220	NOx	612.5177	Vendor Guarantee	NA	0.00%	141.35	141.35	0.07	0.07
04-13	GE Frame 5 (21003)	3	Extreme Low Temp Op	OxCat	OxCat -4-13	4-13	0.231	0.220	PM	6.732	AP-42, Section 3.1 (Revised 4/00), Table 3.1-2a	NA	NA	1.55	NA	0.00	NA
04-13	GE Frame 5 (21003)	3	Extreme Low Temp Op	OxCat	OxCat -4-13	4-13	0.231	0.220	PM10	6.732	AP-42, Section 3.1 (Revised 4/00), Table 3.1-2a	NA	NA	1.55	NA	0.00	NA
04-13	GE Frame 5 (21003)	3	Extreme Low Temp Op	OxCat	OxCat -4-13	4-13	0.231	0.220	PM2.5	6.732	AP-42, Section 3.1 (Revised 4/00), Table 3.1-2a	NA	NA	1.55	NA	0.00	NA

N.1: Emission Summary

Emission Unit #	Emission Unit Name	Process ID	Process Name	Control Device Name	Control Device ID	Stack ID	Maximum Design Capacity *(SCC Units/hour)*	Average Design Capacity *(SCC Units/hour)*	Pollutant	Uncontrolled Emission Factor *(lb/SCC Units)*	Emission Factor Source (e.g. AP-42, Stack Test, Mass Balance)	Capture Efficiency *(%)*	Control Efficiency *(%)*	Hourly Emissions		Annual Emissions	
														Uncontrolled Potential *(lb/hr)*	Controlled Potential *(lb/hr)*	Uncontrolled Potential *(tons/yr)*	Controlled Potential *(tons/yr)*
04-13	GE Frame 5 (21003)	3	Extreme Low Temp Op	OxCat	OxCat -4-13	4-13	0.231	0.220	SO2	3.468	AP-42, Section 3.1 (Revised 4/00), Table 3.1-2a	NA	NA	0.80	NA	0.00	NA
04-13	GE Frame 5 (21003)	3	Extreme Low Temp Op	OxCat	OxCat -4-13	4-13	0.231	0.220	VOC	20.5995	Vendor Guarantee	NA	23.00%	4.75	3.66	0.00	0.00
04-13	GE Frame 5 (21003)	3	Extreme Low Temp Op	OxCat	OxCat -4-13	4-13	0.231	0.220	Formaldehyde	6.9646	Scaling of AP-42, Section 3.1 (Revised 4/00), Table 3.1-3 using Vendor Guarantee	NA	50.00%	1.61	0.80	0.00	0.00
04-13	GE Frame 5 (21003)	3	Extreme Low Temp Op	OxCat	OxCat -4-13	4-13	0.231	0.220	CO2	120017	40 CFR 98, Subpart C, Table C-1	NA	NA	27696.20	NA	13.19	NA
04-13	GE Frame 5 (21003)	3	Extreme Low Temp Op	OxCat	OxCat -4-13	4-13	0.231	0.220	CH4	84.3598	Scaling of AP-42, Section 3.1 (Revised 4/00), Table 3.1-2a using Vendor Guarantee	NA	NA	19.47	NA	0.01	NA
04-13	GE Frame 5 (21003)	3	Extreme Low Temp Op	OxCat	OxCat -4-13	4-13	0.231	0.220	N2O	0.2262	40 CFR 98, Subpart C, Table C-2	NA	NA	0.05	NA	0.00	NA
04-13	GE Frame 5 (21003)	3	Extreme Low Temp Op	OxCat	OxCat -4-13	4-13	0.231	0.220	CO2e	122194	40 CFR 98, Subpart A, Table A-1	NA	NA	28198.59	NA	13.43	NA
04-13	GE Frame 5 (21003)	4	Start-up	OxCat	OxCat -4-13	4-13	2	2	CO	967.40	Vendor Guarantee	NA	0.00%	1934.81	1934.81	50.30	50.30
04-13	GE Frame 5 (21003)	4	Start-up	OxCat	OxCat -4-13	4-13	2	2	NOx	20.91	Vendor Guarantee	NA	0.00%	41.83	41.83	1.09	1.09
04-13	GE Frame 5 (21003)	4	Start-up	OxCat	OxCat -4-13	4-13	2	2	PM	0.42	AP-42, Section 3.1 (Revised 4/00), Table 3.1-2a	NA	NA	0.83	NA	0.02	NA
04-13	GE Frame 5 (21003)	4	Start-up	OxCat	OxCat -4-13	4-13	2	2	PM10	0.42	AP-42, Section 3.1 (Revised 4/00), Table 3.1-2a	NA	NA	0.83	NA	0.02	NA
04-13	GE Frame 5 (21003)	4	Start-up	OxCat	OxCat -4-13	4-13	2	2	PM2.5	0.42	AP-42, Section 3.1 (Revised 4/00), Table 3.1-2a	NA	NA	0.83	NA	0.02	NA
04-13	GE Frame 5 (21003)	4	Start-up	OxCat	OxCat -4-13	4-13	2	2	SO2	0.21	AP-42, Section 3.1 (Revised 4/00), Table 3.1-2a	NA	NA	0.43	NA	0.01	NA
04-13	GE Frame 5 (21003)	4	Start-up	OxCat	OxCat -4-13	4-13	2	2	VOC	12.11	Vendor Guarantee	NA	0.00%	24.23	24.23	0.63	0.63
04-13	GE Frame 5 (21003)	4	Start-up	OxCat	OxCat -4-13	4-13	2	2	Formaldehyde	4.10	Scaling of AP-42, Section 3.1 (Revised 4/00), Table 3.1-3 using Vendor Guarantee	NA	0.00%	8.19	8.19	0.21	0.21
04-13	GE Frame 5 (21003)	4	Start-up	OxCat	OxCat -4-13	4-13	2	2	CO2	7399.00	40 CFR 98, Subpart C, Table C-1	NA	NA	14798.00	NA	384.75	NA
04-13	GE Frame 5 (21003)	4	Start-up	OxCat	OxCat -4-13	4-13	2	2	CH4	49.61	Scaling of AP-42, Section 3.1 (Revised 4/00), Table 3.1-2a using Vendor Guarantee	NA	NA	99.22	NA	2.58	NA

N.1: Emission Summary

Emission Unit #	Emission Unit Name	Process ID	Process Name	Control Device Name	Control Device ID	Stack ID	Maximum Design Capacity *(SCC Units/hour)*	Average Design Capacity *(SCC Units/hour)*	Pollutant	Uncontrolled Emission Factor *(lb/SCC Units)*	Emission Factor Source (e.g. AP-42, Stack Test, Mass Balance)	Capture Efficiency *(%)*	Control Efficiency *(%)*	Hourly Emissions		Annual Emissions	
														Uncontrolled Potential *(lb/hr)*	Controlled Potential *(lb/hr)*	Uncontrolled Potential *(tons/yr)*	Controlled Potential *(tons/yr)*
04-13	GE Frame 5 (21003)	4	Start-up	OxCat	OxCat -4-13	4-13	2	2	N2O	0.01	40 CFR 98, Subpart C, Table C-2	NA	NA	0.03	NA	0.00	NA
04-13	GE Frame 5 (21003)	4	Start-up	OxCat	OxCat -4-13	4-13	2	2	CO2e	8643.00	40 CFR 98, Subpart A, Table A-1	NA	NA	17286.00	NA	449.44	NA
04-13	GE Frame 5 (21003)	5	Shutdown	OxCat	OxCat -4-13	4-13	2	2	CO	1024.86	Vendor Guarantee	NA	75.00%	2049.72	512.43	53.29	13.32
04-13	GE Frame 5 (21003)	5	Shutdown	OxCat	OxCat -4-13	4-13	2	2	NOx	23.38	Vendor Guarantee	NA	0.00%	46.76	46.76	1.22	1.22
04-13	GE Frame 5 (21003)	5	Shutdown	OxCat	OxCat -4-13	4-13	2	2	PM	0.43	AP-42, Section 3.1 (Revised 4/00), Table 3.1-2a	NA	NA	0.87	NA	0.02	NA
04-13	GE Frame 5 (21003)	5	Shutdown	OxCat	OxCat -4-13	4-13	2	2	PM10	0.43	AP-42, Section 3.1 (Revised 4/00), Table 3.1-2a	NA	NA	0.87	NA	0.02	NA
04-13	GE Frame 5 (21003)	5	Shutdown	OxCat	OxCat -4-13	4-13	2	2	PM2.5	0.43	AP-42, Section 3.1 (Revised 4/00), Table 3.1-2a	NA	NA	0.87	NA	0.02	NA
04-13	GE Frame 5 (21003)	5	Shutdown	OxCat	OxCat -4-13	4-13	2	2	SO2	0.22	AP-42, Section 3.1 (Revised 4/00), Table 3.1-2a	NA	NA	0.45	NA	0.01	NA
04-13	GE Frame 5 (21003)	5	Shutdown	OxCat	OxCat -4-13	4-13	2	2	VOC	12.83	Vendor Guarantee	NA	23.00%	25.67	19.76	0.67	0.51
04-13	GE Frame 5 (21003)	5	Shutdown	OxCat	OxCat -4-13	4-13	2	2	Formaldehyde	4.34	Scaling of AP-42, Section 3.1 (Revised 4/00), Table 3.1-3 using Vendor Guarantee	NA	50.00%	8.68	4.34	0.23	0.11
04-13	GE Frame 5 (21003)	5	Shutdown	OxCat	OxCat -4-13	4-13	2	2	CO2	7719.00	40 CFR 98, Subpart C, Table C-1	NA	NA	15438.00	NA	401.39	NA
04-13	GE Frame 5 (21003)	5	Shutdown	OxCat	OxCat -4-13	4-13	2	2	CH4	52.55	Scaling of AP-42, Section 3.1 (Revised 4/00), Table 3.1-2a using Vendor Guarantee	NA	NA	105.11	NA	2.73	NA
04-13	GE Frame 5 (21003)	5	Shutdown	OxCat	OxCat -4-13	4-13	2	2	N2O	0.01	40 CFR 98, Subpart C, Table C-2	NA	NA	0.03	NA	0.00	NA
04-13	GE Frame 5 (21003)	5	Shutdown	OxCat	OxCat -4-13	4-13	2	2	CO2e	9037.00	40 CFR 98, Subpart A, Table A-1	NA	NA	18074.00	NA	469.92	NA
04-13	GE Frame 5 (21003)	6	Uncontrolled OxCat	OxCat	OxCat -4-13	4-13	0.20	0.187	CO	107.23	Vendor Guarantee	NA	0.00%	21.01	21.01	2.00	2.00
04-13	GE Frame 5 (21003)	6	Uncontrolled OxCat	OxCat	OxCat -4-13	4-13	0.20	0.187	NOx	598.90	Vendor Guarantee	NA	0.00%	117.37	117.37	11.18	11.18
04-13	GE Frame 5 (21003)	6	Uncontrolled OxCat	OxCat	OxCat -4-13	4-13	0.20	0.187	PM	6.73	AP-42, Section 3.1 (Revised 4/00), Table 3.1-2a	NA	NA	1.32	NA	0.13	NA
04-13	GE Frame 5 (21003)	6	Uncontrolled OxCat	OxCat	OxCat -4-13	4-13	0.20	0.187	PM10	6.73	AP-42, Section 3.1 (Revised 4/00), Table 3.1-2a	NA	NA	1.32	NA	0.13	NA

N.1: Emission Summary

Emission Unit #	Emission Unit Name	Process ID	Process Name	Control Device Name	Control Device ID	Stack ID	Maximum Design Capacity *(SCC Units/hour)*	Average Design Capacity *(SCC Units/hour)*	Pollutant	Uncontrolled Emission Factor *(lb/SCC Units)*	Emission Factor Source (e.g. AP-42, Stack Test, Mass Balance)	Capture Efficiency *(%)*	Control Efficiency *(%)*	Hourly Emissions		Annual Emissions	
														Uncontrolled Potential *(lb/hr)*	Controlled Potential *(lb/hr)*	Uncontrolled Potential *(tons/yr)*	Controlled Potential *(tons/yr)*
04-13	GE Frame 5 (21003)	6	Uncontrolled OxCat	OxCat	OxCat -4-13	4-13	0.20	0.187	PM2.5	6.73	AP-42, Section 3.1 (Revised 4/00), Table 3.1-2a	NA	NA	1.32	NA	0.13	NA
04-13	GE Frame 5 (21003)	6	Uncontrolled OxCat	OxCat	OxCat -4-13	4-13	0.20	0.187	SO2	3.47	AP-42, Section 3.1 (Revised 4/00), Table 3.1-2a	NA	NA	0.68	NA	0.06	NA
04-13	GE Frame 5 (21003)	6	Uncontrolled OxCat	OxCat	OxCat -4-13	4-13	0.20	0.187	VOC	13.43	Vendor Guarantee	NA	0.00%	2.63	2.63	0.25	0.25
04-13	GE Frame 5 (21003)	6	Uncontrolled OxCat	OxCat	OxCat -4-13	4-13	0.20	0.187	Formaldehyde	4.54	Scaling of AP-42, Section 3.1 (Revised 4/00), Table 3.1-3 using Vendor Guarantee	NA	0.00%	0.89	0.89	0.08	0.08
04-13	GE Frame 5 (21003)	6	Uncontrolled OxCat	OxCat	OxCat -4-13	4-13	0.20	0.187	CO2	120017.00	40 CFR 98, Subpart C, Table C-1	NA	NA	23519.72	NA	2239.97	NA
04-13	GE Frame 5 (21003)	6	Uncontrolled OxCat	OxCat	OxCat -4-13	4-13	0.20	0.187	CH4	54.99	Scaling of AP-42, Section 3.1 (Revised 4/00), Table 3.1-2a using Vendor Guarantee	NA	NA	10.78	NA	1.03	NA
04-13	GE Frame 5 (21003)	6	Uncontrolled OxCat	OxCat	OxCat -4-13	4-13	0.20	0.187	N2O	0.23	40 CFR 98, Subpart C, Table C-2	NA	NA	0.04	NA	0.00	NA
04-13	GE Frame 5 (21003)	6	Uncontrolled OxCat	OxCat	OxCat -4-13	4-13	0.20	0.187	CO2e	121460.00	40 CFR 98, Subpart A, Table A-1	NA	NA	23802.50	NA	2266.91	NA

Section N.2: Stack Information

UTM Zone:

Stack ID	Identify all Emission Units (with Process ID) and Control Devices that Feed to Stack	Stack Physical Data			Stack UTM Coordinates		Stack Gas Stream Data		
		Equivalent Diameter *(ft)*	Height *(ft)*	Base Elevation *(ft)*	Northing *(m)*	Easting *(m)*	Flowrate *(acfm)*	Temperature *(° F)*	Exit Velocity *(ft/sec)*
1-1	Clark HBA-8 ICE (20901)	6.80	20	1060	4161590	698728	165,641	565	76
1-2	Clark HBA-8 ICE (20902)	6.80	20	1059	4161594	698721	165,641	565	76
1-3	Clark HBA-8 ICE (20903)	6.80	20	1059	4161598	698712	165,641	565	76
1-4	Clark HBA-8 ICE (20904)	6.80	20	1059	4161602	698706	165,641	565	76
1-5	Clark HBA-8 ICE (20905)	6.80	20	1059	4161608	698699	165,641	565	76
1-6	Clark HBA-8 ICE (20906)	6.80	20	1059	4161610	698692	165,641	565	76
1-7	Clark HBA-8 ICE (20907)	6.80	20	1059	4161613	698686	165,641	565	76
2-8	Clark HBA-8T ICE (20908)	6.80	20	1058	4161620	698677	165,641	565	76
2-9	Clark HBA-8T ICE (20909)	6.80	20	1057	4161622	698672	165,641	565	76
2-10	Clark HBA-8T ICE (20910)	6.80	20	1057	4161625	698667	165,641	565	76
3-11	GE Frame 3 (21001)	6.80	20	1051	4161571	698630	165,641	565	76
3-12	GE Frame 3 (21002)	6.80	20	1051	4161566	698639	165,641	565	76
4-13	GE Frame 5 (21003)	11.00	47.0	1044	4161532	698610	325,580	625	57

Division for Air Quality
300 Sower Boulevard
Frankfort, KY 40601
(502) 564-3999

DEP7007DD

Insignificant Activities

___ Section DD.1: Table of Insignificant Activities
___ Section DD.2: Signature Block
___ Section DD.3: Notes, Comments, and Explanations

Source Name: Texas Eastern Transmission, LP - Danville Compressor Station
KY EIS (AFS) #: 21- 137-00008
Permit #: V-16-056
Agency Interest (AI) ID: 44065
Date: 6/28/2019

Section DD.1: Table of Insignificant Activities

*Identify each activity with a unique Insignificant Activity number (IA #); for example: 1, 2, 3… etc.

Insignificant Activity #	Description of Activity including Rated Capacity	Serial Number or Other Unique Identifier	Applicable Regulation(s)	Calculated Emissions
1	Diesel Storage Tank, 500 gal.	NA	None	Previously provided
2	Lube Oil Storage Tank, 8,900 gal.	NA	None	Previously provided
3	Oily Sump Water Storage Tank, 1,620 gal.	NA	None	Previously provided
4	Glycol/water Storage Tank, 1,000 gal.	NA	401 KAR 63:020	Previously provided
5	Eight Comfort Heaters, Less than 1 MMBtu/hr, each	NA	None	Previously provided
6	Pipeline Liquids Storage Tanks, (2), 1,100 gal. each	NA	401 KAR 63:020	Previously provided
7	Pipeline Liquids Storage Tanks, (5), 2,480 gal. each	NA	401 KAR 63:020	Previously provided
8	Fugitive Emissions from truck loading	NA	401 KAR 63:020	Previously provided
9	Natural Gas Fired Boiler, 150 hp (6.28 MMBTU/hr)	NA	401 KAR 59:010	Previously provided
10	Two HVAC boilers less than 1 Mmbtu/hr each	NA	None	Previously provided
11	Two water heaters less than 1 MMbtu/hr each	NA	401 KAR 59:010	Previously provided
12	Two ovens less than 1 Mmbtu/hr each	NA	401 KAR 59:010	Previously provided
13	Oil storage tank, 560 gallons	NA	None	Previously provided
14	Coolant Storage Tank, 940 gal	NA	401 KAR 63:020	Previously provided
15	Oily waster storage tank, 20,300 gal	NA	None	Previously provided
16	Oily water storage tank, 12,690 gal	NA	None	Previously provided
17	Oily water storage tank, 12,690 gal	NA	None	Previously provided
18	Nine seperator Vessels (<=300 gal each)	NA	401 KAR 63:020	Previously provided
19	(2) CEMS sample handling box exhaust stack	NA	None	Less than 1 tpy

Section DD.2: Signature Block

I, THE UNDERSIGNED, HEREBY CERTIFY UNDER PENALTY OF LAW, THAT I AM A RESPONSIBLE OFFICIAL, AND THAT I HAVE PERSONALLY EXAMINED, AND AM FAMILIAR WITH, THE 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 INFORMATION IS ON KNOWLEDGE AND BELIEF, TRUE, ACCURATE, AND COMPLETE. I AM AWARE THAT THERE ARE SIGNIFICANT PENALTIES FOR SUBMITTING FALSE OR INCOMPLETE INFORMATION, INCLUDING THE POSSIBILITY OF FINE OR IMPRISONMENT.

	Authorized Signature	Date
By:		
	Thomas V. Wooden, Jr.	VP Gas Transmission Operations
	Type/Print Name of Siguatory	Title of Siguatory

APPENDIX D: PROPOSED CHANGES TO EXISTING TITLE V PERMIT

[Will Provide After Texas Eastern Staff Has Post-Submittal Meeting with KDAQ Permitting Staff]

APPENDIX E: LETTER DATED MARCH 13, 2019 BASIS FOR SITE-WIDE LIMITS

Enbridge
5400 Westheimer Court
Houston, Texas 77056

March 12, 2019

Kentucky Department for Environmental Protection
Division for Air Quality – Permit Support Section
300 Sower Boulevard, 2nd Floor
Frankfort, Kentucky 40601

RE: Texas Eastern Transmission LP
Danville Compressor Station
Permit No. V-16-056
AI No. 44065

Dear Permit Support Section,

On February 28th, Texas Eastern Transmission, LP (Texas Eastern) staff met with Department staff to discuss next steps to preparing a Title V significant modification permit application for the Danville Compressor Station as part of Texas Eastern's proposed Corrective Action Plan. A key objective of the permit application is to obtain additional operational flexibility for the Frame 3 turbines recently retrofitted with catalyst control systems. During the meeting with the Department, Texas Eastern discussed permitting opportunities through the establishment of sitewide emission limits to demonstrate previous Prevention of Significant Deterioration (PSD) avoidance permitting and to authorize additional operational flexibility modes for the turbines with catalyst control systems. Texas Eastern is submitting this letter to outline the basis for obtaining sitewide emission limits that are consistent with previous PSD avoidance permitting and authorization for additional turbine operational flexibility.

The "Relevant Project" – Access/Adair/Lebanon Extension:

As a part of the Access -Addair-Lebanon Extension (AALE) Project, Texas Eastern submitted a Title V permit significant modification application in April 2016. On June 27, 2016, Texas Eastern submitted a letter to document a review of past permitting actions at the Danville Compressor Station to address project aggregation. In summary, Texas Eastern demonstrated that all actions that resulted in a change in emissions were included in the Prevention of Significant Deterioration (PSD) Project Emission Increase (PEI) analysis. Further, the PEI analysis demonstrates the increase in emissions was less than the Significant Emission Rate (SER) for a major modification at a major source for PSD as shown in Table 1 below:

Table 1. AALE Project Emissions Increase Summary

Pollutant	Baseline Actual Emissions 2008-2009 (tpy)	Post Project Potential to Emit (tpy)	Net Emissions Increase (tpy)	PSD Major Modification Threshold (tpy)	Above Threshold?
NO_X	1,713.2	1,223.1	-490.1	40	No
CO	178.8	248.5	69.7	100	No
VOC	56.99	93.70	36.71	40	No
$PM_{10}/PM_{2.5}$	19.49	27.29	7.80	15/10	No
SO_2	2.16	5.43	3.27	40	No
CO_2e	124,198	252,437	128,239	-	No

AALE Sitewide Emission Limit Basis – Emissions by Permit Emission Units:

The sitewide emission increase for the AALE project can be more fully understood by breaking out the individual emission units (EUs) as shown below in Table 2. As Table 2 shows, sources EU01 through EU04 represent more than 99% of the corresponding sitewide NOx and CO emissions.

Table 2. AALE Project Emission Unit-Specific Permit Basis

Emission Unit		Estimated Annual Emissions *		Normal Steady-State Operation #		Start Up/Shutdown – Other Process IDs **,##	
Type	Permit ID	Pollutant	Represented All Modes (tpy)	Emissions Basis	Represented 8,760 Normal Hours (tpy)	Hourly Limit	Represented (tpy)
Recip ICE Uncontrolled	EU01	NOx	594.81	Fuel Cap	594.81	N/A	N/A
		CO	41.64	~25% Utilization	41.64		
Recip ICE Controlled	EU02	NOx	59.38	0.5 g/hp-hr NOx	59.38	N/A	N/A
		CO	62.35	0.6 g/hp-hr CO	62.35		
Frame 3 Turbines Controlled	EU03	NOx	78.01	25 ppmv NOx	77.54	N/A**	1.12
		CO	56.84	12.5 ppmv CO	23.60		33.42
Frame 5 Turbine Controlled	EU04	NOx	489.64	N/A	489.56	N/A##	2.77
		CO	85.23	12.5 ppmv CO	21.91		63.71
Sitewide Representations * (Not Currently a Permit limit)**		**NOx**	**1,225.30*** **		**1,221.41**		**3.89**
		CO	**250.76**		**153.63**		**97.13**

* Represents continuous operation (8,760 hrs/yr) of each emission source and for the turbines (EU03 and EU04) includes start-up, shutdown, and low ambient air temperature operations.

All equipment and corresponding control systems are achieving performance levels within demonstrated parameter ranges and operating 8,760 hrs/year.

** For the Frame 3 turbines (EU03), permit application represented a total of 72 hrs/yr for "Other Process IDs," which includes: 42 hrs/yr of start-up, 23 hrs/yr of shutdown, and 7 hrs/yr of low ambient air temperature operation.

For the Frame 5 turbine (EU04), permit application represented a total of 159 hrs/yr for "Other Process IDs," which includes: 78 hrs/yr of start-up, 74 hrs/yr of shutdown, and 7 hrs/yr of low ambient air temperature operation.

*** Sitewide estimated annual emissions, as represented in the air permit application and not affected by the AALE project PEI, includes miscellaneous, small combustion sources contributing approximately 2 tpy each of NOx and CO emissions.

Table 2 illustrates that all emission units and activities at the Danville Compessor Station were included in the AALE PEI. Importantly though, neither the annual emissions estimate by emission unit or the sitewide annual emissions representation have been incorporated into the existing Title V permit as an emission limit. Texas Eastern believes that in absence of these emission limits, the Department has relied on alternative requirements (that reduce operational flexibilty) to limit emissions to the AALE project representations. These requirements may be described as follows:

- Continuous operation of the respective air pollution control systems (8,760 hrs/yr) with the only exceptions being for the turbines (EU03 and EU04) during start-up, shutdown, and low ambient temperatures.

Rather than to rely on this type of a requirement, Texas Eastern proposes the establishment of sitewide emission limits that correspond to the AALE project representations. The approach to comply with a set of sitewide emission limits offers Texas Eastern more flexibility to operate EUs with control systems while adhering to the AALE emission representations. The sitewide emission limitations approach would allow Texas Eastern to incorporate additional turbine operating modes when controls may not achieve design performance due to operations outside of demonstrated parameter ranges.

Proposed Sitewide Emission Limits Basis – Emissions by Permit Emission Units:

Effectively, Texas Eastern would represent worst case hourly emissions in each operating mode while not specifying total emissions (rolling twelve month) from each mode. Accordingly, the previously presented table would reflect the following:

Table 3. Proposed Permit Basis – Authorize Emission Unit Operations When Control Systems May Not Achieve Design Performance Outside Demonstrated Parameter Ranges

Emission Unit		Estimated Annual Emissions *		Normal Steady-State Operation #		Start Up/Shutdown – Other Process IDs **	
Type	**Permit ID**	**Pollutant**	**Represented All Modes (tpy)**	**Emissions Basis**	**Represented 8,760 Normal Hours (tpy)**	**Hourly Limit**	**(tpy)**
Recip ICE Uncontrolled	EU01	NOx	N/A	Fuel Cap ~25% Utilization	N/A	N/A	N/A
		CO	N/A		N/A		
Recip ICE Controlled	EU02	NOx	N/A	0.5 g/hp-hr NOx	N/A	N/A	N/A
		CO	N/A	0.6 g/hp-hr CO	N/A		
Frame 3 Turbines Controlled	EU03	NOx	N/A	25 ppmv NOx	N/A	500 hrs/year**	Not to exceed proposed sitewide limits
		CO	N/A	12.5 ppmv CO	N/A		
Frame 5 Turbine Controlled	EU04	NOx	N/A	N/A	N/A	500 hrs/year**	Not to exceed proposed sitewide limits
		CO	N/A	12.5 ppmv CO	N/A		
Representations Proposed as Sitewide Emission Limits * **		**NOx**	**1,225.30*** **				
		CO	**250.76**				

* Includes start-up, shutdown, low ambient air temperature, and low load/low catalyst temperature operations.

All equipment and corresponding control systems are achieving performance levels within demonstrated parameter ranges.

** Texas Eastern will review operational history and propose an hourly limit. 500 hrs/yr is shown here for illustration purposes for the combination of all "Other Process IDs," which includes: start-up, shutdown, low ambient air temperature, and low load/low catalyst temperature operations.

*** Sitewide estimated annual emissions, as represented in the air permit application and not affected by the AALE project PEI, includes miscellaneous, small combustion sources contributing approximately 2 tpy each of NOx and CO emissions.

Texas Eastern recognizes this approach will require the following:

- A Department approved parmater monitoring plan.
- Recordkeeping and conservative emissions estimates for all operating modes, including when control systems are outside of demonstrated parameter ranges.
- Minimizing operations when outside of demonstrated parameter ranges.

Texas Eastern also acknowledges requirements to minimize emissions at all times is a concern, including operations outside of demonstrated parameter ranges for control devices. Accordingly, in addition to the sitewide emission limits, Texas Eastern will propose an hour limit (500 hrs/yr shown in table for illustration purposes) for operations outside of demonstrated parameter ranges for the control systems.

In summary, Texas Eastern is proposing to:

- Establish sitewide annual emission limits that represent AALE PEI and PSD avoidance.
- Authorize additional operating modes when control systems may not achieve performance levels due to operations outside of demonstrated parameter ranges by complying with the proposed sitewide annual emission limits.
- Establish limits on annual operating hours to minimize emissions from all operating modes outside of normal steady-state (i.e., start-up, shutdown, low ambient air temperature, and low load/low catalyst temperature operations).

Texas Eastern requests approval of the sitewide emissions approach and requets prompt response from the Department in order us to proceed with permit modifications described in the Corrective Action Plan submitted on January 4, 2019 to Mr. Scott Blakeman.

If you have any questions, please contact me by email at: chuck.zukor@enbridge.com or by phone at 713-627-5791.

Sincerely,



Chuck Zukor

Senior Engineer, Air Permitting

Enbridge
5400 Westheimer Court
Houston, Texas 77056

October 9, 2019

Ms. Shauna Switzer
Kentucky Department for Environmental Protection
Division for Air Quality – Permit Support Section
300 Sower Boulevard, 2nd Floor
Frankfort, Kentucky 40601

RE: Title V Operating Permit – Significant Modification Application
Response to Notice of Deficiency Dated 9/9/2019
Texas Eastern Transmission, LP
Danville Compressor Station
(ID 21-137-00008) (Agency Interest 44065)

Dear Ms. Shauna Switzer:

Texas Eastern Transmission, LP (Texas Eastern) is submitting the following responses to the twelve questions raised in the Notice of Deficiency (NOD) letter dated 9/9/2019. Each of the twelve NOD questions are listed below in bold font, and the corresponding response is provided below in italic font.

1. Please submit a complete DEP7007V form.
RESPONSE: See Attachment 1 for the DEP7007V form and redline/strikeout of existing permit conditions.

2. Please resubmit a DEP7007DD form that includes a signature from the responsible official.
RESPONSE: See Attachment 2 for the DEP7007DD form with the new RO's (Mr. Kerry Puckett, VP Operations, US) signature.

3. Please provide the vendor specifications used for emission factors and destruction efficiencies of control devices as referenced in the application.
RESPONSE: See Attachment 3 for vendor specifications and catalyst performance curves for the pollutant control devices summarized in the table below:

Emission Source	***Uncontrolled***	***CO Controls***	***NOx Controls***
EU 002 *HBA-8T Recips*	*Clark* *NOx = 15.0 g/hp-hr* *CO = 10.0 g/hp-hr* *VOC = 10.0 g/hp-hr*	*AeriNOx DCL OxCat* *----* *CO = 0.6 g/hp-hr ** *VOC = 0.7 g/hp-hr*	*Clean Burn Technologies* *NOx = 1.0 g/hp-hr* *----* *----*
EU 003 *GE Frame 3 Turbines*	*GE Vendor Data* *NOx =184 ppmvd* *CO = 50 ppmvd* *TOC = 50 ppmvd*	*AeriNOx Cromtech OxCat* *----* *CO = 12.5 ppmvd* *(based on a 75% DRE)*	*AeriNOx SCR* *NOx = 25 ppmvd* *----* *----*
EU 004 *GE Frame 5 Turbine*	*GE Vendor Data* *NOx =170 ppmvd* *CO = 50 ppmvd* *TOC = 50 ppmvd*	*Peerless OxCat* *----* *CO = 12.5 ppmvd* *(based on a 75% DRE)*	*None*

** The air permit application assumed a more conservative air permitting basis of 1.05 g CO/hp-hr (i.e. CO DRE 58%).*

4. Please elaborate on the justification provided for the non-applicability of 40 CFR 63, Subpart YYYY to the turbines, as the turbines are currently subject to Subpart YYYY.

RESPONSE: The two GE Frame 3 turbines were initially installed in 1961; and the GE Frame 5 turbine was initially installed in 1969. All three combustion turbines were installed prior to January 14, 2003 and have not been modified or reconstructed since January 14, 2003. Thus, the three combustion turbines are categorized as "existing" affected sources under 40 CFR Part 63, Subpart YYYY. Per 40 CFR §63.6090(b)(4): "Existing stationary combustion turbines in all subcategories do not have to meet the requirements of this subpart and of subpart A of this part. No initial notification is necessary for any existing stationary combustion turbine, even if a new or reconstructed turbine in the same category would require an initial notification." Furthermore, there are no proposed changes to existing affected sources under Subpart YYYY as published in the April 12, 2019 Federal Register.

5. Please explain why the total sum of hours of operation for the turbine processes exceed 8760 hours per turbine.

RESPONSE: See Attachment 4 for the revised, DEP7007A Form - Indirect Heat Exchangers and Turbines. The intent of the original form submittal was to show the sum of turbine operations in "Normal Op," "Low Temp Op," "Extreme Low Temp Op," "Startup," and "Shutdown" operating modes would equal 8,760 hours per year. This was the previous basis for PTEs established in the 2016 Title V application associated with the Access-Adair-Lebanon Extension (PSD-avoidance) project.

However, the values of 156 listed for Startup and Shutdown under the column "Maximum Operating Hours" were not correct. The value of 156 represents the annual number of Startup and Shutdown events, not hours of operation:

- *For the Frame 3 turbines, the correct "Maximum Operating Hours" for Startup and Shutdown are 42 hours, and 23 hours, respectively.*
- *For the Frame 5 turbine, the correct "Maximum Operating Hours" for Startup and Shutdown are 78 hours, and 74 hours, respectively.*

Also, 1 hour corresponding to Extreme Low Temp Op was not deducted from the Normal Op hours of operation in the original form submittal:

- *For the Frame 3 turbines, Normal Op hours of operation should be **8,688 hr/year** (8,760 hr – 6 hr Low Temp Op – 1 hr Extreme Low Temp Op – 42 hr Startup – 23 hr Shutdown).*

- *For the Frame 5 turbine, Normal Op hours of operation should be **8,601 hr/year** (8,760 hr – 6 hr Low Temp Op – 1 hr Extreme Low Temp Op – 78 hr Startup – 74 hr Shutdown).*

In this current Title V permit application, Texas Eastern is requesting two additional modes of operation representing the turbine and add-on control systems:

- *Periods in which both OxCat and SCR catalyst control systems are not achieving design specifications (i.e., uncontrolled emissions), and*

- *Periods in which only the SCR catalyst control system is not achieving design specifications (i.e., the OxCat is achieving controlled emissions, but the SCR has uncontrolled emissions).*

Texas Eastern has proposed "Maximum Operating Hours" of 200 hours per year, for each of the two proposed operating modes. It is difficult to predict how many hours per year would occur within any given year. Texas Eastern would rather not impose a limitation on reducing the "Maximum Operating Hours" of the Norm Op mode by subtracting the "Maximum Operating Hours" for the two proposed operating modes. Texas Eastern is proposing to limit the "Maximum Operating Hours" of the two proposed operating modes to 200 hours per year, but while also monitoring the 12-month rolling emissions associated with ALL turbine operating modes do not exceed the proposed sitewide annual pollutant emission limits. The proposed sitewide annual pollutant emission limits corresponds to the annual sitewide PTEs represented in the 2016 Title V application associated with the Access-Adair-Lebanon Extension (PSD-avoidance) project.

6. In Table C-1Db, please explain why CO_2 has a negative control efficiency.

RESPONSE: Table C-1Db refers to the HBA-8T recips that were equipped with an oxidation catalyst. When an oxidation catalyst is used, the CO emissions are oxidized and converted into CO_2 emissions. The conversion of CO to CO_2 is represented as the oxidation catalyst destruction rate efficiency (DRE). For the HBA-8T recips, the oxidation catalyst CO DRE is 58 wt%. Thus, 58 wt% of the uncontrolled CO emissions are converted in CO_2 emissions.

The negative CO_2 "control efficiency" of -0.56 wt% is an adjustment factor to the normal generation of CO_2 emissions from the combustion of natural gas. The adjustment factor accounts for increased CO_2 emissions which were produced from the oxidation of CO emissions passing through the oxidation catalyst. Positive "control efficiency" values are used to show emission reductions. Thus, the negative "efficiency" value for CO_2 is used to show the emissions increase of CO_2 resulting from the use of the oxidation catalyst.

$$CO_2\ \%\ Increase = \frac{(OxCat_{CO\ DRE\%} * CO\ EF_{uncontrolled})}{Base\ CO_2\ EF} * \frac{(MW_{CO2})}{(MW_{CO})} * 100\%$$

$$CO_2\ \%\ Increase = \frac{(58\ wt\% * 740.42\ lb/MMscf)}{120{,}017\ lb/MMscf} * \frac{(44.01)}{(28.01)} * 100\% = \boxed{0.56\ wt\%}$$

7. Please justify the different control efficiencies for each HAP being controlled by an OxCat. The previous Significant Revision quoted a destruction efficiency of 44% for all HAPs.

*RESPONSE: In the previous Significant Revision (2016 Title V application associated with the Access-Adair-Lebanon Extension (PSD-avoidance) project), the **overall average** OxCat DRE for "Total HAP" emissions was listed as 44 wt%.*

The DRE of an OxCat will differ by each individual organic (HAP) species due to the chemical formulation of the OxCat and its effectiveness in oxidizing chemical bonds of an organic (HAP) species.

- *The selected OxCat formulation has little to no effect (DRE = 0 wt% to 2 wt%) in oxidizing small alkanes such as methane and ethane.*

- *While, the selected OxCat formulation has a larger, but moderate effect (DRE = 40 wt% to 50 wt%) on certain aldehydes such as formaldehyde and acetaldehyde.*

- *The "Total HAP" OxCat DRE of 44 wt% was determined as a **mass-weighted average** of the OxCat DRE for each HAP species.*

8. Please clarify the conditions by which the Frame 3 turbines would be operating under Uncontrolled 1 as opposed to Uncontrolled 2 (i.e., range of outlet temperature and/or range of loads)

RESPONSE: "Uncontrolled 1" represents operation when both catalysts systems (OxCat and SCR) are operating below temperatures which have been demonstrated to achieve the design performance.

- *The performance of the OxCat and SCR catalyst systems will be determined by one of the following:*
    - *The minimum OxCat temperature demonstrated as meeting the design performance through stack testing, or*
    - *The minimum OxCat temperature provided by the vendor as achieving the design performance level, whichever is lower.*

"Uncontrolled 2" represents operation when only the SCR catalyst system is operating below temperatures which have been demonstrated to achieve the design performance.

- *Same as above.*

The catalyst temperatures are a function of load and ambient air temperature as demonstrated in Figure 1 on the next page:

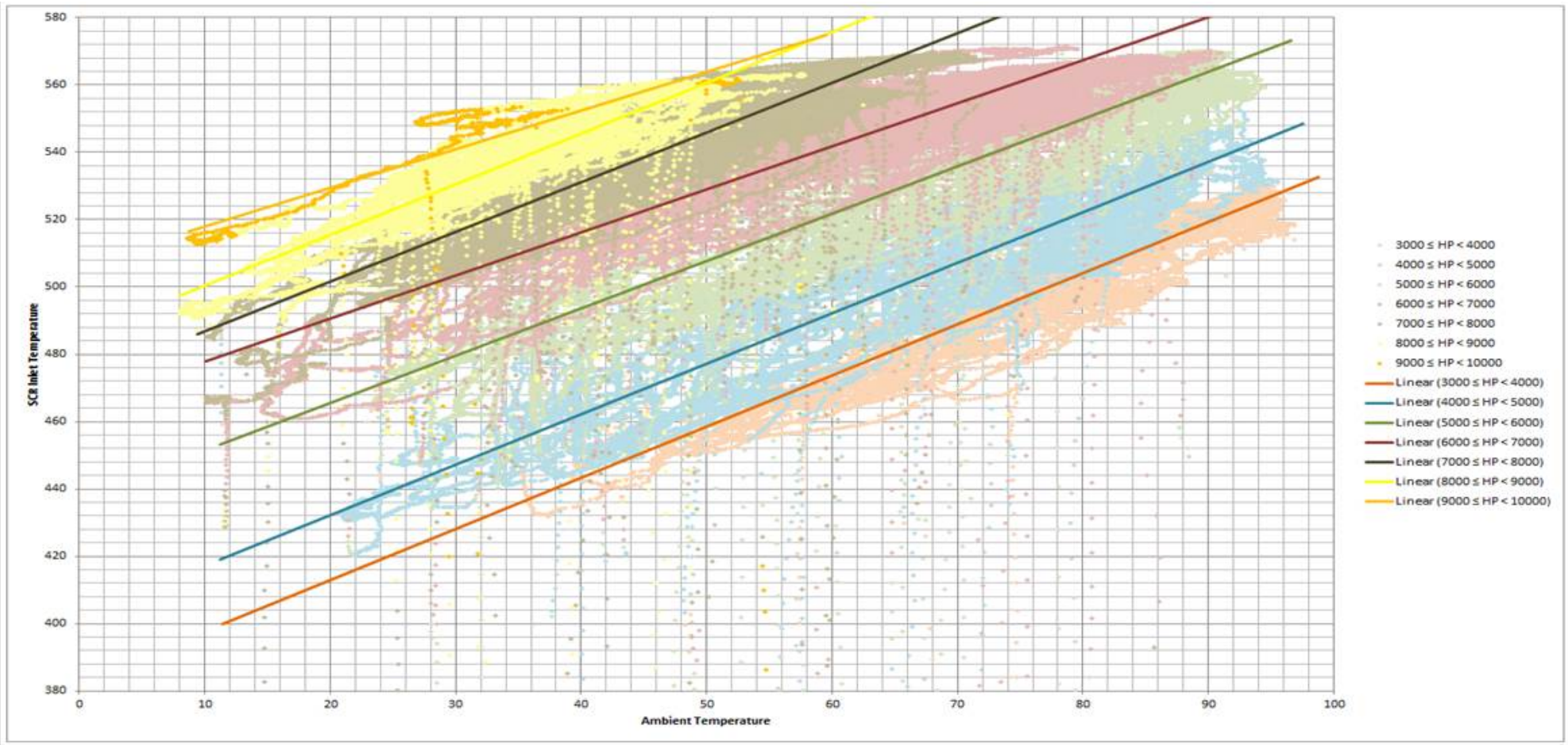


FIGURE 1. SCR Catalyst Inlet Temperature as Function of Ambient Air Temperature (^{o}F) and Turbine Load as Horsepower (HP)

9. Tables B-1Ad and B-1Ae indicate the Ignition-Idle phase as Step 2 and the Loading/Thermal Stabilization phase as Step 3. Is there a Step 1 missing from the analysis provided?

RESPONSE: Step 1 of the turbine startup cycle is the spin-up of the turbine and no fuel is being introduced into the combustion turbine. Thus, there are no turbine emissions associated with Step 1.

10. Please clarify how much each of Step 2 and 3 (and possibly Step 1) contribute to the values presented as the Startup data in Table B-1Af (i.e., values are an average of the emissions associated with each step).

RESPONSE: As discussed in Item 9, there are no turbine emissions associated with Step 1.

At the bottom of Table B-1Af (Startup Emissions for the GE Frame 3 turbines), there is a "NOTES" section which includes a summary table providing the estimated emissions associated with Step 2 and Step 3 of the turbine startup process.

- *The duration of Step 2 is 5.50 minutes per startup event.*
- *The duration of Step 3 is 10.50 minutes per startup event.*
- *Thus, the duration of one complete startup event is 16 minutes (5.50 min +10.50 min).*

- *The emissions associated with one complete startup event **is the sum** of emissions from Step 2 and Step 3.*
- *For example at 54.86 ^{o}F, NOx emissions for a startup event is **3.9809 lbs** (0.8704 lb $_{STEP2}$ + 3.1105 lb $_{STEP 3}$).*
- *There are a maximum number of 2 startup events in a 1-hour period, thus the hourly startup emission rate is **7.9617 lb/hr** (2 events/hour * 3.9809 lb/event).*
- *The annual number of startup events is 156 events, thus the annual startup emission rate is **0.3105 tpy** (156 events/year * 3.9809 lb/event * ton/2,000 lb).*

For Startups (SU), the follow distribution of Step 2 and Step 3 emissions were used:

	Ambient Air Temp 54.86 °F				Ambient Air Temp 0.01 °F			
	Step 2		Step 3		Step 2		Step 3	
Duration	5.50	min/SUevent	10.50	min/SUevent	5.50	min/SUevent	10.50	min/SUevent
NO_X	0.8704	lb/SUevent	3.1105	lb/SUevent	0.9458	lb/SUevent	3.5841	lb/SUevent
CO	48.1700	lb/SUevent	136.3390	lb/SUevent	52.3427	lb/SUevent	157.0988	lb/SUevent
UHC	3.1595	lb/SUevent	8.9425	lb/SUevent	3.4332	lb/SUevent	10.3041	lb/SUevent
Fuel	2,503	scf/SUevent	6,675	scf/SUevent	2,747	scf/SUevent	7,670	scf/SUevent

11. For Sections 3.1.2.2 and 3.2.1.2 of the application, please clarify the difference between scenarios 3 and 4.

RESPONSE: The scenarios in the bulleted list in the referenced sections of the application (referred to as scenario 3 and 4) both reflect operation when catalyst systems are operating below temperatures which have been demonstrated to achieve the design performance. Catalyst temperatures are a function of load and ambient air temperature. Therefore, there is no clear distinction between the two bulleted scenarios.

12. Please justify why the operating scenarios for the Clark HBA-8T engines are not divided out in a similar way to the turbines.

RESPONSE: The startup and shutdown of the recips do not require additional process IDs due to the short duration, fuel consumption, and combustion characteristics; the pound per hour emissions are less than the recip pound per hour emissions under normal operations. Furthermore, the Clark HBA-8T recips are not equipped with a SCR catalyst system for the reduction of NOx emissions. Therefore, an additional process ID is not required. These recips are not affected by ambient air temperature changes to the order of magnitude as combustion turbines. Therefore, additional process IDs for low ambient air temperatures are not required.

ATTACHMENT 1

Requirement Citation	Requirement Text	Proposed Replacement Permit Language	Explanation of Replacement Permit Language
1000 Character Limit	*Memo field*		
SECTION A	**SECTION A - PERMIT AUTHORIZATION** Pursuant to a duly submitted application the Kentucky Division for Air Quality (Division) hereby authorizes the operation of the equipment described herein in accordance with the terms and conditions of this permit. This permit has been issued under the provisions of Kentucky Revised Statutes (KRS) Chapter 224 and regulations promulgated pursuant thereto. The permittee shall not construct, reconstruct, or modify any affected facilities without first submitting a complete application and receiving a permit for the planned activity from the permitting authority, except as provided in this permit or in 401 KAR 52:020, Title V Permits. Issuance of this permit does not relieve the permittee from the responsibility of obtaining any other permits, licenses, or approvals required by the Kentucky Energy and Environment Cabinet (Cabinet) or any other federal, state, or local agency	OK. No changes.	
SECTION B EP 01 & 02 ApReg 1.a	**SECTION B - EMISSION UNITS, EMISSION POINTS, APPLICABLE REGULATIONS, AND OPERATING CONDITIONS** **Emission Unit: 01 (01-07) Seven Compressor Engines** Process 001 Reciprocating Internal Combustion Engine (Plant ID 20901) Process 002 Reciprocating Internal Combustion Engine (Plant ID 20902) Process 003 Reciprocating Internal Combustion Engine (Plant ID 20903) Process 004 Reciprocating Internal Combustion Engine (Plant ID 20904) Process 005 Reciprocating Internal Combustion Engine (Plant ID 20905) Process 006 Reciprocating Internal Combustion Engine (Plant ID 20906) Process 007 Reciprocating Internal Combustion Engine (Plant ID 20907) Description: 1,760 hp Clark HBA-8 Engine Type: 2 stroke lean burn Fuel: Natural gas Maximum rating: 16.60 MMBTU/hr, each	OK. No changes.	
SECTION B EP 01 & 02 ApReg 1.a	**Emission Unit: 02 (08-10) Three Compressor Engines** Process 001 Reciprocating Internal Combustion Engine (Plant ID 20908) Process 002 Reciprocating Internal Combustion Engine (Plant ID 20909) Process 003 Reciprocating Internal Combustion Engine (Plant ID 20910) Description: 2,050 hp Clark HBA-8T Engine Type: 2 stroke lean burn Fuel: Natural gas Maximum rating: 18.68 MMBTU/hr, each Date Constructed: 1957 Controls: Oxidation Catalyst (proposed installation 2017) Note: See Section H, Alternate Operating Scenarios for pre-project requirements.	**Emission Unit: 02 (08-10) Three Compressor Engines** Process 001 Reciprocating Internal Combustion Engine (Plant ID 20908) Process 002 Reciprocating Internal Combustion Engine (Plant ID 20909) Process 003 Reciprocating Internal Combustion Engine (Plant ID 20910) Description: 2,050 hp Clark HBA-8T Engine Type: 2 stroke lean burn Fuel: Natural gas Maximum rating: 18.68 MMBTU/hr, each Date Constructed: 1957 Controls: Oxidation Catalyst (proposed installation 2017) ~~**Note: See Section H, Alternate Operating Scenarios for pre-project requirements.**~~ **KyEIS Process ID 1: Normal, steady-state operation of the engine and the OxCat control system.** **KyEIS Process ID 2: Normal, steady-state operation of the engine but without OxCat control system after completion of scheduled engine overhauls and/or major maintenance on the reciprocating engines and/or OxCat systems.** **KyEIS Process ID 3: Low load, low ambient air temperature operation of the engine and OxCat control system is not meeting performance specifications.**	Remove alternate operating conditions under Section H. They are no longer applicable. Add KyEIS Process IDs to the emission source description to Emission Unit 02 to represent different operating scenarios with different emission characteristics.
SECTION B EP 01 & 02 ApReg 1.a	**APPLICABLE REGULATIONS:** 401 KAR 63:002, incorporating by reference 40 CFR 63, Subpart ZZZZ, National Emissions Standards for Hazardous Air Pollutants for Stationary Reciprocating Internal Combustion Engines. **1. Operating Limitations:** a. Pursuant to 401 KAR 52:020, Section 10, the permittee shall conduct routine maintenance checks to ensure optimum engine operations, for all engines under Emission Unit 01 and Emission Unit 02. **Compliance Demonstration Method:** See 5. Specific Recordkeeping Requirements, Conditions b. and d.	**APPLICABLE REGULATIONS:** 401 KAR 63:002, incorporating by reference 40 CFR 63, Subpart ZZZZ, National Emissions Standards for Hazardous Air Pollutants for Stationary Reciprocating Internal Combustion Engines. **1. Operating Limitations:** a. Pursuant to 401 KAR 52:020, Section 10, the permittee shall conduct routine maintenance checks to ensure optimum engine operations, for all engines under Emission Unit 01 and Emission Unit 02. **Compliance Demonstration Method:** See 5. Specific Recordkeeping Requirements, Conditions **c.** and d.	Regroup 5. b and 5.d as 5c & 5d.

Requirement Citation	Requirement Text	Proposed Replacement Permit Language	Explanation of Replacement Permit Language
SECTION B EP 01 ApReg 1.b	b. To preclude applicability of 401 KAR 51:017, the permittee shall limit the total combined natural gas fuel usage of Emission Unit 01 (seven Clark HBA-8 compressor engines) to a maximum of 249,488,235 scf per year, based on a 12-month rolling total. **Compliance Demonstration Method:** See 5. Specific Recordkeeping Requirements, Condition a.	OK. No changes.	Conditions ONLY for Emission Unit 01
SECTION B EP 02 ApReg 1.c	c. To preclude applicability of 401 KAR 51:017, the permittee shall, at all times, operate the OxCat at each of the three (3) Clark HBA-8T engines under Emission Unit 02 when the associated engine is operating.	c. To preclude applicability of 401 KAR 51:017, the permittee shall at all times, **except as specified under Operating Limitations 1.d and 1.e.,** operate the OxCat **on** each of the three (3) Clark HBA-8T engines under Emission Unit 02 when the associated engine is operating. **d. The permittee is allowed to operate each engine under Emission 02 without the OxCat controls (KyEIS Process ID 2) for up to 100 hours on a 12-month rolling total after completeing scheduled required engine overhauls and/or major maintenance on the reciprocating engines and/or OxCat systems.** **e. Pursuant to 401 KAR 52:012, Section 1, (2) the permittee shall as a minimum apply control procedures that are reasonable, available, and practical.**	Conditions ONLY for Emission Unit 02 The proposed language addresses periods of no control when the OxCat catalyst bed is removed from housing after recip overhauls and/or major maintenance. The OxCat is removed to prevent fouling of catalysts when excess oils/greases are "burned" off from engine parts.
SECTION B EP02 ApReg 2	**2. Emission Limitations:** a. To preclude applicability of 401 KAR 51:017, CO emissions from each Clark HBA-8T engine under Emission Unit 02 shall not exceed 280 lb/mmscf. Compliance Demonstration Method: See 3. Testing Requirements, Condition a. and c. b. To preclude applicability of 401 KAR 51:017, total VOC (including volatile HAPs) emissions from each Clark HBA-8T engine under Emission Unit 02 shall not exceed 189 lb/mmscf. **Compliance Demonstration Method:** See 3. Testing Requirements, Condition b. and c.	**2. Emission Limitations:** a. To preclude applicability of 401 KAR 51:017, CO emissions from each Clark HBA-8T engine under Emission Unit 02 shall not exceed 280 lb/mmscf **(XXX g/hp-hr)**. Compliance Demonstration Method: See 3. Testing Requirements, Condition a. and c. b. To preclude applicability of 401 KAR 51:017, total VOC (including volatile HAPs) emissions from each Clark HBA-8T engine under Emission Unit 02 shall not exceed 189 lb/mmscf **(XXX g/hp-hr)**. Compliance Demonstration Method: See 3. Testing Requirements, Condition b. and c. **c. NOx emissions from each Clark HBA-8T engine under Emission Unit 02 shall not exceed XXX lb/mmscf (XXX g/hp-hr).** **Compliance Demonstration Method:** **See 3. Testing Requirements, Condition a. and c. (assuming annual testing, otherwise 3.b. and c. for only initial NOx testing)**	Conditions ONLY for Emission Unit 02 Add emission limit for NOx to represent all emission control levels associated with clean burn technologies. Also add vendor guarantee in units of g/hp-hr.
SECTION B EP 02 ApReg 3	**3. Testing Requirements:** a. Pursuant to 401 KAR 50:045, Section 1, the permittee shall perform an initial performance test within 180 days of startup (after OxCat installation), and annual testing thereafter, on each of the three Clark HBA-8T engines under Emission Unit 02, using reference methods specified in 401 KAR 50:015, to determine the outlet concentration of CO (in ppmvd, lbs/mmscf, lbs/hr). If the CO emission resulting from the performance test is less than or equal to 75 percent of the CO emission limit of 280 lb/mmscf, the permittee may reduce the frequency of subsequent performance tests to once every 2 years (no more than 26 calendar months following the previous performance test). If the results of any subsequent performance test exceed 75 percent of the CO emission limit for the turbine, the permittee shall resume annual performance tests. b. Pursuant to 401 KAR 50:045, Section 1, the permittee shall perform an initial performance test within 180 days of startup (after OxCat installation), on each of the three Clark HBA-8T engines under Emission Unit 02, using reference methods specified in 401 KAR 50:015, to determine the inlet and outlet concentration of total VOC and formaldehyde (in ppmvd, lbs/mmscf, lbs/hr). c. The permittee shall keep records of the natural gas fuel usage per engine used during each performance test. d. Pursuant to 401 KAR 50:045, Section 1, performance testing using Reference methods specified in 401 KAR 50:015 shall be conducted as required by the Division.	**3. Testing Requirements:** a. Pursuant to 401 KAR 50:045, Section 1, the permittee shall perform an initial performance test within 180 days of startup (after OxCat installation), and annual testing thereafter, on each of the three Clark HBA-8T engines under Emission Unit 02, using reference methods specified in 401 KAR 50:015, to determine the outlet concentration of **NOx and** CO (in ppmvd, lbs/mmscf, lbs/hr). If the **NOx and** CO emission resulting from the performance test is less than or equal to 75 percent of the **NOx and** CO emission limit**s** of **XXX lb/mmscf** and 280 lb/mmscf, **respectively,** the permittee may reduce the frequency of subsequent performance tests to once every 2 years (no more than 26 calendar months following the previous performance test). If the results of any subsequent performance test exceed 75 percent of the **NOx and** CO emission limit**s** for the turbine, the permittee shall resume annual performance tests. b. Pursuant to 401 KAR 50:045, Section 1, the permittee shall perform an initial performance test within 180 days of startup (after OxCat installation), on each of the three Clark HBA-8T engines under Emission Unit 02, using reference methods specified in 401 KAR 50:015, to determine the inlet and outlet concentration of total VOC and formaldehyde (in ppmvd, lbs/mmscf, lbs/hr). c. The permittee shall keep records of the natural gas fuel usage per engine used during each performance test. d. Pursuant to 401 KAR 50:045, Section 1, performance testing using Reference methods specified in 401 KAR 50:015 shall be conducted as required by the Division.	Conditions ONLY for Emission Unit 02 Add NOx to Testing Requirements. **Assuming Annual subsequent testing? Otherwise Initial Testing will keep 3.a as is in permit, then alter 3.b. to include NOx.**

Requirement Citation	Requirement Text	Proposed Replacement Permit Language	Explanation of Replacement Permit Language
SECTION B EP 01 & 02 ApReg 4	**4. Specific Monitoring Requirements:** a. Pursuant to 401 KAR 52:020, Section 10, the permittee shall monitor on a continuous basis the inlet and outlet temperature of the OxCat to ensure proper operation of the control device on each of the three Clark HBA-8T engines under Emission Unit 02. b. See Section F, Monitoring, Recordkeeping, and Reporting Requirements.	**4. Specific Monitoring Requirements:** a. Pursuant to 401 KAR 52:020, Section 10, the permittee shall monitor on a continuous basis the inlet and outlet temperature of the OxCat to ensure proper operation of the control device on each of the three Clark HBA-8T engines under Emission Unit 02. **b. Pursuant to 401 KAR 52:020, Section 10, the permittee shall monitor on a continuous basis the Trapped Equivalence Ratio (TER) controlled air manifold set point to ensure proper operation of the NOx clean burn technologies on each of the three Clark HBA-8T engines under Emission Unit 02.** **c.** See Section F, Monitoring, Recordkeeping, and Reporting Requirements.	Added TER air manifold set point as means for demonstrating compliance with NOx clean burn performance guarantees. **Note: There is no clarification of what the "proper operation of the OxCat control device" is. Should we specifiy minimum catalyst inlet/outlet temp or reference to values documented from past compliance testing?** **Also note there is no monitoring of natural gas useage by Emission Unit 01, but there is a recordkeeping requirement. For completeness, shouldn't there be a monitoring requirement?**
SECTION B EP 01 & 02 ApReg 5	**5. Specific Recordkeeping Requirements:** a. Pursuant to 401 KAR 52:020, Section 10, the permittee shall keep monthly records of the combined natural gas fuel usage for the seven compressor engines under Emission Unit 01 on a 12-month rolling basis. b. Pursuant to 401 KAR 52:020, Section 10, the permittee shall keep records of maintenance and operation of the OxCat controls on each of the Clark HBA-8T engines under Emission Unit 02. c. Pursuant to 401 KAR 52:020, Section 10, the permittee shall keep records of the amount of natural gas fuel usage and hours of operation for each of the Clark HBA-8T engines under Emission Unit 02 on an annual basis. d. Pursuant to 401 KAR 52:020, Section 10, the permittee shall keep records of all routine maintenance performed on each engine under Emission Units 01 and 02.	**5. Specific Recordkeeping Requirements:** a. Pursuant to 401 KAR 52:020, Section 10, the permittee shall keep monthly records of the combined natural gas fuel usage for the seven compressor engines under Emission Unit 01 on a 12-month rolling basis. **b. ~~c.~~** Pursuant to 401 KAR 52:020, Section 10, the permittee shall keep records of the amount of natural gas fuel usage and hours of operation for each of the Clark HBA-8T engines under Emission Unit 02 on **a 12-month rolling basis**. **c. ~~d.~~** Pursuant to 401 KAR 52:020, Section 10, the permittee shall keep records of all routine maintenance performed on each engine under Emission Units 01 and 02. **d. ~~b.~~** Pursuant to 401 KAR 52:020, Section 10, the permittee shall keep records of maintenance and operation of the OxCat controls on each of the Clark HBA-8T engines under Emission Unit 02.	Just re-organized order of conditions.
SECTION B EP 01 & 02 ApReg 6	**6. Specific Reporting Requirements:** See Section F, Monitoring, Recordkeeping, and Reporting Requirements.	OK. No changes.	
SECTION B EP 01 & 02 ApReg 7	**7. Specific Control Equipment Operating Conditions:** Pursuant to 401 KAR 52:020, Section 10, the permittee shall install and operate the OxCat control device on each of the Clark HBA-8T engines under Emission Unit 02 according to the manufacturer's recommendations. Records shall be kept of the maintenance activities performed on the OxCat control device on each of the Clark HBA-8T engines under Emission Unit 02.	**7. Specific Control Equipment Operating Conditions:** Pursuant to 401 KAR 52:020, Section 10, the permittee shall install and operate the OxCat control device on each of the Clark HBA-8T engines under Emission Unit 02 according to the manufacturer's recommendations. **~~Records shall be kept of the maintenance activities performed on the OxCat control device on each of the Clark HBA-8T engines under Emission Unit 02.~~** **Furthermore, pursuant to 401 KAR 52:012, Section 1, (2) the permittee shall as a minimum apply control procedures that are reasonable, available, and practical.** **a. Once per permit term, upon completion of an overhaul on each engine under Emission Unit 02, the permittee may operate the engine without oxidation catalyst controls for up to 100 hours. [401 KAR 52:020, Section 10]** **b. The permittee shall send a letter to the Regional Office at least 30 days in advance of the date of the planned engine overhaul activity, and shall keep records of hours of operation without catalyst controls, as well as the associated emissions. [401 KAR 52:020, Section 10]**	Strikeout text is redundant to exisiting recordkeeping under 5.b (new 5.d.) **Also added citation of 401 KAR 52:012 to emphasize possible limitations beyond operational control in achieving OxCat performance.**

Requirement Citation	Requirement Text	Proposed Replacement Permit Language	Explanation of Replacement Permit Language
SECTION B EP 03 & 04 ApReg 1	**Emissions Unit: 03 (11-12) Two Gas Turbines** Process 001 GE Frame 3 Gas Combustion Turbine (Plant ID 21001) Process 002 GE Frame 3 Gas Combustion Turbine (Plant ID 21002) Description: 8,000 hp turbines Fuel: Natural gas Maximum rating: 83.51 MMBTU/hr, each Construction commenced: 1961 Controls: Oxidation Catalyst and Selective Catalytic Reduction (proposed 2017) Notes: See Section H, Alternate Operating Scenarios for pre-project requirements. Normal operation does not include startup, shutdown, or low-temperature operation.	**Emissions Unit: 03 (11-12) Two Gas Turbines** Process 001 GE Frame 3 Gas Combustion Turbine (Plant ID 21001) Process 002 GE Frame 3 Gas Combustion Turbine (Plant ID 21002) Description: 8,000 hp turbines Fuel: Natural gas Maximum rating: 83.51 MMBTU/hr, each Construction commenced: 1961 **Controls:** **Selective Catalytic Reduction (SCR) for: NOx** **Oxidation Catalyst (OxCat) for: CO, VOC, and Formaldehyde** **Installation Date: XXXX (EU03-11), and XXXX (EU03-12)** **Process ID 1: Steady State Operation Mode (Normal Operation)** **Process ID 2: Startup Mode** **Process ID 3: Shutdown Mode** **Process ID 4: Low Temperature Operation (0°F>T>-20°F) Mode** **Process ID 5: Severe Low Temperature Operation (T<-20°F) Mode** **Process ID 6: Low SCR and OxCat Catalyst Temperature and/or Reduced Turbine Load Operation, No controls** **Process ID 7: Low SCR Catalyst Temperature and/or Reduced Turbine Load Operation, only OxCat operational** ~~**Notes: See Section H, Alternate Operating Scenarios for pre-project requirements. Normal operation does not include startup, shutdown, or low-temperature operation.**~~	Updated description for consistency with OWIN permit. Added description of KYEIS Process IDs. Remove alternate operating conditions under Section H. They are no longer applicable.
SECTION B EP 03 & 04 ApReg 1	**Emissions Unit: 04 (13) Gas Turbine** Description: GE Frame 5 Gas Combustion 18,500 hp Turbine (Plant ID 21003) Fuel: Natural gas Maximum rating: 183.82 MMBTU/hr Construction commenced: 1969 Controls: Oxidation Catalyst (proposed 2017) Notes: See Section H, Alternate Operating Scenarios for pre-project requirements. Normal operation does not include startup, shutdown, or low-temperature operation.	**Emissions Unit: 04 (13) Gas Turbine** Description: GE Frame 5 Gas Combustion 18,500 hp Turbine (Plant ID 21003) Fuel: Natural gas Maximum rating: 183.82 MMBTU/hr Construction commenced: 1969 **Controls:** **Oxidation Catalyst (OxCat) for: CO, VOC, and Formaldehyde** **Installation Date: XXXX (EU04)** **Process ID 1: Steady State Operation Mode (Normal Operation)** **Process ID 2: Startup Mode** **Process ID 3: Shutdown Mode** **Process ID 4: Low Temperature Operation (0°F>T>-20°F) Mode** **Process ID 5: Severe Low Temperature Operation (T<-20°F) Mode** **Process ID 6: Low OxCat Catalyst Temperature and/or Reduced Turbine Load Operation, No controls** ~~**Notes: See Section H, Alternate Operating Scenarios for pre-project requirements. Normal operation does not include startup, shutdown, or low-temperature operation.**~~	Updated description for consistency with OWIN permit. Added description of KYEIS Process IDs. Remove alternate operating conditions under Section H. They are no longer applicable.

Requirement Citation	Requirement Text	Proposed Replacement Permit Language	Explanation of Replacement Permit Language
SECTION B EP 03 & 04 ApReg 1	APPLICABLE REGULATIONS: 401 KAR 63:002, incorporating by reference 40 CFR 63, Subpart YYYY, National Emission Standards for Hazardous Air Pollutants for Stationary Combustion Turbines. 40 CFR Part 64, Compliance Assurance Monitoring. **1. Operating Limitations:** Pursuant to 401 KAR 52:020, Section 10, the permittee shall conduct routine operation and maintenance procedures in accordance with the manufacturer's specifications for each turbine to ensure optimum operations. **Compliance Demonstration Method:** See Section E, Source Control Equipment Requirements, and 7. Specific Control Equipment Operating Conditions.	APPLICABLE REGULATIONS: 401 KAR 63:002, incorporating by reference 40 CFR 63, Subpart YYYY, National Emission Standards for Hazardous Air Pollutants for Stationary Combustion Turbines. 40 CFR Part 64, Compliance Assurance Monitoring. **STATE-ORIGIN REQUIREMENTS:** **401 KAR 63:020 - Potentially hazardous matter or toxic substances.** **1. Operating Limitations:** **a. Pursuant to 401 KAR 63:020, Section 3, persons responsible for a source from which hazardous matter or toxic substances may be emitted shall provide the utmost care and consideration in the handling of these materials, to the potentially harmful effects of the emissions resulting from such activities. The permittee shall not allow any affected facility to emit potentially hazardous matter or toxic substances in such quantities or duration as to be harmful to the health and welfare of humans, animals and plants. Evaluation of such facilities as to the adequacy of controls and/or procedures and emission potential will be made on an individual basis by the Division.** **Compliance Demonstration Method:** **For compliance with 1. Operating Limitations a., based o the rates of emissions of airborne toxics provided in the application submitted by the source.**	NOTE: conducting maintenance procedures was an Operational Limit for ALL of the recips. The same applies to the turbines. However, this "Operational" requirement is not listed for OWIN, but it is listed under "Recordkeeping" for OWIN. Added Operating Limitations to be consistent with OWIN permit and previous conditions for Emission Units 01 & 02.
SECTION B EP 03 & 04 ApReg 1	Continued….	**b. To preclude applicability of 401 KAR 51:017, the permittee shall operate control devices at all times, except as specified under KyEIS Process IDs 2 through 7, and Operating Limitations 1.c and 1.d., when the associated turbine is operating.** **c. The permittee is allowed to operate each turbine without the controls (KyEIS Process ID 6) for up to 100 hours on a 12-month rolling total after completeing scheduled required turbine overhauls and/or major maintenance on the turbines and/or control systems.** **d. Pursuant to 401 KAR 52:012, Section 1, (2) the permittee shall as a minimum apply control procedures that are reasonable, available, and practical.** **Compliance Demonstration Method:** **For compliance with 1. Operating Limitations b., c., and d., see 5. Specific Recordkeeping Requirements and 6. Specific Reporting Requirements.** **e.** Pursuant to 401 KAR 52:020, Section 10, the permittee shall conduct routine operation and maintenance procedures in accordance with the manufacturer's specifications for each turbine to ensure optimum operations. **Compliance Demonstration Method:** **For compliance with 1. Operating Limitations e.,** see Section E, Source Control Equipment Requirements, and 7. Specific Control Equipment Operating Conditions.	NOTE: conducting maintenance procedures was an Operational Limit for ALL of the recips. The same applies to the turbines. However, this "Operational" requirement is not listed for OWIN, but it is listed under "Recordkeeping" for OWIN. Added Operating Limitations to be consistent with OWIN permit and previous conditions for Emission Units 01 & 02.

Requirement Citation	Requirement Text	Proposed Replacement Permit Language	Explanation of Replacement Permit Language
SECTION B EP 03 & 04 ApReg 2	**2. Emission Limitations:** a. To preclude applicability of 401 KAR 51:017, NOx emissions from each of the Frame 3 turbines under Emission Unit 03 shall not exceed 25 ppmvd at 15% O2 during normal operation. **Compliance Demonstration Method:** The permittee shall demonstrate continuous compliance by complying with either 3. Testing Requirements, Condition a, or 4. Specific Monitoring Requirements, Conditions a. and b. b. To preclude applicability of 401 KAR 51:017, CO emissions from each of the Frame 3 turbines under Emission Unit 03 shall not exceed 12.5 ppmvd at 15% O2 during normal operation. **Compliance Demonstration Method:** See 3. Testing Requirements, Condition c. and 4. Specific Monitoring Requirements, Condition c. c. To preclude applicability of 401 KAR 51:017, CO emissions from the Frame 5 turbine under Emission Unit 04 shall not exceed 12.5 ppmvd at 15% O2 during normal operation. **Compliance Demonstration Method:** See 3. Testing Requirements, Condition c. and 4. Specific Monitoring Requirements, Conditions d. through f. d. To preclude applicability of 401 KAR 51:017, VOC emissions from the Frame 3 turbines under Emission Unit 03 shall not exceed 13.28 lb/mmscf during normal operation. e. To preclude applicability of 401 KAR 51:017, VOC emissions from the Frame 5 turbines under Emission Unit 04 shall not exceed 10.36 lb/mmscf during normal operation. **Compliance Demonstration Method:** For compliance with 2. Emission Limitations, Conditions d. and e., see 3. Testing Requirements, Condition d.	**2. Emission Limitations:** a. To preclude applicability of 401 KAR 51:017, NOx emissions from each turbine shall not exceed **7.69 lb/hr per Frame 3 unit under Emission Unit 03 and 16.92 lb/hr for the Frame 5 unit under Emission Unit 04, during normal operation only, except as specified under KyEIS Process IDs 2 through 7, and Operating Limitations 1.c and 1.d.** **b. To preclude applicability of 401 KAR 51:017, CO emissions from each turbine shall not exceed XXXX lb/hr per Frame 3 unit under Emission Unit 03 and XXXX lb/hr for the Frame 5 unit under Emission Unit 04, during normal operation only, except as specified under KyEIS Process IDs 2 through 7, and Operating Limitations 1.c and 1.d.** **c. To preclude applicability of 401 KAR 51:017, VOC emissions from each turbine shall not exceed XXXX lb/hr per Frame 3 unit under Emission Unit 03 and XXXX lb/hr for the Frame 5 unit under Emission Unit 04, during normal operation only, except as specified under KyEIS Process IDs 2 through 7, and Operating Limitations 1.c and 1.d.** **d. The lb/hour emission limitations listed under 2. Emission Limitations a. through c., will be based on a 4-hour rolling average. For a given hour to be included in the rolling 4-hr average, the unit has to be in normal operation (KyEIS Process ID 1) for every minute in that whole clock hour. If one minute or more in that hour corresponds to another KyEIS Process ID (2 through 7: idle, startup, or shutdown operations), then the entire hour will not be considered normal operations and must be excluded from the rolling 4-hour average.** **e. See Section D for sitewide annual emission limitations.** **Compliance Demonstration Method:** **a. See 3. Testing Requirements** **b. See 4. Specific Monitoring Requirements** **c. See 5. Specific Recordkeeping Requirements** **d. See 6. Specific Reporting Requirements**	A mass-based limit provides more operational flexibility. Converting the standard from concentration-based to mass-based requires mutiplying the max rated heat input (83.51 and 183.82 MMBtu/hr for Frame 3 units and Frame 5 unit, respectively) and 0.0923 lb/MMBtu (HHV), which is directly converted from 25 ppmvd at 15% O2. The permit needs to provide a clear definition of what is normal operations. Making that definition can also mean defining what it is not. The permit also needs to define the averaging period to which compliance must be demonstrated. The standard in NSPS KKKK (even though it does not apply) is defined on a 4-hr rolling basis.
SECTION B EP 03 & 04 ApReg 3	**3. Testing Requirements:** a. Pursuant to 401 KAR 52:020, Section 10, the permittee shall perform an initial performance test as required in 40 CFR 60.8. If the permittee chooses to demonstrate continuous compliance with 2. Emission Limitations, Condition a. through testing, the permittee shall conduct annual performance tests, using either EPA Method 7E or EPA Method 20 in Appendix A to 40 CFR Part 60. If the NOx emission result from the performance test is less than or equal to 75 percent of the NOx emission limit for the turbine, the permittee may reduce the frequency of subsequent performance tests to once every 2 years (no more than 26 calendar months following the previous performance test). If the results of any subsequent performance test exceed 75 percent of the NOx emission limit for the turbine, the permittee shall resume annual performance tests. b. Pursuant to 401 KAR 52:020, Section 10, the permittee shall use the method described in Appendix C to 40 CFR Part 60 to demonstrate that the physical change proposed to the Frame 5 turbine under Emission Unit 04 will not result in an increase in NOx emissions, based on pre-project and post-project emissions tests, and is therefore not subject to 40 CFR 60, Subpart KKKK due to modification pursuant to 40 CFR 60.14(a).	**3. Testing Requirements:** a. Pursuant to **401 KAR 52:020, Section 10**, the permittee shall perform an initial performance test, **within 180 days of startup (after SCR installation), and annual testing thereafter, for NOx emissions (ppmvd, lbs/mmscf, lbs/hr) on the Frame 3 turbines under Emission Unit 03,** using using either EPA Method 7E or EPA Method 20 in Appendix A to 40 CFR Part 60. If the NOx emission result from the performance test is less than or equal to 75 percent of the NOx emission limit **of XXX lb/mmscf,** the permittee may reduce the frequency of subsequent performance tests to once every 2 years (no more than 26 calendar months following the previous performance test). If the results of any subsequent performance test exceed 75 percent of the NOx emission limit for the turbine, the permittee shall resume annual performance tests. ~~**b. Pursuant to 401 KAR 52:020, Section 10, the permittee shall use the method described in Appendix C to 40 CFR Part 60 to demonstrate that the physical change proposed to the Frame 5 turbine under Emission Unit 04 will not result in an increase in NOx emissions, based on pre-project and post-project emissions tests, and is therefore not subject to 40 CFR 60, Subpart KKKK due to modification pursuant to 40 CFR 60.14(a).**~~ **b. Since the turbines use SCR to reduce NOX emissions, the permittee shall continuously monitor appropriate parameters to verify the proper operation of the SCR emission controls. The parameters shall be continuously monitored and recorded during the initial NOx performance test following the requirements of 40 CFR 60.8, to establish acceptable values and ranges. [401 KAR 52:020, Section 10]**	Updated requirements for consistency with OWIN permit.

Requirement Citation	Requirement Text	Proposed Replacement Permit Language	Explanation of Replacement Permit Language
SECTION B EP 03 & 04 ApReg 3	Continued.... c. Pursuant to 401 KAR 50:045, Section 1, the permittee shall perform an initial performance test, within 180 days of startup (after OxCat installation), and annual testing thereafter, for CO emissions (ppmvd, lbs/mmscf, lbs/hr) on the Frame 3 turbines under Emission Unit 03 and the Frame 5 turbine under Emission Unit 04, using reference methods specified in 401 KAR 50:015. If the CO emission resulting from the performance test is less than or equal to 75 percent of the CO emission limit of 280 lb/mmscf, the permittee may reduce the frequency of subsequent performance tests to once every 2 years (no more than 26 calendar months following the previous performance test). If the results of any subsequent performance test exceed 75 percent of the CO emission limit for the turbine, the permittee shall resume annual performance tests. d. Pursuant to 401 KAR 50:045, Section 1, the permittee shall perform an initial performance test within 180 days of startup (after OxCat installation), during normal operation on each Frame 3 turbine under Emission Unit 03 and the Frame 5 turbine under Emission Unit 04 in order to determine the inlet and outlet concentration of VOC and formaldehyde (in ppmvd, lbs/mmscf, lbs/hr). e. The permittee shall keep records of the natural gas fuel usage at each turbine used during each performance test.	Continued.... c. Pursuant to **401 KAR 50:045, Section 1**, the permittee shall perform an initial performance test, within 180 days of startup (after OxCat installation), and annual testing thereafter, for CO emissions (ppmvd, lbs/mmscf, lbs/hr) on the Frame 3 turbines under Emission Unit 03 and the Frame 5 turbine under Emission Unit 04, using reference methods specified in 401 KAR 50:015. If the CO emission resulting from the performance test is less than or equal to 75 percent of the CO emission limit of 280 lb/mmscf, the permittee may reduce the frequency of subsequent performance tests to once every 2 years (no more than 26 calendar months following the previous performance test). If the results of any subsequent performance test exceed 75 percent of the CO emission limit for the turbine, the permittee shall resume annual performance tests. **d. The inlet and outlet temperatures to the OxCat shall be continuously monitored and recorded during the initial CO performance test. [401 KAR 52:020, Section 10]** **e.** Pursuant to 401 KAR 50:045, Section 1, the permittee shall perform an initial performance test within 180 days of startup (after OxCat installation), during normal operation on each Frame 3 turbine under Emission Unit 03 and the Frame 5 turbine under Emission Unit 04 in order to determine the inlet and outlet concentration of VOC and formaldehyde (in ppmvd, lbs/mmscf, lbs/hr). **f.** The permittee shall keep records of the natural gas fuel usage at each turbine used during each performance test.	Updated requirements for consistency with OWIN permit.
SECTION B EP 03 & 04 ApReg 4	**4. Specific Monitoring Requirements:** a. Pursuant to 401 KAR 52:020, Section 10, if the permittee chooses to demonstrate continuous compliance with 2. Emission Limitations, Condition a. by meeting monitoring requirements, the permittee shall install, calibrate, maintain and operate the following continuous parameter monitoring: i. For any lean premix stationary combustion turbine, the permittee shall continuously monitor the appropriate parameters to determine whether the unit is operating in low-NOX mode. ii. For any turbine that uses SCR to reduce NOX emissions, the permittee shall continuously monitor appropriate parameters to verify the proper operation of the emission controls.	**4. Specific Monitoring Requirements:** a. Pursuant to 401 KAR 52:020, Section 10, if the permittee chooses to demonstrate continuous compliance with 2. Emission Limitations, Condition a. by meeting monitoring requirements, the permittee shall install, calibrate, maintain and operate the following continuous parameter monitoring: i. For any lean premix stationary combustion turbine, the permittee shall continuously monitor the appropriate parameters to determine whether the unit is operating in low-NOX mode. ii. For any turbine that uses SCR to reduce NOX emissions, the permittee shall continuously monitor appropriate parameters to verify the proper operation of the emission controls. **b. Pursuant to 401 KAR 52:020, Section 10, if the permittee chooses to demonstrate continuous compliance with 2. Emission Limitations, Conditions b. and c., by meeting monitoring requirements, the permittee shall install, calibrate, maintain and operate the following continuous parameter monitoring:** **i. For any lean premix stationary combustion turbine, the permittee shall continuously monitor the appropriate parameters to determine whether the unit is operating in low-CO mode.** **ii. For any turbine that uses OxCat to reduce CO emissions, the permittee shall continuously monitor appropriate parameters to verify the proper operation of the emission controls.**	Added requirements for consistency within the existing permit.

Requirement Citation	Requirement Text	Proposed Replacement Permit Language	Explanation of Replacement Permit Language
SECTION B EP 03 & 04 ApReg 4	**Continued:** b. Pursuant to 401 KAR 52:020, Section 10, the permittee shall demonstrate compliance with 2. Emission Limitations, Condition a. by meeting the requirements of 4. Specific Monitoring Requirements, Condition a. The parameters that are to be continuously monitored shall be monitored during the performance test required under 40 CFR 60.8, to establish acceptable values and ranges. The permittee may supplement the performance test data with engineering analyses, design specifications, manufacturer's recommendations and other relevant information to define the acceptable parametric ranges more precisely. The permittee shall develop and keep on-site a parameter monitoring plan which explains the procedures used to document proper operation of the NOX emission controls. The plan must: i. Include the indicators to be monitored and show there is a significant relationship to emissions and proper operation of the NOX emission controls; ii. Pick ranges (or designated conditions) of the indicators, or describe the process by which such range (or designated condition) will be established; iii. Explain the process that will be used to make certain that data obtained is representative of the emissions or parameters being monitored (such as detector location, installation specification if applicable); iv. Describe quality assurance and control practices that are adequate to ensure the continuing validity of the data; v. Describe the frequency of monitoring and the data collection procedures which will be used (e.g., using a computerized data acquisition over a number of discrete data points with the average (or maximum value) being used for purposes of determining whether an exceedance has occurred), and vi. Submit justification for the proposed elements of the monitoring. If a proposed performance specification differs from manufacturer recommendation, the permittee shall explain the reasons for the differences. The permittee shall submit the data supporting the justification, but may refer to generally available sources of information used to support the justification. The permittee may rely on engineering assessments and other data, provided the permittee demonstrate factors which assure compliance or explain why performance testing is unnecessary to establish indicator ranges. When establishing indicator ranges, the permittee may choose to simplify the process by treating the parameters as if they were correlated. Using this assumption, testing can be divided into two cases: i. All indicators are significant only on one end of range (e.g., for a thermal incinerator controlling volatile organic compounds (VOC) it is only important to insure a minimum temperature, not a maximum). In this case, the permittee may conduct a study so that each parameter is at the significant limit of its range while the permittee conducts emissions testing. If the emissions tests show that the source is in compliance at the significant limit of each parameter, then as long as each parameter is within its limit, the unit is presumed to be in compliance. ii. Some or all indicators are significant on both ends of the range. In this case, the permittee may conduct your study so that each parameter that is significant at both ends of its range assumes its extreme values in all possible combinations of the extreme values (either single or double) of all of the other parameters. For example, if there were only two parameters, A and B, and A had a range of values while B had only a minimum value, the	**Continued:** **c.** Pursuant to 401 KAR 52:020, Section 10, the permittee shall demonstrate compliance with 2. Emission Limitations, Condition a. by meeting the requirements of 4. Specific Monitoring Requirements, **Conditions a., b., and c.** The parameters that are to be continuously monitored shall be monitored during the performance test required under 40 CFR 60.8, to establish acceptable values and ranges. The permittee may supplement the performance test data with engineering analyses, design specifications, manufacturer's recommendations and other relevant information to define the acceptable parametric ranges more precisely. The permittee shall develop and keep on-site a parameter monitoring plan which explains the procedures used to document proper operation of the NOX **and CO** emission controls. The plan must: i. Include the indicators to be monitored and show there is a significant relationship to emissions and proper operation of the NOX **and CO** emission controls; ii. Pick ranges (or designated conditions) of the indicators, or describe the process by which such range (or designated condition) will be established; iii. Explain the process that will be used to make certain that data obtained is representative of the emissions or parameters being monitored (such as detector location, installation specification if applicable); iv. Describe quality assurance and control practices that are adequate to ensure the continuing validity of the data; v. Describe the frequency of monitoring and the data collection procedures which will be used (e.g., using a computerized data acquisition over a number of discrete data points with the average (or maximum value) being used for purposes of determining whether an exceedance has occurred), and vi. Submit justification for the proposed elements of the monitoring. If a proposed performance specification differs from manufacturer recommendation, the permittee shall explain the reasons for the differences. The permittee shall submit the data supporting the justification, but may refer to generally available sources of information used to support the justification. The permittee may rely on engineering assessments and other data, provided the permittee demonstrate factors which assure compliance or explain why performance testing is unnecessary to establish indicator ranges. When establishing indicator ranges, the permittee may choose to simplify the process by treating the parameters as if they were correlated. Using this assumption, testing can be divided into two cases: i. All indicators are significant only on one end of range (e.g., for a thermal incinerator controlling volatile organic compounds (VOC) it is only important to insure a minimum temperature, not a maximum). In this case, the permittee may conduct a study so that each parameter is at the significant limit of its range while the permittee conducts emissions testing. If the emissions tests show that the source is in compliance at the significant limit of each parameter, then as long as each parameter is within its limit, the unit is presumed to be in compliance. ii. Some or all indicators are significant on both ends of the range. In this case, the permittee may conduct your study so that each parameter that is significant at both ends of its range assumes its extreme values in all possible combinations of the extreme values (either single or double) of all of the other parameters. For example, if there were only two parameters, A and B, and A had a range of values while B had only a minimum value, the combinations would be A high with B minimum and A low with B minimum. If both A and B had a range, the combinations would be A high and B high, A low and B low, A high and B low, A low and B high. For the case of four parameters all having a range, there are 16 possible combinations.	The existing permit does not equally address monitoring requiements for the NOx and CO emission controls. Modified requirement for consistency across both NOx and CO control systems.
SECTION B EP 03 & 04 ApReg 4	**Continued:** c. Pursuant to 401 KAR 52:020, Section 10, the permittee shall continuously monitor the inlet and outlet temperatures of the OxCat to ensure proper operation of the control device for each of the Frame 3 turbines under Emission Unit 03. d. Pursuant to 40 CFR Part 64, the permittee shall submit a CAM plan for CO emissions from the Frame 5 turbine that meets the requirements of 40 CFR 64.3 and 40 CFR 64.4. The plan shall be submitted according to the deadline described in 40 CFR 64.5. e. Pursuant to 40 CFR 64.5(d), prior to approval of monitoring that satisfies the requirements of 40 CFR Part 64, the permittee shall be subject to the requirements of 40 CFR 70.6(a)(3)(i)(B). f. Pursuant to 401 KAR 52:020, Section 10, prior to approval of monitoring that satisfies the requirements of 40 CFR Part 64 for CO emissions from the Frame 5 turbine under Emission Unit 04, the permittee shall: i. Continuously monitor appropriate indicators of emission control performance, including but not limited to the inlet and outlet temperatures of the OxCat, to ensure proper operation of the control device. ii. Keep record of inspections and maintenance performed on the turbine and the associated control device.	**Continued:** **c. Pursuant to 401 KAR 52:020, Section 10, the permittee shall continuously monitor the inlet and outlet temperatures of the OxCat to ensure proper operation of the control device for each of the Frame 3 turbines under Emission Unit 03. [NOTE SURE IF THIS REQUIREMENT IS RELEVANT IF CO IS ADDED TO CONDITION 4.b?]** d. Pursuant to 40 CFR Part 64, the permittee shall ~~**submit**~~ **develop and maintain** a CAM plan ~~**for CO emissions from the Frame 5 turbine**~~ that meets the requirements of 40 CFR 64.3 and 40 CFR 64.4 **for the following units:** **i. For NOx emissions from the Frame 3 turbines under Emission Unit 03, and** **ii. For CO emissions from the Frame 5 turbine under Emission Unit 04.** **e.** The CAM plan**s** shall be submitted according to the deadline described in 40 CFR 64.5. **f.** Pursuant to 40 CFR 64.5(d), prior to approval of monitoring that satisfies the requirements of 40 CFR Part 64, the permittee shall be subject to the requirements of 40 CFR 70.6(a)(3)(i)(B). **g.** Pursuant to 401 KAR 52:020, Section 10, prior to approval of monitoring that satisfies the requirements of 40 CFR Part 64 **for NOx emissions from the Frame 3 turbines under Emission Unit 03 and** for CO emissions from the Frame 5 turbine under Emission Unit 04, the permittee shall: i. Continuously monitor appropriate indicators of emission control performance~~**, including but not limited to the inlet and outlet temperatures of the OxCat,**~~ to ensure proper operation of the control device. ii. Keep record of inspections and maintenance performed on the turbine and the associated control device.	

Requirement Citation	Requirement Text	Proposed Replacement Permit Language	Explanation of Replacement Permit Language
SECTION B EP 03 & 04 ApReg 5	**5. Specific Recordkeeping Requirements:** a. Pursuant to 401 KAR 52:020, Section 10, the permittee shall record the amount of natural gas burned at each turbine on an annual basis. b. Pursuant to 401 KAR 52:020, Section 10, the permittee shall keep record of the hours of operation of each turbine under Emission Units 03 and 04 in startup mode, shutdown mode, low temperature modes, and steady state (normal) operation.	**5. Specific Recordkeeping Requirements:** **a. For each Frame 3 turbine under Emission Unit 03, the permittee shall develop and keep the records of a parameter monitoring plan which explains the procedures used to document proper operation of the NOx emission controls. [401 KAR 52:020, Section 10]** **b. For the Frame 5 turbine under Emission Unit 04, the permittee shall develop and keep the records of a parameter monitoring plan which explains the procedures used to document proper operation of the CO emission controls. [401 KAR 52:020, Section 10]** **c. The permittee shall keep records of the monitoring required in 4. Specific Monitoring Requirements a., b., c., d., e., and f. [40 CFR 64], [401 KAR 52:020, Section 10]** **d. The permittee shall maintain records of NOx and CO emission totals and fuel usage of each turbine under Emission Units 03 and 04 during each mode of operation (steady state operation, startup mode, shutdown mode, low/severe low temperature modes, operation during low catalyst temperature, and operation during low turbine load activities and associated control devices) calculated on a monthly basis and a twelve (12) month rolling total. [401 KAR 52:020, Section 10]** **e. The permittee shall keep record of the maintenance activities conducted and the duration that the control device(s) are not in operation during the maintenance activities. Emissions associated with these maintenance activities shall be calculated using appropriate control efficiency. [401 KAR 52:020, Section 10]**	Updated requirements for consistency with OWIN permit.
SECTION B EP 03 & 04 ApReg 6	**6. Specific Reporting Requirements:** For NOx monitoring from the Frame 3 turbines under Emission Unit 03: a. Pursuant to 401 KAR 52:020, Section 10, for each affected unit required to continuously monitor parameters or emissions, the permittee shall submit reports of excess emissions and monitor downtime, in accordance with 40 CFR 60.7(c). Excess emissions shall be reported for all periods of unit operation, including start-up, shutdown, and malfunction. b. Pursuant to 401 KAR 52:020, Section 10, for each affected unit that performs annual performance tests in accordance with 3. Testing Requirements, Condition a., the permittee shall submit a written report of the results of each performance test as described in Section G, General Provisions, Condition 5. c. See Section F, Monitoring, Recordkeeping, and Reporting Requirements	**[STILL WORKING ON THIS ONE]**	
SECTION B EP 03 & 04 ApReg 7	**7. Specific Control Equipment Operating Conditions:** Pursuant to 401 KAR 52:020, Section 10, the permittee shall install and operate the OxCat and Selective Catalytic Reduction control devices according to the manufacturers' recommendations. Records shall be kept of the maintenance activities performed on the OxCat and Selective Catalytic Reduction control devices.	**7. Specific Control Equipment Operating Conditions:** Pursuant to 401 KAR 52:020, Section 10, the permittee shall install and operate the OxCat and Selective Catalytic Reduction control devices according to the manufacturers' recommendations. ~~**Records shall be kept of the maintenance activities performed on the OxCat and Selective Catalytic Reduction control devices.**~~ **Furthermore, pursuant to 401 KAR 52:012, Section 1, (2) the permittee shall as a minimum apply control procedures that are reasonable, available, and practical.** **a. Once per permit term, upon completion of an overhaul on each turbine, the permittee may operate the turbines without SCR and oxidation catalyst controls for up to 100 hours. [401 KAR 52:020, Section 10]** **b. The permittee shall send a letter to the Regional Office at least 30 days in advance of the date of the planned turbine overhaul activity, and shall keep records of hours of operation without catalyst controls, as well as the associated emissions. [401 KAR 52:020, Section 10]**	Strikeout text is redundant to exisiting recordkeeping under 5.b (new 5.d.) **Also added citation of 401 KAR 52:012 to emphasize possible limitations beyond operational control in achieving OxCat performance.**

Requirement Citation	Requirement Text	Proposed Replacement Permit Language	Explanation of Replacement Permit Language
SECTION B EP 05 & 06 ApReg 1	**Emissions Unit: 05 (005) Auxiliary Emergency Generator** Description: Caterpillar G3516 Reciprocating Internal Combustion Engine Capacity: 1,462 hp Engine type: 4 cycle lean burn Maximum rating: 12.64 MMBtu/hr Engine manufactured: June 29, 2010 Construction commenced: October 15, 2010 Emissions Unit: 06 (006) Auxiliary Emergency Generator Description: Caterpillar G3512 Reciprocating Internal Combustion Engine Capacity: 1,102 hp Engine type: 4 cycle lean burn Maximum rating: 8.82 MMBtu/hr Engine manufactured: Proposed March 2017 Construction commenced: Proposed September 2017 APPLICABLE REGULATIONS: 401 KAR 63:002, incorporating by reference 40 CFR 63, Subpart ZZZZ, National Emissions Standards for Hazardous Air Pollutants for Stationary Reciprocating Internal Combustion Engines. 401 KAR 60:005, incorporating by reference 40 CFR 60, Subpart JJJJ, Standards of Performance for Stationary Spark Ignition Internal Combustion Engines. Note: D.C. Circuit Court [Delaware v. EPA, 785 F. 3d 1 (D.C. Cir. 2015)] has vacated the provisions in 40 CFR 60, Subpart JJJJ that contain the 100-hour exemption for operation of emergency engines for purposes of emergency demand response under 40 CFR 60.4243(d)(2)(ii)-(iii). The D.C. Circuit Court issued the mandate for the vacatur on May 4, 2016.	OK. No changes.	Consistent with OWIN.
SECTION B EP 05 & 06 ApReg 1	**1. Operating Limitations:** a. Pursuant to 40 CFR 60.4243(d)(1) through (3), the permittee shall operate each emergency stationary ICE according to the requirements below. In order for an engine to be considered an emergency stationary ICE under 40 CFR 60, Subpart JJJJ, any operation other than emergency operation, maintenance and testing, emergency demand response, and operation in non-emergency situation for 50 hours per year, as described below, is prohibited. If the permittee does not operate the each engine according to the requirements below, the engine will not be considered an emergency engine under 40 CFR 60, Subpart JJJJ and shall meet all requirements for non-emergency engines. i. There is no time limit on the use of emergency stationary ICE in emergency situations. ii. The permittee may operate each emergency stationary ICE for the purpose specified in paragraphs (d)(2)(i) of 40 CFR 60.4243 for a maximum of 100 hours per calendar year. Any operation for non-emergency situations as allowed by paragraph (d)(3) of 40 CFR 60.4243 counts as part of the 100 hours per calendar year allowed by 40 CFR 60.4243(d). 1) Emergency stationary ICE may be operated for maintenance checks and readiness testing, provided that the tests are recommended by federal, state or local government, the manufacturer, the vendor, the regional transmission organization or equivalent balancing authority and transmission operator, or the insurance company associated with the engine. The permittee may petition the Administrator for approval of additional hours to be used for maintenance checks and readiness testing, but a petition is not required if the permittee maintains records indicating that federal, state, or local standards require maintenance and testing of emergency ICE beyond 100 hours per calendar year. iii. Emergency stationary ICE may be operated for up to 50 hours per calendar year in non-emergency situations. The 50 hours of operation in non-emergency situations are counted as part of the 100 hours per calendar year for maintenance and testing provided in paragraph (d)(2) of 40 CFR 60.4243. Except as provided in paragraph (d)(3)(i) of 40 CFR 60.4243, the 50 hours per year for non-emergency situations cannot be used for peak shaving or non-emergency demand response, or to generate income for a facility to an electric grid or otherwise supply power as part of a financial arrangement with another entity. 1) The 50 hours per year for non-emergency situations can be used to supply power as part of a financial arrangement with another entity if all of the following conditions are met: A. The engine is dispatched by the local balancing authority or local transmission and distribution system operator; B. The dispatch is intended to mitigate local transmission and/or distribution limitations so as to avert potential voltage collapse or line overloads that could lead to the interruption of power supply in a local area or region.	OK. No changes.	Consistent with OWIN.
SECTION B EP 05 & 06 ApReg 1	1. b. Pursuant to 40 CFR 60.4243(e), the permittee may operate each engine using propane for a maximum of 100 hours per year as an alternative fuel solely during emergency operations, but shall keep records of such use. If propane is used for more than 100 hours per year in an engine that is not certified to the emission standards when using propane, the permittee is required to conduct a performance test to demonstrate compliance with the emission standards of 40 CFR 60.4233. Compliance Demonstration Method: See 5. Specific Recordkeeping Requirements, Condition c.	OK. No changes.	Consistent with OWIN.

Requirement Citation	Requirement Text	Proposed Replacement Permit Language	Explanation of Replacement Permit Language
SECTION B EP 05 & 06 ApReg 2	**2. Emission Limitations:** a. Pursuant to 40 CFR 60.4233(e), each stationary SI internal combustion engine shall comply with the emission standards for emergency generators listed in Table 1 to 40 CFR 60, Subpart JJJJ as follows: i. NOx – 2.0 g/hp-hr (160 ppmvd at 15 percent O2); ii. CO – 4.0 g/hp-hr (540 ppmvd at 15 percent O2); and iii. VOC – 1.0 g/hp-hr (86 ppmvd at 15 percent O2). Compliance Demonstration Method: Pursuant to 40 CFR 60.4243(b), the permittee shall demonstrate compliance with 2. Emission Limitations, Condition a. according to one of the following methods: i. Purchase an engine certified according to procedures specified in 40 CFR 60, Subpart JJJJ, for the same model year and demonstrating compliance according to one of the methods specified in 40 CFR 60.4243(a); or ii. Purchase a non-certified engine and demonstrate compliance with the emission standards specified in 40 CFR 60.4233(e) and according to the requirements specified in 40 CFR 60.4244, as applicable. The permittee shall keep a maintenance plan and records of conducted maintenance, and shall, to the extent practicable, maintain and operate the engine in a manner consistent with good air pollution control practice for minimizing emissions. Additionally, the permittee shall conduct an initial performance test and subsequent performance testing every 8,760 hours or three (3) years, whichever comes first, thereafter to demonstrate compliance. b. Pursuant to 40 CFR 60.4234, the permittee shall operate and maintain the stationary spark ignition internal combustion engines to achieve the emission standards required by 40 CFR 60.4233 over the entire life of the engines.	OK. No changes.	Consistent with OWIN.
SECTION B EP 05 & 06 ApReg 3	**3. Testing Requirements:** Pursuant to 40 CFR 60.4244, the permittee shall conduct all necessary performance tests following the procedures in 40 CFR 60.4244(a) through (f), as follows: a. Each performance test must be conducted within ten (10) percent of 100 percent peak (or the highest achievable) load and according to the requirements in 40 CFR 60.8 and under the specific conditions that are specified by Table 2 to 40 CFR 60, Subpart JJJJ. b. The permittee shall not conduct performance tests during periods of startup, shutdown, or malfunction, as specified in 40 CFR 60.8(c). If the engine is non-operational, the permittee does not need to startup the engine solely to conduct a performance test; however, the permittee shall conduct the performance test immediately upon startup of the engine. c. The permittee shall conduct three (3) separate test runs for each performance test, as specified in 40 CFR 60.8(f). Each test run shall be conducted within 10 percent of 100 percent peak (or the highest achievable) load and last at least 1 hour. d. To determine compliance with the NOX mass per unit output emission limitation, convert the concentration of NOX in the engine exhaust using Equation 1 in 40 CFR 60.4244(d). e. To determine compliance with the CO mass per unit output emission limitation, convert the concentration of CO in the engine exhaust using Equation 2 in 40 CFR 60.4244(e). f. When calculating emissions of VOC, emissions of formaldehyde should not be included. To determine compliance with the VOC mass per unit output emission limitation, convert the concentration of VOC in the engine exhaust using Equation 3 in 40 CFR 60.4244(f). g. If the permittee chooses to measure VOC emissions using either Method 18 of 40 CFR Part 60, Appendix A, or Method 320 of 40 CFR Part 63, Appendix A, then they have the option of correcting the measured VOC emissions to account for the potential differences in measured values between these methods and Method 25A. The results from Method 18 and Method 320 can be corrected for response factor differences using Equations 4 and 5 as provided in 40 CFR 60.4244(g). The corrected VOC concentration can then be placed on a propane basis using Equation 6 as provided in 40 CFR	OK. No changes.	Consistent with OWIN.
SECTION B EP 05 & 06 ApReg 4	**4. Specific Monitoring Requirements:** Pursuant to 40 CFR 60.4237(a), if an emergency stationary SI internal combustion engine does not meet the standards applicable to non-emergency engines, the permittee shall install a non-resettable hour meter.	OK. No changes.	Consistent with OWIN.

Requirement Citation	Requirement Text	Proposed Replacement Permit Language	Explanation of Replacement Permit Language
SECTION B EP 05 & 06 ApReg 5	**5. Specific Recordkeeping Requirements:** a. Pursuant to 40 CFR 60.4245(a), the permittee shall keep records of the information provided below: i. All notifications submitted to comply with 40 CFR 60, Subpart JJJJ and all documentation supporting any notification; ii. Maintenance conducted on the engine; iii. If the engine is a certified engine, documentation from the manufacturer that the engine is certified to meet the emission standards and information as required in 40 CFR parts 90, 1048, 1054, and 1060, as applicable; and iv. If the engine is not a certified engine or is a certified engine operating in a non-certified manner and subject to 40 CFR 60.4243(a)(2), documentation that the engine meets the emission standards. b. Pursuant to 40 CFR 60.4245(b), for stationary SI emergency internal combustion engines that do not meet the standards applicable to non-emergency engines, the permittee shall keep records of the hours of operation of the engine that is recorded through the non-resettable hour meter. The permittee shall document how many hours are spent for emergency operation, including what classified the operation as emergency and how many hours are spent for non-emergency operation. This only applies to Emission Unit 06, as Emission Unit 05 was manufactured prior to July 1, 2010. c. Pursuant to 401 KAR 52:020, Section 10, the permittee shall maintain the following records: i. The type of fuel used and the hours of operation; ii. Hours of operation for maintenance and testing; and	OK. No changes.	Consistent with OWIN.
SECTION B EP 05 & 06 ApReg 6	**6. Specific Reporting Requirements:** a. Pursuant to 40 CFR 60.4245(c), if an engine has not been certified by an engine manufacturer to meet the emission standards in 40 CFR 60.4231, the permittee shall submit an initial notification as required in 40 CFR 60.7(a)(1). The notification must include the information listed below: i. Name and address of the owner or operator; ii. The address of the affected source; iii. Engine information including make, model, engine family, serial number, model year, maximum engine power, and engine displacement; iv. Emission control equipment; and v. Fuel used. b. Pursuant to 40 CFR 60.4245(d), the permittee shall submit a copy of each performance test as conducted in 40 CFR 60.4244 within 60 days after the test has been completed. c. Pursuant to 40 CFR 63.6645(c), the permittee shall submit an initial notification not later than 120 days after startup of the engine. d. Pursuant to 40 CFR 63.6645(f), the initial notification shall include the information in 40 CFR 63.9(b)(2)(i) through (v), and a statement that the stationary RICE has no additional requirements and explain the basis of the exclusion (for example, that it operates exclusively as an emergency stationary RICE if it has a site rating of more than 500 brake HP located at a major source of HAP emissions).	OK. No changes.	Consistent with OWIN.

Requirement Citation	Requirement Text	Proposed Replacement Permit Language	Explanation of Replacement Permit Language
SECTION B EP 07 ApReg 1	**Emissions Unit: 07** (PC-1 through PC-4) Fugitive Emissions from Piping Components (GR-ST) Station Gas Releases (GR-PL) Pipeline Gas Releases Description: Pipeline equipment component leaks, Station Gas Releases, and Pipeline Gas Releases Gas/Vapor Valves: 1,391 Gas/Vapor Connectors: 8,081 Gas/Vapor Flanges: 1,411 Gas/Vapor Open Ended Lines: 107 Gas Vapor Other: 215 Light Oil Valves: 234 Light Oil Connectors: 710 Light Oil Flanges: 388 Light Oil Open Ended Lines 44 Light Oil Pump Seals: 1 Light Oil Other: 19 Heavy Oil Valves: 563 Heavy Oil Connectors: 2,762 Heavy Oil Flanges: 591 Heavy Oil Open Ended Lines: 27 Heavy Oil Pump Seals: 38 Heavy Oil Other: 41 Water/Oil Coolant Valves: 438 Water/Oil Coolant Connectors: 3,540 Water/Oil Coolant Flanges: 804 Water/Oil Coolant Open Ended Lines: 30 Water/Oil Coolant Pump Seals: 13 Water/Oil Coolant Other: 12 The equipment count listed above reflects an approximate count of the equipment as of the date of issuance of this permit but is not intended to limit the permittee to the exact numbers specified. The permittee may add or remove pipeline equipment without a permit revision as long as the equipment	OK. No changes.	Consistent with OWIN.
SECTION B EP 07 ApReg 1	STATE-ORIGIN REQUIREMENTS: 401 KAR 63:020, Potentially hazardous matter or toxic substances. 1. Operating Limitations: Pursuant to 401 KAR 63:020, Section 3, persons responsible for a source from which hazardous matter or toxic substances may be emitted shall provide the utmost care and consideration, in the handling of these materials, to the potentially harmful effects of the emissions resulting from such activities. The permittee shall not allow any affected facility to emit potentially hazardous matter or toxic substances in such quantities or duration as to be harmful to the health and welfare of humans, animals and plants. Evaluation of such facilities as to adequacy of controls and/or procedures and emission potential will be made on an individual basis by the Division. Compliance Demonstration Method: The source is in compliance with 401 KAR 63:020 based on the rates of emissions of airborne toxics provided in the application submitted by the source. If the permittee alters processes, process rates, material formulations, or any other factor that would result in increased emissions of these previously evaluated airborne toxics, or the emission of airborne toxics not previously evaluated by the Division	OK. No changes.	Consistent with OWIN.
SECTION B EP 07 ApReg 2	2. Emission Limitations: None	OK. No changes.	Consistent with OWIN.
SECTION B EP 07 ApReg 3	3. Testing Requirements: Pursuant to 401 KAR 50:045, Section 1, performance testing using Reference methods specified in 401 KAR 50:015 shall be conducted as required by the Division.	OK. No changes.	Consistent with OWIN.
SECTION B EP 07 ApReg 4	4. Specific Monitoring Requirements: See Section F, Monitoring, Recordkeeping, and Reporting Requirements.	OK. No changes.	Consistent with OWIN.
SECTION B EP 07 ApReg 5	5. Specific Recordkeeping Requirements: See Section F, Monitoring, Recordkeeping, and Reporting Requirements.	OK. No changes.	Consistent with OWIN.

Requirement Citation	Requirement Text	Proposed Replacement Permit Language	Explanation of Replacement Permit Language
SECTION B EP 07 ApReg 6	6. Specific Reporting Requirements: See Section F, Monitoring, Recordkeeping, and Reporting Requirements.	OK. No changes.	Consistent with OWIN.
SECTION C	**SECTION C - INSIGNIFICANT ACTIVITIES** The following listed activities have been determined to be insignificant activities for this source pursuant to 401 KAR 52:020, Section 6. Although these activities are designated as insignificant the permittee must comply with the applicable regulation. Process and emission control equipment at each insignificant activity subject to an opacity standard shall be inspected monthly and a qualitative visible emissions evaluation made. Results of the inspection, evaluation, and any corrective action shall be recorded in a log. Description Generally Applicable Regulation 1. Diesel storage tank, 560 gal None 2. Lube oil storage tank, 8,800 gal None 3. Oily sump water storage tank, 16,920 gal None 4. Glycol/water storage tank, 940 gal 401 KAR 63:020 5. Eight comfort/space heaters, less than 1 mmBtu/hr, each None 6. Two pipeline liquids storage tanks, 1,100 gal, each 401 KAR 63:020 7. Five pipeline liquids storage tanks, 2,480 gal, each 401 KAR 63:020 8. Fugitive emissions from truck loading 401 KAR 63:020 9. Natural gas fired boiler, 150 hp (6.28 mmBtu/hr) 401 KAR 59:015 10. Two HVAC boilers less than 1 mmBtu/hr, each None 11. Two water heaters, less than 1 mmBtu/hr, each 401 KAR 59:010 12. Two ovens, less than 1 mmBtu/hr, each 401 KAR 59:010 13. Oil storage tank, 560 gal None 14. Coolant storage tank, 940 gal 401 KAR 63:020 15. Oily water storage tank, 20,300 gal None 16. Oily water storage tank, 12,690 gal None 17. Parts washer, 0.32 gal/hr (6.84 lb/gal) None	OK. No changes.	Consistent with OWIN.
SECTION D	**SECTION D - SOURCE EMISSION LIMITATIONS AND TESTING REQUIREMENTS** 1. As required by Section 1b of the Cabinet Provisions and Procedures for Issuing Title V Permits incorporated by reference in 401 KAR 52:020, Section 26; compliance with annual emissions and processing limitations contained in this permit, shall be based on emissions and processing rates for any twelve (12) consecutive months. 2. NOx, CO, and VOC emissions, measured by applicable reference methods, or an equivalent or alternative method specified in 40 C.F.R. Chapter I, or by a test method specified in the state implementation plan shall not exceed the respective limitations specified herein.	**SECTION D - SOURCE EMISSION LIMITATION AND TESTING REQUIREMENTS** 1. As required by Section 1b of the Cabinet Provisions and Procedures for Issuing Title V Permits incorporated by reference in 401 KAR 52:020, Section 26; compliance with annual emissions and processing limitations contained in this permit, shall be based on emissions and processing rates for any twelve (12) consecutive months. **2. Source-Wide Emission Limitations:** **a. The total facility-wide emissions of NOx shall not exceed 248.11 tons per year on a twelve month rolling total basis. [401 KAR 52:020, Section 10]** **b. The total facility-wide emissions of CO shall not exceed 130 tons per year on a twelve month rolling total basis. [401 KAR 52:020, Section 10]** **c. The total facility-wide emissions of VOC shall not exceed 112 tons per year on a twelve month rolling total basis. [401 KAR 52:020, Section 10]** **d. The total facility-wide emissions of formaldehyde shall not exceed 9 tons per year on a twelve month rolling total basis. [401 KAR 52:020, Section 10]** **e. The total facility-wide emissions of Total HAP shall not exceed 22.23 tons per year on a twelve month rolling total basis. [401 KAR 52:020, Section 10]**	

Requirement Citation	Requirement Text	Proposed Replacement Permit Language	Explanation of Replacement Permit Language
SECTION D	Continued….	**3. Compliance with the annual emissions pursuant to 401 KAR 52:020, Section 10, and contained in this permit, shall be based on the sum of the monthly emission rates from each emission point (i.e., Sections B and C but excluding emergency generator(s) usage during emergency situations) during each twelve (12) consecutive month period. For the Frame 3 turbines, the monthly emissions will be based on the fuel usage during each mode of operation, emission factor associated with each mode of operation as submitted in the application, and the control efficiency as determined during the most recent performance test that has been accepted by the Division. The permittee may opt to use the outlet concentration of VOC, CO and formaldehyde (ppmdv) as determined in the most recent performance test approved by the Division and fuel usage to determine the monthly emissions during the modes of operation where the OxyCat is in operation. For the Frame 5 turbine, the monthly emissions will be based on CEMS data.** **For periods when the CEMS is down, or CEMS data is unavailable, the monthly emissions for the Frame 5 turbine will be calculated in the same manner as the Frame 3 turbines. The monthly and 12-month rolling totals shall be calculated on the same day of each month, but no more than two (2) weeks after the previous month's end. The permittee shall maintain monthly records, readily accessible to Division personnel upon request, of source wide emissions.** **4. If NOX emission on a 12-month rolling total exceeds 225 tons, then the permittee must begin tracking NOX emissions on a weekly and a 52-week rolling total. The permittee shall calculate the total NOX emissions from the emission sources as described in paragraph 3, of this section for each 7 day period. The source-wide 52-week rolling total of NOX emissions shall then be calculated by adding the current week's NOX emissions to the previous 51 week's NOX emissions.**	
SECTION E	**SECTION E - SOURCE CONTROL EQUIPMENT REQUIREMENTS** Pursuant to 401 KAR 50:055, Section 2(5), at all times, including periods of startup, shutdown and malfunction, owners and operators shall, to the extent practicable, maintain and operate any affected facility including associated air pollution control equipment in a manner consistent with good air pollution control practice for minimizing emissions. Determination of whether acceptable operating and maintenance procedures are being used will be based on information available to the Division which may include, but is not limited to, monitoring results, opacity observations, review of operating and maintenance procedures, and inspection of the source.	OK. No changes.	Consistent with OWIN.
SECTION F.1	**SECTION F - MONITORING, RECORDKEEPING, AND REPORTING REQUIREMENTS** 1. Pursuant to Section 1b-IV-1 of the Cabinet Provisions and Procedures for Issuing Title V Permits incorporated by reference in 401 KAR 52:020, Section 26, when continuing compliance is demonstrated by periodic testing or instrumental monitoring, the permittee shall compile records of required monitoring information that include: a. Date, place as defined in this permit, and time of sampling or measurements; b. Analyses performance dates; c. Company or entity that performed analyses; d. Analytical techniques or methods used; e. Analyses results; and f. Operating conditions during time of sampling or measurement.	OK. No changes.	
SECTION F.2	2. Records of all required monitoring data and support information, including calibrations, maintenance records, and original strip chart recordings, and copies of all reports required by the Division for Air Quality, shall be retained by the permittee for a period of five (5) years and shall be made available for inspection upon request by any duly authorized representative of the Division for Air Quality [Sections 1b-IV-2 and 1a-8 of the Cabinet Provisions and Procedures for Issuing Title V Permits incorporated by reference in 401 KAR 52:020, Section 26].	OK. No changes.	

Requirement Citation	Requirement Text	Proposed Replacement Permit Language	Explanation of Replacement Permit Language
SECTION F.3	3. In accordance with the requirements of 401 KAR 52:020, Section 3(1)h, the permittee shall allow authorized representatives of the Cabinet to perform the following during reasonable times: a. Enter upon the premises to inspect any facility, equipment (including air pollution control equipment), practice, or operation; b. To access and copy any records required by the permit: c. Sample or monitor, at reasonable times, substances or parameters to assure compliance with the permit or any applicable requirements. Reasonable times are defined as during all hours of operation, during normal office hours; or during an emergency.	OK. No changes.	
SECTION F.4	4. No person shall obstruct, hamper, or interfere with any Cabinet employee or authorized representative while in the process of carrying out official duties. Refusal of entry or access may constitute grounds for permit revocation and assessment of civil penalties.	OK. No changes.	
SECTION F.5	5. Summary reports of any monitoring required by this permit shall be submitted to the Regional Office listed on the front of this permit at least every six (6) months during the life of this permit, unless otherwise stated in this permit. For emission units that were still under construction or which had not commenced operation at the end of the 6-month period covered by the report and are subject to monitoring requirements in this permit, the report shall indicate that no monitoring was performed during the previous six months because the emission unit was not in operation [Sections 1b-V-1 of the Cabinet Provisions and Procedures for Issuing Title V Permits incorporated by reference in 401 KAR	OK. No changes.	
SECTION F.6	6. The semi-annual reports are due by January 30th and July 30th of each year. All reports shall be certified by a responsible official pursuant to 401 KAR 52:020, Section 23. If continuous emission and opacity monitors are required by regulation or this permit, data shall be reported in accordance with the requirements of 401 KAR 59:005, General Provisions, Section 3(3). All deviations from permit requirements shall be clearly identified in the reports.	OK. No changes.	
SECTION F.7	7. In accordance with the provisions of 401 KAR 50:055, Section 1, the owner or operator shall notify the Regional Office listed on the front of this permit concerning startups, shutdowns, or malfunctions as follows: a. When emissions during any planned shutdowns and ensuing startups will exceed the standards, notification shall be made no later than three (3) days before the planned shutdown, or immediately following the decision to shut down, if the shutdown is due to events which could not have been foreseen three (3) days before the shutdown. b. When emissions due to malfunctions, unplanned shutdowns and ensuing startups are or may be in excess of the standards, notification shall be made as promptly as possible by telephone (or other electronic media) and shall be submitted in writing upon request.	OK. No changes.	
SECTION F.8	8. The owner or operator shall report emission related exceedances from permit requirements including those attributed to upset conditions (other than emission exceedances covered by Section F.7 above) to the Regional Office listed on the front of this permit within 30 days. Deviations from permit requirements, including those previously reported under F.7 above, shall be included in the semiannual report required by F.6 [Sections 1b-V, 3 and 4 of the Cabinet Provisions and Procedures for Issuing Title V Permits incorporated by reference in 401 KAR 52:020, Section 26].	OK. No changes.	
SECTION F.9	9. Pursuant to 401 KAR 52:020, Title V permits, Section 21, the permittee shall annually certify compliance with the terms and conditions contained in this permit, by completing and returning a Compliance Certification Form (DEP 7007CC) (or an alternative approved by the regional office) to the Regional Office listed on the front of this permit and the U.S. EPA in accordance with the following requirements: a. Identification of the term or condition; b. Compliance status of each term or condition of the permit; c. Whether compliance was continuous or intermittent; d. The method used for determining the compliance status for the source, currently and over the reporting period. e. For an emissions unit that was still under construction or which has not commenced operation at the end of the 12-month period covered by the annual compliance certification, the permittee shall indicate that the unit is under construction and that compliance with any applicable requirements will be demonstrated within the timeframes specified in the permit. f. The certification shall be submitted by January 30th of each year. Annual compliance certifications shall be sent to the following addresses: Division for Air Quality London Regional Office 875 S Main Street London, KY 40741 U.S. EPA Region 4 Air Enforcement Branch Atlanta Federal Center 61 Forsyth St. SW	OK. No changes.	

Requirement Citation	Requirement Text	Proposed Replacement Permit Language	Explanation of Replacement Permit Language
SECTION F.10	10. In accordance with 401 KAR 52:020, Section 22, the permittee shall provide the Division with all information necessary to determine its subject emissions within 30 days of the date the Kentucky Emissions Inventory System (KYEIS) emissions survey is mailed to the permittee.	OK. No changes.	
SECTION G.1.a	**SECTION G - GENERAL PROVISIONS** 1. General Compliance Requirements a. The permittee shall comply with all conditions of this permit. Noncompliance shall be a violation of 401 KAR 52:020, Section 3(1)(b), and a violation of Federal Statute 42 USC 7401 through 7671q (the Clean Air Act). Noncompliance with this permit is grounds for enforcement action including but not limited to termination, revocation and reissuance, revision or denial of a permit [Section 1a-3 of the Cabinet Provisions and Procedures for Issuing Title V Permits incorporated by reference in 401 KAR 52:020, Section 26].	OK. No changes.	
SECTION G.1.b	b. The filing of a request by the permittee for any permit revision, revocation, reissuance, or termination, or of a notification of a planned change or anticipated noncompliance, shall not stay any permit condition [Section 1a-6 of the Cabinet Provisions and Procedures for Issuing Title V Permits incorporated by reference in 401 KAR 52:020, Section 26].	OK. No changes.	
SECTION G.1.c	c. This permit may be revised, revoked, reopened and reissued, or terminated for cause in accordance with 401 KAR 52:020, Section 19. The permit will be reopened for cause and revised accordingly under the following circumstances: (1) If additional applicable requirements become applicable to the source and the remaining permit term is three (3) years or longer. In this case, the reopening shall be completed no later than eighteen (18) months after promulgation of the applicable requirement. A reopening shall not be required if compliance with the applicable requirement is not required until after the date on which the permit is due to expire, unless this permit or any of its terms and conditions have been extended pursuant to 401 KAR 52:020, Section 12; (2) The Cabinet or the United States Environmental Protection Agency (U. S. EPA) determines that the permit must be revised or revoked to assure compliance with the applicable requirements; (3) The Cabinet or the U. S. EPA determines that the permit contains a material mistake or that inaccurate statements were made in establishing the emissions standards or other terms or conditions of the permit; (4) New requirements become applicable to a source subject to the Acid Rain Program. Proceedings to reopen and reissue a permit shall follow the same procedures as apply to initial permit issuance and shall affect only those parts of the permit for which cause to reopen exists. Reopenings shall be made as expeditiously as practicable. Reopenings shall not be initiated before a notice of intent to reopen is provided to the source by the Division, at least thirty (30) days in advance of the date the permit is to be reopened, except that the Division may provide a shorter time period in the case of an emergency.	OK. No changes.	
SECTION G.1.d	d. The permittee shall furnish information upon request of the Cabinet to determine if cause exists for modifying, revoking and reissuing, or terminating the permit; or to determine compliance with the conditions of this permit [Sections 1a- 7 and 8 of the Cabinet Provisions and Procedures for Issuing Title V Permits incorporated by reference in 401 KAR 52:020, Section 26].	OK. No changes.	
SECTION G.1.e	e. Emission units described in this permit shall demonstrate compliance with applicable requirements if requested by the Division [401 KAR 52:020, Section 3(1)(c)].	OK. No changes.	
SECTION G.1.f	f. The permittee, upon becoming aware that any relevant facts were omitted or incorrect information was submitted in the permit application, shall promptly submit such supplementary facts or corrected information to the permitting authority [401 KAR 52:020, Section 7(1)].	OK. No changes.	
SECTION G.1.g	g. Any condition or portion of this permit which becomes suspended or is ruled invalid as a result of any legal or other action shall not invalidate any other portion or condition of this permit [Section 1a-14 of the Cabinet Provisions and Procedures for Issuing Title V Permits incorporated by reference in 401 KAR 52:020, Section 26].	OK. No changes.	
SECTION G.1.h	h. The permittee shall not use as a defense in an enforcement action the contention that it would have been necessary to halt or reduce the permitted activity in order to maintain compliance [Section 1a-4 of the Cabinet Provisions and Procedures for Issuing Title V Permits incorporated by reference in 401 KAR 52:020, Section 26].	OK. No changes.	
SECTION G.1.i	i. All emission limitations and standards contained in this permit shall be enforceable as a practical matter. All emission limitations and standards contained in this permit are enforceable by the U.S. EPA and citizens except for those specifically identified in this permit as state-origin requirements. [Section 1a-15 of the Cabinet Provisions and Procedures for Issuing Title V Permits incorporated by reference in 401 KAR 52:020, Section 26].	OK. No changes.	

Requirement Citation	Requirement Text	Proposed Replacement Permit Language	Explanation of Replacement Permit Language
SECTION G.1.j	j. This permit shall be subject to suspension if the permittee fails to pay all emissions fees within 90 days after the date of notice as specified in 401 KAR 50:038, Section 3(6) [Section 1a-10 of the Cabinet Provisions and Procedures for Issuing Title V Permits incorporated by reference in 401 KAR 52:020, Section 26].	OK. No changes.	
SECTION G.1.k	k. Nothing in this permit shall alter or affect the liability of the permittee for any violation of applicable requirements prior to or at the time of permit issuance [401 KAR 52:020, Section 11(3) 2].	OK. No changes.	
SECTION G.1.l	l. This permit does not convey property rights or exclusive privileges [Section 1a-9 of the Cabinet Provisions and Procedures for Issuing Title V Permits incorporated by reference in 401 KAR 52:020, Section 26].	OK. No changes.	
SECTION G.1.m	m. Issuance of this permit does not relieve the permittee from the responsibility of obtaining any other permits, licenses, or approvals required by the Cabinet or any other federal, state, or local agency.	OK. No changes.	
SECTION G.1.n	n. Nothing in this permit shall alter or affect the authority of U.S. EPA to obtain information pursuant to Federal Statute 42 USC 7414, Inspections, monitoring, and entry [401 KAR 52:020, Section 11(3) 4.].	OK. No changes.	
SECTION G.1.o	o. Nothing in this permit shall alter or affect the authority of U.S. EPA to impose emergency orders pursuant to Federal Statute 42 USC 7603, Emergency orders [401 KAR 52:020, Section 11(3) 1.].	OK. No changes.	
SECTION G.1.p	p. This permit consolidates the authority of any previously issued PSD, NSR, or Synthetic Minor source preconstruction permit terms and conditions for various emission units and incorporates all requirements of those existing permits into one single permit for this source.	OK. No changes.	
SECTION G.1.q	q. Pursuant to 401 KAR 52:020, Section 11, a permit shield shall not protect the owner or operator from enforcement actions for violating an applicable requirement prior to or at the time of permit issuance. Compliance with the conditions of this permit shall be considered compliance with: (1) Applicable requirements that are included and specifically identified in this permit; and (2) Non-applicable requirements expressly identified in this permit.	OK. No changes.	
SECTION G.2.	**2. Permit Expiration and Reapplication Requirements** a. This permit shall remain in effect for a fixed term of five (5) years following the original date of issue. Permit expiration shall terminate the source's right to operate unless a timely and complete renewal application has been submitted to the Division at least six (6) months prior to the expiration date of the permit. Upon a timely and complete submittal, the authorization to operate within the terms and conditions of this permit, including any permit shield, shall remain in effect beyond the expiration date, until the renewal permit is issued or denied by the Division [401 KAR 52:020, Section 12]. b. The authority to operate granted shall cease to apply if the source fails to submit additional information requested by the Division after the completeness determination has been made on any application, by whatever deadline the Division sets [401 KAR 52:020, Section 8(2)].	OK. No changes.	
SECTION G.3.	**3. Permit Revisions** a. A minor permit revision procedure may be used for permit revisions involving the use of economic incentive, marketable permit, emission trading, and other similar approaches, to the extent that these minor permit revision procedures are explicitly provided for in the State Implementation Plan (SIP) or in applicable requirements and meet the relevant requirements of 401 KAR 52:020, Section 14(2). b. This permit is not transferable by the permittee. Future owners and operators shall obtain a new permit from the Division for Air Quality. The new permit may be processed as an administrative amendment if no other change in this permit is necessary, and provided that a written agreement containing a specific date for transfer of permit responsibility coverage and liability between the current and new permittee has been submitted to the permitting authority within ten (10) days following the transfer.	OK. No changes.	

Requirement Citation	Requirement Text	Proposed Replacement Permit Language	Explanation of Replacement Permit Language
SECTION G.4.a	**4. Construction, Start-Up, and Initial Compliance Demonstration Requirements** Pursuant to a duly submitted application the Kentucky Division for Air Quality hereby authorizes the construction of the equipment described herein, and listed below, in accordance with the terms and conditions of this permit: • Addition of clean burn technology and Oxidation Catalyst (OxCat) on the three (3) Clark HBA-8T engines under Emission Unit 02; • Addition of Selective Catalytic Reduction (SCR) and OxCat on the two (2) Frame 3 turbines under Emission Unit 03; and • Addition of OxCat on the Frame 5 turbine under Emission Unit 04. a. Construction of any process and/or air pollution control equipment authorized by this permit shall be conducted and completed only in compliance with the conditions of this permit.	OK. No changes.	
SECTION G.4.b	b. Within thirty (30) days following commencement of construction and within fifteen (15) days following start-up and attainment of the maximum production rate specified in the permit application, or within fifteen (15) days following the issuance date of this permit, whichever is later, the permittee shall furnish to the Regional Office listed on the front of this permit in writing, with a copy to the Field Office Branch of the Frankfort Central Office, notification of the following: (1) The date when construction commenced. (2) The date of start-up of the affected facilities listed in this permit. (3) The date when the maximum production rate specified in the permit application was achieved.	OK. No changes.	
SECTION G.4.c	c. Pursuant to 401 KAR 52:020, Section 3(2), unless construction is commenced within eighteen (18) months after the proposed permit is issued, or begins but is discontinued for a period of eighteen (18) months or is not completed within a reasonable timeframe then the construction and operating authority granted by this permit for those affected facilities for which construction was not completed shall immediately become invalid. Upon written request, the Cabinet may extend these time periods if the source shows good cause.	OK. No changes.	
SECTION G.4.d	d. Pursuant to 401 KAR 50:055, Section 2(1)(a), an owner or operator of any affected facility subject to any standard within the administrative regulations of the Division for Air Quality shall demonstrate compliance with the applicable standard(s) within sixty (60) days after achieving the maximum production rate at which the affected facility will be operated, but not later than 180 days after initial start-up of such facility. Pursuant to 401 KAR 52:020, Section 3(3)(c), sources that have not demonstrated compliance within the timeframes prescribed in 401 KAR 50:055, Section 2(1)(a), shall operate the affected facility only for purposes of demonstrating compliance unless authorized under an approved compliance plan or an order of the cabinet.	OK. No changes.	
SECTION G.4.e	e. This permit shall allow time for the initial start-up, operation, and compliance demonstration of the affected facilities listed herein. However, within sixty (60) days after achieving the maximum production rate at which the affected facilities will be operated but not later than 180 days after initial start-up of such facilities, the permittee shall conduct a performance demonstration on the affected facilities in accordance with 401 KAR 50:055, General compliance requirements. Testing must also be conducted in accordance with General Provisions G.5 of this permit.	OK. No changes.	
SECTION G.4.f	f. Terms and conditions in this permit established pursuant to the construction authority of 401 KAR 51:017 or 401 KAR 51:052 shall not expire.	OK. No changes.	
SECTION G.5.a	**5. Testing Requirements** a. Pursuant to 401 KAR 50:045, Section 2, a source required to conduct a performance test shall submit a completed Compliance Test Protocol form, DEP form 6028, or a test protocol a source has developed for submission to other regulatory agencies, in a format approved by the cabinet, to the Division's Frankfort Central Office a minimum of sixty (60) days prior to the scheduled test date. Pursuant to 401 KAR 50:045, Section 7, the Division shall be notified of the actual test date at least thirty (30) days prior to the test.	OK. No changes.	
SECTION G.5.b	b. Pursuant to 401 KAR 50:045, Section 5, in order to demonstrate that a source is capable of complying with a standard at all times, any required performance test shall be conducted under normal conditions that are representative of the source's operations and create the highest rate of emissions. If [When] the maximum production rate represents a source's highest emissions rate and a performance test is conducted at less than the maximum production rate, a source shall be limited to a production rate of no greater than 110 percent of the average production rate during the performance tests. If and when the facility is capable of operation at the rate specified in the application, the source may retest to demonstrate compliance at the new production rate. The Division for Air Quality may waive these requirements on a case-by-case basis if the source demonstrates to the Division's satisfaction that the source is in compliance with all applicable requirements.	OK. No changes.	
SECTION G.5.c	c. Results of performance test(s) required by the permit shall be submitted to the Division by the source or its representative within forty-five days or sooner if required by an applicable standard, after the completion of the fieldwork.	OK. No changes.	

Requirement Citation	Requirement Text	Proposed Replacement Permit Language	Explanation of Replacement Permit Language
SECTION G.6.a	**6. Acid Rain Program Requirements** a. If an applicable requirement of Federal Statute 42 USC 7401 through 7671q (the Clean Air Act) is more stringent than an applicable requirement promulgated pursuant to Federal Statute 42 USC 7651 through 7651o (Title IV of the Act), both provisions shall apply, and both shall be state and federally enforceable.	OK. No changes.	
SECTION G.6.b	b. The permittee shall comply with all applicable requirements and conditions of the Acid Rain Permit and the Phase II permit application (including the Phase II NOx compliance plan and averaging plan, if applicable) incorporated into the Title V permit issued for this source. The source shall also comply with all requirements of any revised or future acid rain permit(s) issued to this source.	OK. No changes.	
SECTION G.7.a	**7. Emergency Provisions** a. Pursuant to 401 KAR 52:020, Section 24(1), an emergency shall constitute an affirmative defense to an action brought for the noncompliance with the technology-based emission limitations if the permittee demonstrates through properly signed contemporaneous operating logs or relevant evidence that: (1) An emergency occurred and the permittee can identify the cause of the emergency; (2) The permitted facility was at the time being properly operated; (3) During an emergency, the permittee took all reasonable steps to minimize levels of emissions that exceeded the emissions standards or other requirements in the permit; and (4) Pursuant to 401 KAR 52:020, 401 KAR 50:055, and KRS 224.1-400, the permittee notified the Division as promptly as possible and submitted written notice of the emergency to the Division when emission limitations were exceeded due to an emergency. The notice shall include a description of the emergency, steps taken to mitigate emissions, and corrective actions taken. (5) This requirement does not relieve the source of other local, state or federal notification requirements.	OK. No changes.	
SECTION G.7.b	b. Emergency conditions listed in General Condition G.7.a above are in addition to any emergency or upset provision(s) contained in an applicable requirement [401 KAR 52:020, Section 24(3)].	OK. No changes.	
SECTION G.7.c	c. In an enforcement proceeding, the permittee seeking to establish the occurrence of an emergency shall have the burden of proof [401 KAR 52:020, Section 24(2)].	OK. No changes.	
SECTION G.8.a	**8. Ozone Depleting Substances** a. The permittee shall comply with the standards for recycling and emissions reduction pursuant to 40 CFR 82, Subpart F, except as provided for Motor Vehicle Air Conditioners (MVACs) in Subpart B: (1) Persons opening appliances for maintenance, service, repair, or disposal shall comply with the required practices contained in 40 CFR 82.156. (2) Equipment used during the maintenance, service, repair, or disposal of appliances shall comply with the standards for recycling and recovery equipment contained in 40 CFR 82.158. (3) Persons performing maintenance, service, repair, or disposal of appliances shall be certified by an approved technician certification program pursuant to 40 CFR 82.161. (4) Persons disposing of small appliances, MVACs, and MVAC-like appliances (as defined at 40 CFR 82.152) shall comply with the recordkeeping requirements pursuant to 40 CFR 82.166 (5) Persons owning commercial or industrial process refrigeration equipment shall comply with the leak repair requirements pursuant to 40 CFR 82.156. (6) Owners/operators of appliances normally containing 50 or more pounds of refrigerant shall keep records of refrigerant purchased and added to such appliances pursuant to 40 CFR 82.166.	OK. No changes.	
SECTION G.8.b	b. If the permittee performs service on motor (fleet) vehicle air conditioners containing ozone-depleting substances, the source shall comply with all applicable requirements as specified in 40 CFR 82, Subpart B, Servicing of Motor Vehicle Air Conditioners.	OK. No changes.	
SECTION G.9.a	**9. Risk Management Provisions** a. The permittee shall comply with all applicable requirements of 401 KAR Chapter 68, Chemical Accident Prevention, which incorporates by reference 40 CFR Part 68, Risk Management Plan provisions. If required, the permittee shall comply with the Risk Management Program and submit a Risk Management Plan to: RMP Reporting Center P.O. Box 10162 Fairfax, VA 22038	OK. No changes.	
SECTION G.9.b	b. If requested, submit additional relevant information to the Division or the U.S. EPA.	OK. No changes.	

Requirement Citation	Requirement Text	Proposed Replacement Permit Language	Explanation of Replacement Permit Language
SECTION H EP 01 & 02 ApReg 1	**SECTION H - ALTERNATE OPERATING SCENARIOS** The alternate operating scenarios set forth below have been approved by the Division based on information supplied with the application and during the application review process. The terms and conditions of each alternate operating scenario have been developed to ensure compliance with the applicable regulations. The permittee, when making a change from one operating scenario to another, shall record contemporaneously in a log at the permitted facility a record of the scenario under which the facility is operating. The permit shield, as provided in Section G shall extend to each alternate operating scenario set forth in this Section. All conditions not specified under an alternate operating scenario shall remain unchanged from their permit values or requirements. The requirements contained in this alternate operating scenario for Emission Units 01-04 shall remain in effect until the control devices for Emission Units 02-04 have been installed. These control devices (OxCat and Selective Catalytic Reduction), are part of the bi-directional flow project, as described in the significant revision application submitted to the Division on April 6, 2016. At the time that the control devices are installed, the requirements for Emission Units 01-04 in Section B of this permit shall be met. Emissions Unit: 01 (01-07) Seven Compressor Engines Process 001 Reciprocating Internal Combustion Engine (Plant ID 20901) Process 002 Reciprocating Internal Combustion Engine (Plant ID 20902) Process 003 Reciprocating Internal Combustion Engine (Plant ID 20903) Process 004 Reciprocating Internal Combustion Engine (Plant ID 20904) Process 005 Reciprocating Internal Combustion Engine (Plant ID 20905) Process 006 Reciprocating Internal Combustion Engine (Plant ID 20906) Process 007 Reciprocating Internal Combustion Engine (Plant ID 20907) Description: 1,760 hp Clark HBA-8 Engine Type: 2 stroke lean burn Fuel: Natural gas Maximum rating: 16.60 MMBTU/hr, each	**None.**	Alternate scenarios no longer applicable. Remove all conditions under Section H.
SECTION H EP 01 & 02 ApReg 1	Emissions Unit: 02 (08-10) Three Compressor Engines Process 001 Reciprocating Internal Combustion Engine (Plant ID 20908) Process 002 Reciprocating Internal Combustion Engine (Plant ID 20909) Process 003 Reciprocating Internal Combustion Engine (Plant ID 20910) Description: 2,050 hp Clark HBA-8T Engine Type: 2 stroke lean burn Fuel: Natural gas Maximum rating: 18.68 MMBTU/hr, each Construction commenced: 1957 APPLICABLE REGULATIONS: 401 KAR 63:002, incorporating by reference 40 CFR 63, Subpart ZZZZ, National Emissions Standards for Hazardous Air Pollutants for Stationary Reciprocating Internal Combustion Engines. 1. Operating Limitations: Pursuant to 401 KAR 52:020, Section 10, the permittee shall conduct routine operation and maintenance procedures to ensure optimum engine operations. Compliance Demonstration Method: The permittee shall keep records of all routine maintenance performed on each engine under Emission Units 01 and 02.	**None.**	Alternate scenarios no longer applicable. Remove all conditions under Section H.
SECTION H EP 01 & 02 ApReg 2	2. Emission Limitations: None	**Leave blank**	Alternate scenarios no longer applicable. Remove all conditions under Section H.
SECTION H EP 01 & 02 ApReg 3	3. Testing Requirements: None	**Leave blank**	Alternate scenarios no longer applicable. Remove all conditions under Section H.
SECTION H EP 01 & 02 ApReg 4	4. Specific Monitoring Requirements: None	**Leave blank**	Alternate scenarios no longer applicable. Remove all conditions under Section H.

Requirement Citation	Requirement Text	Proposed Replacement Permit Language	Explanation of Replacement Permit Language
SECTION H EP 01 & 02 ApReg 5	5. Specific Recordkeeping Requirements: Pursuant to 401 KAR 52:020, Section 10, the permittee shall record the amount of natural gas burned on an annual basis.	**Leave blank**	Alternate scenarios no longer applicable. Remove all conditions under Section H.
SECTION H EP 01 & 02 ApReg 6	6. Specific Reporting Requirements: None	**Leave blank**	Alternate scenarios no longer applicable. Remove all conditions under Section H.
SECTION H EP 01 & 02 ApReg 7	7. Specific Control Equipment Operating Conditions: None	**Leave blank**	Alternate scenarios no longer applicable. Remove all conditions under Section H.
SECTION H EP 03 & 04 ApReg 1	Emissions Unit: 03 (11-12) Two Gas Turbines Process 001 GE Frame 3 Gas Combustion Turbine (Plant ID 21001) Process 002 GE Frame 3 Gas Combustion Turbine (Plant ID 21002) Description: 8,000 hp turbines Fuel: Natural gas Maximum rating: 83.51 MMBTU/hr, each Construction commenced: 1961 Emissions Unit: 04 (13) Gas Turbine Description: GE Frame 5 Gas Combustion 18,500 hp Turbine (Plant ID 21003) Fuel: Natural gas Maximum rating: 183.82 MMBTU/hr Construction commenced: 1969 APPLICABLE REGULATIONS: 401 KAR 63.002, incorporating by reference 40 CFR 63, Subpart YYYY, National Emission Standards for Hazardous Air Pollutants for Stationary Combustion Turbines. 1. Operating Limitations: Pursuant to 401 KAR 52:020, Section 10, the permittee shall conduct routine operation and maintenance procedures to ensure optimum engine operations. Compliance Demonstration Method: The permittee shall keep records of all routine maintenance performed on each turbine under Emission Units 03 and 04.	**None.**	Alternate scenarios no longer applicable. Remove all conditions under Section H.
SECTION H EP 03 & 04 ApReg 2	2. Emission Limitations: None	**Leave blank**	Alternate scenarios no longer applicable. Remove all conditions under Section H.
SECTION H EP 03 & 04 ApReg 3	3. Testing Requirements: None	**Leave blank**	Alternate scenarios no longer applicable. Remove all conditions under Section H.
SECTION H EP 03 & 04 ApReg 4	4. Specific Monitoring Requirements: None	**Leave blank**	Alternate scenarios no longer applicable. Remove all conditions under Section H.
SECTION H EP 03 & 04 ApReg 5	5. Specific Recordkeeping Requirements: Pursuant to 401 KAR 52:020, Section 10, the permittee shall record the amount of natural gas burned on an annual basis.	**Leave blank**	Alternate scenarios no longer applicable. Remove all conditions under Section H.
SECTION H EP 03 & 04 ApReg 6	6. Specific Reporting Requirements: None	**Leave blank**	Alternate scenarios no longer applicable. Remove all conditions under Section H.
SECTION I	SECTION I - COMPLIANCE SCHEDULE None	**Leave blank**	Alternate scenarios no longer applicable. Remove all conditions under Section H.

ATTACHMENT 2

Division for Air Quality
300 Sower Boulevard
Frankfort, KY 40601
(502) 564-3999

DEP7007DD

Insignificant Activities

___ Section DD.1: Table of Insignificant Activities
___ Section DD.2: Signature Block
___ Section DD.3: Notes, Comments, and Explanations

Source Name: Texas Eastern Transmission, LP - Danville Compressor Station
KY EIS (AFS) #: 21- 137-00008
Permit #: V-16-056
Agency Interest (AI) ID: 44065
Date: 9/9/2019

Section DD.1: Table of Insignificant Activities

*Identify each activity with a unique Insignificant Activity number (IA #); for example: 1, 2, 3... etc.

Insignificant Activity #	Description of Activity including Rated Capacity	Serial Number or Other Unique Identifier	Applicable Regulation(s)	Calculated Emissions
1	Diesel Storage Tank, 500 gal.	NA	None	Previously provided
2	Lube Oil Storage Tank, 8,900 gal.	NA	None	Previously provided
3	Oily Sump Water Storage Tank, 1,620 gal.	NA	None	Previously provided
4	Glycol/water Storage Tank, 1,000 gal.	NA	401 KAR 63:020	Previously provided
5	Eight Comfort Heaters, Less than 1 MMBtu/hr, each	NA	None	Previously provided
6	Pipeline Liquids Storage Tanks, (2), 1,100 gal. each	NA	401 KAR 63:020	Previously provided
7	Pipeline Liquids Storage Tanks, (5), 2,480 gal. each	NA	401 KAR 63:020	Previously provided
8	Fugitive Emissions from truck loading	NA	401 KAR 63:020	Previously provided
9	Natural Gas Fired Boiler, 150 hp (6.28 MMBTU/hr)	NA	401 KAR 59:010	Previously provided
10	Two HVAC boilers less than 1 Mmbtu/hr each	NA	None	Previously provided
11	Two water heaters less than 1 MMbtu/hr each	NA	401 KAR 59:010	Previously provided
12	Two ovens less than 1 Mmbtu/hr each	NA	401 KAR 59:010	Previously provided
13	Oil storage tank, 560 gallons	NA	None	Previously provided
14	Coolant Storage Tank, 940 gal	NA	401 KAR 63:020	Previously provided
15	Oily waster storage tank, 20,300 gal	NA	None	Previously provided
16	Oily water storage tank, 12,690 gal	NA	None	Previously provided
17	Oily water storage tank, 12,690 gal	NA	None	Previously provided
18	Nine seperator Vessels (<=300 gal each)	NA	401 KAR 63:020	Previously provided
19	(2) CEMS sample handling box exhaust stack	NA	None	Less than 1 tpy

Section DD.2: Signature Block

I, THE UNDERSIGNED, HEREBY CERTIFY UNDER PENALTY OF LAW, THAT I AM A RESPONSIBLE OFFICIAL, AND THAT I HAVE PERSONALLY EXAMINED, AND AM FAMILIAR WITH, THE 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 INFORMATION IS ON KNOWLEDGE AND BELIEF, TRUE, ACCURATE, AND COMPLETE. I AM AWARE THAT THERE ARE SIGNIFICANT PENALTIES FOR SUBMITTING FALSE OR INCOMPLETE INFORMATION, INCLUDING THE POSSIBILITY OF FINE OR IMPRISONMENT.

By:

K Puckett — Authorized Signature

9/16/19 — Date

Kerry Puckett — Type/Print Name of Siguatory

VP Operations, US — Title of Siguatory

ATTACHMENT 3

Vendor Design Basis for the Clark HBA-8T recips (EU02). 4 pages.

Refer to the 4th purple page which provides a summary table of emission performance.

TETCO System Emissions Project
Danville COMPRESSION STATION

DESIGN BASIS MEMORANDUM

Revision A
July 30, 2015

Prepared By:

Spectra Energy

0. General

0.1. Project Summary

The TETCO System Emissions Project for the Danville Compression Station in Danville, Kentucky will require modifications to reduce emissions in order to comply with the new TETCO Emissions Project requirements.

This Design Basis Memorandum (DBM) details the general requirements for the Danville Emissions scope of the Access/Adair/Lebanon Expansion project. The project will consist of the Engineering, design, procurement, installation, supervision, commissioning and start-up services of an emissions reduction system for three (3) Clark HBA-8T engines located at the Spectra Energy Danville Compressor Station in Danville, Kentucky. The three (3) existing units are tagged in all existing drawings as unit 20908, 20909 and 20910.

The previously described, is anticipated to result in the upgrade and modification of the three (3) existing Clark HBA-8T engines, a new catalytic oxidation exhaust system and modification to the existing fuel gas piping system for the existing compression station installation. The Contractor will also be required to provide specific additional requirements for the existing station systems including the fuel gas supply, plant and instrument air supply, electrical load supply, cooling system and any other critical, non-critical and essential utility systems associated with the station emissions upgrade so Company can determine if any additional equipment or system upgrades are required.

The upgrade will tie into the existing main gas transmission pipeline piping, fuel gas piping system and other existing site utility and electrical systems and will be completed by Others.

0.2. Project Scope

The scope of work and materials for the station upgrade, which shall be confirmed in the Contractor's bid offering, may consist of, but will not be limited to the following for the three (3) x Clark HBA-8Ts:

Hardware

- Base Engine and Control Hardware – 3 x Clark HBA-8T
- High Pressure Fuel Injection
- Combustion Pressure Monitoring System
- Compressor Pressure Monitoring System
- New Allen Bradley PLC Based Unit Control Panels and End Devices
- Increased Flow for Exhaust System
- Turbocharger Modifications.
- Starting system modifications.
- High pressure fuel supply, regulation, filtering and metering per unit.
  Note: Fuel gas supply piping modifications located upstream of the engine(s) interface connections shall be performed by a 3rd party contractor.
- If required, modify the turbocharger to a higher air flow/pressure specification allowing for additional operating margin should the existing performance be minimal. The modifications if required, shall ensure adequate air needs and shall be described in detail and listed separately in the proposal.
- If required, an engine exhaust system complete with an Oxidation Catalyst, silencer, exhaust stack, interconnecting ducting, and structural supports. Instrumentation, controls, electrical, emissions monitoring system and all required interface and interconnects shall also be included.

- Based on prior preliminary evaluations, it is possible that the **Oxidation Catalyst** and or the exhaust system may not be required, may be considered marginal and offered as optional. Should this be the case, the bidding Contractor shall point out and confirm this in the proposal and include a thorough and quantified **detailed description** explaining the reasoning and for such case. This explanation shall provide operational load and flow ranges pertaining to the break points associated with the requirement or non-requirement of the oxidation catalyst. The contractor shall provide enough data to facilitate a decision by the Spectra Operations group. Furthermore, should this be the case, the Contractor **shall also include an option** to provide the catalyst housing only (without the catalyst) and include provisions to add the catalyst in the future should it be required to increase the station's operating margin.
  Note: Upgrade of fuel gas supply piping system to account for the higher fuel gas pressure requirements shall be performed by a 3rd party contractor.

The scope of work shall also include:

- A cooling system study to determine if the existing ambient coolers are capable of handling the heat load from each engine.
- Remove and dispose of any and all hazardous materials and equipment generated or discovered during project. Dispose of all hardware.
- Demolition labor and supervision for demolition of all systems and hardware: On-engine fuel system, unit controls, end devices, exhaust system hardware (inside the building) and fuel gas piping. This applies to all hardware that will be upgraded or replaced.
- Engineering, and design work to include all materials for interconnect piping, electrical, instrumentation and insulation requirements for the installation of the engine modifications, exhaust system and subsequent system and plant modifications and or additions. Work shall include review and approval by Company.
- Engineering and design work to include the coordination, identification and interface with all associated interconnecting systems such as interconnect fuel and transmission gas piping, electrical and instrumentation requirements for the installation of the emissions upgrade system.
- Other scope of work for the compressor station will include retirement, installation, upgrades, additions and tie-ins to following equipment and facilities:
  - New or modified Compressor/ engine station main piping and valves into the existing station system piping, small valves and process control and instrumentation.
  - New and existing platforms, ladders and stairs as needed.
  - New and existing vent, drain and blowdown systems.
  - Electrical cabling/conduit, process control tubing, and other ancillary connections to station control panels (SCP), ESD panels, unit control panels (UCP), and any other panels as required
  - Station Grounding Grid/Ground Electrode System
  - Existing Inventory
  - Retirement of existing facilities and equipment as required.
  - Some of the existing equipment or new and upgraded equipment is or may be located in the existing buildings at site.

Scope Contract Strategy:

- The base engine, controls, cooler study and exhaust system EPC work will be awarded to the engine upgrade contractor.
- The work on the fuel gas system supply piping to the engines will be given to a separate 3rd party contractor.

Expected Project Timescale:

- Contract award time frame: August 24, 2015.
- Construction start date: April - May 2017.
- Commissioning: August 2017
- Upgraded station start date: October 2017.

Emissions and Performance Guarantees:

Engine Performance Guarantee:
Contractor shall guarantee the engine to meet the performance criteria as described in this section. If the guarantees are not met during the initial testing, Contractor will evaluate the cause of the problem and make recommendations for corrective actions. Contractor shall correct any defects found in its products and or workmanship at Contractor's expense. Contractor may use a portable exhaust gas emissions analyzer to monitor and record NOx (NO + NO2),
CO, and O2 during the commissioning efforts for air/fuel ratio mapping for emissions assurance to
The performance guarantees for NOx and CO. The emissions analyzer used shall follow standard EPA reference method protocols for calibration, heated sampling and line conditioning. During the compliance test, Contractor shall coordinate work with Company to record and monitor NOx and CO exhaust emissions to verify compliance with design requirements described below.
Contractor shall state their warranty and how it shall apply. See exhibit A for additional details. Contractor shall provide the oxidation catalyst vendor's design documentation and operation requirements to maintain guaranteed performance.

Emissions Performance Guarantees
Clark HBA-8T, Rated: 2050 BHP @ 300 rpm
Maximum Air Manifold Temperature (AMT) of 130°F
100°F Maximum Ambient Temperature

HBA-8T	2050 BHP @ **300 rpm** 130 Max AMT	60%-100% Horsepower 275 - 300 rpm
NOx	1.0 gm/bhp-hr	
CO	0.60 gm/bhp-hr	
VOC (nmne-HC)	0.70 gm/bhp-hr	
Heat Rate	7,600 BTU/bhp-hr (LHV)	

Note: It is important and advisable that the Contractor define their broadest compliant operation range. This includes providing the operating envelopes or ranges where certain equipment modifications (Oxidation catalyst / turbocharger modifications) are required or necessary in order to achieve emissions levels. Company will then determine if it qualifies for the Company expected operations.

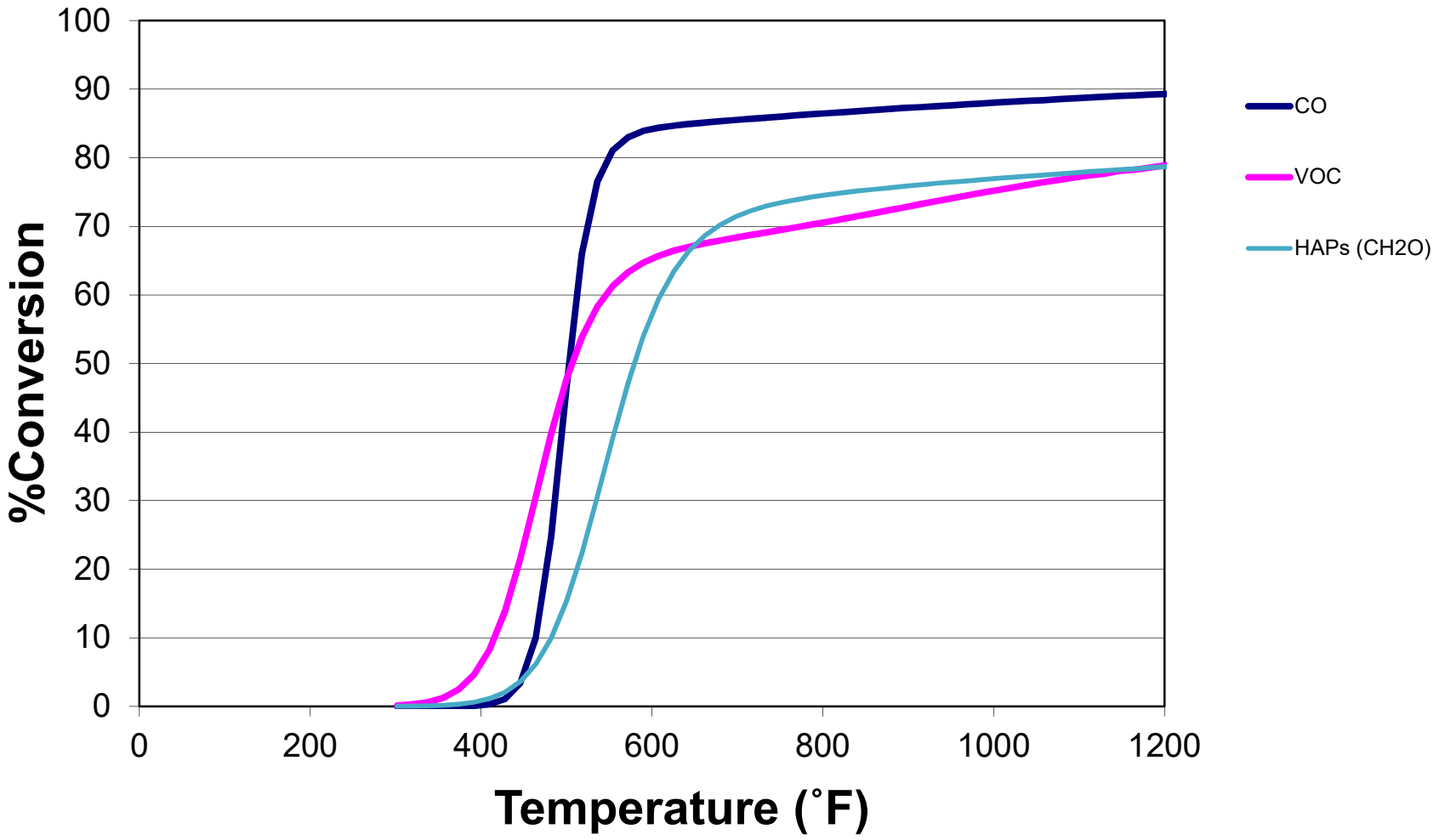
The project will be designed and constructed using Company standards for design, construction and quality assurance. The details provided herein are preliminary in nature and should not be

GE Frame 3 Turbines (EU 03) Vendor Supplied Oxidation Catalyst (OxCat) Performance Curve.

"%Conversion" represents the pollutant reduction efficiency. Performance is a function of OxCat temperature.

DCL International Inc.

Conversion Efficiency



GE Frame 3 Turbines (EU 03) Vendor Supplied SCR Performance Guarantee.

AeriNOx, Inc.
PO Box 490
Eaton, CO 80615
Phone: 970-443-3868

Date: February 10, 2016

To: Texas Eastern Transmission, LP
Spectra Energy
5400 Westheimer Ct
Houston, TX 77251

Subject: PN15067B Rev3 – Emissions Guarantee – Danville SCR Project – 2 x GE Frame 3

Dear Ms. Benson,

We hereby guarantee that the SCR System per quote PN15067B Rev3 specifications:

Catalyst coating	DNX GT-201®
Vol. of SCR substrates	~8.0 m^3 (282.5 ft^3)
No. of SCR Rows	1
Cell Density	64 cpsi

and sized for the following:

Turbine model	**GE Frame 3**
Exhaust Flow-Rate & Regenerator Outlet Temp	5,003,173 SCFH (388,079 lb/hr) @ 650°F
Fuel	Pipeline Quality Natural Gas

will perform as follows:

Emissions	**Turbine Out (ppmvd @15%O_2)**	**SCR Outlet (ppmvd @15%O_2)**
Oxides of Nitrogen (NOx)	190.77	25.0
NH_3 Slip	--	10.0

for an estimated period of 60 months or 43,800 hours, whichever comes first, subject to all terms and conditions contained in the subject contract and proposal warranty document being respected and met.

Sincerely,



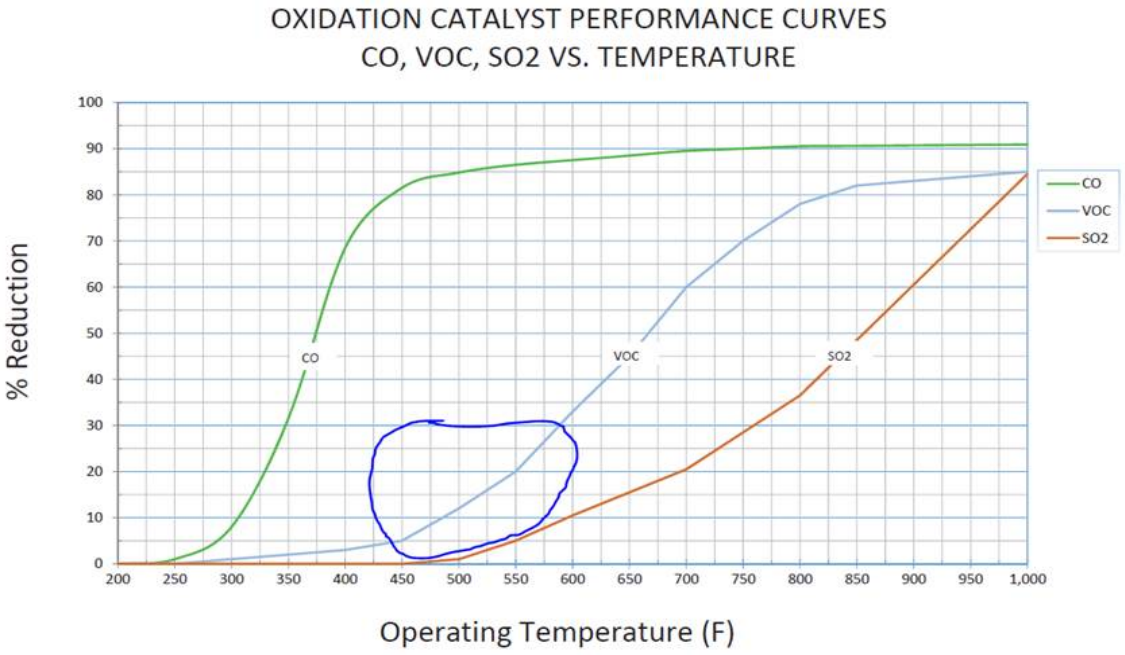
Loran Novacek
Chief Executive Officer

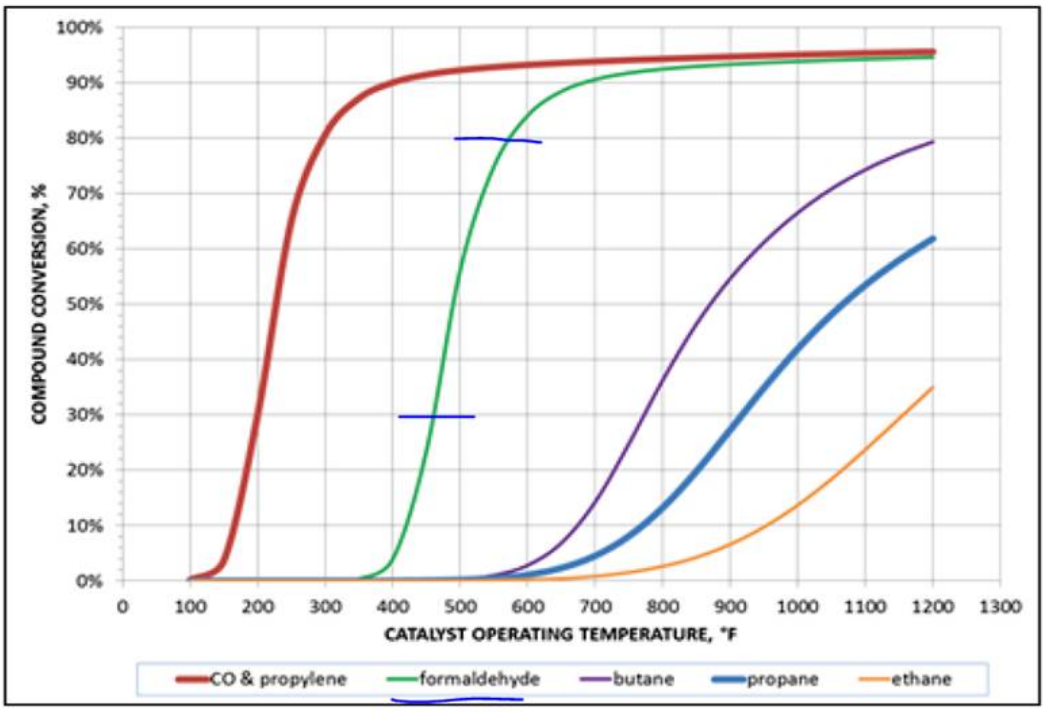
AeriNOx Inc.
100 S. Cherry Avenue, Suite 68
Eaton, CO 80615
Office: 970-454-5639
Email: lnovacek@aerinox-inc.com
Web: www.aerinox-inc.com

GE Frame 5 Turbine (EU 04) Vendor Supplied Oxidation Catalyst (OxCat) Performance Curve.

"%Conversion" represents the pollutant reduction efficiency. Performance is a function of OxCat temperature.

Danville Frame 5 CO Catalyst





ATTACHMENT 4

Section A.2: Operating and Fuel Information

Emission Unit #	If multipurpose unit, identify the percentage of use by purpose				Rated Capacity Heat Input *(MMBTU/hr)*	Rated Capacity Power Output		Describe Operating Scenario (only if this unit will be used in different configurations)	Classify Fuel as Primary or Secondary	Identify Fuel Type: Coal, Natural Gas, Wood, Biomass, Landfill/Digester Gas, Fuel Oil # (specify 1-6), or Other	Heat Content (HHV)		Maximum Operating Hours	Ash Content *(%)*	Sulfur Content *(%)*
	Space Heat	Process Heat	Power	Emergency			*(Specify units: hp, MW, or lb steam/hr)*					*(Specify units: Btu/lb, Btu/gal, or Btu/scf)*			
03-11	NA	NA	100%	NA	94.22	8,000	HP	Normal Op	Primary	Natural Gas	1020	BTU/scf	8688	0	0.05
03-11	NA	NA	100%	NA	94.22	8,000	HP	Low Temp Op	Primary	Natural Gas	1020	BTU/scf	6	0	0.05
03-11	NA	NA	100%	NA	94.22	8,000	HP	Extreme Low Temp Op	Primary	Natural Gas	1020	BTU/scf	1	0	0.05
03-11	NA	NA	100%	NA	94.22	8,000	HP	Start-up	Primary	Natural Gas	1020	BTU/scf	42	0	0.05
03-11	NA	NA	100%	NA	94.22	8,000	HP	Shutdown	Primary	Natural Gas	1020	BTU/scf	23	0	0.05
03-11	NA	NA	100%	NA	94.22	8,000	HP	Uncontrolled Both Ox+SCR	Primary	Natural Gas	1020	BTU/scf	200	0	0.05
03-11	NA	NA	100%	NA	94.22	8,000	HP	Uncontrolled Only SCR	Primary	Natural Gas	1020	BTU/scf	200	0	0.05
03-12	NA	NA	100%	NA	94.22	8,000	HP	Normal Op	Primary	Natural Gas	1020	BTU/scf	8688	0	0.05
03-12	NA	NA	100%	NA	94.22	8,000	HP	Low Temp Op	Primary	Natural Gas	1020	BTU/scf	6	0	0.05
03-12	NA	NA	100%	NA	94.22	8,000	HP	Extreme Low Temp Op	Primary	Natural Gas	1020	BTU/scf	1	0	0.05
03-12	NA	NA	100%	NA	94.22	8,000	HP	Start-up	Primary	Natural Gas	1020	BTU/scf	42	0	0.05
03-12	NA	NA	100%	NA	94.22	8,000	HP	Shutdown	Primary	Natural Gas	1020	BTU/scf	23	0	0.05
03-12	NA	NA	100%	NA	94.22	8,000	HP	Uncontrolled Both Ox+SCR	Primary	Natural Gas	1020	BTU/scf	200	0	0.05
03-12	NA	NA	100%	NA	94.22	8,000	HP	Uncontrolled Only SCR	Primary	Natural Gas	1020	BTU/scf	200	0	0.05
04-13	NA	NA	100%	NA	94.22	8,000	HP	Normal Op	Primary	Natural Gas	1020	BTU/scf	8601	0	0.05
04-13	NA	NA	100%	NA	94.22	8,000	HP	Low Temp Op	Primary	Natural Gas	1020	BTU/scf	6	0	0.05
04-13	NA	NA	100%	NA	94.22	8,000	HP	Extreme Low Temp Op	Primary	Natural Gas	1020	BTU/scf	1	0	0.05
04-13	NA	NA	100%	NA	94.22	8,000	HP	Start-up	Primary	Natural Gas	1020	BTU/scf	78	0	0.05
04-13	NA	NA	100%	NA	94.22	8,000	HP	Shutdown	Primary	Natural Gas	1020	BTU/scf	74	0	0.05
04-13	NA	NA	100%	NA	94.22	8,000	HP	Uncontrolled OxCat	Primary	Natural Gas	1020	BTU/scf	200	0	0.05

Hass, Taylor (EEC)

From: Chuck Zukor <Chuck.Zukor@enbridge.com>
Sent: Tuesday, January 14, 2020 2:59 PM
To: Hass, Taylor (EEC)
Cc: Reagan Mayces; Barry Goodrich
Subject: Texas Eastern/Danville Title V Sig Mod - Response to phone questions 1/14/2020
Attachments: DANV_AALE TVPermitApplication_20160405.pdf

****CAUTION** PDF attachments may contain links to malicious sites. Please contact the COT Service Desk ServiceCorrespondence@ky.gov for any assistance.**

Taylor – Per our conversation today, I am providing you a matrix of emission factors for CO, VOC, and NOx in the units of (lb/MMscf) and (g/hp-hr):
These EFs will help you complete **Section B, EP02, 2. Emission Limitations** and **3. Testing Requirements**.

Pollutant	EF (lb/MMscf)	EF (g/hp-hr)
CO	280	1.05
VOC	189	0.71
NOx	267	1.00

SECTION B EP02 ApReg 2	**2. Emission Limitations:** a. To preclude applicability of 401 KAR 51:017, CO emissions from each Clark HBA-8T engine under Emission Unit 02 shall not exceed 280 lb/mmscf. Compliance Demonstration Method: See 3. Testing Requirements, Condition a. and c. b. To preclude applicability of 401 KAR 51:017, total VOC (including volatile HAPs) emissions from each Clark HBA-8T engine under Emission Unit 02 shall not exceed 189 lb/mmscf. **Compliance Demonstration Method:** See 3. Testing Requirements, Condition b. and c.	**2. Emission Limitations:** a. To preclude applicability of 401 KAR 51:017, CO emissions from each shall not exceed 280 lb/mmscf (XXX g/hp-hr). Compliance Demonstration Method: See 3. Testing Requirements, Condition a. and c. b. To preclude applicability of 401 KAR 51:017, total VOC (including vola engine under Emission Unit 02 shall not exceed 189 lb/mmscf (XXX g/h Compliance Demonstration Method: See 3. Testing Requirements, Condition b. and c. c. NOx emissions from each Clark HBA-8T engine under Emission Un hr). Compliance Demonstration Method: See 3. Testing Requirements, Condition a. and c. (assuming annual t testing)

The next question you had was in regards to **Section D., 2. Source-Wide Emission Limitations**.
The emission values orginally listed below, now highlighted in green and strike-out font, corresponded to Texas Eastern's Owingsville, KY compressor station.
We liked the language that was used in Section D for the Owingsville site, so it was cut & pasted without updating the sitewide emission values to correspond with the Danville, KY station.
The values inside the red boxes with arrows, correspond to the site wide annual emissions at the Danville station after implementation of the AALE project, as shown in the attached PDF of the Danville/AALE application, pg 48 of 137, TABLE A-2, Potential to Emit Emissions After Permitting Activity. Please feel free to call me to discuss or to clarify. Thanks!

SECTION D	**SECTION D - SOURCE EMISSION LIMITATIONS AND TESTING REQUIREMENTS** 1. As required by Section 1b of the Cabinet Provisions and Procedures for Issuing Title V Permits incorporated by reference in 401 KAR 52:020, Section 26; compliance with annual emissions and processing limitations contained in this permit, shall be based on emissions and processing rates for any twelve (12) consecutive months. 2. NOx, CO, and VOC emissions, measured by applicable reference methods, or an equivalent or alternative method specified in 40 C.F.R. Chapter I, or by a test method specified in the state implementation plan shall not exceed the respective limitations specified herein.	**SECTION D - SOURCE EMISSION LIMITATION AND TESTING REQUIREMENTS** 1. As required by Section 1b of the Cabinet Provisions and Procedures fo incorporated by reference in 401 KAR 52:020, Section 26; compliance wi and processing limitations contained in this permit, shall be based on emi rates for any twelve (12) consecutive months. 2. Source-Wide Emission Limitations: a. The total facility-wide emissions of NOx shall not exceed 248.11 to basis. [401 KAR 52:020, Section 10] b. The total facility-wide emissions of CO shall not exceed 130 tons p [401 KAR 52:020, Section 10] c. The total facility-wide emissions of VOC shall not exceed 112 tons [401 KAR 52:020, Section 10] d. The total facility-wide emissions of formaldehyde shall not exceed basis. [401 KAR 52:020, Section 10] e. The total facility-wide emissions of Total HAP shall not exceed 22.3 basis. [401 KAR 52:020, Section 10]

Sincerely,

Chuck Zukor
Sr. Engineer
Safety & Reliability/Air Projects

—

ENBRIDGE
TEL: 713-627-5791 | CELL: 713-819-9501 |Chuck.Zukor@enbridge.com
5400 Westheimer Court, Houston, TX 77056

enbridge.com
Safety. Integrity. Respect.

Requirement Citation	Requirement Text	Proposed Replacement Permit Language	Explanation of Replacement Permit Language
1000 Character Limit	*Memo field*		
SECTION A	**SECTION A - PERMIT AUTHORIZATION** Pursuant to a duly submitted application the Kentucky Division for Air Quality (Division) hereby authorizes the operation of the equipment described herein in accordance with the terms and conditions of this permit. This permit has been issued under the provisions of Kentucky Revised Statutes (KRS) Chapter 224 and regulations promulgated pursuant thereto. The permittee shall not construct, reconstruct, or modify any affected facilities without first submitting a complete application and receiving a permit for the planned activity from the permitting authority, except as provided in this permit or in 401 KAR 52:020, Title V Permits. Issuance of this permit does not relieve the permittee from the responsibility of obtaining any other permits, licenses, or approvals required by the Kentucky Energy and Environment Cabinet (Cabinet) or any other federal, state, or local agency	OK. No changes.	
SECTION B EP 01 & 02 ApReg 1.a	**SECTION B - EMISSION UNITS, EMISSION POINTS, APPLICABLE REGULATIONS, AND OPERATING CONDITIONS** **Emission Unit: 01 (01-07) Seven Compressor Engines** Process 001 Reciprocating Internal Combustion Engine (Plant ID 20901) Process 002 Reciprocating Internal Combustion Engine (Plant ID 20902) Process 003 Reciprocating Internal Combustion Engine (Plant ID 20903) Process 004 Reciprocating Internal Combustion Engine (Plant ID 20904) Process 005 Reciprocating Internal Combustion Engine (Plant ID 20905) Process 006 Reciprocating Internal Combustion Engine (Plant ID 20906) Process 007 Reciprocating Internal Combustion Engine (Plant ID 20907) Description: 1,760 hp Clark HBA-8 Engine Type: 2 stroke lean burn Fuel: Natural gas Maximum rating: 16.60 MMBTU/hr, each	OK. No changes.	
SECTION B EP 01 & 02 ApReg 1.a	**Emission Unit: 02 (08-10) Three Compressor Engines** Process 001 Reciprocating Internal Combustion Engine (Plant ID 20908) Process 002 Reciprocating Internal Combustion Engine (Plant ID 20909) Process 003 Reciprocating Internal Combustion Engine (Plant ID 20910) Description: 2,050 hp Clark HBA-8T Engine Type: 2 stroke lean burn Fuel: Natural gas Maximum rating: 18.68 MMBTU/hr, each Date Constructed: 1957 Controls: Oxidation Catalyst (proposed installation 2017) Note: See Section H, Alternate Operating Scenarios for pre-project requirements.	**Emission Unit: 02 (08-10) Three Compressor Engines** Process 001 Reciprocating Internal Combustion Engine (Plant ID 20908) Process 002 Reciprocating Internal Combustion Engine (Plant ID 20909) Process 003 Reciprocating Internal Combustion Engine (Plant ID 20910) Description: 2,050 hp Clark HBA-8T Engine Type: 2 stroke lean burn Fuel: Natural gas Maximum rating: 18.68 MMBTU/hr, each Date Constructed: 1957 Controls: Oxidation Catalyst (proposed installation 2017) 10/27/2017 and 10/30/2017 ~~**Note: See Section H, Alternate Operating Scenarios for pre-project requirements.**~~ **KyEIS Process ID 1: Normal, steady-state operation of the engine and the OxCat control system.** **KyEIS Process ID 2: Normal, steady-state operation of the engine but without OxCat control system after completion of scheduled engine overhauls and/or major maintenance on the reciprocating engines and/or OxCat systems.** **KyEIS Process ID 3: Low load, low ambient air temperature operation of the engine and OxCat control system is not meeting performance specifications.**	Remove alternate operating conditions under Section H. They are no longer applicable. Add KyEIS Process IDs to the emission source description to Emission Unit 02 to represent different operating scenarios with different emission characteristics.
SECTION B EP 01 & 02 ApReg 1.a	**APPLICABLE REGULATIONS:** 401 KAR 63:002, incorporating by reference 40 CFR 63, Subpart ZZZZ, National Emissions Standards for Hazardous Air Pollutants for Stationary Reciprocating Internal Combustion Engines. **1. Operating Limitations:** a. Pursuant to 401 KAR 52:020, Section 10, the permittee shall conduct routine maintenance checks to ensure optimum engine operations, for all engines under Emission Unit 01 and Emission Unit 02. **Compliance Demonstration Method:** See 5. Specific Recordkeeping Requirements, Conditions b. and d.	**APPLICABLE REGULATIONS:** 401 KAR 63:002, incorporating by reference 40 CFR 63, Subpart ZZZZ, National Emissions Standards for Hazardous Air Pollutants for Stationary Reciprocating Internal Combustion Engines. **1. Operating Limitations:** a. Pursuant to 401 KAR 52:020, Section 10, the permittee shall conduct routine maintenance checks to ensure optimum engine operations, for all engines under Emission Unit 01 and Emission Unit 02. **Compliance Demonstration Method:** See 5. Specific Recordkeeping Requirements, Conditions **c.** and d.	Regroup 5. b and 5.d as 5c & 5d.

Requirement Citation	Requirement Text	Proposed Replacement Permit Language	Explanation of Replacement Permit Language
SECTION B EP 01 ApReg 1.b	b. To preclude applicability of 401 KAR 51:017, the permittee shall limit the total combined natural gas fuel usage of Emission Unit 01 (seven Clark HBA-8 compressor engines) to a maximum of 249,488,235 scf per year, based on a 12-month rolling total. **Compliance Demonstration Method:** See 5. Specific Recordkeeping Requirements, Condition a.	OK. No changes.	Conditions ONLY for Emission Unit 01
SECTION B EP 02 ApReg 1.c	c. To preclude applicability of 401 KAR 51:017, the permittee shall, at all times, operate the OxCat at each of the three (3) Clark HBA-8T engines under Emission Unit 02 when the associated engine is operating.	c. To preclude applicability of 401 KAR 51:017, the permittee shall at all times, **except as specified under Operating Limitations 1.d and 1.e.,** operate the OxCat **on** each of the three (3) Clark HBA-8T engines under Emission Unit 02 when the associated engine is operating. **d. The permittee is allowed to operate each engine under Emission 02 without the OxCat controls (KyEIS Process ID 2) for up to 100 hours on a 12-month rolling total after completeing scheduled required engine overhauls and/or major maintenance on the reciprocating engines and/or OxCat systems.** **e. Pursuant to 401 KAR 52:012, Section 1, (2) the permittee shall as a minimum apply control procedures that are reasonable, available, and practical.**	Conditions ONLY for Emission Unit 02 The proposed language addresses periods of no control when the OxCat catalyst bed is removed from housing after recip overhauls and/or major maintenance. The OxCat is removed to prevent fouling of catalysts when excess oils/greases are "burned" off from engine parts.
SECTION B EP02 ApReg 2	**2. Emission Limitations:** a. To preclude applicability of 401 KAR 51:017, CO emissions from each Clark HBA-8T engine under Emission Unit 02 shall not exceed 280 lb/mmscf. Compliance Demonstration Method: See 3. Testing Requirements, Condition a. and c. b. To preclude applicability of 401 KAR 51:017, total VOC (including volatile HAPs) emissions from each Clark HBA-8T engine under Emission Unit 02 shall not exceed 189 lb/mmscf. **Compliance Demonstration Method:** See 3. Testing Requirements, Condition b. and c.	**2. Emission Limitations:** a. To preclude applicability of 401 KAR 51:017, CO emissions from each Clark HBA-8T engine under Emission Unit 02 shall not exceed 280 lb/mmscf **(XXX g/hp-hr)**. Compliance Demonstration Method: See 3. Testing Requirements, Condition a. and c. b. To preclude applicability of 401 KAR 51:017, total VOC (including volatile HAPs) emissions from each Clark HBA-8T engine under Emission Unit 02 shall not exceed 189 lb/mmscf **(XXX g/hp-hr)**. Compliance Demonstration Method: See 3. Testing Requirements, Condition b. and c. **c. NOx emissions from each Clark HBA-8T engine under Emission Unit 02 shall not exceed XXX lb/mmscf (XXX g/hp-hr).** **Compliance Demonstration Method:** **See 3. Testing Requirements, Condition a. and c. (assuming annual testing, otherwise 3.b. and c. for only initial NOx testing)**	Conditions ONLY for Emission Unit 02 Add emission limit for NOx to represent all emission control levels associated with clean burn technologies. Also add vendor guarantee in units of g/hp-hr.
SECTION B EP 02 ApReg 3	**3. Testing Requirements:** a. Pursuant to 401 KAR 50:045, Section 1, the permittee shall perform an initial performance test within 180 days of startup (after OxCat installation), and annual testing thereafter, on each of the three Clark HBA-8T engines under Emission Unit 02, using reference methods specified in 401 KAR 50:015, to determine the outlet concentration of CO (in ppmvd, lbs/mmscf, lbs/hr). If the CO emission resulting from the performance test is less than or equal to 75 percent of the CO emission limit of 280 lb/mmscf, the permittee may reduce the frequency of subsequent performance tests to once every 2 years (no more than 26 calendar months following the previous performance test). If the results of any subsequent performance test exceed 75 percent of the CO emission limit for the turbine, the permittee shall resume annual performance tests. b. Pursuant to 401 KAR 50:045, Section 1, the permittee shall perform an initial performance test within 180 days of startup (after OxCat installation), on each of the three Clark HBA-8T engines under Emission Unit 02, using reference methods specified in 401 KAR 50:015, to determine the inlet and outlet concentration of total VOC and formaldehyde (in ppmvd, lbs/mmscf, lbs/hr). c. The permittee shall keep records of the natural gas fuel usage per engine used during each performance test. d. Pursuant to 401 KAR 50:045, Section 1, performance testing using Reference methods specified in 401 KAR 50:015 shall be conducted as required by the Division.	**3. Testing Requirements:** a. Pursuant to 401 KAR 50:045, Section 1, the permittee shall perform an initial performance test within 180 days of startup (after OxCat installation), and annual testing thereafter, on each of the three Clark HBA-8T engines under Emission Unit 02, using reference methods specified in 401 KAR 50:015, to determine the outlet concentration of **NOx and** CO (in ppmvd, lbs/mmscf, lbs/hr). If the **NOx and** CO emission resulting from the performance test is less than or equal to 75 percent of the **NOx and** CO emission limit**s** of **XXX lb/mmscf** and 280 lb/mmscf, **respectively,** the permittee may reduce the frequency of subsequent performance tests to once every 2 years (no more than 26 calendar months following the previous performance test). If the results of any subsequent performance test exceed 75 percent of the **NOx and** CO emission limit**s** for the turbine, the permittee shall resume annual performance tests. b. Pursuant to 401 KAR 50:045, Section 1, the permittee shall perform an initial performance test within 180 days of startup (after OxCat installation), on each of the three Clark HBA-8T engines under Emission Unit 02, using reference methods specified in 401 KAR 50:015, to determine the inlet and outlet concentration of total VOC and formaldehyde (in ppmvd, lbs/mmscf, lbs/hr). c. The permittee shall keep records of the natural gas fuel usage per engine used during each performance test. d. Pursuant to 401 KAR 50:045, Section 1, performance testing using Reference methods specified in 401 KAR 50:015 shall be conducted as required by the Division.	Conditions ONLY for Emission Unit 02 Add NOx to Testing Requirements. **Assuming Annual subsequent testing? Otherwise Initial Testing will keep 3.a as is in permit, then alter 3.b. to include NOx.**

Requirement Citation	Requirement Text	Proposed Replacement Permit Language	Explanation of Replacement Permit Language
SECTION B EP 01 & 02 ApReg 4	**4. Specific Monitoring Requirements:** a. Pursuant to 401 KAR 52:020, Section 10, the permittee shall monitor on a continuous basis the inlet and outlet temperature of the OxCat to ensure proper operation of the control device on each of the three Clark HBA-8T engines under Emission Unit 02. b. See Section F, Monitoring, Recordkeeping, and Reporting Requirements.	**4. Specific Monitoring Requirements:** a. Pursuant to 401 KAR 52:020, Section 10, the permittee shall monitor on a continuous basis the inlet and outlet temperature of the OxCat to ensure proper operation of the control device on each of the three Clark HBA-8T engines under Emission Unit 02. **b. Pursuant to 401 KAR 52:020, Section 10, the permittee shall monitor on a continuous basis the Trapped Equivalence Ratio (TER) controlled air manifold set point to ensure proper operation of the NOx clean burn technologies on each of the three Clark HBA-8T engines under Emission Unit 02.** **c.** See Section F, Monitoring, Recordkeeping, and Reporting Requirements.	Added TER air manifold set point as means for demonstrating compliance with NOx clean burn performance guarantees. **Note: There is no clarification of what the "proper operation of the OxCat control device" is. Should we specifiy minimum catalyst inlet/outlet temp or reference to values documented from past compliance testing?** **Also note there is no monitoring of natural gas useage by Emission Unit 01, but there is a recordkeeping requirement. For completeness, shouldn't there be a monitoring requirement?**
SECTION B EP 01 & 02 ApReg 5	**5. Specific Recordkeeping Requirements:** a. Pursuant to 401 KAR 52:020, Section 10, the permittee shall keep monthly records of the combined natural gas fuel usage for the seven compressor engines under Emission Unit 01 on a 12-month rolling basis. b. Pursuant to 401 KAR 52:020, Section 10, the permittee shall keep records of maintenance and operation of the OxCat controls on each of the Clark HBA-8T engines under Emission Unit 02. c. Pursuant to 401 KAR 52:020, Section 10, the permittee shall keep records of the amount of natural gas fuel usage and hours of operation for each of the Clark HBA-8T engines under Emission Unit 02 on an annual basis. d. Pursuant to 401 KAR 52:020, Section 10, the permittee shall keep records of all routine maintenance performed on each engine under Emission Units 01 and 02.	**5. Specific Recordkeeping Requirements:** a. Pursuant to 401 KAR 52:020, Section 10, the permittee shall keep monthly records of the combined natural gas fuel usage for the seven compressor engines under Emission Unit 01 on a 12-month rolling basis. **b. ~~c.~~** Pursuant to 401 KAR 52:020, Section 10, the permittee shall keep records of the amount of natural gas fuel usage and hours of operation for each of the Clark HBA-8T engines under Emission Unit 02 on **a 12-month rolling basis**. **c. ~~d.~~** Pursuant to 401 KAR 52:020, Section 10, the permittee shall keep records of all routine maintenance performed on each engine under Emission Units 01 and 02. **d. ~~b.~~** Pursuant to 401 KAR 52:020, Section 10, the permittee shall keep records of maintenance and operation of the OxCat controls on each of the Clark HBA-8T engines under Emission Unit 02.	Just re-organized order of conditions.
SECTION B EP 01 & 02 ApReg 6	**6. Specific Reporting Requirements:** See Section F, Monitoring, Recordkeeping, and Reporting Requirements.	OK. No changes.	
SECTION B EP 01 & 02 ApReg 7	**7. Specific Control Equipment Operating Conditions:** Pursuant to 401 KAR 52:020, Section 10, the permittee shall install and operate the OxCat control device on each of the Clark HBA-8T engines under Emission Unit 02 according to the manufacturer's recommendations. Records shall be kept of the maintenance activities performed on the OxCat control device on each of the Clark HBA-8T engines under Emission Unit 02.	**7. Specific Control Equipment Operating Conditions:** Pursuant to 401 KAR 52:020, Section 10, the permittee shall install and operate the OxCat control device on each of the Clark HBA-8T engines under Emission Unit 02 according to the manufacturer's recommendations. **~~Records shall be kept of the maintenance activities performed on the OxCat control device on each of the Clark HBA-8T engines under Emission Unit 02.~~** **Furthermore, pursuant to 401 KAR 52:012, Section 1, (2) the permittee shall as a minimum apply control procedures that are reasonable, available, and practical.** **a. Once per permit term, upon completion of an overhaul on each engine under Emission Unit 02, the permittee may operate the engine without oxidation catalyst controls for up to 100 hours. [401 KAR 52:020, Section 10]** **b. The permittee shall send a letter to the Regional Office at least 30 days in advance of the date of the planned engine overhaul activity, and shall keep records of hours of operation without catalyst controls, as well as the associated emissions. [401 KAR 52:020, Section 10]**	Strikeout text is redundant to exisiting recordkeeping under 5.b (new 5.d.) **Also added citation of 401 KAR 52:012 to emphasize possible limitations beyond operational control in achieving OxCat performance.**

Requirement Citation	Requirement Text	Proposed Replacement Permit Language	Explanation of Replacement Permit Language
SECTION B EP 03 & 04 ApReg 1	**Emissions Unit: 03 (11-12) Two Gas Turbines** Process 001 GE Frame 3 Gas Combustion Turbine (Plant ID 21001) Process 002 GE Frame 3 Gas Combustion Turbine (Plant ID 21002) Description: 8,000 hp turbines Fuel: Natural gas Maximum rating: 83.51 MMBTU/hr, each Construction commenced: 1961 Controls: Oxidation Catalyst and Selective Catalytic Reduction (proposed 2017) Notes: See Section H, Alternate Operating Scenarios for pre-project requirements. Normal operation does not include startup, shutdown, or low-temperature operation.	**Emissions Unit: 03 (11-12) Two Gas Turbines** Process 001 GE Frame 3 Gas Combustion Turbine (Plant ID 21001) Process 002 GE Frame 3 Gas Combustion Turbine (Plant ID 21002) Description: 8,000 hp turbines Fuel: Natural gas Maximum rating: 83.51 MMBTU/hr, each Construction commenced: 1961 **Controls:** **Selective Catalytic Reduction (SCR) for: NOx** **Oxidation Catalyst (OxCat) for: CO, VOC, and Formaldehyde** **Installation Date: XXXX (EU03-11), and XXXX (EU03-12)** **Process ID 1: Steady State Operation Mode (Normal Operation)** **Process ID 2: Startup Mode** **Process ID 3: Shutdown Mode** **Process ID 4: Low Temperature Operation (0°F>T>-20°F) Mode** **Process ID 5: Severe Low Temperature Operation (T<-20°F) Mode** **Process ID 6: Low SCR and OxCat Catalyst Temperature and/or Reduced Turbine Load Operation, No controls** **Process ID 7: Low SCR Catalyst Temperature and/or Reduced Turbine Load Operation, only OxCat operational** ~~**Notes: See Section H, Alternate Operating Scenarios for pre-project requirements. Normal operation does not include startup, shutdown, or low-temperature operation.**~~ 10/25/2017 and 10/24/2017	Updated description for consistency with OWIN permit. Added description of KYEIS Process IDs. Remove alternate operating conditions under Section H. They are no longer applicable.
SECTION B EP 03 & 04 ApReg 1	**Emissions Unit: 04 (13) Gas Turbine** Description: GE Frame 5 Gas Combustion 18,500 hp Turbine (Plant ID 21003) Fuel: Natural gas Maximum rating: 183.82 MMBTU/hr Construction commenced: 1969 Controls: Oxidation Catalyst (proposed 2017) Notes: See Section H, Alternate Operating Scenarios for pre-project requirements. Normal operation does not include startup, shutdown, or low-temperature operation.	**Emissions Unit: 04 (13) Gas Turbine** Description: GE Frame 5 Gas Combustion 18,500 hp Turbine (Plant ID 21003) Fuel: Natural gas Maximum rating: 183.82 MMBTU/hr Construction commenced: 1969 **Controls:** **Oxidation Catalyst (OxCat) for: CO, VOC, and Formaldehyde** **Installation Date: XXXX (EU04)** **Process ID 1: Steady State Operation Mode (Normal Operation)** **Process ID 2: Startup Mode** **Process ID 3: Shutdown Mode** **Process ID 4: Low Temperature Operation (0°F>T>-20°F) Mode** **Process ID 5: Severe Low Temperature Operation (T<-20°F) Mode** **Process ID 6: Low OxCat Catalyst Temperature and/or Reduced Turbine Load Operation, No controls** ~~**Notes: See Section H, Alternate Operating Scenarios for pre-project requirements. Normal operation does not include startup, shutdown, or low-temperature operation.**~~ 10/12/2017	Updated description for consistency with OWIN permit. Added description of KYEIS Process IDs. Remove alternate operating conditions under Section H. They are no longer applicable.

Requirement Citation	Requirement Text	Proposed Replacement Permit Language	Explanation of Replacement Permit Language
SECTION B EP 03 & 04 ApReg 1	APPLICABLE REGULATIONS: 401 KAR 63:002, incorporating by reference 40 CFR 63, Subpart YYYY, National Emission Standards for Hazardous Air Pollutants for Stationary Combustion Turbines. 40 CFR Part 64, Compliance Assurance Monitoring. **1. Operating Limitations:** Pursuant to 401 KAR 52:020, Section 10, the permittee shall conduct routine operation and maintenance procedures in accordance with the manufacturer's specifications for each turbine to ensure optimum operations. **Compliance Demonstration Method:** See Section E, Source Control Equipment Requirements, and 7. Specific Control Equipment Operating Conditions.	APPLICABLE REGULATIONS: 401 KAR 63:002, incorporating by reference 40 CFR 63, Subpart YYYY, National Emission Standards for Hazardous Air Pollutants for Stationary Combustion Turbines. 40 CFR Part 64, Compliance Assurance Monitoring. **STATE-ORIGIN REQUIREMENTS:** **401 KAR 63:020 - Potentially hazardous matter or toxic substances.** **1. Operating Limitations:** **a. Pursuant to 401 KAR 63:020, Section 3, persons responsible for a source from which hazardous matter or toxic substances may be emitted shall provide the utmost care and consideration in the handling of these materials, to the potentially harmful effects of the emissions resulting from such activities. The permittee shall not allow any affected facility to emit potentially hazardous matter or toxic substances in such quantities or duration as to be harmful to the health and welfare of humans, animals and plants. Evaluation of such facilities as to the adequacy of controls and/or procedures and emission potential will be made on an individual basis by the Division.** **Compliance Demonstration Method:** **For compliance with 1. Operating Limitations a., based o the rates of emissions of airborne toxics provided in the application submitted by the source.**	NOTE: conducting maintenance procedures was an Operational Limit for ALL of the recips. The same applies to the turbines. However, this "Operational" requirement is not listed for OWIN, but it is listed under "Recordkeeping" for OWIN. Added Operating Limitations to be consistent with OWIN permit and previous conditions for Emission Units 01 & 02.
SECTION B EP 03 & 04 ApReg 1	Continued….	**b. To preclude applicability of 401 KAR 51:017, the permittee shall operate control devices at all times, except as specified under KyEIS Process IDs 2 through 7, and Operating Limitations 1.c and 1.d., when the associated turbine is operating.** **c. The permittee is allowed to operate each turbine without the controls (KyEIS Process ID 6) for up to 100 hours on a 12-month rolling total after completeing scheduled required turbine overhauls and/or major maintenance on the turbines and/or control systems.** **d. Pursuant to 401 KAR 52:012, Section 1, (2) the permittee shall as a minimum apply control procedures that are reasonable, available, and practical.** **Compliance Demonstration Method:** **For compliance with 1. Operating Limitations b., c., and d., see 5. Specific Recordkeeping Requirements and 6. Specific Reporting Requirements.** **e.** Pursuant to 401 KAR 52:020, Section 10, the permittee shall conduct routine operation and maintenance procedures in accordance with the manufacturer's specifications for each turbine to ensure optimum operations. **Compliance Demonstration Method:** **For compliance with 1. Operating Limitations e.,** see Section E, Source Control Equipment Requirements, and 7. Specific Control Equipment Operating Conditions.	NOTE: conducting maintenance procedures was an Operational Limit for ALL of the recips. The same applies to the turbines. However, this "Operational" requirement is not listed for OWIN, but it is listed under "Recordkeeping" for OWIN. Added Operating Limitations to be consistent with OWIN permit and previous conditions for Emission Units 01 & 02.

Requirement Citation	Requirement Text	Proposed Replacement Permit Language	Explanation of Replacement Permit Language
SECTION B EP 03 & 04 ApReg 2	**2. Emission Limitations:** a. To preclude applicability of 401 KAR 51:017, NOx emissions from each of the Frame 3 turbines under Emission Unit 03 shall not exceed 25 ppmvd at 15% O2 during normal operation. **Compliance Demonstration Method:** The permittee shall demonstrate continuous compliance by complying with either 3. Testing Requirements, Condition a, or 4. Specific Monitoring Requirements, Conditions a. and b. b. To preclude applicability of 401 KAR 51:017, CO emissions from each of the Frame 3 turbines under Emission Unit 03 shall not exceed 12.5 ppmvd at 15% O2 during normal operation. **Compliance Demonstration Method:** See 3. Testing Requirements, Condition c. and 4. Specific Monitoring Requirements, Condition c. c. To preclude applicability of 401 KAR 51:017, CO emissions from the Frame 5 turbine under Emission Unit 04 shall not exceed 12.5 ppmvd at 15% O2 during normal operation. **Compliance Demonstration Method:** See 3. Testing Requirements, Condition c. and 4. Specific Monitoring Requirements, Conditions d. through f. d. To preclude applicability of 401 KAR 51:017, VOC emissions from the Frame 3 turbines under Emission Unit 03 shall not exceed 13.28 lb/mmscf during normal operation. e. To preclude applicability of 401 KAR 51:017, VOC emissions from the Frame 5 turbines under Emission Unit 04 shall not exceed 10.36 lb/mmscf during normal operation. **Compliance Demonstration Method:** For compliance with 2. Emission Limitations, Conditions d. and e., see 3. Testing Requirements, Condition d.	**2. Emission Limitations:** a. To preclude applicability of 401 KAR 51:017, NOx emissions from each turbine shall not exceed ~~7.69 lb/~~hr per Frame 3 unit under Emission Unit 03 ~~and 16.92 lb/hr for the Frame 5 unit under Emission Unit 04,~~ during normal operation only, except as specified under KyEIS Process IDs 2 through 7, and Operating Limitations 1.c and 1.d. b. To preclude applicability of 401 KAR 51:017, CO emissions from each turbine shall not exceed ~~XXXX lb/hr~~ per Frame 3 unit under Emission Unit 03 and ~~XXXX lb/hr~~ for the Frame 5 unit under Emission Unit 04, during normal operation only, except as specified under KyEIS Process IDs 2 through 7, and Operating Limitations 1.c and 1.d. ~~c. To preclude applicability of 401 KAR 51:017, VOC emissions from each turbine shall not exceed XXXX lb/hr per Frame 3 unit under Emission Unit 03 and XXXX lb/hr for the Frame 5 unit under Emission Unit 04, during normal operation only, except as specified under KyEIS Process IDs 2 through 7, and Operating Limitations 1.c and 1.d.~~ d. The lb/hour emission limitations listed under 2. Emission Limitations ~~a. through c.,~~ will be based on a 4-hour rolling average. For a given hour to be included in the rolling 4-hr average, the unit has to be in normal operation (KyEIS Process ID 1) for every minute in that whole clock hour. If one minute or more in that hour corresponds to another KyEIS Process ID (2 through 7: idle, startup, or shutdown operations), then the entire hour will not be considered normal operations and must be excluded from the rolling 4-hour average. e. See Section D for sitewide annual emission limitations. Compliance Demonstration Method: a. See 3. Testing Requirements b. See 4. Specific Monitoring Requirements c. See 5. Specific Recordkeeping Requirements d. See 6. Specific Reporting Requirements	Deleting text for Frame 5, b/c it has no NOx controls A mass-based limit provides more operational flexibility. ~~dard from concentra~~ based requires mutiplying the max rated heat input (83.51 and 183.82 MMBtu/hr for Frame 3 units and Frame 5 unit, respectively) and 0.0923 lb/MMBtu (HHV), which is directly converted from 25 ppmvd at 15% O2. **c. The lb/hour emission limitations listed under 2. Emission Limitations a., will be based on a 30-day equivalent (720-hour) rolling average. For a given hour to be included in the rolling average, the unit has to be in normal operation (KyEIS Process ID 1) for every minute in that whole clock hour. If one minute or more in that hour corresponds to another KyEIS Process ID (2 through 7: idle, startup, or shutdown operations), then the entire hour will not be considered normal operations and must be excluded from the rolling average.**
SECTION B EP 03 & 04 ApReg 3	**3. Testing Requirements:** a. Pursuant to 401 KAR 52:020, Section 10, the permittee shall perform an initial performance test as required in 40 CFR 60.8. If the permittee chooses to demonstrate continuous compliance with 2. Emission Limitations, Condition a. through testing, the permittee shall conduct annual performance tests, using either EPA Method 7E or EPA Method 20 in Appendix A to 40 CFR Part 60. If the NOx emission result from the performance test is less than or equal to 75 percent of the NOx emission limit for the turbine, the permittee may reduce the frequency of subsequent performance tests to once every 2 years (no more than 26 calendar months following the previous performance test). If the results of any subsequent performance test exceed 75 percent of the NOx emission limit for the turbine, the permittee shall resume annual performance tests. b. Pursuant to 401 KAR 52:020, Section 10, the permittee shall use the method described in Appendix C to 40 CFR Part 60 to demonstrate that the physical change proposed to the Frame 5 turbine under Emission Unit 04 will not result in an increase in NOx emissions, based on pre-project and post-project emissions tests, and is therefore not subject to 40 CFR 60, Subpart KKKK due to modification pursuant to 40 CFR 60.14(a).	**3. Testing Requirements:** a. Pursuant to 401 KAR 52:020, Section 10, the permittee shall perform an initial performance test, **within 180 days of startup (after SCR installation),** ~~and annual testing thereafter, for~~ **NOx emissions (ppmvd, lbs/mmscf, lbs/hr) on the Frame 3 turbines under Emission Unit 03,** using using either EPA Method 7E or EPA Method 20 in Appendix A to 40 CFR Part 60. ~~If the NOx emission result from the performance test is less than or equal to 75 percent of the NOx emission limit of XXX lb/mmscf, the permittee may reduce the frequency of subsequent performance tests to once every 2 years (no more than 26 calendar months following the previous performance test). If the results of any subsequent performance test exceed 75 percent of the NOx emission limit for the turbine, the permittee shall resume annual performance tests.~~ ~~b. Pursuant to 401 KAR 52:020, Section 10, the permittee shall use the method described in Appendix C to 40 CFR Part 60 to demonstrate that the physical change proposed to the Frame 5 turbine under Emission Unit 04 will not result in an increase in NOx emissions, based on pre-project and post-project emissions tests, and is therefore not subject to 40 CFR 60, Subpart KKKK due to modification pursuant to 40 CFR 60.14(a).~~ ~~b. Since the turbines use SCR to reduce NOX emissions, the permittee shall continuously monitor appropriate parameters to verify the proper operation of the SCR emission controls. The parameters shall be continuously monitored and recorded during the initial NOx performance test following the requirements of 40 CFR 60.8, to establish acceptable values and ranges. [401 KAR 52:020, Section 10]~~	Deleting text for NOx parametric montoring b/c we plan to use NOx CEMS for continuous direct measurement. ~~nsistency with~~

18 lb/hr

5.77 lb/hr

3.13 lb/hr

b.

Requirement Citation	Requirement Text	Proposed Replacement Permit Language	Explanation of Replacement Permit Language
SECTION B EP 03 & 04 ApReg 3	Continued.... c. Pursuant to 401 KAR 50:045, Section 1, the permittee shall perform an initial performance test, within 180 days of startup (after OxCat installation), and annual testing thereafter, for CO emissions (ppmvd, lbs/mmscf, lbs/hr) on the Frame 3 turbines under Emission Unit 03 and the Frame 5 turbine under Emission Unit 04, using reference methods specified in 401 KAR 50:015. If the CO emission resulting from the performance test is less than or equal to 75 percent of the CO emission limit of 280 lb/mmscf, the permittee may reduce the frequency of subsequent performance tests to once every 2 years (no more than 26 calendar months following the previous performance test). If the results of any subsequent performance test exceed 75 percent of the CO emission limit for the turbine, the permittee shall resume annual performance tests. d. Pursuant to 401 KAR 50:045, Section 1, the permittee shall perform an initial performance test within 180 days of startup (after OxCat installation), during normal operation on each Frame 3 turbine under Emission Unit 03 and the Frame 5 turbine under Emission Unit 04 in order to determine the inlet and outlet concentration of VOC and formaldehyde (in ppmvd, lbs/mmscf, lbs/hr). e. The permittee shall keep records of the natural gas fuel usage at each turbine used during each performance test.	Continued.... c. Pursuant to **401 KAR 50:045, Section 1**, the permittee shall perform an initial performance test, within 180 days of startup (after OxCat installation), and annual testing thereafter, for CO emissions (ppmvd, lbs/mmscf, lbs/hr) on the Frame 3 turbines under Emission Unit 03 and the Frame 5 turbine under Emission Unit 04, using reference methods specified in 401 KAR 50:015. If the CO emission resulting from the performance test is less than or equal to 75 percent of the CO emission limit of 280 lb/mmscf, the permittee may reduce the frequency of subsequent performance tests to once every 2 years (no more than 26 calendar months following the previous performance test). If the results of any subsequent performance test exceed 75 percent of the CO emission limit for the turbine, the permittee shall resume annual performance tests. **d. The inlet and outlet temperatures to the OxCat shall be continuously monitored and recorded during the initial CO performance test. [401 KAR 52:020, Section 10]** **e.** Pursuant to 401 KAR 50:045, Section 1, the permittee shall perform an initial performance test within 180 days of startup (after OxCat installation), during normal operation on each Frame 3 turbine under Emission Unit 03 and the Frame 5 turbine under Emission Unit 04 in order to determine the inlet and outlet concentration of VOC and formaldehyde (in ppmvd, lbs/mmscf, lbs/hr). **f.** The permittee shall keep records of the natural gas fuel usage at each turbine used during each performance test.	Updated requirements for consistency with OWIN permit.
SECTION B EP 03 & 04 ApReg 4	**4. Specific Monitoring Requirements:** a. Pursuant to 401 KAR 52:020, Section 10, if the permittee chooses to demonstrate continuous compliance with 2. Emission Limitations, Condition a. by meeting monitoring requirements, the permittee shall install, calibrate, maintain and operate the following continuous parameter monitoring: i. For any lean premix stationary combustion turbine, the permittee shall continuously monitor the appropriate parameters to determine whether the unit is operating in low-NOX mode. ii. For any turbine that uses SCR to reduce NOX emissions, the permittee shall continuously monitor appropriate parameters to verify the proper operation of the emission controls.	**4. Specific Monitoring Requirements:** a. Pursuant to 401 KAR 52:020, Section 10, if the permittee chooses to demonstrate continuous compliance with 2. Emission Limitations, Condition a. by meeting monitoring requirements, the permittee shall install, calibrate, maintain and operate the following continuous parameter monitoring: i. For any lean premix stationary combustion turbine, the permittee shall continuously monitor the appropriate parameters to determine whether the unit is operating in low-NOX mode. ii. For any turbine that uses SCR to reduce NOX emissions, the permittee shall continuously monitor appropriate parameters to verify the proper operation of the emission controls. **b. Pursuant to 401 KAR 52:020, Section 10, if the permittee chooses to demonstrate continuous compliance with 2. Emission Limitations, Conditions b. and c., by meeting monitoring requirements, the permittee shall install, calibrate, maintain and operate the following continuous parameter monitoring:** **i. For any lean premix stationary combustion turbine, the permittee shall continuously monitor the appropriate parameters to determine whether the unit is operating in low-CO mode.** **ii. For any turbine that uses OxCat to reduce CO emissions, the permittee shall continuously monitor appropriate parameters to verify the proper operation of the emission controls.**	Added requirements for consistency within the existing permit.

Requirement Citation	Requirement Text	Proposed Replacement Permit Language	Explanation of Replacement Permit Language
SECTION B EP 03 & 04 ApReg 4	**Continued:** b. Pursuant to 401 KAR 52:020, Section 10, the permittee shall demonstrate compliance with 2. Emission Limitations, Condition a. by meeting the requirements of 4. Specific Monitoring Requirements, Condition a. The parameters that are to be continuously monitored shall be monitored during the performance test required under 40 CFR 60.8, to establish acceptable values and ranges. The permittee may supplement the performance test data with engineering analyses, design specifications, manufacturer's recommendations and other relevant information to define the acceptable parametric ranges more precisely. The permittee shall develop and keep on-site a parameter monitoring plan which explains the procedures used to document proper operation of the NOX emission controls. The plan must: i. Include the indicators to be monitored and show there is a significant relationship to emissions and proper operation of the NOX emission controls; ii. Pick ranges (or designated conditions) of the indicators, or describe the process by which such range (or designated condition) will be established; iii. Explain the process that will be used to make certain that data obtained is representative of the emissions or parameters being monitored (such as detector location, installation specification if applicable); iv. Describe quality assurance and control practices that are adequate to ensure the continuing validity of the data; v. Describe the frequency of monitoring and the data collection procedures which will be used (e.g., using a computerized data acquisition over a number of discrete data points with the average (or maximum value) being used for purposes of determining whether an exceedance has occurred), and vi. Submit justification for the proposed elements of the monitoring. If a proposed performance specification differs from manufacturer recommendation, the permittee shall explain the reasons for the differences. The permittee shall submit the data supporting the justification, but may refer to generally available sources of information used to support the justification. The permittee may rely on engineering assessments and other data, provided the permittee demonstrate factors which assure compliance or explain why performance testing is unnecessary to establish indicator ranges. When establishing indicator ranges, the permittee may choose to simplify the process by treating the parameters as if they were correlated. Using this assumption, testing can be divided into two cases: i. All indicators are significant only on one end of range (e.g., for a thermal incinerator controlling volatile organic compounds (VOC) it is only important to insure a minimum temperature, not a maximum). In this case, the permittee may conduct a study so that each parameter is at the significant limit of its range while the permittee conducts emissions testing. If the emissions tests show that the source is in compliance at the significant limit of each parameter, then as long as each parameter is within its limit, the unit is presumed to be in compliance. ii. Some or all indicators are significant on both ends of the range. In this case, the permittee may conduct your study so that each parameter that is significant at both ends of its range assumes its extreme values in all possible combinations of the extreme values (either single or double) of all of the other parameters. For example, if there were only two parameters, A and B, and A had a range of values while B had only a minimum value, the	**Continued:** **c.** Pursuant to 401 KAR 52:020, Section 10, the permittee shall demonstrate compliance with 2. Emission Limitations, Condition a. by meeting the requirements of 4. Specific Monitoring Requirements, **Conditions a., b., and c.** The parameters that are to be continuously monitored shall be monitored during the performance test required under 40 CFR 60.8, to establish acceptable values and ranges. The permittee may supplement the performance test data with engineering analyses, design specifications, manufacturer's recommendations and other relevant information to define the acceptable parametric ranges more precisely. The permittee shall develop and keep on-site a parameter monitoring plan which explains the procedures used to document proper operation of the NOX **and CO** emission controls. The plan must: i. Include the indicators to be monitored and show there is a significant relationship to emissions and proper operation of the NOX **and CO** emission controls; ii. Pick ranges (or designated conditions) of the indicators, or describe the process by which such range (or designated condition) will be established; iii. Explain the process that will be used to make certain that data obtained is representative of the emissions or parameters being monitored (such as detector location, installation specification if applicable); iv. Describe quality assurance and control practices that are adequate to ensure the continuing validity of the data; v. Describe the frequency of monitoring and the data collection procedures which will be used (e.g., using a computerized data acquisition over a number of discrete data points with the average (or maximum value) being used for purposes of determining whether an exceedance has occurred), and vi. Submit justification for the proposed elements of the monitoring. If a proposed performance specification differs from manufacturer recommendation, the permittee shall explain the reasons for the differences. The permittee shall submit the data supporting the justification, but may refer to generally available sources of information used to support the justification. The permittee may rely on engineering assessments and other data, provided the permittee demonstrate factors which assure compliance or explain why performance testing is unnecessary to establish indicator ranges. When establishing indicator ranges, the permittee may choose to simplify the process by treating the parameters as if they were correlated. Using this assumption, testing can be divided into two cases: i. All indicators are significant only on one end of range (e.g., for a thermal incinerator controlling volatile organic compounds (VOC) it is only important to insure a minimum temperature, not a maximum). In this case, the permittee may conduct a study so that each parameter is at the significant limit of its range while the permittee conducts emissions testing. If the emissions tests show that the source is in compliance at the significant limit of each parameter, then as long as each parameter is within its limit, the unit is presumed to be in compliance. ii. Some or all indicators are significant on both ends of the range. In this case, the permittee may conduct your study so that each parameter that is significant at both ends of its range assumes its extreme values in all possible combinations of the extreme values (either single or double) of all of the other parameters. For example, if there were only two parameters, A and B, and A had a range of values while B had only a minimum value, the combinations would be A high with B minimum and A low with B minimum. If both A and B had a range, the combinations would be A high and B high, A low and B low, A high and B low, A low and B high. For the case of four parameters all having a range, there are 16 possible combinations.	The existing permit does not equally address monitoring requiements for the NOx and CO emission controls. Modified requirement for consistency across both NOx and CO control systems.
SECTION B EP 03 & 04 ApReg 4	**Continued:** c. Pursuant to 401 KAR 52:020, Section 10, the permittee shall continuously monitor the inlet and outlet temperatures of the OxCat t vice for each of the Frame 3 turbines under Emission d. Pursuant to 40 CFR Part 64, th emissions from the Frame 5 turbine that meets the re 4. The plan shall be submitted according to the deadli e. Pursuant to 40 CFR 64.5(d), prior to approval of monitoring that satisfies the requirements of 40 CFR Part 64, the permittee shall be subject to the requirements of 40 CFR 70.6(a)(3)(i)(B). f. Pursuant to 401 KAR 52:020, Section 10, prior to approval of monitoring that satisfies the requirements of 40 CFR Part 64 for CO emissions from the Frame 5 turbine under Emission Unit 04, the permittee shall: i. Continuously monitor appropriate indicators of emission control performance, including but not limited to the inlet and outlet temperatures of the OxCat, to ensure proper operation of the control device. ii. Keep record of inspections and maintenance performed on the turbine and the associated control device.	**Continued:** **c. Pursuant to 401 KAR 52:020, Section 10, the permittee shall continuously monitor the inlet and outlet temperatures of the OxCat to ensure proper operation of the control device for each of the Frame 3 turbines under Emission Unit 03. [NOTE SURE IF THIS REQUIREMENT IS RELEVANT IF CO IS ADDED TO CONDITION 4.b?]** d. Pursuant to 40 CFR Part 64, the permittee shall ~~submit~~ **develop and maintain** a CAM plan ~~for CO emissions from the Frame 5 turbine~~ that meets the requirements of 40 CFR 64.3 and 40 CFR 64.4 **for the following units:** ~~**i. For NOx emissions from the Frame 3 turbines under Emission Unit 03, and**~~ ~~**ii. For CO emissions from the Frame 5 turbine under Emission Unit 04.**~~ **e.** The CAM plans shall be submitted according to the deadline described in 40 CFR 64.5. **f.** Pursuant to 40 CFR 64.5(d), prior to approval of monitoring that satisfies the requirements of 40 CFR Part 64, the permittee shall be subject to the requirements of 40 CFR 70.6(a)(3)(i)(B). **g.** Pursuant to 401 KAR 52:020, Section 10, prior to approval of monitoring that satisfies the requirements of 40 CFR Part 64 ~~for NOx emissions from the Frame 3 turbines under Emission Unit 03 and~~ for CO emissions from the Frame 5 turbine under Emission Unit 04, the permittee shall: i. Continuously monitor appropriate indicators of emission control performance~~, including but not limited to the inlet and outlet temperatures of the OxCat,~~ to ensure proper operation of the control device. ii. Keep record of inspections and maintenance performed on the turbine and the associated control device.	

Using NOx CEMS QA/QC instead, so NOx CAM plan is not required

Requirement Citation	Requirement Text	Proposed Replacement Permit Language	Explanation of Replacement Permit Language
SECTION B EP 03 & 04 ApReg 5	**5. Specific Recordkeeping Requirements:** a. Pursuant to 401 KAR 52:020, Section 10, the permittee shall record the amount of natural gas burned at each turbine on an annual basis. b. Pursuant to 401 KAR 52:020, Section 10, the permittee shall keep record of the hours of operation of each turbine under Emission Units 03 and 04 in startup mode, shutdown mode, low temperature modes, and steady state (normal) operation.	**5. Specific Recordkeeping Requirements:** ~~**a. For each Frame 3 turbine under Emission Unit 03, the permittee shall develop and keep the records of a parameter monitoring plan which explains the procedures used to document proper operation of the NOx emission controls. [401 KAR 52:020, Section 10]**~~ **b. For the Frame 5 turbine under Emission Unit 04, the permittee shall develop and keep the records of a parameter monitoring plan which explains the procedures used to document proper operation of the CO emission controls. [401 KAR 52:020, Section 10]** **c. The permittee shall keep records of the monitoring required in 4. Specific Monitoring Requirements a., b., c., d., e., and f. [40 CFR 64], [401 KAR 52:020, Section 10]** **d. The permittee shall maintain records of NOx and CO emission totals and fuel usage of each turbine under Emission Units 03 and 04 during each mode of operation (steady state operation, startup mode, shutdown mode, low/severe low temperature modes, operation during low catalyst temperature, and operation during low turbine load activities and associated control devices) calculated on a monthly basis and a twelve (12) month rolling total. [401 KAR 52:020, Section 10]** **e. The permittee shall keep record of the maintenance activities conducted and the duration that the control device(s) are not in operation during the maintenance activities. Emissions associated with these maintenance activities shall be calculated using appropriate control efficiency. [401 KAR 52:020, Section 10]**	**a. For each Frame 3 turbine under Emission Unit 03, the permittee shall develop and keep the records of a NOx CEMS QA/QC plan which explains the procedures used to document proper operation of the NOx CEMS. [401 KAR 52:020, Section 10]** Updated requirements for consistency with OWIN permit.
SECTION B EP 03 & 04 ApReg 6	**6. Specific Reporting Requirements:** For NOx monitoring from the Frame 3 turbines under Emission Unit 03: a. Pursuant to 401 KAR 52:020, Section 10, for each affected unit required to continuously monitor parameters or emissions, the permittee shall submit reports of excess emissions and monitor downtime, in accordance with 40 CFR 60.7(c). Excess emissions shall be reported for all periods of unit operation, including start-up, shutdown, and malfunction. b. Pursuant to 401 KAR 52:020, Section 10, for each affected unit that performs annual performance tests in accordance with 3. Testing Requirements, Condition a., the permittee shall submit a written Condition	**[STILL WORKING ON THIS ONE]**	
	nd ons. atalytic	**7. Specific Control Equipment Operating Conditions:** Pursuant to 401 KAR 52:020, Section 10, the permittee shall install and operate the OxCat and Selective Catalytic Reduction control devices according to the manufacturers' recommendations. ~~**Records shall be kept of the maintenance activities performed on the OxCat and Selective Catalytic Reduction control devices.**~~ **Furthermore, pursuant to 401 KAR 52:012, Section 1, (2) the permittee shall as a minimum apply control procedures that are reasonable, available, and practical.** **a. Once per permit term, upon completion of an overhaul on each turbine, the permittee may operate the turbines without SCR and oxidation catalyst controls for up to 100 hours. [401 KAR 52:020, Section 10]** **b. The permittee shall send a letter to the Regional Office at least 30 days in advance of the date of the planned turbine overhaul activity, and shall keep records of hours of operation without catalyst controls, as well as the associated emissions. [401 KAR 52:020, Section 10]**	Strikeout text is redundant to exisiting recordkeeping under 5.b (new 5.d.) **Also added citation of 401 KAR 52:012 to emphasize possible limitations beyond operational control in achieving OxCat performance.**

6. Specific Reporting Requirements:

a. Pursuant to 401 KAR 52:020, Section 10, for each affected unit required to continuously monitor CO control parameters or measure direct NOx emissions with a CEMS, the permittee shall submit reports of excess CO or NOx (hourly and annual) emissions and monitor downtime, in accordance with 40 CFR 60.7(c). Excess hourly emissions over the designated averaging period shall be reported for only periods of "normal" unit operation. Excess annual emissions shall be reported for all periods of unit operation, including start-up, shutdown, and malfunction.

b. Pursuant to 401 KAR 52:020, Section 10, for each affected unit that performs annual performance tests in accordance with 3. Testing Requirements, Condition a., the permittee shall submit a written report of the results of each performance test as described in Section G, General Provisions, Condition 5.

c. See Section F, Monitoring, Recordkeeping, and Reporting Requirements.

Requirement Citation	Requirement Text	Proposed Replacement Permit Language	Explanation of Replacement Permit Language
SECTION B EP 05 & 06 ApReg 1	**Emissions Unit: 05 (005) Auxiliary Emergency Generator** Description: Caterpillar G3516 Reciprocating Internal Combustion Engine Capacity: 1,462 hp Engine type: 4 cycle lean burn Maximum rating: 12.64 MMBtu/hr Engine manufactured: June 29, 2010 Construction commenced: October 15, 2010 Emissions Unit: 06 (006) Auxiliary Emergency Generator Description: Caterpillar G3512 Reciprocating Internal Combustion Engine Capacity: 1,102 hp Engine type: 4 cycle lean burn Maximum rating: 8.82 MMBtu/hr Engine manufactured: Proposed March 2017 Construction commenced: Proposed September 2017 APPLICABLE REGULATIONS: 401 KAR 63:002, incorporating by reference 40 CFR 63, Subpart ZZZZ, National Emissions Standards for Hazardous Air Pollutants for Stationary Reciprocating Internal Combustion Engines. 401 KAR 60:005, incorporating by reference 40 CFR 60, Subpart JJJJ, Standards of Performance for Stationary Spark Ignition Internal Combustion Engines. Note: D.C. Circuit Court [Delaware v. EPA, 785 F. 3d 1 (D.C. Cir. 2015)] has vacated the provisions in 40 CFR 60, Subpart JJJJ that contain the 100-hour exemption for operation of emergency engines for purposes of emergency demand response under 40 CFR 60.4243(d)(2)(ii)-(iii). The D.C. Circuit Court issued the mandate for the vacatur on May 4, 2016.	OK. No changes.	Consistent with OWIN.
SECTION B EP 05 & 06 ApReg 1	**1. Operating Limitations:** a. Pursuant to 40 CFR 60.4243(d)(1) through (3), the permittee shall operate each emergency stationary ICE according to the requirements below. In order for an engine to be considered an emergency stationary ICE under 40 CFR 60, Subpart JJJJ, any operation other than emergency operation, maintenance and testing, emergency demand response, and operation in non-emergency situation for 50 hours per year, as described below, is prohibited. If the permittee does not operate the each engine according to the requirements below, the engine will not be considered an emergency engine under 40 CFR 60, Subpart JJJJ and shall meet all requirements for non-emergency engines. i. There is no time limit on the use of emergency stationary ICE in emergency situations. ii. The permittee may operate each emergency stationary ICE for the purpose specified in paragraphs (d)(2)(i) of 40 CFR 60.4243 for a maximum of 100 hours per calendar year. Any operation for non-emergency situations as allowed by paragraph (d)(3) of 40 CFR 60.4243 counts as part of the 100 hours per calendar year allowed by 40 CFR 60.4243(d). 1) Emergency stationary ICE may be operated for maintenance checks and readiness testing, provided that the tests are recommended by federal, state or local government, the manufacturer, the vendor, the regional transmission organization or equivalent balancing authority and transmission operator, or the insurance company associated with the engine. The permittee may petition the Administrator for approval of additional hours to be used for maintenance checks and readiness testing, but a petition is not required if the permittee maintains records indicating that federal, state, or local standards require maintenance and testing of emergency ICE beyond 100 hours per calendar year. iii. Emergency stationary ICE may be operated for up to 50 hours per calendar year in non-emergency situations. The 50 hours of operation in non-emergency situations are counted as part of the 100 hours per calendar year for maintenance and testing provided in paragraph (d)(2) of 40 CFR 60.4243. Except as provided in paragraph (d)(3)(i) of 40 CFR 60.4243, the 50 hours per year for non-emergency situations cannot be used for peak shaving or non-emergency demand response, or to generate income for a facility to an electric grid or otherwise supply power as part of a financial arrangement with another entity. 1) The 50 hours per year for non-emergency situations can be used to supply power as part of a financial arrangement with another entity if all of the following conditions are met: A. The engine is dispatched by the local balancing authority or local transmission and distribution system operator; B. The dispatch is intended to mitigate local transmission and/or distribution limitations so as to avert potential voltage collapse or line overloads that could lead to the interruption of power supply in a local area or region.	OK. No changes.	Consistent with OWIN.
SECTION B EP 05 & 06 ApReg 1	1. b. Pursuant to 40 CFR 60.4243(e), the permittee may operate each engine using propane for a maximum of 100 hours per year as an alternative fuel solely during emergency operations, but shall keep records of such use. If propane is used for more than 100 hours per year in an engine that is not certified to the emission standards when using propane, the permittee is required to conduct a performance test to demonstrate compliance with the emission standards of 40 CFR 60.4233. Compliance Demonstration Method: See 5. Specific Recordkeeping Requirements, Condition c.	OK. No changes.	Consistent with OWIN.

Requirement Citation	Requirement Text	Proposed Replacement Permit Language	Explanation of Replacement Permit Language
SECTION B EP 05 & 06 ApReg 2	**2. Emission Limitations:** a. Pursuant to 40 CFR 60.4233(e), each stationary SI internal combustion engine shall comply with the emission standards for emergency generators listed in Table 1 to 40 CFR 60, Subpart JJJJ as follows: i. NOx – 2.0 g/hp-hr (160 ppmvd at 15 percent O2); ii. CO – 4.0 g/hp-hr (540 ppmvd at 15 percent O2); and iii. VOC – 1.0 g/hp-hr (86 ppmvd at 15 percent O2). Compliance Demonstration Method: Pursuant to 40 CFR 60.4243(b), the permittee shall demonstrate compliance with 2. Emission Limitations, Condition a. according to one of the following methods: i. Purchase an engine certified according to procedures specified in 40 CFR 60, Subpart JJJJ, for the same model year and demonstrating compliance according to one of the methods specified in 40 CFR 60.4243(a); or ii. Purchase a non-certified engine and demonstrate compliance with the emission standards specified in 40 CFR 60.4233(e) and according to the requirements specified in 40 CFR 60.4244, as applicable. The permittee shall keep a maintenance plan and records of conducted maintenance, and shall, to the extent practicable, maintain and operate the engine in a manner consistent with good air pollution control practice for minimizing emissions. Additionally, the permittee shall conduct an initial performance test and subsequent performance testing every 8,760 hours or three (3) years, whichever comes first, thereafter to demonstrate compliance. b. Pursuant to 40 CFR 60.4234, the permittee shall operate and maintain the stationary spark ignition internal combustion engines to achieve the emission standards required by 40 CFR 60.4233 over the entire life of the engines.	OK. No changes.	Consistent with OWIN.
SECTION B EP 05 & 06 ApReg 3	**3. Testing Requirements:** Pursuant to 40 CFR 60.4244, the permittee shall conduct all necessary performance tests following the procedures in 40 CFR 60.4244(a) through (f), as follows: a. Each performance test must be conducted within ten (10) percent of 100 percent peak (or the highest achievable) load and according to the requirements in 40 CFR 60.8 and under the specific conditions that are specified by Table 2 to 40 CFR 60, Subpart JJJJ. b. The permittee shall not conduct performance tests during periods of startup, shutdown, or malfunction, as specified in 40 CFR 60.8(c). If the engine is non-operational, the permittee does not need to startup the engine solely to conduct a performance test; however, the permittee shall conduct the performance test immediately upon startup of the engine. c. The permittee shall conduct three (3) separate test runs for each performance test, as specified in 40 CFR 60.8(f). Each test run shall be conducted within 10 percent of 100 percent peak (or the highest achievable) load and last at least 1 hour. d. To determine compliance with the NOX mass per unit output emission limitation, convert the concentration of NOX in the engine exhaust using Equation 1 in 40 CFR 60.4244(d). e. To determine compliance with the CO mass per unit output emission limitation, convert the concentration of CO in the engine exhaust using Equation 2 in 40 CFR 60.4244(e). f. When calculating emissions of VOC, emissions of formaldehyde should not be included. To determine compliance with the VOC mass per unit output emission limitation, convert the concentration of VOC in the engine exhaust using Equation 3 in 40 CFR 60.4244(f). g. If the permittee chooses to measure VOC emissions using either Method 18 of 40 CFR Part 60, Appendix A, or Method 320 of 40 CFR Part 63, Appendix A, then they have the option of correcting the measured VOC emissions to account for the potential differences in measured values between these methods and Method 25A. The results from Method 18 and Method 320 can be corrected for response factor differences using Equations 4 and 5 as provided in 40 CFR 60.4244(g). The corrected VOC concentration can then be placed on a propane basis using Equation 6 as provided in 40 CFR	OK. No changes.	Consistent with OWIN.
SECTION B EP 05 & 06 ApReg 4	**4. Specific Monitoring Requirements:** Pursuant to 40 CFR 60.4237(a), if an emergency stationary SI internal combustion engine does not meet the standards applicable to non-emergency engines, the permittee shall install a non-resettable hour meter.	OK. No changes.	Consistent with OWIN.

Requirement Citation	Requirement Text	Proposed Replacement Permit Language	Explanation of Replacement Permit Language
SECTION B EP 05 & 06 ApReg 5	**5. Specific Recordkeeping Requirements:** a. Pursuant to 40 CFR 60.4245(a), the permittee shall keep records of the information provided below: i. All notifications submitted to comply with 40 CFR 60, Subpart JJJJ and all documentation supporting any notification; ii. Maintenance conducted on the engine; iii. If the engine is a certified engine, documentation from the manufacturer that the engine is certified to meet the emission standards and information as required in 40 CFR parts 90, 1048, 1054, and 1060, as applicable; and iv. If the engine is not a certified engine or is a certified engine operating in a non-certified manner and subject to 40 CFR 60.4243(a)(2), documentation that the engine meets the emission standards. b. Pursuant to 40 CFR 60.4245(b), for stationary SI emergency internal combustion engines that do not meet the standards applicable to non-emergency engines, the permittee shall keep records of the hours of operation of the engine that is recorded through the non-resettable hour meter. The permittee shall document how many hours are spent for emergency operation, including what classified the operation as emergency and how many hours are spent for non-emergency operation. This only applies to Emission Unit 06, as Emission Unit 05 was manufactured prior to July 1, 2010. c. Pursuant to 401 KAR 52:020, Section 10, the permittee shall maintain the following records: i. The type of fuel used and the hours of operation; ii. Hours of operation for maintenance and testing; and	OK. No changes.	Consistent with OWIN.
SECTION B EP 05 & 06 ApReg 6	**6. Specific Reporting Requirements:** a. Pursuant to 40 CFR 60.4245(c), if an engine has not been certified by an engine manufacturer to meet the emission standards in 40 CFR 60.4231, the permittee shall submit an initial notification as required in 40 CFR 60.7(a)(1). The notification must include the information listed below: i. Name and address of the owner or operator; ii. The address of the affected source; iii. Engine information including make, model, engine family, serial number, model year, maximum engine power, and engine displacement; iv. Emission control equipment; and v. Fuel used. b. Pursuant to 40 CFR 60.4245(d), the permittee shall submit a copy of each performance test as conducted in 40 CFR 60.4244 within 60 days after the test has been completed. c. Pursuant to 40 CFR 63.6645(c), the permittee shall submit an initial notification not later than 120 days after startup of the engine. d. Pursuant to 40 CFR 63.6645(f), the initial notification shall include the information in 40 CFR 63.9(b)(2)(i) through (v), and a statement that the stationary RICE has no additional requirements and explain the basis of the exclusion (for example, that it operates exclusively as an emergency stationary RICE if it has a site rating of more than 500 brake HP located at a major source of HAP emissions).	OK. No changes.	Consistent with OWIN.

Requirement Citation	Requirement Text	Proposed Replacement Permit Language	Explanation of Replacement Permit Language
SECTION B EP 07 ApReg 1	**Emissions Unit: 07** (PC-1 through PC-4) Fugitive Emissions from Piping Components (GR-ST) Station Gas Releases (GR-PL) Pipeline Gas Releases Description: Pipeline equipment component leaks, Station Gas Releases, and Pipeline Gas Releases Gas/Vapor Valves: 1,391 Gas/Vapor Connectors: 8,081 Gas/Vapor Flanges: 1,411 Gas/Vapor Open Ended Lines: 107 Gas Vapor Other: 215 Light Oil Valves: 234 Light Oil Connectors: 710 Light Oil Flanges: 388 Light Oil Open Ended Lines 44 Light Oil Pump Seals: 1 Light Oil Other: 19 Heavy Oil Valves: 563 Heavy Oil Connectors: 2,762 Heavy Oil Flanges: 591 Heavy Oil Open Ended Lines: 27 Heavy Oil Pump Seals: 38 Heavy Oil Other: 41 Water/Oil Coolant Valves: 438 Water/Oil Coolant Connectors: 3,540 Water/Oil Coolant Flanges: 804 Water/Oil Coolant Open Ended Lines: 30 Water/Oil Coolant Pump Seals: 13 Water/Oil Coolant Other: 12 The equipment count listed above reflects an approximate count of the equipment as of the date of issuance of this permit but is not intended to limit the permittee to the exact numbers specified. The permittee may add or remove pipeline equipment without a permit revision as long as the equipment	OK. No changes.	Consistent with OWIN.
SECTION B EP 07 ApReg 1	STATE-ORIGIN REQUIREMENTS: 401 KAR 63:020, Potentially hazardous matter or toxic substances. 1. Operating Limitations: Pursuant to 401 KAR 63:020, Section 3, persons responsible for a source from which hazardous matter or toxic substances may be emitted shall provide the utmost care and consideration, in the handling of these materials, to the potentially harmful effects of the emissions resulting from such activities. The permittee shall not allow any affected facility to emit potentially hazardous matter or toxic substances in such quantities or duration as to be harmful to the health and welfare of humans, animals and plants. Evaluation of such facilities as to adequacy of controls and/or procedures and emission potential will be made on an individual basis by the Division. Compliance Demonstration Method: The source is in compliance with 401 KAR 63:020 based on the rates of emissions of airborne toxics provided in the application submitted by the source. If the permittee alters processes, process rates, material formulations, or any other factor that would result in increased emissions of these previously evaluated airborne toxics, or the emission of airborne toxics not previously evaluated by the Division	OK. No changes.	Consistent with OWIN.
SECTION B EP 07 ApReg 2	2. Emission Limitations: None	OK. No changes.	Consistent with OWIN.
SECTION B EP 07 ApReg 3	3. Testing Requirements: Pursuant to 401 KAR 50:045, Section 1, performance testing using Reference methods specified in 401 KAR 50:015 shall be conducted as required by the Division.	OK. No changes.	Consistent with OWIN.
SECTION B EP 07 ApReg 4	4. Specific Monitoring Requirements: See Section F, Monitoring, Recordkeeping, and Reporting Requirements.	OK. No changes.	Consistent with OWIN.
SECTION B EP 07 ApReg 5	5. Specific Recordkeeping Requirements: See Section F, Monitoring, Recordkeeping, and Reporting Requirements.	OK. No changes.	Consistent with OWIN.

Requirement Citation	Requirement Text	Proposed Replacement Permit Language	Explanation of Replacement Permit Language
SECTION B EP 07 ApReg 6	6. Specific Reporting Requirements: See Section F, Monitoring, Recordkeeping, and Reporting Requirements.	OK. No changes.	Consistent with OWIN.
SECTION C	**SECTION C - INSIGNIFICANT ACTIVITIES** The following listed activities have been determined to be insignificant activities for this source pursuant to 401 KAR 52:020, Section 6. Although these activities are designated as insignificant the permittee must comply with the applicable regulation. Process and emission control equipment at each insignificant activity subject to an opacity standard shall be inspected monthly and a qualitative visible emissions evaluation made. Results of the inspection, evaluation, and any corrective action shall be recorded in a log. Description Generally Applicable Regulation 1. Diesel storage tank, 560 gal None 2. Lube oil storage tank, 8,800 gal None 3. Oily sump water storage tank, 16,920 gal None 4. Glycol/water storage tank, 940 gal 401 KAR 63:020 5. Eight comfort/space heaters, less than 1 mmBtu/hr, each None 6. Two pipeline liquids storage tanks, 1,100 gal, each 401 KAR 63:020 7. Five pipeline liquids storage tanks, 2,480 gal, each 401 KAR 63:020 8. Fugitive emissions from truck loading 401 KAR 63:020 9. Natural gas fired boiler, 150 hp (6.28 mmBtu/hr) 401 KAR 59:015 10. Two HVAC boilers less than 1 mmBtu/hr, each None 11. Two water heaters, less than 1 mmBtu/hr, each 401 KAR 59:010 12. Two ovens, less than 1 mmBtu/hr, each 401 KAR 59:010 13. Oil storage tank, 560 gal None 14. Coolant storage tank, 940 gal 401 KAR 63:020 15. Oily water storage tank, 20,300 gal None 16. Oily water storage tank, 12,690 gal None 17. Parts washer, 0.32 gal/hr (6.84 lb/gal) None	OK. No changes.	Consistent with OWIN.
SECTION D	**SECTION D - SOURCE EMISSION LIMITATIONS AND TESTING REQUIREMENTS** 1. As required by Section 1b of the Cabinet Provisions and Procedures for Issuing Title V Permits incorporated by reference in 401 KAR 52:020, Section 26; compliance with annual emissions and processing limitations contained in this permit, shall be based on emissions and processing rates for any twelve (12) consecutive months. 2. NOx, CO, and VOC emissions, measured by applicable reference methods, or an equivalent or alternative method specified in 40 C.F.R. Chapter I, or by a test method specified in the state implementation plan shall not exceed the respective limitations specified herein.	**SECTION D - SOURCE EMISSION LIMITATION AND TESTING REQUIREMENTS** 1. As required by Section 1b of the Cabinet Provisions and Procedures for Issuing Title V Permits incorporated by reference in 401 KAR 52:020, Section 26; compliance with annual emissions and processing limitations contained in this permit, shall be based on emissions and processing rates for any twelve (12) consecutive months. **2. Source-Wide Emission Limitations:** **a. The total facility-wide emissions of NOx shall not exceed 248.11 tons per year on a twelve month rolling total basis. [401 KAR 52:020, Section 10]** **b. The total facility-wide emissions of CO shall not exceed 130 tons per year on a twelve month rolling total basis. [401 KAR 52:020, Section 10]** **c. The total facility-wide emissions of VOC shall not exceed 112 tons per year on a twelve month rolling total basis. [401 KAR 52:020, Section 10]** **d. The total facility-wide emissions of formaldehyde shall not exceed 9 tons per year on a twelve month rolling total basis. [401 KAR 52:020, Section 10]** **e. The total facility-wide emissions of Total HAP shall not exceed 22.23 tons per year on a twelve month rolling total basis. [401 KAR 52:020, Section 10]**	

Requirement Citation	Requirement Text	parametric monitoring of CO emissions (Frame 3 and Frame 5 units) and NOx emissions (Frame 5 unit only)	Explanation of Replacement Permit Language
SECTION D	Continued….	**3. Compliance with the annual emissions pursuant to 401 KAR 52:020, Section 10, and contained in this permit, shall be based on the sum of the monthly emission rates from each emission point (i.e., Sections B and C but excluding emergency generator(s) usage during emergency situations) during each twelve (12) consecutive month period. For ~~the Frame 3 turbines,~~ the monthly emissions will be based on the fuel usage during each mode of operation, emission factor associated with each mode of operation as submitted in the application, and the control efficiency as determined during the most recent performance test that has been accepted by the Division. The permittee may opt to use the outlet concentration of VOC, CO and formaldehyde (ppmdv) as determined in the most recent performance test approved by the Division and fuel usage to determine the monthly emissions during the modes of operation where the OxyCat is in operation. For the Frame 5 turbine, the monthly emissions will be based on CEMS data.** **~~For periods when the CEMS is down, or CEMS data is unavailable, the monthly emissions for the Frame 5 turbine will be calculated in the same manner as the Frame 3 turbines.~~ The monthly and 12-month rolling totals shall be calculated on the same day of each month, but no more than two (2) weeks after the previous month's end. The permittee shall maintain monthly records, readily accessible to Division personnel upon request, of source wide emissions.** **4. If NOX emission on a 12-month rolling total exceeds 225 tons, then the permittee must begin tracking NOX emissions on a weekly and a 52-week rolling total. The permittee shall calculate the total NOX emissions from the emission sources as described in paragraph 3, of this section for each 7 day period. The source-wide 52-week rolling total of NOX emissions shall then be calculated by adding the current week's NOX emissions to the previous 51 week's NOX emissions.**	For periods when the Frame 3 NOx CEMS is down, or Frame 3 NOx CEMS data are unavailable, the Frame 3 NOx emissions will implement 40 CFR Part 75 data substitution procedures to estimate NOx emissions.
SECTION E	**SECTION E - SOURCE CONTROL EQUIPMENT REQUIREMENTS** Pursuant to 401 KAR 50:055, Section 2(5), at all times, including periods of startup, shutdown and malfunction, owners and operators shall, to the extent practicable, maintain and operate any affected facility including associated air pollution control equipment in a manner consistent with good air pollution control practice for minimizing emissions. Determination of whether acceptable operating and maintenance procedures are being used will be based on information available to the Division which may include, but is not limited to, monitoring results, opacity observations, review of operating and maintenance procedures, and inspection of the source.	OK. No changes.	Consistent with OWIN.
SECTION F.1	**SECTION F - MONITORING, RECORDKEEPING, AND REPORTING REQUIREMENTS** 1. Pursuant to Section 1b-IV-1 of the Cabinet Provisions and Procedures for Issuing Title V Permits incorporated by reference in 401 KAR 52:020, Section 26, when continuing compliance is demonstrated by periodic testing or instrumental monitoring, the permittee shall compile records of required monitoring information that include: a. Date, place as defined in this permit, and time of sampling or measurements; b. Analyses performance dates; c. Company or entity that performed analyses; d. Analytical techniques or methods used; e. Analyses results; and f. Operating conditions during time of sampling or measurement.	OK. No changes.	
SECTION F.2	2. Records of all required monitoring data and support information, including calibrations, maintenance records, and original strip chart recordings, and copies of all reports required by the Division for Air Quality, shall be retained by the permittee for a period of five (5) years and shall be made available for inspection upon request by any duly authorized representative of the Division for Air Quality [Sections 1b-IV-2 and 1a-8 of the Cabinet Provisions and Procedures for Issuing Title V Permits incorporated by reference in 401 KAR 52:020, Section 26].	OK. No changes.	

Requirement Citation	Requirement Text	Proposed Replacement Permit Language	Explanation of Replacement Permit Language
SECTION F.3	3. In accordance with the requirements of 401 KAR 52:020, Section 3(1)h, the permittee shall allow authorized representatives of the Cabinet to perform the following during reasonable times: a. Enter upon the premises to inspect any facility, equipment (including air pollution control equipment), practice, or operation; b. To access and copy any records required by the permit: c. Sample or monitor, at reasonable times, substances or parameters to assure compliance with the permit or any applicable requirements. Reasonable times are defined as during all hours of operation, during normal office hours; or during an emergency.	OK. No changes.	
SECTION F.4	4. No person shall obstruct, hamper, or interfere with any Cabinet employee or authorized representative while in the process of carrying out official duties. Refusal of entry or access may constitute grounds for permit revocation and assessment of civil penalties.	OK. No changes.	
SECTION F.5	5. Summary reports of any monitoring required by this permit shall be submitted to the Regional Office listed on the front of this permit at least every six (6) months during the life of this permit, unless otherwise stated in this permit. For emission units that were still under construction or which had not commenced operation at the end of the 6-month period covered by the report and are subject to monitoring requirements in this permit, the report shall indicate that no monitoring was performed during the previous six months because the emission unit was not in operation [Sections 1b-V-1 of the Cabinet Provisions and Procedures for Issuing Title V Permits incorporated by reference in 401 KAR	OK. No changes.	
SECTION F.6	6. The semi-annual reports are due by January 30th and July 30th of each year. All reports shall be certified by a responsible official pursuant to 401 KAR 52:020, Section 23. If continuous emission and opacity monitors are required by regulation or this permit, data shall be reported in accordance with the requirements of 401 KAR 59:005, General Provisions, Section 3(3). All deviations from permit requirements shall be clearly identified in the reports.	OK. No changes.	
SECTION F.7	7. In accordance with the provisions of 401 KAR 50:055, Section 1, the owner or operator shall notify the Regional Office listed on the front of this permit concerning startups, shutdowns, or malfunctions as follows: a. When emissions during any planned shutdowns and ensuing startups will exceed the standards, notification shall be made no later than three (3) days before the planned shutdown, or immediately following the decision to shut down, if the shutdown is due to events which could not have been foreseen three (3) days before the shutdown. b. When emissions due to malfunctions, unplanned shutdowns and ensuing startups are or may be in excess of the standards, notification shall be made as promptly as possible by telephone (or other electronic media) and shall be submitted in writing upon request.	OK. No changes.	
SECTION F.8	8. The owner or operator shall report emission related exceedances from permit requirements including those attributed to upset conditions (other than emission exceedances covered by Section F.7 above) to the Regional Office listed on the front of this permit within 30 days. Deviations from permit requirements, including those previously reported under F.7 above, shall be included in the semiannual report required by F.6 [Sections 1b-V, 3 and 4 of the Cabinet Provisions and Procedures for Issuing Title V Permits incorporated by reference in 401 KAR 52:020, Section 26].	OK. No changes.	
SECTION F.9	9. Pursuant to 401 KAR 52:020, Title V permits, Section 21, the permittee shall annually certify compliance with the terms and conditions contained in this permit, by completing and returning a Compliance Certification Form (DEP 7007CC) (or an alternative approved by the regional office) to the Regional Office listed on the front of this permit and the U.S. EPA in accordance with the following requirements: a. Identification of the term or condition; b. Compliance status of each term or condition of the permit; c. Whether compliance was continuous or intermittent; d. The method used for determining the compliance status for the source, currently and over the reporting period. e. For an emissions unit that was still under construction or which has not commenced operation at the end of the 12-month period covered by the annual compliance certification, the permittee shall indicate that the unit is under construction and that compliance with any applicable requirements will be demonstrated within the timeframes specified in the permit. f. The certification shall be submitted by January 30th of each year. Annual compliance certifications shall be sent to the following addresses: Division for Air Quality London Regional Office 875 S Main Street London, KY 40741 U.S. EPA Region 4 Air Enforcement Branch Atlanta Federal Center 61 Forsyth St. SW	OK. No changes.	

Requirement Citation	Requirement Text	Proposed Replacement Permit Language	Explanation of Replacement Permit Language
SECTION F.10	10. In accordance with 401 KAR 52:020, Section 22, the permittee shall provide the Division with all information necessary to determine its subject emissions within 30 days of the date the Kentucky Emissions Inventory System (KYEIS) emissions survey is mailed to the permittee.	OK. No changes.	
SECTION G.1.a	**SECTION G - GENERAL PROVISIONS** 1. General Compliance Requirements a. The permittee shall comply with all conditions of this permit. Noncompliance shall be a violation of 401 KAR 52:020, Section 3(1)(b), and a violation of Federal Statute 42 USC 7401 through 7671q (the Clean Air Act). Noncompliance with this permit is grounds for enforcement action including but not limited to termination, revocation and reissuance, revision or denial of a permit [Section 1a-3 of the Cabinet Provisions and Procedures for Issuing Title V Permits incorporated by reference in 401 KAR 52:020, Section 26].	OK. No changes.	
SECTION G.1.b	b. The filing of a request by the permittee for any permit revision, revocation, reissuance, or termination, or of a notification of a planned change or anticipated noncompliance, shall not stay any permit condition [Section 1a-6 of the Cabinet Provisions and Procedures for Issuing Title V Permits incorporated by reference in 401 KAR 52:020, Section 26].	OK. No changes.	
SECTION G.1.c	c. This permit may be revised, revoked, reopened and reissued, or terminated for cause in accordance with 401 KAR 52:020, Section 19. The permit will be reopened for cause and revised accordingly under the following circumstances: (1) If additional applicable requirements become applicable to the source and the remaining permit term is three (3) years or longer. In this case, the reopening shall be completed no later than eighteen (18) months after promulgation of the applicable requirement. A reopening shall not be required if compliance with the applicable requirement is not required until after the date on which the permit is due to expire, unless this permit or any of its terms and conditions have been extended pursuant to 401 KAR 52:020, Section 12; (2) The Cabinet or the United States Environmental Protection Agency (U. S. EPA) determines that the permit must be revised or revoked to assure compliance with the applicable requirements; (3) The Cabinet or the U. S. EPA determines that the permit contains a material mistake or that inaccurate statements were made in establishing the emissions standards or other terms or conditions of the permit; (4) New requirements become applicable to a source subject to the Acid Rain Program. Proceedings to reopen and reissue a permit shall follow the same procedures as apply to initial permit issuance and shall affect only those parts of the permit for which cause to reopen exists. Reopenings shall be made as expeditiously as practicable. Reopenings shall not be initiated before a notice of intent to reopen is provided to the source by the Division, at least thirty (30) days in advance of the date the permit is to be reopened, except that the Division may provide a shorter time period in the case of an emergency.	OK. No changes.	
SECTION G.1.d	d. The permittee shall furnish information upon request of the Cabinet to determine if cause exists for modifying, revoking and reissuing, or terminating the permit; or to determine compliance with the conditions of this permit [Sections 1a- 7 and 8 of the Cabinet Provisions and Procedures for Issuing Title V Permits incorporated by reference in 401 KAR 52:020, Section 26].	OK. No changes.	
SECTION G.1.e	e. Emission units described in this permit shall demonstrate compliance with applicable requirements if requested by the Division [401 KAR 52:020, Section 3(1)(c)].	OK. No changes.	
SECTION G.1.f	f. The permittee, upon becoming aware that any relevant facts were omitted or incorrect information was submitted in the permit application, shall promptly submit such supplementary facts or corrected information to the permitting authority [401 KAR 52:020, Section 7(1)].	OK. No changes.	
SECTION G.1.g	g. Any condition or portion of this permit which becomes suspended or is ruled invalid as a result of any legal or other action shall not invalidate any other portion or condition of this permit [Section 1a-14 of the Cabinet Provisions and Procedures for Issuing Title V Permits incorporated by reference in 401 KAR 52:020, Section 26].	OK. No changes.	
SECTION G.1.h	h. The permittee shall not use as a defense in an enforcement action the contention that it would have been necessary to halt or reduce the permitted activity in order to maintain compliance [Section 1a-4 of the Cabinet Provisions and Procedures for Issuing Title V Permits incorporated by reference in 401 KAR 52:020, Section 26].	OK. No changes.	
SECTION G.1.i	i. All emission limitations and standards contained in this permit shall be enforceable as a practical matter. All emission limitations and standards contained in this permit are enforceable by the U.S. EPA and citizens except for those specifically identified in this permit as state-origin requirements. [Section 1a-15 of the Cabinet Provisions and Procedures for Issuing Title V Permits incorporated by reference in 401 KAR 52:020, Section 26].	OK. No changes.	

Requirement Citation	Requirement Text	Proposed Replacement Permit Language	Explanation of Replacement Permit Language
SECTION G.1.j	j. This permit shall be subject to suspension if the permittee fails to pay all emissions fees within 90 days after the date of notice as specified in 401 KAR 50:038, Section 3(6) [Section 1a-10 of the Cabinet Provisions and Procedures for Issuing Title V Permits incorporated by reference in 401 KAR 52:020, Section 26].	OK. No changes.	
SECTION G.1.k	k. Nothing in this permit shall alter or affect the liability of the permittee for any violation of applicable requirements prior to or at the time of permit issuance [401 KAR 52:020, Section 11(3) 2].	OK. No changes.	
SECTION G.1.l	l. This permit does not convey property rights or exclusive privileges [Section 1a-9 of the Cabinet Provisions and Procedures for Issuing Title V Permits incorporated by reference in 401 KAR 52:020, Section 26].	OK. No changes.	
SECTION G.1.m	m. Issuance of this permit does not relieve the permittee from the responsibility of obtaining any other permits, licenses, or approvals required by the Cabinet or any other federal, state, or local agency.	OK. No changes.	
SECTION G.1.n	n. Nothing in this permit shall alter or affect the authority of U.S. EPA to obtain information pursuant to Federal Statute 42 USC 7414, Inspections, monitoring, and entry [401 KAR 52:020, Section 11(3) 4.].	OK. No changes.	
SECTION G.1.o	o. Nothing in this permit shall alter or affect the authority of U.S. EPA to impose emergency orders pursuant to Federal Statute 42 USC 7603, Emergency orders [401 KAR 52:020, Section 11(3) 1.].	OK. No changes.	
SECTION G.1.p	p. This permit consolidates the authority of any previously issued PSD, NSR, or Synthetic Minor source preconstruction permit terms and conditions for various emission units and incorporates all requirements of those existing permits into one single permit for this source.	OK. No changes.	
SECTION G.1.q	q. Pursuant to 401 KAR 52:020, Section 11, a permit shield shall not protect the owner or operator from enforcement actions for violating an applicable requirement prior to or at the time of permit issuance. Compliance with the conditions of this permit shall be considered compliance with: (1) Applicable requirements that are included and specifically identified in this permit; and (2) Non-applicable requirements expressly identified in this permit.	OK. No changes.	
SECTION G.2.	**2. Permit Expiration and Reapplication Requirements** a. This permit shall remain in effect for a fixed term of five (5) years following the original date of issue. Permit expiration shall terminate the source's right to operate unless a timely and complete renewal application has been submitted to the Division at least six (6) months prior to the expiration date of the permit. Upon a timely and complete submittal, the authorization to operate within the terms and conditions of this permit, including any permit shield, shall remain in effect beyond the expiration date, until the renewal permit is issued or denied by the Division [401 KAR 52:020, Section 12]. b. The authority to operate granted shall cease to apply if the source fails to submit additional information requested by the Division after the completeness determination has been made on any application, by whatever deadline the Division sets [401 KAR 52:020, Section 8(2)].	OK. No changes.	
SECTION G.3.	**3. Permit Revisions** a. A minor permit revision procedure may be used for permit revisions involving the use of economic incentive, marketable permit, emission trading, and other similar approaches, to the extent that these minor permit revision procedures are explicitly provided for in the State Implementation Plan (SIP) or in applicable requirements and meet the relevant requirements of 401 KAR 52:020, Section 14(2). b. This permit is not transferable by the permittee. Future owners and operators shall obtain a new permit from the Division for Air Quality. The new permit may be processed as an administrative amendment if no other change in this permit is necessary, and provided that a written agreement containing a specific date for transfer of permit responsibility coverage and liability between the current and new permittee has been submitted to the permitting authority within ten (10) days following the transfer.	OK. No changes.	

Requirement Citation	Requirement Text	Proposed Replacement Permit Language	Explanation of Replacement Permit Language
SECTION G.4.a	**4. Construction, Start-Up, and Initial Compliance Demonstration Requirements** Pursuant to a duly submitted application the Kentucky Division for Air Quality hereby authorizes the construction of the equipment described herein, and listed below, in accordance with the terms and conditions of this permit: • Addition of clean burn technology and Oxidation Catalyst (OxCat) on the three (3) Clark HBA-8T engines under Emission Unit 02; • Addition of Selective Catalytic Reduction (SCR) and OxCat on the two (2) Frame 3 turbines under Emission Unit 03; and • Addition of OxCat on the Frame 5 turbine under Emission Unit 04. a. Construction of any process and/or air pollution control equipment authorized by this permit shall be conducted and completed only in compliance with the conditions of this permit.	OK. No changes.	
SECTION G.4.b	b. Within thirty (30) days following commencement of construction and within fifteen (15) days following start-up and attainment of the maximum production rate specified in the permit application, or within fifteen (15) days following the issuance date of this permit, whichever is later, the permittee shall furnish to the Regional Office listed on the front of this permit in writing, with a copy to the Field Office Branch of the Frankfort Central Office, notification of the following: (1) The date when construction commenced. (2) The date of start-up of the affected facilities listed in this permit. (3) The date when the maximum production rate specified in the permit application was achieved.	OK. No changes.	
SECTION G.4.c	c. Pursuant to 401 KAR 52:020, Section 3(2), unless construction is commenced within eighteen (18) months after the proposed permit is issued, or begins but is discontinued for a period of eighteen (18) months or is not completed within a reasonable timeframe then the construction and operating authority granted by this permit for those affected facilities for which construction was not completed shall immediately become invalid. Upon written request, the Cabinet may extend these time periods if the source shows good cause.	OK. No changes.	
SECTION G.4.d	d. Pursuant to 401 KAR 50:055, Section 2(1)(a), an owner or operator of any affected facility subject to any standard within the administrative regulations of the Division for Air Quality shall demonstrate compliance with the applicable standard(s) within sixty (60) days after achieving the maximum production rate at which the affected facility will be operated, but not later than 180 days after initial start-up of such facility. Pursuant to 401 KAR 52:020, Section 3(3)(c), sources that have not demonstrated compliance within the timeframes prescribed in 401 KAR 50:055, Section 2(1)(a), shall operate the affected facility only for purposes of demonstrating compliance unless authorized under an approved compliance plan or an order of the cabinet.	OK. No changes.	
SECTION G.4.e	e. This permit shall allow time for the initial start-up, operation, and compliance demonstration of the affected facilities listed herein. However, within sixty (60) days after achieving the maximum production rate at which the affected facilities will be operated but not later than 180 days after initial start-up of such facilities, the permittee shall conduct a performance demonstration on the affected facilities in accordance with 401 KAR 50:055, General compliance requirements. Testing must also be conducted in accordance with General Provisions G.5 of this permit.	OK. No changes.	
SECTION G.4.f	f. Terms and conditions in this permit established pursuant to the construction authority of 401 KAR 51:017 or 401 KAR 51:052 shall not expire.	OK. No changes.	
SECTION G.5.a	**5. Testing Requirements** a. Pursuant to 401 KAR 50:045, Section 2, a source required to conduct a performance test shall submit a completed Compliance Test Protocol form, DEP form 6028, or a test protocol a source has developed for submission to other regulatory agencies, in a format approved by the cabinet, to the Division's Frankfort Central Office a minimum of sixty (60) days prior to the scheduled test date. Pursuant to 401 KAR 50:045, Section 7, the Division shall be notified of the actual test date at least thirty (30) days prior to the test.	OK. No changes.	
SECTION G.5.b	b. Pursuant to 401 KAR 50:045, Section 5, in order to demonstrate that a source is capable of complying with a standard at all times, any required performance test shall be conducted under normal conditions that are representative of the source's operations and create the highest rate of emissions. If [When] the maximum production rate represents a source's highest emissions rate and a performance test is conducted at less than the maximum production rate, a source shall be limited to a production rate of no greater than 110 percent of the average production rate during the performance tests. If and when the facility is capable of operation at the rate specified in the application, the source may retest to demonstrate compliance at the new production rate. The Division for Air Quality may waive these requirements on a case-by-case basis if the source demonstrates to the Division's satisfaction that the source is in compliance with all applicable requirements.	OK. No changes.	
SECTION G.5.c	c. Results of performance test(s) required by the permit shall be submitted to the Division by the source or its representative within forty-five days or sooner if required by an applicable standard, after the completion of the fieldwork.	OK. No changes.	

Requirement Citation	Requirement Text	Proposed Replacement Permit Language	Explanation of Replacement Permit Language
SECTION G.6.a	**6. Acid Rain Program Requirements** a. If an applicable requirement of Federal Statute 42 USC 7401 through 7671q (the Clean Air Act) is more stringent than an applicable requirement promulgated pursuant to Federal Statute 42 USC 7651 through 7651o (Title IV of the Act), both provisions shall apply, and both shall be state and federally enforceable.	OK. No changes.	
SECTION G.6.b	b. The permittee shall comply with all applicable requirements and conditions of the Acid Rain Permit and the Phase II permit application (including the Phase II NOx compliance plan and averaging plan, if applicable) incorporated into the Title V permit issued for this source. The source shall also comply with all requirements of any revised or future acid rain permit(s) issued to this source.	OK. No changes.	
SECTION G.7.a	**7. Emergency Provisions** a. Pursuant to 401 KAR 52:020, Section 24(1), an emergency shall constitute an affirmative defense to an action brought for the noncompliance with the technology-based emission limitations if the permittee demonstrates through properly signed contemporaneous operating logs or relevant evidence that: (1) An emergency occurred and the permittee can identify the cause of the emergency; (2) The permitted facility was at the time being properly operated; (3) During an emergency, the permittee took all reasonable steps to minimize levels of emissions that exceeded the emissions standards or other requirements in the permit; and (4) Pursuant to 401 KAR 52:020, 401 KAR 50:055, and KRS 224.1-400, the permittee notified the Division as promptly as possible and submitted written notice of the emergency to the Division when emission limitations were exceeded due to an emergency. The notice shall include a description of the emergency, steps taken to mitigate emissions, and corrective actions taken. (5) This requirement does not relieve the source of other local, state or federal notification requirements.	OK. No changes.	
SECTION G.7.b	b. Emergency conditions listed in General Condition G.7.a above are in addition to any emergency or upset provision(s) contained in an applicable requirement [401 KAR 52:020, Section 24(3)].	OK. No changes.	
SECTION G.7.c	c. In an enforcement proceeding, the permittee seeking to establish the occurrence of an emergency shall have the burden of proof [401 KAR 52:020, Section 24(2)].	OK. No changes.	
SECTION G.8.a	**8. Ozone Depleting Substances** a. The permittee shall comply with the standards for recycling and emissions reduction pursuant to 40 CFR 82, Subpart F, except as provided for Motor Vehicle Air Conditioners (MVACs) in Subpart B: (1) Persons opening appliances for maintenance, service, repair, or disposal shall comply with the required practices contained in 40 CFR 82.156. (2) Equipment used during the maintenance, service, repair, or disposal of appliances shall comply with the standards for recycling and recovery equipment contained in 40 CFR 82.158. (3) Persons performing maintenance, service, repair, or disposal of appliances shall be certified by an approved technician certification program pursuant to 40 CFR 82.161. (4) Persons disposing of small appliances, MVACs, and MVAC-like appliances (as defined at 40 CFR 82.152) shall comply with the recordkeeping requirements pursuant to 40 CFR 82.166 (5) Persons owning commercial or industrial process refrigeration equipment shall comply with the leak repair requirements pursuant to 40 CFR 82.156. (6) Owners/operators of appliances normally containing 50 or more pounds of refrigerant shall keep records of refrigerant purchased and added to such appliances pursuant to 40 CFR 82.166.	OK. No changes.	
SECTION G.8.b	b. If the permittee performs service on motor (fleet) vehicle air conditioners containing ozone-depleting substances, the source shall comply with all applicable requirements as specified in 40 CFR 82, Subpart B, Servicing of Motor Vehicle Air Conditioners.	OK. No changes.	
SECTION G.9.a	**9. Risk Management Provisions** a. The permittee shall comply with all applicable requirements of 401 KAR Chapter 68, Chemical Accident Prevention, which incorporates by reference 40 CFR Part 68, Risk Management Plan provisions. If required, the permittee shall comply with the Risk Management Program and submit a Risk Management Plan to: RMP Reporting Center P.O. Box 10162 Fairfax, VA 22038	OK. No changes.	
SECTION G.9.b	b. If requested, submit additional relevant information to the Division or the U.S. EPA.	OK. No changes.	

Requirement Citation	Requirement Text	Proposed Replacement Permit Language	Explanation of Replacement Permit Language
SECTION H EP 01 & 02 ApReg 1	**SECTION H - ALTERNATE OPERATING SCENARIOS** The alternate operating scenarios set forth below have been approved by the Division based on information supplied with the application and during the application review process. The terms and conditions of each alternate operating scenario have been developed to ensure compliance with the applicable regulations. The permittee, when making a change from one operating scenario to another, shall record contemporaneously in a log at the permitted facility a record of the scenario under which the facility is operating. The permit shield, as provided in Section G shall extend to each alternate operating scenario set forth in this Section. All conditions not specified under an alternate operating scenario shall remain unchanged from their permit values or requirements. The requirements contained in this alternate operating scenario for Emission Units 01-04 shall remain in effect until the control devices for Emission Units 02-04 have been installed. These control devices (OxCat and Selective Catalytic Reduction), are part of the bi-directional flow project, as described in the significant revision application submitted to the Division on April 6, 2016. At the time that the control devices are installed, the requirements for Emission Units 01-04 in Section B of this permit shall be met. Emissions Unit: 01 (01-07) Seven Compressor Engines Process 001 Reciprocating Internal Combustion Engine (Plant ID 20901) Process 002 Reciprocating Internal Combustion Engine (Plant ID 20902) Process 003 Reciprocating Internal Combustion Engine (Plant ID 20903) Process 004 Reciprocating Internal Combustion Engine (Plant ID 20904) Process 005 Reciprocating Internal Combustion Engine (Plant ID 20905) Process 006 Reciprocating Internal Combustion Engine (Plant ID 20906) Process 007 Reciprocating Internal Combustion Engine (Plant ID 20907) Description: 1,760 hp Clark HBA-8 Engine Type: 2 stroke lean burn Fuel: Natural gas Maximum rating: 16.60 MMBTU/hr, each	**None.**	Alternate scenarios no longer applicable. Remove all conditions under Section H.
SECTION H EP 01 & 02 ApReg 1	Emissions Unit: 02 (08-10) Three Compressor Engines Process 001 Reciprocating Internal Combustion Engine (Plant ID 20908) Process 002 Reciprocating Internal Combustion Engine (Plant ID 20909) Process 003 Reciprocating Internal Combustion Engine (Plant ID 20910) Description: 2,050 hp Clark HBA-8T Engine Type: 2 stroke lean burn Fuel: Natural gas Maximum rating: 18.68 MMBTU/hr, each Construction commenced: 1957 APPLICABLE REGULATIONS: 401 KAR 63:002, incorporating by reference 40 CFR 63, Subpart ZZZZ, National Emissions Standards for Hazardous Air Pollutants for Stationary Reciprocating Internal Combustion Engines. 1. Operating Limitations: Pursuant to 401 KAR 52:020, Section 10, the permittee shall conduct routine operation and maintenance procedures to ensure optimum engine operations. Compliance Demonstration Method: The permittee shall keep records of all routine maintenance performed on each engine under Emission Units 01 and 02.	**None.**	Alternate scenarios no longer applicable. Remove all conditions under Section H.
SECTION H EP 01 & 02 ApReg 2	2. Emission Limitations: None	**Leave blank**	Alternate scenarios no longer applicable. Remove all conditions under Section H.
SECTION H EP 01 & 02 ApReg 3	3. Testing Requirements: None	**Leave blank**	Alternate scenarios no longer applicable. Remove all conditions under Section H.
SECTION H EP 01 & 02 ApReg 4	4. Specific Monitoring Requirements: None	**Leave blank**	Alternate scenarios no longer applicable. Remove all conditions under Section H.

Requirement Citation	Requirement Text	Proposed Replacement Permit Language	Explanation of Replacement Permit Language
SECTION H EP 01 & 02 ApReg 5	5. Specific Recordkeeping Requirements: Pursuant to 401 KAR 52:020, Section 10, the permittee shall record the amount of natural gas burned on an annual basis.	**Leave blank**	Alternate scenarios no longer applicable. Remove all conditions under Section H.
SECTION H EP 01 & 02 ApReg 6	6. Specific Reporting Requirements: None	**Leave blank**	Alternate scenarios no longer applicable. Remove all conditions under Section H.
SECTION H EP 01 & 02 ApReg 7	7. Specific Control Equipment Operating Conditions: None	**Leave blank**	Alternate scenarios no longer applicable. Remove all conditions under Section H.
SECTION H EP 03 & 04 ApReg 1	Emissions Unit: 03 (11-12) Two Gas Turbines Process 001 GE Frame 3 Gas Combustion Turbine (Plant ID 21001) Process 002 GE Frame 3 Gas Combustion Turbine (Plant ID 21002) Description: 8,000 hp turbines Fuel: Natural gas Maximum rating: 83.51 MMBTU/hr, each Construction commenced: 1961 Emissions Unit: 04 (13) Gas Turbine Description: GE Frame 5 Gas Combustion 18,500 hp Turbine (Plant ID 21003) Fuel: Natural gas Maximum rating: 183.82 MMBTU/hr Construction commenced: 1969 APPLICABLE REGULATIONS: 401 KAR 63.002, incorporating by reference 40 CFR 63, Subpart YYYY, National Emission Standards for Hazardous Air Pollutants for Stationary Combustion Turbines. 1. Operating Limitations: Pursuant to 401 KAR 52:020, Section 10, the permittee shall conduct routine operation and maintenance procedures to ensure optimum engine operations. Compliance Demonstration Method: The permittee shall keep records of all routine maintenance performed on each turbine under Emission Units 03 and 04.	**None.**	Alternate scenarios no longer applicable. Remove all conditions under Section H.
SECTION H EP 03 & 04 ApReg 2	2. Emission Limitations: None	**Leave blank**	Alternate scenarios no longer applicable. Remove all conditions under Section H.
SECTION H EP 03 & 04 ApReg 3	3. Testing Requirements: None	**Leave blank**	Alternate scenarios no longer applicable. Remove all conditions under Section H.
SECTION H EP 03 & 04 ApReg 4	4. Specific Monitoring Requirements: None	**Leave blank**	Alternate scenarios no longer applicable. Remove all conditions under Section H.
SECTION H EP 03 & 04 ApReg 5	5. Specific Recordkeeping Requirements: Pursuant to 401 KAR 52:020, Section 10, the permittee shall record the amount of natural gas burned on an annual basis.	**Leave blank**	Alternate scenarios no longer applicable. Remove all conditions under Section H.
SECTION H EP 03 & 04 ApReg 6	6. Specific Reporting Requirements: None	**Leave blank**	Alternate scenarios no longer applicable. Remove all conditions under Section H.
SECTION I	SECTION I - COMPLIANCE SCHEDULE None	**Leave blank**	Alternate scenarios no longer applicable. Remove all conditions under Section H.

TITLE V SIGNIFICANT PERMIT REVISION APPLICATION



TEXAS EASTERN TRANSMISSION, LP
Danville Compressor Station
Danville, Kentucky

Prepared By:

TRINITY CONSULTANTS
909 Wright's Summit Pkwy, Suite 230
Covington, Kentucky 41011

July 2025

Project 252101.0021

Trinity Consultants

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1. APPLICATION OVERVIEW

1.1 Introduction

Texas Eastern Transmission, LP (Texas Eastern) owns and operates a natural gas compressor station located near Danville, Lincoln County, Kentucky (AI 44065). The Danville Compressor Station (Danville Station) compresses and transports natural gas to various parts of the country via transmission pipelines. Line pressure must be maintained in the transmission pipelines to ensure natural gas moves at sufficient volumes for reliable service at all delivery points. The Danville Station employs three (3) combustion turbine-driven centrifugal compressors and ten (10) reciprocating internal combustion engine (RICE)-driven compressors, as well as various ancillary support emission units (EUs).

Texas Eastern upgraded the Danville Station via changes authorized by a 2016 significant permit revision application, equipping two of the existing combustion turbines with selective catalytic reduction (SCR) control devices for nitrogen oxides (NO_X) mitigation and adding oxidation catalyst (OxCat) to all three turbines for carbon monoxide (CO) and formaldehyde reduction when the project was complete. The project also included replacing the existing wet gas seals with dry gas seals in the centrifugal compressors associated with two (2) of the combustion turbines and adding clean burn engine technology and OxCat to three (3) of the existing RICE-driven compressors.

The Danville Station is regulated as a "major source" under 401 KAR 52:020 and operates under Title V Operating Permit No. V-16-056 issued on April 3, 2016. V-16-056 has an expiration date of April 3, 2022; however, a Title V renewal application was submitted on October 1, 2021, prior to the renewal application deadline of October 3, 2021.

Texas Eastern is submitting this significant revision application to authorize construction of three new combustion turbines (and support operations) for natural gas compression to replace the existing combustion turbines, RICE units, and various existing support operations. This project is herein referred to as the "TEM IV project." Texas Eastern has provided all the required elements of a significant revision application as specified in 401 KAR 52:020 Sections 4 and 5, as summarized below:

- Section 2 provides a description of the project;
- Section 3 contains a description of the emission calculation methodologies and the corresponding updates to the potential to emit (PTE) calculations;
- Section 4 contains a regulatory applicability analysis;
- Appendix A contains an area map and plot plan;
- Appendix B contains detailed emissions calculations;
- Appendix C contains a complete set of DEP 7007 series forms AI, A, B, EE, N, DD, and V; and
- Appendix D includes suggested permit revisions.

2. FACILITY DESCRIPTION AND PTE UPDATES

2.1 Existing Facility Description

The Danville Station is located near Danville, in Lincoln County, Kentucky. Lincoln County is classified as an area of attainment for all criteria pollutants.

Currently, the Danville Station consists of the following significant EUs:

Natural Gas Compression Units

- 7 Clark HBA-8 natural gas (NG)-fired reciprocating engines – 1,760 HP (**EU 01**)
  - Uncontrolled with annual fuel limitation
- 3 Clark HBA-8T NG-fired reciprocating engines 2,050 HP (**EU 02**)
  - Equipped with clean-burn technologies with OxCat control system
- 2 GE Frame 3 NG-fired combustion turbines – 8,000 HP (**EU 03**)
  - Equipped with SCR and OxCat control systems
- 1 GE Frame 5 natural gas-fired combustion turbine – 18,500 HP (**EU 04**)
  - Equipped with OxCat control system

All the reciprocating engines and combustion turbines (EU 01 through EU 06) exclusively burn pipeline quality natural gas from Texas Eastern's pipeline network.

Emergency Units

- 1 Caterpillar G3516 emergency generator – 1,462 HP (**EU 05**)
- 1 Caterpillar G3512 emergency generator – 1,102 HP (**EU 06**)

The emergency generators are maintained on-site and used to generate emergency power in the event of a loss of electrical power from the utility grid.

Ancillary Support Operations

- Fugitive Emissions from Piping Components (PC-1 through PC-4), Station Gas Releases (GR-ST), and Pipeline Gas Releases (GR-PL) (**EU 07**)
- Additional support equipment that are designated as insignificant activities (IAs) such as various organic liquid storage tanks and separator vessels, truck loading, a parts washer, a small natural gas-fired boiler, and several natural gas-fired heat exchangers with firing rates of less than 1 million British thermal units per hour (MMBtu/hr).

Pipeline liquids are collected from various station operations and stored in a tank until they are transported by tank truck off-site. Routine station operations also result in fugitive emissions from piping equipment components (**EU 07**). Periodically, blowdown and purges of natural gas lines and equipment are required because of normal operations, process startups/shutdowns, routine maintenance, and/or emergency venting (**EU 07**). These gas releases are vented through a set of separator vessels.

2.2 TEM IV Project Changes

As part of this TEM IV project Title V significant revision application, Texas Eastern is proposing the following changes the Danville Station.

- **Remove** the following emission sources upon completion of the TEM IV project:
  - 10 natural gas-fired, reciprocating engines (**EU 01** and **EU 02**)
  - 3 natural gas-fired, combustion turbines (**EU 03** and **EU 04**)
  - 2 natural gas-fired emergency engine generators (**EU 05** and **EU 06**)
  - Existing separator vessels, storage tanks, truck loading areas (IAs)[1]

- **Add** the following new emission sources proposed under the TEM IV project:
  - 3 natural gas-fired Solar Titan 130 turbines – 18,000 HP (proposed **EU08-10**) equipped with the following control devices:
    - Dry Low NOx Burners (SoLoNOx) achieving 9 parts per million by volume (ppm_v) NO_X concentration
    - OxCat to reduce CO, volatile organic compound (VOC), and hazardous air pollutant (HAP) emissions
  - 1 Waukesha VGF48SE emergency engine generator – 1,100 HP (proposed **EU11**)
  - 3 natural gas-fired fuel gas heaters – 1.2 MMBtu/hr each (proposed **EU12**)
  - 6 pipeline liquids storage tanks/separator vessels, including the following:
    - One 2,640-gallon pipeline liquids tank, V05 (proposed **EU13**), including as a significant emission unit due to the need for legal and practical enforceable limits to avoid federal regulatory requirements as described elsewhere in this report; and
    - Five vessels (<500 gallons each) (IAs)
  - One 0.004 MMBtu/hr pipeline heater (IA) and two new truck loading areas (IAs)

- **Modify** the emission characteristics / operating parameters for the following emission sources upon completion of the TEM IV project:
  - Gas Releases (**EU 07**)
  - Fugitive Piping Components (**EU 07**)

2.3 Emissions Calculation Methodologies

2.3.1 Solar Titan 130 Turbine Emissions

To calculate emissions from the newly constructed Solar® Titan 130 natural gas-fired compressor turbines, emission factors were obtained from various sources. The turbine utilizes an oxidation catalyst to reduce potential emissions of CO and organic emissions and utilizes SoLoNOX™ technology to reduce emissions of NO_X. Table 2-1 provides a summary of the uncontrolled emission factors used for each pollutant during normal steady-state operation for the turbine.

[1] Due to timing of the project, Texas Eastern is not indicating any existing IAs as shutdown as part of this permit application.

Table 2-1. Turbine Pre-Control Emission Factors – Normal Operations

Pollutant	Emission Factor*	Source
NO_X	9 ppm_{vd} at 15% O_2	Vendor guaranteed emission rate
CO	25 ppm_{vd} at 15% O_2	Vendor guaranteed emission rate
VOC	25 ppm_{vd} of TOC at 15% O_2 or 6.97 lb VOC/MMscf	Based on vendor data for TOC, scaled to VOC based on ratio of TOC:VOC in Table 3.1-2a of AP-42 (April 2000)
CH_4	25 ppm_{vd} of TOC at 15% O_2 or 28.55 lb CH_4/MMscf	Based on vendor data for TOC, scaled to CH_4 based on ratio of TOC:CH_4 in Table 3.1-2a of AP-42 (April 2000)
$PM_{10}/PM_{2.5}$	0.0066 lb/MMBtu (HHV)	Table 3.1-2a of AP-42 (April 2000)
SO_2	14.29 lb/MMscf	Using pipeline total sulfur tariff of 5 gr/100 dscf of gas, and Table 3.1-2a of AP-42 (April 2000)
CO_2	53.06 kg/MMBtu (HHV)	40 CFR 98, Subpart C, Table C-1
N_2O	0.0001 kg/MMBtu (HHV)	40 CFR 98, Subpart C, Table C-2
Total HAP	Multiple HAP factors	Table 3.1-3 of AP-42 (April 2000); organic HAP were scaled using vendor data and AP-42 emission rates for TOC

*The emission factors provided in this table represent uncontrolled emissions (excluding add-on controls not inherent to the equipment) at temperatures above 0ºF.

Solar® has guaranteed NO_X emissions for these turbines at 9 ppm_v on a dry basis (ppm_{vd}) (at 15% O_2) during steady-state operation at 50-100 percent engine load for all ambient temperatures above 0°F. In order to calculate hourly emissions during normal operation, the emission factors provided in the table above are converted to factors in pounds per million standard cubic feet (lb/MMscf) as described in subsequent sections.

2.3.1.1 Turbine Emissions Factors – NO_X, CO, and UHC

NO_X, CO, and unburned hydrocarbons (UHC) emitted by the combustion turbine during normal operation are calculated based on vendor–supplied emission rates provided in Appendix B. Although UHC is not a criteria pollutant, it is used to derive the emission factors for VOC, CH_4 (a greenhouse gas), and organic hazardous air pollutants (HAP). Vendor data for several ambient temperatures and vendor literature for emissions were compiled to develop the data listed below:

- **Fuel**: Lower Heating Value (Btu/scf);
- **Turbine Performance**: Net Output Power (hp), Heat Input at LHV (MMBtu/hr), Heat Rate at LHV (Btu/hp-hr);
- **Exhaust Parameters**: Exhaust Temperature (°F), Water Fraction (%), O_2 Content (%, dry), Molecular Weight (lb/lb-mol), Flowrate (lb/hr and acfm); and
- **Vendor Supplied Emission Rates**: NO_X, CO and UHC (ppm_{vd} at 15% O_2).

Operating and emissions data at other ambient temperatures are estimated by fitting the data to a curve that best represents the data and interpolating/extrapolating to the desired temperatures. The mass emission rates of NO_X, CO, and UHC at a given load decrease with increasing ambient temperature conditions (i.e., fuel consumption at 100% load is highest at lower ambient temperatures). As such, short-term, maximum hourly emission rates are estimated based on operating and emissions data at 0.01°F to provide the most conservative estimate. Annual emissions estimates are based on the annual

average ambient conditions at the Danville Station. As such, for annual emissions estimates, the operating data (turbine performance and exhaust gas parameters) are interpolated to estimate emissions at the average annual ambient temperature at the station.[2] The emission factor at a given ambient temperature is calculated as illustrated in Equation 2-1 through Equation 2-3.

Equation 2-1:

$$[NO_x, CO, UHC]\ EF\ (ppmw) = [ppmvd, 15\%\ O_2] \times [nonwater\%] \times \left[\frac{20.9 - (\ vol\%\ O_2, dry\ \times 100)}{5.9}\right] = ppmw$$

Equation 2-2:

$$[NO_x, CO, UHC]\ hourly\ emissions\ \left(\frac{lb}{hr}\right) @\ T = \left[\frac{ppmw}{1,000,000}\right] \times \left[\frac{lb\ exhaust}{hr}\right]_T \times \left[\frac{\frac{lb\ pollutant}{lbmol}}{\left[\frac{lb\ exhaust}{lbmol}\right]_T}\right]$$

$$= \left[\frac{lb\ pollutant}{hr}\right]_T$$

Equation 2-3:

$$[NO_x, CO, UHC]\ EF\ @\ T = \left[\frac{lb}{hr}\right]_T \times \left[\frac{1,000,000\frac{scf}{MMscf}}{\left[\frac{scf\ fuel}{hr}\right]_T}\right] = \left[\frac{lb}{MMscf}\right]_T$$

Where: *EF = Emission Factor*
T = ambient temperature
Maximum hourly emissions estimated at T = 0.01 °F
Annual average hourly emissions

2.3.1.2 Turbine Emissions Factors – VOC, CH_4, and HAP

VOC, CH_4, and HAP emitted by the combustion turbine are calculated using the vendor-supplied UHC emission rate[3] and US Environmental Protection Agency (USEPA) AP-42 emission factors, as VOC, CH_4, and HAP are constituents of UHC. The UHC emission factor in terms of lb/MMscf, at a given ambient temperature, is calculated as outlined in the previous section.

Standard emission factors for VOC, CH_4, HAP, and UHC from stationary gas turbines are provided in Chapter 3.1 of USEPA's Compilation of Air Pollutant Emissions Factors (AP-42). Table 3.1-2a of AP-42 (version dated April 2000) provides emission factors of 0.0021 lb VOC per MMBtu, 0.0086 lb CH_4 per MMBtu, and 0.011 lb UHC per MMBtu from natural gas-fired turbines. Table 3.1-3 of AP-42 (version dated April 2000) provides emission factors for HAP emitted from natural gas-fired turbines. These HAP include, but are not limited to, the following:

[2] A weighted daily average ambient temperature is used in estimating potential annual emissions for Danville and is based on meteorological information in USEPA's AP-42 Table 7.1-7 (11/2019). To determine ambient temperatures, the meteorological stations in closest proximity to the station are reviewed, and the station with the most representative ambient temperatures is selected. The average annual temperature at Danville is 55.51°F.

[3] Vendor supplied emission rates are summarized in Appendix B.

- 1,3-butadiene;
- Acetaldehyde;
- Acrolein;
- Benzene;
- Ethylbenzene;
- Formaldehyde;
- Naphthalene;
- Polycyclic aromatic hydrocarbons (PAH);
- Propylene oxide;
- Toluene; and
- Xylenes.

A total HAP emission factor is calculated as the sum of all individual HAP emission factors.

Ratios of VOC, CH_4, and HAP to UHC from the AP-42 factors are applied to the UHC factor derived from vendor information to obtain emission factors for VOC, CH_4, and HAP. For normal operation, the uncontrolled VOC, CH_4, and HAP factors are derived as follows:

Equation 2-4:

$$\boldsymbol{VOC, CH_4, HAP\ EF = \frac{lb\ TOC}{MMscf} \times \frac{\left(\frac{lb\ pollutant}{MMBtu} \times 1{,}020\ \frac{MMBtu}{MMscf}\right)}{\left(0.011\ \frac{lb\ UHC}{MMBtu} \times 1{,}020\ \frac{MMBtu}{MMscf}\right)} = \frac{lb}{MMscf}}$$

2.3.1.3 Turbine Emissions Factors – PM_{10}, $PM_{2.5}$, and SO_2

Particulate matter less than 10 microns in diameter (PM_{10}) and particulate matter less than 2.5 microns in diameter ($PM_{2.5}$) emitted by the turbines during normal operation are calculated based on the emission factors listed in Table 3.1-2a of AP-42 (version dated April 2000) for stationary gas turbines. It is conservatively assumed that Total PM is equal to Total PM_{10} and Total $PM_{2.5}$. The AP-42 emission factors are converted to (lb/MMscf) as follows:

Equation 2-5:

$$\boldsymbol{[PM_{10}, PM_{2.5}]\ EF = \left[\frac{lb}{MMBtu}\right] \times \left[1{,}020\ \frac{MMBtu}{MMscf}\right] = \left[\frac{lb}{MMscf}\right]}$$

Texas Eastern updated its methodology for estimating sulfur dioxide (SO_2) emissions from the combustion of natural gas in turbines. Instead of using the default AP-42 sulfur content in natural gas, Texas Eastern applies its pipeline total sulfur tariff of 5 (gr/100 scf) of natural gas. The emission factor for SO_2 emitted by the turbines during normal, steady-state operation is calculated based on total sulfur mass balance based on the procedures listed in Table 3.1-2a of AP-42 (version dated April 2000) for stationary gas turbines. The emission factor is calculated as follows:

Equation 2-6:

$$\boldsymbol{[SO_2]\ EF\ \left(\frac{lb}{MMscf}\right)} = \left[\frac{5\ gr\ Total\ Sulfur}{100\ scf}\right] x \left[\frac{1\ lb}{7{,}000\ gr}\right] x \left[\frac{64\ \frac{lb\ SO_2}{lb\ mole}}{32\ \frac{lb\ S}{lb\ mole}}\right] \times \left[\frac{1{,}000{,}000}{1}\ \frac{scf}{MMscf}\right] = \boldsymbol{14.29\ \frac{lb\ SO_2}{MMscf}}$$

2.3.1.4 Turbine Emissions Factors – CO_2, N_2O, and CO_2e

Emission factors for CO_2 and nitrous oxide (N_2O) emitted by the combustion of natural gas are calculated based on the emission factors provided for pipeline natural gas combustion in 40 CFR Part 98, Subpart C, Tables C-1 and C-2, as follows:[4]

Equation 2-7:

$$[CO_2]\ EF = \left[53.06\frac{kg}{MMBtu}\right] \times \left[2.2046\frac{lb}{kg}\right] \times \left[1,026\frac{Btu}{scf}\right] = \left[120,017\frac{lb\ CO_2}{MMscf}\right]$$

For conservatism, it was assumed that a chemical reaction will occur as a result of the oxidation catalyst controlling CO emissions to produce CO_2. The station quantified the additional CO_2 emissions using the following equation:

Equation 2-8:

$$CO_2\ Emissions\ \left(\frac{lb}{hr}\right) = CO_2\ EF\left(\frac{lb\ CO_2}{MMscf}\right) * Fuel\ Use\ \left(\frac{MMscf}{hr}\right) + [CO\ Emissions\left(\frac{lb\ CO}{hr}\right) * 95\%\ CO\ Control * \frac{MW_{CO2}}{MW_{CO}}]$$

Equation 2-9:

$$[N_2O]\ EF = \left[0.0001\frac{kg}{MMBtu}\right] \times \left[2.2046\frac{lb}{kg}\right] \times \left[1,026\frac{Btu}{scf}\right] = \left[0.23\frac{lb\ N_2O}{MMscf}\right]$$

Total GHG emissions in terms of CO_2 equivalents (CO_2e) are equal to the sum of all individual GHGs emitted by the turbine, accounting for the respective global warming potential (GWP) of each GHG. The GWPs used to calculate CO_2e emissions for each pollutant emitted by the project are contained in the following table.

Table 2-2. Applicable Global Warming Potentials

Pollutant*	GWP**
CO_2	1
CH_4	28
N_2O	265

* Only those GHGs for which quantifiable emissions increases are expected due to this project are listed.
** GWPs are based on a 100-year time horizon, as identified in Table A-1 to 40 CFR Part 98, Subpart A (89 FR 31894, Apr. 25, 2024).

As such, the CO_2e factor is derived as follows:

Equation 2-10:

$$[CO_2e\ ]EF = \left[\frac{lb\ CO_2}{MMscf} \times 1\ GWP\right] + \left[\frac{lb\ CH_4}{MMscf} \times 28\ GWP\right] + \left[\frac{lb\ N_2O}{MMscf} \times 265\ GWP\right] = \left[\frac{lb\ CO_2e}{MMscf}\right]$$

[4] Note that emission factors utilized the corresponding natural gas heating value from the same subpart or reference (Part 98 for GHG, AP-42 for other factors). In this way, the factors and heating value are consistent with each other, although slightly different heating values were referenced for different factors.

2.3.1.5 Turbine Startup and Shutdown Hourly Emissions

Emissions during startups and shutdowns are calculated based on vendor-specified transient operation profiles which are used to determine the maximum pound per startup or shutdown event as described in further detail in the following sections.

2.3.1.5.1 Turbine Startup Operation

The startup process for the turbine is estimated to take approximately 9 minutes from the initiation of startup to normal operation. This includes approximately 3 minutes of ignition-idle operation and 6 minutes of loading/thermal stabilization operation.[5]

The following table includes a summary of the emission factors used for each pollutant during the ignition-idle and loading/thermal stabilization phases of each startup event. It is assumed that the oxidation catalyst will not yet have a measurable destruction or removal efficiency (DRE) during startup, as it is designed to meet control specifications only during normal operation. It is also assumed that the SoLoNO$_X$™ will not result in reduced NO$_X$ during startup.

[5] These are referred to as "Step 2" and "Step 3", respectively, in the emissions calculations in Appendix B. Step 1 of turbine startup includes energizing the starter and observing the RPM until the ignition range is reached. During Step 1, ignition and combustion have not yet occurred in the turbine, and thus the turbine combustor is not yet a source of air emissions.

Table 2-3. Turbine Pre-Control Emission Factors – Startup Operation

Pollutant	Ignition-Idle Phase Emission Factor "Step 2" *	Loading/Thermal Stabilization Phase Emission Factor "Step 3" *	Source
NO_X	50 ppm_{vd} at 15% O_2	50 ppm_{vd} at 15% O_2	Based on vendor data[6]
CO	10,000 ppm_{vd} at 15% O_2	9,000 ppm_{vd} at 15% O_2	Based on vendor data[7]
VOC	5,490 ppm_{vd} TOC at 15% O_2	3,050 ppm_{vd} TOC at 15% O_2	Based on vendor data for TOC, scaled to VOC based on ratio of TOC:VOC in Table 3.1-2a of AP-42 (April 2000)
CH_4	5,490 ppm_{vd} TOC at 15% O_2	3,050 ppm_{vd} TOC at 15% O_2	Based on vendor data for TOC, scaled to CH_4 based on ratio of TOC:CH_4 in Table 3.1-2a of AP-42 (April 2000)
$PM_{10}/PM_{2.5}$	Same as normal operation		
SO_2	Same as normal operation		
CO_2	Same as normal operation		
N_2O	Same as normal operation		
Total HAP	5,490 ppm_{vd} TOC at 15% O_2 Multiple HAP factors	3,050 ppm_{vd} TOC at 15% O_2 Multiple HAP factors	Based on vendor data for TOC, scaled to HAP based on ratio of TOC:HAP in Table 3.1-2a of AP-42 (April 2000)

* The emission factors provided in this table represent uncontrolled emissions. The Solar® Titan 130 turbine will be equipped with oxidation catalyst; however, it is assumed that the catalyst does not have a DRE during startups.

All pollutants emitted by the combustion turbine during startup events are calculated based on the same methodology that is used to calculate emissions during normal operation. However, rather than calculate a lb/MMscf emission factor, pounds per startup event (lb/event) are calculated for each pollutant based on the fuel consumed during the 3-minute ignition-idle phase and during the 6-minute loading/thermal stabilization phase as follows:

Equation 2-11:

$$EF_i \; during \; SU \; event = \left[\frac{lb \; Pollutant \; i}{MMBtu}\right] \times \left[\frac{lb \; Pollutant \; i}{MMBtu} \times 1{,}020 \; \frac{MMBtu}{MMscf}\right] \times \left[\frac{scf \; fuel}{event}\right] \times \left[\frac{MMscf}{1{,}000{,}000 \; scf}\right]$$
$$= \left[\frac{lb \; Pollutant \; i}{event}\right]$$

Where: *EF is the emission factor for pollutant "i"*

[6] Vendor data is summarized in Appendix B.

[7] Ibid.

2.3.1.5.2 Turbine Shutdown Operation

The shutdown process for the turbine is estimated to take approximately 8.5 minutes from normal operation to shutdown for the turbine. The shutdown event consists of only the "Step 3" loading/thermal stabilization operation. It is assumed that the oxidation catalyst will continue to have a measurable DRE during turbine shutdown. The calculation for shutdowns is similar to that for startups as shown previously, utilizing the same emission rates identified during "Step 3" loading/thermal stabilization for startup.

2.3.1.6 Turbine Annual Potential Emissions

The emission factors described in the previous sections are multiplied by the following activity data to estimate annual potential emissions for the turbine:

- **Normal, Steady-State Operation**: Annual fuel consumption as estimated from vendor-provided turbine parameters at the annual average ambient temperature for the Danville Compressor Station. Annual PTE estimates assume 100% utilization (8,760 hours per year). CO, VOC, and HAP PTE estimates take the control efficiency of the proposed oxidation catalyst into account. Further, since an oxidation catalyst provides more complete conversion of CO to CO_2, the controlled portion of the CO emissions is added back to the CO_2 emissions rate. Note however, that this increase is a small fraction of the overall CO_2 emissions.

NO_X PTE estimates are based on the project-specific emissions guarantee of the proposed SoLoNO$_X$™ combustion technology.

- **Startup/Shutdown Operation:** The number of startup and shutdown events is estimated at 208 startup and 208 shutdown events per year for the turbine. For startups, no credit for control by the oxidation catalyst is accounted for in the estimation of startup emissions even though the oxidation catalyst inlet temperature should reach the effective temperature quickly. For shutdowns, the oxidation catalyst is assumed effective, and emission reductions are taken during shutdown since the oxidation catalyst inlet temperature shouldn't drop below the effective temperature until after the fuel is cut off.

For some pollutants, emission rates from the combustion turbines are higher during normal steady-state operation than they are during startup and shutdown. However, for other pollutants, emission rates may be higher during startup and shutdown than during normal operation. Although emission concentration may be higher, load is typically lower during startup and shutdown such that short-term mass emission rate may still be lower. This varies, however, per pollutant. The maximum annual emissions for the turbine is the sum of normal, startup (SU), shutdown (SD), and low temperature operation as shown in the equations.

Equation 2-12:

$$Normal\,\frac{ton}{yr} = \left[Average\ Normal\,\frac{lb}{hr}\right] \times \left[\frac{8,760\ hr}{yr}\right] \times \left[\frac{ton}{2,000\ lb}\right]$$

Equation 2-13:

$$Normal\ \ and\ SU\ and\ SD\,\frac{ton}{yr} = \left[startup\,\frac{ton}{yr}\right] + \left[shutdown\,\frac{ton}{yr}\right] + \left(\left[normal\,\frac{ton}{yr} \times \frac{1 - startup\ hrs - shutdown\ hrs}{8760}\right]\right)$$

Equation 2-14:

$$Annual\ PTE\left(\frac{ton}{yr}\right)_{Pollutant\ i} = \mathbf{MAX}\left[Normal\left(\frac{ton}{yr}\right), Normal\ \ and\ SU\ \ \ and\ SD\left(\frac{ton}{yr}\right)\right]_i$$

2.3.2 Emergency Generator Emissions

A Waukesha (1,475 bhp) four-stroke, rich-burn, natural gas-fired emergency generator equipped with a 3-way (non-selective) catalyst (NSCR) system is proposed for the TEM IV Project. The operation of the emergency engine is assumed to not exceed 500 hrs/yr[8]. The following table provides information on the emission factors used to calculate emissions from the emergency generator that are comparable to other equivalent emergency generators.

Table 2-4. Waukesha Emergency Generator Emission Factors

Pollutant	Emission Factor from Source	Source
NO_X	2.0 g/bhp-hr	NSPS Subpart JJJJ
CO	4.0 g/bhp-hr	NSPS Subpart JJJJ
VOC	1.0 g/bhp-hr	VOC (without formaldehyde): NSPS Subpart JJJJ Table 3.2-2 of AP-42
CH_4	1.0 g VOC/bhp-hr 1.25 lb/MMBtu (HHV)	VOC: NSPS Subpart JJJJ Table 3.2-2 of AP-42
$PM_{10}/PM_{2.5}$	0.00999 lb/MMBtu (HHV)	Table 3.2-2 of AP-42
SO_2	14.29 lb/MMscf	Using pipeline total sulfur tariff of 5 gr/100 dscf of gas, and Table 3.1-2a of AP-42 (April 2000)
CO_2	53.02 kg/MMBtu (HHV)	40 CFR 98, Subpart C, Table C-1
N_2O	0.0001 kg/MMBtu (HHV)	40 CFR 98, Subpart C, Table C-2
Total HAP	1.0 g VOC/bhp-hr Multiple HAP factors	VOC: NSPS Subpart JJJJ Table 3.2-2 of AP-42

In order to calculate hourly emissions, the emission factors provided in the table above are converted to factors in lb/MMscf. These converted factors are multiplied by the generator's hourly fuel consumption in scf/hr to obtain hourly emissions. The following sections summarize the methods used to obtain lb/MMscf emission factors for each pollutant emitted from the emergency generator.

2.3.2.1 Emergency Generator Emission Factors – NO_X, CO, and VOC

NO_X, CO, and VOC emitted by the emergency generator are calculated based on the emission limits established under NSPS Subpart JJJJ in grams per brake horsepower-hour (g/bhp-hr) for emergency engines greater than 130 hp installed on and after January 1, 2009.[9]

The VOC emission limit of 1.0 g/bhp-hr in NSPS Subpart JJJJ excludes formaldehyde.[10] A VOC factor inclusive of formaldehyde is calculated using the relative emissions of formaldehyde and VOC provided

[8] USEPA Memorandum: *Calculating Potential to Emit (PTE) for Emergency Generators* from John S. Seitz, Director of OAQPS (September 6, 1995) <https://www.epa.gov/sites/default/files/2015-08/documents/emgen.pdf>

[9] Per Table 1 to Subpart JJJJ of Part 60.

[10] Per footnote "d" of Table 1 to Subpart JJJJ of Part 60.

in Table 3.2-2 of AP-42 (version dated July 2000). A VOC factor is calculated as the sum of the factors for all trace organic compounds listed in Table 3.2-2 which are VOCs. Formaldehyde emissions are proportional to VOC emissions, because formaldehyde is a constituent of VOC. The VOC factor is adjusted to account for formaldehyde as follows:

Equation 2-15:

$$VOC\ EF = \frac{1.0\ g\ VOC\ (without\ formaldehye)}{bhphr} \times \frac{\left(\frac{0.119\ lb\ VOC}{MMBtu}\right)}{\left(\frac{0.119\ lb\ VOC}{MMBtu} - \frac{0.0528\ lb\ formaldehyde}{MMBtu}\right)} = 1.79\frac{g}{bhp-hr}$$

Vendor-specified power output and fuel consumption for the engine are used to convert the g/bhp-hr factors. NO_X, CO, and VOC factors are derived as follows:

Equation 2-16:

$$NO_x, CO, VOC\ EF = \frac{g}{bhp-hr} \times \frac{lb}{453.6\ g} \times hp \times \frac{hr}{scf\ fuel} \times \frac{1,000,000\ scf}{MMscf} = \frac{lb}{MMscf}$$

2.3.2.2 Emergency Generator Emission Factors – CH_4 and HAP

CH_4 and HAP emissions are calculated using the VOC emission rate and AP-42 emission factors. Standard emission factors for VOC, CH_4, and HAP from natural gas fired engines are provided in Chapter 3.2 of AP-42. Table 3.2-2 (version dated July 2000) provides emission factors for VOC, CH_4, and HAP from four stroke lean burn natural gas-fired engines.

Using the same ratio method used to calculate CH_4 and HAP emitted from the turbine (detailed in Section 4.1.2.), CH_4 and HAP emitted from engines are ratioed based on the VOC emission rate from NSPS Subpart JJJJ.

2.3.2.3 Emergency Generator Emission Factors – PM_{10}, $PM_{2.5}$, and SO_2

PM_{10} and $PM_{2.5}$ emitted by the emergency generator are calculated based on the emission factors listed in Table 3.2-2 of AP-42 (version dated July 2000) for natural gas fired engines. PM_{10} and $PM_{2.5}$ emission factors are calculated as the sum of the filterable and condensable PM emission factors.

The SO_2 emission factor utilized is the same as described for the turbines. The emissions are based on a mass balance of the Texas Eastern pipeline tariff for total sulfur content of 5 gr/100 dscf of gas.

2.3.2.4 Emergency Generator Emission Factors – CO_2, N_2O, and CO_2e

CO_2 and N_2O emitted by the emergency generator are calculated based on the emission factors listed in 40 CFR 98, Subpart C, Tables C-1 and C-2. Equation 4-6 and Equation 4-8 show how factors in lb/MMscf are derived for these pollutants. GHGs emitted from the engine include CO_2, CH_4, and N_2O. CO_2e emissions are calculated using the GWPs provided in Table 4-2.

2.3.3 Fuel Gas Heater Emissions

As part of the TEM IV Project, Texas Eastern proposes to install three 1.154 MMBtu/hr input natural gas-fired fuel gas heaters.[11] The following table provides information on the emission factors used to calculate emissions from the fuel gas heater.

Table 2-5. Fuel Gas Heater Emission Factors

Pollutant	Emission Factor from Source	Source
NO_X	80 ppm_{vd} at 3% O_2 or 98.43 lb/MMscf	Vendor specified emission rate
CO	200 ppm_{vd} at 3% O_2 or 150 lb/MMscf	Vendor specified emission rate
TOC	140 ppm_{vd} at 3% O_2 or 60 lb/MMscf	Vendor specified emission rate
VOC	140 ppm_{vd} TOC at 3% O_2 or 36.15 lb VOC/MMscf	Based on vendor data for TOC, scaled to VOC based on ratio of TOC:VOC in Table 3.1-2a of AP-42 (April 2000)
CH_4	140 ppm_{vd} TOC at 3% O_2 or 10.16 lb CH_4/MMscf	Based on vendor data for TOC, scaled to CH_4 based on ratio of TOC:CH_4 in Table 3.1-2a of AP-42 (April 2000)
$PM_{10}/PM_{2.5}$	7.60 lb/MMscf	Table 1.4-2 of AP-42
SO_2	14.29 lb/MMscf	Using pipeline total sulfur tariff of 5 gr/100 dscf of gas, and Table 3.1-2a of AP-42 (April 2000)
CO_2	53.02 kg/MMBtu (HHV)	40 CFR 98, Subpart C, Table C-1
N_2O	0.0001 kg/MMBtu (HHV)	40 CFR 98, Subpart C, Table C-2
Total HAP	140 ppm_{vd} TOC at 3% O_2 Multiple HAP factors	TOC: vendor specified emission rate Table 1.4-3 of AP-42; organic HAP were scaled using the vendor data and AP-42 emission rates for TOC

In order to calculate hourly emissions, the emission factors provided in the table above are converted to units of lb/MMscf. These converted factors are multiplied by the heater's hourly fuel consumption in scf/hr to obtain hourly emissions. Fuel consumption is calculated from the heat output of the heater, assuming a thermal efficiency of 65% and a natural gas heating value of 1,020 Btu/scf. Annual potential emissions are calculated based on average hourly fuel consumption. Maximum hourly potential emissions are calculated based on maximum hourly fuel consumption, assuming an overload capability of 105%. The following sections summarize the methods used to obtain lb/MMscf emission factors for each pollutant emitted from the heater.

[11] Heat output for fuel gas heater is 0.750 MMBtu/hr, while the corresponding heat input is 1.154 MMBtu/hr.

2.3.3.1 Heater Emissions Factors – NO_X, CO, and TOC

NO_X, CO, and TOC emitted by the heater are calculated based on vendor-specified emission rates and vendor-specified fuel consumption for the heater. NO_X, CO, and TOC factors are derived as follows:

Equation 2-17:

$$\boldsymbol{NO_x, CO, TOC\ EF = ppmvd, 3\%\ O_2 \times \frac{lb/MMBtu}{ppmvd, 3\%\ O_2} \times 1,020 \frac{MMBtu}{MMscf} = \frac{lb}{MMscf}}$$

2.3.3.2 Heater Emissions Factors – VOC, CH_4, and HAP

VOC, CH_4, and HAP emissions are calculated using the TOC emission rate and AP-42 emission factors. Standard emission factors for TOC, VOC, CH_4, and HAP from natural gas-fired heaters are provided in Chapter 1.4 of AP-42. Table 1.4-2 (version dated July 1998) provides a CH_4 emission factor for natural gas-fired external combustion sources. The TOC and VOC factors used in the calculations differ slightly from the factors provided in Table 1.4-2. Instead, TOC and VOC factors are calculated as the sum of the factors for all speciated organic compounds listed in AP-42 Table 1.4-3 which are TOCs and VOCs, respectively. These calculated values differently slightly from AP-42 Table 1.4-2. Table 1.4-3 of AP-42 (version dated July 2000) provides emission factors for the HAP emitted from natural gas-fired external combustion units.

Using the same ratio method used to calculate CH_4 and HAP emitted from the turbine (detailed in Section 2.3.1.2.), CH_4, HAP, and VOC emitted from the heater are ratioed based on the vendor-specified TOC emission rate.

2.3.3.3 Heater Emissions Factors – PM_{10}, $PM_{2.5}$, and SO_2

PM_{10} and $PM_{2.5}$ emitted by the heater are calculated based on the emission factors listed in Table 1.4-2 of AP-42 (version dated July 1998) for natural gas fired external combustion sources. The total PM emission factor of 7.6 lb/MMscf, which includes filterable and condensable particulate, is used and it is assumed that all particulate emitted from natural gas combustion is less than 2.5 microns in diameter, such that PM equals PM_{10} and $PM_{2.5}$.

The SO_2 emission factor is the same as for the turbines and emergency generator.

2.3.3.4 Heater Emissions Factors – CO_2, N_2O, and CO_2e

CO_2 and N_2O emitted by the heater are calculated based on the emission factors listed in 40 CFR 98, Subpart C, Tables C-1 and C-2. Equation 2-6 and Equation 2-8 show how factors in lb/MMscf are derived for these pollutants. GHGs emitted from the heater include CO_2, CH_4, and N_2O. CO_2e emissions are calculated using the GWPs provided in Table 2-2.

2.3.4 Fugitive Emissions (FUG001)

Fugitive emissions are being reconciled as part of this proposed permit modification application. Potential emissions are calculated from the piping components using emission factors from USEPA's Protocol for Equipment Leak Emission Estimates (EPA 453/R-95-017), Table 2-4 (November 1995) which provides leak emission factors for oil and gas production operations. Gas service factors are used for components in natural gas service, light oil service factors are used for components in pipeline liquids service (e.g., condensate), and heavy oil service factors are used for components in oil service (e.g., oils on-site). Because an emission factor is not provided for leaks from pump seals in heavy oil service in Table 2-4, the average SOCMI without ethylene emission factor for pumps in heavy oil service from

Table 2-1 is used to estimate emissions. Annual emissions are conservatively calculated assuming that the components are in continuous gas/liquid/oil service as follows:

Equation 2-18:

$$\textbf{Total Gas Emissions} = \#\ \boldsymbol{of\ components} \times \frac{\frac{\boldsymbol{kg}}{\boldsymbol{hr}}}{\boldsymbol{component}} \times \frac{\boldsymbol{8{,}760\ hrs}}{\boldsymbol{yr}} \times \frac{\boldsymbol{1{,}000\ g}}{\boldsymbol{kg}} \times \frac{\boldsymbol{lb}}{\boldsymbol{453.6\ g}} \times \frac{\boldsymbol{2{,}000\ ton}}{\boldsymbol{lb}} = \frac{\boldsymbol{tons}}{\boldsymbol{yr}}$$

The equation above is used to calculate total fugitive gas emitted from the piping components at the Danville Station. Emissions of individual VOCs, GHGs, and HAP are calculated by multiplying the total fugitive gas emissions from piping components in gas, pipeline liquid, and oil service by the weight percent of each pollutant in gas, pipeline liquids, and oil. Gas, pipeline liquid, and oil compositions are engineering estimates based on available worst-case data to be conservative.[12, 13]

2.3.5 Gas Releases (EQT0005, FG-2)

Gas releases due to periodic blowdown of the turbines and other events occur at the station. The majority of emissions from gas release events are associated with routine operations such as startup and shutdown, reduced pressure demand events, or maintenance activities. The potential volume of gas emitted was estimated in standard cubic feet per year based on design data for the Danville Compressor Station after the addition of the new turbines. Emissions of individual VOCs, GHGs, and HAP are calculated by multiplying the total gas emissions from gas releases by the weight percent of each pollutant in the natural gas compressed at the facility.

2.3.6 Tank Emissions

Danville utilizes several storage tanks and separator vessels as part of its operations. For the purpose of working and breathing loss emissions estimates, these tanks utilize the calculation methodology described in the latest updates to AP-42 Section 7.1. Detailed calculations are included in Appendix B.

2.4 Emissions Summary

The Danville Station's source classifications are characterized as follows:

- Existing major stationary source (i.e., > 250 tons per year [tpy]) of NO_X and CO under the Prevention of Significant Deterioration (PSD) program (Title 40, Code of Federal Regulations, Part 52 [40 CFR 52] and 401 KAR 51:017);
- Existing major source (i.e., > 100 tpy) of NO_X, CO, and VOC under the Title V program (40 CFR 70 and 401 KAR 52:020); and
- Existing major source of HAP (i.e., > 25 tpy of total HAP and > 10 tpy of any single HAP).

[12] Oil is assumed to be 100 percent VOC and contain no GHGs or HAP. Pipeline liquids composition is based on the composition of residual liquids following flashing, calculated based on a laboratory analysis of flashing from an operation in Atlanta, Texas in April 2009.

[13] Natural gas composition is conservatively estimated based on an extended gas analysis taken from a similar natural gas transmission stations.

- Upon completion of the proposed project, total HAP and any single HAP emissions will be reduced to <25 tpy/<10 tpy, and the **station will become an area (minor) source of HAP**.

A summary of the proposed PTE emissions is presented in Table 2-6. Detailed emissions calculations are available in Appendix B of this application.

Table 2-6. Facility-Wide Potential Emissions Summary

Pollutant --	**PTE in Previous Renewal** tpy[a]	**After Project PTE** tpy	**Change in PTE** tpy
PM_{10} / $PM_{2.5}$	27.4	14.1	**-13.3**
SO_2	5.4	29.7[b]	**+24.3**
NO_X	1,225.3	78.7	**-1,146.6**
CO	250.4	77.5	**-172.9**
VOC	202.9	59.9	**-143.0**
Total HAP	48.9	7.7	**-41.2**

a. Based on Title V No. V-16-056

b. The post-project SO_2 emissions value is based on a change in calculation methodology based on specific fuel characteristics (i.e., the pipeline tariff of 5 gr/100 dscf) at the Danville Station, not an "actual" increase in SO_2 being generated from combustion devices.

3. REGULATORY APPLICABILITY

This section provides a summary of the federal and state air quality regulations that are applicable to this permit application.

3.1 Federal Regulations

Applicable federal requirements for individual emission sources and a further explanation of applicability or non-applicability are provided below.

3.1.1 Title V Operating Permit Program

40 CFR Part 70 establishes the Federal Title V operating permits program. The Title V program was established as part of the 1990 Clean Air Act Amendments and is in the federal regulations at 40 CFR Part 70-71. The Title V program requires that all new and existing major sources of air emissions obtain federally approved state administered operating permits. A major source as defined under the Title V program is a facility that has the PTE either more than 100 tpy for any criteria pollutant, more than 10 tpy for any single hazardous air pollutant (HAP), or more than 25 tpy for all HAP.

As provided in Table 2-6, the post-project PTE will be less than the major source thresholds. However, due to the timing of construction and operation of the new EUs in relation to the submittal of this application, the Danville Station will maintain its designation as a major source with regard to Title V at this time.

3.1.2 Prevention of Significant Deterioration

3.1.2.1 PSD Source Classification

New Source Review (NSR) requires that federal construction permitting of new emission sources or modifications to existing emission sources be completed when a project results in a significant net emission increase. Two distinct NSR permitting programs apply depending on whether the facility is located in an attainment or nonattainment area for a particular pollutant. The PSD permitting program applies to project increases of those pollutants for which the area the facility is located in is classified as "attainment" or "unclassifiable". The Danville Station is located in Lincoln County, which has been classified as in attainment with or unclassifiable with regard to the National Ambient Air Quality Standard (NAAQS) for all regulated pollutants.[14] Thus, the Danville Station is potentially subject to PSD permitting requirements.

Kentucky has incorporated the requirements of the PSD permitting program into its SIP at 401 KAR 51:017.[15] These PSD regulations specifically define 28 industrial source categories for which the "major" source threshold is 100 tpy of any regulated pollutant.[16] The major source threshold for facilities not on this "List of 28" is 250 tpy. Natural gas compressor stations are not on the list of 28 named source categories; as such, the PSD major source thresholds are 250 tpy for all criteria pollutants.

[14] 401 KAR 51:010, Section 2
[15] 40 CFR 51.166(a)(1)
[16] 401 KAR 51:001, Section 1(118)(a)(2)

3.1.2.2 PSD Assessment—Post-Project

This sub-section is a PSD assessment for the project in a post-project, as-built phase, when all existing EUs that were designated to shut down are no longer in operation and all new EUs have been constructed and are in operation. Refer to Section 3.1.2.3 for an assessment of PSD implications during a short phase of overlapping operations.

3.1.2.2.1 PSD Applicability Methodology

At an existing major PSD source, PSD is triggered for a regulated NSR pollutant if the project under consideration constitutes a "major modification," as defined at 401 KAR 51:001, Section 1(114). To constitute a major modification, the proposed project must first be a "*physical change in or change in the method of operation of a stationary source*," not otherwise exempted. The proposed project meets this criterion. Second, both the emission increase from the project alone (known as the "Step 1" project emissions increase), and the net emissions increase over a five-year contemporaneous period (known as the "Step 2" net project emissions increase) must be "significant," meaning the increase exceeds the PSD significant emission rates (SERs) defined under 401 KAR 51:001, Section 1(218)(a) for a regulated NSR pollutant.

The methodology for calculating a significant emissions increase is provided in 401 KAR 51:017, Section 1(4). Within 401 KAR 51:017 Section 1(4)(a)3., a "hybrid test" for projects such as the TEM IV Project includes the assessment of both new construction (i.e., the installation of new EUs such as the turbines and emergency generator) as well as existing units (i.e., the shutdown of turbine- and RICE-driven compressors and changes to fugitives) to calculate a significant emissions increase as "the sum of emissions increases for each unit." In March 2018 and October 2020, USEPA recognized the uncertainty regarding the term "sum of emissions increases" but went on to state that, based upon their review of past regulatory interpretations and existing regulations, the "hybrid test" could include both increases and decreases as part of the Step 1 calculations.[17,18] On December 24, 2020, the federal PSD language for a "hybrid test" in 40 CFR 52.21(a)(2)(iv)(f) was modified for clarity, but the corresponding language in 401 KAR 51:017 has not been updated to reflect the federal changes.

Thus, the "sum of emission increases" for the TEM IV Project is effectively equal to the sum of the PTE for the new emission units as these are the "increases" associated with the project and the emissions decreases from the existing unit shutdowns cannot be used to "offset" these emissions increases from the new emission units that will replace the existing units. The sum of these increases as shown in Table 3-1 below exceeds the SER for NO_X and $PM_{2.5}$. Since Step 1 analysis exceeds one or more SERs, the net creditable emission increases and decreases over the contemporaneous period [as defined in 401 KAR 51:001 Section 1(144)(b)] are required to be estimated and the net emissions increase is required to be developed and compared against the SER (i.e., a "Step 2" net project emissions increase analysis).

[17] Letter from E. Scott Pruitt, to Regional Administrators, "Project Emissions Accounting Under the New Source Review Preconstruction Permitting Program," March 13, 2018, available at https://www.epa.gov/nsr/project-emissions-accounting-under-new-source-review-preconstruction-permitting-program

[18] Notice from Andrew R. Wheeler, "Prevention of Significant Deterioration (PSD) and Nonattainment New Source Review (NNSR): Project Emissions Accounting," October 22, 2020, available at https://www.epa.gov/nsr/nsr-regulatory-actions#:~:text=Final%20Action%20on%20%22Project%20Emissions,at%20existing%20air%20pollution%20sources.

3.1.2.2.2 Step 2 Net Project Emissions Increase

Pursuant to 401 KAR 51:001 Section 1(144)(a)-(c), the net emissions increase is equal to the increase calculated in Step 1 as described in the preceding subsection plus any other increases and decreases in actual emissions that are "contemporaneous" with the aforementioned change and "otherwise creditable."

- Pursuant to 401 KAR 51:001 Section 1(144)(b)2., contemporaneous increases and decreases are those that occurred within the 5 years prior to construction on the project commencing. For the TEM IV project, Texas Eastern is conservatively assuming that the project will commence construction on July 1, 2026.

To support an assessment of the Step 2 net project emissions changes for the proposed project, Texas Eastern has only identified one contemporaneous project other than the existing unit shutdowns previously noted as part of the TEM IV Project scope that resulted in an increase or decrease in NSR pollutants between July 1, 2021, and July 1, 2026. The March 2023 off-permit change application for the installation of two new filter separators resulted in a minimal increase in VOC and greenhouse gases (GHG) emissions. This project is included in Table 3-1 below along with all increases and decreases associated with the project, and the result is a net emissions increase for each NSR pollutant that is below the SER.

3.1.2.2.3 Reasonable Possibility

When the net emissions increase for a project exceeds 50% of one or more PSD SER, there exists a "reasonable possibility" that the actual emissions from the project will exceed the SER. For this reason, such projects require additional monitoring, recordkeeping, and reporting requirements to ensure that the emission units involved in the project maintain actual emissions below the SER once operation has commenced.

As shown in Table 3-1 below, the net emissions increase of SO_2 exceeds 50% of the corresponding SER. However, there are no modified emission units contributing to the net increase in SO_2 emissions and the net emissions increase would be under the SER without consideration of the shutdown of existing emission units (i.e., the PTE of all post-project emission units is less than 40 tpy SO_2). Therefore, "reasonable possibility" requirements are not necessary for this project.

3.1.2.3 PSD Assessment—Overlapping Operations

As discussed with the Division during a pre-application meeting on June 10, 2025, there may be a short overlap period during which new EUs are brought online for testing purposes while existing EUs are still in operation. As stated during the aforementioned meeting, any overlapping operation is expected to be minimal and have little effect on the emissions assessments provided in this application. Thus, to ensure there is no potential for triggering PSD permitting during the overlapping period, Texas Eastern is requesting the PSD avoidance permit requirement below to be in place until all existing EUs designated as being shut down as part of this project have ceased operation. Note that PM_{10} and SO_2 emissions from the new EUs will not exceed the SER regardless of existing EU decreases; therefore, no avoidance limits are necessary for these pollutants. Furthermore, the PTE of the new insignificant activities have been subtracted from these avoidance limits and, thus, will not be tabulated as part of compliance with the avoidance limit. In addition, existing insignificant activities would contribute a negligible change in actual emissions during the overlapping period which can be reasonably accounted for based on the 90% of SER "buffer" included in the derivation of the proposed PSD avoidance limits.

Section D.3.
To preclude applicability of 401 KAR 51:017, emissions from EU01-EU13 will not exceed 582.8 tpy NO_X, 129.3 tpy CO, 23.1 tpy $PM_{2.5}$, and 97.6 tpy VOC. This requirement will remain in effect until such time that the Kentucky Division for Air Quality has received written notice that EU01-EU06 have permanently ceased operation.

Compliance Demonstration Methods:
Upon start-up of EU 08, EU 09, EU 10, EU 11, and/or EU 12, the permittee shall calculate and record monthly and 12-month rolling totals of the NO_X, CO, $PM_{2.5}$, and VOC emissions from the emission units referenced above. The permittee shall use the emission factors provided in the application for construction and operation of EU 08-12.

This proposed requirement is reflected in the suggested permit edits in Appendix D.

3.1.2.4 PSD Applicability Calculation Summary

The baseline actual emissions (BAE), projected actual emissions (PAE), emissions increase and net emissions increase, and PSD avoidance limits are calculated as provided in Table 3-1 below.

Table 3-1. PSD Applicability Calculations

Post-Project Status Category	Emission Source		Pollutant						Notes
	ID	Description	NO_x	CO	$PM_{10/2.5}$	SO_2	VOC	CO_2e	
Shutdown Significant EUs	EU 03 (11-12)	Two Gas Turbines	29.1	6.60	2.52	1.30	2.19	45,756	CY2022-23 emissions from KYEIS
	EU 04 (13)	Gas Turbine	232.5	4.10	3.16	1.63	0.329	57,150	
	EU 01 (01-07)	IC Engines	266.3	18.6	2.75	3.35E-02	9.72	6,710	
	EU 02 (08-10)	IC Engines	18.8	9.94	5.67	6.90E-02	5.54	13,827	
	EU 05	Emergency Engine	3.76E-02	5.27E-02	1.10E-03	6.50E-05	7.40E-03	13.0	
	EU 06	Emergency Engine	3.45E-02	4.26E-02	8.37E-04	4.93E-05	2.23E-02	22.0	
New Significant EUs	EU 08 (proposed)	Unit 4T Turbine	25.0	23.9	4.62	9.80	3.92	82,984	Potential to emit of new emission units
	EU 09 (proposed)	Unit 5T Turbine	25.0	23.9	4.62	9.80	3.92	82,984	
	EU 10 (proposed)	Unit 6T Turbine	25.0	23.9	4.62	9.80	3.92	82,984	
	EU 11 (proposed)	Emergency Engine Generator	1.63	3.25	6.23E-02	4.50E-02	2.20	814	
	EU 12 (proposed)	Unit 4T-6T Fuel Gas Heaters	1.46	2.23	0.113	0.212	0.537	1,788	
	EU 13 (proposed)	TNK V05 - Separator Vessel	-	-	-	-	0.348	21	
Modified Existing Significant EUs	EU 07 (GR-ST; GR-PL)	Gas Release Events	-	-	-	-	25.44	5,986	CY2022-23 emissions from KYEIS
							26.13	22,967	Post-project PTE; actual emissions will be considerably less but not quantified as part of this application
	EU 07 (PC-1 - PC-4)	Piping Components	-	-	-	-	19.71	3,370	CY2022-23 emissions from KYEIS
							8.23	-	Post-project PTE
New Insignificant Activities	CHTR 01	Boiler/Heater	2.30E-03	3.62E-02	2.00E-04	4.00E-04	1.27E-02	3.00	Potential to emit of new emission units
	SVV V01C01	Separator Vessel					7.05E-02	4.26	
	SVV V01C02	Separator Vessel					7.05E-02	4.26	
	SVV V01C03	Separator Vessel					7.05E-02	4.26	
	SLV V02	Separator Vessel	-	-	-	-	1.12	35.4	
	TNK OW01	Separator Vessel					1.00E-03	-	
	TL PL	Truck Loading Area					2.22E-02	1.34	
	TL OW	Truck Loading Area					< 0.001	-	

Red values indicate pre-project actual emissions (CY2022-23) that are tabulated as part of the project baseline emissions
Green values indicate post-project potential emissions that are tabulated as part of the projected actual emissions (all new and modified units use post-project PTE as PAE)

PSD Calculations (tpy)	NOX	CO	$PM_{10/2.5}$	SO_2	VOC	CO_2e	Notes
Existing Sources to be Shutdown- Pre-Project Baseline Actual Emissions, BAE	546.8	39.4	14.1	3.0	17.8	132,833	Sum of CY2022-23 actual emissions data for existing affected EUs
New and Modified Sources- Post-Project Emissions (PTE for All)	78.1	77.2	14.0	29.7	50.6	274,595	Post-project emission rates from all new and modified emission units
PSD Significant Emission Rate, SER	**40**	**100**	**15/10**	**40**	**40**	**75,000**	The CO_2e SER for GHGs is not an SER in the same manner as for other NSR pollutants; a net project emissions increase above this level in conjunction with a net emissions increase of another NSR above the SER would trigger PSD review for GHGs
Step 1 Project Emissions Increase, PEI ** Red text indicates SER exceedance*	**78.1**	77.2	**14.0**	29.7	16.9	268,609	Each EU PAE - BAE, increases only (i.e., new EUs + marginal increase from gas release events); NO_X and $PM_{2.5}$ exceed SER
Emissions Changes from Contemporaneous Projects	-	-	-	-	0.271	156.2	Table 1 of March 2023 OPC for Installation of 2 New Filter Separators (using % increases shown)
Step 2 Net Emissions Increase ** Red text indicates SER exceedance*	(468.66)	37.9	(0.08)	26.62	(12.39)	141,761	New Source PTE + Modified Source PEI + Contemporaneous Increases - BAE for Shutdown Units; all pollutants are less than SER
Temporary PSD Avoidance Limits for Overlapping Operations	582.8	129.3	23.1	--	97.6	--	Equal to BAE for all existing/modified units + 90% × SER - PTE of "New Insignificant Activities"

3.1.3 Nonattainment New Source Review (NANSR)

The Danville Station is located in Danville County which is classified as an attainment area for all regulated pollutants. Therefore, NANSR does not apply.

3.1.4 New Source Performance Standards (NSPS)

The federal NSPS requires new, modified, or reconstructed sources to control emissions to the level that is achievable by the best demonstrated technology as specified in the applicable provisions of the rule. The following summary describes the applicability and non-applicability of NSPS subparts relevant to the Danville Station.

3.1.4.1 40 CFR 60 Subpart A – General Provisions

Any source subject to a source-specific NSPS is also subject to the general provisions of NSPS Subpart A, unless specifically excluded. NSPS Subpart A requires initial notification, performance testing, recordkeeping and monitoring, provides reference methods, and mandates general control device requirements for all other subparts as applicable.

3.1.4.2 40 CFR 60 Subpart Ka – Standards of Performance for Storage Vessels for Petroleum Liquids

NSPS Subpart Ka, Standards of Performance of Storage Vessels for Petroleum Liquids for which Construction, Reconstruction, or Modification Commenced After May 18, 1978, and prior to July 23, 1984, provides standards of performance for storage vessels for petroleum liquids with a storage capacity greater than or equal to 40,000 gallons for which construction is commenced after May 18, 1978, and prior to July 23, 1984. All of the storage vessels located at the Danville Station are sized to capacities less than 40,000 gallons and are not subject to this subpart.

3.1.4.3 40 CFR 60 Subpart Kb – Standards of Performance for Volatile Organic Liquid Storage Vessels

NSPS Subpart Kb, Standards of Performance for Volatile Organic Liquid Storage Vessels (Including Petroleum Liquid Storage Vessels) for Which Construction, Reconstruction, or Modification Commenced After July 23, 1984 and On or Before October 4, 2023, outlines performance standards for volatile organic liquids (VOL) storage vessels (including petroleum liquid storage vessels) for which construction, reconstruction, or modification commenced after July 23, 1984 or on or before October 4, 2023. However, this regulation does not apply to storage vessels with a capacity less than 75 m^3 (approximately 20,000 gallons); therefore, this regulation is not applicable to storage vessels at the Danville Station.

3.1.4.4 40 CFR 60 Subpart Kc – Standards of Performance for Volatile Organic Liquid Storage Vessels

NSPS Subpart Kc, Standards of Performance for Volatile Organic Liquid Storage Vessels (Including Petroleum Liquid Storage Vessels) for Which Construction, Reconstruction, or Modification Commenced After October 4, 2023, outlines performance standards for volatile organic liquids (VOL) storage vessels (including petroleum liquid storage vessels) for which construction, reconstruction, or modification commenced after October 4, 2023. However, this regulation does not apply to storage vessels with a capacity less than 75 m^3 (approximately 20,000 gallons); therefore, this regulation is not applicable to storage vessels at the Danville Station.

3.1.4.5 40 CFR 60 Subpart GG – Standards of Performance for Stationary Gas Turbines

NSPS Subpart GG applies to each stationary combustion turbine with a heat input at peak load equal to or greater than 10 MMBtu/hr, and which commenced construction, modification, or reconstruction after October 3, 1977. The GE Frame 3 turbines at the Danville Station (EU 03-04) were installed prior to 1977 and are not subject to NSPS Subpart GG. The new Solar Titan 130 turbines will be installed after 1977 but will be subject to NSPS Subpart KKKK instead of NSPS Subpart GG.

3.1.4.6 40 CFR Subpart KKK – Standards of Performance for Equipment Leaks of VOC from Onshore Natural Gas Processing Plants

NSPS Subpart KKK establishes Standards of Performance for Equipment Leaks of VOC From Onshore Natural Gas Processing Plants for Which Construction, Reconstruction, or Modification Commenced After January 20, 1984, and on or Before August 23, 2011. This regulation is not applicable to the Danville Station as the facility is a gas transmission station and is not a gas processing plant.

3.1.4.7 40 CFR 60 Subpart JJJJ – Standards of Performance for Stationary Spark Ignition Internal Combustion Engines

NSPS Subpart JJJJ regulates criteria pollutant emissions from stationary spark ignition (SI) internal combustion engines (ICE) constructed after June 12, 2006. For the purposes of this Subpart, the constructed date is the date when the emergency engine is ordered by the owner or operator. For emergency engines with a maximum engine power greater than 25 hp, NSPS Subpart JJJJ is applicable if the engine was manufactured after January 1, 2009. The existing emergency RICE EUs at the Danville Station (**EU 05** and **EU 06**) are currently subject to the emission standards and operating requirements in NSPS Subpart JJJJ. The new emergency RICE, proposed **EU11**, will be subject to NSPS Subpart JJJJ in the same manner.

3.1.4.8 40 CFR 60 Subpart KKKK – Standards of Performance for Stationary Combustion Turbines

NSPS Subpart KKKK applies to each stationary combustion turbine with a heat input at peak load equal to or greater than 10 MMBtu/hr based on the higher heating value (HHV) of the fuel, and which commenced construction, modification, or reconstruction after February 18, 2005. Pursuant to 40 CFR 60.4305(a), each new Solar® Titan 130 gas turbine is subject to requirements of NSPS Subpart KKKK, because its heat input at peak load will be greater than or equal to 10 MMBtu/hr (HHV) and the construction at the Danville Station will have commenced after February 18, 2005.

Note that the USEPA has proposed new requirements for combustion turbines under 40 CFR Part 60, Subpart KKKKa (NSPS Subpart KKKKa). However, NSPS Subpart KKKKa is only proposed and may be subject to change based on USEPA's assessment of public comments. Thus, at the time of this application submittal, the new Solar Titan 130 turbines proposed under this project will be subject to NSPS KKKK. A summary of requirements from NSPS Subpart KKKK that will be applicable to the new turbines is provided in the subsections below.

3.1.4.8.1 Emissions Limitations

According to 40 CFR 60.4320(a) and Table 1 to NSPS Subpart KKKK titled "Nitrogen Oxide Emission Limits for New Stationary Combustion Turbines," the new gas turbines with HHV heat inputs of between 50 and 850 MMBtu/hr, will comply with a NO_X emission standard of 25 ppm at 15 percent O_2 or 1.2 lb/MWh useful output. Pursuant to 40 CFR 60.4330(a)(2), the new turbine will comply with fuel standard of equal to or less than 0.060 lb SO_2/MMBtu heat input.

3.1.4.8.2 General Compliance Requirements

Pursuant to 40 CFR 60.4333(a), the new turbine, its air pollution control equipment, and its monitoring equipment will be maintained in a manner that is consistent with good air pollution control practices for minimizing emissions. This requirement applies at all times including during startup, shutdown, and malfunction.

3.1.4.8.3 NO_X Monitoring

Pursuant to 40 CFR 60.4340(a), since the new turbine will not use water or steam injection to control NO_X emissions, the Danville Station will perform annual performance tests in accordance with 40 CFR 60.4400 to demonstrate continuous compliance. If the NO_X emission result from the performance test is less than or equal to 75 percent of the NO_X emission limit for a turbine (i.e., < 18.75 ppm NO_X at 15% O_2 or < 0.9 lb NO_X/MW-hr), the Danville Station may reduce the frequency of subsequent performance tests to once every 2 years (no more than 26 calendar months following the previous performance test). If the results of any subsequent performance test exceed 75% of the NO_X emission limit, the Danville Station will be required to resume annual performance testing.

Per 40 CFR 60.8(a), the initial NO_X performance tests for the new turbines are required to be conducted within 60 days after achieving the maximum production rate (i.e. the turbines' maximum rated heat output), but no later than 180 days after initial startup.

3.1.4.8.4 SO_2 Monitoring

Pursuant to 40 CFR 60.4365(a), the Danville Station will obtain a current tariff sheet for the fuel specifying that the maximum total sulfur content for natural gas use is 20 grains of sulfur or less per 100 standard cubic feet (SCF) and potential sulfur emissions are less than 0.060 lb SO_2/MMBtu) heat input.

3.1.4.8.5 Reporting

Pursuant to 40 CFR 60.4375(b), since the Danville Station will be conducting annual performance testing in accordance with 40 CFR 60.4340(a), a written report of the results of the performance test will be submitted to KDAQ and the USEPA before the close of business on the 60th day following the completion of the performance test.

Per 40 CFR 60.7(a)(1), the Danville Station will submit notification of the date construction of the new turbine commenced. The submittal will be postmarked no later than 30 days after the commencement of construction date. Per 40 CFR 60.7(a)(3), the submittal of the notifications of the actual date of initial startup of the new turbine will be postmarked by no later than 15 days after the initial startup dates. The reports will satisfy the construction and start-up reporting requirements required by Section G of the current permit.

3.1.4.9 40 CFR 60 Subpart KKKKa – Standards of Performance for Stationary Combustion Turbines

NSPS Subpart KKKKa for stationary combustion turbines was proposed on December 13, 2024, and is not yet promulgated as a final rule. The USEPA reopened and extended the public comment period to April 15, 2025, to allow additional time for stakeholders to review and comment on the proposed rule. Multiple aspects of the proposed NSPS Subpart KKKKa may be subject to change based on USEPA's assessment of public comments. The proposed NSPS Subpart KKKKa would apply to new stationary combustion turbines with a base load rating greater than 10 MMBtu/hr, based on the HHV of the fuel,

which commenced construction, modification, or reconstruction after December 13, 2024. This subpart would regulate NO_X and SO_2 emissions from such turbines. Once NSPS Subpart KKKKa is promulgated as final, a detailed applicability analysis will be performed for the new turbines.

3.1.4.10 40 CFR 60 Subpart OOOO – Natural Gas Production, Transmission and Distribution

NSPS Subpart OOOO establishes emission standards and compliance schedules for the control of emissions from affected facilities that commence construction, modification or reconstruction after August 23, 2011, and on or before September 18, 2015. Affected facilities include certain units and operations located in the oil and natural gas production segment, natural gas processing segment or natural gas transmission and storage segment.

Under NSPS Subpart OOOO, the only affected facilities in the natural gas transmission and storage segment are storage vessels that have the potential for VOC emissions equal to or greater than 6 tpy. The Danville Station does not include any storage vessels which have a PTE of 6 tpy or more of VOC. Also, units at the facility were put into operation before August 23, 2011, and have not been modified or reconstructed since installation. Therefore, NSPS Subpart OOOO does not apply to the Danville Station.

3.1.4.11 40 CFR 60 Subpart OOOOa – Natural gas Production, Transmission and Distribution

NSPS OOOOa establishes emission standards and compliance schedules for the control of GHG from affected facilities in the oil and natural gas industry that commence construction, modification or reconstruction after September 18, 2015.

The collection of fugitive equipment components from new or modified natural gas compressor stations is subject to leak detection and repair (LDAR) requirements under NSPS OOOOa. In addition, the rule also includes requirements for other affected facilities at natural gas transmission compressor stations, including reciprocating compressors with rod packing, storage vessels, pneumatic pumps, and continuous bleed pneumatic controllers.

- For the purposes of NSPS OOOOa, a "modification" to the collection of fugitive emission components at a compressor station occurs when:
  - An additional compressor is installed at a compressor station; or
  - One or more compressors at a compressor station are replaced by one or more compressors of greater total horsepower than the compressor(s) being replaced.
- All of the compressor units at the Danville Station were installed prior to September 18, 2015, and have not been modified or reconstructed since the rule's applicability date.
- The Danville Station does not include any storage vessels with a PTE of 6 tpy or more of VOC. Additionally, the units at the Danville Station were installed prior to September 18, 2015, and have not been modified or reconstructed since the rule's applicability date.
- The Danville Station does not include any pneumatic pumps.
- The Danville Station does not include any continuous bleed pneumatic controllers.

Therefore, NSPS OOOOa does not apply to any of the activities at the Danville Station.

3.1.4.12 40 CFR 60 Subpart OOOOb – Crude Oil & Natural Gas Facilities for Which Construction, Modification or Reconstruction Commenced After December 6, 2022

NSPS OOOOb establishes emission standards and compliance schedules for the control of greenhouse gases (GHG) from affected facilities in the oil and natural gas industry that commence construction, modification or reconstruction after December 6, 2022. The rule includes requirements for a variety of affected facilities at natural gas transmission compressor stations including:

- Centrifugal compressors,
- Reciprocating compressors,
- Storage vessels,
- Collection of natural gas-driven process controllers,
- Collection of natural gas-driven pumps, and
- Collection of fugitive emissions components.

Texas Eastern has determined that the TEM IV project will trigger applicable requirements for the construction of operation of various affected facilities covered under NSPS Subpart OOOOb as described in the subsections below. Note that there has been no net increase or modification of the collection of natural gas-driven process controllers at the station. Thus, the rule does not apply to the collection of natural gas-driven process controllers at the station.

3.1.4.12.1 Turbine-Fired Compressors

The new and increased horsepower rating of the compressor associated with the new Solar Titan 130 turbines will trigger applicable requirements for the new centrifugal compressors, and the leak detection and repair (LDAR) program for the collection of fugitive emission components. These requirements are outlined in the DEP 7007V form in Appendix C.

3.1.4.12.2 Pipeline Liquids Storage Tank

A new 2,640-gallon pipeline liquids storage tank (V05; proposed **EU13**) will be constructed but will not be an applicable facility as, pursuant to 40 CFR 60.5365b(e)(1)(i), the PTE of VOC from the "tank battery" (i.e., in this case, the single tank) will be less than 6 tpy. Pursuant to 40 CFR 60.5365b(e)(2)(i)(A)-(F), this determination may take into account requirements under a legally and practicably enforceable (LPE) limit(s) meeting the requirements for such limits listed therein. Texas Eastern's proposed LPE limits are as provided below. These limits are based on the presumed maximum annual throughput of pipeline liquids of 7,920 gallons per year and the corresponding emissions calculations as calculated in TankESP® (refer to Appendix B).

1. The permittee shall limit VOC emissions to 0.35 tons per 12-month rolling total.
    a. The 12-month rolling VOC emissions total will be determined by adding the current month's VOC emissions to that of the previous 11 months.
    b. The permittee shall monitor and record the monthly and 12-month rolling total VOC emissions in units of tons.
2. The permittee shall limit methane emissions to 0.75 tons per 12-month rolling total.
    a. The 12-month rolling methane emissions total will be determined by adding the current month's methane emissions to that of the previous 11 months.
    b. The permittee shall monitor and record the monthly and 12-month rolling total methane emissions in units of tons.

3. The permittee shall limit the tank throughput volume to 7,920 gallons per 12-month rolling total.
    a. The 12-month rolling total will be determined by adding the current month's throughput to that of the previous 11 months.
    b. The permittee shall monitor and record the monthly and 12-month rolling total tank throughput of pipeline liquids in units of gallons.
4. The permittee shall report the 12-month rolling limitations proposed above on a semiannual basis as a component of the required semiannual monitoring report.

3.1.5 National Emission Standards for Hazardous Air Pollutants

NESHAP or MACT standards apply to major sources of HAP or specifically designated area sources of HAP. A major source of HAP is defined as having potential emissions in excess of 10 tpy for any individual HAP, and/or 25 tpy for total HAP. The Danville Station is an area source of HAP, and therefore Texas Eastern has reviewed the applicability of the following standards.

3.1.5.1 40 CFR 63 Subpart A – General Provisions

NESHAP Subpart A, General Provisions, contains national emission standards for HAP defined in Section 112(b) of the Clean Air Act. All affected sources, which are subject to another NESHAP, are subject to the general provisions of NESHAP Subpart A, unless specifically excluded by the source-specific NESHAP. Subpart A is applicable because 40 CFR Part 63 Subpart ZZZZ is applicable (see below).

3.1.5.2 40 CFR 63 Subpart HH – National Emission Standards for Hazardous Air Pollutants from Oil and Natural Gas Production Facilities

NESHAP Subpart HH applies to major and area sources of HAP that process, upgrade, or store hydrocarbon liquids. The natural gas production facility to which the rule applies ends at the point that the natural gas enters a facility in the natural gas transmission and storage category per 40 CFR 63.760(a)(3). The Danville Station does not include any dehydration units, and the station is considered a natural gas transmission and storage facility. Therefore, NESHAP Subpart HH does not apply.

3.1.5.3 40 CFR 63 Subpart HHH – National Emission Standards for Hazardous Air Pollutants from Natural Gas Transmission and Storage Facilities

This subpart applies to owners and operators of natural gas transmission and storage facilities that transport or store natural gas prior to entering the pipeline to a local distribution company or to a final end user (if there is no local distribution company), and that are major sources of HAP emissions. The Danville Station does not include any glycol dehydration units. Thus, this regulation does not apply to the Danville Station.

3.1.5.4 40 CFR 63 Subpart YYYY – National Emission Standards for Hazardous Air Pollutants for Stationary Combustion Turbines

40 CFR 63 Subpart YYYY – National Emission Standards for Hazardous Air Pollutants for Stationary Combustion Turbines (NESHAP YYYY) establishes emissions and operating limitations for HAP from existing, reconstructed, or new stationary combustion turbines located at major stationary sources of HAP. The existing gas turbines (**EU03** and **EU04**) are subject to NESHAP YYYY, and all applicable requirements from this federal regulation are adequately captured in the current Title V permit V-16-056 with no necessary updates for the proposed project. With the full implementation of the TEM IV Project, the Danville Station will be designated as an area source of HAP; therefore, this regulation does not apply.

Note that on September 21, 2023, US EPA proposed a rule to refine "major source" review under the NESHAP program, proposing to allow major sources that limit emissions to reclassify as "area sources" but to also impose emission limitation safeguards on those sources. This stipulation was *not* included in the September 10, 2024, final rule.[19] Furthermore, the September 10, 2024, rule was revoked per the Congression Review Act (CRA) on June 20, 2025. Therefore, no federally-enforceable emissions limitations are necessary for Enbridge to reclassify as an area source of HAP on a post-project basis.

3.1.5.5 40 CFR 63 Subpart ZZZZ – Stationary Reciprocating Internal Combustion Engines

40 CFR 63 Subpart ZZZZ, National Emission Standards for Hazardous Air Pollutants for Stationary Reciprocating Internal Combustion Engines, provides national emission limitations and operating limitations for HAP emitted from stationary RICE located at major and area sources of HAP. Upon completion of the project, the Danville Station will be an area source of HAP that includes one natural gas-fired emergency engine subject to this rule. Compliance with the requirements of NSPS JJJJ satisfies the requirements of 40 CFR 63, Subpart ZZZZ.

3.1.6 Mandatory Greenhouse Gas Reporting Rule

40 CFR Part 98 establishes mandatory GHG reporting requirements for facilities that directly emit GHGs. The GHG reporting requirements and related monitoring and recordkeeping requirements apply to any facility that has an aggregate maximum rated heat input capacity of the stationary fuel combustion units of 30 MMBTU/hr or greater and has actual emissions of 25,000 metric tons of carbon dioxide equivalents (CO_2e) or more per year in combined emissions from all stationary fuel combustion sources. The Danville Station has an aggregate maximum rated heat input capacity of stationary fuel combustion units at the facility greater than 30 MMBTU/hr and has a CO_2e PTE greater than 25,000 metric tons per year. Therefore, the Texas Eastern will continue to comply with the requirements of 40 CFR Part 98.

3.1.7 Risk Management Plan

Subpart B of 40 CFR Part 68 outlines requirements for risk management prevention plans pursuant to Section 112(r) of the Clean Air Act. Applicability of the subpart is determined based on the type and quantity of chemicals stored at a facility. The Danville Station does not exceed the threshold quantity for any of the chemicals and is, therefore, not subject to 40 CFR 68 Subpart B. Texas Eastern is subject to the General Duty Clause under the Clean Air Act Section 112(r)(1), which states:

"The owners and operators of stationary sources producing, processing, handling or storing such substances [i.e., a chemical in 40 CFR part 68 or any other extremely hazardous substance] have a general duty [in the same manner and to the same extent as the general duty clause in the Occupational Safety and Health Act (OSHA)] to identify hazards which may result from (such) releases using appropriate hazard assessment techniques, to design and maintain a safe facility taking such steps as are necessary to prevent releases, and to minimize the consequences of accidental releases which do occur."

3.1.8 Stratospheric Ozone Protection Regulations

The requirements originating from Title VI of the Clean Air Act, entitled Protection of Stratospheric Ozone, are contained in 40 CFR Part 82. 40 CFR Part 82 Subpart F, Recycling and Emissions Reduction,

[19] *Review of Final Rule Reclassification of Major Sources as Area Sources Under Section 112 of the Clean Air Act* [89 FR 73293]

potentially applies if the facility maintains, repairs, services, or disposes of appliances that utilize Class I or Class II ozone depleting substances. Subpart F generally requires persons completing the repairs, service, or disposal to be properly certified. An appropriately certified technician will complete all repairs, service, and disposal of ozone depleting substances from the air conditioners at the facility. Subparts A through E and Subparts G and H are not applicable to the Facility. The Danville Station will continue to comply with 40 CFR Part 82, as appropriate.

3.1.9 Compliance Assurance Monitoring

The Compliance Assurance Monitoring (CAM) regulations apply to pollutant-specific emission units at a major source under the Title V operating permit program that satisfy the following criteria as detailed in 40 CFR§64.2(a):

- The unit is subject to an emission limitation or standard for the applicable regulated air pollutant (or a surrogate thereof), other than an emission limitation or standard that is exempt under 40 CFR 64.2(b);
- The unit uses a control device to achieve compliance with any such limitation or standard; and
- The unit has potential pre-control device emissions of the applicable regulated air pollutant that are equal to or greater than 100 percent of the amount, in tons per year, required for a source to be classified as a major source.

The pre-controlled emission levels for the new gas-fired turbines, which are equipped with OxCat to reduce CO, VOC, and HAP emissions, do not exceed the major source thresholds under the Title V operating permit program. Therefore, CAM requirements will not apply to the new units at the Danville Station.

3.2 State of Kentucky Regulations

This section of the renewal application identifies specific regulations in Kentucky's State Implementation Plan (SIP) relevant to the Danville Station.

3.2.1 401 KAR 59:015 – New Indirect Heat Exchangers

This regulation applies to equipment, apparatus, or contrivances used for the combustion of fuel in which the energy produced is transferred to its point of usage through a medium that does not come into contact with or add to the products of combustion. Affected sources must have a heat input capacity greater than 1 MMBtu/hr.

The 3 new natural gas-fired fuel gas heaters (proposed **EU12**) meet the definition of indirect heat exchangers under 401 KAR 59:015 as they each have a heat input rating of 1.2 MMBtu/hr and are new affected facilities. Section 4 of 401 KAR 59:015 establishes opacity standards and heat input-based particulate matter (PM) emission limits. Pursuant to 401 KAR 59:015, Section 4(2), opacity of continuous emissions from the proposed **EU12** are limited to 20%, except that a maximum of 40% shall be allowed for a maximum of six (6) consecutive minutes in any sixty (60) minute period during fire-box cleaning or soot blowing events.

The applicable PM emission limit is determined based on the total heat input capacity for all the affected facilities at the source at the time of construction of the new units. A different heat input-based PM allowable emission rate applies depending on whether the total heat input capacity for the facility is less than 10 MMBtu/hr, between 10 MMBtu/hr and 250 MMBtu/hr, or above 250 MMBtu/hr. The sum of the

heat input capacities for the proposed **EU12** plus the existing 401 KAR 59:015 affected facilities is less than 10 MMBtu/hr; therefore, the allowable PM emission factor using the applicable algorithm presented in 401 KAR 59:015, Section 4(1)(b), is 0.56 lb PM/MMBtu.[20] The potential PM emission factor from combusting natural gas in the new heat exchangers is lower than the allowable PM emission rate, so the Danville Station will be implicitly in compliance with these emission limits when burning natural gas.

Section 5 of the rule establishes SO_2 emissions standards. The SO_2 emissions standard is also limited based on the total heat input capacity for all affected facilities at the source. A different heat input capacity-based allowable emission rate algorithm applies based on the type of fuel to be burned (e.g., solid, liquid, or gaseous) and whether the total, facility-wide affected facility heat input capacity falls within one of the same ranges discussed above for the PM emission limit derivation. Thus, the allowable SO_2 emission factor is 3.0 lb SO_2/MMBtu.[21] Again, the potential SO_2 emission factor from combusting natural gas in the Danville Station's affected units is lower than the allowable SO_2 emission rate, so the units will be implicitly in compliance with these emission limits when burning natural gas.

3.2.2 401 KAR 63:020 – Kentucky Air Toxics Program

401 KAR 63:020 establishes Kentucky's Air Toxics Program, which restricts any affected facility from emitting potentially hazardous matter or toxic substances in such quantities or duration as to be harmful to the health and welfare of humans, animals and plants. Pursuant to Permit V-16-056, the Danville Station is in compliance with 401 KAR 63:020 based on the rates of emissions of airborne toxics provided in the most recent application submitted by the source. Texas Eastern does not anticipate that the compliance situation will be affected by this application, as the new turbines are well-controlled and are sources of standard natural gas combustion byproducts.

3.2.3 401 KAR 52:020 – Title V Permits

3.2.3.1 Qualification as a Significant Permit Revision

Pursuant to 401 KAR 52:020 Section 16, a significant permit revision is required for permit revisions that "[i]nvolve significant changes in the monitoring requirements or a relaxation in the reporting or recordkeeping requirements contained in the permit" or "[d]o not qualify as administrative permit amendments or minor permit revisions." As stated throughout this application, Texas Eastern will be requesting temporary PSD avoidance limits and LPE to avoid applicability to NSPS Subpart OOOOb. Texas Eastern considers each of these to be "case-by-case determinations" under 401 KAR 52:020 Section 14(1)(c). Meeting the criterion of Section 14(1)(c) precludes the use of a minor permit revision to institute the requested changes and, consequently, requires a significant permit revision.

3.2.3.2 Required Information for a Significant Permit Revision

Pursuant to 401 KAR 52:020 Section 16, significant permit revisions shall include all the same information as an initial permit application or renewal application.

[20] Pursuant to 401 KAR 59:015 Section 4.(1)(a).

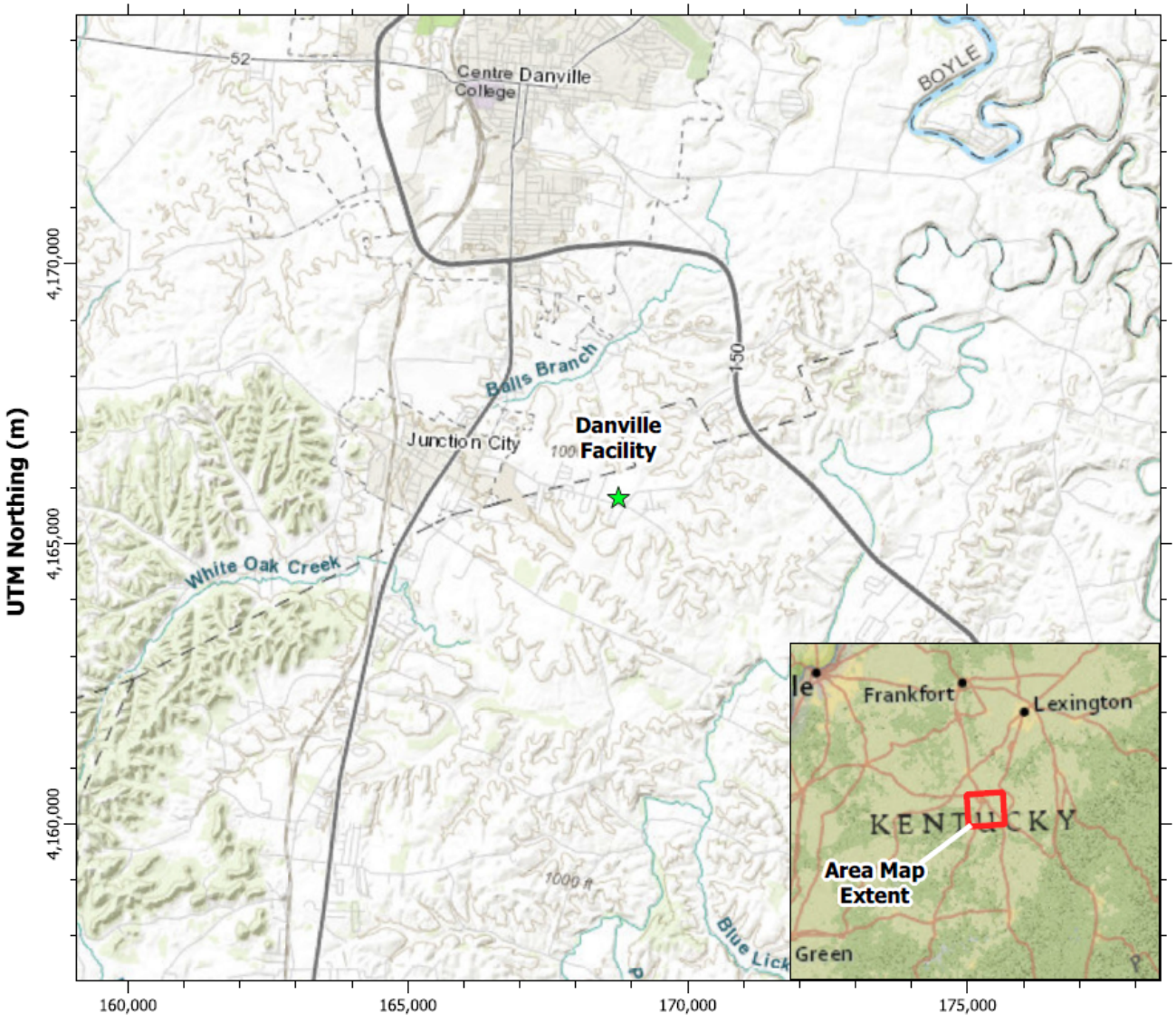
[21] Pursuant to 401 KAR 59:015 Section 5.(1)(a)1.

3.2.3.3 Certification Statement

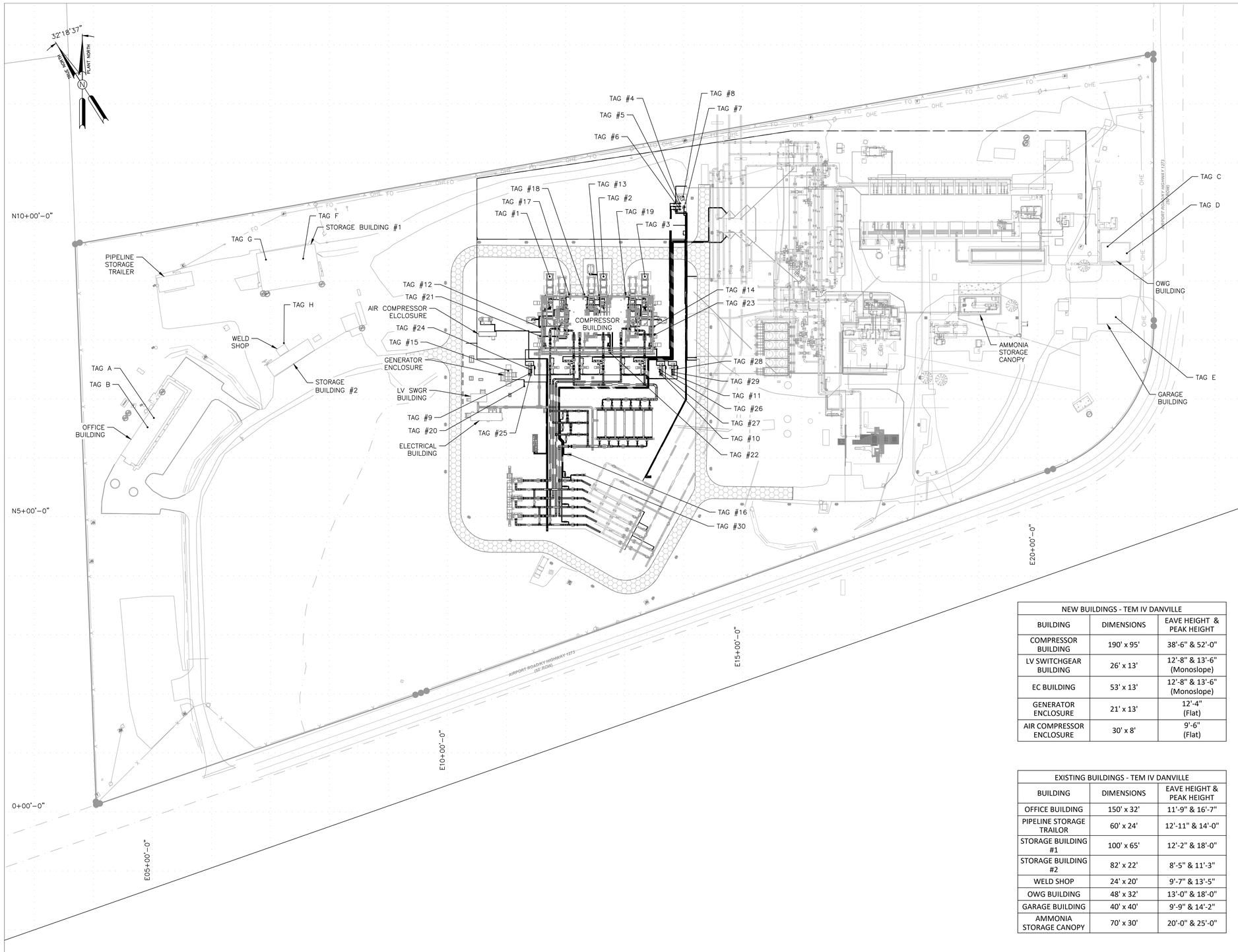
Based on information and belief formed after reasonable inquiry, the statements and information contained in this notification are true, accurate, and complete. This declaration is affirmed by the Danville Station's responsible official via the signature on the DEP 7007AI form in Appendix C.

APPENDIX A: AREA MAP AND PLOT PLAN

Area Map for the Danville Compressor Station



All coordinates shown in UTM Coordinates, UTM Zone 16, NAD 83 Datum



NEW EMISSIONS SOURCES - TEM IV DANVILLE				
EMISSIONS TAG NUMBER	SOURCE DESCRIPTION	LOCATION	EMISSION HEIGHT	CROSS SECTIONAL AREA
1	UNIT 4T TURBINE EXHAUST	5210484.87 E 3736636.56 N	~61' ABOVE GRADE	84" ID (~38.48 SF)
2	UNIT 5T TURBINE EXHAUST	5210561.98 E 3736587.79 N	~61' ABOVE GRADE	84" ID (~38.48 SF)
3	UNIT 6T TURBINE EXHAUST	5210621.10 E 3736550.28 N	~61' ABOVE GRADE	84" ID (~38.48 SF)
4	UNIT 4T CASE VENT BLOWDOWN SEP/SILENCER	5210737.56 E 3736623.46 N	~21' ABOVE GRADE	26" ID (~3.69 SF)
5	UNIT 5T CASE VENT BLOWDOWN SEP/SILENCER	5210734.77 E 3736619.15 N	~21' ABOVE GRADE	26" ID (~3.69 SF)
6	UNIT 6T CASE VENT BLOWDOWN SEP/SILENCER	5210732.10 E 3736614.92 N	~21' ABOVE GRADE	26" ID (~3.69 SF)
7	PIPELINE RECEIVER SEPARATOR VENT	5210740.59 E 3736614.05 N	~20' ABOVE GRADE	11.750" ID (~0.75 SF)
8	SOURCE CONTROL ACCUMULATOR VENT	5210748.17 E 3736630.04 N	~15' ABOVE GRADE	3.826" ID (~0.08 SF)
9	UNIT 4T FUEL GAS HEATER STACK	5210367.44 E 3736515.96 N	~15' ABOVE GRADE	9.75" ID (~0.52 SF)
10	UNIT 5T FUEL GAS HEATER STACK	5210555.47 E 3736396.54 N	~15' ABOVE GRADE	9.75" ID (~0.52 SF)
11	UNIT 6T FUEL GAS HEATER STACK	5210572.48 E 3736385.54 N	~15' ABOVE GRADE	9.75" ID (~0.52 SF)
12	UNIT 4T FUEL GAS ESD BLOWDOWN	5210424.82 E 3736573.21 N	~47' ABOVE GRADE	1.939" ID (~0.02 SF)
13	UNIT 5T FUEL GAS ESD BLOWDOWN	5210538.89 E 3736565.60 N	~47' ABOVE GRADE	1.939" ID (~0.02 SF)
14	UNIT 6T FUEL GAS ESD BLOWDOWN	5210590.26 E 3736470.52 N	~47' ABOVE GRADE	1.939" ID (~0.02 SF)
15	GENERATOR EXHAUST	5210340.18 E 3736539.26 N	~18' ABOVE GRADE	11.750" ID (~0.75 SF)
16	UNIT 4T/5T/6T SUCTION/DISCHARGE ESD BLOWDOWN	5210353.27 E 3736362.69 N	~20' ABOVE GRADE	11.750" ID (~0.75 SF)
17	UNIT 4T LUBE OIL VENT	5210496.67 E 3736593.86 N	~44' ABOVE GRADE	7.625" ID (~0.32 SF)
18	UNIT 5T LUBE OIL VENT	5210518.54 E 3736579.90 N	~44' ABOVE GRADE	7.625" ID (~0.32 SF)
19	UNIT 6T LUBE OIL VENT	5210578.65 E 3736544.59 N	~44' ABOVE GRADE	7.625" ID (~0.32 SF)
20	UNIT 4T SEAL GAS VENTS	5210349.05 E 3736502.47 N	~60' ABOVE GRADE	(2) 1.939" ID (~0.02 SF EA.)
21	UNIT 5T SEAL GAS VENTS	5210417.15 E 3736559.90 N	~60' ABOVE GRADE	(2) 1.939" ID (~0.02 SF EA.)
22	UNIT 6T SEAL GAS VENTS	5210502.42 E 3736472.06 N	~60' ABOVE GRADE	(2) 1.939" ID (~0.02 SF EA.)
23	DOMESTIC GAS LASD BLOWDOWN	5210582.08 E 3736458.17 N	~10' ABOVE GRADE	1.939" ID (~0.02 SF)
24	UNIT 4T HEATER FUEL GAS VENT VALVE	5210374.00 E 3736519.54 N	~10' ABOVE GRADE	0.815" ID (~0.01 SF)
25	UNIT 4T HEATER FUEL/PILOT GAS VENT VALVE	5210372.18 E 3736516.49 N	~10' ABOVE GRADE	0.815" ID (~0.01 SF)
26	UNIT 5T HEATER FUEL GAS VENT VALVE	5210558.00 E 3736403.63 N	~10' ABOVE GRADE	0.815" ID (~0.01 SF)
27	UNIT 5T HEATER FUEL/PILOT GAS VENT VALVE	5210556.02 E 3736400.80 N	~10' ABOVE GRADE	0.815" ID (~0.01 SF)
28	UNIT 6T HEATER FUEL GAS VENT VALVE	5210575.69 E 3736392.30 N	~10' ABOVE GRADE	0.815" ID (~0.01 SF)
29	UNIT 6T HEATER FUEL/PILOT GAS VENT VALVE	5210574.02 E 3736389.11 N	~10' ABOVE GRADE	0.815" ID (~0.01 SF)
30	DISCHARGE ESD BLOWDOWN	5210353.99 E 3736321.29 N	~20' ABOVE GRADE	11.750" ID (~0.75 SF)

NEW BUILDINGS - TEM IV DANVILLE		
BUILDING	DIMENSIONS	EAVE HEIGHT & PEAK HEIGHT
COMPRESSOR BUILDING	190' x 95'	38'-6" & 52'-0"
LV SWITCHGEAR BUILDING	26' x 13'	12'-8" & 13'-6" (Monoslope)
EC BUILDING	53' x 13'	12'-8" & 13'-6" (Monoslope)
GENERATOR ENCLOSURE	21' x 13'	12'-4" (Flat)
AIR COMPRESSOR ENCLOSURE	30' x 8'	9'-6" (Flat)

EXISTING BUILDINGS - TEM IV DANVILLE		
BUILDING	DIMENSIONS	EAVE HEIGHT & PEAK HEIGHT
OFFICE BUILDING	150' x 32'	11'-9" & 16'-7"
PIPELINE STORAGE TRAILOR	60' x 24'	12'-11" & 14'-0"
STORAGE BUILDING #1	100' x 65'	12'-2" & 18'-0"
STORAGE BUILDING #2	82' x 22'	8'-5" & 11'-3"
WELD SHOP	24' x 20'	9'-7" & 13'-5"
OWG BUILDING	48' x 32'	13'-0" & 18'-0"
GARAGE BUILDING	40' x 40'	9'-9" & 14'-2"
AMMONIA STORAGE CANOPY	70' x 30'	20'-0" & 25'-0"

EXISTING EMISSIONS SOURCES - TEM IV DANVILLE				
EMISSIONS TAG NUMBER	SOURCE DESCRIPTION	LOCATION	EMISSION HEIGHT	CROSS SECTIONAL AREA
A	OFFICE BUILDING HEATER #1	5209790.00 E 3736792.48 N	15'-6" ABOVE GRADE	6" ID (~0.76 SF)
B	OFFICE BUILDING HEATER #2	5209772.58 E 3736784.86 N	18'-0" ABOVE GRADE	6" ID (~0.76 SF)
C	OWG BUILDING HEATER #1	5211310.97 E 3736174.41 N	20'-0" ABOVE GRADE	6" ID (~0.76 SF)
D	OWG BUILDING HEATER #2	5211332.35 E 3736147.31 N	20'-0" ABOVE GRADE	6" ID (~0.76 SF)
E	GARAGE BUILDING HEATER	5211258.74 E 3736065.87 N	17'-0" ABOVE GRADE	6" ID (~0.76 SF)
F	STORAGE BUILDING #1 HEATER #1	5210148.11 E 3736885.46 N	21'-0" ABOVE GRADE	6" ID (~0.76 SF)
G	STORAGE BUILDING #2 HEATER #2	5210093.96 E 3736917.89 N	21'-0" ABOVE GRADE	6" ID (~0.76 SF)
H	WELD SHOP HEATER	5210044.01 E 3736781.95 N	12'-7" ABOVE GRADE	6" ID (~0.76 SF)

DWG. NO.	REFERENCE DWG.	REV	DATE	DSN	CK	DESCRIPTION

ENGineering
28100 TORCH PARKWAY
WARRENVILLE, IL 60555
TEL 630-353-4000
FAX 630-353-7777
WWW.ENGINEERING.COM

DRAWN BY:	MJG	4/8/2025	TEM IV AIR PERMIT PLOT PLAN		ENBRIDGE
DESIGN CHECKER:	PDH	4/8/2025			
DESIGN ENGINEER:	PDH	4/8/2025	TITLE: DANVILLE COMPRESSOR STATION		Texas Eastern Transmission, LP 5400 Westheimer Ct. Houston, TX 77056-5310 713 / 627-5400
PROJECT MANAGER:	DJH	4/8/2025	LOC.: LINCOLN COUNTY, KY		
TITLE	INITIALS	DATE	YEAR: 2028	W.O.: 30004504	SCALE: 1" = 80'	DWG.: EXHIBIT	REV.:

Drawing: \\ene.enengineering.com\dfs\FileShare\Projects\ENB\231427.00\Drawings\6. Working Drawings\6.4 Mechanical Drawings\Exhibits\DANV-Air Permit Plan.dwg
Time: 4/1/2022 10:38:09 AM
Model:
Username: M.GONZALEZ

APPENDIX B: DETAILED EMISSIONS CALCULATIONS

TABLE A-1
Potential to Emit
Basis

Emission Source					Rated Capacity	Operational Limits								Data Sources
ID	FIN	EPN	GIN	Description		Short-Term -- Material Flow		Short-Term -- Capacity		Annual Material Flow		Annual Utilization		
DANV TBC 01	DANV TBC 01	DANV TBC 01		Turbine	18,100 bhp (NEMA)	Natural Gas	171,492 scfh	Power Output	21,793 bhp	Natural Gas	1,367,966,752 scf/yr	Runtime	8,760 hrs/yr	TABLE B-1Ac
DANV TBC 02	DANV TBC 02	DANV TBC 02		Turbine	18,100 bhp (NEMA)	Natural Gas	171,492 scfh	Power Output	21,793 bhp	Natural Gas	1,367,966,752 scf/yr	Runtime	8,760 hrs/yr	TABLE B-1Ac
DANV TBC 03	DANV TBC 03	DANV TBC 03		Turbine	18,100 bhp (NEMA)	Natural Gas	171,492 scfh	Power Output	21,793 bhp	Natural Gas	1,367,966,752 scf/yr	Runtime	8,760 hrs/yr	TABLE B-1Ac
DANV ENGEN 01	DANV ENGEN 01	DANV ENGEN 01		IC Engine	1,475 bhp	Natural Gas	12,589 scfh	Power Output	1,475 bhp	Natural Gas	6,294,523 scf/yr	Runtime	500 hrs/yr	TABLE C-1A
DANV FGH 01	DANV FGH 01	DANV FGH 01		Boilers/Heaters	0.750 MMBTU/hr (output)	Natural Gas	1,188 scfh	Heat Input	1.212 MMBTU/hr	Natural Gas	9,909,502 scf/yr	Runtime	8,760 hrs/yr	TABLE D-1A
DANV FGH 02	DANV FGH 02	DANV FGH 02		Boilers/Heaters	0.750 MMBTU/hr (output)	Natural Gas	1,188 scfh	Heat Input	1.212 MMBTU/hr	Natural Gas	9,909,502 scf/yr	Runtime	8,760 hrs/yr	TABLE D-1A
DANV FGH 03	DANV FGH 03	DANV FGH 03		Boilers/Heaters	0.750 MMBTU/hr (output)	Natural Gas	1,188 scfh	Heat Input	1.212 MMBTU/hr	Natural Gas	9,909,502 scf/yr	Runtime	8,760 hrs/yr	TABLE D-1A
DANV HVAC 01	DANV HVAC 01	DANV HVAC 01		Boilers/Heaters	0.112 MMBTU/hr (output)	Natural Gas	124 scfh	Heat Input	0.126 MMBTU/hr	Natural Gas	1,030,588 scf/yr	Runtime	8,760 hrs/yr	TABLE D-1B
DANV HVAC 02	DANV HVAC 02	DANV HVAC 02		Boilers/Heaters	0.112 MMBTU/hr (output)	Natural Gas	124 scfh	Heat Input	0.126 MMBTU/hr	Natural Gas	1,030,588 scf/yr	Runtime	8,760 hrs/yr	TABLE D-1C
DANV SHTR 01	DANV SHTR 01	DANV SHTR 01		Boilers/Heaters	0.120 MMBTU/hr (output)	Natural Gas	154 scfh	Heat Input	0.158 MMBTU/hr	Natural Gas	1,288,235 scf/yr	Runtime	8,760 hrs/yr	TABLE D-1D
DANV SHTR 02	DANV SHTR 02	DANV SHTR 02		Boilers/Heaters	0.140 MMBTU/hr (output)	Natural Gas	180 scfh	Heat Input	0.184 MMBTU/hr	Natural Gas	1,502,941 scf/yr	Runtime	8,760 hrs/yr	TABLE D-1E
DANV SHTR 03	DANV SHTR 03	DANV SHTR 03		Boilers/Heaters	0.140 MMBTU/hr (output)	Natural Gas	180 scfh	Heat Input	0.184 MMBTU/hr	Natural Gas	1,502,941 scf/yr	Runtime	8,760 hrs/yr	TABLE D-1E
DANV SHTR 04	DANV SHTR 04	DANV SHTR 04		Boilers/Heaters	0.080 MMBTU/hr (output)	Natural Gas	103 scfh	Heat Input	0.105 MMBTU/hr	Natural Gas	858,824 scf/yr	Runtime	8,760 hrs/yr	TABLE D-1F
DANV SHTR 05	DANV SHTR 05	DANV SHTR 05		Boilers/Heaters	0.110 MMBTU/hr (output)	Natural Gas	141 scfh	Heat Input	0.144 MMBTU/hr	Natural Gas	1,176,588 scf/yr	Runtime	8,760 hrs/yr	TABLE D-1G
DANV SHTR 06	DANV SHTR 06	DANV SHTR 06		Boilers/Heaters	0.025 MMBTU/hr (output)	Natural Gas	31 scfh	Heat Input	0.032 MMBTU/hr	Natural Gas	257,647 scf/yr	Runtime	8,760 hrs/yr	TABLE D-1H
DANV SHTR 07	DANV SHTR 07	DANV SHTR 07		Boilers/Heaters	0.100 MMBTU/hr (output)	Natural Gas	129 scfh	Heat Input	0.131 MMBTU/hr	Natural Gas	1,073,529 scf/yr	Runtime	8,760 hrs/yr	TABLE D-1I
DANV SHTR 08	DANV SHTR 08	DANV SHTR 08		Boilers/Heaters	0.100 MMBTU/hr (output)	Natural Gas	129 scfh	Heat Input	0.131 MMBTU/hr	Natural Gas	1,073,529 scf/yr	Runtime	8,760 hrs/yr	TABLE D-1I
DANV CHTR 01	DANV CHTR 01	DANV CHTR 01		Boilers/Heaters	0.004 MMBTU/hr (output)	Natural Gas	6 scfh	Heat Input	0.006 MMBTU/hr	Natural Gas	51,529 scf/yr	Runtime	8,760 hrs/yr	TABLE D-1J
DANV WHTR 01	DANV WHTR 01	DANV WHTR 01		Boilers/Heaters	0.017 MMBTU/hr (output)	Natural Gas	31 scfh	Heat Input	0.032 MMBTU/hr	Natural Gas	257,647 scf/yr	Runtime	8,760 hrs/yr	TABLE D-1K
DANV WHTR 02	DANV WHTR 02	DANV WHTR 02		Boilers/Heaters	0.023 MMBTU/hr (output)	Natural Gas	41 scfh	Heat Input	0.042 MMBTU/hr	Natural Gas	343,529 scf/yr	Runtime	8,760 hrs/yr	TABLE D-1L
DANV OVEN 01	DANV OVEN 01	DANV OVEN 01		Boilers/Heaters	0.007 MMBTU/hr (output)	Natural Gas	81 scfh	Heat Input	0.083 MMBTU/hr	Natural Gas	678,471 scf/yr	Runtime	8,760 hrs/yr	TABLE D-1M
DANV OVEN 02	DANV OVEN 02	DANV OVEN 02		Boilers/Heaters	0.007 MMBTU/hr (output)	Natural Gas	81 scfh	Heat Input	0.083 MMBTU/hr	Natural Gas	678,471 scf/yr	Runtime	8,760 hrs/yr	TABLE D-1N
DANV SVV V01C01	DANV SVV V01C01	DANV SVV V01C01		Separator Vessel	59 gal (accumulation)	Pipeline Liquids	59 gal/hr	Aboveground; Vertical; H/L = 20.00; D = 3.17		Pipeline Liquids	264.00 gal/yr	Runtime	N/A	TABLE F-1AA
DANV SVV V01C02	DANV SVV V01C02	DANV SVV V01C02		Separator Vessel	59 gal (accumulation)	Pipeline Liquids	59 gal/hr	Aboveground; Vertical; H/L = 20.00; D = 3.17		Pipeline Liquids	264.00 gal/yr	Runtime	N/A	TABLE F-1AB
DANV SVV V01C03	DANV SVV V01C03	DANV SVV V01C03		Separator Vessel	59 gal (accumulation)	Pipeline Liquids	59 gal/hr	Aboveground; Vertical; H/L = 20.00; D = 3.17		Pipeline Liquids	264.00 gal/yr	Runtime	N/A	TABLE F-1AC
DANV SLV V02	DANV SLV V02	DANV SLV V02		Separator Vessel	470 gal (accumulation)	Pipeline Liquids	470 gal/hr	Aboveground; Vertical; H/L = 10.00; D = 4.00		Pipeline Liquids	7,920.00 gal/yr	Runtime	N/A	TABLE F-1B
DANV TNK V05	DANV TNK V05	DANV TNK V05		Separator Vessel	2,640 gal (accumulation)	Pipeline Liquids	2,640 gal/hr	Aboveground; Vertical; H/L = 7.00; D = 8.00		Pipeline Liquids	7,920.00 gal/yr	Runtime	N/A	TABLE F-1C
DANV TNK OW01	DANV TNK OW01	DANV TNK OW01		Separator Vessel	220 gal (accumulation)	Oily Water	220 gal/hr	Aboveground; Horizontal; H/L = 6.00; D = 2.50		Oily Water	80,299.98 gal/yr	Runtime	N/A	TABLE F-1D
DANV TNK DF01	DANV TNK DF01	DANV TNK DF01		Separator Vessel	560 gal (accumulation)	Diesel	560 gal/hr	Aboveground; Horizontal; H/L = 6.00; D = 4.00		Diesel	204,399.96 gal/yr	Runtime	N/A	TABLE F-1E
DANV TL PL	DANV TL PL	DANV TL PL		Truck Loading Area	150 gpm	Pipeline Liquids	2,640 gal/hr			Pipeline Liquids	7,920 gal/yr	Runtime	N/A	TABLE F-1F
DANV TL OW	DANV TL OW	DANV TL OW		Truck Loading Area	150 gpm	Oily Water	220 gal/hr			Oily Water	2,640 gal/yr	Runtime	N/A	TABLE F-1G
DANV-GR	DANV-GR-ST	DANV-GR-ST		Gas Release Events	Natural Gas	Natural Gas	7,258,528 scfh			Natural Gas	59,740,260 scf/yr	Runtime	N/A	max(TABLE G-1Aa, TABLE G-1Ab)
	DANV-GR-PL	DANV-GR-PL		Gas Release Events	Natural Gas									
DANV PC	DANV PC NG	DANV PC NG		Piping Components	Natural Gas	Valves: 698; Connectors: 3,222; Flanges: 466; Open-Ended Lines: 36; Pump Seals: 0; Other (blowdown valves, relief valves, and compressor seals): 71								TABLE H-1Aa
	DANV PC PL	DANV PC PL		Piping Components	Pipeline Liquids	Valves: 99; Connectors: 575; Flanges: 209; Open-Ended Lines: 36; Pump Seals: 1; Other (blowdown valves, relief valves, and compressor seals): 1								TABLE H-1Ab
	DANV PC OIL	DANV PC OIL		Piping Components	Oil	Valves: 360; Connectors: 1,023; Flanges: 211; Open-Ended Lines: 0; Pump Seals: 21; Other (blowdown valves, relief valves, and compressor seals): 4								TABLE H-1Ac
DANV PW	DANV PW	DANV PW		Parts Washer	Remote Reservoir	Solvent	N/A	Solvent Make-up	0.33 gal/hr	Solvent Make-up	120 gal/yr	Runtime	N/A	TABLE I-1

NOTES

Equipment being placed into service directly associated with the project.
Equipment being taken out of service directly associated with the project.
Equipment being modified directly associated with the project.
Equipment whose parameters may be impacted by project.
Gas releases after the project will be tracked to assure compliance with the gas releases VOC cap (federally enforceable). As VOC density of gas is dynamic, the volume of gas listed is NOT a limitation.

TABLE A-1
Potential to Emit
Emissions

Emission Source					Rated Capacity	Potential to Emit (tpy)										Data
ID	FIN	EPN	GIN	Description		CO_{2-e}	NO_X	CO	$PM_{10/2.5}$	SO_2	VOC (Total)	HAP (Total)	Benzene	Formaldehyde	Hexane (n-)	Sources
DANV TBC 01	DANV TBC 01	DANV TBC 01		Turbine	18,100 bhp (NEMA)	82,984	25.0178	23.9050	4.6175	9.7986	3.9190	1.0006	0.0224	0.4416		TABLE B-1Aj
DANV TBC 02	DANV TBC 02	DANV TBC 02		Turbine	18,100 bhp (NEMA)	82,984	25.0178	23.9050	4.6175	9.7986	3.9190	1.0006	0.0224	0.4416		TABLE B-1Aj
DANV TBC 03	DANV TBC 03	DANV TBC 03		Turbine	18,100 bhp (NEMA)	82,984	25.0178	23.9050	4.6175	9.7986	3.9190	1.0006	0.0224	0.4416		TABLE B-1Aj
DANV ENGEN 01	DANV ENGEN 01	DANV ENGEN 01		IC Engine	1,475 bhp	814	1.6259	3.2518	0.0623	0.0450	2.2015	2.1957	0.1070	1.3885		TABLE C-1A
DANV FGH 01	DANV FGH 01	DANV FGH 01		Boilers/Heaters	0.750 MMBTU/hr (output)	596	0.4877	0.7432	0.0377	0.0708	0.1791	0.0412	0.0000	0.0016	0.0394	TABLE D-1A
DANV FGH 02	DANV FGH 02	DANV FGH 02		Boilers/Heaters	0.750 MMBTU/hr (output)	596	0.4877	0.7432	0.0377	0.0708	0.1791	0.0412	0.0000	0.0016	0.0394	TABLE D-1A
DANV FGH 03	DANV FGH 03	DANV FGH 03		Boilers/Heaters	0.750 MMBTU/hr (output)	596	0.4877	0.7432	0.0377	0.0708	0.1791	0.0412	0.0000	0.0016	0.0394	TABLE D-1A
DANV HVAC 01	DANV HVAC 01	DANV HVAC 01		Boilers/Heaters	0.112 MMBTU/hr (output)	62	0.0484	0.0206	0.0039	0.0074	0.0042	0.0010	0.0000	0.0000	0.0009	TABLE D-1B
DANV HVAC 02	DANV HVAC 02	DANV HVAC 02		Boilers/Heaters	0.112 MMBTU/hr (output)	62	0.0484	0.0206	0.0039	0.0074	0.0042	0.0010	0.0000	0.0000	0.0009	TABLE D-1C
DANV SHTR 01	DANV SHTR 01	DANV SHTR 01		Boilers/Heaters	0.120 MMBTU/hr (output)	77	0.0605	0.0258	0.0049	0.0092	0.0053	0.0012	0.0000	0.0000	0.0012	TABLE D-1D
DANV SHTR 02	DANV SHTR 02	DANV SHTR 02		Boilers/Heaters	0.140 MMBTU/hr (output)	90	0.0706	0.0301	0.0057	0.0107	0.0061	0.0014	0.0000	0.0001	0.0014	TABLE D-1E
DANV SHTR 03	DANV SHTR 03	DANV SHTR 03		Boilers/Heaters	0.140 MMBTU/hr (output)	90	0.0706	0.0301	0.0057	0.0107	0.0061	0.0014	0.0000	0.0001	0.0014	TABLE D-1E
DANV SHTR 04	DANV SHTR 04	DANV SHTR 04		Boilers/Heaters	0.080 MMBTU/hr (output)	52	0.0404	0.0172	0.0033	0.0061	0.0035	0.0008	0.0000	0.0000	0.0008	TABLE D-1F
DANV SHTR 05	DANV SHTR 05	DANV SHTR 05		Boilers/Heaters	0.110 MMBTU/hr (output)	71	0.0553	0.0235	0.0045	0.0084	0.0048	0.0011	0.0000	0.0000	0.0011	TABLE D-1G
DANV SHTR 06	DANV SHTR 06	DANV SHTR 06		Boilers/Heaters	0.025 MMBTU/hr (output)	15	0.0121	0.0052	0.0010	0.0018	0.0011	0.0002	0.0000	0.0000	0.0002	TABLE D-1H
DANV SHTR 07	DANV SHTR 07	DANV SHTR 07		Boilers/Heaters	0.100 MMBTU/hr (output)	64	0.0505	0.0215	0.0041	0.0077	0.0044	0.0010	0.0000	0.0000	0.0010	TABLE D-1I
DANV SHTR 08	DANV SHTR 08	DANV SHTR 08		Boilers/Heaters	0.100 MMBTU/hr (output)	64	0.0505	0.0215	0.0041	0.0077	0.0044	0.0010	0.0000	0.0000	0.0010	TABLE D-1I
DANV CHTR 01	DANV CHTR 01	DANV CHTR 01		Boilers/Heaters	0.004 MMBTU/hr (output)	3	0.0023	0.0362	0.0002	0.0004	0.0127	0.0029	0.0000	0.0001	0.0028	TABLE D-1J
DANV WHTR 01	DANV WHTR 01	DANV WHTR 01		Boilers/Heaters	0.017 MMBTU/hr (output)	15	0.0121	0.0052	0.0010	0.0018	0.0011	0.0002	0.0000	0.0000	0.0002	TABLE D-1K
DANV WHTR 02	DANV WHTR 02	DANV WHTR 02		Boilers/Heaters	0.023 MMBTU/hr (output)	21	0.0161	0.0069	0.0013	0.0025	0.0014	0.0003	0.0000	0.0000	0.0003	TABLE D-1L
DANV OVEN 01	DANV OVEN 01	DANV OVEN 01		Boilers/Heaters	0.007 MMBTU/hr (output)	41	0.0319	0.0136	0.0026	0.0048	0.0028	0.0006	0.0000	0.0000	0.0006	TABLE D-1M
DANV OVEN 02	DANV OVEN 02	DANV OVEN 02		Boilers/Heaters	0.007 MMBTU/hr (output)	41	0.0319	0.0136	0.0026	0.0048	0.0028	0.0006	0.0000	0.0000	0.0006	TABLE D-1N
DANV SVV V01C01	DANV SVV V01C01	DANV SVV V01C01		Separator Vessel	59.000 gal (accumulation)	4.2644					0.0705	0.0044	0.0011		0.0020	TABLE F-1AA
DANV SVV V01C02	DANV SVV V01C02	DANV SVV V01C02		Separator Vessel	59.000 gal (accumulation)	4.2644					0.0705	0.0044	0.0011		0.0020	TABLE F-1AB
DANV SVV V01C03	DANV SVV V01C03	DANV SVV V01C03		Separator Vessel	59.000 gal (accumulation)	4.2644					0.0705	0.0044	0.0011		0.0020	TABLE F-1AC
DANV SLV V02	DANV SLV V02	DANV SLV V02		Separator Vessel	470.000 gal (accumulation)	35.3819					1.1195	0.0672	0.0140		0.0464	TABLE E-1A & TABLE F-1B
DANV TNK V05	DANV TNK V05	DANV TNK V05		Separator Vessel	2,640.000 gal (accumulation)	21.0042					0.3475	0.0216	0.0052		0.0100	TABLE F-1C
DANV TNK OW01	DANV TNK OW01	DANV TNK OW01		Separator Vessel	220 gal (accumulation)						0.0010					TABLE F-1D
DANV TNK DF01	DANV TNK DF01	DANV TNK DF01		Separator Vessel	560.000 gal (accumulation)						0.0025					TABLE F-1E
DANV TL PL	DANV TL PL	DANV TL PL		Truck Loading Area	150 gpm	1.3396					0.0222	0.0014	0.0003		0.0006	TABLE F-1F
DANV TL OW	DANV TL OW	DANV TL OW		Truck Loading Area	150 gpm						0.0000					TABLE F-1G
DANV-GR	DANV-GR-ST	DANV-GR-ST		Gas Release Events	Natural Gas	36,145					35.0000	1.4941	0.3540		0.8481	max(TABLE G-1Aa, TABLE G-1Ab)
	DANV-GR-PL	DANV-GR-PL		Gas Release Events	Natural Gas											
DANV PC	DANV PC NG	DANV PC NG		Piping Components	Natural Gas	1,203					1.9219	0.0987	0.0201		0.0571	TABLE H-1Aa
	DANV PC PL	DANV PC PL		Piping Components	Pipeline Liquids	0					4.4562	0.6489	0.0643		0.0756	TABLE H-1Ab
	DANV PC OIL	DANV PC OIL		Piping Components	Oil						1.8529					TABLE H-1Ac
DANV PW	DANV PW	DANV PW		Parts Washer	Remote Reservoir						0.4103					TABLE I-1
				TOTAL		289,743	78.7441	77.4875	14.0764	29.7445	59.9060	7.6813	0.6355	2.7188	1.1764	

NOTES

DANV PC	As per TCEQ guidance, fugitive emissions from piping components should not be estimated for:	Glycol	0.001552	psia	at	68 °F	worst-case glycol (EG, TEG, or PEG)
	Mixtures in streams where the VOC has an aggregate partial pressure of less than 0.002 psia at 68°F.	Coolant	0.001552	psia	at	68 °F	worst-case glycol (EG or PEG)

SIGNIFICANT EMISSION UNITS

TABLE B-1Aa
Ambient Temperature, Start Model, and Utilization Data
PTE - 100% Fuel Utilization at 100% Power Output

Month	#Days	Daily Average	Weighted Daily Average
JAN	31.00	33.35	2.83
FEB	28.50	36.65	2.86
MAR	31.00	45.05	3.82
APR	30.00	55.50	4.56
MAY	31.00	64.30	5.45
JUN	30.00	72.60	5.96
JUL	31.00	75.90	6.44
AUG	31.00	75.35	6.39
SEP	30.00	68.30	5.61
OCT	31.00	57.00	4.83
NOV	30.00	45.90	3.77
DEC	31.00	36.20	3.07
Annual	365.50	55.51	**55.58**

Low Temperature Data	
Below 0˚F Hours	175 hrs/yr
Below -20˚F Hours	7 hrs/yr

NOTES
1. Please refer to TABLE B-0.

Start Model and Utilization	
Utilization	100.00%
Start Model	TET - Medium
Starts	208.00 starts/yr

TABLE B-1Ab
Manufacturer's Operating and Emissions Data
Normal Operations
PTE - 100% Fuel Utilization at 100% Power Output

Parameters			Curve Fitting			Vendor Data						
Ambient	Temperature	°F	-20.00	-20.00	55.51	-0.01	0.01	20.00	40.00	60.00	80.00	100.00
	Altitude	ft	0	0	0	0	0	0	0	0	0	0
	Pressure	psia	14.702	14.702	14.702	14.702	14.702	14.702	14.702	14.702	14.702	14.702
	Relative Humidity	%	60%	60%	60%	60%	60%	60%	60%	60%	60%	60%
	Specific Humidity	$lb_{H2O}/lb_{Dry\ Air}$	0.0003	0.0003	0.0049	0.0006	0.0006	0.0013	0.0028	0.0058	0.0124	0.0262
Fuel	Lower Heating Value (LHV)	BTU/scf	939.2	939.2	939.2	939.2	939.2	939.2	939.2	939.2	939.2	939.2
	Higher Heating Value (HHV)	BTU/scf	1,043.6	1,043.6	1,043.6	1,043.6	1,043.6	1,043.6	1,043.6	1,043.6	1,043.6	1,043.6
Turbine	Net Output Power	hp	22,151	22,151	20,186	21,793	21,793	21,435	20,903	19,918	18,229	16,227
	Fuel Consumption	scf/hr	173,227	173,227	152,636	167,621	167,621	162,021	156,825	151,193	142,334	133,422
	Heat Input at LHV	MMBTU/hr	162.70	162.70	143.36	157.43	157.43	152.17	147.29	142.00	133.68	125.31
	Heat Input at HHV	MMBTU/hr	180.77	180.77	159.28	174.92	174.92	169.08	163.66	157.78	148.53	139.23
	Heat Rate at LHV	BTU/hp-hr	7,345	7,345	7,102	7,224	7,224	7,099	7,046	7,129	7,333	7,722
	Heat Rate at HHV	BTU/hp-hr	8,161	8,161	7,891	8,027	8,027	7,888	7,829	7,921	8,148	8,580
Exhaust	Temperature	°F	893	893	940	900	900	907	921	945	965	995
	Water Fraction	%, by vol	5.78%	5.78%	6.71%	5.91%	5.91%	6.04%	6.32%	6.86%	7.81%	9.56%
	Non-Water Fraction	%, by vol	94.22%	94.22%	93.29%	94.09%	94.09%	93.96%	93.68%	93.14%	92.19%	90.44%
	O_2 Content	%, by vol (dry)	15.30%	15.30%	15.24%	15.29%	15.29%	15.28%	15.26%	15.23%	15.21%	15.12%
	Molecular Weight	lb/lb-mol	28.60	28.60	28.51	28.59	28.59	28.58	28.55	28.49	28.38	28.19
	Flow Rate	lb/hr	453,151	453,151	395,167	437,978	437,978	422,820	407,737	390,974	367,144	339,008
		scfm (1 atm, 68°F)	101,880	101,880	89,108	98,465	98,465	95,088	91,792	88,243	83,178	77,305
		acfm	260,967	260,967	236,123	253,525	253,525	246,090	239,994	234,724	224,401	212,946
NO_X Emissions		lb/lb-mol	46.01	46.01	46.01	46.01	46.01	46.01	46.01	46.01	46.01	46.01
		ppmvd, 15% O_2	120	42	9	42	9	9	9	9	9	9
		ppmvw	107.31	37.56	8.06	37.58	8.05	8.06	8.06	8.06	8.00	7.97
		lb/hr	78.23	27.38	5.14	26.48	5.68	5.48	5.30	5.09	4.76	4.41
CO Emissions		lb/lb-mol	28.01	28.01	28.01	28.01	28.01	28.01	28.01	28.01	28.01	28.01
		ppmvd, 15% O_2	150	100	25	100	25	25	25	25	25	25
		ppmvw	134.14	89.43	22.39	89.47	22.37	22.38	22.39	22.38	22.23	22.15
		lb/hr	59.53	39.69	8.69	38.39	9.60	9.27	8.96	8.60	8.05	7.46
UHC Emissions		lb/lb-mol	18.37	18.37	18.37	18.37	18.37	18.37	18.37	18.37	18.37	18.37
		ppmvd, 15% O_2	75	50	25	50	25	25	25	25	25	25
		ppmvw	67.07	44.71	22.39	44.73	22.37	22.38	22.39	22.38	22.23	22.15
		lb/hr	19.52	13.02	5.70	12.59	6.29	6.08	5.87	5.64	5.28	4.89

NOTES

1. Operating and emissions data was provided by the manufacturer for the following ambient temperatures: 0°F, 20°F, 40°F, 60°F, 80°F, and 100°F.
   Specific Humidity is estimate using curve fitting equation: $6.15E\text{-}04e^{3.75E\text{-}02T}$
   All other parameter values estimated using cubic spline.
2. Pollutant concentrations (ppmvd at 15% O2) for 0°F and -20°F based on information provided in a document published by the manufacturer.
3. Ambient pressure and humidity will vary. However, it is believed that any variation would not affect compliance with the proposed emission representations.
4. The heating value of the natural gas used to fuel the turbine will vary. However, it is believed that any variation would not affect compliance with the proposed emission representations.

TABLE B-1Ac
Gas-Fired Turbines
Emission Estimates
Normal Operations
PTE - 100% Fuel Utilization at 100% Power Output

Make	Solar				
Model	130-20502S4				
Normal Operating Load	100%				
Fuel	Natural Gas				
Fuel Higher Heating Value (HHV)	1,020 BTU/scf			1,020 BTU/scf	
Ambient Temperature	55.51 °F			0.01 °F	
Power Output	20,186 bhp (mech.)			21,793 bhp (mech.)	
	15,053 kW (elec.)			16,251 kW (elec.)	
Heat Rate at HHV	7,891 BTU/hp-hr			8,027 BTU/hp-hr	
Operating Hours	8,760 hrs/yr				
Fuel Consumption	156,161 scfh			171,492 scfh	
	1,367.967 MMscf/yr				
Heat Input at HHV	159.28 MMBTU/hr			174.92 MMBTU/hr	
	1,395,326 MMBTU/yr	Average	Maximum		Maximum
NO_X	32.92 lb/MMscf	5.1406 lb/hr	22.5159 tpy	33.09 lb/MMscf	5.6753 lb/hr
CO	55.67 lb/MMscf	8.6931 lb/hr	38.0756 tpy	55.96 lb/MMscf	9.5972 lb/hr
SO_2	14.29 lb/MMscf	2.2309 lb/hr	9.7712 tpy	14.29 lb/MMscf	2.4499 lb/hr
$PM_{10/2.5}$	6.73 lb/MMscf	1.0513 lb/hr	4.6046 tpy	6.73 lb/MMscf	1.1545 lb/hr
CO_{2-e}	120,877 lb/MMscf	18,876 lb/hr	82,678 tpy	120,881 lb/MMscf	20,730 lb/hr
CO_2	120,017 lb/MMscf	18,742 lb/hr	82,090 tpy	120,017 lb/MMscf	20,582 lb/hr
N_2O	0.23 lb/MMscf	0.0353 lb/hr	0.1547 tpy	0.23 lb/MMscf	0.0388 lb/hr
TOC (Total)	36.51 lb/MMscf	5.7018 lb/hr	24.9738 tpy	36.71 lb/MMscf	6.2948 lb/hr
Methane	28.55 lb/MMscf	4.4578 lb/hr	19.5250 tpy	28.70 lb/MMscf	4.9214 lb/hr
Ethane	1.00 lb/MMscf	0.1555 lb/hr	0.6811 tpy	1.00 lb/MMscf	0.1717 lb/hr
VOC (Total)	6.97 lb/MMscf	1.0885 lb/hr	4.7677 tpy	7.01 lb/MMscf	1.2017 lb/hr
VOC (non-HAP)	3.56 lb/MMscf	0.5560 lb/hr	2.4353 tpy	3.58 lb/MMscf	0.6138 lb/hr
HAP (Total)	3.41 lb/MMscf	0.5325 lb/hr	2.3324 tpy	3.43 lb/MMscf	0.5879 lb/hr
Acetaldehyde	1.33E-01 lb/MMscf	0.0207 lb/hr	0.0908 tpy	1.33E-01 lb/MMscf	0.0229 lb/hr
Acrolein	2.12E-02 lb/MMscf	0.0033 lb/hr	0.0145 tpy	2.14E-02 lb/MMscf	0.0037 lb/hr
Benzene	3.98E-02 lb/MMscf	0.0062 lb/hr	0.0272 tpy	4.00E-02 lb/MMscf	0.0069 lb/hr
Biphenyl					
Butadiene (1,3-)	1.43E-03 lb/MMscf	0.0002 lb/hr	0.0010 tpy	1.43E-03 lb/MMscf	0.0002 lb/hr
Carbon Tetrachloride					
Chlorobenzene					
Chloroform					
Dichloropropene (1,3-)					
Ethylbenzene	1.06E-01 lb/MMscf	0.0166 lb/hr	0.0727 tpy	1.07E-01 lb/MMscf	0.0183 lb/hr
Ethylene Dibromide					
Formaldehyde	2.36E+00 lb/MMscf	0.3680 lb/hr	1.6119 tpy	2.37E+00 lb/MMscf	0.4063 lb/hr
Hexane (n-)					
Methanol					
Methylene Chloride					
Methylnaphthalene (2-)					
Naphthalene	4.32E-03 lb/MMscf	0.0007 lb/hr	0.0030 tpy	4.34E-03 lb/MMscf	0.0007 lb/hr
PAH	7.30E-03 lb/MMscf	0.0011 lb/hr	0.0050 tpy	7.34E-03 lb/MMscf	0.0013 lb/hr
Phenol					
Propylene Oxide	9.63E-02 lb/MMscf	0.0150 lb/hr	0.0658 tpy	9.68E-02 lb/MMscf	0.0166 lb/hr
Styrene					
Tetrachloroethane (1,1,2,2-)					
Toluene	4.32E-01 lb/MMscf	0.0674 lb/hr	0.2951 tpy	4.34E-01 lb/MMscf	0.0744 lb/hr
Trichloroethane (1,1,2-)					
Trimethylpentane (2,2,4-)					
Vinyl Chloride					
Xylenes	2.12E-01 lb/MMscf	0.0332 lb/hr	0.1453 tpy	2.14E-01 lb/MMscf	0.0366 lb/hr

NOTES

1. Fuel higher heating value selected to correspond to AP-42 emissions factors.
2. Manufacturer provided operating and emissions data (TABLE B-1Ab).
3. The annual emissions are based on a representative annual average ambient temperature (TABLE B-1Aa).
   Maximum hourly emissions are based on an ambient temperature of 0°F.
4. NOX, CO, and TOC (Total) emission factor based on Vendor Guarantee.
5. CO2 and N2O emission factors based on 40 CFR 98, Subpart C, Table C-1 and 40 CFR 98, Subpart C, Table C-2, respectively.
6. SO2 emission factor based on AP-42, Section 3.1 (Revised 4/00), Table 3.1-2a using Tariff (5.00 gr/100 scf).
7. PM10/2.5 emission factor based on AP-42, Section 3.1 (Revised 4/00), Table 3.1-2a, not Solar's PIL 171 dated 5/6/2015 (which is 127% greater).
8. Methane, Ethane, and VOC (Total) emissions based on scaling of AP-42, Section 3.1 (Revised 4/00), Table 3.1-2a using Vendor Guarantee.
   Speciated VOC (non-HAP) emissions based on scaling of AP-42, Section 3.1 (Revised 4/00), Table 3.1-2a using Vendor Guarantee.
   $EF_{Scaled} = (EF_{AP42})(EF_{TOC}/EF_{TOC\text{-}AP42})$

TABLE B-1Ad
Manufacturer's Operating and Emissions Data
Startup/Shutdown Step 2: Iginition-Idle
PTE - 100% Fuel Utilization at 100% Power Output

Parameters			Interpolated	Vendor Data					
Ambient	Temperature	°F	55.51	0.01	20.00	40.00	60.00	80.00	100.00
	Altitude	ft	0	0	0	0	0	0	0
	Pressure	psia	14.702	14.702	14.702	14.702	14.702	14.702	14.702
	Relative Humidity	%	60%	60%	60%	60%	60%	60%	60%
	Specific Humidity	$lb_{H2O}/lb_{Dry\ Air}$	0.0049	0.0006	0.0013	0.0028	0.0058	0.0124	0.0262
Fuel	Lower Heating Value (LHV)	BTU/scf	939.2	939.2	939.2	939.2	939.2	939.2	939.2
	Higher Heating Value (HHV)	BTU/scf	1,043.6	1,043.6	1,043.6	1,043.6	1,043.6	1,043.6	1,043.6
Turbine	Net Output Power	hp	2,019	2,179	2,144	2,091	1,992	1,823	1,623
	Fuel Consumption	scf/hr	46,689	43,335	43,718	45,315	47,061	48,499	48,328
	Heat Input at LHV	MMBTU/hr	43.85	40.70	41.06	42.56	44.20	45.55	45.39
	Heat Input at HHV	MMBTU/hr	48.72	45.22	45.62	47.29	49.11	50.61	50.43
	Heat Rate at LHV	BTU/hp-hr	21,720	18,678	19,151	20,354	22,189	24,986	27,967
	Heat Rate at HHV	BTU/hp-hr	24,133	20,754	21,279	22,615	24,654	27,763	31,074
Exhaust	Temperature	°F	777	596	644	715	797	894	967
	Water Fraction	%, by vol	4.98%	3.53%	3.83%	4.36%	5.20%	6.53%	8.54%
	Non-Water Fraction	%, by vol	95.02%	96.47%	96.17%	95.64%	94.80%	93.47%	91.46%
	O_2 Content	%, by vol (dry)	17.01%	17.68%	17.52%	17.25%	16.93%	16.56%	16.23%
	Molecular Weight	lb/lb-mol	28.61	28.74	28.71	28.67	28.59	28.46	28.25
	Flow Rate	lb/hr	160,442	192,508	184,970	165,866	158,916	150,454	139,975
		scfm (1 atm, 68°F)	36,044	43,043	41,393	37,193	35,729	33,977	31,858
		acfm	84,440	86,054	86,516	82,738	85,028	87,098	86,068
NO_X Emissions		lb/lb-mol	46.01	46.01	46.01	46.01	46.01	46.01	46.01
		ppmvd, 15% O_2	50	50	50	50	50	50	50
		ppmvw	31.36	26.32	27.55	29.58	31.89	34.38	36.20
		lb/hr	8.09	8.11	8.17	7.87	8.16	8.36	8.25
CO Emissions		lb/lb-mol	28.01	28.01	28.01	28.01	28.01	28.01	28.01
		ppmvd, 15% O_2	10,000	10,000	10,000	10,000	10,000	10,000	10,000
		ppmvw	6,271.34	5,264.97	5,509.40	5,916.71	6,378.92	6,875.59	7,239.29
		lb/hr	985.03	987.81	994.23	958.79	993.15	1,018.10	1,004.71
UHC Emissions		lb/lb-mol	18.37	18.37	18.37	18.37	18.37	18.37	18.37
		ppmvd, 15% O_2	5,490	5,490	5,490	5,490	5,490	5,490	5,490
		ppmvw	3,442.96	2,890.47	3,024.66	3,248.27	3,502.02	3,774.70	3,974.37
		lb/hr	354.70	355.70	358.01	345.25	357.62	366.61	361.79

NOTES

1. Footnotes 1 thru 4 of TABLE B-1Ab.

TABLE B-1Ae
Manufacturer's Operating and Emissions Data
Startup/Shutdown Step 3: Loading/Thermal Stabilization
PTE - 100% Fuel Utilization at 100% Power Output

Parameters			Interpolated	Vendor Data					
Ambient	Temperature	°F	55.51	0.01	20.00	40.00	60.00	80.00	100.00
	Altitude	ft	0	0	0	0	0	0	0
	Pressure	psia	14.702	14.702	14.702	14.702	14.702	14.702	14.702
	Relative Humidity	%	60%	60%	60%	60%	60%	60%	60%
	Specific Humidity	$lb_{H2O}/lb_{Dry\ Air}$	0.0049	0.0006	0.0013	0.0028	0.0058	0.0124	0.0262
Fuel	Lower Heating Value (LHV)	BTU/scf	939.2	939.2	939.2	939.2	939.2	939.2	939.2
	Higher Heating Value (HHV)	BTU/scf	1,043.6	1,043.6	1,043.6	1,043.6	1,043.6	1,043.6	1,043.6
Turbine	Net Output Power	hp	6,055	6,538	6,431	6,271	5,975	5,469	4,868
	Fuel Consumption	scf/hr	73,446	72,839	73,488	73,829	73,254	71,412	68,793
	Heat Input at LHV	MMBTU/hr	68.98	68.41	69.02	69.34	68.80	67.07	64.61
	Heat Input at HHV	MMBTU/hr	76.65	76.01	76.69	77.04	76.44	74.52	71.79
	Heat Rate at LHV	BTU/hp-hr	11,392	10,463	10,732	11,057	11,515	12,264	13,272
	Heat Rate at HHV	BTU/hp-hr	12,657	11,626	11,925	12,286	12,794	13,626	14,747
Exhaust	Temperature	°F	788	655	704	752	798	842	883
	Water Fraction	%, by vol	5.32%	4.06%	4.36%	4.81%	5.50%	6.62%	8.47%
	Non-Water Fraction	%, by vol	94.68%	95.94%	95.64%	95.19%	94.50%	93.38%	91.53%
	O_2 Content	%, by vol (dry)	16.67%	17.17%	16.99%	16.80%	16.63%	16.47%	16.30%
	Molecular Weight	lb/lb-mol	28.59	28.71	28.68	28.64	28.57	28.45	28.26
	Flow Rate	lb/hr	251,066	280,654	270,433	260,079	248,186	233,358	217,201
		scfm (1 atm, 68°F)	56,422	62,824	60,593	58,372	55,832	52,724	49,415
		acfm	133,294	132,617	133,528	133,940	132,972	129,963	125,641
NO_X Emissions		lb/lb-mol	46.01	46.01	46.01	46.01	46.01	46.01	46.01
		ppmvd, 15% O_2	60	60	60	60	60	60	60
		ppmvw	40.76	36.39	38.03	39.69	41.04	42.07	42.82
		lb/hr	16.47	16.37	16.50	16.58	16.40	15.88	15.14
CO Emissions		lb/lb-mol	28.01	28.01	28.01	28.01	28.01	28.01	28.01
		ppmvd, 15% O_2	9,000	9,000	9,000	9,000	9,000	9,000	9,000
		ppmvw	6,113.61	5,458.82	5,704.36	5,953.41	6,155.31	6,310.27	6,422.61
		lb/hr	1,503.83	1,494.69	1,506.61	1,514.30	1,497.72	1,449.78	1,382.66
UHC Emissions		lb/lb-mol	18.37	18.37	18.37	18.37	18.37	18.37	18.37
		ppmvd, 15% O_2	3,050	3,050	3,050	3,050	3,050	3,050	3,050
		ppmvw	2,071.84	1,849.93	1,933.14	2,017.54	2,085.97	2,138.48	2,176.55
		lb/hr	334.27	332.24	334.89	336.59	332.91	322.25	307.33

NOTES

1. Footnotes 1 thru 4 of TABLE B-1Ab.

TABLE B-1Af
Gas-Fired Turbines
Emission Estimates
Startup
PTE - 100% Fuel Utilization at 100% Power Output

Make	Solar				
Model	130-20502S4				
Fuel	Natural Gas				
Ambient Temperature	55.51 °F			0.01 °F	
Maximum Event Frequency		2 events/hr	208 events/yr		2 events/hr
Maximum Startup Time		18.00 min/hr	31.20 hrs/yr		18.00 min/hr
Fuel Consumption		19,358 scf/hr	2.01 MMscf/yr		18,901 scf/hr
		Average	Maximum		Maximum
NO_X	2.0513 lbs/event	4.1027 lb/hr	0.2133 tpy	2.0425 lbs/event	4.0849 lb/hr
CO	199.6350 lbs/event	399.2700 lb/hr	20.7620 tpy	198.8589 lbs/event	397.7179 lb/hr
SO_2	0.1383 lbs/event	0.2765 lb/hr	0.0144 tpy	0.1350 lbs/event	0.2700 lb/hr
$PM_{10/2.5}$	0.0652 lbs/event	0.1303 lb/hr	0.0068 tpy	0.0636 lbs/event	0.1272 lb/hr
CO_{2-e}	2,282 lbs/event	4,564 lb/hr	237 tpy	2,251 lbs/event	4,503 lb/hr
CO_2	1,162 lbs/event	2,323 lb/hr	121 tpy	1,134 lbs/event	2,268 lb/hr
N_2O	0.0022 lbs/event	0.0044 lb/hr	0.0002 tpy	0.0021 lbs/event	0.0043 lb/hr
TOC (Total)	51.1618 lbs/event	102.3236 lb/hr	5.3208 tpy	51.0084 lbs/event	102.0169 lb/hr
Methane	39.9992 lbs/event	79.9985 lb/hr	4.1599 tpy	39.8793 lbs/event	79.7586 lb/hr
Ethane	1.3953 lbs/event	2.7906 lb/hr	0.1451 tpy	1.3911 lbs/event	2.7823 lb/hr
VOC (Total)	9.7673 lbs/event	19.5345 lb/hr	1.0158 tpy	9.7380 lbs/event	19.4759 lb/hr
VOC (non-HAP)	4.9891 lbs/event	9.9781 lb/hr	0.5189 tpy	4.9741 lbs/event	9.9482 lb/hr
HAP (Total)	4.7782 lbs/event	9.5564 lb/hr	0.4969 tpy	4.7639 lbs/event	9.5277 lb/hr
Acetaldehyde	1.86E-01 lbs/event	0.3721 lb/hr	0.0193 tpy	1.85E-01 lbs/event	0.3710 lb/hr
Acrolein	2.98E-02 lbs/event	0.0595 lb/hr	0.0031 tpy	2.97E-02 lbs/event	0.0594 lb/hr
Benzene	5.58E-02 lbs/event	0.1116 lb/hr	0.0058 tpy	5.56E-02 lbs/event	0.1113 lb/hr
Biphenyl					
Butadiene (1,3-)	2.00E-03 lbs/event	0.0040 lb/hr	0.0002 tpy	1.99E-03 lbs/event	0.0040 lb/hr
Carbon Tetrachloride					
Chlorobenzene					
Chloroform					
Dichloropropene (1,3-)					
Ethylbenzene	1.49E-01 lbs/event	0.2977 lb/hr	0.0155 tpy	1.48E-01 lbs/event	0.2968 lb/hr
Ethylene Dibromide					
Formaldehyde	3.30E+00 lbs/event	6.6045 lb/hr	0.3434 tpy	3.29E+00 lbs/event	6.5847 lb/hr
Hexane (n-)					
Methanol					
Methylene Chloride					
Methylnaphthalene (2-)					
Naphthalene	6.05E-03 lbs/event	0.0121 lb/hr	0.0006 tpy	6.03E-03 lbs/event	0.0121 lb/hr
PAH	1.02E-02 lbs/event	0.0205 lb/hr	0.0011 tpy	1.02E-02 lbs/event	0.0204 lb/hr
Phenol					
Propylene Oxide	1.35E-01 lbs/event	0.2698 lb/hr	0.0140 tpy	1.34E-01 lbs/event	0.2690 lb/hr
Styrene					
Tetrachloroethane (1,1,2,2-)					
Toluene	6.05E-01 lbs/event	1.2093 lb/hr	0.0629 tpy	6.03E-01 lbs/event	1.2057 lb/hr
Trichloroethane (1,1,2-)					
Trimethylpentane (2,2,4-)					
Vinyl Chloride					
Xylenes	2.98E-01 lbs/event	0.5953 lb/hr	0.0310 tpy	2.97E-01 lbs/event	0.5936 lb/hr

NOTES

1. Emissions of NOx, CO, and UHC are estimated using information provided in TABLE B-1Ad and TABLE B-1Ae.

	55.51 °F		0.01 °F	
	Step 2	Step 3	Step 2	Step 3
Duration	3.00 min/event	6.00 min/event	3.00 min/event	6.00 min/event
NO_X	0.4045 lb/event	1.6468 lb/event	0.4056 lb/event	1.6368 lb/event
CO	49.2515 lb/event	150.3834 lb/event	49.3903 lb/event	149.4687 lb/event
UHC	17.7350 lb/event	33.4268 lb/event	17.7849 lb/event	33.2235 lb/event
Fuel	2,334 scf/event	7,345 scf/event	2,167 scf/event	7,284 scf/event

2. Footnotes 4 thru 8 of TABLE B-1Ac.
3. The frequency of startup events was provided by Technical Services.

TABLE B-1Ag
Gas-Fired Turbines
Emission Estimates
Shutdown
PTE - 100% Fuel Utilization at 100% Power Output

Make	Solar				
Model	130-20502S4				
Fuel	Natural Gas				
Ambient Temperature	55.51 °F			0.01 °F	
Maximum Event Frequency		2 events/hr	208 events/yr		2 events/hr
Maximum Startup Time		17.00 min/hr	29.47 hrs/yr		17.00 min/hr
Fuel Consumption		20,810 scf/hr	2.16 MMscf/yr		20,638 scf/hr
		Average	Maximum		Maximum
NO_X	2.3330 lbs/event	4.6660 lb/hr	0.2426 tpy	2.3188 lbs/event	4.6376 lb/hr
CO	213.0432 lbs/event	426.0864 lb/hr	22.1565 tpy	211.7473 lbs/event	423.4946 lb/hr
SO_2	0.1486 lbs/event	0.2973 lb/hr	0.0155 tpy	0.1474 lbs/event	0.2948 lb/hr
$PM_{10/2.5}$	0.0700 lbs/event	0.1401 lb/hr	0.0073 tpy	0.0695 lbs/event	0.1389 lb/hr
CO_{2-e}	2,286 lbs/event	4,572 lb/hr	238 tpy	2,269 lbs/event	4,539 lb/hr
CO_2	1,249 lbs/event	2,498 lb/hr	130 tpy	1,238 lbs/event	2,477 lb/hr
N_2O	0.0024 lbs/event	0.0047 lb/hr	0.0002 tpy	0.0023 lbs/event	0.0047 lb/hr
TOC (Total)	47.3547 lbs/event	94.7094 lb/hr	4.9249 tpy	47.0667 lbs/event	94.1333 lb/hr
Methane	37.0228 lbs/event	74.0455 lb/hr	3.8504 tpy	36.7976 lbs/event	73.5951 lb/hr
Ethane	1.2915 lbs/event	2.5830 lb/hr	0.1343 tpy	1.2836 lbs/event	2.5673 lb/hr
VOC (Total)	9.0404 lbs/event	18.0809 lb/hr	0.9402 tpy	8.9855 lbs/event	17.9709 lb/hr
VOC (non-HAP)	4.6178 lbs/event	9.2356 lb/hr	0.4803 tpy	4.5897 lbs/event	9.1795 lb/hr
HAP (Total)	4.4226 lbs/event	8.8453 lb/hr	0.4600 tpy	4.3957 lbs/event	8.7915 lb/hr
Acetaldehyde	1.72E-01 lbs/event	0.3444 lb/hr	0.0179 tpy	1.71E-01 lbs/event	0.3423 lb/hr
Acrolein	2.76E-02 lbs/event	0.0551 lb/hr	0.0029 tpy	2.74E-02 lbs/event	0.0548 lb/hr
Benzene	5.17E-02 lbs/event	0.1033 lb/hr	0.0054 tpy	5.13E-02 lbs/event	0.1027 lb/hr
Biphenyl					
Butadiene (1,3-)	1.85E-03 lbs/event	0.0037 lb/hr	0.0002 tpy	1.84E-03 lbs/event	0.0037 lb/hr
Carbon Tetrachloride					
Chlorobenzene					
Chloroform					
Dichloropropene (1,3-)					
Ethylbenzene	1.38E-01 lbs/event	0.2755 lb/hr	0.0143 tpy	1.37E-01 lbs/event	0.2738 lb/hr
Ethylene Dibromide					
Formaldehyde	3.06E+00 lbs/event	6.1131 lb/hr	0.3179 tpy	3.04E+00 lbs/event	6.0759 lb/hr
Hexane (n-)					
Methanol					
Methylene Chloride					
Methylnaphthalene (2-)					
Naphthalene	5.60E-03 lbs/event	0.0112 lb/hr	0.0006 tpy	5.56E-03 lbs/event	0.0111 lb/hr
PAH	9.47E-03 lbs/event	0.0189 lb/hr	0.0010 tpy	9.41E-03 lbs/event	0.0188 lb/hr
Phenol					
Propylene Oxide	1.25E-01 lbs/event	0.2497 lb/hr	0.0130 tpy	1.24E-01 lbs/event	0.2482 lb/hr
Styrene					
Tetrachloroethane (1,1,2,2-)					
Toluene	5.60E-01 lbs/event	1.1193 lb/hr	0.0582 tpy	5.56E-01 lbs/event	1.1125 lb/hr
Trichloroethane (1,1,2-)					
Trimethylpentane (2,2,4-)					
Vinyl Chloride					
Xylenes	2.76E-01 lbs/event	0.5510 lb/hr	0.0287 tpy	2.74E-01 lbs/event	0.5477 lb/hr

NOTES

1. Emissions of NOx, CO, and UHC are estimated using information provided in TABLE B-1Ad and TABLE B-1Ae.

	55.51 °F		0.01 °F	
	Step 2	Step 3	Step 2	Step 3
Duration	0.00 min/event	8.50 min/event	0.00 min/event	8.50 min/event
NO_X	0.0000 lb/event	2.3330 lb/event	0.0000 lb/event	2.3188 lb/event
CO	0.0000 lb/event	213.0432 lb/event	0.0000 lb/event	211.7473 lb/event
UHC	0.0000 lb/event	47.3547 lb/event	0.0000 lb/event	47.0667 lb/event
Fuel	0 scf/event	10,405 scf/event	0 scf/event	10,319 scf/event

2. Footnotes 4 thru 8 of TABLE B-1Ac.
3. The frequency of startup events was provided by Technical Services.

TABLE B-1Ah
Gas-Fired Turbines
Emission Estimates
Low Temperatures
PTE - 100% Fuel Utilization at 100% Power Output

Make	Solar					
Model	130-20502S4					
Normal Operating Load	100%					
Fuel	Natural Gas					
Fuel Higher Heating Value (HHV)	1,020 BTU/scf			1,020 BTU/scf		
Ambient Temperature	-20.00 °F			-20.00 °F		
Power Output	22,151 bhp (mech.)			22,151 bhp (mech.)		
	16,519 kW (elec.)			16,519 kW (elec.)		
Heat Rate at HHV	8,161 BTU/hp-hr			8,161 BTU/hp-hr		
Operating Hours	175 hrs/yr			7 hrs/yr		
Fuel Consumption	177,228 scfh			177,228 scfh		
	31.015 MMscf/yr			1.241 MMscf/yr		
Heat Input at HHV	180.77 MMBTU/hr	0°F ≥ T > -20°F		180.77 MMBTU/hr	T ≤ -20°F	
	31,635 MMBTU/yr	Hourly	Annual	1,265 MMBTU/yr	Hourly	Annual
NO_X	154.50 lb/MMscf	27.3815 lb/hr	2.3959 tpy	441.43 lb/MMscf	78.2329 lb/hr	0.2738 tpy
CO	223.94 lb/MMscf	39.6889 lb/hr	3.4728 tpy	335.91 lb/MMscf	59.5333 lb/hr	0.2084 tpy
SO_2	14.29 lb/MMscf	2.5318 lb/hr	0.2215 tpy	14.29 lb/MMscf	2.5318 lb/hr	0.0089 tpy
$PM_{10/2.5}$	6.73 lb/MMscf	1.1931 lb/hr	0.1044 tpy	6.73 lb/MMscf	1.1931 lb/hr	0.0042 tpy
$CO_{2\text{-}e}$	121,685 lb/MMscf	21,566 lb/hr	1,887 tpy	122,489 lb/MMscf	21,708 lb/hr	76 tpy
CO_2	120,017 lb/MMscf	21,270 lb/hr	1,861 tpy	120,017 lb/MMscf	21,270 lb/hr	74 tpy
N_2O	0.23 lb/MMscf	0.0401 lb/hr	0.0035 tpy	0.23 lb/MMscf	0.0401 lb/hr	0.0001 tpy
TOC (Total)	73.44 lb/MMscf	13.0160 lb/hr	1.1389 tpy	110.16 lb/MMscf	19.5240 lb/hr	0.0683 tpy
Methane	57.42 lb/MMscf	10.1761 lb/hr	0.8904 tpy	86.13 lb/MMscf	15.2642 lb/hr	0.0534 tpy
Ethane	2.00 lb/MMscf	0.3550 lb/hr	0.0311 tpy	3.00 lb/MMscf	0.5325 lb/hr	0.0019 tpy
VOC (Total)	14.02 lb/MMscf	2.4849 lb/hr	0.2174 tpy	21.03 lb/MMscf	3.7273 lb/hr	0.0130 tpy
VOC (non-HAP)	7.16 lb/MMscf	1.2693 lb/hr	0.1111 tpy	10.74 lb/MMscf	1.9039 lb/hr	0.0067 tpy
HAP (Total)	6.86 lb/MMscf	1.2156 lb/hr	0.1064 tpy	10.29 lb/MMscf	1.8234 lb/hr	0.0064 tpy
Acetaldehyde	2.67E-01 lb/MMscf	0.0473 lb/hr	0.0041 tpy	4.01E-01 lb/MMscf	0.0710 lb/hr	0.0002 tpy
Acrolein	4.27E-02 lb/MMscf	0.0076 lb/hr	0.0007 tpy	6.41E-02 lb/MMscf	0.0114 lb/hr	0.0000 tpy
Benzene	8.01E-02 lb/MMscf	0.0142 lb/hr	0.0012 tpy	1.20E-01 lb/MMscf	0.0213 lb/hr	0.0001 tpy
Biphenyl						
Butadiene (1,3-)	2.87E-03 lb/MMscf	0.0005 lb/hr	0.0000 tpy	4.31E-03 lb/MMscf	0.0008 lb/hr	0.0000 tpy
Carbon Tetrachloride						
Chlorobenzene						
Chloroform						
Dichloropropene (1,3-)						
Ethylbenzene	2.14E-01 lb/MMscf	0.0379 lb/hr	0.0033 tpy	3.20E-01 lb/MMscf	0.0568 lb/hr	0.0002 tpy
Ethylene Dibromide						
Formaldehyde	4.74E+00 lb/MMscf	0.8401 lb/hr	0.0735 tpy	7.11E+00 lb/MMscf	1.2602 lb/hr	0.0044 tpy
Hexane (n-)						
Methanol						
Methylene Chloride						
Methylnaphthalene (2-)						
Naphthalene	8.68E-03 lb/MMscf	0.0015 lb/hr	0.0001 tpy	1.30E-02 lb/MMscf	0.0023 lb/hr	0.0000 tpy
PAH	1.47E-02 lb/MMscf	0.0026 lb/hr	0.0002 tpy	2.20E-02 lb/MMscf	0.0039 lb/hr	0.0000 tpy
Phenol						
Propylene Oxide	1.94E-01 lb/MMscf	0.0343 lb/hr	0.0030 tpy	2.90E-01 lb/MMscf	0.0515 lb/hr	0.0002 tpy
Styrene						
Tetrachloroethane (1,1,2,2-)						
Toluene	8.68E-01 lb/MMscf	0.1538 lb/hr	0.0135 tpy	1.30E+00 lb/MMscf	0.2307 lb/hr	0.0008 tpy
Trichloroethane (1,1,2-)						
Trimethylpentane (2,2,4-)						
Vinyl Chloride						
Xylenes	4.27E-01 lb/MMscf	0.0757 lb/hr	0.0066 tpy	6.41E-01 lb/MMscf	0.1136 lb/hr	0.0004 tpy

NOTES

1. Fuel higher heating value selected to correspond to AP-42 emissions factors.
2. Operating hours for low ambient temperatures best on best fit of available data (see TABLE B-1Aa).
3. Manufacturer provided data on: power output, heat rate, along with NOx, CO, and UHC (or TOC) emissions.
4. Footnotes 4 thru 8 of TABLE B-1Ac.

TABLE B-1Ai
Gas-Fired Turbines
Maximum Emission Estimates
Normal Operations, Startup, Shutdown, and Low Temperature Operations
PTE - 100% Fuel Utilization at 100% Power Output

Make	Solar																	
Model	130-20502S4																	
Normal Operating Load	100%																	
Operations	Normal			Startup			Shutdown			Startup/Shutdown w/ Normal			Low Temperatures			Combined Operations		
Maximum Annual Combined Event Frequency	8,760 hrs/yr			31 hrs/yr			29 hrs/yr			8,760 hrs/yr			182 hrs/yr			8,760 hrs/yr		
	Hourly		Maximum	Hourly		Maximum	Hourly		Maximum	Hourly			Hourly		Maximum	Hourly		Maximum
Pollutant	Average	Maximum	Annual	Average	Maximum	Annual	Average	Maximum	Annual	Average	Maximum	Maximum Annual	Average	Maximum	Annual	Average	Maximum	Annual
NO_X	5.1406 lb/hr	5.6753 lb/hr	22.5159 tpy	4.1027 lb/hr	4.1027 lb/hr	0.2133 tpy	4.6660 lb/hr	4.6660 lb/hr	0.2426 tpy	5.2091 lb/hr	11.1334 lb/hr	22.8159 tpy	29.3373 lb/hr	78.2329 lb/hr	2.6697 tpy	5.7118 lb/hr	78.2329 lb/hr	25.0178 tpy
CO	8.6931 lb/hr	9.5972 lb/hr	38.0756 tpy	399.2700 lb/hr	399.2700 lb/hr	20.7620 tpy	426.0864 lb/hr	426.0864 lb/hr	22.1565 tpy	18.4316 lb/hr	829.3552 lb/hr	80.7305 tpy	40.4521 lb/hr	59.5333 lb/hr	3.6811 tpy	19.0914 lb/hr	829.3552 lb/hr	83.6205 tpy
SO_2	2.2309 lb/hr	2.4499 lb/hr	9.7712 tpy	0.2765 lb/hr	0.2765 lb/hr	0.0144 tpy	0.2973 lb/hr	0.2973 lb/hr	0.0155 tpy	2.2309 lb/hr	2.4499 lb/hr	9.7712 tpy	2.5318 lb/hr	2.5318 lb/hr	0.2304 tpy	2.2371 lb/hr	2.5318 lb/hr	9.7986 tpy
$PM_{10/2.5}$	1.0513 lb/hr	1.1545 lb/hr	4.6046 tpy	0.1303 lb/hr	0.1303 lb/hr	0.0068 tpy	0.1401 lb/hr	0.1401 lb/hr	0.0073 tpy	1.0513 lb/hr	1.1545 lb/hr	4.6046 tpy	1.1931 lb/hr	1.1931 lb/hr	0.1086 tpy	1.0542 lb/hr	1.1931 lb/hr	4.6175 tpy
CO_{2-e}	18,876 lb/hr	20,730 lb/hr	82,678 tpy	4,564 lb/hr	4,564 lb/hr	237 tpy	4,572 lb/hr	4,572 lb/hr	238 tpy	18,876 lb/hr	20,730 lb/hr	82,678 tpy	21,571 lb/hr	21,708 lb/hr	1,963 tpy	18,932 lb/hr	21,708 lb/hr	82,923 tpy
CO_2	18,742 lb/hr	20,582 lb/hr	82,090 tpy	2,323 lb/hr	2,323 lb/hr	121 tpy	2,498 lb/hr	2,498 lb/hr	130 tpy	18,742 lb/hr	20,582 lb/hr	82,090 tpy	21,270 lb/hr	21,270 lb/hr	1,936 tpy	18,795 lb/hr	21,270 lb/hr	82,320 tpy
N_2O	0.0353 lb/hr	0.0388 lb/hr	0.1547 tpy	0.0044 lb/hr	0.0044 lb/hr	0.0002 tpy	0.0047 lb/hr	0.0047 lb/hr	0.0002 tpy	0.0353 lb/hr	0.0388 lb/hr	0.1547 tpy	0.0401 lb/hr	0.0401 lb/hr	0.0036 tpy	0.0354 lb/hr	0.0401 lb/hr	0.1551 tpy
TOC (Total)	5.7018 lb/hr	6.2948 lb/hr	24.9738 tpy	102.3236 lb/hr	102.3236 lb/hr	5.3208 tpy	94.7094 lb/hr	94.7094 lb/hr	4.9249 tpy	8.0015 lb/hr	199.6559 lb/hr	35.0466 tpy	13.2663 lb/hr	19.5240 lb/hr	1.2072 tpy	8.1587 lb/hr	199.6559 lb/hr	35.7350 tpy
Methane	4.4578 lb/hr	4.9214 lb/hr	19.5250 tpy	79.9985 lb/hr	79.9985 lb/hr	4.1599 tpy	74.0455 lb/hr	74.0455 lb/hr	3.8504 tpy	6.2557 lb/hr	156.0946 lb/hr	27.4001 tpy	10.3718 lb/hr	15.2642 lb/hr	0.9438 tpy	6.3786 lb/hr	156.0946 lb/hr	27.9382 tpy
Ethane	0.1555 lb/hr	0.1717 lb/hr	0.6811 tpy	2.7906 lb/hr	2.7906 lb/hr	0.1451 tpy	2.5830 lb/hr	2.5830 lb/hr	0.1343 tpy	0.2182 lb/hr	5.4452 lb/hr	0.9558 tpy	0.3618 lb/hr	0.5325 lb/hr	0.0329 tpy	0.2225 lb/hr	5.4452 lb/hr	0.9746 tpy
VOC (Total)	1.0885 lb/hr	1.2017 lb/hr	4.7677 tpy	19.5345 lb/hr	19.5345 lb/hr	1.0158 tpy	18.0809 lb/hr	18.0809 lb/hr	0.9402 tpy	1.5276 lb/hr	38.1161 lb/hr	6.6907 tpy	2.5327 lb/hr	3.7273 lb/hr	0.2305 tpy	1.5576 lb/hr	38.1161 lb/hr	6.8221 tpy
VOC (non-HAP)	0.5560 lb/hr	0.6138 lb/hr	2.4353 tpy	9.9781 lb/hr	9.9781 lb/hr	0.5189 tpy	9.2356 lb/hr	9.2356 lb/hr	0.4803 tpy	0.7803 lb/hr	19.4695 lb/hr	3.4176 tpy	1.2937 lb/hr	1.9039 lb/hr	0.1177 tpy	0.7956 lb/hr	19.4695 lb/hr	3.4847 tpy
HAP (Total)	0.5325 lb/hr	0.5879 lb/hr	2.3324 tpy	9.5564 lb/hr	9.5564 lb/hr	0.4969 tpy	8.8453 lb/hr	8.8453 lb/hr	0.4600 tpy	0.7473 lb/hr	18.6466 lb/hr	3.2731 tpy	1.2390 lb/hr	1.8234 lb/hr	0.1127 tpy	0.7620 lb/hr	18.6466 lb/hr	3.3374 tpy
Acetaldehyde	2.07E-02 lb/hr	2.29E-02 lb/hr	9.08E-02 tpy	3.72E-01 lb/hr	3.72E-01 lb/hr	1.93E-02 tpy	3.44E-01 lb/hr	3.44E-01 lb/hr	1.79E-02 tpy	2.91E-02 lb/hr	7.26E-01 lb/hr	1.27E-01 tpy	4.82E-02 lb/hr	7.10E-02 lb/hr	4.39E-03 tpy	2.97E-02 lb/hr	7.26E-01 lb/hr	1.30E-01 tpy
Acrolein	3.32E-03 lb/hr	3.66E-03 lb/hr	1.45E-02 tpy	5.95E-02 lb/hr	5.95E-02 lb/hr	3.10E-03 tpy	5.51E-02 lb/hr	5.51E-02 lb/hr	2.87E-03 tpy	4.66E-03 lb/hr	1.16E-01 lb/hr	2.04E-02 tpy	7.72E-03 lb/hr	1.14E-02 lb/hr	7.02E-04 tpy	4.75E-03 lb/hr	1.16E-01 lb/hr	2.08E-02 tpy
Benzene	6.22E-03 lb/hr	6.87E-03 lb/hr	2.72E-02 tpy	1.12E-01 lb/hr	1.12E-01 lb/hr	5.80E-03 tpy	1.03E-01 lb/hr	1.03E-01 lb/hr	5.37E-03 tpy	8.73E-03 lb/hr	2.18E-01 lb/hr	3.82E-02 tpy	1.45E-02 lb/hr	2.13E-02 lb/hr	1.32E-03 tpy	8.90E-03 lb/hr	2.18E-01 lb/hr	3.90E-02 tpy
Biphenyl																		
Butadiene (1,3-)	2.23E-04 lb/hr	2.46E-04 lb/hr	9.76E-04 tpy	4.00E-03 lb/hr	4.00E-03 lb/hr	2.08E-04 tpy	3.70E-03 lb/hr	3.70E-03 lb/hr	1.93E-04 tpy	3.13E-04 lb/hr	7.80E-03 lb/hr	1.37E-03 tpy	5.19E-04 lb/hr	7.63E-04 lb/hr	4.72E-05 tpy	3.19E-04 lb/hr	7.80E-03 lb/hr	1.40E-03 tpy
Carbon Tetrachloride																		
Chlorobenzene																		
Chloroform																		
Dichloropropene (1,3-)																		
Ethylbenzene	1.66E-02 lb/hr	1.83E-02 lb/hr	7.27E-02 tpy	2.98E-01 lb/hr	2.98E-01 lb/hr	1.55E-02 tpy	2.76E-01 lb/hr	2.76E-01 lb/hr	1.43E-02 tpy	2.33E-02 lb/hr	5.81E-01 lb/hr	1.02E-01 tpy	3.86E-02 lb/hr	5.68E-02 lb/hr	3.51E-03 tpy	2.37E-02 lb/hr	5.81E-01 lb/hr	1.04E-01 tpy
Ethylene Dibromide																		
Formaldehyde	3.68E-01 lb/hr	4.06E-01 lb/hr	1.61E+00 tpy	6.60E+00 lb/hr	6.60E+00 lb/hr	3.43E-01 tpy	6.11E+00 lb/hr	6.11E+00 lb/hr	3.18E-01 tpy	5.16E-01 lb/hr	1.29E+01 lb/hr	2.26E+00 tpy	8.56E-01 lb/hr	1.26E+00 lb/hr	7.79E-02 tpy	5.27E-01 lb/hr	1.29E+01 lb/hr	2.31E+00 tpy
Hexane (n-)																		
Methanol																		
Methylene Chloride																		
Methylnaphthalene (2-)																		
Naphthalene	6.74E-04 lb/hr	7.44E-04 lb/hr	2.95E-03 tpy	1.21E-02 lb/hr	1.21E-02 lb/hr	6.29E-04 tpy	1.12E-02 lb/hr	1.12E-02 lb/hr	5.82E-04 tpy	9.46E-04 lb/hr	2.36E-02 lb/hr	4.14E-03 tpy	1.57E-03 lb/hr	2.31E-03 lb/hr	1.43E-04 tpy	9.64E-04 lb/hr	2.36E-02 lb/hr	4.22E-03 tpy
PAH	1.14E-03 lb/hr	1.26E-03 lb/hr	4.99E-03 tpy	2.05E-02 lb/hr	2.05E-02 lb/hr	1.06E-03 tpy	1.89E-02 lb/hr	1.89E-02 lb/hr	9.85E-04 tpy	1.60E-03 lb/hr	3.99E-02 lb/hr	7.01E-03 tpy	2.65E-03 lb/hr	3.90E-03 lb/hr	2.41E-04 tpy	1.63E-03 lb/hr	3.99E-02 lb/hr	7.15E-03 tpy
Phenol																		
Propylene Oxide	1.50E-02 lb/hr	1.66E-02 lb/hr	6.58E-02 tpy	2.70E-01 lb/hr	2.70E-01 lb/hr	1.40E-02 tpy	2.50E-01 lb/hr	2.50E-01 lb/hr	1.30E-02 tpy	2.11E-02 lb/hr	5.26E-01 lb/hr	9.24E-02 tpy	3.50E-02 lb/hr	5.15E-02 lb/hr	3.18E-03 tpy	2.15E-02 lb/hr	5.26E-01 lb/hr	9.42E-02 tpy
Styrene																		
Tetrachloroethane (1,1,2,2-)																		
Toluene	6.74E-02 lb/hr	7.44E-02 lb/hr	2.95E-01 tpy	1.21E+00 lb/hr	1.21E+00 lb/hr	6.29E-02 tpy	1.12E+00 lb/hr	1.12E+00 lb/hr	5.82E-02 tpy	9.46E-02 lb/hr	2.36E+00 lb/hr	4.14E-01 tpy	1.57E-01 lb/hr	2.31E-01 lb/hr	1.43E-02 tpy	9.64E-02 lb/hr	2.36E+00 lb/hr	4.22E-01 tpy
Trichloroethane (1,1,2-)																		
Trimethylpentane (2,2,4-)																		
Vinyl Chloride																		
Xylenes	3.32E-02 lb/hr	3.66E-02 lb/hr	1.45E-01 tpy	5.95E-01 lb/hr	5.95E-01 lb/hr	3.10E-02 tpy	5.51E-01 lb/hr	5.51E-01 lb/hr	2.87E-02 tpy	4.66E-02 lb/hr	1.16E+00 lb/hr	2.04E-01 tpy	7.72E-02 lb/hr	1.14E-01 lb/hr	7.02E-03 tpy	4.75E-02 lb/hr	1.16E+00 lb/hr	2.08E-01 tpy

NOTES

1. See TABLE B-1Ac, TABLE B-1Af, TABLE B-1Ag, and TABLE B-1Ah.
2. If $E(t)_{normal} > E(t)_{transient}$, then $E(8{,}760\ hrs/yr)_{all} = E(8{,}760\ hrs/yr)_{normal}$
   Otherwise, $E(8{,}760\ hrs/yr)_{all} = E(8{,}760\ hrs/yr)_{normal} - E(t)_{normal} + E(t)_{transient}$.
   where t = the duration of transient operation.

TABLE B-1Aj
Gas-Fired Turbines
Maximum Emission Estimates
Normal Operations, Startup, Shutdown, and Low Temperature Operations
PTE - 100% Fuel Utilization at 100% Power Output

Make		Solar																		
Model		130-20502S4																		
Normal Operating Load		100%																		
Operations		Normal			Startup			Shutdown			Startup/Shutdown w/ Normal			Low Temperatures			Combined Operations		
Maximum Annual Combined Event Frequency		8,760 hrs/yr			31 hrs/yr			29 hrs/yr			8,760 hrs/yr			182 hrs/yr			8,760 hrs/yr		
Pollutant	Control Efficiency	Hourly		Maximum	Hourly		Maximum	Hourly		Maximum	Hourly		Maximum	Hourly		Maximum	Hourly		Maximum
		Average	Maximum	Annual	Average	Maximum	Annual	Average	Maximum	Annual	Average	Maximum	Annual	Average	Maximum	Annual	Average	Maximum	Annual
NO_X		5.1406 lb/hr	5.6753 lb/hr	22.5159 tpy	4.1027 lb/hr	4.1027 lb/hr	0.2133 tpy	4.6660 lb/hr	4.6660 lb/hr	0.2426 tpy	5.2091 lb/hr	11.1334 lb/hr	22.8159 tpy	29.3373 lb/hr	78.2329 lb/hr	2.6697 tpy	5.7118 lb/hr	78.2329 lb/hr	25.0178 tpy
CO	95.00% by weight	0.4347 lb/hr	0.4799 lb/hr	1.9038 tpy	399.2700 lb/hr	399.2700 lb/hr	20.7620 tpy	21.3043 lb/hr	21.3043 lb/hr	1.1078 tpy	5.4248 lb/hr	420.7742 lb/hr	23.7605 tpy	0.2026 lb/hr	2.9767 lb/hr	0.1841 tpy	5.4578 lb/hr	420.7742 lb/hr	23.9050 tpy
SO_2		2.2309 lb/hr	2.4499 lb/hr	9.7712 tpy	0.2765 lb/hr	0.2765 lb/hr	0.0144 tpy	0.2973 lb/hr	0.2973 lb/hr	0.0155 tpy	2.2309 lb/hr	2.4499 lb/hr	9.7712 tpy	2.5318 lb/hr	2.5318 lb/hr	0.2304 tpy	2.2371 lb/hr	2.5318 lb/hr	9.7986 tpy
$PM_{10/2.5}$		1.0513 lb/hr	1.1545 lb/hr	4.6046 tpy	0.1303 lb/hr	0.1303 lb/hr	0.0068 tpy	0.1401 lb/hr	0.1401 lb/hr	0.0073 tpy	1.0513 lb/hr	1.1545 lb/hr	4.6046 tpy	1.1931 lb/hr	1.1931 lb/hr	0.1086 tpy	1.0542 lb/hr	1.1931 lb/hr	4.6175 tpy
CO_{2-e}		18,889 lb/hr	20,744 lb/hr	82,734 tpy	4,564 lb/hr	4,564 lb/hr	237 tpy	5,208 lb/hr	5,208 lb/hr	271 tpy	18,889 lb/hr	20,744 lb/hr	82,734 tpy	21,632 lb/hr	21,797 lb/hr	1,968 tpy	18,946 lb/hr	25,741 lb/hr	82,984 tpy
CO_2		18,755 lb/hr	20,596 lb/hr	82,147 tpy	2,323 lb/hr	2,323 lb/hr	121 tpy	3,134 lb/hr	3,134 lb/hr	163 tpy	18,755 lb/hr	20,596 lb/hr	82,147 tpy	21,331 lb/hr	21,359 lb/hr	1,941 tpy	18,808 lb/hr	21,359 lb/hr	82,381 tpy
N_2O		0.0353 lb/hr	0.0388 lb/hr	0.1547 tpy	0.0044 lb/hr	0.0044 lb/hr	0.0002 tpy	0.0047 lb/hr	0.0047 lb/hr	0.0002 tpy	0.0353 lb/hr	0.0388 lb/hr	0.1547 tpy	0.0401 lb/hr	0.0401 lb/hr	0.0036 tpy	0.0354 lb/hr	0.0401 lb/hr	0.1551 tpy
TOC (Total)	10.91% by weight	5.0798 lb/hr	5.6081 lb/hr	22.2494 tpy	102.3236 lb/hr	102.3236 lb/hr	5.3208 tpy	84.3775 lb/hr	84.3775 lb/hr	4.3876 tpy	7.2611 lb/hr	189.0378 lb/hr	31.8038 tpy	11.8191 lb/hr	17.3941 lb/hr	1.0755 tpy	7.4012 lb/hr	189.0378 lb/hr	32.4171 tpy
Methane	0.00% by weight	4.4578 lb/hr	4.9214 lb/hr	19.5250 tpy	79.9985 lb/hr	79.9985 lb/hr	4.1599 tpy	74.0455 lb/hr	74.0455 lb/hr	3.8504 tpy	6.2557 lb/hr	156.0946 lb/hr	27.4001 tpy	10.3718 lb/hr	15.2642 lb/hr	0.9438 tpy	6.3786 lb/hr	156.0946 lb/hr	27.9382 tpy
Ethane	50.00% by weight	0.0778 lb/hr	0.0858 lb/hr	0.3406 tpy	2.7906 lb/hr	2.7906 lb/hr	0.1451 tpy	1.2915 lb/hr	1.2915 lb/hr	0.0672 tpy	0.1257 lb/hr	4.1179 lb/hr	0.5505 tpy	0.1809 lb/hr	0.2662 lb/hr	0.0165 tpy	0.1278 lb/hr	4.1179 lb/hr	0.5599 tpy
VOC (Total)	50.00% by weight	0.5443 lb/hr	0.6009 lb/hr	2.3839 tpy	19.5345 lb/hr	19.5345 lb/hr	1.0158 tpy	9.0404 lb/hr	9.0404 lb/hr	0.4701 tpy	0.8797 lb/hr	28.8253 lb/hr	3.8533 tpy	1.2663 lb/hr	1.8637 lb/hr	0.1152 tpy	0.8947 lb/hr	28.8253 lb/hr	3.9190 tpy
VOC (non-HAP)	19.10% by weight	0.4498 lb/hr	0.4966 lb/hr	1.9703 tpy	9.9781 lb/hr	9.9781 lb/hr	0.5189 tpy	7.4720 lb/hr	7.4720 lb/hr	0.3885 tpy	0.6539 lb/hr	17.6571 lb/hr	2.8641 tpy	1.0466 lb/hr	1.5403 lb/hr	0.0952 tpy	0.6663 lb/hr	17.6571 lb/hr	2.9184 tpy
HAP (Total)	8.23E-01 by weight	0.0944 lb/hr	0.1042 lb/hr	0.4136 tpy	9.5564 lb/hr	9.5564 lb/hr	0.4969 tpy	1.5684 lb/hr	1.5684 lb/hr	0.0816 tpy	0.2258 lb/hr	11.1682 lb/hr	0.9892 tpy	0.2197 lb/hr	0.3233 lb/hr	0.0200 tpy	0.2284 lb/hr	11.1682 lb/hr	1.0006 tpy
Acetaldehyde	80.00% by weight	4.15E-03 lb/hr	4.58E-03 lb/hr	1.82E-02 tpy	3.72E-01 lb/hr	3.72E-01 lb/hr	1.93E-02 tpy	6.89E-02 lb/hr	6.89E-02 lb/hr	3.58E-03 tpy	9.35E-03 lb/hr	4.43E-01 lb/hr	4.10E-02 tpy	9.65E-03 lb/hr	1.42E-02 lb/hr	8.78E-04 tpy	9.47E-03 lb/hr	4.43E-01 lb/hr	4.15E-02 tpy
Acrolein	50.00% by weight	1.66E-03 lb/hr	1.83E-03 lb/hr	7.27E-03 tpy	5.95E-02 lb/hr	5.95E-02 lb/hr	3.10E-03 tpy	2.76E-02 lb/hr	2.76E-02 lb/hr	1.43E-03 tpy	2.68E-03 lb/hr	8.78E-02 lb/hr	1.17E-02 tpy	3.86E-03 lb/hr	5.68E-03 lb/hr	3.51E-04 tpy	2.73E-03 lb/hr	8.78E-02 lb/hr	1.19E-02 tpy
Benzene	50.00% by weight	3.11E-03 lb/hr	3.43E-03 lb/hr	1.36E-02 tpy	1.12E-01 lb/hr	1.12E-01 lb/hr	5.80E-03 tpy	5.17E-02 lb/hr	5.17E-02 lb/hr	2.69E-03 tpy	5.03E-03 lb/hr	1.65E-01 lb/hr	2.20E-02 tpy	7.24E-03 lb/hr	1.06E-02 lb/hr	6.58E-04 tpy	5.11E-03 lb/hr	1.65E-01 lb/hr	2.24E-02 tpy
Biphenyl	0.00% by weight																		
Butadiene (1,3-)	50.00% by weight	1.11E-04 lb/hr	1.23E-04 lb/hr	4.88E-04 tpy	4.00E-03 lb/hr	4.00E-03 lb/hr	2.08E-04 tpy	1.85E-03 lb/hr	1.85E-03 lb/hr	9.63E-05 tpy	1.80E-04 lb/hr	5.90E-03 lb/hr	7.89E-04 tpy	2.59E-04 lb/hr	3.82E-04 lb/hr	2.36E-05 tpy	1.83E-04 lb/hr	5.90E-03 lb/hr	8.02E-04 tpy
Carbon Tetrachloride	50.00% by weight																		
Chlorobenzene	50.00% by weight																		
Chloroform	50.00% by weight																		
Dichloropropene (1,3-)	50.00% by weight																		
Ethylbenzene	50.00% by weight	8.29E-03 lb/hr	9.16E-03 lb/hr	3.63E-02 tpy	2.98E-01 lb/hr	2.98E-01 lb/hr	1.55E-02 tpy	1.38E-01 lb/hr	1.38E-01 lb/hr	7.16E-03 tpy	1.34E-02 lb/hr	4.39E-01 lb/hr	5.87E-02 tpy	1.93E-02 lb/hr	2.84E-02 lb/hr	1.76E-03 tpy	1.36E-02 lb/hr	4.39E-01 lb/hr	5.97E-02 tpy
Ethylene Dibromide	50.00% by weight																		
Formaldehyde	95.00% by weight	1.84E-02 lb/hr	2.03E-02 lb/hr	8.06E-02 tpy	6.60E+00 lb/hr	6.60E+00 lb/hr	3.43E-01 tpy	3.06E-01 lb/hr	3.06E-01 lb/hr	1.59E-02 tpy	1.00E-01 lb/hr	6.92E+00 lb/hr	4.39E-01 tpy	4.28E-02 lb/hr	6.30E-02 lb/hr	3.90E-03 tpy	1.01E-01 lb/hr	6.92E+00 lb/hr	4.42E-01 tpy
Hexane (n-)	50.00% by weight																		
Methanol	95.00% by weight																		
Methylene Chloride	50.00% by weight																		
Methylnaphthalene (2-)	50.00% by weight																		
Naphthalene	50.00% by weight	3.37E-04 lb/hr	3.72E-04 lb/hr	1.48E-03 tpy	1.21E-02 lb/hr	1.21E-02 lb/hr	6.29E-04 tpy	5.60E-03 lb/hr	5.60E-03 lb/hr	2.91E-04 tpy	5.45E-04 lb/hr	1.78E-02 lb/hr	2.39E-03 tpy	7.84E-04 lb/hr	1.15E-03 lb/hr	7.13E-05 tpy	5.54E-04 lb/hr	1.78E-02 lb/hr	2.43E-03 tpy
PAH	50.00% by weight	5.70E-04 lb/hr	6.29E-04 lb/hr	2.50E-03 tpy	2.05E-02 lb/hr	2.05E-02 lb/hr	1.06E-03 tpy	9.47E-03 lb/hr	9.47E-03 lb/hr	4.92E-04 tpy	9.22E-04 lb/hr	3.02E-02 lb/hr	4.04E-03 tpy	1.33E-03 lb/hr	1.95E-03 lb/hr	1.21E-04 tpy	9.37E-04 lb/hr	3.02E-02 lb/hr	4.11E-03 tpy
Phenol	50.00% by weight																		
Propylene Oxide	50.00% by weight	7.52E-03 lb/hr	8.30E-03 lb/hr	3.29E-02 tpy	2.70E-01 lb/hr	2.70E-01 lb/hr	1.40E-02 tpy	1.25E-01 lb/hr	1.25E-01 lb/hr	6.49E-03 tpy	1.21E-02 lb/hr	3.98E-01 lb/hr	5.32E-02 tpy	1.75E-02 lb/hr	2.57E-02 lb/hr	1.59E-03 tpy	1.24E-02 lb/hr	3.98E-01 lb/hr	5.41E-02 tpy
Styrene	0.00% by weight																		
Tetrachloroethane (1,1,2,2-)	50.00% by weight																		
Toluene	50.00% by weight	3.37E-02 lb/hr	3.72E-02 lb/hr	1.48E-01 tpy	1.21E+00 lb/hr	1.21E+00 lb/hr	6.29E-02 tpy	5.60E-01 lb/hr	5.60E-01 lb/hr	2.91E-02 tpy	5.45E-02 lb/hr	1.78E+00 lb/hr	2.39E-01 tpy	7.84E-02 lb/hr	1.15E-01 lb/hr	7.13E-03 tpy	5.54E-02 lb/hr	1.78E+00 lb/hr	2.43E-01 tpy
Trichloroethane (1,1,2-)	50.00% by weight																		
Trimethylpentane (2,2,4-)	50.00% by weight																		
Vinyl Chloride	0.00% by weight																		
Xylenes	50.00% by weight	1.66E-02 lb/hr	1.83E-02 lb/hr	7.27E-02 tpy	5.95E-01 lb/hr	5.95E-01 lb/hr	3.10E-02 tpy	2.76E-01 lb/hr	2.76E-01 lb/hr	1.43E-02 tpy	2.68E-02 lb/hr	8.78E-01 lb/hr	1.17E-01 tpy	3.86E-02 lb/hr	5.68E-02 lb/hr	3.51E-03 tpy	2.73E-02 lb/hr	8.78E-01 lb/hr	1.19E-01 tpy

NOTES

1. See TABLE B-1Ai.
2. It's assumed that oxidation catalyst will be ineffective during startup events.
3. $CO2 = CO2_{uncontrolled} + CE_{CO\text{-}control\ efficiency} * CO_{uncontrolled} * (MW_{CO2}/MW_{CO}) = CO2_{uncontrolled} + CE_{CO\text{-}control\ efficiency} * CO_{uncontrolled} * (44.0095/28.0101)$.

TABLE C-1A
4-Stroke Rich-Burn Reciprocating Engines
Hourly and Annual Emission Estimates
Controlled - NSCR

Type		4srb				
Service		Emergency				
JJJJ Relevant Date		Manufactured: On or After 01/01/2009				
ZZZZ Status		New RICE at Area HAP Source				
Make		Waukesha				
Model		VGF48SE - Remote Radiator				
Fuel		Natural Gas				
Fuel Higher Heating Value (HHV)		1,020 BTU/scf			1,020 BTU/scf	
Ambient Temperature		80 °F			80 °F	
Power Output		1,475 bhp (mech.)			1,475 bhp (mech.)	
		1,050 kW (elec.)			1,050 kW (elec.)	
Heat Rate at HHV		8,706 BTU/hp-hr			8,706 BTU/hp-hr	
Operating Hours		500 hrs/yr				
Fuel Consumption		12,589 scfh			12,589 scfh	
		6.295 MMscf/yr				
Heat Input at HHV		12.84 MMBTU/hr			12.84 MMBTU/hr	
		6,420 MMBTU/yr	Controlled - NSCR			Controlled - NSCR
Pollutant	Control Efficiency	Controlled - NSCR	Average Hourly	Maximum Annual	Controlled - NSCR	Maximum Hourly
NO_X		516.60 lb/MMscf	6.5035 lb/hr	1.6259 tpy	516.60 lb/MMscf	6.5035 lb/hr
CO		1,033.20 lb/MMscf	13.0071 lb/hr	3.2518 tpy	1,033.20 lb/MMscf	13.0071 lb/hr
SO_2		14.29 lb/MMscf	0.1798 lb/hr	0.0450 tpy	14.29 lb/MMscf	0.1798 lb/hr
$PM_{10/2.5}$		19.80 lb/MMscf	0.2492 lb/hr	0.0623 tpy	19.80 lb/MMscf	0.2492 lb/hr
CO_{2-e}		258,673 lb/MMscf	3,256 lb/hr	814 tpy	258,673 lb/MMscf	3,256 lb/hr
CO_2		120,017 lb/MMscf	1,511 lb/hr	378 tpy	120,017 lb/MMscf	1,511 lb/hr
N_2O		0.23 lb/MMscf	0.0028 lb/hr	0.0007 tpy	0.23 lb/MMscf	0.0028 lb/hr
TOC (Total)		7,704.52 lb/MMscf	96.9925 lb/hr	24.2481 tpy	7,704.52 lb/MMscf	96.9925 lb/hr
Methane		4,949.83 lb/MMscf	62.3136 lb/hr	15.5784 tpy	4,949.83 lb/MMscf	62.3136 lb/hr
Ethane		2,055.21 lb/MMscf	25.8731 lb/hr	6.4683 tpy	2,055.21 lb/MMscf	25.8731 lb/hr
VOC (Total)		699.48 lb/MMscf	8.8058 lb/hr	2.2015 tpy	699.48 lb/MMscf	8.8058 lb/hr
VOC (non-HAP)		1.81 lb/MMscf	0.0228 lb/hr	0.0057 tpy	1.81 lb/MMscf	0.0228 lb/hr
HAP (Total)		697.67 lb/MMscf	8.7830 lb/hr	2.1957 tpy	697.67 lb/MMscf	8.7830 lb/hr
Acetaldehyde		6.00E+01 lb/MMscf	7.56E-01 lb/hr	1.89E-01 tpy	6.00E+01 lb/MMscf	7.56E-01 lb/hr
Acrolein		5.66E+01 lb/MMscf	7.13E-01 lb/hr	1.78E-01 tpy	5.66E+01 lb/MMscf	7.13E-01 lb/hr
Benzene		3.40E+01 lb/MMscf	4.28E-01 lb/hr	1.07E-01 tpy	3.40E+01 lb/MMscf	4.28E-01 lb/hr
Biphenyl						
Butadiene (1,3-)		1.43E+01 lb/MMscf	1.80E-01 lb/hr	4.49E-02 tpy	1.43E+01 lb/MMscf	1.80E-01 lb/hr
Carbon Tetrachloride		3.81E-01 lb/MMscf	4.80E-03 lb/hr	1.20E-03 tpy	3.81E-01 lb/MMscf	4.80E-03 lb/hr
Chlorobenzene		2.78E-01 lb/MMscf	3.49E-03 lb/hr	8.74E-04 tpy	2.78E-01 lb/MMscf	3.49E-03 lb/hr
Chloroform		2.95E-01 lb/MMscf	3.71E-03 lb/hr	9.28E-04 tpy	2.95E-01 lb/MMscf	3.71E-03 lb/hr
Dichloropropene (1,3-)		2.73E-01 lb/MMscf	3.44E-03 lb/hr	8.60E-04 tpy	2.73E-01 lb/MMscf	3.44E-03 lb/hr
Ethylbenzene		5.34E-01 lb/MMscf	6.72E-03 lb/hr	1.68E-03 tpy	5.34E-01 lb/MMscf	6.72E-03 lb/hr
Ethylene Dibromide		4.58E-01 lb/MMscf	5.77E-03 lb/hr	1.44E-03 tpy	4.58E-01 lb/MMscf	5.77E-03 lb/hr
Formaldehyde		4.41E+02 lb/MMscf	5.55E+00 lb/hr	1.39E+00 tpy	4.41E+02 lb/MMscf	5.55E+00 lb/hr
Hexane (n-)						
Methanol		6.59E+01 lb/MMscf	8.29E-01 lb/hr	2.07E-01 tpy	6.59E+01 lb/MMscf	8.29E-01 lb/hr
Methylene Chloride		8.87E-01 lb/MMscf	1.12E-02 lb/hr	2.79E-03 tpy	8.87E-01 lb/MMscf	1.12E-02 lb/hr
Methylnaphthalene (2-)						
Naphthalene		2.09E+00 lb/MMscf	2.63E-02 lb/hr	6.58E-03 tpy	2.09E+00 lb/MMscf	2.63E-02 lb/hr
PAH		3.03E+00 lb/MMscf	3.82E-02 lb/hr	9.55E-03 tpy	3.03E+00 lb/MMscf	3.82E-02 lb/hr
Phenol						
Propylene Oxide						
Styrene		2.56E-01 lb/MMscf	3.22E-03 lb/hr	8.06E-04 tpy	2.56E-01 lb/MMscf	3.22E-03 lb/hr
Tetrachloroethane (1,1,2,2-)		5.44E-01 lb/MMscf	6.85E-03 lb/hr	1.71E-03 tpy	5.44E-01 lb/MMscf	6.85E-03 lb/hr
Toluene		1.20E+01 lb/MMscf	1.51E-01 lb/hr	3.78E-02 tpy	1.20E+01 lb/MMscf	1.51E-01 lb/hr
Trichloroethane (1,1,2-)		3.29E-01 lb/MMscf	4.15E-03 lb/hr	1.04E-03 tpy	3.29E-01 lb/MMscf	4.15E-03 lb/hr
Trimethylpentane (2,2,4-)						
Vinyl Chloride		1.55E-01 lb/MMscf	1.95E-03 lb/hr	4.86E-04 tpy	1.55E-01 lb/MMscf	1.95E-03 lb/hr
Xylenes		4.20E+00 lb/MMscf	5.28E-02 lb/hr	1.32E-02 tpy	4.20E+00 lb/MMscf	5.28E-02 lb/hr

NOTES

1. Fuel higher heating value selected to correspond to AP-42 emissions factors.
2. Maximum hourly emissions based on 100% of rated capacity.
3. Vendor provided data on power output and heat rate.
4. SO2 emission factor based on AP-42, Section 3.2 (Revised 7/00), Table 3.2-1 using Tariff (5 gr/100 scf).
5. PM10/2.5 emission factor based on AP-42, Section 3.2 (Revised 7/00), Table 3.2-3.
6. CO2 and N2O emission factors based on 40 CFR 98, Subpart C, Table C-1 and 40 CFR 98, Subpart C, Table C-2, respectively.
7. NOX and CO emission factors based on 40 CFR 60, Subpart JJJJ.
8. TOC (Total) and TOC specie emissions are estimated based on scaling of AP-42 using 40 CFR 60, Subpart JJJJ (VOC - Formaldehyde) data.
   Emission factors based on: $EF_i = [EF_{(VOC - Formaldehyde)}]/[(EF_{VOC-AP42} - EF_{Formaldehyde-AP42})] (EF_{i-AP42})$

TABLE D-1A
Natural Gas Combustion
Hourly and Annual Emission Estimates
Uncontrolled

Application		Process Heater				
Combustion Process		Conventional				
Add-on Controls		None				
Package (Make: Model)		Cameron: Unknown				
Burner (Make: Model)		Flameco: SB-24-10				
Fuel		Natural Gas				
Fuel Higher Heating Value (HHV)		1,020 BTU/scf			1,020 BTU/scf	
Heat Output at HHV		0.750 MMBTU/hr			0.788 MMBTU/hr	
Thermal Efficiency		65%			65%	
Operating Hours		8,760 hrs/yr				
Fuel Consumption		1,131 scfh			1,188 scfh	
		9.910 MMscf/yr				
Heat Input at HHV		1.154 MMBTU/hr			1.212 MMBTU/hr	
		10,108 MMBTU/yr	Uncontrolled			Uncontrolled
Pollutant	Control Efficiency	Uncontrolled	Average Hourly	Maximum Annual	Uncontrolled	Maximum Hourly
NO_X		98.43 lb/MMscf	0.1113 lb/hr	0.4877 tpy	98.43 lb/MMscf	0.1169 lb/hr
CO		150.00 lb/MMscf	0.1697 lb/hr	0.7432 tpy	150.00 lb/MMscf	0.1782 lb/hr
SO_2		14.29 lb/MMscf	0.0162 lb/hr	0.0708 tpy	14.29 lb/MMscf	0.0170 lb/hr
$PM_{10/2.5}$		7.60 lb/MMscf	0.0086 lb/hr	0.0377 tpy	7.60 lb/MMscf	0.0090 lb/hr
CO_{2-e}		120,361.88 lb/MMscf	136.1560 lb/hr	596.3632 tpy	120,361.88 lb/MMscf	142.9638 lb/hr
CO_2		120,017.45 lb/MMscf	135.7664 lb/hr	594.6566 tpy	120,017.45 lb/MMscf	142.5547 lb/hr
N_2O		0.23 lb/MMscf	0.0003 lb/hr	0.0011 tpy	0.23 lb/MMscf	0.0003 lb/hr
TOC (Total)		60.00 lb/MMscf	0.0679 lb/hr	0.2973 tpy	60.00 lb/MMscf	0.0713 lb/hr
Methane		10.16 lb/MMscf	0.0115 lb/hr	0.0503 tpy	10.16 lb/MMscf	0.0121 lb/hr
Ethane		13.69 lb/MMscf	0.0155 lb/hr	0.0679 tpy	13.69 lb/MMscf	0.0163 lb/hr
VOC (Total)		36.15 lb/MMscf	0.0409 lb/hr	0.1791 tpy	36.15 lb/MMscf	0.0429 lb/hr
VOC (non-HAP)		27.83 lb/MMscf	0.0315 lb/hr	0.1379 tpy	27.83 lb/MMscf	0.0331 lb/hr
HAP (Total)		8.32 lb/MMscf	0.0094 lb/hr	0.0412 tpy	8.32 lb/MMscf	0.0099 lb/hr
Acetaldehyde						
Acrolein						
Benzene		9.28E-03 lb/MMscf	1.05E-05 lb/hr	4.60E-05 tpy	9.28E-03 lb/MMscf	1.10E-05 lb/hr
Biphenyl						
Butadiene (1,3-)						
Carbon Tetrachloride						
Chlorobenzene						
Chloroform						
Dichloropropene (1,3-)						
Ethylbenzene						
Ethylene Dibromide						
Formaldehyde		3.31E-01 lb/MMscf	3.75E-04 lb/hr	1.64E-03 tpy	3.31E-01 lb/MMscf	3.94E-04 lb/hr
Hexane (n-)		7.95E+00 lb/MMscf	8.99E-03 lb/hr	3.94E-02 tpy	7.95E+00 lb/MMscf	9.44E-03 lb/hr
Methanol						
Methylene Chloride						
Methylnaphthalene (2-)		1.06E-04 lb/MMscf	1.20E-07 lb/hr	5.25E-07 tpy	1.06E-04 lb/MMscf	1.26E-07 lb/hr
Naphthalene		2.69E-03 lb/MMscf	3.05E-06 lb/hr	1.34E-05 tpy	2.69E-03 lb/MMscf	3.20E-06 lb/hr
PAH						
Phenol						
Propylene Oxide						
Styrene						
Tetrachloroethane (1,1,2,2-)						
Toluene		1.50E-02 lb/MMscf	1.70E-05 lb/hr	7.44E-05 tpy	1.50E-02 lb/MMscf	1.78E-05 lb/hr
Trichloroethane (1,1,2-)						
Trimethylpentane (2,2,4-)						
Vinyl Chloride						
Xylenes						

NOTES

1. Fuel higher heating value selected to correspond to AP-42 emissions factors.
2. Maximum hourly emissions based on 105% of rated capacity.
3. Vendor provided data on: heat output and heat input.
4. CO2 and N2O emission factors based on 40 CFR 98, Subpart C, Table C-1 and 40 CFR 98, Subpart C, Table C-2, respectively.
5. NOX, CO and TOC (Total) emission factors based on vendor data.
6. SO2 emission factors based on AP-42, Section 1.4 (Revised 3/98), Table 1.4-2 using Tariff (5 gr/100 scf).
7. PM10/2.5 emission factors based on AP-42, Section 1.4 (Revised 3/98), Table 1.4-2.
8. Remaining TOC specie emission factors based on scaling of AP-42, Section 1.4 (Revised 3/98), Table 1.4-3 using vendor HC data.

TABLE E-0a(i)
Flash Analysis
Summary of Laboratory Analysis

	FEED Pressurized Liquid	VAPOR Flash Gas	LIQUID Residual Liquid
Pressure	575.000 psig	0.034 psig	0.034 psig
	589.696 psia	14.730 psia	14.730 psia
Temperature	72 °F	60 °F	60 °F
API Gravity at 60°F	73.960 n.d.	788.526 n.d.	61.227 n.d.
Specific Gravity at 60°F	0.6887 n.d. (water)	0.1538 n.d. (water)	0.7342 n.d. (water)
	3.3880 n.d. (air)	0.9301 n.d. (air)	4.4320 n.d. (air)
Molecular Weight	98.125 lb/lb-mol	26.938 lb/lb-mol	128.362 lb/lb-mol
Density at 60°F and 14.730 psia	5.747 lb/gal	1.283 lb/gal	6.126 lb/gal
	0.2593 lb/ft^3	0.0712 lb/ft^3	0.3392 lb/ft^3
	22.1622 ft^3/gal	18.0282 ft^3/gal	18.0610 ft^3/gal
	930.8120 ft^3/bbl	757.1853 ft^3/bbl	758.5600 ft^3/bbl
	378.4123 $ft^3/lb\text{-}mol$	378.4123 $ft^3/lb\text{-}mol$	378.4123 $ft^3/lb\text{-}mol$
	17.0747 gal/lb-mol	20.9900 gal/lb-mol	20.9520 gal/lb-mol
	2.4598 lb-mol/bbl	2.0010 lb-mol/bbl	2.0046 lb-mol/bbl
Density at 68°F and 14.696 psia	947.3299 scf/bbl	770.6220 scf/bbl	772.0211 scf/bbl
	385.1275 scf/lb-mol	385.1275 scf/lb-mol	385.1275 scf/lb-mol
	2.4598 lb-mol/bbl	2.0010 lb-mol/bbl	2.0046 lb-mol/bbl
Vapor to Liquid Mole Ratio (V/L)	0.4249 n.d. ($lb\text{-}mol_{VAPOR}/lb\text{-}mol_{LIQUID}$)		
Mole Balance	1.0000 bbl	0.3666 bbl	0.8612 bbl
	2.4598 lb-mol	0.7335 lb-mol	1.7263 lb-mol
	947.3299 scf	282.4903 scf	664.8396 scf
Flash Factor (FF)	328.0318 scf_{VAPOR}/bbl_{LIQUID}		

NOTES

1. Sample Data: Location: Atlanta, TX
   Date: 04/15/09
   Time: Not Recorded
2. Reference Conditions: SPL Standard

T =	60 °F	68 °F
P =	14.730 psia	14.696 psia
Water	8.344 lb/gal	8.338 lb/gal
Air	0.0765 lb/ft^3	0.0752 lb/ft^3

3. V + L = F => F = (1 + V/L)L {Overall Mole Balance}.

TABLE E-0a(ii)
Flash Analysis
Extrapolation of Specie Mole Percentages

						Liquid Dump Flash Data				
						Input			Output	
						Liquid	Scaled	*Calculated*	Vapor	Liquid
Component						z_i		z_i	y_i	x_i
Name (i)	GC Postition	SPL Class	Formula	Type	HAP	($mol_{i\text{-}F}/mol_F$)		($mol_{i\text{-}F}/mol_F$)	($mol_{i\text{-}V}/mol_V$)	($mol_{i\text{-}L}/mol_L$)
Nitrogen	1		N2			0.034%	0.034%	0.030%	0.101%	0.000%
Carbon Dioxide	3		CO2	GHG		0.968%	0.968%	0.970%	3.163%	0.038%
Methane	2		C01H04	GHG		20.922%	20.922%	20.921%	69.445%	0.303%
Ethane	4		C02H06			3.391%	3.391%	3.390%	10.467%	0.383%
Propane	5		C03H08	VOC		2.183%	2.183%	2.180%	5.339%	0.838%
Butane (i-)	6		C04H10	VOC		1.232%	1.232%	1.230%	2.126%	0.849%
Butane (n-)	7		C04H10	VOC		1.721%	1.721%	1.720%	2.495%	1.391%
Pentane (i-)	8		C05H12	VOC		2.354%	2.354%	2.350%	1.895%	2.543%
Pentane (n-)	9		C05H12	VOC		1.622%	1.622%	1.620%	1.056%	1.859%
Dimethylbutane (2,2-)	10	Hexanes	C06H14	VOC		0.174%	0.174%	0.174%	0.050%	0.227%
Dimethylbutane (2,3-)	11	Hexanes	C06H14	VOC		0.000%	0.000%	0.000%	0.000%	0.000%
Cyclopentane	12	Hexanes	C05H10	VOC		0.000%	0.000%	0.000%	0.000%	0.000%
Methylpentane (2-)	13	Hexanes	C06H14	VOC		1.218%	1.218%	1.218%	0.352%	1.586%
Methylpentane (3-)	14	Hexanes	C06H14	VOC		0.912%	0.912%	0.912%	0.264%	1.187%
Hexane (n-)	15	Hexanes	C06H14	VOC	X	1.937%	1.937%	1.937%	0.561%	2.522%
Dimethylpentane (2,2-)	16	Heptanes	C07H16	VOC		0.311%	0.311%	0.311%	0.032%	0.430%
Methylcyclopentane	17	Heptanes	C06H12	VOC		1.134%	1.134%	1.134%	0.116%	1.566%
Dimethylpentane (2,4-)	18	Heptanes	C07H16	VOC		0.128%	0.128%	0.128%	0.013%	0.177%
Trimethylbutane (2,2,3-)	19	Heptanes	C07H16	VOC		0.000%	0.000%	0.000%	0.000%	0.000%
Benzene	20	Heptanes	C06H06	VOC	X	1.713%	1.713%	1.713%	0.175%	2.366%
Dimethylpentane (3,3-)	21	Heptanes	C07H16	VOC		0.221%	0.221%	0.221%	0.023%	0.305%
Cyclohexane	22	Heptanes	C06H12	VOC		1.106%	1.106%	1.106%	0.113%	1.528%
Methylhexane (2-)	23	Heptanes	C07H16	VOC		2.292%	2.292%	2.292%	0.235%	3.166%
Dimethylpentane (2,3-)	24	Heptanes	C07H16	VOC		0.000%	0.000%	0.000%	0.000%	0.000%
Dimethylcyclopentane (1,1-)	25	Heptanes	C07H14	VOC		0.603%	0.603%	0.603%	0.062%	0.833%
Methylhexane (3-)	26	Heptanes	C07H16	VOC		2.379%	2.379%	2.379%	0.244%	3.286%
Dimethylcyclopentane (1,t-3-)	27	Heptanes	C07H14	VOC		0.163%	0.163%	0.163%	0.017%	0.225%
Dimethylcyclopentane (1,c-3-)	28	Heptanes	C07H14	VOC		0.266%	0.266%	0.266%	0.027%	0.367%
Ethylpentane (3-)	29	Heptanes	C07H16	VOC		0.029%	0.029%	0.029%	0.003%	0.040%
Dimethylcyclopentane (1,t-2-)	30	Heptanes	C07H14	VOC		0.222%	0.222%	0.222%	0.023%	0.307%
Trimethylpentane (2,2,4-)	31	Heptanes	C08H18	VOC	X	0.021%	0.021%	0.021%	0.002%	0.029%
Heptane (n-)	32	Heptanes	C07H16	VOC		3.742%	3.742%	3.742%	0.383%	5.169%
Methylcyclohexane	33	Octanes	C07H14	VOC		3.301%	3.301%	3.301%	0.136%	4.646%
Trimethylcyclopentane (1,1,3-)	34	Octanes	C08H16	VOC		0.225%	0.225%	0.225%	0.009%	0.317%
Dimethylhexane (2,2-)	35	Octanes	C08H18	VOC		0.095%	0.095%	0.095%	0.004%	0.134%
Dimethylcyclopentane (1,c-2-)	36	Octanes	C07H14	VOC		0.848%	0.848%	0.848%	0.035%	1.193%
Dimethylhexane (2,5-)	37	Octanes	C08H18	VOC		0.000%	0.000%	0.000%	0.000%	0.000%
Dimethylhexane (2,4-)	38	Octanes	C08H18	VOC		0.143%	0.143%	0.143%	0.006%	0.201%
Ethylcyclopentane	39	Octanes	C07H14	VOC		0.464%	0.464%	0.464%	0.019%	0.653%
Trimethylpentane (2,2,3-)	40	Octanes	C08H18	VOC		0.028%	0.028%	0.028%	0.001%	0.039%
Trimethylcyclopentane (1,t-2,c-4-)	41	Octanes	C08H16	VOC		0.000%	0.000%	0.000%	0.000%	0.000%
Dimethylhexane (3,3-)	42	Octanes	C08H18	VOC		0.000%	0.000%	0.000%	0.000%	0.000%
Trimethylcyclopentane (1,t-2,c-3-)	43	Octanes	C08H16	VOC		0.000%	0.000%	0.000%	0.000%	0.000%
Trimethylpentane (2,3,4-)	44	Octanes	C08H18	VOC		0.000%	0.000%	0.000%	0.000%	0.000%
Dimethylhexane (2,3-)	45	Octanes	C08H18	VOC		0.000%	0.000%	0.000%	0.000%	0.000%
Toluene	46	Octanes	C07H08	VOC	X	4.444%	4.444%	4.444%	0.183%	6.255%
Trimethylcyclopentane (1,1,2-)	47	Octanes	C08H16	VOC		0.371%	0.371%	0.371%	0.015%	0.522%
Dimethylhexane (3,4-)	48	Octanes	C08H18	VOC		3.505%	3.505%	3.505%	0.144%	4.933%
Methylheptane (2-)	49	Octanes	C08H18	VOC		0.000%	0.000%	0.000%	0.000%	0.000%
Methylheptane (4-)	50	Octanes	C08H18	VOC		2.896%	2.896%	2.896%	0.119%	4.076%
Dimethylhexane (3,4-)	51	Octanes	C08H18	VOC		0.000%	0.000%	0.000%	0.000%	0.000%
Methylheptane (3-)	52	Octanes	C08H18	VOC		0.416%	0.416%	0.416%	0.017%	0.585%
Ethylhexane (3-)	53	Octanes	C08H18	VOC		0.111%	0.111%	0.111%	0.005%	0.156%
Trimethylcyclopentane (1,c-2,t-4-)	54	Octanes	C08H16	VOC		0.028%	0.028%	0.028%	0.001%	0.039%
Dimethylcyclohexane (1,c-3-)	55	Octanes	C08H16	VOC		0.170%	0.170%	0.170%	0.007%	0.239%
Trimethylcyclopentane (1,c-2,t-3-)	56	Octanes	C08H16	VOC		0.170%	0.170%	0.170%	0.007%	0.239%
Dimethylcyclohexane (1,t-4-)	57	Octanes	C08H16	VOC		0.000%	0.000%	0.000%	0.000%	0.000%
Trimethylhexane (2,2,5-)	58	Octanes	C09H20	VOC		0.000%	0.000%	0.000%	0.000%	0.000%
Dimethylcyclohexane (1,1-)	59	Octanes	C08H16	VOC		0.000%	0.000%	0.000%	0.000%	0.000%
Ethylcyclopentane (1-methyl-t-3-)	60	Octanes	C08H16	VOC		0.000%	0.000%	0.000%	0.000%	0.000%
Ethylcyclopentane (1-methyl-c-3-)	61	Octanes	C08H16	VOC		0.000%	0.000%	0.000%	0.000%	0.000%
Ethylcyclopentane (1-methyl-t-2-)	62	Octanes	C08H16	VOC		0.000%	0.000%	0.000%	0.000%	0.000%
Trimethylhexane (2,2,4-)	63	Octanes	C09H20	VOC		0.000%	0.000%	0.000%	0.000%	0.000%
Ethylcyclopentane (1-methyl-t-1-)	64	Octanes	C08H16	VOC		0.000%	0.000%	0.000%	0.000%	0.000%
Cycloheptane	65	Octanes	C07H14	VOC		0.000%	0.000%	0.000%	0.000%	0.000%
Octane (n-)	66	Octanes	C08H18	VOC		4.372%	4.372%	4.372%	0.180%	6.153%
Trimethylhexane (2,4,4-)	67	Nonanes	C09H20	VOC		0.190%	0.190%	0.190%	0.003%	0.269%
Tetramethylpentane (2,2,4,4-)	68	Nonanes	C09H20	VOC		0.000%	0.000%	0.000%	0.000%	0.000%
Dimethylcyclohexane (1,t-3-)	69	Nonanes	C08H16	VOC		0.053%	0.053%	0.053%	0.001%	0.075%
Dimethylcyclohexane (1,c-4-)	70	Nonanes	C08H16	VOC		0.053%	0.053%	0.053%	0.001%	0.075%
Trimethylcyclopentane (1,c-2,c-3-)	71	Nonanes	C08H16	VOC		0.053%	0.053%	0.053%	0.001%	0.075%
Propylcyclopentane (i-)	72	Nonanes	C08H16	VOC		0.348%	0.348%	0.348%	0.006%	0.493%
Trimethylhexane (2,3,5-)	73	Nonanes	C09H20	VOC		0.006%	0.006%	0.006%	0.000%	0.009%
Dimethylheptane (2,2-)	74	Nonanes	C09H20	VOC		0.000%	0.000%	0.000%	0.000%	0.000%
Dimethylheptane (2,4-)	75	Nonanes	C09H20	VOC		0.158%	0.158%	0.158%	0.003%	0.224%
Methylcyclopentane (1-ethyl-c-2-)	76	Nonanes	C08H16	VOC		0.181%	0.181%	0.181%	0.003%	0.257%
Trimethylhexane (2,2,3-)	77	Nonanes	C09H20	VOC		0.000%	0.000%	0.000%	0.000%	0.000%

TABLE E-0a(ii)
Flash Analysis
Extrapolation of Specie Mole Percentages

Component						Liquid Dump Flash Data				
						Input			Output	
						Liquid	Scaled	*Calculated*	Vapor	Liquid
Name (i)	GC Postition	SPL Class	Formula	Type	HAP	z_i ($mol_{i\text{-}F}/mol_F$)		z_i ($mol_{i\text{-}F}/mol_F$)	y_i ($mol_{i\text{-}V}/mol_V$)	x_i ($mol_{i\text{-}L}/mol_L$)
Dimethylcyclohexane (1,c-2-)	78	Nonanes	C08H16	VOC		0.510%	0.510%	0.510%	0.009%	0.723%
Dimethylheptane (2,6-)	79	Nonanes	C09H20	VOC		0.112%	0.112%	0.112%	0.002%	0.159%
Propylcyclopentane (n-)	80	Nonanes	C08H16	VOC		0.000%	0.000%	0.000%	0.000%	0.000%
Trimethylcyclohexane (1,c-3,c-5-)	81	Nonanes	C09H18	VOC		0.000%	0.000%	0.000%	0.000%	0.000%
Ethylcyclohexane	82	Nonanes	C08H16	VOC		1.365%	1.365%	1.365%	0.023%	1.935%
Dimethylheptane (2,5-)	83	Nonanes	C09H20	VOC		0.067%	0.067%	0.067%	0.001%	0.095%
Dimethylheptane (3,5-)	84	Nonanes	C09H20	VOC		0.067%	0.067%	0.067%	0.001%	0.095%
Trimethylcyclohexane (1,1,3-)	85	Nonanes	C09H18	VOC		0.077%	0.077%	0.077%	0.001%	0.109%
Trimethylhexane (2,3,3-)	86	Nonanes	C09H20	VOC		0.038%	0.038%	0.038%	0.001%	0.054%
Dimethylheptane (3,3-)	87	Nonanes	C09H20	VOC		0.038%	0.038%	0.038%	0.001%	0.054%
Trimethylcyclohexane (1,1,4-)	88	Nonanes	C09H18	VOC		0.000%	0.000%	0.000%	0.000%	0.000%
Tetramethylpentane (2,2,3,3-)	89	Nonanes	C09H20	VOC		0.261%	0.261%	0.261%	0.004%	0.370%
Ethylbenzene	90	Nonanes	C08H10	VOC	X	0.406%	0.406%	0.406%	0.007%	0.576%
Trimethylhexane (2,3,4-)	91	Nonanes	C09H20	VOC		0.007%	0.007%	0.007%	0.000%	0.010%
Trimethylcyclohexane (1,t-2,t-4-)	92	Nonanes	C09H18	VOC		0.000%	0.000%	0.000%	0.000%	0.000%
Dimethylheptane (2,3-)	93	Nonanes	C09H20	VOC		0.000%	0.000%	0.000%	0.000%	0.000%
Trimethylcyclohexane (1,c-3,t-5-)	94	Nonanes	C09H18	VOC		0.000%	0.000%	0.000%	0.000%	0.000%
Xylene (m-)	95	Nonanes	C08H10	VOC	X	2.462%	2.462%	2.462%	0.042%	3.490%
Xylene (p-)	96	Nonanes	C08H10	VOC	X	2.462%	2.462%	2.462%	0.042%	3.490%
Dimethylheptane (3,4-)	97	Nonanes	C09H20	VOC		0.092%	0.092%	0.092%	0.002%	0.130%
Methyloctane (2-)	98	Nonanes	C09H20	VOC		0.782%	0.782%	0.782%	0.013%	1.109%
Methyloctane (4-)	99	Nonanes	C09H20	VOC		0.782%	0.782%	0.782%	0.013%	1.109%
Dimethylheptane (3,4-)	100	Nonanes	C09H20	VOC		0.000%	0.000%	0.000%	0.000%	0.000%
Methyloctane (3-)	101	Nonanes	C09H20	VOC		0.000%	0.000%	0.000%	0.000%	0.000%
Butylcyclopentane (i-)	102	Nonanes	C09H18	VOC		0.000%	0.000%	0.000%	0.000%	0.000%
Trimethylcyclohexane (1,t-2,c-3-)	103	Nonanes	C09H18	VOC		0.231%	0.231%	0.231%	0.004%	0.327%
Trimethylcyclohexane (1,t-2,c-4-)	104	Nonanes	C09H18	VOC		0.231%	0.231%	0.231%	0.004%	0.327%
Xylene (o-)	105	Nonanes	C08H10	VOC	X	0.547%	0.547%	0.547%	0.009%	0.775%
Trimethylcyclohexane (1,1,2-)	106	Nonanes	C09H18	VOC		0.000%	0.000%	0.000%	0.000%	0.000%
Trimethylcyclohexane (1,c-2,t-4-)	107	Nonanes	C09H18	VOC		0.200%	0.200%	0.200%	0.003%	0.284%
Trimethylcyclohexane (1,c-2,c-4-)	108	Nonanes	C09H18	VOC		0.000%	0.000%	0.000%	0.000%	0.000%
Nonane (n-)	109	Nonanes	C09H20	VOC		2.884%	2.884%	2.884%	0.050%	4.088%
Unknowns	110	Decanes+	C10+	VOC		10.753%	10.753%	10.753%	0.079%	15.288%
TOTAL						100.001%	100.000%	99.984%	100.001%	99.976%
TOC (Total)						98.999%	98.998%	98.984%	96.737%	99.938%
VOC (Total)						74.686%	74.685%	74.673%	16.825%	99.252%
Hexanes						4.241%	4.240%	4.241%	1.227%	5.521%
Heptanes						14.330%	14.310%	14.330%	1.468%	19.795%
Octanes						21.587%	21.610%	21.587%	0.888%	30.382%
Nonanes						14.663%	14.660%	14.663%	0.252%	20.786%
Decanes+						10.753%	10.770%	10.753%	0.079%	15.288%
HAP (Total)						13.992%	13.992%	13.992%	1.022%	19.503%
Xylenes						1.209%	1.209%	1.209%	0.021%	1.714%

NOTES

1. Sample Data: Location: Atlanta, TX; Date: 04/15/09; Dimethyloctane (2,3-); Time: Not Recorded
2. $v_i + l_i = f_i$; $y_i = v_i/V$; $x_i = l_i/L$; $z_i = f_i/F \Rightarrow y_iV + x_iL = z_iF \Rightarrow y_i(V/L)L + x_iL = z_i(1 + V/L)L \Rightarrow z_i = [y_i(V/L) + x_i]/[1 + (V/L)]$ {Mole Balance}.
3. V/L = 0.4249; 1 + V/L = 1.4249
4. z_i is refined to the same number if significant digits as y_i and x_i using the component mole balance and laboratory results for V/L.
5. z_i is scale using the hydrocarbon (e.g., hexanes+) z_i percentage in the flash analysis results, with the exception of HAP species.
6. $[y_i ; x_i]$ mole percent for species of hydrocarbons is estimated using scaled lab mole percent results for z_i and $[y ; x]_{HC}$ for the hydrocarbon.

(assumes v_i/l_i is same for all hydrocarbon species)

	$(v/l)_{hexanes}$ =	0.2219		
$y_{hexanes}$ = 1.227%	$x_{hexanes}$ =	5.520%	$z_{hexanes}$ =	4.240%
$y_i = z_i(y/z)_{hexanes}$ =	0.2894	z_i		
$x_i = z_i(x/z)_{hexanes}$ =	1.3019	z_i		
	$(v/l)_{heptanes}$ =	0.0740		
$y_{heptanes}$ = 1.466%	$x_{heptanes}$ =	19.767%	$z_{heptanes}$ =	14.310%
$y_i = z_i(y/z)_{heptanes}$ =	0.1024	z_i		
$x_i = z_i(x/z)_{heptanes}$ =	1.3814	z_i		
	$(v/l)_{octanes}$ =	0.0292		
$y_{octanes}$ = 0.889%	$x_{octanes}$ =	30.414%	$z_{octanes}$ =	21.610%
$y_i = z_i(y/z)_{octanes}$ =	0.0411	z_i		
$x_i = z_i(x/z)_{octanes}$ =	1.4074	z_i		
	$(v/l)_{nonanes}$ =	0.0121		
$y_{nonanes}$ = 0.252%	$x_{nonanes}$ =	20.782%	$z_{nonanes}$ =	14.660%
$y_i = z_i(y/z)_{nonanes}$ =	0.0172	z_i		
$x_i = z_i(x/z)_{nonanes}$ =	1.4176	z_i		
	$(v/l)_{decanes+}$ =	0.0051		
$y_{decanes+}$ = 0.079%	$x_{decanes+}$ =	15.313%	$z_{decanes+}$ =	10.770%
$y_i = z_i(y/z)_{decanes+}$ =	0.0073	z_i		
$x_i = z_i(x/z)_{decanes+}$ =	1.4218	z_i		

TABLE E-0b(i)
Flash Analysis
Estimation of Specie Weight Percentages
Pressurized Liquid

Component			Molecular Weight	Density	Mole Percent	Weight Percent
Name (i)	Type	HAP	$(lb/mol)_i$	$(lb/scf)_i$	(mol_i/mol_T)	(lb_i/lb_T)
Nitrogen			28.013	0.0727	0.030%	0.009%
Carbon Dioxide	GHG		44.010	0.1143	0.970%	0.435%
Methane	GHG		16.042	0.0417	20.924%	3.421%
Ethane			30.069	0.0781	3.391%	1.039%
Propane	VOC		44.096	0.1145	2.181%	0.980%
Butane (i-)	VOC		58.122	0.1509	1.230%	0.729%
Butane (n-)	VOC		58.122	0.1509	1.720%	1.019%
Pentane (i-)	VOC		72.149	0.1873	2.350%	1.728%
Pentane (n-)	VOC		72.149	0.1873	1.620%	1.191%
Dimethylbutane (2,2-)	VOC		86.175	0.2238	0.174%	0.153%
Dimethylbutane (2,3-)	VOC		86.175	0.2238	0.000%	0.000%
Cyclopentane	VOC		70.133	0.1821	0.000%	0.000%
Methylpentane (2-)	VOC		86.175	0.2238	1.218%	1.070%
Methylpentane (3-)	VOC		86.175	0.2238	0.912%	0.801%
Hexane (n-)	VOC	X	86.175	0.2238	1.937%	1.701%
Dimethylpentane (2,2-)	VOC		100.202	0.2602	0.311%	0.318%
Methylcyclopentane	VOC		84.159	0.2185	1.134%	0.973%
Dimethylpentane (2,4-)	VOC		100.202	0.2602	0.128%	0.131%
Trimethylbutane (2,2,3-)	VOC		100.202	0.2602	0.000%	0.000%
Benzene	VOC	X	78.112	0.2028	1.713%	1.364%
Dimethylpentane (3,3-)	VOC		100.202	0.2602	0.221%	0.226%
Cyclohexane	VOC		84.159	0.2185	1.106%	0.949%
Methylhexane (2-)	VOC		100.202	0.2602	2.292%	2.341%
Dimethylpentane (2,3-)	VOC		100.202	0.2602	0.000%	0.000%
Dimethylcyclopentane (1,1-)	VOC		98.186	0.2549	0.603%	0.603%
Methylhexane (3-)	VOC		100.202	0.2602	2.379%	2.430%
Dimethylcyclopentane (1,t-3-)	VOC		98.186	0.2549	0.163%	0.163%
Dimethylcyclopentane (1,c-3-)	VOC		98.186	0.2549	0.266%	0.266%
Ethylpentane (3-)	VOC		100.202	0.2602	0.029%	0.030%
Dimethylcyclopentane (1,t-2-)	VOC		98.186	0.2549	0.222%	0.222%
Trimethylpentane (2,2,4-)	VOC	X	114.229	0.2966	0.021%	0.024%
Heptane (n-)	VOC		100.202	0.2602	3.743%	3.822%
Methylcyclohexane	VOC		98.186	0.2549	3.302%	3.304%
Trimethylcyclopentane (1,1,3-)	VOC		112.213	0.2914	0.225%	0.257%
Dimethylhexane (2,2-)	VOC		114.229	0.2966	0.095%	0.111%
Dimethylcyclopentane (1,c-2-)	VOC		98.186	0.2549	0.848%	0.849%
Dimethylhexane (2,5-)	VOC		114.229	0.2966	0.000%	0.000%
Dimethylhexane (2,4-)	VOC		114.229	0.2966	0.143%	0.166%
Ethylcyclopentane	VOC		98.186	0.2549	0.464%	0.464%
Trimethylpentane (2,2,3-)	VOC		114.229	0.2966	0.028%	0.033%
Trimethylcyclopentane (1,t-2,c-4-)	VOC		112.213	0.2914	0.000%	0.000%
Dimethylhexane (3,3-)	VOC		114.229	0.2966	0.000%	0.000%
Trimethylcyclopentane (1,t-2,c-3-)	VOC		112.213	0.2914	0.000%	0.000%
Trimethylpentane (2,3,4-)	VOC		114.229	0.2966	0.000%	0.000%

TABLE E-0b(i)
Flash Analysis
Estimation of Specie Weight Percentages
Pressurized Liquid

Component			Molecular Weight	Density	Mole Percent	Weight Percent
Name (i)	Type	HAP	$(lb/mol)_i$	$(lb/scf)_i$	(mol_i/mol_T)	(lb_i/lb_T)
Dimethylhexane (2,3-)	VOC		114.229	0.2966	0.000%	0.000%
Toluene	VOC	X	92.138	0.2392	4.445%	4.174%
Trimethylcyclopentane (1,1,2-)	VOC		112.213	0.2914	0.371%	0.424%
Dimethylhexane (3,4-)	VOC		114.229	0.2966	3.506%	4.081%
Methylheptane (2-)	VOC		114.229	0.2966	0.000%	0.000%
Methylheptane (4-)	VOC		114.229	0.2966	2.896%	3.372%
Dimethylhexane (3,4-)	VOC		114.229	0.2966	0.000%	0.000%
Methylheptane (3-)	VOC		114.229	0.2966	0.416%	0.484%
Ethylhexane (3-)	VOC		114.229	0.2966	0.111%	0.129%
Trimethylcyclopentane (1,c-2,t-4-)	VOC		112.213	0.2914	0.028%	0.032%
Dimethylcyclohexane (1,c-3-)	VOC		112.213	0.2914	0.170%	0.194%
Trimethylcyclopentane (1,c-2,t-3-)	VOC		112.213	0.2914	0.170%	0.194%
Dimethylcyclohexane (1,t-4-)	VOC		112.213	0.2914	0.000%	0.000%
Trimethylhexane (2,2,5-)	VOC		128.255	0.3330	0.000%	0.000%
Dimethylcyclohexane (1,1-)	VOC		112.213	0.2914	0.000%	0.000%
Ethylcyclopentane (1-methyl-t-3-)	VOC		112.213	0.2914	0.000%	0.000%
Ethylcyclopentane (1-methyl-c-3-)	VOC		112.213	0.2914	0.000%	0.000%
Ethylcyclopentane (1-methyl-t-2-)	VOC		112.213	0.2914	0.000%	0.000%
Trimethylhexane (2,2,4-)	VOC		128.255	0.3330	0.000%	0.000%
Ethylcyclopentane (1-methyl-t-1-)	VOC		112.213	0.2914	0.000%	0.000%
Cycloheptane	VOC		98.186	0.2549	0.000%	0.000%
Octane (n-)	VOC		114.229	0.2966	4.373%	5.090%
Trimethylhexane (2,4,4-)	VOC		128.255	0.3330	0.190%	0.248%
Tetramethylpentane (2,2,4,4-)	VOC		128.255	0.3330	0.000%	0.000%
Dimethylcyclohexane (1,t-3-)	VOC		112.213	0.2914	0.053%	0.061%
Dimethylcyclohexane (1,c-4-)	VOC		112.213	0.2914	0.053%	0.061%
Trimethylcyclopentane (1,c-2,c-3-)	VOC		112.213	0.2914	0.053%	0.061%
Propylcyclopentane (i-)	VOC		112.213	0.2914	0.348%	0.398%
Trimethylhexane (2,3,5-)	VOC		128.255	0.3330	0.006%	0.008%
Dimethylheptane (2,2-)	VOC		128.255	0.3330	0.000%	0.000%
Dimethylheptane (2,4-)	VOC		128.255	0.3330	0.158%	0.207%
Methylcyclopentane (1-ethyl-c-2-)	VOC		112.213	0.2914	0.181%	0.207%
Trimethylhexane (2,2,3-)	VOC		128.255	0.3330	0.000%	0.000%
Dimethylcyclohexane (1,c-2-)	VOC		112.213	0.2914	0.510%	0.583%
Dimethylheptane (2,6-)	VOC		128.255	0.3330	0.112%	0.146%
Propylcyclopentane (n-)	VOC		112.213	0.2914	0.000%	0.000%
Trimethylcyclohexane (1,c-3,c-5-)	VOC		126.239	0.3278	0.000%	0.000%
Ethylcyclohexane	VOC		112.213	0.2914	1.365%	1.561%
Dimethylheptane (2,5-)	VOC		128.255	0.3330	0.067%	0.088%
Dimethylheptane (3,5-)	VOC		128.255	0.3330	0.067%	0.088%
Trimethylcyclohexane (1,1,3-)	VOC		126.239	0.3278	0.077%	0.099%
Trimethylhexane (2,3,3-)	VOC		128.255	0.3330	0.038%	0.050%
Dimethylheptane (3,3-)	VOC		128.255	0.3330	0.038%	0.050%
Trimethylcyclohexane (1,1,4-)	VOC		126.239	0.3278	0.000%	0.000%

TABLE E-0b(i)
Flash Analysis
Estimation of Specie Weight Percentages
Pressurized Liquid

Component			Molecular	Density	Mole	Weight
Name (i)	Type	HAP	Weight $(lb/mol)_i$	$(lb/scf)_i$	Percent (mol_i/mol_T)	Percent (lb_i/lb_T)
Tetramethylpentane (2,2,3,3-)	VOC		128.255	0.3330	0.261%	0.341%
Ethylbenzene	VOC	X	106.165	0.2757	0.406%	0.439%
Trimethylhexane (2,3,4-)	VOC		128.255	0.3330	0.007%	0.009%
Trimethylcyclohexane (1,t-2,t-4-)	VOC		126.239	0.3278	0.000%	0.000%
Dimethylheptane (2,3-)	VOC		128.255	0.3330	0.000%	0.000%
Trimethylcyclohexane (1,c-3,t-5-)	VOC		126.239	0.3278	0.000%	0.000%
Xylene (m-)	VOC	X	106.165	0.2757	2.462%	2.664%
Xylene (p-)	VOC	X	106.165	0.2757	2.462%	2.664%
Dimethylheptane (3,4-)	VOC		128.255	0.3330	0.092%	0.120%
Methyloctane (2-)	VOC		128.255	0.3330	0.782%	1.022%
Methyloctane (4-)	VOC		128.255	0.3330	0.782%	1.022%
Dimethylheptane (3,4-)	VOC		128.255	0.3330	0.000%	0.000%
Methyloctane (3-)	VOC		128.255	0.3330	0.000%	0.000%
Butylcyclopentane (i-)	VOC		126.239	0.3278	0.000%	0.000%
Trimethylcyclohexane (1,t-2,c-3-)	VOC		126.239	0.3278	0.231%	0.297%
Trimethylcyclohexane (1,t-2,c-4-)	VOC		126.239	0.3278	0.231%	0.297%
Xylene (o-)	VOC	X	106.165	0.2757	0.547%	0.592%
Trimethylcyclohexane (1,1,2-)	VOC		126.239	0.3278	0.000%	0.000%
Trimethylcyclohexane (1,c-2,t-4-)	VOC		126.239	0.3278	0.200%	0.257%
Trimethylcyclohexane (1,c-2,c-4-)	VOC		126.239	0.3278	0.000%	0.000%
Nonane (n-)	VOC		128.255	0.3330	2.884%	3.770%
Unknowns	VOC		**283.704**	0.7366	10.755%	31.094%
Pressurized Liquid			98.125	0.2548	100.000%	100.000%
TOC (Total)			98.677	0.2562	99.000%	99.556%
VOC (Total)			124.943	0.3244	74.685%	95.096%
HAP (Total)			92.449	0.2400	7.356%	6.931%
Xylenes			106.165	0.2757	5.472%	5.920%

NOTES

1. Normalized mole percentages from TABLE E-0a(ii) to make total 100.000%.
2. Determined molecular weight of unknowns via iteration to match TABLE E-0a(i).

MW = 98.125 lb/lb-mol

TABLE E-0b(ii)
Flash Analysis
Estimation of Specie Weight Percentages
Flash Gas

Component			Molecular Weight	Density	Mole Percent	Weight Percent
Name (i)	Type	HAP	$(lb/mol)_i$	$(lb/scf)_i$	(mol_i/mol_T)	(lb_i/lb_T)
Nitrogen			28.013	0.0727	0.101%	0.105%
Carbon Dioxide	GHG		44.010	0.1143	3.163%	5.167%
Methane	GHG		16.042	0.0417	69.444%	41.356%
Ethane			30.069	0.0781	10.467%	11.683%
Propane	VOC		44.096	0.1145	5.339%	8.739%
Butane (i-)	VOC		58.122	0.1509	2.126%	4.587%
Butane (n-)	VOC		58.122	0.1509	2.495%	5.383%
Pentane (i-)	VOC		72.149	0.1873	1.895%	5.075%
Pentane (n-)	VOC		72.149	0.1873	1.056%	2.828%
Dimethylbutane (2,2-)	VOC		86.175	0.2238	0.050%	0.161%
Dimethylbutane (2,3-)	VOC		86.175	0.2238	0.000%	0.000%
Cyclopentane	VOC		70.133	0.1821	0.000%	0.000%
Methylpentane (2-)	VOC		86.175	0.2238	0.352%	1.128%
Methylpentane (3-)	VOC		86.175	0.2238	0.264%	0.844%
Hexane (n-)	VOC	X	86.175	0.2238	0.561%	1.793%
Dimethylpentane (2,2-)	VOC		100.202	0.2602	0.032%	0.119%
Methylcyclopentane	VOC		84.159	0.2185	0.116%	0.363%
Dimethylpentane (2,4-)	VOC		100.202	0.2602	0.013%	0.049%
Trimethylbutane (2,2,3-)	VOC		100.202	0.2602	0.000%	0.000%
Benzene	VOC	X	78.112	0.2028	0.175%	0.509%
Dimethylpentane (3,3-)	VOC		100.202	0.2602	0.023%	0.084%
Cyclohexane	VOC		84.159	0.2185	0.113%	0.354%
Methylhexane (2-)	VOC		100.202	0.2602	0.235%	0.873%
Dimethylpentane (2,3-)	VOC		100.202	0.2602	0.000%	0.000%
Dimethylcyclopentane (1,1-)	VOC		98.186	0.2549	0.062%	0.225%
Methylhexane (3-)	VOC		100.202	0.2602	0.244%	0.907%
Dimethylcyclopentane (1,t-3-)	VOC		98.186	0.2549	0.017%	0.061%
Dimethylcyclopentane (1,c-3-)	VOC		98.186	0.2549	0.027%	0.099%
Ethylpentane (3-)	VOC		100.202	0.2602	0.003%	0.011%
Dimethylcyclopentane (1,t-2-)	VOC		98.186	0.2549	0.023%	0.083%
Trimethylpentane (2,2,4-)	VOC	X	114.229	0.2966	0.002%	0.009%
Heptane (n-)	VOC		100.202	0.2602	0.383%	1.426%
Methylcyclohexane	VOC		98.186	0.2549	0.136%	0.495%
Trimethylcyclopentane (1,1,3-)	VOC		112.213	0.2914	0.009%	0.039%
Dimethylhexane (2,2-)	VOC		114.229	0.2966	0.004%	0.017%
Dimethylcyclopentane (1,c-2-)	VOC		98.186	0.2549	0.035%	0.127%
Dimethylhexane (2,5-)	VOC		114.229	0.2966	0.000%	0.000%
Dimethylhexane (2,4-)	VOC		114.229	0.2966	0.006%	0.025%
Ethylcyclopentane	VOC		98.186	0.2549	0.019%	0.070%
Trimethylpentane (2,2,3-)	VOC		114.229	0.2966	0.001%	0.005%
Trimethylcyclopentane (1,t-2,c-4-)	VOC		112.213	0.2914	0.000%	0.000%
Dimethylhexane (3,3-)	VOC		114.229	0.2966	0.000%	0.000%
Trimethylcyclopentane (1,t-2,c-3-)	VOC		112.213	0.2914	0.000%	0.000%
Trimethylpentane (2,3,4-)	VOC		114.229	0.2966	0.000%	0.000%

TABLE E-0b(ii)
Flash Analysis
Estimation of Specie Weight Percentages
Flash Gas

Component			Molecular	Density	Mole	Weight
Name (i)	Type	HAP	Weight $(lb/mol)_i$	$(lb/scf)_i$	Percent (mol_i/mol_T)	Percent (lb_i/lb_T)
Dimethylhexane (2,3-)	VOC		114.229	0.2966	0.000%	0.000%
Toluene	VOC	X	92.138	0.2392	0.183%	0.625%
Trimethylcyclopentane (1,1,2-)	VOC		112.213	0.2914	0.015%	0.064%
Dimethylhexane (3,4-)	VOC		114.229	0.2966	0.144%	0.611%
Methylheptane (2-)	VOC		114.229	0.2966	0.000%	0.000%
Methylheptane (4-)	VOC		114.229	0.2966	0.119%	0.505%
Dimethylhexane (3,4-)	VOC		114.229	0.2966	0.000%	0.000%
Methylheptane (3-)	VOC		114.229	0.2966	0.017%	0.073%
Ethylhexane (3-)	VOC		114.229	0.2966	0.005%	0.019%
Trimethylcyclopentane (1,c-2,t-4-)	VOC		112.213	0.2914	0.001%	0.005%
Dimethylcyclohexane (1,c-3-)	VOC		112.213	0.2914	0.007%	0.029%
Trimethylcyclopentane (1,c-2,t-3-)	VOC		112.213	0.2914	0.007%	0.029%
Dimethylcyclohexane (1,t-4-)	VOC		112.213	0.2914	0.000%	0.000%
Trimethylhexane (2,2,5-)	VOC		128.255	0.3330	0.000%	0.000%
Dimethylcyclohexane (1,1-)	VOC		112.213	0.2914	0.000%	0.000%
Ethylcyclopentane (1-methyl-t-3-)	VOC		112.213	0.2914	0.000%	0.000%
Ethylcyclopentane (1-methyl-c-3-)	VOC		112.213	0.2914	0.000%	0.000%
Ethylcyclopentane (1-methyl-t-2-)	VOC		112.213	0.2914	0.000%	0.000%
Trimethylhexane (2,2,4-)	VOC		128.255	0.3330	0.000%	0.000%
Ethylcyclopentane (1-methyl-t-1-)	VOC		112.213	0.2914	0.000%	0.000%
Cycloheptane	VOC		98.186	0.2549	0.000%	0.000%
Octane (n-)	VOC		114.229	0.2966	0.180%	0.763%
Trimethylhexane (2,4,4-)	VOC		128.255	0.3330	0.003%	0.016%
Tetramethylpentane (2,2,4,4-)	VOC		128.255	0.3330	0.000%	0.000%
Dimethylcyclohexane (1,t-3-)	VOC		112.213	0.2914	0.001%	0.004%
Dimethylcyclohexane (1,c-4-)	VOC		112.213	0.2914	0.001%	0.004%
Trimethylcyclopentane (1,c-2,c-3-)	VOC		112.213	0.2914	0.001%	0.004%
Propylcyclopentane (i-)	VOC		112.213	0.2914	0.006%	0.025%
Trimethylhexane (2,3,5-)	VOC		128.255	0.3330	0.000%	0.000%
Dimethylheptane (2,2-)	VOC		128.255	0.3330	0.000%	0.000%
Dimethylheptane (2,4-)	VOC		128.255	0.3330	0.003%	0.013%
Methylcyclopentane (1-ethyl-c-2-)	VOC		112.213	0.2914	0.003%	0.013%
Trimethylhexane (2,2,3-)	VOC		128.255	0.3330	0.000%	0.000%
Dimethylcyclohexane (1,c-2-)	VOC		112.213	0.2914	0.009%	0.037%
Dimethylheptane (2,6-)	VOC		128.255	0.3330	0.002%	0.009%
Propylcyclopentane (n-)	VOC		112.213	0.2914	0.000%	0.000%
Trimethylcyclohexane (1,c-3,c-5-)	VOC		126.239	0.3278	0.000%	0.000%
Ethylcyclohexane	VOC		112.213	0.2914	0.023%	0.098%
Dimethylheptane (2,5-)	VOC		128.255	0.3330	0.001%	0.005%
Dimethylheptane (3,5-)	VOC		128.255	0.3330	0.001%	0.005%
Trimethylcyclohexane (1,1,3-)	VOC		126.239	0.3278	0.001%	0.006%
Trimethylhexane (2,3,3-)	VOC		128.255	0.3330	0.001%	0.003%
Dimethylheptane (3,3-)	VOC		128.255	0.3330	0.001%	0.003%
Trimethylcyclohexane (1,1,4-)	VOC		126.239	0.3278	0.000%	0.000%

TABLE E-0b(ii)
Flash Analysis
Estimation of Specie Weight Percentages
Flash Gas

Component			Molecular	Density	Mole	Weight
Name (i)	Type	HAP	Weight $(lb/mol)_i$	$(lb/scf)_i$	Percent (mol_i/mol_T)	Percent (lb_i/lb_T)
Tetramethylpentane (2,2,3,3-)	VOC		128.255	0.3330	0.004%	0.021%
Ethylbenzene	VOC	X	106.165	0.2757	0.007%	0.028%
Trimethylhexane (2,3,4-)	VOC		128.255	0.3330	0.000%	0.001%
Trimethylcyclohexane (1,t-2,t-4-)	VOC		126.239	0.3278	0.000%	0.000%
Dimethylheptane (2,3-)	VOC		128.255	0.3330	0.000%	0.000%
Trimethylcyclohexane (1,c-3,t-5-)	VOC		126.239	0.3278	0.000%	0.000%
Xylene (m-)	VOC	X	106.165	0.2757	0.042%	0.167%
Xylene (p-)	VOC	X	106.165	0.2757	0.042%	0.167%
Dimethylheptane (3,4-)	VOC		128.255	0.3330	0.002%	0.008%
Methyloctane (2-)	VOC		128.255	0.3330	0.013%	0.064%
Methyloctane (4-)	VOC		128.255	0.3330	0.013%	0.064%
Dimethylheptane (3,4-)	VOC		128.255	0.3330	0.000%	0.000%
Methyloctane (3-)	VOC		128.255	0.3330	0.000%	0.000%
Butylcyclopentane (i-)	VOC		126.239	0.3278	0.000%	0.000%
Trimethylcyclohexane (1,t-2,c-3-)	VOC		126.239	0.3278	0.004%	0.019%
Trimethylcyclohexane (1,t-2,c-4-)	VOC		126.239	0.3278	0.004%	0.019%
Xylene (o-)	VOC	X	106.165	0.2757	0.009%	0.037%
Trimethylcyclohexane (1,1,2-)	VOC		126.239	0.3278	0.000%	0.000%
Trimethylcyclohexane (1,c-2,t-4-)	VOC		126.239	0.3278	0.003%	0.016%
Trimethylcyclohexane (1,c-2,c-4-)	VOC		126.239	0.3278	0.000%	0.000%
Nonane (n-)	VOC		128.255	0.3330	0.050%	0.236%
Unknowns	VOC		**473.700**	1.2300	0.079%	1.387%
Flash Gas			26.938	0.0699	100.000%	100.000%
TOC (Total)			26.379	0.0685	96.736%	94.728%
VOC (Total)			66.745	0.1733	16.825%	41.688%
HAP (Total)			88.115	0.2288	0.762%	2.492%
Xylenes			106.165	0.2757	0.094%	0.371%

NOTES

1. Normalized mole percentages from TABLE E-0a(ii) to make total 100.000%.
2. Determined molecular weight of unknowns via iteration to match TABLE E-0a(i), unless value negative.

MW = 26.938 lb/lb-mol

TABLE E-0b(iii)
Flash Analysis
Estimation of Specie Weight Percentages
Residual Liquid

Component			Molecular Weight	Density	Mole Percent	Weight Percent
Name (i)	Type	HAP	$(lb/mol)_i$	$(lb/scf)_i$	(mol_i/mol_T)	(lb_i/lb_T)
Nitrogen			28.013	0.0727	0.000%	0.000%
Carbon Dioxide	GHG		44.010	0.1143	0.038%	0.013%
Methane	GHG		16.042	0.0417	0.303%	0.038%
Ethane			30.069	0.0781	0.383%	0.090%
Propane	VOC		44.096	0.1145	0.838%	0.288%
Butane (i-)	VOC		58.122	0.1509	0.849%	0.385%
Butane (n-)	VOC		58.122	0.1509	1.391%	0.630%
Pentane (i-)	VOC		72.149	0.1873	2.544%	1.430%
Pentane (n-)	VOC		72.149	0.1873	1.859%	1.045%
Dimethylbutane (2,2-)	VOC		86.175	0.2238	0.227%	0.152%
Dimethylbutane (2,3-)	VOC		86.175	0.2238	0.000%	0.000%
Cyclopentane	VOC		70.133	0.1821	0.000%	0.000%
Methylpentane (2-)	VOC		86.175	0.2238	1.586%	1.065%
Methylpentane (3-)	VOC		86.175	0.2238	1.188%	0.797%
Hexane (n-)	VOC	X	86.175	0.2238	2.522%	1.693%
Dimethylpentane (2,2-)	VOC		100.202	0.2602	0.430%	0.335%
Methylcyclopentane	VOC		84.159	0.2185	1.567%	1.027%
Dimethylpentane (2,4-)	VOC		100.202	0.2602	0.177%	0.138%
Trimethylbutane (2,2,3-)	VOC		100.202	0.2602	0.000%	0.000%
Benzene	VOC	X	78.112	0.2028	2.367%	1.440%
Dimethylpentane (3,3-)	VOC		100.202	0.2602	0.305%	0.238%
Cyclohexane	VOC		84.159	0.2185	1.528%	1.002%
Methylhexane (2-)	VOC		100.202	0.2602	3.167%	2.472%
Dimethylpentane (2,3-)	VOC		100.202	0.2602	0.000%	0.000%
Dimethylcyclopentane (1,1-)	VOC		98.186	0.2549	0.833%	0.637%
Methylhexane (3-)	VOC		100.202	0.2602	3.287%	2.566%
Dimethylcyclopentane (1,t-3-)	VOC		98.186	0.2549	0.225%	0.172%
Dimethylcyclopentane (1,c-3-)	VOC		98.186	0.2549	0.368%	0.281%
Ethylpentane (3-)	VOC		100.202	0.2602	0.040%	0.031%
Dimethylcyclopentane (1,t-2-)	VOC		98.186	0.2549	0.307%	0.235%
Trimethylpentane (2,2,4-)	VOC	X	114.229	0.2966	0.029%	0.026%
Heptane (n-)	VOC		100.202	0.2602	5.170%	4.036%
Methylcyclohexane	VOC		98.186	0.2549	4.647%	3.555%
Trimethylcyclopentane (1,1,3-)	VOC		112.213	0.2914	0.317%	0.277%
Dimethylhexane (2,2-)	VOC		114.229	0.2966	0.134%	0.119%
Dimethylcyclopentane (1,c-2-)	VOC		98.186	0.2549	1.194%	0.913%
Dimethylhexane (2,5-)	VOC		114.229	0.2966	0.000%	0.000%
Dimethylhexane (2,4-)	VOC		114.229	0.2966	0.201%	0.179%
Ethylcyclopentane	VOC		98.186	0.2549	0.653%	0.500%
Trimethylpentane (2,2,3-)	VOC		114.229	0.2966	0.039%	0.035%
Trimethylcyclopentane (1,t-2,c-4-)	VOC		112.213	0.2914	0.000%	0.000%
Dimethylhexane (3,3-)	VOC		114.229	0.2966	0.000%	0.000%
Trimethylcyclopentane (1,t-2,c-3-)	VOC		112.213	0.2914	0.000%	0.000%
Trimethylpentane (2,3,4-)	VOC		114.229	0.2966	0.000%	0.000%

TABLE E-0b(iii)
Flash Analysis
Estimation of Specie Weight Percentages
Residual Liquid

Component			Molecular	Density	Mole	Weight
Name (i)	Type	HAP	Weight $(lb/mol)_i$	$(lb/scf)_i$	Percent (mol_i/mol_T)	Percent (lb_i/lb_T)
Dimethylhexane (2,3-)	VOC		114.229	0.2966	0.000%	0.000%
Toluene	VOC	X	92.138	0.2392	6.256%	4.491%
Trimethylcyclopentane (1,1,2-)	VOC		112.213	0.2914	0.522%	0.457%
Dimethylhexane (3,4-)	VOC		114.229	0.2966	4.934%	4.391%
Methylheptane (2-)	VOC		114.229	0.2966	0.000%	0.000%
Methylheptane (4-)	VOC		114.229	0.2966	4.077%	3.628%
Dimethylhexane (3,4-)	VOC		114.229	0.2966	0.000%	0.000%
Methylheptane (3-)	VOC		114.229	0.2966	0.586%	0.521%
Ethylhexane (3-)	VOC		114.229	0.2966	0.156%	0.139%
Trimethylcyclopentane (1,c-2,t-4-)	VOC		112.213	0.2914	0.039%	0.034%
Dimethylcyclohexane (1,c-3-)	VOC		112.213	0.2914	0.239%	0.209%
Trimethylcyclopentane (1,c-2,t-3-)	VOC		112.213	0.2914	0.239%	0.209%
Dimethylcyclohexane (1,t-4-)	VOC		112.213	0.2914	0.000%	0.000%
Trimethylhexane (2,2,5-)	VOC		128.255	0.3330	0.000%	0.000%
Dimethylcyclohexane (1,1-)	VOC		112.213	0.2914	0.000%	0.000%
Ethylcyclopentane (1-methyl-t-3-)	VOC		112.213	0.2914	0.000%	0.000%
Ethylcyclopentane (1-methyl-c-3-)	VOC		112.213	0.2914	0.000%	0.000%
Ethylcyclopentane (1-methyl-t-2-)	VOC		112.213	0.2914	0.000%	0.000%
Trimethylhexane (2,2,4-)	VOC		128.255	0.3330	0.000%	0.000%
Ethylcyclopentane (1-methyl-t-1-)	VOC		112.213	0.2914	0.000%	0.000%
Cycloheptane	VOC		98.186	0.2549	0.000%	0.000%
Octane (n-)	VOC		114.229	0.2966	6.155%	5.477%
Trimethylhexane (2,4,4-)	VOC		128.255	0.3330	0.269%	0.269%
Tetramethylpentane (2,2,4,4-)	VOC		128.255	0.3330	0.000%	0.000%
Dimethylcyclohexane (1,t-3-)	VOC		112.213	0.2914	0.075%	0.066%
Dimethylcyclohexane (1,c-4-)	VOC		112.213	0.2914	0.075%	0.066%
Trimethylcyclopentane (1,c-2,c-3-)	VOC		112.213	0.2914	0.075%	0.066%
Propylcyclopentane (i-)	VOC		112.213	0.2914	0.493%	0.431%
Trimethylhexane (2,3,5-)	VOC		128.255	0.3330	0.009%	0.009%
Dimethylheptane (2,2-)	VOC		128.255	0.3330	0.000%	0.000%
Dimethylheptane (2,4-)	VOC		128.255	0.3330	0.224%	0.224%
Methylcyclopentane (1-ethyl-c-2-)	VOC		112.213	0.2914	0.257%	0.224%
Trimethylhexane (2,2,3-)	VOC		128.255	0.3330	0.000%	0.000%
Dimethylcyclohexane (1,c-2-)	VOC		112.213	0.2914	0.723%	0.632%
Dimethylheptane (2,6-)	VOC		128.255	0.3330	0.159%	0.159%
Propylcyclopentane (n-)	VOC		112.213	0.2914	0.000%	0.000%
Trimethylcyclohexane (1,c-3,c-5-)	VOC		126.239	0.3278	0.000%	0.000%
Ethylcyclohexane	VOC		112.213	0.2914	1.935%	1.692%
Dimethylheptane (2,5-)	VOC		128.255	0.3330	0.095%	0.095%
Dimethylheptane (3,5-)	VOC		128.255	0.3330	0.095%	0.095%
Trimethylcyclohexane (1,1,3-)	VOC		126.239	0.3278	0.109%	0.107%
Trimethylhexane (2,3,3-)	VOC		128.255	0.3330	0.054%	0.054%
Dimethylheptane (3,3-)	VOC		128.255	0.3330	0.054%	0.054%
Trimethylcyclohexane (1,1,4-)	VOC		126.239	0.3278	0.000%	0.000%

TABLE E-0b(iii)
Flash Analysis
Estimation of Specie Weight Percentages
Residual Liquid

Component			Molecular	Density	Mole	Weight
Name (i)	Type	HAP	Weight $(lb/mol)_i$	$(lb/scf)_i$	Percent (mol_i/mol_T)	Percent (lb_i/lb_T)
Tetramethylpentane (2,2,3,3-)	VOC		128.255	0.3330	0.370%	0.370%
Ethylbenzene	VOC	X	106.165	0.2757	0.576%	0.476%
Trimethylhexane (2,3,4-)	VOC		128.255	0.3330	0.010%	0.010%
Trimethylcyclohexane (1,t-2,t-4-)	VOC		126.239	0.3278	0.000%	0.000%
Dimethylheptane (2,3-)	VOC		128.255	0.3330	0.000%	0.000%
Trimethylcyclohexane (1,c-3,t-5-)	VOC		126.239	0.3278	0.000%	0.000%
Xylene (m-)	VOC	X	106.165	0.2757	3.491%	2.887%
Xylene (p-)	VOC	X	106.165	0.2757	3.491%	2.887%
Dimethylheptane (3,4-)	VOC		128.255	0.3330	0.130%	0.130%
Methyloctane (2-)	VOC		128.255	0.3330	1.109%	1.108%
Methyloctane (4-)	VOC		128.255	0.3330	1.109%	1.108%
Dimethylheptane (3,4-)	VOC		128.255	0.3330	0.000%	0.000%
Methyloctane (3-)	VOC		128.255	0.3330	0.000%	0.000%
Butylcyclopentane (i-)	VOC		126.239	0.3278	0.000%	0.000%
Trimethylcyclohexane (1,t-2,c-3-)	VOC		126.239	0.3278	0.328%	0.322%
Trimethylcyclohexane (1,t-2,c-4-)	VOC		126.239	0.3278	0.328%	0.322%
Xylene (o-)	VOC	X	106.165	0.2757	0.776%	0.641%
Trimethylcyclohexane (1,1,2-)	VOC		126.239	0.3278	0.000%	0.000%
Trimethylcyclohexane (1,c-2,t-4-)	VOC		126.239	0.3278	0.284%	0.279%
Trimethylcyclohexane (1,c-2,c-4-)	VOC		126.239	0.3278	0.000%	0.000%
Nonane (n-)	VOC		128.255	0.3330	4.089%	4.086%
Unknowns	VOC		**283.170**	0.7353	15.292%	33.734%
Residual Liquid			128.362	0.3333	100.000%	100.000%
TOC (Total)			128.394	0.3334	99.962%	99.987%
VOC (Total)			129.116	0.3353	99.276%	99.859%
HAP (Total)			92.587	0.2404	10.159%	7.327%
Xylenes			106.165	0.2757	7.757%	6.416%

NOTES

1. Normalized mole percentages from TABLE E-0a(ii) to make total 100.000%.
2. Determined molecular weight of unknowns via iteration to match TABLE E-0a(i).

MW = 128.362 lb/lb-mol

TABLE E-1A
Flash Analysis
Maximum Hourly and Annual Emission Estimates

Station ID	DANV SLV V02				
Service	Pipeline Liquids				
Liquids Holding Capacity	470 gal			470 gal	
Liquids Input Rate	7,920 gal/yr			470 gal/hr	
Flash Gas Density	0.0769 lb/scf			0.0769 lb/scf	
Flash Factor	328.03 scf/bbl			328.03 scf/bbl	
Flash Gas Rate	61,857 scf/yr			3,671 scfh	
Flash Losses	4,759 lb/yr	Average	Maximum	282 lb/hr	Maximum
Flash Gas	100.00% by weight	0.5433 lb/hr	2.3796 tpy	100.00% by weight	282.4330 lb/hr
CO_{2-e}	1163.14% by weight	6.3193 lb/hr	27.6787 tpy	1039.07% by weight	2,935 lb/hr
CO_2	5.17% by weight	0.0281 lb/hr	0.1230 tpy	5.17% by weight	14.5945 lb/hr
TOC (Total)	94.73% by weight	0.5147 lb/hr	2.2542 tpy	94.73% by weight	267.5418 lb/hr
Methane	41.36% by weight	0.2247 lb/hr	0.9841 tpy	41.36% by weight	116.8036 lb/hr
Ethane	11.68% by weight	0.0635 lb/hr	0.2780 tpy	11.68% by weight	32.9979 lb/hr
VOC (Total)	41.69% by weight	0.2265 lb/hr	0.9920 tpy	41.69% by weight	117.7404 lb/hr
HAP (Total)	2.49% by weight	0.0135 lb/hr	0.0593 tpy	2.49% by weight	7.0388 lb/hr
Benzene	0.5089% by weight	0.0028 lb/hr	0.0121 tpy	0.5089% by weight	1.4372 lb/hr
Ethylbenzene	0.0275% by weight	0.0001 lb/hr	0.0007 tpy	0.0275% by weight	0.0777 lb/hr
Hexane (n-)	1.7932% by weight	0.0097 lb/hr	0.0427 tpy	1.7932% by weight	5.0646 lb/hr
Methanol					
Naphthalene					
Toluene	0.6253% by weight	0.0034 lb/hr	0.0149 tpy	0.6253% by weight	1.7661 lb/hr
Trimethylpentane (2,2,4-)	0.0091% by weight	0.0000 lb/hr	0.0002 tpy	0.0091% by weight	0.0258 lb/hr
Xylenes	0.3706% by weight	0.0020 lb/hr	0.0088 tpy	0.3706% by weight	1.0468 lb/hr

NOTES

1. Separator Characteristics: Flash is represented for separators that receive majority of liquids, but flash may be emitted other separators.
   - Orientation: Vertical
   - Height/Length: 10.00 ft
   - Diameter: 4.00 ft
   - Capacity (physical): 940 gal
   - Capacity (liquid): 470 gal — 50% of physical capacity
2. Liquid input rates:
   - a. maximum hourly based on operator experience; 470 gal/hr
   - b. maximum annual based on operating experience and safety factor; and 7,920 gal/yr
   - c. average hourly is just the maximum annual divided by 8,760 hrs/yr.
3. Flash gas density is 110% of the value extracted from TABLE E-0b(ii).
   Density (TABLE E-0b(ii)): 0.0699 lb/scf Safety Factor: 110%
4. Flash factor extracted from TABLE E-0a(i).
5. Speciated emissions vapor weight percentages extracted from TABLE E-0b(ii).

TABLE F-0
Volatile Organic Liquid Storage Tanks
Vapor Physical Property and Composition Estimates
Raoult's Law

Component Data														Liquid Data		Vapor Data	
Component			MW	Yaws Vapor Pressure Coefficients							VP Datum		mol%	wt%	y_i	$wt\%_i$
Name (i)	Type	HAP	$(lb/mol)_i$ $\mathbf{M_i}$	A	B	C	D	E	T_{Min} (°F)	T_{Max} (°F)	**T** (°F)	P_i (psia)	(mol_i/mol_L) $\mathbf{f_{v-i}}$	(lb_i/lb_L) $\mathbf{f_{m-i}}$	(mol_i/mol_V)	(lb_i/lb_V)
Nitrogen			28.013	3.7362	2.6465E+02	-6.7880E+00	0.0000E+00	0.0000E+00	-345.75	-232.60	68.00		0.000%	0.000%	0.000%	0.000%
Carbon Dioxide	GHG		44.010	35.0169	-1.5119E+03	-1.1334E+01	9.3368E-03	1.7136E-09	-68.80	87.80	68.00	833.1743	0.038%	0.013%	1.087%	2.183%
Methane	GHG		16.042	14.6667	-5.7097E+02	-3.3373E+00	-2.1999E-09	1.3096E-05	-295.60	-115.60	68.00	7,889.8148	0.303%	0.038%	82.053%	60.088%
Ethane			30.069	20.6973	-1.1341E+03	-5.2514E+00	-9.8774E-11	6.7329E-06	-297.40	89.60	68.00	546.5426	0.383%	0.090%	7.185%	9.862%
Propane	VOC		44.096	21.4469	-1.4627E+03	-5.2610E+00	3.2820E-11	3.7349E-06	-306.40	206.60	68.00	121.5870	0.838%	0.288%	3.497%	7.039%
Butane (i-)	VOC		58.122	31.2541	-1.9532E+03	-8.8060E+00	8.9246E-11	5.7501E-06	-254.20	275.00	68.00	44.2751	0.849%	0.385%	1.290%	3.423%
Butane (n-)	VOC		58.122	27.0441	-1.9049E+03	-7.1805E+00	-6.6845E-11	4.2190E-06	-216.40	305.60	68.00	30.1688	1.391%	0.630%	1.440%	3.821%
Pentane (i-)	VOC		72.149	29.2963	-2.1762E+03	-7.8830E+00	-4.6512E-11	3.8997E-06	-256.00	368.60	68.00	11.1082	2.544%	1.430%	0.970%	3.193%
Pentane (n-)	VOC		72.149	33.3239	-2.4227E+03	-9.2354E+00	9.0199E-11	4.1050E-06	-202.00	386.60	68.00	8.1938	1.859%	1.045%	0.523%	1.722%
Dimethylbutane (2,2-)	VOC		86.175	33.1285	-2.4527E+03	-9.2016E+00	-4.7077E-10	4.1755E-06	-146.20	420.80	68.00	5.0720	0.227%	0.152%	0.039%	0.155%
Dimethylbutane (2,3-)	VOC		86.175	33.6319	-2.5524E+03	-9.3142E+00	1.4759E-10	3.9140E-06	-223.60	500.00	68.00	3.6998	0.000%	0.000%	0.000%	0.000%
Cyclopentane	VOC		70.133	29.1547	-2.3512E+03	-7.6965E+00	-1.6212E-10	3.1250E-06	-137.20	462.20	68.00	5.0181	0.000%	0.000%	0.000%	0.000%
Methylpentane (2-)	VOC		86.175	30.7477	-2.4888E+03	-8.2295E+00	-2.3723E-11	3.2402E-06	-243.40	437.00	68.00	3.3041	1.586%	1.065%	0.180%	0.707%
Methylpentane (3-)	VOC		86.175	35.2848	-2.6773E+03	-9.8546E+00	2.2352E-11	4.0277E-06	-261.40	447.80	68.00	2.9617	1.188%	0.797%	0.121%	0.475%
Hexane (n-)	VOC	X	86.175	69.7378	-3.6278E+03	-2.3927E+01	1.2810E-02	-1.6844E-16	-139.00	453.20	68.00	2.3626	2.522%	1.693%	0.204%	0.804%
Dimethylpentane (2,2-)	VOC		100.202	6.2875	-2.1682E+03	2.6936E+00	-1.5525E-02	1.0917E-05	-191.20	478.40	68.00	1.6191	0.430%	0.335%	0.024%	0.109%
Methylcyclopentane	VOC		84.159	32.4766	-2.6434E+03	-8.7933E+00	2.0749E-11	3.2158E-06	-223.60	500.00	68.00	2.1257	1.567%	1.027%	0.114%	0.439%
Dimethylpentane (2,4-)	VOC		100.202	35.9436	-2.8460E+03	-9.9938E+00	8.0693E-11	3.6419E-06	-182.20	476.60	68.00	1.5074	0.177%	0.138%	0.009%	0.042%
Trimethylbutane (2,2,3-)	VOC		100.202	32.3633	-2.6614E+03	-8.7743E+00	-7.6870E-10	3.2006E-06	-11.20	496.40	68.00	1.5789	0.000%	0.000%	0.000%	0.000%
Benzene	VOC	X	78.112	31.7718	-2.7254E+03	-8.4443E+00	-5.3534E-09	2.7187E-06	42.80	552.20	68.00	1.4495	2.367%	1.440%	0.118%	0.420%
Dimethylpentane (3,3-)	VOC		100.202	30.2570	-2.6313E+03	-7.9839E+00	4.6848E-13	2.7170E-06	-209.20	505.40	68.00	1.2681	0.305%	0.238%	0.013%	0.061%
Cyclohexane	VOC		84.159	48.5529	-3.0874E+03	-1.5521E+01	7.3830E-03	6.3563E-12	44.60	537.80	68.00	1.5112	1.528%	1.002%	0.079%	0.304%
Methylhexane (2-)	VOC		100.202	54.1075	-3.3785E+03	-1.7547E+01	8.2594E-03	-3.4967E-14	-180.40	494.60	68.00	0.9987	3.167%	2.472%	0.109%	0.496%
Dimethylpentane (2,3-)	VOC		100.202	39.7737	-2.9050E+03	-1.2012E+01	5.1334E-03	-2.3807E-14	-171.40	507.20	68.00	1.0467	0.000%	0.000%	0.000%	0.000%
Dimethylcyclopentane (1,1-)	VOC		98.186	58.1943	-3.4151E+03	-1.9294E+01	9.6704E-03	-2.4361E-15	-94.00	525.20	68.00	1.1616	0.833%	0.637%	0.033%	0.149%
Methylhexane (3-)	VOC		100.202	35.2535	-2.9310E+03	-9.6667E+00	-5.2026E-11	3.2107E-06	-182.20	503.60	68.00	0.9291	3.287%	2.566%	0.105%	0.479%
Dimethylcyclopentane (1,t-3-)	VOC		98.186	53.1912	-3.3121E+03	-1.7277E+01	8.3107E-03	5.0896E-14	-209.20	536.00	68.00	0.9791	0.225%	0.172%	0.008%	0.034%
Dimethylcyclopentane (1,c-3-)	VOC		98.186	35.4255	-2.7286E+03	-1.0444E+01	4.6608E-03	1.7565E-14	-209.20	532.40	68.00	1.0075	0.368%	0.281%	0.013%	0.057%
Ethylpentane (3-)	VOC		100.202	8.5463	-2.2979E+03	1.5503E+00	-1.2233E-02	8.2670E-06	-180.40	514.40	68.00	0.8755	0.040%	0.031%	0.001%	0.006%
Dimethylcyclopentane (1,t-2-)	VOC		98.186	36.8109	-2.9536E+03	-1.0275E+01	-4.6212E-12	3.6730E-06	-178.60	536.00	68.00	0.9713	0.307%	0.235%	0.010%	0.046%
Trimethylpentane (2,2,4-)	VOC	X	114.229	50.3422	-3.2789E+03	-1.6111E+01	7.4260E-03	-9.1804E-14	-160.60	519.80	68.00	0.7453	0.029%	0.026%	0.001%	0.004%
Heptane (n-)	VOC		100.202	65.0257	-3.8188E+03	-2.1684E+01	1.0387E-02	1.0206E-14	-130.00	512.60	68.00	0.6808	5.170%	4.036%	0.121%	0.552%
Methylcyclohexane	VOC		98.186	38.0955	-3.0738E+03	-1.0684E+01	-5.1766E-11	3.5282E-06	-194.80	570.20	68.00	0.6925	4.647%	3.555%	0.110%	0.495%
Trimethylcyclopentane (1,1,3-)	VOC		112.213	11.0144	-2.9801E+03	2.7007E-01	-6.7946E-03	3.5409E-06	-63.40	734.00	68.00	0.0130	0.317%	0.277%	0.000%	0.001%
Dimethylhexane (2,2-)	VOC		114.229	38.7670	-3.1841E+03	-1.0857E+01	1.9275E-12	3.4797E-06	-185.80	530.60	68.00	0.5066	0.134%	0.119%	0.002%	0.012%
Dimethylcyclopentane (1,c-2-)	VOC		98.186	36.3623	-3.0025E+03	-1.0070E+01	-1.0435E-09	3.3726E-06	-65.20	557.60	68.00	0.7110	1.194%	0.913%	0.029%	0.131%
Dimethylhexane (2,5-)	VOC		114.229	40.0260	-3.2647E+03	-1.1282E+01	-6.5408E-10	3.6200E-06	-131.80	530.60	68.00	0.4490	0.000%	0.000%	0.000%	0.000%
Dimethylhexane (2,4-)	VOC		114.229	56.2877	-3.6225E+03	-1.8225E+01	8.1864E-03	8.7232E-12	30.20	537.80	68.00	0.4499	0.201%	0.179%	0.003%	0.016%
Ethylcyclopentane	VOC		98.186	36.3631	-3.0448E+03	-1.0038E+01	3.5007E-11	3.2347E-06	-216.40	566.60	68.00	0.5963	0.653%	0.500%	0.013%	0.060%
Trimethylpentane (2,2,3-)	VOC		114.229	35.9540	-3.0569E+03	-9.8896E+00	-7.2916E-11	3.1060E-06	-169.60	555.80	68.00	0.4788	0.039%	0.035%	0.001%	0.003%
Trimethylcyclopentane (1,t-2,c-4-)	VOC		112.213	11.0144	-2.9801E+03	2.7007E-01	-6.7946E-03	3.5409E-06	-63.40	734.00	68.00	0.0130	0.000%	0.000%	0.000%	0.000%
Dimethylhexane (3,3-)	VOC		114.229	38.0712	-3.1736E+03	-1.0617E+01	6.3090E-11	3.3817E-06	-194.80	552.20	68.00	0.4250	0.000%	0.000%	0.000%	0.000%
Trimethylcyclopentane (1,t-2,c-3-)	VOC		112.213	11.0144	-2.9801E+03	2.7007E-01	-6.7946E-03	3.5409E-06	-63.40	734.00	68.00	0.0130	0.000%	0.000%	0.000%	0.000%

TABLE F-0
Volatile Organic Liquid Storage Tanks
Vapor Physical Property and Composition Estimates
Raoult's Law

Component Data														Liquid Data		Vapor Data	
Component			MW	Yaws Vapor Pressure Coefficients							VP Datum			mol%	wt%	y_i	$wt\%_i$
Name (i)	Type	HAP	$(lb/mol)_i$ $\mathbf{M_i}$	A	B	C	D	E	T_{Min} (°F)	T_{Max} (°F)	**T** (°F)	P_i (psia)		(mol_i/mol_L) $\mathbf{f_{v-i}}$	(lb_i/lb_L) $\mathbf{f_{m-i}}$	(mol_i/mol_V)	(lb_i/lb_V)
Trimethylpentane (2,3,4-)	VOC		114.229	34.1565	-3.0232E+03	-9.2267E+00	2.7691E-11	2.7828E-06	-164.20	559.40	68.00	0.4029		0.000%	0.000%	0.000%	0.000%
Dimethylhexane (2,3-)	VOC		114.229	57.3778	-3.7143E+03	-1.8599E+01	8.2907E-03	-2.8441E-12	30.20	554.00	68.00	0.3451		0.000%	0.000%	0.000%	0.000%
Toluene	VOC	X	92.138	34.0775	-3.0379E+03	-9.1635E+00	1.0289E-11	2.7035E-06	-139.00	606.20	68.00	0.4219		6.256%	4.491%	0.091%	0.381%
Trimethylcyclopentane (1,1,2-)	VOC		112.213	11.0144	-2.9801E+03	2.7007E-01	-6.7946E-03	3.5409E-06	-63.40	734.00	68.00	0.0130		0.522%	0.457%	0.000%	0.001%
Dimethylhexane (3,4-)	VOC		114.229	38.6119	-3.2685E+03	-1.0752E+01	3.6386E-09	3.2771E-06	30.20	564.80	68.00	0.3186		4.934%	4.391%	0.054%	0.281%
Methylheptane (2-)	VOC		114.229	37.6930	-3.2611E+03	-1.0391E+01	-1.0524E-12	3.0560E-06	-164.20	548.60	68.00	0.3028		0.000%	0.000%	0.000%	0.000%
Methylheptane (4-)	VOC		114.229	40.2080	-3.3661E+03	-1.1279E+01	-8.7855E-11	3.4055E-06	-185.80	552.20	68.00	0.3001		4.077%	3.628%	0.042%	0.219%
Dimethylhexane (3,4-)	VOC		114.229	38.6119	-3.2685E+03	-1.0752E+01	3.6386E-09	3.2771E-06	30.20	564.80	68.00	0.3186		0.000%	0.000%	0.000%	0.000%
Methylheptane (3-)	VOC		114.229	52.8828	-3.6231E+03	-1.6804E+01	7.1828E-03	7.4077E-14	-184.00	555.80	68.00	0.2869		0.586%	0.521%	0.006%	0.030%
Ethylhexane (3-)	VOC		114.229	40.2079	-3.3651E+03	-1.1285E+01	-5.4180E-09	3.4199E-06	30.20	557.60	68.00	0.2931		0.156%	0.139%	0.002%	0.008%
Trimethylcyclopentane (1,c-2,t-4-)	VOC		112.213	11.0144	-2.9801E+03	2.7007E-01	-6.7946E-03	3.5409E-06	-63.40	734.00	68.00	0.0130		0.039%	0.034%	0.000%	0.000%
Dimethylcyclohexane (1,c-3-)	VOC		112.213	32.4775	-3.0067E+03	-8.5896E+00	7.0258E-11	2.1739E-06	-103.00	604.40	68.00	0.3176		0.239%	0.209%	0.003%	0.013%
Trimethylcyclopentane (1,c-2,t-3-)	VOC		112.213	11.0144	-2.9801E+03	2.7007E-01	-6.7946E-03	3.5409E-06	-63.40	734.00	68.00	0.0130		0.239%	0.209%	0.000%	0.001%
Dimethylcyclohexane (1,t-4-)	VOC		112.213	32.5731	-2.9872E+03	-8.6494E+00	-2.1355E-09	2.2946E-06	-34.60	602.60	68.00	0.3364		0.000%	0.000%	0.000%	0.000%
Trimethylhexane (2,2,5-)	VOC		128.255	7.8816	-2.6422E+03	2.3902E+00	-1.5376E-02	9.7931E-06	-158.80	563.00	68.00	0.2426		0.000%	0.000%	0.000%	0.000%
Dimethylcyclohexane (1,1-)	VOC		112.213	33.1329	-3.0084E+03	-8.8498E+00	-4.3621E-10	2.3704E-06	-27.40	604.40	68.00	0.3361		0.000%	0.000%	0.000%	0.000%
Ethylcyclopentane (1-methyl-t-3-)	VOC		112.213	11.0144	-2.9801E+03	2.7007E-01	-6.7946E-03	3.5409E-06	-63.40	734.00	68.00	0.0130		0.000%	0.000%	0.000%	0.000%
Ethylcyclopentane (1-methyl-c-3-)	VOC		112.213	11.0144	-2.9801E+03	2.7007E-01	-6.7946E-03	3.5409E-06	-63.40	734.00	68.00	0.0130		0.000%	0.000%	0.000%	0.000%
Ethylcyclopentane (1-methyl-t-2-)	VOC		112.213	11.0144	-2.9801E+03	2.7007E-01	-6.7946E-03	3.5409E-06	-63.40	734.00	68.00	0.0130		0.000%	0.000%	0.000%	0.000%
Trimethylhexane (2,2,4-)	VOC		128.255	33.1285	-2.4527E+03	-9.2016E+00	-4.7077E-10	4.1755E-06	-146.20	420.80	68.00	5.0720		0.000%	0.000%	0.000%	0.000%
Ethylcyclopentane (1-methyl-t-1-)	VOC		112.213	11.0144	-2.9801E+03	2.7007E-01	-6.7946E-03	3.5409E-06	-63.40	734.00	68.00	0.0130		0.000%	0.000%	0.000%	0.000%
Cycloheptane	VOC		98.186	54.0858	-3.6109E+03	-1.7331E+01	7.5272E-03	1.7553E-12	17.60	627.80	68.00	0.3185		0.000%	0.000%	0.000%	0.000%
Octane (n-)	VOC		114.229	29.0948	-3.0114E+03	-7.2653E+00	-2.2696E-11	1.4680E-06	-70.60	564.80	68.00	0.2040		6.155%	5.477%	0.043%	0.225%
Trimethylhexane (2,4,4-)	VOC		128.255	33.1285	-2.4527E+03	-9.2016E+00	-4.7077E-10	4.1755E-06	-146.20	420.80	68.00	5.0720		0.269%	0.269%	0.047%	0.275%
Tetramethylpentane (2,2,4,4-)	VOC		128.255	-3.8184	-2.2442E+03	7.0671E+00	-1.9644E-02	1.1435E-05	-86.80	568.40	68.00	0.2957		0.000%	0.000%	0.000%	0.000%
Dimethylcyclohexane (1,t-3-)	VOC		112.213	32.4384	-3.0550E+03	-8.5372E+00	2.2892E-10	2.0099E-06	-130.00	617.00	68.00	0.2590		0.075%	0.066%	0.001%	0.003%
Dimethylcyclohexane (1,c-4-)	VOC		112.213	31.9151	-3.0253E+03	-8.3613E+00	5.7055E-12	1.9673E-06	-124.60	617.00	68.00	0.2640		0.075%	0.066%	0.001%	0.003%
Trimethylcyclopentane (1,c-2,c-3-)	VOC		112.213	11.0144	-2.9801E+03	2.7007E-01	-6.7946E-03	3.5409E-06	-63.40	734.00	68.00	0.0130		0.075%	0.066%	0.000%	0.000%
Propylcyclopentane (i-)	VOC		112.213	11.0144	-2.9801E+03	2.7007E-01	-6.7946E-03	3.5409E-06	-63.40	734.00	68.00	0.0130		0.493%	0.431%	0.000%	0.001%
Trimethylhexane (2,3,5-)	VOC		128.255	33.1285	-2.4527E+03	-9.2016E+00	-4.7077E-10	4.1755E-06	-146.20	420.80	68.00	5.0720		0.009%	0.009%	0.001%	0.009%
Dimethylheptane (2,2-)	VOC		128.255	33.1285	-2.4527E+03	-9.2016E+00	-4.7077E-10	4.1755E-06	-146.20	420.80	68.00	5.0720		0.000%	0.000%	0.000%	0.000%
Dimethylheptane (2,4-)	VOC		128.255	33.1285	-2.4527E+03	-9.2016E+00	-4.7077E-10	4.1755E-06	-146.20	420.80	68.00	5.0720		0.224%	0.224%	0.039%	0.228%
Methylcyclopentane (1-ethyl-c-2-)	VOC		112.213	11.0144	-2.9801E+03	2.7007E-01	-6.7946E-03	3.5409E-06	-63.40	734.00	68.00	0.0130		0.257%	0.224%	0.000%	0.001%
Trimethylhexane (2,2,3-)	VOC		128.255	33.1285	-2.4527E+03	-9.2016E+00	-4.7077E-10	4.1755E-06	-146.20	420.80	68.00	5.0720		0.000%	0.000%	0.000%	0.000%
Dimethylcyclohexane (1,c-2-)	VOC		112.213	32.1635	-3.0728E+03	-8.4344E+00	6.8943E-10	1.9558E-06	-58.00	631.40	68.00	0.2121		0.723%	0.632%	0.005%	0.027%
Dimethylheptane (2,6-)	VOC		128.255	33.1285	-2.4527E+03	-9.2016E+00	-4.7077E-10	4.1755E-06	-146.20	420.80	68.00	5.0720		0.159%	0.159%	0.028%	0.162%
Propylcyclopentane (n-)	VOC		112.213	33.9220	-3.2097E+03	-8.9914E+00	-3.2992E-11	2.0684E-06	-178.60	626.00	68.00	0.1793		0.000%	0.000%	0.000%	0.000%
Trimethylcyclohexane (1,c-3,c-5-)	VOC		126.239	11.0144	-2.9801E+03	2.7007E-01	-6.7946E-03	3.5409E-06	-63.40	734.00	68.00	0.0130		0.000%	0.000%	0.000%	0.000%
Ethylcyclohexane	VOC		112.213	32.7090	-3.1283E+03	-8.6023E+00	-3.9268E-11	1.9935E-06	-167.80	636.80	68.00	0.1870		1.935%	1.692%	0.012%	0.064%
Dimethylheptane (2,5-)	VOC		128.255	33.1285	-2.4527E+03	-9.2016E+00	-4.7077E-10	4.1755E-06	-146.20	420.80	68.00	5.0720		0.095%	0.095%	0.017%	0.097%
Dimethylheptane (3,5-)	VOC		128.255	33.1285	-2.4527E+03	-9.2016E+00	-4.7077E-10	4.1755E-06	-146.20	420.80	68.00	5.0720		0.095%	0.095%	0.017%	0.097%
Trimethylcyclohexane (1,1,3-)	VOC		126.239	11.0144	-2.9801E+03	2.7007E-01	-6.7946E-03	3.5409E-06	-63.40	734.00	68.00	0.0130		0.109%	0.107%	0.000%	0.000%
Trimethylhexane (2,3,3-)	VOC		128.255	33.1285	-2.4527E+03	-9.2016E+00	-4.7077E-10	4.1755E-06	-146.20	420.80	68.00	5.0720		0.054%	0.054%	0.009%	0.055%

TABLE F-0
Volatile Organic Liquid Storage Tanks
Vapor Physical Property and Composition Estimates
Raoult's Law

Component Data														Liquid Data		Vapor Data	
Component			MW	Yaws Vapor Pressure Coefficients							VP Datum		mol%	wt%	y_i	$wt\%_i$
Name (i)	Type	HAP	$(lb/mol)_i$ $\mathbf{M_i}$	A	B	C	D	E	T_{Min} (°F)	T_{Max} (°F)	**T** (°F)	P_i (psia)	(mol_i/mol_L) $\mathbf{f_{v\text{-}i}}$	(lb_i/lb_L) $\mathbf{f_{m\text{-}i}}$	(mol_i/mol_V)	(lb_i/lb_V)
Dimethylheptane (3,3-)	VOC		128.255	33.1285	-2.4527E+03	-9.2016E+00	-4.7077E-10	4.1755E-06	-146.20	420.80	68.00	5.0720	0.054%	0.054%	0.009%	0.055%
Trimethylcyclohexane (1,1,4-)	VOC		126.239	11.0144	-2.9801E+03	2.7007E-01	-6.7946E-03	3.5409E-06	-63.40	734.00	68.00	0.0130	0.000%	0.000%	0.000%	0.000%
Tetramethylpentane (2,2,3,3-)	VOC		128.255	35.4216	-3.2760E+03	-9.5678E+00	9.0298E-10	2.4355E-06	14.00	640.40	68.00	0.1369	0.370%	0.370%	0.002%	0.010%
Ethylbenzene	VOC	X	106.165	36.1998	-3.3402E+03	-9.7970E+00	-1.1467E-11	2.5758E-06	-139.00	651.20	68.00	0.1388	0.576%	0.476%	0.003%	0.013%
Trimethylhexane (2,3,4-)	VOC		128.255	33.1285	-2.4527E+03	-9.2016E+00	-4.7077E-10	4.1755E-06	-146.20	420.80	68.00	5.0720	0.010%	0.010%	0.002%	0.010%
Trimethylcyclohexane (1,t-2,t-4-)	VOC		126.239	11.0144	-2.9801E+03	2.7007E-01	-6.7946E-03	3.5409E-06	-63.40	734.00	68.00	0.0130	0.000%	0.000%	0.000%	0.000%
Dimethylheptane (2,3-)	VOC		128.255	33.1285	-2.4527E+03	-9.2016E+00	-4.7077E-10	4.1755E-06	-146.20	420.80	68.00	5.0720	0.000%	0.000%	0.000%	0.000%
Trimethylcyclohexane (1,c-3,t-5-)	VOC		126.239	11.0144	-2.9801E+03	2.7007E-01	-6.7946E-03	3.5409E-06	-63.40	734.00	68.00	0.0130	0.000%	0.000%	0.000%	0.000%
Xylene (m-)	VOC	X	106.165	34.6803	-3.2981E+03	-9.2570E+00	-4.3563E-10	-2.4103E-06	-54.40	649.40	68.00	0.0468	3.491%	2.887%	0.006%	0.027%
Xylene (p-)	VOC	X	106.165	60.0531	-4.0159E+03	-1.9441E+01	8.2881E-03	-2.3647E-12	55.40	649.40	68.00	0.1277	3.491%	2.887%	0.015%	0.074%
Dimethylheptane (3,4-)	VOC		128.255	33.1285	-2.4527E+03	-9.2016E+00	-4.7077E-10	4.1755E-06	-146.20	420.80	68.00	5.0720	0.130%	0.130%	0.023%	0.133%
Methyloctane (2-)	VOC		128.255	6.0191	-2.8579E+03	3.4068E+00	-1.6572E-02	9.8047E-06	-112.00	597.20	68.00	0.0881	1.109%	1.108%	0.003%	0.020%
Methyloctane (4-)	VOC		128.255	11.2012	-2.9467E+03	1.2133E+00	-1.4423E-02	9.1770E-06	-171.40	599.00	68.00	0.0974	1.109%	1.108%	0.004%	0.022%
Dimethylheptane (3,4-)	VOC		128.255	33.1285	-2.4527E+03	-9.2016E+00	-4.7077E-10	4.1755E-06	-146.20	420.80	68.00	5.0720	0.000%	0.000%	0.000%	0.000%
Methyloctane (3-)	VOC		128.255	9.8147	-2.9609E+03	1.9061E+00	-1.5675E-02	9.7961E-06	-160.60	602.60	68.00	0.0889	0.000%	0.000%	0.000%	0.000%
Butylcyclopentane (i-)	VOC		126.239	11.0144	-2.9801E+03	2.7007E-01	-6.7946E-03	3.5409E-06	-63.40	734.00	68.00	0.0130	0.000%	0.000%	0.000%	0.000%
Trimethylcyclohexane (1,t-2,c-3-)	VOC		126.239	11.0144	-2.9801E+03	2.7007E-01	-6.7946E-03	3.5409E-06	-63.40	734.00	68.00	0.0130	0.328%	0.322%	0.000%	0.001%
Trimethylcyclohexane (1,t-2,c-4-)	VOC		126.239	11.0144	-2.9801E+03	2.7007E-01	-6.7946E-03	3.5409E-06	-63.40	734.00	68.00	0.0130	0.328%	0.322%	0.000%	0.001%
Xylene (o-)	VOC	X	106.165	37.2413	-3.4573E+03	-1.0126E+01	9.0676E-11	2.6123E-06	-13.00	674.60	68.00	0.0946	0.776%	0.641%	0.003%	0.012%
Trimethylcyclohexane (1,1,2-)	VOC		126.239	11.0144	-2.9801E+03	2.7007E-01	-6.7946E-03	3.5409E-06	-63.40	734.00	68.00	0.0130	0.000%	0.000%	0.000%	0.000%
Trimethylcyclohexane (1,c-2,t-4-)	VOC		126.239	11.0144	-2.9801E+03	2.7007E-01	-6.7946E-03	3.5409E-06	-63.40	734.00	68.00	0.0130	0.284%	0.279%	0.000%	0.001%
Trimethylcyclohexane (1,c-2,c-4-)	VOC		126.239	11.0144	-2.9801E+03	2.7007E-01	-6.7946E-03	3.5409E-06	-63.40	734.00	68.00	0.0130	0.000%	0.000%	0.000%	0.000%
Nonane (n-)	VOC		128.255	8.8817	-2.8042E+03	1.5262E+00	-1.0464E-02	5.7972E-06	-63.40	613.40	68.00	0.0627	4.089%	4.086%	0.009%	0.051%
Unknowns	VOC		283.170	116.5157	-8.0140E+03	-3.8799E+01	1.3398E-02	-4.4444E-13	50.00	813.20	68.00	0.0000	15.292%	33.734%	0.000%	0.000%
Residual Liquid	Liquid	128.362 lb/lb-mol	Vapor	68.00 °F		29.1420 psia			21.907 lb/lb-mol				100.000%	100.000%	100.000%	100.000%
TOC (Total)		128.394 lb/lb-mol		68.00 °F		28.8362 psia			21.664 lb/lb-mol				99.962%	99.987%	98.913%	97.817%
VOC (Total)		129.116 lb/lb-mol		68.00 °F		2.8403 psia			63.095 lb/lb-mol				99.276%	99.859%	9.676%	27.868%
HAP (Total)		95.690 lb/lb-mol		68.00 °F		0.6569 psia			86.481 lb/lb-mol				19.507%	14.542%	0.440%	1.736%
Xylenes		106.165 lb/lb-mol		68.00 °F		0.0880 psia			106.165 lb/lb-mol				7.757%	6.416%	0.023%	0.114%

NOTES

1. Liquid composition of residual liquid based on SPL flash analysis (see TABLE E-0b(iii)).
2. Vapor pressure data for unknowns based on: Pentadecane (n-)

TABLE F-1AA
Volatile Organic Liquids Storage Tanks
Hourly and Annual Emission Estimates
Standing & Working Losses

Source		DANV SVV V01C01				
Service		Pipeline Liquids				
Capacity		59.00 gal			59.00 gal	
Temperature of Stored Liquid		64.39 °F			82.51 °F	
Vapor Pressure		5.8193 psia			7.8797 psia	
Pumping Rate		135 gal/min			135 gal/min	
Throughput		4.47 turnover/yr				
		264 gal/yr			59 gal/hr	
Standing Losses					**July**	
					744 hrs/month	
					21.0876 lbs/month	
		138.8529 lb/yr			0.0283 lb/hr	
Working Losses		**8.46E-03** lb/gal			**1.19E-02** lb/gal	
		2.2336 lb/yr	Average	Maximum	0.7041 lb/hr	Maximum
Residual Liquid	Stand	358.84% by weight	0.0569 lb/hr	0.2491 tpy	358.84% by weight	0.1017 lb/hr
	Work		0.0009 lb/hr	0.0040 tpy		2.5265 lb/hr
	Total		0.0578 lb/hr	0.2531 tpy		2.6282 lb/hr
CO_{2-e}		6045.12% by weight	0.9736 lb/hr	4.2644 tpy	6045.12% by weight	44 lb/hr
CO_2		7.83% by weight	0.0013 lb/hr	0.0055 tpy	7.83% by weight	0.0574 lb/hr
TOC (Total)		351.00% by weight	0.0565 lb/hr	0.2476 tpy	351.00% by weight	2.5708 lb/hr
Methane		215.62% by weight	0.0347 lb/hr	0.1521 tpy	215.62% by weight	1.5792 lb/hr
Ethane		35.39% by weight	0.0057 lb/hr	0.0250 tpy	35.39% by weight	0.2592 lb/hr
VOC (Total)		100.00% by weight	0.0161 lb/hr	0.0705 tpy	100.00% by weight	0.7324 lb/hr
HAP (Total)		6.23% by weight	0.0010 lb/hr	0.0044 tpy	6.23% by weight	0.0456 lb/hr
Benzene		1.5063% by weight	2.43E-04 lb/hr	1.06E-03 tpy	1.5063% by weight	1.10E-02 lb/hr
Ethylbenzene		0.0477% by weight	7.68E-06 lb/hr	3.36E-05 tpy	0.0477% by weight	3.49E-04 lb/hr
Hexane (n-)		2.8866% by weight	4.65E-04 lb/hr	2.04E-03 tpy	2.8866% by weight	2.11E-02 lb/hr
Methanol						
Naphthalene						
Toluene		1.3668% by weight	2.20E-04 lb/hr	9.64E-04 tpy	1.3668% by weight	1.00E-02 lb/hr
Trimethylpentane (2,2,4-)		0.0139% by weight	2.24E-06 lb/hr	9.79E-06 tpy	0.0139% by weight	1.02E-04 lb/hr
Xylenes		0.4073% by weight	6.56E-05 lb/hr	2.87E-04 tpy	0.4073% by weight	2.98E-03 lb/hr

NOTES

1. Tank Characteristics: TANKS 4.09d

Orientation	Vertical	Above Ground?	Aboveground
Height/Length	20.00 ft	Shell/Roof Color	Gray (Medium) or less solar
Diameter	3.17 ft	Shell Condition	Average absorptance
Capacity (estimated)	1,178 gal	Vacuum Setting	0.00
Capacity (nominal)	1,180 gal	Pressure Setting	0.00

2. Stored Liquid Characteristics:

Basis	AP42 Table 7.1-7 (06/2020)	MET Station:	Lexington, KY
Material	Gasoline (RVP = 10)	Selected purely for a worst-case scenario.	
Liquid Molecular Weight	92.00 lb/lb-mol	Vapor Molecular Weight	66.00 lb/lb-mol

Monthly Data

	Days	Vapor Pressure		Liquid Surface Temperature		Losses (lbs)		Flow
		avg	max	avg	max	standing	working	Used
January	31	3.1357	3.4749	35.30	40.15	4.2970	0.3068	58.80
February	28	3.4297	3.8716	39.52	45.36	5.0002	0.3325	58.80
March	31	4.1780	4.8115	49.09	56.17	7.9212	0.3971	58.80
April	30	5.2775	6.1831	60.91	69.23	11.3258	0.4898	58.80
May	31	6.3332	7.4181	70.52	79.14	15.0118	0.5768	58.80
June	30	7.4472	8.7231	79.36	88.28	18.9408	0.6670	58.80
July	31	7.8797	9.1855	82.51	91.26	21.0876	0.7017	58.80
August	31	7.7396	9.0138	81.50	90.16	20.2526	0.6907	58.80
September	30	6.6613	7.7163	73.24	81.34	14.5913	0.6042	58.80
October	31	5.2582	6.0341	60.72	67.93	10.1102	0.4888	58.80
November	30	4.1070	4.5976	48.25	53.87	6.0035	0.3915	58.80
December	31	3.3183	3.6586	37.96	42.62	4.3108	0.3230	58.80
ALL	365	5.8193	6.7326	64.39	71.97	138.8529	5.9699	705.60

3. Emission Estimate Basis: AP-42 Chapter 7 (06/2020) & TCEQ RG-166/01
4. Speciation of emissions is based on vapor weight percentages in TABLE F-0 normalized on VOC to assure methodology is conservative.

TABLE F-1AB
Volatile Organic Liquids Storage Tanks
Hourly and Annual Emission Estimates
Standing & Working Losses

Source		DANV SVV V01C02				
Service		Pipeline Liquids				
Capacity		59.00 gal			59.00 gal	
Temperature of Stored Liquid		64.39 °F			82.51 °F	
Vapor Pressure		5.8193 psia			7.8797 psia	
Pumping Rate		135 gal/min			135 gal/min	
Throughput		4.47 turnover/yr				
		264 gal/yr			59 gal/hr	
Standing Losses					**July**	
					744 hrs/month	
					21.0876 lbs/month	
		138.8529 lb/yr			0.0283 lb/hr	
Working Losses		**8.46E-03** lb/gal			**1.19E-02** lb/gal	
		2.2336 lb/yr	Average	Maximum	0.7041 lb/hr	Maximum
Residual Liquid	Stand	358.84% by weight	0.0569 lb/hr	0.2491 tpy	358.84% by weight	0.1017 lb/hr
	Work		0.0009 lb/hr	0.0040 tpy		2.5265 lb/hr
	Total		0.0578 lb/hr	0.2531 tpy		2.6282 lb/hr
CO_{2-e}		6045.12% by weight	0.9736 lb/hr	4.2644 tpy	6045.12% by weight	44 lb/hr
CO_2		7.83% by weight	0.0013 lb/hr	0.0055 tpy	7.83% by weight	0.0574 lb/hr
TOC (Total)		351.00% by weight	0.0565 lb/hr	0.2476 tpy	351.00% by weight	2.5708 lb/hr
Methane		215.62% by weight	0.0347 lb/hr	0.1521 tpy	215.62% by weight	1.5792 lb/hr
Ethane		35.39% by weight	0.0057 lb/hr	0.0250 tpy	35.39% by weight	0.2592 lb/hr
VOC (Total)		100.00% by weight	0.0161 lb/hr	0.0705 tpy	100.00% by weight	0.7324 lb/hr
HAP (Total)		6.23% by weight	0.0010 lb/hr	0.0044 tpy	6.23% by weight	0.0456 lb/hr
Benzene		1.5063% by weight	2.43E-04 lb/hr	1.06E-03 tpy	1.5063% by weight	1.10E-02 lb/hr
Ethylbenzene		0.0477% by weight	7.68E-06 lb/hr	3.36E-05 tpy	0.0477% by weight	3.49E-04 lb/hr
Hexane (n-)		2.8866% by weight	4.65E-04 lb/hr	2.04E-03 tpy	2.8866% by weight	2.11E-02 lb/hr
Methanol						
Naphthalene						
Toluene		1.3668% by weight	2.20E-04 lb/hr	9.64E-04 tpy	1.3668% by weight	1.00E-02 lb/hr
Trimethylpentane (2,2,4-)		0.0139% by weight	2.24E-06 lb/hr	9.79E-06 tpy	0.0139% by weight	1.02E-04 lb/hr
Xylenes		0.4073% by weight	6.56E-05 lb/hr	2.87E-04 tpy	0.4073% by weight	2.98E-03 lb/hr

NOTES

1. Tank Characteristics: TANKS 4.09d

Orientation	Vertical	Above Ground?	Aboveground
Height/Length	20.00 ft	Shell/Roof Color	Gray (Medium) or less solar
Diameter	3.17 ft	Shell Condition	Average absorptance
Capacity (estimated)	1,178 gal	Vacuum Setting	0.00
Capacity (nominal)	1,180 gal	Pressure Setting	0.00

2. Stored Liquid Characteristics:

Basis	AP42 Table 7.1-7 (06/2020)	MET Station:	Lexington, KY
Material	Gasoline (RVP = 10)	Selected purely for a worst-case scenario.	
Liquid Molecular Weight	92.00 lb/lb-mol	Vapor Molecular Weight	66.00 lb/lb-mol

Monthly Data

	Days	Vapor Pressure		Liquid Surface Temperature		Losses (lbs)		Flow
		avg	max	avg	max	standing	working	Used
January	31	3.1357	3.4749	35.30	40.15	4.2970	0.3068	58.80
February	28	3.4297	3.8716	39.52	45.36	5.0002	0.3325	58.80
March	31	4.1780	4.8115	49.09	56.17	7.9212	0.3971	58.80
April	30	5.2775	6.1831	60.91	69.23	11.3258	0.4898	58.80
May	31	6.3332	7.4181	70.52	79.14	15.0118	0.5768	58.80
June	30	7.4472	8.7231	79.36	88.28	18.9408	0.6670	58.80
July	31	7.8797	9.1855	82.51	91.26	21.0876	0.7017	58.80
August	31	7.7396	9.0138	81.50	90.16	20.2526	0.6907	58.80
September	30	6.6613	7.7163	73.24	81.34	14.5913	0.6042	58.80
October	31	5.2582	6.0341	60.72	67.93	10.1102	0.4888	58.80
November	30	4.1070	4.5976	48.25	53.87	6.0035	0.3915	58.80
December	31	3.3183	3.6586	37.96	42.62	4.3108	0.3230	58.80
ALL	365	5.8193	6.7326	64.39	71.97	138.8529	5.9699	705.60

3. Emission Estimate Basis: AP-42 Chapter 7 (06/2020) & TCEQ RG-166/01
4. Speciation of emissions is based on vapor weight percentages in TABLE F-0 normalized on VOC to assure methodology is conservative.

TABLE F-1AC
Volatile Organic Liquids Storage Tanks
Hourly and Annual Emission Estimates
Standing & Working Losses

Source		DANV SVV V01C03				
Service		Pipeline Liquids				
Capacity		59.00 gal			59.00 gal	
Temperature of Stored Liquid		64.39 °F			82.51 °F	
Vapor Pressure		5.8193 psia			7.8797 psia	
Pumping Rate		135 gal/min			135 gal/min	
Throughput		4.47 turnover/yr				
		264 gal/yr			59 gal/hr	
Standing Losses					**July**	
					744 hrs/month	
					21.0876 lbs/month	
		138.8529 lb/yr			0.0283 lb/hr	
Working Losses		**8.46E-03** lb/gal			**1.19E-02** lb/gal	
		2.2336 lb/yr	Average	Maximum	0.7041 lb/hr	Maximum
Residual Liquid	Stand	358.84% by weight	0.0569 lb/hr	0.2491 tpy	358.84% by weight	0.1017 lb/hr
	Work		0.0009 lb/hr	0.0040 tpy		2.5265 lb/hr
	Total		0.0578 lb/hr	0.2531 tpy		2.6282 lb/hr
CO_{2-e}		6045.12% by weight	0.9736 lb/hr	4.2644 tpy	6045.12% by weight	44 lb/hr
CO_2		7.83% by weight	0.0013 lb/hr	0.0055 tpy	7.83% by weight	0.0574 lb/hr
TOC (Total)		351.00% by weight	0.0565 lb/hr	0.2476 tpy	351.00% by weight	2.5708 lb/hr
Methane		215.62% by weight	0.0347 lb/hr	0.1521 tpy	215.62% by weight	1.5792 lb/hr
Ethane		35.39% by weight	0.0057 lb/hr	0.0250 tpy	35.39% by weight	0.2592 lb/hr
VOC (Total)		100.00% by weight	0.0161 lb/hr	0.0705 tpy	100.00% by weight	0.7324 lb/hr
HAP (Total)		6.23% by weight	0.0010 lb/hr	0.0044 tpy	6.23% by weight	0.0456 lb/hr
Benzene		1.5063% by weight	2.43E-04 lb/hr	1.06E-03 tpy	1.5063% by weight	1.10E-02 lb/hr
Ethylbenzene		0.0477% by weight	7.68E-06 lb/hr	3.36E-05 tpy	0.0477% by weight	3.49E-04 lb/hr
Hexane (n-)		2.8866% by weight	4.65E-04 lb/hr	2.04E-03 tpy	2.8866% by weight	2.11E-02 lb/hr
Methanol						
Naphthalene						
Toluene		1.3668% by weight	2.20E-04 lb/hr	9.64E-04 tpy	1.3668% by weight	1.00E-02 lb/hr
Trimethylpentane (2,2,4-)		0.0139% by weight	2.24E-06 lb/hr	9.79E-06 tpy	0.0139% by weight	1.02E-04 lb/hr
Xylenes		0.4073% by weight	6.56E-05 lb/hr	2.87E-04 tpy	0.4073% by weight	2.98E-03 lb/hr

NOTES

1. Tank Characteristics: TANKS 4.09d

Orientation	Vertical	Above Ground?	Aboveground
Height/Length	20.00 ft	Shell/Roof Color	Gray (Medium) or less solar
Diameter	3.17 ft	Shell Condition	Average absorptance
Capacity (estimated)	1,178 gal	Vacuum Setting	0.00
Capacity (nominal)	1,180 gal	Pressure Setting	0.00

2. Stored Liquid Characteristics:

Basis	AP42 Table 7.1-7 (06/2020)	MET Station:	Lexington, KY
Material	Gasoline (RVP = 10)	Selected purely for a worst-case scenario.	
Liquid Molecular Weight	92.00 lb/lb-mol	Vapor Molecular Weight	66.00 lb/lb-mol

Monthly Data	Days	Vapor Pressure		Liquid Surface Temperature		Losses (lbs)		Flow
		avg	max	avg	max	standing	working	Used
January	31	3.1357	3.4749	35.30	40.15	4.2970	0.3068	58.80
February	28	3.4297	3.8716	39.52	45.36	5.0002	0.3325	58.80
March	31	4.1780	4.8115	49.09	56.17	7.9212	0.3971	58.80
April	30	5.2775	6.1831	60.91	69.23	11.3258	0.4898	58.80
May	31	6.3332	7.4181	70.52	79.14	15.0118	0.5768	58.80
June	30	7.4472	8.7231	79.36	88.28	18.9408	0.6670	58.80
July	31	7.8797	9.1855	82.51	91.26	21.0876	0.7017	58.80
August	31	7.7396	9.0138	81.50	90.16	20.2526	0.6907	58.80
September	30	6.6613	7.7163	73.24	81.34	14.5913	0.6042	58.80
October	31	5.2582	6.0341	60.72	67.93	10.1102	0.4888	58.80
November	30	4.1070	4.5976	48.25	53.87	6.0035	0.3915	58.80
December	31	3.3183	3.6586	37.96	42.62	4.3108	0.3230	58.80
ALL	365	5.8193	6.7326	64.39	71.97	138.8529	5.9699	705.60

3. Emission Estimate Basis: AP-42 Chapter 7 (06/2020) & TCEQ RG-166/01
4. Speciation of emissions is based on vapor weight percentages in TABLE F-0 normalized on VOC to assure methodology is conservative.

TABLE F-1B
Volatile Organic Liquids Storage Tanks
Hourly and Annual Emission Estimates
Standing & Working Losses

Source		DANV SLV V02				
Service		Pipeline Liquids				
Capacity		470.00 gal			470 gal	
Temperature of Stored Liquid		64.82 °F			83.11 °F	
Vapor Pressure		5.8702 psia			7.9640 psia	
Pumping Rate		135 gal/min			135 gal/min	
Throughput		16.85 turnover/yr				
		7,920 gal/yr			470 gal/hr	
Standing Losses					**July**	
					744 hrs/month	
					30.1428 lbs/month	
		187.6332 lb/yr			0.0405 lb/hr	
Working Losses		**8.49E-03** lb/gal			**1.20E-02** lb/gal	
		67.2248 lb/yr	Average	Maximum	5.6373 lb/hr	Maximum
Residual Liquid	Stand	358.84% by weight	0.0769 lb/hr	0.3366 tpy	358.84% by weight	0.1454 lb/hr
	Work		0.0275 lb/hr	0.1206 tpy		20.2287 lb/hr
	Total		0.1044 lb/hr	0.4573 tpy		20.3740 lb/hr
CO_{2-e}		6045.12% by weight	1.7587 lb/hr	7.7032 tpy	6045.12% by weight	343 lb/hr
CO_2		7.83% by weight	0.0023 lb/hr	0.0100 tpy	7.83% by weight	0.4448 lb/hr
TOC (Total)		351.00% by weight	0.1021 lb/hr	0.4473 tpy	351.00% by weight	19.9293 lb/hr
Methane		215.62% by weight	0.0627 lb/hr	0.2748 tpy	215.62% by weight	12.2423 lb/hr
Ethane		35.39% by weight	0.0103 lb/hr	0.0451 tpy	35.39% by weight	2.0092 lb/hr
VOC (Total)		100.00% by weight	0.0291 lb/hr	0.1274 tpy	100.00% by weight	5.6778 lb/hr
HAP (Total)		6.23% by weight	0.0018 lb/hr	0.0079 tpy	6.23% by weight	0.3536 lb/hr
Benzene		1.5063% by weight	4.38E-04 lb/hr	1.92E-03 tpy	1.5063% by weight	8.55E-02 lb/hr
Ethylbenzene		0.0477% by weight	1.39E-05 lb/hr	6.07E-05 tpy	0.0477% by weight	2.71E-03 lb/hr
Hexane (n-)		2.8866% by weight	8.40E-04 lb/hr	3.68E-03 tpy	2.8866% by weight	1.64E-01 lb/hr
Methanol						
Naphthalene						
Toluene		1.3668% by weight	3.98E-04 lb/hr	1.74E-03 tpy	1.3668% by weight	7.76E-02 lb/hr
Trimethylpentane (2,2,4-)		0.0139% by weight	4.04E-06 lb/hr	1.77E-05 tpy	0.0139% by weight	7.88E-04 lb/hr
Xylenes		0.4073% by weight	1.19E-04 lb/hr	5.19E-04 tpy	0.4073% by weight	2.31E-02 lb/hr

NOTES

1. Tank Characteristics: TANKS 4.09d

Orientation	Vertical	Above Ground?	Aboveground
Height/Length	10.00 ft	Shell/Roof Color	Gray (Medium) or less solar
Diameter	4.00 ft	Shell Condition	Average absorptance
Capacity (estimated)	940 gal	Vacuum Setting	0.00
Capacity (nominal)	940 gal	Pressure Setting	0.00

2. Stored Liquid Characteristics:

Basis	AP42 Table 7.1-7 (06/2020)	MET Station:	Lexington, KY
Material	Gasoline (RVP = 10)	Selected purely for a worst-case scenario.	
Liquid Molecular Weight	92.00 lb/lb-mol	Vapor Molecular Weight	66.00 lb/lb-mol

Monthly Data

	Days	Vapor Pressure		Liquid Surface Temperature		Losses (lbs)		Flow
		avg	max	avg	max	standing	working	Used
January	31	3.1476	3.4826	35.47	40.25	4.9863	2.4517	469.98
February	28	3.4486	3.8903	39.78	45.59	5.9786	2.6607	469.98
March	31	4.2089	4.8491	49.46	56.56	9.9394	3.1824	469.98
April	30	5.3274	6.2525	61.40	69.83	14.9739	3.9313	469.98
May	31	6.3999	7.5187	71.08	79.89	20.6493	4.6335	469.98
June	30	7.5293	8.8507	79.97	89.11	26.8505	5.3596	469.98
July	31	7.9640	9.3159	83.11	92.07	30.1428	5.6370	469.98
August	31	7.8165	9.1273	82.06	90.89	28.6731	5.5456	469.98
September	30	6.7165	7.7885	73.69	81.86	19.9233	4.8445	469.98
October	31	5.2924	6.0703	61.05	68.25	13.1123	3.9140	469.98
November	30	4.1248	4.6105	48.46	54.01	7.3589	3.1297	469.98
December	31	3.3296	3.6647	38.12	42.70	5.0449	2.5802	469.98
ALL	365	5.8702	6.8031	64.82	72.49	187.6332	47.8702	5,639.76

3. Emission Estimate Basis: AP-42 Chapter 7 (06/2020) & TCEQ RG-166/01
4. Speciation of emissions is based on vapor weight percentages in TABLE F-0 normalized on VOC to assure methodology is conservative.

TABLE F-1C
Volatile Organic Liquids Storage Tanks
Hourly and Annual Emission Estimates
Standing & Working Losses

Source		DANV TNK V05				
Service		Pipeline Liquids				
Capacity		2,640 gal			2,640 gal	
Temperature of Stored Liquid		65.58 °F			84.16 °F	
Vapor Pressure		5.9606 psia			8.1138 psia	
Pumping Rate		150 gal/min			150 gal/min	
Throughput		3.00 turnover/yr				
		7,920 gal/yr			2,640 gal/hr	
Standing Losses					**July**	
					744 hrs/month	
					107.3985 lbs/month	
		626.9132 lb/yr			0.1444 lb/hr	
Working Losses		**8.59E-03** lb/gal			**1.22E-02** lb/gal	
		67.9993 lb/yr	Average	Maximum	32.1339 lb/hr	Maximum
Residual Liquid	Stand	358.84% by weight	0.2568 lb/hr	1.1248 tpy	358.84% by weight	0.5180 lb/hr
	Work		0.0279 lb/hr	0.1220 tpy		115.3089 lb/hr
	Total		0.2847 lb/hr	1.2468 tpy		115.8268 lb/hr
CO_{2-e}		6045.12% by weight	4.7955 lb/hr	21.0042 tpy	6045.12% by weight	1,951 lb/hr
CO_2		7.83% by weight	0.0062 lb/hr	0.0272 tpy	7.83% by weight	2.5286 lb/hr
TOC (Total)		351.00% by weight	0.2784 lb/hr	1.2196 tpy	351.00% by weight	113.2982 lb/hr
Methane		215.62% by weight	0.1710 lb/hr	0.7492 tpy	215.62% by weight	69.5976 lb/hr
Ethane		35.39% by weight	0.0281 lb/hr	0.1230 tpy	35.39% by weight	11.4224 lb/hr
VOC (Total)		100.00% by weight	0.0793 lb/hr	0.3475 tpy	100.00% by weight	32.2783 lb/hr
HAP (Total)		6.23% by weight	0.0049 lb/hr	0.0216 tpy	6.23% by weight	2.0105 lb/hr
Benzene		1.5063% by weight	1.19E-03 lb/hr	5.23E-03 tpy	1.5063% by weight	4.86E-01 lb/hr
Ethylbenzene		0.0477% by weight	3.78E-05 lb/hr	1.66E-04 tpy	0.0477% by weight	1.54E-02 lb/hr
Hexane (n-)		2.8866% by weight	2.29E-03 lb/hr	1.00E-02 tpy	2.8866% by weight	9.32E-01 lb/hr
Methanol						
Naphthalene						
Toluene		1.3668% by weight	1.08E-03 lb/hr	4.75E-03 tpy	1.3668% by weight	4.41E-01 lb/hr
Trimethylpentane (2,2,4-)		0.0139% by weight	1.10E-05 lb/hr	4.82E-05 tpy	0.0139% by weight	4.48E-03 lb/hr
Xylenes		0.4073% by weight	3.23E-04 lb/hr	1.42E-03 tpy	0.4073% by weight	1.31E-01 lb/hr

NOTES

1. Tank Characteristics: TANKS 4.09d

Orientation	Vertical	Above Ground?	Aboveground
Height/Length	7.00 ft	Shell/Roof Color	Gray (Medium) or less solar
Diameter	8.00 ft	Shell Condition	Average absorptance
Capacity (estimated)	2,632 gal	Vacuum Setting	0.00
Capacity (nominal)	2,640 gal	Pressure Setting	0.00

2. Stored Liquid Characteristics:

Basis	AP42 Table 7.1-7 (06/2020)	MET Station:	Lexington, KY
Material	Gasoline (RVP = 10)	Selected purely for a worst-case scenario.	
Liquid Molecular Weight	92.00 lb/lb-mol	Vapor Molecular Weight	66.00 lb/lb-mol

Monthly Data	Days	Vapor Pressure		Liquid Surface Temperature		Losses (lbs)		Flow
		avg	max	avg	max	standing	working	Used
January	31	3.1686	3.4962	35.78	40.44	13.9611	13.8458	2,640.12
February	28	3.4819	3.9235	40.24	46.01	17.3694	15.0619	2,640.12
March	31	4.2638	4.9156	50.10	57.26	30.4159	18.0631	2,640.12
April	30	5.4162	6.3759	62.25	70.88	48.5932	22.3768	2,640.12
May	31	6.5185	7.6981	72.07	81.20	70.2779	26.4113	2,640.12
June	30	7.6755	9.0786	81.04	90.58	94.7746	30.5688	2,640.12
July	31	8.1138	9.5487	84.16	93.51	107.3985	32.1354	2,640.12
August	31	7.9531	9.3297	83.03	92.16	100.6310	31.5817	2,640.12
September	30	6.8146	7.9167	74.48	82.77	66.5619	27.5280	2,640.12
October	31	5.3529	6.1345	61.64	68.81	41.1189	22.1861	2,640.12
November	30	4.1563	4.6333	48.84	54.26	21.6335	17.6877	2,640.12
December	31	3.3495	3.6754	38.40	42.84	14.1772	14.5630	2,640.12
ALL	365	5.9606	6.9287	65.58	73.40	626.9132	272.0095	31,681.44

3. Emission Estimate Basis: AP-42 Chapter 7 (06/2020) & TCEQ RG-166/01
4. Speciation of emissions is based on vapor weight percentages in TABLE F-0 normalized on VOC to assure methodology is conservative.

TABLE F-1D
Volatile Organic Liquids Storage Tanks
Hourly and Annual Emission Estimates
Standing & Working Losses

Source		DANV TNK OW01				
Service		Oily Water				
Capacity		220 gal			220 gal	
Temperature of Stored Liquid		61.58 °F			84.86 °F	
Vapor Pressure		0.0078 psia			0.0142 psia	
Pumping Rate		150 gal/min			150 gal/min	
Throughput		365.00 turnover/yr				
		80,300 gal/yr			220 gal/hr	
Standing Losses					**July**	
					744 hrs/month	
					0.0095 lbs/month	
		0.0562 lb/yr			0.00001 lb/hr	
Working Losses		**2.36E-05** lb/gal			**4.18E-05** lb/gal	
		1.8989 lb/yr	Average	Maximum	0.0092 lb/hr	Maximum
Liquid	Stand	100.00% by weight	0.0000 lb/hr	0.0000 tpy	100.00% by weight	0.0000 lb/hr
	Work		0.0002 lb/hr	0.0009 tpy		0.0092 lb/hr
	Total		0.0002 lb/hr	0.0010 tpy		0.0092 lb/hr
TOC (Total)		100.00% by weight	0.0002 lb/hr	0.0010 tpy	100.00% by weight	0.0092 lb/hr
Methane						
Ethane						
VOC (Total)		100.00% by weight	0.0002 lb/hr	0.0010 tpy	100.00% by weight	0.0092 lb/hr
HAP (Total)						
Benzene						
Ethylbenzene						
Hexane (n-)						
Methanol						
Naphthalene						
Toluene						
Trimethylpentane (2,2,4-)						
Xylenes						

NOTES

1. Tank Characteristics: TANKS 4.09d

Orientation	Horizontal	Above Ground?	Aboveground
Height/Length	6.00 ft	Shell/Roof Color	Gray (Medium) or less solar
Diameter	2.50 ft	Shell Condition	Average absorptance
Capacity (estimated)	220 gal	Vacuum Setting	-0.03
Capacity (nominal)	220 gal	Pressure Setting	0.03

2. Stored Liquid Characteristics:

Basis	AP42 Table 7.1-7 (06/2020)	MET Station:	Lexington, KY
Material	Fuel Oil No. 2 (Diesel)	Selected purely for a worst-case scenario.	
Liquid Molecular Weight	188.00 lb/lb-mol	Vapor Molecular Weight	130.00 lb/lb-mol

Monthly Data	Days	Vapor Pressure avg	Vapor Pressure max	Liquid Surface Temperature avg	Liquid Surface Temperature max	Losses (lbs) standing	Losses (lbs) working	Flow Used
January	31	0.0028	0.0033	35.99	40.56	0.0010	0.0020	220.08
February	28	0.0033	0.0041	40.55	46.28	0.0014	0.0024	220.08
March	31	0.0047	0.0060	50.53	57.72	0.0027	0.0033	220.08
April	30	0.0071	0.0094	62.83	71.58	0.0046	0.0048	220.08
May	31	0.0098	0.0130	72.74	82.09	0.0067	0.0065	220.08
June	30	0.0129	0.0173	81.76	91.56	0.0087	0.0084	220.08
July	31	0.0142	0.0188	84.86	94.48	0.0095	0.0092	220.08
August	31	0.0137	0.0180	83.68	93.01	0.0090	0.0089	220.08
September	30	0.0105	0.0136	75.01	83.39	0.0061	0.0069	220.08
October	31	0.0069	0.0087	62.04	69.19	0.0037	0.0047	220.08
November	30	0.0045	0.0054	49.09	54.42	0.0018	0.0031	220.08
December	31	0.0031	0.0036	38.59	42.93	0.0011	0.0022	220.08
ALL	365	0.0078	0.0101	61.58	69.05	0.0562	0.0625	2,640.96

3. Emission Estimate Basis: AP-42 Chapter 7 (06/2020) & TCEQ RG-166/01
4. There is no basis for speciation of emissions.

TABLE F-1E
Volatile Organic Liquids Storage Tanks
Hourly and Annual Emission Estimates
Standing & Working Losses

Source		DANV TNK DF01				
Service		Diesel				
Capacity		560 gal			560 gal	
Temperature of Stored Liquid		61.42 °F			84.62 °F	
Vapor Pressure		0.0078 psia			0.0141 psia	
Pumping Rate		150 gal/min			150 gal/min	
Throughput		365.00 turnover/yr				
		204,400 gal/yr			560 gal/hr	
Standing Losses					**July**	
					744 hrs/month	
					0.0241 lbs/month	
		0.1422 lb/yr			0.00003 lb/hr	
Working Losses		**2.35E-05** lb/gal			**4.15E-05** lb/gal	
		4.8113 lb/yr	Average	Maximum	0.0233 lb/hr	Maximum
Liquid	Stand	100.00% by weight	0.0000 lb/hr	0.0001 tpy	100.00% by weight	0.0000 lb/hr
	Work		0.0005 lb/hr	0.0024 tpy		0.0233 lb/hr
	Total		0.0006 lb/hr	0.0025 tpy		0.0233 lb/hr
TOC (Total)		100.00% by weight	0.0006 lb/hr	0.0025 tpy	100.00% by weight	0.0233 lb/hr
Methane						
Ethane						
VOC (Total)		100.00% by weight	0.0006 lb/hr	0.0025 tpy	100.00% by weight	0.0233 lb/hr
HAP (Total)						
Benzene						
Ethylbenzene						
Hexane (n-)						
Methanol						
Naphthalene						
Toluene						
Trimethylpentane (2,2,4-)						
Xylenes						

NOTES

1. Tank Characteristics: TANKS 4.09d

Orientation	Horizontal	Above Ground?	Aboveground
Height/Length	6.00 ft	Shell/Roof Color	Gray (Medium) or less solar
Diameter	4.00 ft	Shell Condition	Average absorptance
Capacity (estimated)	564 gal	Vacuum Setting	-0.03
Capacity (nominal)	560 gal	Pressure Setting	0.03

2. Stored Liquid Characteristics:

Basis	AP42 Table 7.1-7 (06/2020)	MET Station:	Lexington, KY
Material	Fuel Oil No. 2 (Diesel)	Selected purely for a worst-case scenario.	
Liquid Molecular Weight	188.00 lb/lb-mol	Vapor Molecular Weight	130.00 lb/lb-mol

Monthly Data	Days	Vapor Pressure		Liquid Surface Temperature		Losses (lbs)		Flow
		avg	max	avg	max	standing	working	Used
January	31	0.0028	0.0033	35.92	40.52	0.0026	0.0051	559.86
February	28	0.0033	0.0041	40.45	46.19	0.0035	0.0060	559.86
March	31	0.0047	0.0060	50.39	57.57	0.0068	0.0083	559.86
April	30	0.0071	0.0093	62.63	71.34	0.0115	0.0122	559.86
May	31	0.0097	0.0129	72.51	81.79	0.0169	0.0164	559.86
June	30	0.0128	0.0171	81.52	91.23	0.0219	0.0213	559.86
July	31	0.0141	0.0187	84.62	94.15	0.0241	0.0233	559.86
August	31	0.0136	0.0179	83.46	92.72	0.0226	0.0225	559.86
September	30	0.0104	0.0135	74.83	83.18	0.0156	0.0176	559.86
October	31	0.0069	0.0087	61.90	69.06	0.0095	0.0119	559.86
November	30	0.0045	0.0054	49.00	54.37	0.0046	0.0080	559.86
December	31	0.0031	0.0036	38.53	42.90	0.0027	0.0056	559.86
ALL	365	0.0078	0.0101	61.42	68.87	0.1422	0.1581	6,718.32

3. Emission Estimate Basis: AP-42 Chapter 7 (06/2020) & TCEQ RG-166/01
4. There is no basis for speciation of emissions.

TABLE F-1F
Volatile Organic Liquids Loading (Tanker Trucks)
Hourly and Annual Emission Estimates

Source	DANV TL PL				
Supply Vessel	DANV TNK V05				
	Pipeline Liquids				
	2,640 gal			2,640 gal	
Tanker Truck Service	Dedicated Normal			Dedicated Normal	
Loading Method	Submerged			Submerged	
Saturation Factor	0.60 n.d.			0.60 n.d.	
Vapor Molecular Weight	66.00 lb/lb-mol			66.00 lb/lb-mol	
Bulk Liquid Temperature	65.58 °F			84.16 °F	
	525.58 R			544.16 R	
Vapor Pressure	5.9606 psia			8.1138 psia	
Loading Loss Factor	5.5958 lb/kgal			7.3572 lb/kgal	
Pumping Rate				150 gpm	
Throughput	3.00 turnover/yr				
	7,920 gal/yr			2,640 gal/hr	
Loading Losses	44.3186 lb/yr	Average	Maximum	19.4231 lb/hr	Maximum
Residual Liquid	358.84% by weight	0.0182 lb/hr	0.0795 tpy	358.84% by weight	69.6975 lb/hr
CO_{2-e}	6045.12% by weight	0.3058 lb/hr	1.3396 tpy	6045.12% by weight	1,174.1493 lb/hr
CO_2	7.83% by weight	0.0004 lb/hr	0.0017 tpy	7.83% by weight	1.5216 lb/hr
TOC (Total)	351.00% by weight	0.0178 lb/hr	0.0778 tpy	351.00% by weight	68.1759 lb/hr
Methane	215.62% by weight	0.0109 lb/hr	0.0478 tpy	215.62% by weight	41.8796 lb/hr
Ethane	35.39% by weight	0.0018 lb/hr	0.0078 tpy	35.39% by weight	6.8733 lb/hr
VOC (Total)	100.00% by weight	0.0051 lb/hr	0.0222 tpy	100.00% by weight	19.4231 lb/hr
HAP (Total)	6.23% by weight	0.0003 lb/hr	0.0014 tpy	6.23% by weight	1.2098 lb/hr
Benzene	1.5063% by weight	7.62E-05 lb/hr	3.34E-04 tpy	1.5063% by weight	2.93E-01 lb/hr
Ethylbenzene	0.0477% by weight	2.41E-06 lb/hr	1.06E-05 tpy	0.0477% by weight	9.26E-03 lb/hr
Hexane (n-)	2.8866% by weight	1.46E-04 lb/hr	6.40E-04 tpy	2.8866% by weight	5.61E-01 lb/hr
Methanol					
Naphthalene					
Toluene	1.3668% by weight	6.92E-05 lb/hr	3.03E-04 tpy	1.3668% by weight	2.65E-01 lb/hr
Trimethylpentane (2,2,4-)	0.0139% by weight	7.02E-07 lb/hr	3.08E-06 tpy	0.0139% by weight	2.70E-03 lb/hr
Xylenes	0.4073% by weight	2.06E-05 lb/hr	9.03E-05 tpy	0.4073% by weight	7.91E-02 lb/hr

NOTES

1. Emissions calculated using methods provided in USEPA, AP-42 Section 5.2 dated 1/95. $L_L = 12.46[(S)M_VP/T]$
2. Physical property, throughput and speciation data based data from supply vessel emission calculation spreadsheet.

TABLE F-1G
Volatile Organic Liquids Loading (Tanker Trucks)
Hourly and Annual Emission Estimates

Source	DANV TL OW				
Supply Vessel	DANV TNK OW01				
	Oily Water				
	220 gal			220 gal	
Tanker Truck Service	Dedicated Normal			Dedicated Normal	
Loading Method	Splash			Splash	
Saturation Factor	1.45 n.d.			1.45 n.d.	
Vapor Molecular Weight	130.00 lb/lb-mol			130.00 lb/lb-mol	
Bulk Liquid Temperature	61.58 °F			84.86 °F	
	521.58 R			544.86 R	
Vapor Pressure	0.0078 psia			0.0142 psia	
Loading Loss Factor	0.0352 lb/kgal			0.0611 lb/kgal	
Pumping Rate				150 gpm	
Throughput	12.00 turnover/yr				
	2,640 gal/yr			220 gal/hr	
Loading Losses	0.0930 lb/yr	Average	Maximum	0.0134 lb/hr	Maximum
Residual Liquid	100.00% by weight	0.00001 lb/hr	0.0000 tpy	100.00% by weight	0.0134 lb/hr
TOC (Total)	100.00% by weight	0.00001 lb/hr	0.0000 tpy	100.00% by weight	0.0134 lb/hr
Methane					
Ethane					
VOC (Total)	100.00% by weight	0.00001 lb/hr	0.0000 tpy	100.00% by weight	0.0134 lb/hr
HAP (Total)					
Benzene					
Ethylbenzene					
Hexane (n-)					
Methanol					
Naphthalene					
Toluene					
Trimethylpentane (2,2,4-)					
Xylenes					

NOTES

1. Emissions calculated using methods provided in USEPA, AP-42 Section 5.2 dated 1/95. $L_L = 12.46[(S)M_VP/T]$
2. Physical property, throughput and speciation data based data from supply vessel emission calculation spreadsheet.

TABLE G-1Aa
Gas Releases
Hourly and Annual Emission Estimates

Category	Station Operations					
Source	DANV-GR-ST			DANV-GR-PL		
	Avg. Hourly	Max. Annual	Max. Hourly	Avg. Hourly	Max. Annual	Max. Hourly
Gas Release	5,421 scfh	47,488,596 scf/yr	2,357,862 scfh	1,399 scfh	12,251,664 scf/yr	4,900,666 scfh
	246 lb/hr	2,151,644 lb/yr	115,021 lb/hr	63 lb/hr	555,106 lb/yr	239,063 lb/hr
NO_X						
CO						
SO_2						
$PM_{10/2.5}$						
CO_{2-e}	6,560 lb/hr	28,732 tpy	3,118,068 lb/hr	1,692 lb/hr	7,413 tpy	6,480,705 lb/hr
CO_2	8.3677 lb/hr	36.6505 tpy	5,468.8230 lb/hr	2.1588 lb/hr	9.4555 tpy	11,366.5980 lb/hr
N_2O						
TOC (Total)	246 lb/hr	1,076 tpy	115,021 lb/hr	63 lb/hr	278 tpy	239,063 lb/hr
Methane	234 lb/hr	1,025 tpy	111,164 lb/hr	60 lb/hr	264 tpy	231,048 lb/hr
Ethane	31 lb/hr	137 tpy	22,501 lb/hr	8 lb/hr	35 tpy	46,766 lb/hr
VOC (Total)	5.3990 lb/hr	23.6478 tpy	10,923.7942 lb/hr	2.5918 lb/hr	11.3522 tpy	22,704.4058 lb/hr
VOC (non-HAP)	5.2341 lb/hr	22.9253 tpy	10,667.1836 lb/hr	2.5309 lb/hr	11.0855 tpy	22,171.0571 lb/hr
HAP (Total)	0.1650 lb/hr	0.7225 tpy	256.6106 lb/hr	0.0609 lb/hr	0.2667 tpy	533.3487 lb/hr
Acetaldehyde						
Acrolein						
Benzene	0.0451 lb/hr	0.1974 tpy	91.7944 lb/hr	0.0218 lb/hr	0.0954 tpy	190.7888 lb/hr
Biphenyl						
Butadiene (1,3-)						
Carbon Tetrachloride						
Chlorobenzene						
Chloroform						
Dichloropropene (1,3-)						
Ethylbenzene	0.0202 lb/hr	0.0887 tpy	14.1431 lb/hr	0.0052 lb/hr	0.0229 tpy	29.3955 lb/hr
Ethylene Dibromide						
Formaldehyde						
Hexane (n-)	0.0958 lb/hr	0.4195 tpy	256.6106 lb/hr	0.0609 lb/hr	0.2667 tpy	533.3487 lb/hr
Methanol						
Methylene Chloride						
Methylnaphthalene (2-)						
Naphthalene						
PAH						
Phenol						
Propylene Oxide						
Styrene						
Tetrachloroethane (1,1,2,2-)						
Toluene	0.0508 lb/hr	0.2223 tpy	79.6644 lb/hr	0.0189 lb/hr	0.0828 tpy	165.5773 lb/hr
Trichloroethane (1,1,2-)						
Trimethylpentane (2,2,4-)	0.0169 lb/hr	0.0740 tpy	7.9635 lb/hr	0.0044 lb/hr	0.0191 tpy	16.5517 lb/hr
Vinyl Chloride						
Xylenes	0.0615 lb/hr	0.2695 tpy	120.2163 lb/hr	0.0285 lb/hr	0.1249 tpy	249.8619 lb/hr

NOTES

1. Gas release estimates based on engineering evaluation of several other compressor stations.
2. Data used in estimates is based upon model deemed to be most representative of natural gas at the site.
   There are five (5) models to choose from which are based on laboratory extended analysis of samples collected at various locations along Enbridge pipelines.
   Selected Grouping of Available Samples: **PLQNG** Samples that conform with Tariff
   Number of Samples in Grouping: 421
   States Represented in Grouping: AR, CT, IN, KY, LA, MA, MD, ME, MO, MS, NJ, NS, NY, OH, OK, PA, RI, TN, TX, VA and WV
   Dates Represented in Grouping: 2011 thru 2016
   Selected Class for Grouping: **WC** → Selected Model: **PLQNG: WC**
3. If necessary, customizations (SF) are applied to make the models more representative of natural gas at the site.

	Average		Maximum	
Upper Percentile Limit Applied:	90%	SF	100%	SF
Heating Value (BTU/scf)	1,069 BTU/scf	100%	1,109 BTU/scf	100%
Density (lb/scf) at USEPA Standard Conditions	0.0453 lb/scf	100%	0.0488 lb/scf	100%
VOC (Total)	2.20% by wt.	100%	9.50% by wt.	100%
HAP (Total)	0.07% by wt.	100%	0.22% by wt.	100%

TABLE G-1Ab
Gas Releases
Hourly and Annual Emission Estimates

Category	Station Operations					
Source	DANV-GR-ST			DANV-GR-PL		
	Avg. Hourly	Max. Annual	Max. Hourly	Avg. Hourly	Max. Annual	Max. Hourly
Gas Release	2,463 scfh	21,577,024 scf/yr	1,698,557 scfh	635 scfh	5,566,693 scf/yr	2,226,677 scfh
	118 lb/hr	1,034,905 lb/yr	93,809 lb/hr	30 lb/hr	266,997 lb/yr	122,977 lb/hr
NO_X						
CO						
SO_2						
$PM_{10/2.5}$						
CO_{2-e}	2,573 lb/hr	11,270 tpy	2,439,460 lb/hr	664 lb/hr	2,907 tpy	3,197,944 lb/hr
CO_2	2.8845 lb/hr	12.6339 tpy	6,810.5519 lb/hr	1.0192 lb/hr	4.4641 tpy	8,928.1108 lb/hr
N_2O						
TOC (Total)	118 lb/hr	516 tpy	93,809 lb/hr	30 lb/hr	133 tpy	122,977 lb/hr
Methane	92 lb/hr	402 tpy	86,880 lb/hr	24 lb/hr	104 tpy	113,893 lb/hr
Ethane	21 lb/hr	92 tpy	23,517 lb/hr	5 lb/hr	24 tpy	30,829 lb/hr
VOC (Total)	5.0417 lb/hr	22.0827 tpy	19,707.1502 lb/hr	2.9492 lb/hr	12.9173 tpy	25,834.5611 lb/hr
VOC (non-HAP)	4.7828 lb/hr	20.9486 tpy	19,157.9158 lb/hr	2.8670 lb/hr	12.5573 tpy	25,114.5569 lb/hr
HAP (Total)	0.2589 lb/hr	1.1341 tpy	549.2344 lb/hr	0.0822 lb/hr	0.3600 tpy	720.0042 lb/hr
Acetaldehyde						
Acrolein						
Benzene	0.0526 lb/hr	0.2305 tpy	188.4353 lb/hr	0.0282 lb/hr	0.1235 tpy	247.0242 lb/hr
Biphenyl						
Butadiene (1,3-)						
Carbon Tetrachloride						
Chlorobenzene						
Chloroform						
Dichloropropene (1,3-)						
Ethylbenzene	0.0073 lb/hr	0.0321 tpy	30.0772 lb/hr	0.0045 lb/hr	0.0197 tpy	39.4289 lb/hr
Ethylene Dibromide						
Formaldehyde						
Hexane (n-)	0.1499 lb/hr	0.6566 tpy	292.2308 lb/hr	0.0437 lb/hr	0.1915 tpy	383.0921 lb/hr
Methanol						
Methylene Chloride						
Methylnaphthalene (2-)						
Naphthalene						
PAH						
Phenol						
Propylene Oxide						
Styrene						
Tetrachloroethane (1,1,2,2-)						
Toluene	0.0711 lb/hr	0.3113 tpy	152.9368 lb/hr	0.0229 lb/hr	0.1002 tpy	200.4884 lb/hr
Trichloroethane (1,1,2-)						
Trimethylpentane (2,2,4-)	0.0104 lb/hr	0.0457 tpy	18.2753 lb/hr	0.0027 lb/hr	0.0120 tpy	23.9575 lb/hr
Vinyl Chloride						
Xylenes	0.0431 lb/hr	0.1887 tpy	161.6400 lb/hr	0.0242 lb/hr	0.1059 tpy	211.8977 lb/hr

NOTES

1. Gas release estimates based on engineering evaluation of several other compressor stations.
2. Data used in estimates is based upon model deemed to be most representative of natural gas at the site.
   There are five (5) models to choose from which are based on laboratory extended analysis of samples collected at various locations along Enbridge pipelines.
   Selected Grouping of Available Samples: **TNCNG** Samples that do NOT conform with Tariff
   Number of Samples in Grouping: 56
   States Represented in Grouping: AR, LA, ME, MO, MS, NS, NY, OH, OK, PA, TN, TX and WV
   Dates Represented in Grouping: 2011 thru 2016
   Selected Class for Grouping: **BC** → Selected Model: **TNCNG: BC**
3. If necessary, customizations (SF) are applied to make the models more representative of natural gas at the site.

	Average		Maximum	
Upper Percentile Limit Applied:	60%	SF	98%	SF
Heating Value (BTU/scf)	1,106 BTU/scf	100%	1,246 BTU/scf	100%
Density (lb/scf) at USEPA Standard Conditions	0.0480 lb/scf	100%	0.0552 lb/scf	100%
VOC (Total)	4.27% by wt.	100%	21.01% by wt.	100%
HAP (Total)	0.22% by wt.	100%	0.59% by wt.	100%

TABLE H-1Aa
Piping Components
Hourly and Annual Emission Estimates

Source			DANV-PC-NG			
Service			Gas			
			Natural Gas			
Minimum hours when component purged with inert gas			0 hrs/yr			
Component	Valves	Count	698 components			
		Emission Factor	4.50E-03 kg/hr/component			
	Connectors	Count	3,222 components			
		Emission Factor	2.00E-04 kg/hr/component			
	Flanges	Count	466 components			
		Emission Factor	3.90E-04 kg/hr/component			
	Open-Ended Lines	Count	36 components			
		Emission Factor	2.00E-03 kg/hr/component			
	Pump Seals	Count	0 components			
		Emission Factor	2.40E-03 kg/hr/component			
	Other	Count	71 components	**Emissions**		
		Emission Factor	8.80E-03 kg/hr/component	**Avg. Hourly**	**Max. Annual**	**Max. Hourly**
Speciation	CO_{2-e}		2670.74% by weight	274.6070 lb/hr	1,202.7789 tpy	278.7340 lb/hr
	CO_2		3.41% by weight	0.3503 lb/hr	1.5342 tpy	0.7465 lb/hr
	TOC (Total)		100.00% by weight	10.2821 lb/hr	45.0354 tpy	10.2821 lb/hr
	Methane		95.262% by weight	9.7949 lb/hr	42.9016 tpy	9.9373 lb/hr
	Ethane		17.742% by weight	1.8243 lb/hr	7.9902 tpy	2.5776 lb/hr
	VOC (Total)		4.268% by weight	0.4388 lb/hr	1.9219 tpy	2.1600 lb/hr
	VOC (non-HAP)		4.048% by weight	0.4163 lb/hr	1.8232 tpy	2.0998 lb/hr
	HAP (Total)		0.219% by weight	0.0225 lb/hr	0.0987 tpy	0.0602 lb/hr
	Benzene		0.045% by weight	4.58E-03 lb/hr	2.01E-02 tpy	2.07E-02 lb/hr
	Ethylbenzene		0.008% by weight	8.47E-04 lb/hr	3.71E-03 tpy	3.30E-03 lb/hr
	Hexane (n-)		0.127% by weight	1.30E-02 lb/hr	5.71E-02 tpy	3.20E-02 lb/hr
	Methanol					
	Naphthalene					
	Toluene		0.060% by weight	6.18E-03 lb/hr	2.71E-02 tpy	1.68E-02 lb/hr
	Trimethylpentane (2,2,4-)		0.009% by weight	9.08E-04 lb/hr	3.98E-03 tpy	2.00E-03 lb/hr
	Xylenes		0.036% by weight	3.75E-03 lb/hr	1.64E-02 tpy	1.77E-02 lb/hr

NOTES

1. Emission factors obtained from Table 2-4 (Oil & Gas Production Operations) of Protocol for Equipment Leak Emission Estimates (EPA 453/R-95-017).
The average SOCMI w/o ethylene emission factor is used for pumps in heavy oil service (Table 2-1) since an emission factor isn't provided in Table 2-4.
2. Applied Control Efficiencies for TCEQ LDAR Programs: None.
3. Piping component counts based on survey at other compressor stations.
4. The component type "Other" includes blowdown valves, relief valves, and compressor seals.
5. Weight percents based on gas analysis used to estimate gas release annual emissions [max(TABLE G-1Aa, TABLE G-1Ab)].
Maximum hourly emissions are based on the worst-case short-term weight percents even though the values are NOT presented.

TABLE H-1Ab
Piping Components
Hourly and Annual Emission Estimates

Source			DANV-PC-PL			
Service			Light Oil			
			Pipeline Liquids			
Minimum hours when component purged with inert gas			0 hrs/yr			
Component	Valves	Count	99 components			
		Emission Factor	2.50E-03 kg/hr/component			
	Connectors	Count	575 components			
		Emission Factor	2.10E-04 kg/hr/component			
	Flanges	Count	209 components			
		Emission Factor	1.10E-04 kg/hr/component			
	Open-Ended Lines	Count	36 components			
		Emission Factor	1.40E-03 kg/hr/component			
	Pump Seals	Count	1 components			
		Emission Factor	1.30E-02 kg/hr/component			
	Other	Count	1 components	**Emissions**		
		Emission Factor	7.50E-03 kg/hr/component	**Avg. Hourly**	**Max. Annual**	**Max. Hourly**
Speciation	CO_{2-e}		1.07% by weight	0.0109 lb/hr	0.0479 tpy	0.0131 lb/hr
	CO_2		0.01% by weight	0.0001 lb/hr	0.0006 tpy	0.0002 lb/hr
	TOC (Total)		99.99% by weight	1.0187 lb/hr	4.4619 tpy	1.2224 lb/hr
	Methane		0.04% by weight	0.0004 lb/hr	0.0017 tpy	0.0005 lb/hr
	Ethane		0.09% by weight	0.0009 lb/hr	0.0040 tpy	0.0011 lb/hr
	VOC (Total)		99.86% by weight	1.0174 lb/hr	4.4562 tpy	1.2209 lb/hr
	VOC (non-HAP)		85.32% by weight	0.8692 lb/hr	3.8072 tpy	1.0431 lb/hr
	HAP (Total)		14.54% by weight	0.1482 lb/hr	0.6489 tpy	0.1778 lb/hr
	Benzene		1.44% by weight	1.47E-02 lb/hr	6.43E-02 tpy	1.76E-02 lb/hr
	Ethylbenzene		0.48% by weight	4.85E-03 lb/hr	2.12E-02 tpy	5.82E-03 lb/hr
	Hexane (n-)		1.69% by weight	1.73E-02 lb/hr	7.56E-02 tpy	2.07E-02 lb/hr
	Methanol					
	Naphthalene					
	Toluene		4.49% by weight	4.58E-02 lb/hr	2.00E-01 tpy	5.49E-02 lb/hr
	Trimethylpentane (2,2,4-)		0.03% by weight	2.63E-04 lb/hr	1.15E-03 tpy	3.16E-04 lb/hr
	Xylenes		6.42% by weight	6.54E-02 lb/hr	2.86E-01 tpy	7.84E-02 lb/hr

NOTES

1. Emission factors obtained from Table 2-4 (Oil & Gas Production Operations) of Protocol for Equipment Leak Emission Estimates (EPA 453/R-95-017). The average SOCMI w/o ethylene emission factor is used for pumps in heavy oil service (Table 2-1) since an emission factor isn't provided in Table 2-4.
2. Applied Control Efficiencies for TCEQ LDAR Programs: None.
3. Piping component counts based on design drawings for a similar compressor station.
4. The component type "Other" includes blowdown valves, relief valves, and compressor seals.
5. Weight percents based on composition estimate (TABLE F-0).
6. Maximum hourly emissions are based on 120% of the hourly emissions estimated in an effort to be conservative.

TABLE H-1Ac
Piping Components
Hourly and Annual Emission Estimates

Source			DANV-PC-OIL			
Service			Heavy Oil			
			Oil			
Minimum hours when component purged with inert gas			0 hrs/yr			
Component	Valves	Count	360 components			
		Emission Factor	8.40E-06 kg/hr/component			
	Connectors	Count	1,023 components			
		Emission Factor	7.50E-06 kg/hr/component			
	Flanges	Count	211 components			
		Emission Factor	3.90E-07 kg/hr/component			
	Open-Ended Lines	Count	0 components			
		Emission Factor	1.40E-04 kg/hr/component			
	Pump Seals	Count	21 components			
		Emission Factor	8.62E-03 kg/hr/component			
	Other	Count	4 components	**Emissions**		
		Emission Factor	3.20E-05 kg/hr/component	**Avg. Hourly**	**Max. Annual**	**Max. Hourly**
Speciation	CO_{2-e}					
	CO_2					
	TOC (Total)		100.00% by weight	0.4230 lb/hr	1.8529 tpy	0.5077 lb/hr
	Methane					
	Ethane					
	VOC (Total)		100.00% by weight	0.4230 lb/hr	1.8529 tpy	0.5077 lb/hr
	VOC (non-HAP)		100.00% by weight	0.4230 lb/hr	1.8529 tpy	0.5077 lb/hr
	HAP (Total)					
	Benzene					
	Ethylbenzene					
	Hexane (n-)					
	Methanol					
	Naphthalene					
	Toluene					
	Trimethylpentane (2,2,4-)					
	Xylenes					

NOTES

1. Emission factors obtained from Table 2-4 (Oil & Gas Production Operations) of Protocol for Equipment Leak Emission Estimates (EPA 453/R-95-017). The emission factor for pumps in heavy oil service is obtained from Table 2-1.
2. Applied Control Efficiencies for TCEQ LDAR Programs: None.
3. Piping component counts based on design drawings for a similar compressor station.
4. The component type "Other" includes blowdown valves, relief valves, and compressor seals.
5. Weight percents based listed on MSDS.
6. Maximum hourly emissions are based on 120% of the hourly emissions estimated in an effort to be conservative.

INSIGNIFICANT ACTIVITIES

TABLE D-1B
Natural Gas Combustion
Hourly and Annual Emission Estimates
Uncontrolled

Application		HVAC				
Combustion Process		Conventional				
Add-on Controls		None				
Package (Make: Model)		Carrier: 58MTB-120				
Burner (Make: Model)		Unknown: Unknown				
Fuel		Natural Gas				
Fuel Higher Heating Value (HHV)		1,020 BTU/scf			1,020 BTU/scf	
Heat Output at HHV		0.112 MMBTU/hr			0.118 MMBTU/hr	
Thermal Efficiency		93%			93%	
Operating Hours		8,760 hrs/yr				
Fuel Consumption		118 scfh			124 scfh	
		1.031 MMscf/yr				
Heat Input at HHV		0.120 MMBTU/hr			0.126 MMBTU/hr	
		1,051 MMBTU/yr	Uncontrolled			Uncontrolled
Pollutant	Control Efficiency	Uncontrolled	Average Hourly	Maximum Annual	Uncontrolled	Maximum Hourly
NO_X		94.00 lb/MMscf	0.0111 lb/hr	0.0484 tpy	94.00 lb/MMscf	0.0116 lb/hr
CO		40.00 lb/MMscf	0.0047 lb/hr	0.0206 tpy	40.00 lb/MMscf	0.0049 lb/hr
SO_2		14.29 lb/MMscf	0.0017 lb/hr	0.0074 tpy	14.29 lb/MMscf	0.0018 lb/hr
$PM_{10/2.5}$		7.60 lb/MMscf	0.0009 lb/hr	0.0039 tpy	7.60 lb/MMscf	0.0009 lb/hr
CO_{2-e}		120,141.79 lb/MMscf	14.1343 lb/hr	61.9084 tpy	120,141.79 lb/MMscf	14.8410 lb/hr
CO_2		120,017.45 lb/MMscf	14.1197 lb/hr	61.8443 tpy	120,017.45 lb/MMscf	14.8257 lb/hr
N_2O		0.23 lb/MMscf	0.0000 lb/hr	0.0001 tpy	0.23 lb/MMscf	0.0000 lb/hr
TOC (Total)		13.58 lb/MMscf	0.0016 lb/hr	0.0070 tpy	13.58 lb/MMscf	0.0017 lb/hr
Methane		2.30 lb/MMscf	0.0003 lb/hr	0.0012 tpy	2.30 lb/MMscf	0.0003 lb/hr
Ethane		3.10 lb/MMscf	0.0004 lb/hr	0.0016 tpy	3.10 lb/MMscf	0.0004 lb/hr
VOC (Total)		8.18 lb/MMscf	0.0010 lb/hr	0.0042 tpy	8.18 lb/MMscf	0.0010 lb/hr
VOC (non-HAP)		6.30 lb/MMscf	0.0007 lb/hr	0.0032 tpy	6.30 lb/MMscf	0.0008 lb/hr
HAP (Total)		1.88 lb/MMscf	0.0002 lb/hr	0.0010 tpy	1.88 lb/MMscf	0.0002 lb/hr
Acetaldehyde						
Acrolein						
Benzene		2.10E-03 lb/MMscf	2.47E-07 lb/hr	1.08E-06 tpy	2.10E-03 lb/MMscf	2.59E-07 lb/hr
Biphenyl						
Butadiene (1,3-)						
Carbon Tetrachloride						
Chlorobenzene						
Chloroform						
Dichloropropene (1,3-)						
Ethylbenzene						
Ethylene Dibromide						
Formaldehyde		7.50E-02 lb/MMscf	8.82E-06 lb/hr	3.86E-05 tpy	7.50E-02 lb/MMscf	9.26E-06 lb/hr
Hexane (n-)		1.80E+00 lb/MMscf	2.12E-04 lb/hr	9.28E-04 tpy	1.80E+00 lb/MMscf	2.22E-04 lb/hr
Methanol						
Methylene Chloride						
Methylnaphthalene (2-)		2.40E-05 lb/MMscf	2.82E-09 lb/hr	1.24E-08 tpy	2.40E-05 lb/MMscf	2.96E-09 lb/hr
Naphthalene		6.10E-04 lb/MMscf	7.18E-08 lb/hr	3.14E-07 tpy	6.10E-04 lb/MMscf	7.54E-08 lb/hr
PAH						
Phenol						
Propylene Oxide						
Styrene						
Tetrachloroethane (1,1,2,2-)						
Toluene		3.40E-03 lb/MMscf	4.00E-07 lb/hr	1.75E-06 tpy	3.40E-03 lb/MMscf	4.20E-07 lb/hr
Trichloroethane (1,1,2-)						
Trimethylpentane (2,2,4-)						
Vinyl Chloride						
Xylenes						

NOTES

1. Fuel higher heating value selected to correspond to AP-42 emissions factors.
2. Maximum hourly emissions based on 105% of rated capacity.
3. Vendor provided data on: heat output and heat input.
4. CO2 and N2O emission factors based on 40 CFR 98, Subpart C, Table C-1 and 40 CFR 98, Subpart C, Table C-2, respectively.
5. NOX, CO and TOC (Total) emission factors based on AP-42, Section 1.4 (Revised 3/98), Table 1.4-1 : Residential Furnace (< 0.3 MMBTU/hr) - Uncontrolled.
6. SO2 emission factors based on AP-42, Section 1.4 (Revised 3/98), Table 1.4-2 using Tariff (5 gr/100 scf).
7. PM10/2.5 emission factors based on AP-42, Section 1.4 (Revised 3/98), Table 1.4-2.
8. Remaining TOC specie emission factors based on AP-42, Section 1.4 (Revised 3/98), Table 1.4-3.

TABLE D-1C
Natural Gas Combustion
Hourly and Annual Emission Estimates
Uncontrolled

Application		HVAC				
Combustion Process		Conventional				
Add-on Controls		None				
Package (Make: Model)		Carrier: 58SC2-120				
Burner (Make: Model)		Unknown: Unknown				
Fuel		Natural Gas				
Fuel Higher Heating Value (HHV)		1,020 BTU/scf			1,020 BTU/scf	
Heat Output at HHV		0.112 MMBTU/hr			0.118 MMBTU/hr	
Thermal Efficiency		93%			93%	
Operating Hours		8,760 hrs/yr				
Fuel Consumption		118 scfh			124 scfh	
		1.031 MMscf/yr				
Heat Input at HHV		0.120 MMBTU/hr			0.126 MMBTU/hr	
		1,051 MMBTU/yr	Uncontrolled			Uncontrolled
Pollutant	Control Efficiency	Uncontrolled	Average Hourly	Maximum Annual	Uncontrolled	Maximum Hourly
NO_X		94.00 lb/MMscf	0.0111 lb/hr	0.0484 tpy	94.00 lb/MMscf	0.0116 lb/hr
CO		40.00 lb/MMscf	0.0047 lb/hr	0.0206 tpy	40.00 lb/MMscf	0.0049 lb/hr
SO_2		14.29 lb/MMscf	0.0017 lb/hr	0.0074 tpy	14.29 lb/MMscf	0.0018 lb/hr
$PM_{10/2.5}$		7.60 lb/MMscf	0.0009 lb/hr	0.0039 tpy	7.60 lb/MMscf	0.0009 lb/hr
CO_{2-e}		120,141.79 lb/MMscf	14.1343 lb/hr	61.9084 tpy	120,141.79 lb/MMscf	14.8410 lb/hr
CO_2		120,017.45 lb/MMscf	14.1197 lb/hr	61.8443 tpy	120,017.45 lb/MMscf	14.8257 lb/hr
N_2O		0.23 lb/MMscf	0.0000 lb/hr	0.0001 tpy	0.23 lb/MMscf	0.0000 lb/hr
TOC (Total)		13.58 lb/MMscf	0.0016 lb/hr	0.0070 tpy	13.58 lb/MMscf	0.0017 lb/hr
Methane		2.30 lb/MMscf	0.0003 lb/hr	0.0012 tpy	2.30 lb/MMscf	0.0003 lb/hr
Ethane		3.10 lb/MMscf	0.0004 lb/hr	0.0016 tpy	3.10 lb/MMscf	0.0004 lb/hr
VOC (Total)		8.18 lb/MMscf	0.0010 lb/hr	0.0042 tpy	8.18 lb/MMscf	0.0010 lb/hr
VOC (non-HAP)		6.30 lb/MMscf	0.0007 lb/hr	0.0032 tpy	6.30 lb/MMscf	0.0008 lb/hr
HAP (Total)		1.88 lb/MMscf	0.0002 lb/hr	0.0010 tpy	1.88 lb/MMscf	0.0002 lb/hr
Acetaldehyde						
Acrolein						
Benzene		2.10E-03 lb/MMscf	2.47E-07 lb/hr	1.08E-06 tpy	2.10E-03 lb/MMscf	2.59E-07 lb/hr
Biphenyl						
Butadiene (1,3-)						
Carbon Tetrachloride						
Chlorobenzene						
Chloroform						
Dichloropropene (1,3-)						
Ethylbenzene						
Ethylene Dibromide						
Formaldehyde		7.50E-02 lb/MMscf	8.82E-06 lb/hr	3.86E-05 tpy	7.50E-02 lb/MMscf	9.26E-06 lb/hr
Hexane (n-)		1.80E+00 lb/MMscf	2.12E-04 lb/hr	9.28E-04 tpy	1.80E+00 lb/MMscf	2.22E-04 lb/hr
Methanol						
Methylene Chloride						
Methylnaphthalene (2-)		2.40E-05 lb/MMscf	2.82E-09 lb/hr	1.24E-08 tpy	2.40E-05 lb/MMscf	2.96E-09 lb/hr
Naphthalene		6.10E-04 lb/MMscf	7.18E-08 lb/hr	3.14E-07 tpy	6.10E-04 lb/MMscf	7.54E-08 lb/hr
PAH						
Phenol						
Propylene Oxide						
Styrene						
Tetrachloroethane (1,1,2,2-)						
Toluene		3.40E-03 lb/MMscf	4.00E-07 lb/hr	1.75E-06 tpy	3.40E-03 lb/MMscf	4.20E-07 lb/hr
Trichloroethane (1,1,2-)						
Trimethylpentane (2,2,4-)						
Vinyl Chloride						
Xylenes						

NOTES

1. Fuel higher heating value selected to correspond to AP-42 emissions factors.
2. Maximum hourly emissions based on 105% of rated capacity.
3. Vendor provided data on: heat output and heat input.
4. CO2 and N2O emission factors based on 40 CFR 98, Subpart C, Table C-1 and 40 CFR 98, Subpart C, Table C-2, respectively.
5. NOX, CO and TOC (Total) emission factors based on AP-42, Section 1.4 (Revised 3/98), Table 1.4-1 : Residential Furnace (< 0.3 MMBTU/hr) - Uncontrolled.
6. SO2 emission factors based on AP-42, Section 1.4 (Revised 3/98), Table 1.4-2 using Tariff (5 gr/100 scf).
7. PM10/2.5 emission factors based on AP-42, Section 1.4 (Revised 3/98), Table 1.4-2.
8. Remaining TOC specie emission factors based on AP-42, Section 1.4 (Revised 3/98), Table 1.4-3.

TABLE D-1D
Natural Gas Combustion
Hourly and Annual Emission Estimates
Uncontrolled

Application		Space Heater				
Combustion Process		Conventional				
Add-on Controls		None				
Package (Make: Model)		Peerless: LUH-150				
Burner (Make: Model)		Unknown: Unknown				
Fuel		Natural Gas				
Fuel Higher Heating Value (HHV)		1,020 BTU/scf			1,020 BTU/scf	
Heat Output at HHV		0.120 MMBTU/hr			0.126 MMBTU/hr	
Thermal Efficiency		80%			80%	
Operating Hours		8,760 hrs/yr				
Fuel Consumption		147 scfh			154 scfh	
		1.288 MMscf/yr				
Heat Input at HHV		0.150 MMBTU/hr			0.158 MMBTU/hr	
		1,314 MMBTU/yr	Uncontrolled			Uncontrolled
Pollutant	Control Efficiency	Uncontrolled	Average Hourly	Maximum Annual	Uncontrolled	Maximum Hourly
NO_X		94.00 lb/MMscf	0.0138 lb/hr	0.0605 tpy	94.00 lb/MMscf	0.0145 lb/hr
CO		40.00 lb/MMscf	0.0059 lb/hr	0.0258 tpy	40.00 lb/MMscf	0.0062 lb/hr
SO_2		14.29 lb/MMscf	0.0021 lb/hr	0.0092 tpy	14.29 lb/MMscf	0.0022 lb/hr
$PM_{10/2.5}$		7.60 lb/MMscf	0.0011 lb/hr	0.0049 tpy	7.60 lb/MMscf	0.0012 lb/hr
CO_{2-e}		120,141.79 lb/MMscf	17.6679 lb/hr	77.3855 tpy	120,141.79 lb/MMscf	18.5513 lb/hr
CO_2		120,017.45 lb/MMscf	17.6496 lb/hr	77.3054 tpy	120,017.45 lb/MMscf	18.5321 lb/hr
N_2O		0.23 lb/MMscf	0.0000 lb/hr	0.0001 tpy	0.23 lb/MMscf	0.0000 lb/hr
TOC (Total)		13.58 lb/MMscf	0.0020 lb/hr	0.0087 tpy	13.58 lb/MMscf	0.0021 lb/hr
Methane		2.30 lb/MMscf	0.0003 lb/hr	0.0015 tpy	2.30 lb/MMscf	0.0004 lb/hr
Ethane		3.10 lb/MMscf	0.0005 lb/hr	0.0020 tpy	3.10 lb/MMscf	0.0005 lb/hr
VOC (Total)		8.18 lb/MMscf	0.0012 lb/hr	0.0053 tpy	8.18 lb/MMscf	0.0013 lb/hr
VOC (non-HAP)		6.30 lb/MMscf	0.0009 lb/hr	0.0041 tpy	6.30 lb/MMscf	0.0010 lb/hr
HAP (Total)		1.88 lb/MMscf	0.0003 lb/hr	0.0012 tpy	1.88 lb/MMscf	0.0003 lb/hr
Acetaldehyde						
Acrolein						
Benzene		2.10E-03 lb/MMscf	3.09E-07 lb/hr	1.35E-06 tpy	2.10E-03 lb/MMscf	3.24E-07 lb/hr
Biphenyl						
Butadiene (1,3-)						
Carbon Tetrachloride						
Chlorobenzene						
Chloroform						
Dichloropropene (1,3-)						
Ethylbenzene						
Ethylene Dibromide						
Formaldehyde		7.50E-02 lb/MMscf	1.10E-05 lb/hr	4.83E-05 tpy	7.50E-02 lb/MMscf	1.16E-05 lb/hr
Hexane (n-)		1.80E+00 lb/MMscf	2.65E-04 lb/hr	1.16E-03 tpy	1.80E+00 lb/MMscf	2.78E-04 lb/hr
Methanol						
Methylene Chloride						
Methylnaphthalene (2-)		2.40E-05 lb/MMscf	3.53E-09 lb/hr	1.55E-08 tpy	2.40E-05 lb/MMscf	3.71E-09 lb/hr
Naphthalene		6.10E-04 lb/MMscf	8.97E-08 lb/hr	3.93E-07 tpy	6.10E-04 lb/MMscf	9.42E-08 lb/hr
PAH						
Phenol						
Propylene Oxide						
Styrene						
Tetrachloroethane (1,1,2,2-)						
Toluene		3.40E-03 lb/MMscf	5.00E-07 lb/hr	2.19E-06 tpy	3.40E-03 lb/MMscf	5.25E-07 lb/hr
Trichloroethane (1,1,2-)						
Trimethylpentane (2,2,4-)						
Vinyl Chloride						
Xylenes						

NOTES

1. Fuel higher heating value selected to correspond to AP-42 emissions factors.
2. Maximum hourly emissions based on 105% of rated capacity.
3. Vendor provided data on: heat output and heat input.
4. CO2 and N2O emission factors based on 40 CFR 98, Subpart C, Table C-1 and 40 CFR 98, Subpart C, Table C-2, respectively.
5. NOX, CO and TOC (Total) emission factors based on AP-42, Section 1.4 (Revised 3/98), Table 1.4-1 : Residential Furnace (< 0.3 MMBTU/hr) - Uncontrolled.
6. SO2 emission factors based on AP-42, Section 1.4 (Revised 3/98), Table 1.4-2 using Tariff (5 gr/100 scf).
7. PM10/2.5 emission factors based on AP-42, Section 1.4 (Revised 3/98), Table 1.4-2.
7. Remaining TOC specie emission factors based on AP-42, Section 1.4 (Revised 3/98), Table 1.4-3.

TABLE D-1E
Natural Gas Combustion
Hourly and Annual Emission Estimates
Uncontrolled

Application		Space Heater				
Combustion Process		Conventional				
Add-on Controls		None				
Package (Make: Model)		Dayton: 3E372D				
Burner (Make: Model)		Unknown: Unknown				
Fuel		Natural Gas				
Fuel Higher Heating Value (HHV)		1,020 BTU/scf			1,020 BTU/scf	
Heat Output at HHV		0.140 MMBTU/hr			0.147 MMBTU/hr	
Thermal Efficiency		80%			80%	
Operating Hours		8,760 hrs/yr				
Fuel Consumption		172 scfh			180 scfh	
		1.503 MMscf/yr				
Heat Input at HHV		0.175 MMBTU/hr			0.184 MMBTU/hr	
		1,533 MMBTU/yr	Uncontrolled			Uncontrolled
Pollutant	Control Efficiency	Uncontrolled	Average Hourly	Maximum Annual	Uncontrolled	Maximum Hourly
NO_X		94.00 lb/MMscf	0.0161 lb/hr	0.0706 tpy	94.00 lb/MMscf	0.0169 lb/hr
CO		40.00 lb/MMscf	0.0069 lb/hr	0.0301 tpy	40.00 lb/MMscf	0.0072 lb/hr
SO_2		14.29 lb/MMscf	0.0025 lb/hr	0.0107 tpy	14.29 lb/MMscf	0.0026 lb/hr
$PM_{10/2.5}$		7.60 lb/MMscf	0.0013 lb/hr	0.0057 tpy	7.60 lb/MMscf	0.0014 lb/hr
CO_{2-e}		120,141.79 lb/MMscf	20.6126 lb/hr	90.2830 tpy	120,141.79 lb/MMscf	21.6432 lb/hr
CO_2		120,017.45 lb/MMscf	20.5912 lb/hr	90.1896 tpy	120,017.45 lb/MMscf	21.6208 lb/hr
N_2O		0.23 lb/MMscf	0.0000 lb/hr	0.0002 tpy	0.23 lb/MMscf	0.0000 lb/hr
TOC (Total)		13.58 lb/MMscf	0.0023 lb/hr	0.0102 tpy	13.58 lb/MMscf	0.0024 lb/hr
Methane		2.30 lb/MMscf	0.0004 lb/hr	0.0017 tpy	2.30 lb/MMscf	0.0004 lb/hr
Ethane		3.10 lb/MMscf	0.0005 lb/hr	0.0023 tpy	3.10 lb/MMscf	0.0006 lb/hr
VOC (Total)		8.18 lb/MMscf	0.0014 lb/hr	0.0061 tpy	8.18 lb/MMscf	0.0015 lb/hr
VOC (non-HAP)		6.30 lb/MMscf	0.0011 lb/hr	0.0047 tpy	6.30 lb/MMscf	0.0011 lb/hr
HAP (Total)		1.88 lb/MMscf	0.0003 lb/hr	0.0014 tpy	1.88 lb/MMscf	0.0003 lb/hr
Acetaldehyde						
Acrolein						
Benzene		2.10E-03 lb/MMscf	3.60E-07 lb/hr	1.58E-06 tpy	2.10E-03 lb/MMscf	3.78E-07 lb/hr
Biphenyl						
Butadiene (1,3-)						
Carbon Tetrachloride						
Chlorobenzene						
Chloroform						
Dichloropropene (1,3-)						
Ethylbenzene						
Ethylene Dibromide						
Formaldehyde		7.50E-02 lb/MMscf	1.29E-05 lb/hr	5.64E-05 tpy	7.50E-02 lb/MMscf	1.35E-05 lb/hr
Hexane (n-)		1.80E+00 lb/MMscf	3.09E-04 lb/hr	1.35E-03 tpy	1.80E+00 lb/MMscf	3.24E-04 lb/hr
Methanol						
Methylene Chloride						
Methylnaphthalene (2-)		2.40E-05 lb/MMscf	4.12E-09 lb/hr	1.80E-08 tpy	2.40E-05 lb/MMscf	4.32E-09 lb/hr
Naphthalene		6.10E-04 lb/MMscf	1.05E-07 lb/hr	4.58E-07 tpy	6.10E-04 lb/MMscf	1.10E-07 lb/hr
PAH						
Phenol						
Propylene Oxide						
Styrene						
Tetrachloroethane (1,1,2,2-)						
Toluene		3.40E-03 lb/MMscf	5.83E-07 lb/hr	2.56E-06 tpy	3.40E-03 lb/MMscf	6.13E-07 lb/hr
Trichloroethane (1,1,2-)						
Trimethylpentane (2,2,4-)						
Vinyl Chloride						
Xylenes						

NOTES

1. Fuel higher heating value selected to correspond to AP-42 emissions factors.
2. Maximum hourly emissions based on 105% of rated capacity.
3. Vendor provided data on: heat output and heat input.
4. CO2 and N2O emission factors based on 40 CFR 98, Subpart C, Table C-1 and 40 CFR 98, Subpart C, Table C-2, respectively.
5. NOX, CO and TOC (Total) emission factors based on AP-42, Section 1.4 (Revised 3/98), Table 1.4-1 : Residential Furnace (< 0.3 MMBTU/hr) - Uncontrolled.
6. SO2 emission factors based on AP-42, Section 1.4 (Revised 3/98), Table 1.4-2 using Tariff (5 gr/100 scf).
7. PM10/2.5 emission factors based on AP-42, Section 1.4 (Revised 3/98), Table 1.4-2.
7. Remaining TOC specie emission factors based on AP-42, Section 1.4 (Revised 3/98), Table 1.4-3.

TABLE D-1F
Natural Gas Combustion
Hourly and Annual Emission Estimates
Uncontrolled

Application		Space Heater				
Combustion Process		Conventional				
Add-on Controls		None				
Package (Make: Model)		Unknown: Unknown				
Burner (Make: Model)		Unknown: Unknown				
Fuel		Natural Gas				
Fuel Higher Heating Value (HHV)		1,020 BTU/scf			1,020 BTU/scf	
Heat Output at HHV		0.080 MMBTU/hr			0.084 MMBTU/hr	
Thermal Efficiency		80%			80%	
Operating Hours		8,760 hrs/yr				
Fuel Consumption		98 scfh			103 scfh	
		0.859 MMscf/yr				
Heat Input at HHV		0.100 MMBTU/hr			0.105 MMBTU/hr	
		876 MMBTU/yr	Uncontrolled			Uncontrolled
Pollutant	Control Efficiency	Uncontrolled	Average Hourly	Maximum Annual	Uncontrolled	Maximum Hourly
NO_X		94.00 lb/MMscf	0.0092 lb/hr	0.0404 tpy	94.00 lb/MMscf	0.0097 lb/hr
CO		40.00 lb/MMscf	0.0039 lb/hr	0.0172 tpy	40.00 lb/MMscf	0.0041 lb/hr
SO_2		14.29 lb/MMscf	0.0014 lb/hr	0.0061 tpy	14.29 lb/MMscf	0.0015 lb/hr
$PM_{10/2.5}$		7.60 lb/MMscf	0.0007 lb/hr	0.0033 tpy	7.60 lb/MMscf	0.0008 lb/hr
CO_{2-e}		120,141.79 lb/MMscf	11.7786 lb/hr	51.5903 tpy	120,141.79 lb/MMscf	12.3675 lb/hr
CO_2		120,017.45 lb/MMscf	11.7664 lb/hr	51.5369 tpy	120,017.45 lb/MMscf	12.3547 lb/hr
N_2O		0.23 lb/MMscf	0.0000 lb/hr	0.0001 tpy	0.23 lb/MMscf	0.0000 lb/hr
TOC (Total)		13.58 lb/MMscf	0.0013 lb/hr	0.0058 tpy	13.58 lb/MMscf	0.0014 lb/hr
Methane		2.30 lb/MMscf	0.0002 lb/hr	0.0010 tpy	2.30 lb/MMscf	0.0002 lb/hr
Ethane		3.10 lb/MMscf	0.0003 lb/hr	0.0013 tpy	3.10 lb/MMscf	0.0003 lb/hr
VOC (Total)		8.18 lb/MMscf	0.0008 lb/hr	0.0035 tpy	8.18 lb/MMscf	0.0008 lb/hr
VOC (non-HAP)		6.30 lb/MMscf	0.0006 lb/hr	0.0027 tpy	6.30 lb/MMscf	0.0006 lb/hr
HAP (Total)		1.88 lb/MMscf	0.0002 lb/hr	0.0008 tpy	1.88 lb/MMscf	0.0002 lb/hr
Acetaldehyde						
Acrolein						
Benzene		2.10E-03 lb/MMscf	2.06E-07 lb/hr	9.02E-07 tpy	2.10E-03 lb/MMscf	2.16E-07 lb/hr
Biphenyl						
Butadiene (1,3-)						
Carbon Tetrachloride						
Chlorobenzene						
Chloroform						
Dichloropropene (1,3-)						
Ethylbenzene						
Ethylene Dibromide						
Formaldehyde		7.50E-02 lb/MMscf	7.35E-06 lb/hr	3.22E-05 tpy	7.50E-02 lb/MMscf	7.72E-06 lb/hr
Hexane (n-)		1.80E+00 lb/MMscf	1.76E-04 lb/hr	7.73E-04 tpy	1.80E+00 lb/MMscf	1.85E-04 lb/hr
Methanol						
Methylene Chloride						
Methylnaphthalene (2-)		2.40E-05 lb/MMscf	2.35E-09 lb/hr	1.03E-08 tpy	2.40E-05 lb/MMscf	2.47E-09 lb/hr
Naphthalene		6.10E-04 lb/MMscf	5.98E-08 lb/hr	2.62E-07 tpy	6.10E-04 lb/MMscf	6.28E-08 lb/hr
PAH						
Phenol						
Propylene Oxide						
Styrene						
Tetrachloroethane (1,1,2,2-)						
Toluene		3.40E-03 lb/MMscf	3.33E-07 lb/hr	1.46E-06 tpy	3.40E-03 lb/MMscf	3.50E-07 lb/hr
Trichloroethane (1,1,2-)						
Trimethylpentane (2,2,4-)						
Vinyl Chloride						
Xylenes						

NOTES

1. Fuel higher heating value selected to correspond to AP-42 emissions factors.
2. Maximum hourly emissions based on 105% of rated capacity.
3. Vendor provided data on: heat output and heat input.
4. CO2 and N2O emission factors based on 40 CFR 98, Subpart C, Table C-1 and 40 CFR 98, Subpart C, Table C-2, respectively.
5. NOX, CO and TOC (Total) emission factors based on AP-42, Section 1.4 (Revised 3/98), Table 1.4-1 : Residential Furnace (< 0.3 MMBTU/hr) - Uncontrolled.
6. SO2 emission factors based on AP-42, Section 1.4 (Revised 3/98), Table 1.4-2 using Tariff (5 gr/100 scf).
7. PM10/2.5 emission factors based on AP-42, Section 1.4 (Revised 3/98), Table 1.4-2.
7. Remaining TOC specie emission factors based on AP-42, Section 1.4 (Revised 3/98), Table 1.4-3.

TABLE D-1G
Natural Gas Combustion
Hourly and Annual Emission Estimates
Uncontrolled

Application		Space Heater				
Combustion Process		Conventional				
Add-on Controls		None				
Package (Make: Model)		Lennox: LF3-137				
Burner (Make: Model)		Unknown: Unknown				
Fuel		Natural Gas				
Fuel Higher Heating Value (HHV)		1,020 BTU/scf			1,020 BTU/scf	
Heat Output at HHV		0.110 MMBTU/hr			0.115 MMBTU/hr	
Thermal Efficiency		80%			80%	
Operating Hours		8,760 hrs/yr				
Fuel Consumption		134 scfh			141 scfh	
		1.177 MMscf/yr				
Heat Input at HHV		0.137 MMBTU/hr			0.144 MMBTU/hr	
		1,200 MMBTU/yr	Uncontrolled			Uncontrolled
Pollutant	Control Efficiency	Uncontrolled	Average Hourly	Maximum Annual	Uncontrolled	Maximum Hourly
NO_X		94.00 lb/MMscf	0.0126 lb/hr	0.0553 tpy	94.00 lb/MMscf	0.0133 lb/hr
CO		40.00 lb/MMscf	0.0054 lb/hr	0.0235 tpy	40.00 lb/MMscf	0.0056 lb/hr
SO_2		14.29 lb/MMscf	0.0019 lb/hr	0.0084 tpy	14.29 lb/MMscf	0.0020 lb/hr
$PM_{10/2.5}$		7.60 lb/MMscf	0.0010 lb/hr	0.0045 tpy	7.60 lb/MMscf	0.0011 lb/hr
CO_{2-e}		120,141.79 lb/MMscf	16.1367 lb/hr	70.6787 tpy	120,141.79 lb/MMscf	16.9435 lb/hr
CO_2		120,017.45 lb/MMscf	16.1200 lb/hr	70.6056 tpy	120,017.45 lb/MMscf	16.9260 lb/hr
N_2O		0.23 lb/MMscf	0.0000 lb/hr	0.0001 tpy	0.23 lb/MMscf	0.0000 lb/hr
TOC (Total)		13.58 lb/MMscf	0.0018 lb/hr	0.0080 tpy	13.58 lb/MMscf	0.0019 lb/hr
Methane		2.30 lb/MMscf	0.0003 lb/hr	0.0014 tpy	2.30 lb/MMscf	0.0003 lb/hr
Ethane		3.10 lb/MMscf	0.0004 lb/hr	0.0018 tpy	3.10 lb/MMscf	0.0004 lb/hr
VOC (Total)		8.18 lb/MMscf	0.0011 lb/hr	0.0048 tpy	8.18 lb/MMscf	0.0012 lb/hr
VOC (non-HAP)		6.30 lb/MMscf	0.0008 lb/hr	0.0037 tpy	6.30 lb/MMscf	0.0009 lb/hr
HAP (Total)		1.88 lb/MMscf	0.0003 lb/hr	0.0011 tpy	1.88 lb/MMscf	0.0003 lb/hr
Acetaldehyde						
Acrolein						
Benzene		2.10E-03 lb/MMscf	2.82E-07 lb/hr	1.24E-06 tpy	2.10E-03 lb/MMscf	2.96E-07 lb/hr
Biphenyl						
Butadiene (1,3-)						
Carbon Tetrachloride						
Chlorobenzene						
Chloroform						
Dichloropropene (1,3-)						
Ethylbenzene						
Ethylene Dibromide						
Formaldehyde		7.50E-02 lb/MMscf	1.01E-05 lb/hr	4.41E-05 tpy	7.50E-02 lb/MMscf	1.06E-05 lb/hr
Hexane (n-)		1.80E+00 lb/MMscf	2.42E-04 lb/hr	1.06E-03 tpy	1.80E+00 lb/MMscf	2.54E-04 lb/hr
Methanol						
Methylene Chloride						
Methylnaphthalene (2-)		2.40E-05 lb/MMscf	3.22E-09 lb/hr	1.41E-08 tpy	2.40E-05 lb/MMscf	3.38E-09 lb/hr
Naphthalene		6.10E-04 lb/MMscf	8.19E-08 lb/hr	3.59E-07 tpy	6.10E-04 lb/MMscf	8.60E-08 lb/hr
PAH						
Phenol						
Propylene Oxide						
Styrene						
Tetrachloroethane (1,1,2,2-)						
Toluene		3.40E-03 lb/MMscf	4.57E-07 lb/hr	2.00E-06 tpy	3.40E-03 lb/MMscf	4.80E-07 lb/hr
Trichloroethane (1,1,2-)						
Trimethylpentane (2,2,4-)						
Vinyl Chloride						
Xylenes						

NOTES

1. Fuel higher heating value selected to correspond to AP-42 emissions factors.
2. Maximum hourly emissions based on 105% of rated capacity.
3. Vendor provided data on: heat output and heat input.
4. CO2 and N2O emission factors based on 40 CFR 98, Subpart C, Table C-1 and 40 CFR 98, Subpart C, Table C-2, respectively.
5. NOX, CO and TOC (Total) emission factors based on AP-42, Section 1.4 (Revised 3/98), Table 1.4-1 : Residential Furnace (< 0.3 MMBTU/hr) - Uncontrolled.
6. SO2 emission factors based on AP-42, Section 1.4 (Revised 3/98), Table 1.4-2 using Tariff (5 gr/100 scf).
7. PM10/2.5 emission factors based on AP-42, Section 1.4 (Revised 3/98), Table 1.4-2.
7. Remaining TOC specie emission factors based on AP-42, Section 1.4 (Revised 3/98), Table 1.4-3.

TABLE D-1H
Natural Gas Combustion
Hourly and Annual Emission Estimates
Uncontrolled

Application		Space Heater				
Combustion Process		Conventional				
Add-on Controls		None				
Package (Make: Model)		Reznor: UDAP-030				
Burner (Make: Model)		Unknown: Unknown				
Fuel		Natural Gas				
Fuel Higher Heating Value (HHV)		1,020 BTU/scf			1,020 BTU/scf	
Heat Output at HHV		0.025 MMBTU/hr			0.026 MMBTU/hr	
Thermal Efficiency		82%			82%	
Operating Hours		8,760 hrs/yr				
Fuel Consumption		29 scfh			31 scfh	
		0.258 MMscf/yr				
Heat Input at HHV		0.030 MMBTU/hr			0.032 MMBTU/hr	
		263 MMBTU/yr	Uncontrolled			Uncontrolled
Pollutant	Control Efficiency	Uncontrolled	Average Hourly	Maximum Annual	Uncontrolled	Maximum Hourly
NO_X		94.00 lb/MMscf	0.0028 lb/hr	0.0121 tpy	94.00 lb/MMscf	0.0029 lb/hr
CO		40.00 lb/MMscf	0.0012 lb/hr	0.0052 tpy	40.00 lb/MMscf	0.0012 lb/hr
SO_2		14.29 lb/MMscf	0.0004 lb/hr	0.0018 tpy	14.29 lb/MMscf	0.0004 lb/hr
$PM_{10/2.5}$		7.60 lb/MMscf	0.0002 lb/hr	0.0010 tpy	7.60 lb/MMscf	0.0002 lb/hr
CO_{2-e}		120,141.79 lb/MMscf	3.5336 lb/hr	15.4771 tpy	120,141.79 lb/MMscf	3.7103 lb/hr
CO_2		120,017.45 lb/MMscf	3.5299 lb/hr	15.4611 tpy	120,017.45 lb/MMscf	3.7064 lb/hr
N_2O		0.23 lb/MMscf	0.0000 lb/hr	0.0000 tpy	0.23 lb/MMscf	0.0000 lb/hr
TOC (Total)		13.58 lb/MMscf	0.0004 lb/hr	0.0017 tpy	13.58 lb/MMscf	0.0004 lb/hr
Methane		2.30 lb/MMscf	0.0001 lb/hr	0.0003 tpy	2.30 lb/MMscf	0.0001 lb/hr
Ethane		3.10 lb/MMscf	0.0001 lb/hr	0.0004 tpy	3.10 lb/MMscf	0.0001 lb/hr
VOC (Total)		8.18 lb/MMscf	0.0002 lb/hr	0.0011 tpy	8.18 lb/MMscf	0.0003 lb/hr
VOC (non-HAP)		6.30 lb/MMscf	0.0002 lb/hr	0.0008 tpy	6.30 lb/MMscf	0.0002 lb/hr
HAP (Total)		1.88 lb/MMscf	0.0001 lb/hr	0.0002 tpy	1.88 lb/MMscf	0.0001 lb/hr
Acetaldehyde						
Acrolein						
Benzene		2.10E-03 lb/MMscf	6.18E-08 lb/hr	2.71E-07 tpy	2.10E-03 lb/MMscf	6.49E-08 lb/hr
Biphenyl						
Butadiene (1,3-)						
Carbon Tetrachloride						
Chlorobenzene						
Chloroform						
Dichloropropene (1,3-)						
Ethylbenzene						
Ethylene Dibromide						
Formaldehyde		7.50E-02 lb/MMscf	2.21E-06 lb/hr	9.66E-06 tpy	7.50E-02 lb/MMscf	2.32E-06 lb/hr
Hexane (n-)		1.80E+00 lb/MMscf	5.29E-05 lb/hr	2.32E-04 tpy	1.80E+00 lb/MMscf	5.56E-05 lb/hr
Methanol						
Methylene Chloride						
Methylnaphthalene (2-)		2.40E-05 lb/MMscf	7.06E-10 lb/hr	3.09E-09 tpy	2.40E-05 lb/MMscf	7.41E-10 lb/hr
Naphthalene		6.10E-04 lb/MMscf	1.79E-08 lb/hr	7.86E-08 tpy	6.10E-04 lb/MMscf	1.88E-08 lb/hr
PAH						
Phenol						
Propylene Oxide						
Styrene						
Tetrachloroethane (1,1,2,2-)						
Toluene		3.40E-03 lb/MMscf	1.00E-07 lb/hr	4.38E-07 tpy	3.40E-03 lb/MMscf	1.05E-07 lb/hr
Trichloroethane (1,1,2-)						
Trimethylpentane (2,2,4-)						
Vinyl Chloride						
Xylenes						

NOTES

1. Fuel higher heating value selected to correspond to AP-42 emissions factors.
2. Maximum hourly emissions based on 105% of rated capacity.
3. Vendor provided data on: heat output and heat input.
4. CO2 and N2O emission factors based on 40 CFR 98, Subpart C, Table C-1 and 40 CFR 98, Subpart C, Table C-2, respectively.
5. NOX, CO and TOC (Total) emission factors based on AP-42, Section 1.4 (Revised 3/98), Table 1.4-1 : Residential Furnace (< 0.3 MMBTU/hr) - Uncontrolled.
6. SO2 emission factors based on AP-42, Section 1.4 (Revised 3/98), Table 1.4-2 using Tariff (5 gr/100 scf).
7. PM10/2.5 emission factors based on AP-42, Section 1.4 (Revised 3/98), Table 1.4-2.
7. Remaining TOC specie emission factors based on AP-42, Section 1.4 (Revised 3/98), Table 1.4-3.

TABLE D-1I
Natural Gas Combustion
Hourly and Annual Emission Estimates
Uncontrolled

Application		Space Heater				
Combustion Process		Conventional				
Add-on Controls		None				
Package (Make: Model)		Modine: HD-125				
Burner (Make: Model)		Unknown: Unknown				
Fuel		Natural Gas				
Fuel Higher Heating Value (HHV)		1,020 BTU/scf			1,020 BTU/scf	
Heat Output at HHV		0.100 MMBTU/hr			0.105 MMBTU/hr	
Thermal Efficiency		80%			80%	
Operating Hours		8,760 hrs/yr				
Fuel Consumption		123 scfh			129 scfh	
		1.074 MMscf/yr				
Heat Input at HHV		0.125 MMBTU/hr			0.131 MMBTU/hr	
		1,095 MMBTU/yr	Uncontrolled			Uncontrolled
Pollutant	Control Efficiency	Uncontrolled	Average Hourly	Maximum Annual	Uncontrolled	Maximum Hourly
NO_X		94.00 lb/MMscf	0.0115 lb/hr	0.0505 tpy	94.00 lb/MMscf	0.0121 lb/hr
CO		40.00 lb/MMscf	0.0049 lb/hr	0.0215 tpy	40.00 lb/MMscf	0.0051 lb/hr
SO_2		14.29 lb/MMscf	0.0018 lb/hr	0.0077 tpy	14.29 lb/MMscf	0.0018 lb/hr
$PM_{10/2.5}$		7.60 lb/MMscf	0.0009 lb/hr	0.0041 tpy	7.60 lb/MMscf	0.0010 lb/hr
CO_{2-e}		120,141.79 lb/MMscf	14.7233 lb/hr	64.4879 tpy	120,141.79 lb/MMscf	15.4594 lb/hr
CO_2		120,017.45 lb/MMscf	14.7080 lb/hr	64.4211 tpy	120,017.45 lb/MMscf	15.4434 lb/hr
N_2O		0.23 lb/MMscf	0.0000 lb/hr	0.0001 tpy	0.23 lb/MMscf	0.0000 lb/hr
TOC (Total)		13.58 lb/MMscf	0.0017 lb/hr	0.0073 tpy	13.58 lb/MMscf	0.0017 lb/hr
Methane		2.30 lb/MMscf	0.0003 lb/hr	0.0012 tpy	2.30 lb/MMscf	0.0003 lb/hr
Ethane		3.10 lb/MMscf	0.0004 lb/hr	0.0017 tpy	3.10 lb/MMscf	0.0004 lb/hr
VOC (Total)		8.18 lb/MMscf	0.0010 lb/hr	0.0044 tpy	8.18 lb/MMscf	0.0011 lb/hr
VOC (non-HAP)		6.30 lb/MMscf	0.0008 lb/hr	0.0034 tpy	6.30 lb/MMscf	0.0008 lb/hr
HAP (Total)		1.88 lb/MMscf	0.0002 lb/hr	0.0010 tpy	1.88 lb/MMscf	0.0002 lb/hr
Acetaldehyde						
Acrolein						
Benzene		2.10E-03 lb/MMscf	2.57E-07 lb/hr	1.13E-06 tpy	2.10E-03 lb/MMscf	2.70E-07 lb/hr
Biphenyl						
Butadiene (1,3-)						
Carbon Tetrachloride						
Chlorobenzene						
Chloroform						
Dichloropropene (1,3-)						
Ethylbenzene						
Ethylene Dibromide						
Formaldehyde		7.50E-02 lb/MMscf	9.19E-06 lb/hr	4.03E-05 tpy	7.50E-02 lb/MMscf	9.65E-06 lb/hr
Hexane (n-)		1.80E+00 lb/MMscf	2.21E-04 lb/hr	9.66E-04 tpy	1.80E+00 lb/MMscf	2.32E-04 lb/hr
Methanol						
Methylene Chloride						
Methylnaphthalene (2-)		2.40E-05 lb/MMscf	2.94E-09 lb/hr	1.29E-08 tpy	2.40E-05 lb/MMscf	3.09E-09 lb/hr
Naphthalene		6.10E-04 lb/MMscf	7.48E-08 lb/hr	3.27E-07 tpy	6.10E-04 lb/MMscf	7.85E-08 lb/hr
PAH						
Phenol						
Propylene Oxide						
Styrene						
Tetrachloroethane (1,1,2,2-)						
Toluene		3.40E-03 lb/MMscf	4.17E-07 lb/hr	1.83E-06 tpy	3.40E-03 lb/MMscf	4.38E-07 lb/hr
Trichloroethane (1,1,2-)						
Trimethylpentane (2,2,4-)						
Vinyl Chloride						
Xylenes						

NOTES

1. Fuel higher heating value selected to correspond to AP-42 emissions factors.
2. Maximum hourly emissions based on 105% of rated capacity.
3. Vendor provided data on: heat output and heat input.
4. CO2 and N2O emission factors based on 40 CFR 98, Subpart C, Table C-1 and 40 CFR 98, Subpart C, Table C-2, respectively.
5. NOX, CO and TOC (Total) emission factors based on AP-42, Section 1.4 (Revised 3/98), Table 1.4-1 : Residential Furnace (< 0.3 MMBTU/hr) - Uncontrolled.
6. SO2 emission factors based on AP-42, Section 1.4 (Revised 3/98), Table 1.4-2 using Tariff (5 gr/100 scf).
7. PM10/2.5 emission factors based on AP-42, Section 1.4 (Revised 3/98), Table 1.4-2.
7. Remaining TOC specie emission factors based on AP-42, Section 1.4 (Revised 3/98), Table 1.4-3.

TABLE D-1J
Natural Gas Combustion
Hourly and Annual Emission Estimates
Uncontrolled

Application		Process Heater				
Combustion Process		Conventional				
Add-on Controls		None				
Package (Make: Model)		Bruest: SP02				
Burner (Make: Model)		Unknown: Unknown				
Fuel		Natural Gas				
Fuel Higher Heating Value (HHV)		1,020 BTU/scf			1,020 BTU/scf	
Heat Output at HHV		0.0042 MMBTU/hr			0.0044 MMBTU/hr	
Thermal Efficiency		70%			70%	
Operating Hours		8,760 hrs/yr				
Fuel Consumption		5.88 scfh			6.18 scfh	
		0.0515 MMscf/yr				
Heat Input at HHV		0.0060 MMBTU/hr			0.0063 MMBTU/hr	
		52.56 MMBTU/yr	Uncontrolled			Uncontrolled
Pollutant	Control Efficiency	Uncontrolled	Average Hourly	Maximum Annual	Uncontrolled	Maximum Hourly
NO_X		88.59 lb/MMscf	0.0005 lb/hr	0.0023 tpy	88.59 lb/MMscf	0.0005 lb/hr
CO		1,404.00 lb/MMscf	0.0083 lb/hr	0.0362 tpy	1,404.00 lb/MMscf	0.0087 lb/hr
SO_2		14.29 lb/MMscf	0.0001 lb/hr	0.0004 tpy	14.29 lb/MMscf	0.0001 lb/hr
$PM_{10/2.5}$		7.60 lb/MMscf	0.0000 lb/hr	0.0002 tpy	7.60 lb/MMscf	0.0000 lb/hr
CO_{2-e}		123,944.07 lb/MMscf	0.7291 lb/hr	3.1934 tpy	123,944.07 lb/MMscf	0.7655 lb/hr
CO_2		120,017.45 lb/MMscf	0.7060 lb/hr	3.0922 tpy	120,017.45 lb/MMscf	0.7413 lb/hr
N_2O		0.23 lb/MMscf	0.0000 lb/hr	0.0000 tpy	0.23 lb/MMscf	0.0000 lb/hr
TOC (Total)		815.51 lb/MMscf	0.0048 lb/hr	0.0210 tpy	815.51 lb/MMscf	0.0050 lb/hr
Methane		138.10 lb/MMscf	0.0008 lb/hr	0.0036 tpy	138.10 lb/MMscf	0.0009 lb/hr
Ethane		186.13 lb/MMscf	0.0011 lb/hr	0.0048 tpy	186.13 lb/MMscf	0.0011 lb/hr
VOC (Total)		491.28 lb/MMscf	0.0029 lb/hr	0.0127 tpy	491.28 lb/MMscf	0.0030 lb/hr
VOC (non-HAP)		378.26 lb/MMscf	0.0022 lb/hr	0.0097 tpy	378.26 lb/MMscf	0.0023 lb/hr
HAP (Total)		113.02 lb/MMscf	0.0007 lb/hr	0.0029 tpy	113.02 lb/MMscf	0.0007 lb/hr
Acetaldehyde						
Acrolein						
Benzene		1.26E-01 lb/MMscf	7.42E-07 lb/hr	3.25E-06 tpy	1.26E-01 lb/MMscf	7.79E-07 lb/hr
Biphenyl						
Butadiene (1,3-)						
Carbon Tetrachloride						
Chlorobenzene						
Chloroform						
Dichloropropene (1,3-)						
Ethylbenzene						
Ethylene Dibromide						
Formaldehyde		4.50E+00 lb/MMscf	2.65E-05 lb/hr	1.16E-04 tpy	4.50E+00 lb/MMscf	2.78E-05 lb/hr
Hexane (n-)		1.08E+02 lb/MMscf	6.36E-04 lb/hr	2.78E-03 tpy	1.08E+02 lb/MMscf	6.68E-04 lb/hr
Methanol						
Methylene Chloride						
Methylnaphthalene (2-)		1.44E-03 lb/MMscf	8.48E-09 lb/hr	3.71E-08 tpy	1.44E-03 lb/MMscf	8.90E-09 lb/hr
Naphthalene		3.66E-02 lb/MMscf	2.15E-07 lb/hr	9.44E-07 tpy	3.66E-02 lb/MMscf	2.26E-07 lb/hr
PAH						
Phenol						
Propylene Oxide						
Styrene						
Tetrachloroethane (1,1,2,2-)						
Toluene		2.04E-01 lb/MMscf	1.20E-06 lb/hr	5.26E-06 tpy	2.04E-01 lb/MMscf	1.26E-06 lb/hr
Trichloroethane (1,1,2-)						
Trimethylpentane (2,2,4-)						
Vinyl Chloride						
Xylenes						

NOTES

1. Fuel higher heating value selected to correspond to AP-42 emissions factors.
2. Maximum hourly emissions based on 105% of rated capacity.
3. Vendor provided data on: heat output and heat input.
4. CO2 and N2O emission factors based on 40 CFR 98, Subpart C, Table C-1 and 40 CFR 98, Subpart C, Table C-2, respectively.
5. NOX, CO and VOC (Total) emission factors based on Vendor Data for a similar unit from a different Vendor.
6. PM10/2.5 emission factor based on AP-42, Section 1.4 (Revised 3/98), Table 1.4-2.
7. SO2 emission factor based on AP-42, Section 1.4 (Revised 3/98), Table 1.4-2 using Tariff (5 gr/100 scf).
8. TOC (Total) and remaining TOC specie emission factors based on Scaling of AP-42 using vendor VOC data.
   $EF_i = (EF_{VOC}/EF_{VOC\text{-}AP42})\ (EF_{i\text{-}AP42})$

TABLE D-1K
Natural Gas Combustion
Hourly and Annual Emission Estimates
Uncontrolled

Application		Space Heater				
Combustion Process		Conventional				
Add-on Controls		None				
Package (Make: Model)		Whirlpool: N30				
Burner (Make: Model)		Unknown: Unknown				
Fuel		Natural Gas				
Fuel Higher Heating Value (HHV)		1,020 BTU/scf			1,020 BTU/scf	
Heat Output at HHV		0.017 MMBTU/hr			0.018 MMBTU/hr	
Thermal Efficiency		58%			58%	
Operating Hours		8,760 hrs/yr				
Fuel Consumption		29 scfh			31 scfh	
		0.258 MMscf/yr				
Heat Input at HHV		0.030 MMBTU/hr			0.032 MMBTU/hr	
		263 MMBTU/yr	Uncontrolled			Uncontrolled
Pollutant	Control Efficiency	Uncontrolled	Average Hourly	Maximum Annual	Uncontrolled	Maximum Hourly
NO_X		94.00 lb/MMscf	0.0028 lb/hr	0.0121 tpy	94.00 lb/MMscf	0.0029 lb/hr
CO		40.00 lb/MMscf	0.0012 lb/hr	0.0052 tpy	40.00 lb/MMscf	0.0012 lb/hr
SO_2		14.29 lb/MMscf	0.0004 lb/hr	0.0018 tpy	14.29 lb/MMscf	0.0004 lb/hr
$PM_{10/2.5}$		7.60 lb/MMscf	0.0002 lb/hr	0.0010 tpy	7.60 lb/MMscf	0.0002 lb/hr
CO_{2-e}		120,141.79 lb/MMscf	3.5336 lb/hr	15.4771 tpy	120,141.79 lb/MMscf	3.7103 lb/hr
CO_2		120,017.45 lb/MMscf	3.5299 lb/hr	15.4611 tpy	120,017.45 lb/MMscf	3.7064 lb/hr
N_2O		0.23 lb/MMscf	0.0000 lb/hr	0.0000 tpy	0.23 lb/MMscf	0.0000 lb/hr
TOC (Total)		13.58 lb/MMscf	0.0004 lb/hr	0.0017 tpy	13.58 lb/MMscf	0.0004 lb/hr
Methane		2.30 lb/MMscf	0.0001 lb/hr	0.0003 tpy	2.30 lb/MMscf	0.0001 lb/hr
Ethane		3.10 lb/MMscf	0.0001 lb/hr	0.0004 tpy	3.10 lb/MMscf	0.0001 lb/hr
VOC (Total)		8.18 lb/MMscf	0.0002 lb/hr	0.0011 tpy	8.18 lb/MMscf	0.0003 lb/hr
VOC (non-HAP)		6.30 lb/MMscf	0.0002 lb/hr	0.0008 tpy	6.30 lb/MMscf	0.0002 lb/hr
HAP (Total)		1.88 lb/MMscf	0.0001 lb/hr	0.0002 tpy	1.88 lb/MMscf	0.0001 lb/hr
Acetaldehyde						
Acrolein						
Benzene		2.10E-03 lb/MMscf	6.18E-08 lb/hr	2.71E-07 tpy	2.10E-03 lb/MMscf	6.49E-08 lb/hr
Biphenyl						
Butadiene (1,3-)						
Carbon Tetrachloride						
Chlorobenzene						
Chloroform						
Dichloropropene (1,3-)						
Ethylbenzene						
Ethylene Dibromide						
Formaldehyde		7.50E-02 lb/MMscf	2.21E-06 lb/hr	9.66E-06 tpy	7.50E-02 lb/MMscf	2.32E-06 lb/hr
Hexane (n-)		1.80E+00 lb/MMscf	5.29E-05 lb/hr	2.32E-04 tpy	1.80E+00 lb/MMscf	5.56E-05 lb/hr
Methanol						
Methylene Chloride						
Methylnaphthalene (2-)		2.40E-05 lb/MMscf	7.06E-10 lb/hr	3.09E-09 tpy	2.40E-05 lb/MMscf	7.41E-10 lb/hr
Naphthalene		6.10E-04 lb/MMscf	1.79E-08 lb/hr	7.86E-08 tpy	6.10E-04 lb/MMscf	1.88E-08 lb/hr
PAH						
Phenol						
Propylene Oxide						
Styrene						
Tetrachloroethane (1,1,2,2-)						
Toluene		3.40E-03 lb/MMscf	1.00E-07 lb/hr	4.38E-07 tpy	3.40E-03 lb/MMscf	1.05E-07 lb/hr
Trichloroethane (1,1,2-)						
Trimethylpentane (2,2,4-)						
Vinyl Chloride						
Xylenes						

NOTES

1. Fuel higher heating value selected to correspond to AP-42 emissions factors.
2. Maximum hourly emissions based on 105% of rated capacity.
3. Vendor provided data on: heat output and heat input.
4. CO2 and N2O emission factors based on 40 CFR 98, Subpart C, Table C-1 and 40 CFR 98, Subpart C, Table C-2, respectively.
5. NOX, CO and TOC (Total) emission factors based on AP-42, Section 1.4 (Revised 3/98), Table 1.4-1 : Residential Furnace (< 0.3 MMBTU/hr) - Uncontrolled.
6. SO2 emission factors based on AP-42, Section 1.4 (Revised 3/98), Table 1.4-2 using Tariff (5 gr/100 scf).
7. PM10/2.5 emission factors based on AP-42, Section 1.4 (Revised 3/98), Table 1.4-2.
7. Remaining TOC specie emission factors based on AP-42, Section 1.4 (Revised 3/98), Table 1.4-3.

TABLE D-1L
Natural Gas Combustion
Hourly and Annual Emission Estimates
Uncontrolled

Application		Space Heater				
Combustion Process		Conventional				
Add-on Controls		None				
Package (Make: Model)		A.O. Smith: GCV-40				
Burner (Make: Model)		Unknown: Unknown				
Fuel		Natural Gas				
Fuel Higher Heating Value (HHV)		1,020 BTU/scf			1,020 BTU/scf	
Heat Output at HHV		0.023 MMBTU/hr			0.024 MMBTU/hr	
Thermal Efficiency		58%			58%	
Operating Hours		8,760 hrs/yr				
Fuel Consumption		39 scfh			41 scfh	
		0.344 MMscf/yr				
Heat Input at HHV		0.040 MMBTU/hr			0.042 MMBTU/hr	
		350 MMBTU/yr	Uncontrolled			Uncontrolled
Pollutant	Control Efficiency	Uncontrolled	Average Hourly	Maximum Annual	Uncontrolled	Maximum Hourly
NO_X		94.00 lb/MMscf	0.0037 lb/hr	0.0161 tpy	94.00 lb/MMscf	0.0039 lb/hr
CO		40.00 lb/MMscf	0.0016 lb/hr	0.0069 tpy	40.00 lb/MMscf	0.0016 lb/hr
SO_2		14.29 lb/MMscf	0.0006 lb/hr	0.0025 tpy	14.29 lb/MMscf	0.0006 lb/hr
$PM_{10/2.5}$		7.60 lb/MMscf	0.0003 lb/hr	0.0013 tpy	7.60 lb/MMscf	0.0003 lb/hr
CO_{2-e}		120,141.79 lb/MMscf	4.7114 lb/hr	20.6361 tpy	120,141.79 lb/MMscf	4.9470 lb/hr
CO_2		120,017.45 lb/MMscf	4.7066 lb/hr	20.6148 tpy	120,017.45 lb/MMscf	4.9419 lb/hr
N_2O		0.23 lb/MMscf	0.0000 lb/hr	0.0000 tpy	0.23 lb/MMscf	0.0000 lb/hr
TOC (Total)		13.58 lb/MMscf	0.0005 lb/hr	0.0023 tpy	13.58 lb/MMscf	0.0006 lb/hr
Methane		2.30 lb/MMscf	0.0001 lb/hr	0.0004 tpy	2.30 lb/MMscf	0.0001 lb/hr
Ethane		3.10 lb/MMscf	0.0001 lb/hr	0.0005 tpy	3.10 lb/MMscf	0.0001 lb/hr
VOC (Total)		8.18 lb/MMscf	0.0003 lb/hr	0.0014 tpy	8.18 lb/MMscf	0.0003 lb/hr
VOC (non-HAP)		6.30 lb/MMscf	0.0002 lb/hr	0.0011 tpy	6.30 lb/MMscf	0.0003 lb/hr
HAP (Total)		1.88 lb/MMscf	0.0001 lb/hr	0.0003 tpy	1.88 lb/MMscf	0.0001 lb/hr
Acetaldehyde						
Acrolein						
Benzene		2.10E-03 lb/MMscf	8.24E-08 lb/hr	3.61E-07 tpy	2.10E-03 lb/MMscf	8.65E-08 lb/hr
Biphenyl						
Butadiene (1,3-)						
Carbon Tetrachloride						
Chlorobenzene						
Chloroform						
Dichloropropene (1,3-)						
Ethylbenzene						
Ethylene Dibromide						
Formaldehyde		7.50E-02 lb/MMscf	2.94E-06 lb/hr	1.29E-05 tpy	7.50E-02 lb/MMscf	3.09E-06 lb/hr
Hexane (n-)		1.80E+00 lb/MMscf	7.06E-05 lb/hr	3.09E-04 tpy	1.80E+00 lb/MMscf	7.41E-05 lb/hr
Methanol						
Methylene Chloride						
Methylnaphthalene (2-)		2.40E-05 lb/MMscf	9.41E-10 lb/hr	4.12E-09 tpy	2.40E-05 lb/MMscf	9.88E-10 lb/hr
Naphthalene		6.10E-04 lb/MMscf	2.39E-08 lb/hr	1.05E-07 tpy	6.10E-04 lb/MMscf	2.51E-08 lb/hr
PAH						
Phenol						
Propylene Oxide						
Styrene						
Tetrachloroethane (1,1,2,2-)						
Toluene		3.40E-03 lb/MMscf	1.33E-07 lb/hr	5.84E-07 tpy	3.40E-03 lb/MMscf	1.40E-07 lb/hr
Trichloroethane (1,1,2-)						
Trimethylpentane (2,2,4-)						
Vinyl Chloride						
Xylenes						

NOTES

1. Fuel higher heating value selected to correspond to AP-42 emissions factors.
2. Maximum hourly emissions based on 105% of rated capacity.
3. Vendor provided data on: heat output and heat input.
4. CO2 and N2O emission factors based on 40 CFR 98, Subpart C, Table C-1 and 40 CFR 98, Subpart C, Table C-2, respectively.
5. NOX, CO and TOC (Total) emission factors based on AP-42, Section 1.4 (Revised 3/98), Table 1.4-1 : Residential Furnace (< 0.3 MMBTU/hr) - Uncontrolled.
6. SO2 emission factors based on AP-42, Section 1.4 (Revised 3/98), Table 1.4-2 using Tariff (5 gr/100 scf).
7. PM10/2.5 emission factors based on AP-42, Section 1.4 (Revised 3/98), Table 1.4-2.
7. Remaining TOC specie emission factors based on AP-42, Section 1.4 (Revised 3/98), Table 1.4-3.

TABLE D-1M
Natural Gas Combustion
Hourly and Annual Emission Estimates
Uncontrolled

Application		Space Heater				
Combustion Process		Conventional				
Add-on Controls		None				
Package (Make: Model)		Frigidaire: FOP316 sub w/ FGF348				
Burner (Make: Model)		Unknown: Unknown				
Fuel		Natural Gas				
Fuel Higher Heating Value (HHV)		1,020 BTU/scf			1,020 BTU/scf	
Heat Output at HHV		0.007 MMBTU/hr			0.007 MMBTU/hr	
Thermal Efficiency		9%			9%	
Operating Hours		8,760 hrs/yr				
Fuel Consumption		77 scfh			81 scfh	
		0.678 MMscf/yr				
Heat Input at HHV		0.079 MMBTU/hr			0.083 MMBTU/hr	
		692 MMBTU/yr	Uncontrolled			Uncontrolled
Pollutant	Control Efficiency	Uncontrolled	Average Hourly	Maximum Annual	Uncontrolled	Maximum Hourly
NO_X		94.00 lb/MMscf	0.0073 lb/hr	0.0319 tpy	94.00 lb/MMscf	0.0076 lb/hr
CO		40.00 lb/MMscf	0.0031 lb/hr	0.0136 tpy	40.00 lb/MMscf	0.0033 lb/hr
SO_2		14.29 lb/MMscf	0.0011 lb/hr	0.0048 tpy	14.29 lb/MMscf	0.0012 lb/hr
$PM_{10/2.5}$		7.60 lb/MMscf	0.0006 lb/hr	0.0026 tpy	7.60 lb/MMscf	0.0006 lb/hr
CO_{2-e}		120,141.79 lb/MMscf	9.3051 lb/hr	40.7563 tpy	120,141.79 lb/MMscf	9.7704 lb/hr
CO_2		120,017.45 lb/MMscf	9.2955 lb/hr	40.7142 tpy	120,017.45 lb/MMscf	9.7602 lb/hr
N_2O		0.23 lb/MMscf	0.0000 lb/hr	0.0001 tpy	0.23 lb/MMscf	0.0000 lb/hr
TOC (Total)		13.58 lb/MMscf	0.0011 lb/hr	0.0046 tpy	13.58 lb/MMscf	0.0011 lb/hr
Methane		2.30 lb/MMscf	0.0002 lb/hr	0.0008 tpy	2.30 lb/MMscf	0.0002 lb/hr
Ethane		3.10 lb/MMscf	0.0002 lb/hr	0.0011 tpy	3.10 lb/MMscf	0.0003 lb/hr
VOC (Total)		8.18 lb/MMscf	0.0006 lb/hr	0.0028 tpy	8.18 lb/MMscf	0.0007 lb/hr
VOC (non-HAP)		6.30 lb/MMscf	0.0005 lb/hr	0.0021 tpy	6.30 lb/MMscf	0.0005 lb/hr
HAP (Total)		1.88 lb/MMscf	0.0001 lb/hr	0.0006 tpy	1.88 lb/MMscf	0.0002 lb/hr
Acetaldehyde						
Acrolein						
Benzene		2.10E-03 lb/MMscf	1.63E-07 lb/hr	7.12E-07 tpy	2.10E-03 lb/MMscf	1.71E-07 lb/hr
Biphenyl						
Butadiene (1,3-)						
Carbon Tetrachloride						
Chlorobenzene						
Chloroform						
Dichloropropene (1,3-)						
Ethylbenzene						
Ethylene Dibromide						
Formaldehyde		7.50E-02 lb/MMscf	5.81E-06 lb/hr	2.54E-05 tpy	7.50E-02 lb/MMscf	6.10E-06 lb/hr
Hexane (n-)		1.80E+00 lb/MMscf	1.39E-04 lb/hr	6.11E-04 tpy	1.80E+00 lb/MMscf	1.46E-04 lb/hr
Methanol						
Methylene Chloride						
Methylnaphthalene (2-)		2.40E-05 lb/MMscf	1.86E-09 lb/hr	8.14E-09 tpy	2.40E-05 lb/MMscf	1.95E-09 lb/hr
Naphthalene		6.10E-04 lb/MMscf	4.72E-08 lb/hr	2.07E-07 tpy	6.10E-04 lb/MMscf	4.96E-08 lb/hr
PAH						
Phenol						
Propylene Oxide						
Styrene						
Tetrachloroethane (1,1,2,2-)						
Toluene		3.40E-03 lb/MMscf	2.63E-07 lb/hr	1.15E-06 tpy	3.40E-03 lb/MMscf	2.77E-07 lb/hr
Trichloroethane (1,1,2-)						
Trimethylpentane (2,2,4-)						
Vinyl Chloride						
Xylenes						

NOTES

1. Fuel higher heating value selected to correspond to AP-42 emissions factors.
2. Maximum hourly emissions based on 105% of rated capacity.
3. Vendor provided data on: heat output and heat input.
4. CO2 and N2O emission factors based on 40 CFR 98, Subpart C, Table C-1 and 40 CFR 98, Subpart C, Table C-2, respectively.
5. NOX, CO and TOC (Total) emission factors based on AP-42, Section 1.4 (Revised 3/98), Table 1.4-1 : Residential Furnace (< 0.3 MMBTU/hr) - Uncontrolled.
6. SO2 emission factors based on AP-42, Section 1.4 (Revised 3/98), Table 1.4-2 using Tariff (5 gr/100 scf).
7. PM10/2.5 emission factors based on AP-42, Section 1.4 (Revised 3/98), Table 1.4-2.
7. Remaining TOC specie emission factors based on AP-42, Section 1.4 (Revised 3/98), Table 1.4-3.

TABLE D-1N
Natural Gas Combustion
Hourly and Annual Emission Estimates
Uncontrolled

Application		Space Heater				
Combustion Process		Conventional				
Add-on Controls		None				
Package (Make: Model)		Frigidaire: Unknown sub w/ FGF348				
Burner (Make: Model)		Unknown: Unknown				
Fuel		Natural Gas				
Fuel Higher Heating Value (HHV)		1,020 BTU/scf			1,020 BTU/scf	
Heat Output at HHV		0.007 MMBTU/hr			0.007 MMBTU/hr	
Thermal Efficiency		9%			9%	
Operating Hours		8,760 hrs/yr				
Fuel Consumption		77 scfh			81 scfh	
		0.678 MMscf/yr				
Heat Input at HHV		0.079 MMBTU/hr			0.083 MMBTU/hr	
		692 MMBTU/yr	Uncontrolled			Uncontrolled
Pollutant	Control Efficiency	Uncontrolled	Average Hourly	Maximum Annual	Uncontrolled	Maximum Hourly
NO_X		94.00 lb/MMscf	0.0073 lb/hr	0.0319 tpy	94.00 lb/MMscf	0.0076 lb/hr
CO		40.00 lb/MMscf	0.0031 lb/hr	0.0136 tpy	40.00 lb/MMscf	0.0033 lb/hr
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CO_{2-e}		120,141.79 lb/MMscf	9.3051 lb/hr	40.7563 tpy	120,141.79 lb/MMscf	9.7704 lb/hr
CO_2		120,017.45 lb/MMscf	9.2955 lb/hr	40.7142 tpy	120,017.45 lb/MMscf	9.7602 lb/hr
N_2O		0.23 lb/MMscf	0.0000 lb/hr	0.0001 tpy	0.23 lb/MMscf	0.0000 lb/hr
TOC (Total)		13.58 lb/MMscf	0.0011 lb/hr	0.0046 tpy	13.58 lb/MMscf	0.0011 lb/hr
Methane		2.30 lb/MMscf	0.0002 lb/hr	0.0008 tpy	2.30 lb/MMscf	0.0002 lb/hr
Ethane		3.10 lb/MMscf	0.0002 lb/hr	0.0011 tpy	3.10 lb/MMscf	0.0003 lb/hr
VOC (Total)		8.18 lb/MMscf	0.0006 lb/hr	0.0028 tpy	8.18 lb/MMscf	0.0007 lb/hr
VOC (non-HAP)		6.30 lb/MMscf	0.0005 lb/hr	0.0021 tpy	6.30 lb/MMscf	0.0005 lb/hr
HAP (Total)		1.88 lb/MMscf	0.0001 lb/hr	0.0006 tpy	1.88 lb/MMscf	0.0002 lb/hr
Acetaldehyde						
Acrolein						
Benzene		2.10E-03 lb/MMscf	1.63E-07 lb/hr	7.12E-07 tpy	2.10E-03 lb/MMscf	1.71E-07 lb/hr
Biphenyl						
Butadiene (1,3-)						
Carbon Tetrachloride						
Chlorobenzene						
Chloroform						
Dichloropropene (1,3-)						
Ethylbenzene						
Ethylene Dibromide						
Formaldehyde		7.50E-02 lb/MMscf	5.81E-06 lb/hr	2.54E-05 tpy	7.50E-02 lb/MMscf	6.10E-06 lb/hr
Hexane (n-)		1.80E+00 lb/MMscf	1.39E-04 lb/hr	6.11E-04 tpy	1.80E+00 lb/MMscf	1.46E-04 lb/hr
Methanol						
Methylene Chloride						
Methylnaphthalene (2-)		2.40E-05 lb/MMscf	1.86E-09 lb/hr	8.14E-09 tpy	2.40E-05 lb/MMscf	1.95E-09 lb/hr
Naphthalene		6.10E-04 lb/MMscf	4.72E-08 lb/hr	2.07E-07 tpy	6.10E-04 lb/MMscf	4.96E-08 lb/hr
PAH						
Phenol						
Propylene Oxide						
Styrene						
Tetrachloroethane (1,1,2,2-)						
Toluene		3.40E-03 lb/MMscf	2.63E-07 lb/hr	1.15E-06 tpy	3.40E-03 lb/MMscf	2.77E-07 lb/hr
Trichloroethane (1,1,2-)						
Trimethylpentane (2,2,4-)						
Vinyl Chloride						
Xylenes						

NOTES

1. Fuel higher heating value selected to correspond to AP-42 emissions factors.
2. Maximum hourly emissions based on 105% of rated capacity.
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7. Remaining TOC specie emission factors based on AP-42, Section 1.4 (Revised 3/98), Table 1.4-3.

APPENDIX C: DEP 7007 FORMS

Division for Air Quality

300 Sower Boulevard

Frankfort, KY 40601

(502) 564-3999

DEP7007AI

Administrative Information

___ Section AI.1: Source Information

___ Section AI.2: Applicant Information

___ Section AI.3: Owner Information

___ Section AI.4: Type of Application

___ Section AI.5: Other Required Information

___ Section AI.6: Signature Block

___ Section AI.7: Notes, Comments, and Explanations

Additional Documentation

___ Additional Documentation attached

Source Name: Texas Eastern Transmission, LP - Danville Compressor Station

KY EIS (AFS) #: 21- 137-00008

Permit #: V-16-056

Agency Interest (AI) ID: 44065

Date: July 31, 2025

Section AI.1: Source Information

Physical Location Address:	**Street:**	1745 Airport Road				
	City:	Danville	**County:**	Lincoln	**Zip Code:**	40422
Mailing Address:	**Street or P.O. Box:**	PO Box 1642				
	City:	Huston	**State:**	TX	**Zip Code:**	77251

Standard Coordinates for Source Physical Location

Longitude: 37.579727° (decimal degrees) **Latitude:** 84.754952° (decimal degrees)

Primary (NAICS) Category: Pipeline Transmission of Natural Gas **Primary NAICS #:** 486210

Classification (SIC) Category: Natural Gas Transmission **Primary SIC #:** 4922

Briefly discuss the type of business conducted at this site: Compressor Station for natural gas pipeline that delivers natural gas to customers

Description of Area Surrounding Source: ☑ Rural Area ☐ Industrial Park ☐ Residential Area ☐ Urban Area ☐ Industrial Area ☐ Commercial Area

Is any part of the source located on federal land? ☐ Yes ☐ No

Number of Employees: ~20

Approximate distance to nearest residence or commercial property: ~250 feet

Property Area: ~33 Acres

Is this source portable? ☐ Yes ☐ No

What other environmental permits or registrations does this source currently hold or need to obtain in Kentucky?

NPDES/KPDES:	☐ Currently Hold	☐ Need	☐ N/A	Refer to previous permit list submitted with source-wide applications
Solid Waste:	☐ Currently Hold	☐ Need	☐ N/A	
RCRA:	☐ Currently Hold	☐ Need	☐ N/A	
UST:	☐ Currently Hold	☐ Need	☐ N/A	

Type of Regulated Waste Activity:

☐ Mixed Waste Generator ☐ Generator ☐ Recycler ☐ Other: _____

☐ U.S. Importer of Hazardous Waste ☐ Transporter ☐ Treatment/Storage/Disposal Facility ☑ N/A

Section AI.2: Applicant Information

Applicant Name: Texas Eastern Transmission, LP

Title: (if individual)

Mailing Address:
Street or P.O. Box: PO Box 1642
City: Huston **State:** TX **Zip Code:** 77251

Email: (if individual)

Phone: 713-627-5400

Technical Contact

Name: Chuck Zukor

Title: Sr. Engineer, Safety & Reliability / Air Projects

Mailing Address:
Street or P.O. Box: PO Box 1642
City: Huston **State:** TX **Zip Code:** 77251

Email: chuck.zukor@enbridge.com

Phone: 713-627-5791

Air Permit Contact for Source

Name: Chuck Zukor

Title: Sr. Engineer, Safety & Reliability / Air Projects

Mailing Address:
Street or P.O. Box: PO Box 1642
City: Huston **State:** TX **Zip Code:** 77251

Email: chuck.zukor@enbridge.com

Phone: 713-627-5791

Section AI.3: Owner Information

☑ **Owner same as applicant**

Name: _____

Title: _____

Mailing Address: **Street or P.O. Box:** _____

City: _____ **State:** _____ **Zip Code:** _____

Email: _____

Phone: _____

List names of owners and officers of the company who have an interest in the company of 5% or more.

Name	Position

Section AI.4: Type of Application

Current Status: ☑ Title V ☐ Conditional Major ☐ State-Origin ☐ General Permit ☐ Registration ☐ None

Requested Action: *(check all that apply)*

☐ Name Change	☐ Initial Registration	☑ Significant Revision	☐ Administrative Permit Amendment
☐ Renewal Permit	☐ Revised Registration	☐ Minor Revision	☐ Initial Source-wide OperatingPermit
☐ 502(b)(10)Change	☐ Extension Request	☐ Addition of New Facility	☐ Portable Plant Relocation Notice
☐ Revision	☐ Off Permit Change	☐ Landfill Alternate Compliance Submittal	☑ Modification of Existing Facilities
☐ Ownership Change	☐ Closure		

Requested Status: ☑ Title V ☐ Conditional Major ☐ State-Origin ☐ PSD ☐ NSR ☐ Other: _____

Is the source requesting a limitation of potential emissions? ☐ Yes ☑ No

Pollutant:	Requested Limit:	Pollutant:	Requested Limit:
☐ Particulate Matter		☐ Single HAP	
☐ Volatile Organic Compounds (VOC)		☐ Combined HAPs	
☐ Carbon Monoxide		☐ Air Toxics (40 CFR 68, Subpart F)	
☐ Nitrogen Oxides		☐ Carbon Dioxide	
☐ Sulfur Dioxide		☐ Greenhouse Gases (GHG)	
☐ Lead		☐ Other	

For New Construction:

Proposed Start Date of Construction: *(MM/YYYY)* 07/2026

Proposed Operation Start-Up Date: *(MM/YYYY)* 2H 2026

For Modifications:

Proposed Start Date of Modification: *(MM/YYYY)*

Proposed Operation Start-Up Date: *(MM/YYYY)*

Applicant is seeking coverage under a permit shield. ☐ **Yes** ☐ **No**

Identify any non-applicable requirements for which permit shield is sought on a separate attachment to the application.

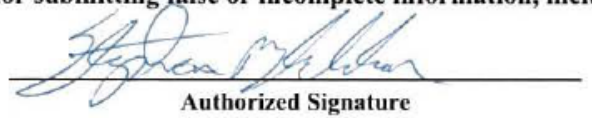
Section AI.5 Other Required Information

Indicate the documents attached as part of this application:

- [x] DEP7007A Indirect Heat Exchangers and Turbines
- [x] DEP7007B Manufacturing or Processing Operations
- [ ] DEP7007C Incinerators and Waste Burners
- [ ] DEP7007F Episode Standby Plan
- [x] DEP7007J Volatile Liquid Storage
- [ ] DEP7007K Surface Coating or Printing Operations
- [ ] DEP7007L Mineral Processes
- [ ] DEP7007M Metal Cleaning Degreasers
- [x] DEP7007N Source Emissions Profile
- [ ] DEP7007P Perchloroethylene Dry Cleaning Systems
- [ ] DEP7007R Emission Offset Credit
- [ ] DEP7007S Service Stations
- [ ] DEP7007T Metal Plating and Surface Treatment Operations
- [x] DEP7007V Applicable Requirements and Compliance Activities
- [ ] DEP7007Y Good Engineering Practice and Stack Height Determination
- [ ] DEP7007AA Compliance Schedule for Non-complying Emission Units
- [ ] DEP7007BB Certified Progress Report
- [ ] DEP7007CC Compliance Certification
- [x] DEP7007DD Insignificant Activities
- [x] DEP7007EE Internal Combustion Engines
- [ ] DEP7007FF Secondary Aluminum Processing
- [ ] DEP7007GG Control Equipment
- [ ] DEP7007HH Haul Roads
- [ ] Confidentiality Claim
- [ ] Ownership Change Form
- [ ] Secretary of State Certificate
- [ ] Flowcharts or diagrams depicting process
- [ ] Digital Line Graphs (DLG) files of buldings, roads, etc.
- [ ] Site Map
- [ ] Map or drawing depicting location of facility
- [ ] Safety Data Sheet (SDS)
- [ ] Emergency Response Plan
- [ ] Other: _____

Section AI.6: Signature Block

I, the undersigned, hereby certify under penalty of law, that I am a responsible official*, and that I have personally examined, and am familiar with, the 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 information is on knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false or incomplete information, including the possibility of fine or imprisonment.



Authorized Signature

July 31, 2025

Date

Stephen McFadden

Type or Printed Name of Signatory

Director Field Operations Central Region

Title of Signatory

*Responsible official as defined by 401 KAR 52:001.

Section AI.7: Notes, Comments, and Explanations

Division for Air Quality

300 Sower Boulevard
Frankfort, KY 40601
(502) 564-3999

DEP7007A

Indirect Heat Exchangers and Turbines

___ Section A.1: General Information
___ Section A.2: Operating and Fuel Information
___ Section A.3: Notes, Comments, and Explanations

Additional Documentation

___ Complete DEP7007AI, DEP7007N, DEP7007V, and DEP7007GG.

____ Manufacturer's specifications

Source Name: Texas Eastern Transmission, LP - Danville Compressor Station
KY EIS (AFS) #: 21- 137-00008
Permit #: V-16-056
Agency Interest (AI) ID: 44065
Date: July 31, 2025

Section A.1: General Information

Emission Unit #	Emission Unit Name	Process ID	Process Name	Identify General Type: Indirect Heat Exchanger, Gas Turbine, or Combustion Turbine	Indirect Heat Exchanger Configuration	Manufacturer	Model No./ Serial No.	Proposed/Actual Date of Construction Commencement *(MM/YYYY)*	SCC Code	SCC Units	Control Device ID	Stack ID
EU08	Unit 4T Turbine	1	Normal Operations	Gas Turbine	--	Solar	130-2050S4	2H 2026	20200201	MMscf	C08	S08
EU08	Unit 4T Turbine	2	Start-up	Gas Turbine	--	Solar	130-2050S4	2H 2026	20200201	MMscf	--	S08
EU08	Unit 4T Turbine	3	Shut-down	Gas Turbine	--	Solar	130-2050S4	2H 2026	20200201	MMscf	C08	S08
EU08	Unit 4T Turbine	4	Low Temperature	Gas Turbine	--	Solar	130-2050S4	2H 2026	20200201	MMscf	C08	S08
EU09	Unit 5T Turbine	1	Normal Operations	Gas Turbine	--	Solar	130-2050S4	2H 2026	20200201	MMscf	C09	S09
EU09	Unit 5T Turbine	2	Start-up	Gas Turbine	--	Solar	130-2050S4	2H 2026	20200201	MMscf	--	S09
EU09	Unit 5T Turbine	3	Shut-down	Gas Turbine	--	Solar	130-2050S4	2H 2026	20200201	MMscf	C09	S09
EU09	Unit 5T Turbine	4	Low Temperature	Gas Turbine	--	Solar	130-2050S4	2H 2026	20200201	MMscf	C09	S09
EU10	Unit 6T Turbine	1	Normal Operations	Gas Turbine	--	Solar	130-2050S4	2H 2026	20200201	MMscf	C10	S10
EU10	Unit 6T Turbine	2	Start-up	Gas Turbine	--	Solar	130-2050S4	2H 2026	20200201	MMscf	--	S10
EU10	Unit 6T Turbine	3	Shut-down	Gas Turbine	--	Solar	130-2050S4	2H 2026	20200201	MMscf	C10	S10
EU10	Unit 6T Turbine	4	Low Temperature	Gas Turbine	--	Solar	130-2050S4	2H 2026	20200201	MMscf	C10	S10
EU12	Unit 4T-6T Fuel Gas Heaters	1	Unit 4T Fuel Gas Heater	Indirect Heat Exchanger	Shell & Tube	Package: Cameron Burner: Flameco	Package: Unknown Burner: SB-24-10	2H 2026	31000404	MMscf	--	S12
EU12	Unit 4T-6T Fuel Gas Heaters	2	Unit 5T Fuel Gas Heater	Indirect Heat Exchanger	Shell & Tube	Package: Cameron Burner: Flameco	Package: Unknown Burner: SB-24-10	2H 2026	31000404	MMscf	--	S12
EU12	Unit 4T-6T Fuel Gas Heaters	3	Unit 6T Fuel Gas Heater	Indirect Heat Exchanger	Shell & Tube	Package: Cameron Burner: Flameco	Package: Unknown Burner: SB-24-10	2H 2026	31000404	MMscf	--	S12

Section A.2: Operating and Fuel Information

Emission Unit #	If multipurpose unit, identify the percentage of use by purpose				Rated Capacity Heat Input *(MMBTU/hr)*	Rated Capacity Power Output		Describe Operating Scenario (only if this unit will be used in different configurations)	Classify Fuel as Primary or Secondary	Identify Fuel Type: Coal, Natural Gas, Wood, Biomass, Landfill/Digester Gas, Fuel Oil # (specify 1-6), or Other	Heat Content (HHV)		Maximum Operating Hours	Ash Content *(%)*	Sulfur Content *(%)*
	Space Heat	Process Heat	Power	Emergency			*(Specify units: hp, MW, or lb steam/hr)*					*(Specify units: Btu/lb, Btu/gal, or Btu/scf)*			
EU08	--	--	100%	--	159.28	20,186	bhp	Normal Operations	Primary	Natural Gas	1,020	BTU/scf	8760	--	0.05
EU08	--	--	100%	--	159.28	20,186	bhp	Start-up	Primary	Natural Gas	1,020	BTU/scf	31.2	--	0.05
EU08	--	--	100%	--	159.28	20,186	bhp	Shut-down	Primary	Natural Gas	1,020	BTU/scf	29.5	--	0.05
EU08	--	--	100%	--	180.77	22,151	bhp	Low Temperature	Primary	Natural Gas	1,020	BTU/scf	175	--	0.05
EU09	--	--	100%	--	159.28	20,186	bhp	Normal Operations	Primary	Natural Gas	1,020	BTU/scf	8760	--	0.05
EU09	--	--	100%	--	159.28	20,186	bhp	Start-up	Primary	Natural Gas	1,020	BTU/scf	31.2	--	0.05
EU09	--	--	100%	--	159.28	20,186	bhp	Shut-down	Primary	Natural Gas	1,020	BTU/scf	29.5	--	0.05
EU09	--	--	100%	--	180.77	22,151	bhp	Low Temperature	Primary	Natural Gas	1,020	BTU/scf	175	--	0.05
EU10	--	--	100%	--	159.28	20,186	bhp	Normal Operations	Primary	Natural Gas	1,020	BTU/scf	8760	--	0.05
EU10	--	--	100%	--	159.28	20,186	bhp	Start-up	Primary	Natural Gas	1,020	BTU/scf	31.2	--	0.05
EU10	--	--	100%	--	159.28	20,186	bhp	Shut-down	Primary	Natural Gas	1,020	BTU/scf	29.5	--	0.05
EU10	--	--	100%	--	180.77	22,151	bhp	Low Temperature	Primary	Natural Gas	1,020	BTU/scf	175	--	0.05
EU12	--	100%	--	--	1.154	0.75	MMBTU/hr	--	Primary	Natural Gas	1,020	BTU/scf	8760	--	0.05

Section A.3: Notes, Comments, and Explanations

Division for Air Quality

300 Sower Boulevard
Frankfort, KY 40601
(502) 564-3999

DEP7007B

Manufacturing or Processing Operations

___ Section B.1: Process Information
___ Section B.2: Materials and Fuel Information
___ Section B.3: Notes, Comments, and Explanations

Additional Documentation

___ Complete DEP7007AI, DEP7007N, DEP7007V, and DEP7007GG.
___ Attach a flow diagram
___ Attach SDS

Source Name: Texas Eastern Transmission, LP - Danville Compressor Station
KY EIS (AFS) #: 21-137-00008
Permit #: V-16-056
Agency Interest (AI) ID: 44065
Date: July 31, 2025

Section B.1: Process Information

Emission Unit #	Emission Unit Name	Describe Emission Unit	Process ID	Process Name	Manufacturer	Model No.	Proposed/Actual Date of Construction Commencement	Is the Process Continuous or Batch?	Number of Batches per 24 Hours	Hours per Batch *(if applicable)*
PC01	DANV-PC-NG	Piping Component Emissions from Natural Gas	1	Valves	--	--	1956	Continuous	--	--
			2	Connectors						
			3	Flanges						
			4	Open-Ended Lines						
			5	Other						
PC02	DANV-PC-PL	Piping Component Emissions from Light Oil	1	Valves	--	--	1956	Continuous	--	--
			2	Connectors						
			3	Flanges						
			4	Open-Ended						
			5	Pump Seals						
			6	Other						
PC03	DANV-PC-OIL	Piping Component Emissions from Heavy Oil	1	Valves	--	--	1956	Continuous	--	--
			2	Connectors						
			3	Flanges						
			4	Pump Seals						
			5	Other						
GR-ST	DANV-GR-ST	Station Gas Release Emissions from Natural Gas	1	Station Gas Release Emissions from Natural Gas	--	--	1956	Continuous	--	--
GR-PL	DANV-GR-PL	Pipeline Gas Release Emissions from Natural Gas	1	Pipeline Gas Release Emissions from Natural Gas	--	--	1956	Continuous	--	--

Section B.2: Materials and Fuel Information

**Maximum yearly fuel usage rate only applies if applicant request operating restrictions through federally enforceable limitations.*

Emission Unit #	Emission Unit Name	Name of Raw Materials Input	Maximum Quantity of Each Raw Material Input	(Specify Units/hr)	Total Process Weight Rate for Emission Unit (tons/hr)	Name of Finished Materials	Maximum Quantity of Each Finished Material Output	(Specify Units/hr)	Fuel Type	Maximum Hourly Fuel Usage Rate	(Specify Units)	Maximum Yearly Fuel Usage Rate	(Specify Units)	Sulfur Content (%)	Ash Content (%)
PC01	DANV-PC-Natural Gas	Valves	0.0797	comp/hr	--	--	--	--	--	--	--	--	--	--	--
		Connectors	0.3678	comp/hr	--	--	--	--	--	--	--	--	--	--	--
		Flanges	0.0532	comp/hr	--	--	--	--	--	--	--	--	--	--	--
		Open-Ended Lines	0.0041	comp/hr	--	--	--	--	--	--	--	--	--	--	--
		Other	0.0081	comp/hr	--	--	--	--	--	--	--	--	--	--	--
PC02	DANV-PC-Pipeline Liquids (Light Liquids)	Valves	0.0113	comp/hr	--	--	--	--	--	--	--	--	--	--	--
		Connectors	0.0656	comp/hr	--	--	--	--	--	--	--	--	--	--	--
		Flanges	0.0239	comp/hr	--	--	--	--	--	--	--	--	--	--	--
		Open-Ended Lines	0.0041	comp/hr	--	--	--	--	--	--	--	--	--	--	--
		Pump Seals	0.0001	comp/hr	--	--	--	--	--	--	--	--	--	--	--
		Other	0.0001	comp/hr	--	--	--	--	--	--	--	--	--	--	--
PC03	DANV-PC-Oil (Heavy Liquids)	Valves	0.0411	comp/hr	--	--	--	--	--	--	--	--	--	--	--
		Connectors	0.1168	comp/hr	--	--	--	--	--	--	--	--	--	--	--
		Flanges	0.0241	comp/hr	--	--	--	--	--	--	--	--	--	--	--
		Pump Seals	0.0024	comp/hr	--	--	--	--	--	--	--	--	--	--	--
		Other	0.0005	comp/hr	--	--	--	--	--	--	--	--	--	--	--
GR-ST	DANV-GR-ST	Natural Gas	1	comp/hr	--	--	--	--	--	--	--	--	--	--	--
GR-PL	DANV-GR-PL	Natural Gas	1	comp/hr	--	--	--	--	--	--	--	--	--	--	--

Section B.3: Notes, Comments, and Explanations

Division for Air Quality

300 Sower Boulevard

Frankfort, KY 40601

(502) 564-3999

DEP7007J

Volatile Liquid Storage

___ Section J.1: General Information

___ Section J.2: Tank Description

___ Section J.3: Gasoline Plants and Terminals

___ Section J.4: Loading Rack(s)

___ Section J.5: Equipment Leaks

___ Section J.6: Notes, Comments, and Explanations

Additional Documentation

___ Complete DEP7007AI, DEP7007N, DEP7007V, and DEP7007GG.

___ SDS attached

Source Name: Texas Eastern Transmission, LP - Danville Compressor Station

KY EIS (AFS) #: 21- 137-00008

Permit #: V-16-056

Agency Interest (AI) ID: 44065

Date: July 31, 2025

Section J.1: General Information

Emission Unit #	Emission Unit Name	Emission Unit Description	Proposed/Actual Date of Construction Commencement *(MM/YYYY)*	Date of modification/ reconstruction	Control Device ID	Stack ID
EU13	V05 Storage Tank	Pipeline Liquids Storage Tank	Proposed 2026	--	--	--

Section J.2: Tank Description

Emission Point #: EU13

Emission Point Name: V05 Storage Tank

Tank ID#: TNK V05

Date Installed: Proposed 2026

List Applicable Regulations: 40 CFR, Subpart OOOOb

J.2A: Stored Liquid Data:

Single or Multi-Component Liquid Name(s)	Maximum Annual Throughput *(gal/yr)*	Liquid Density *(lb/gal)*	Molecular Weight of Single or Multi-Component Liquid	Percent Composition of Multi-Component Liquid(s)	Temperature *(°F)*		Vapor Pressure *(psia)*	
					Minimum	Maximum	Minimum	Maximum
Gasoline (RVP = 10)	7,920	6.12	92.00 lb/lb-mol	Mixture	~31.12	73.40	~2.841	6.9287

J.2B: Tank Data:

Tank Capacity: *(gallons)* 7,920 **Shell Height/ Length:** *(ft)* 7.00 **Shell Diameter:** *(ft)* 8.00 **Tank Turnovers per Year:** 3.00

Tank Orientation: ☐ Horizontal ☒ Vertical If Vertical, provide Maximum Liquid Height: *(ft)* 6.00 Average Liquid Height: *(ft)* 3.50

Shell Color/Shade: ☐ Red ☐ White ☐ Light Gray ☒ Medium Gray ☐ Aluminum Specular ☐ Aluminum Diffuse ☐ Other: _____

Roof Color: ☐ Slack ☐ White ☐ Light Gray ☒ Medium Gray ☐ Aluminum Specular ☐ Aluminum Diffuse ☐ Other: _____

Tank Type: ☒ Fixed Roof ☐ Internal Floating Roof ☐ External Floating Roof ☐ Pressure Tank

J.2C: For Fixed Roof Tanks:

Roof Type: ☐ Dome ☒ Flat ☐ Cone **Dome/Cone Height:** -- ft **Average Vapor Space Height:** 1.75 ft

Is Tank Underground? ☐ Yes ☒ No **Roof Condition:** ☒ Good ☐ Poor **Vacuum Setting:** 0.00 psig

Is Tank Heated?: ☐ Yes ☒ No **Shell Condition:** ☒ Good ☐ Poor **Pressure Setting:** 0.00 psig

J.2D: For All Internal Floating Roof Tanks:

Rim Seal Description: ☐ Vapor Mounted Primary ☐ Vapor Mounted Primary plus Secondary Seal ☐ Shoe Mounted ☐ Liquid Mounted Primary ☐ Liquid Mounted Primary plus Secondary Seal ☐ Shoe Mounted plus Secondary Seal

Secondary Seal: ☐ Rim Mounted ☐ Shoe Mounted ☐ None

Internal Shell Condition: ☐ Light Rust ☐ Dense Rust ☐ Gunite-lined **External Shell Condition:** ☐ Good ☐ Poor

Roof Paint Condition: ☐ Good ☐ Poor **Self Supporting Roof?** ☐ Yes ☐ No

Number of Support Columns: _____ **Effective Column Diameter:** _____ ft

J.2E: Deck Data for Internal Floating Roofs:

Length of Deck Seam: _____ ft

Deck Type: ☐ Bolted ☐ Welded

Type of Deck Fitting: ☐ Access Hatch ☐ Ladder Well ☐ Sample Pipe ☐ Sample Well ☐ Vacuum Breaker ☐ Column Well ☐ Roof Leg ☐ Hanger Well ☐ Stub Drain ☐ Automatic Gauge Float Well

Design of each deck fitting:
(diameter sizes, bolted or gasket covers, sliding cover or fabric seal, adjustable or fixed roof leg/hanger well and number)

J.2F: For All External Floating Roof Tanks:

Rim Seal Description:

- ☐ Vapor Mounted Primary
- ☐ Vapor Mounted Primary Rim Secondary Seal
- ☐ Vapor Mounted Prmary with Weather Shield
- ☐ Liquid Mounted Primary
- ☐ Liquid Mounted Primary Rim Secondary Seal
- ☐ Liquid Mounted Primary with Weather Shield
- ☐ Shoe Mounted Primary
- ☐ Shoe Mounted Primary Rim Secondary Seal
- ☐ Shoe Mounted Primary Shoe Secondary

Internal Shell Condition: ☐ Light Rust ☐ Dense Rust ☐ Gunite-lined

Tank Type: ☐ Riveted ☐ Welded

Roof Type: ☐ Pontoon Roof ☐ Double Deck Roof

J.2G: Deck Data for External Floating Roof Tanks:

Type of Deck Fitting:

- ☐ Access Hatch
- ☐ Gauge Hatch
- ☐ Sample Well
- ☐ Roof Leg
- ☐ Vacuum Breaker
- ☐ Guide Pole
- ☐ Gauge Float
- ☐ Roof Drain
- ☐ Rim Vent
- ☐ Other

Design of each deck fitting:
(diameter sizes, bolted or gasket covers, sliding cover, unslotted or slotted guide pole well, adjusted or fixed roof leg and number of each design)

J.2H: Emissions Data:

Attach SDS/Composition Analysis for Each Component Listed

Process ID	Component Name	Process Name (e.g. Breathing, Working, Cleaning, Flashing Loss(es))	Lost Emissions *(lb/1000 gal)*	Frequency of Occurrence	Determination Methodology for Each Type of Loss*
EU13	Pipeline Liquids	Standing	7.92E-05	Continuous	AP42 Table 7.1-7 (06/2020)
EU13	Pipeline Liquids	Working	8.59E-06	Continuous	AP42 Table 7.1-7 (06/2020)

Section J.3: Gasoline Plants and Terminals

Indicate the percentage of one or more of the following modes of transportation for incoming liquid and outgoing liquid:

	Tank Truck	Trailer	Railcar	Pipeline	Marine Tank	Barge	Other (Specify)
Incoming Liquid Material:							Not Applicable to this Application
Outgoing Liquid Material:							Not Applicable to this Application

For Gasoline Dispensing Facilities (GDF) only:

Is the loading of gasoline storage tanks at a GDF located at an area source of hazardous air pollutants as defined in 40 CFR 63.2? ☐ Yes ☐ No

Is there the dispensing of gasoline from a fixed storage tank at a GDF into a portable tank for the on-site delivery and subsequent dispensing into gasoline-fueled equipment? ☐ Yes ☐ No

Maximum monthly throughput in gallons: _____

For Bulk Gasoline Plants Only:

Is the maximum calculated design throughput less than 20,000 gallons (75,700 liters) per day? ☐ Yes ☐ No

Is gasoline loaded into cargo tanks for transport to gasoline dispensing facilities? ☐ Yes ☐ No

For Bulk Gasoline Terminals Only:

Is the maximum calculated design throughput equal to or greater than 20,000 gallons (75,700 liters) per day? ☐ Yes ☐ No

Is the terminal located at an area source of hazardous air pollutants as defined in 40 CFR 63.2?	☐ Yes	☐ No
Does the facility load from marine tank vessel loading operations at all loading berths less than 1.6 billion liters (10 M barrels) of gasoline annually and of less than 32 billion liters (200 M barrels) of crude oil annually?	☐ Yes	☐ No
Does the terminal handle any reformatted or oxygenated gasoline containing methyl tertbutyl ether (MTBE), CF?	☐ Yes	☐ No

Indicate the type of vapor control device utilized: ☐ Incinerator ☐ Adsorber ☐ Other

Section J.4: Loading Rack(s)

Emission Point #: _____

Emission Point Name: _____

Loading Rack ID#: _____

Product Type	Number of Lanes/Rack	Number of risers/loading arms per rack	Does the petroleum storage capacity exceed 300,000 barrels? *(Y/N)*	Time required to load standard size tanker *(minutes)*	Barge/Pipeline Unloading Rate *(barrels/hr)*	Barge/Pipeline Unloading Rate *(barrels/yr)*	Maximum Loaded *(gal/hr)*	Maximum Loaded *(gal/yr)*	Stack ID	Control Device ID
Not Applicable to this Application										

Section J.5: Equipment Leaks

Emission Point #: _____

Emission Point Name: _____

This section is to be completed for all components of Volatile Liquid Storage Systems that may have leaks.

Equipment Type	Indicate the number of each type of equipment for this emission point		Emission Factor *(lb/SCC units)*		Source of Emission Factor	Total Emissions *(lb/yr)*
	Gasoline	Other (diesel, kerosene, etc.)	Gasoline	Other		
Valves						
Pumps						
Connectors						
Risers/Loading-Arm Valves						
Open-ended Lines						
Other						

Section J.6: Notes, Comments, and Explanations
All equipment leak components are covered in Form B of this application

Division for Air Quality

300 Sower Boulevard
Frankfort, KY 40601
(502) 564-3999

DEP7007EE

Internal Combustion Engines

___ Section EE.1: General Information
___ Section EE.2: Operating Information
___ Section EE.3: Design Information
___ Section EE.4: Fuel Information
___ Section EE.5: Emission Factor Information
___ Section EE.6: Notes, Comments, and Explanations

Additional Documentation

___ Complete DEP7007AI, DEP7007N, DEP7007V, and DEP7007GG

___ Attach EPA certification of the engine

Source Name: Texas Eastern Transmission, LP - Danville Compressor Station
KY EIS (AFS) #: 21- 137-00008
Permit #: V-16-056
Agency Interest (AI) ID: 44065
Date: July 31, 2025

Section EE.1: General Information

Emission Unit #	Emission Unit Name	Control Device ID	Stack ID	Manufacturer	Model Number	Model Year	Date of Manufacture	Proposed/Actual Date of Construction Commencement *(MM/YYYY)*	Date Reconstructed/ Modified	List Applicable Regulations
EU11	Emergency Engine Generator	C11	S11	Waukesha	VGF48SE (or alternative)	TBD	TBD	2H 2026	--	40 CFR Part 60 Subpart JJJJ, 40 CFR Part 63 Subpart ZZZZ

Section EE.2: Operating Information

Emission Unit #	Engine Purpose (Identify if Non-Emergency, Emergency,Fire/Water Pump, Black-start engine for combustion turbine, Engine Testing)	Hours Operated	Is this engine a rental? *(Yes/No)*	Rental Time Period *(hrs)*	Alternate Operating Scenarios (Describe any operating scenarios in which the engine may be used in a different configuration)
EU11	Emergency	500	No	--	--

Section EE.3: Design Information

Emission Unit #	Engine Type (Identify all that apply: Commercial, Institutional, Stationary, Non-Road)	Ignition Type (Identify if either Compression or Spark Ignition)	Engine Family (Identify all that apply: 2-stroke, 4-stroke, Rich Burn, Lean Burn)	Maximum Engine Power *(bhp)*	Maximum Engine Speed *(rpm)*	Total Displacement *(L)*	Number of Cylinders
EU11	Stationary	Spark Ignition	4-stroke, Rich Burn	1,475	1800	48	16

Section EE.4: Fuel Information

Emission Unit #	Identify if Primary, Secondary, or Tertiary Fuel	Fuel Type (Identify if Diesel, Gasoline, Natural Gas, Liquefied Petroleum Gas (LPG), Landfill/Digester Gas, or Other)	Fuel Grade	Percent Time Used *(%)*	Maximum Fuel Consumption	Heat Content	Sulfur Content *(%)*	SCC Code	SCC Units
EU11	Primary	Natural Gas	--	100	1.26 MMscf/yr	1020 BTU/scf	0.05	20100202	MMscf

Section EE.5: Emission Factor Information

Emission factors expressed here are based on the potential to emit.

Emission Unit #	Fuel	Pollutant	Emission Factor	Emission Factor Units	Source of Emission Factor
EU11	Natural Gas	NOX	516.60	lb/MMscf	NSPS JJJJ
		CO	1,033.20	lb/MMscf	NSPS JJJJ
		SO2	14.29	lb/MMscf	Mass balance based on 100% conversion of fuel sulfur to SO2
		PM10/2.5	19.80	lb/MMscf	AP42 Section 3.2 Table 3.2-3
		CO2-e	258,672.61	lb/MMscf	Mass balance
		CO2	120,017.45	lb/MMscf	40 CFR 98 Subpart C, Table C-1
		N2O	0.23	lb/MMscf	40 CFR 98 Subpart C, Table C-2
		Methane	4,949.83	lb/MMscf	AP-42 Section 3.2 HAP value × ratio of AP-42 VOC to NSPS JJJJ VOC
		Ethane	2,055.21	lb/MMscf	
		VOC (Total)	699.48	lb/MMscf	NSPS JJJJ (1.0 g/bhp-hr) scaled up by ratio of VOC to formaldehyde from AP-42 Section 3.2
		HAP (Total)	697.67	lb/MMscf	AP-42 Section 3.2 HAP value × ratio of AP-42 VOC to NSPS JJJJ VOC
		Acetaldehyde	60.04	lb/MMscf	
		Acrolein	56.60	lb/MMscf	
		Benzene	34.00	lb/MMscf	
		Butadiene (1,3-)	14.27	lb/MMscf	
		Carbon Tetrachloride	0.38	lb/MMscf	
		Chlorobenzene	0.28	lb/MMscf	
		Chloroform	0.29	lb/MMscf	
		Dichloropropene (1,3-)	0.27	lb/MMscf	
		Ethylbenzene	0.53	lb/MMscf	
		Ethylene Dibromide	0.46	lb/MMscf	
		Formaldehyde	441.18	lb/MMscf	
		Methanol	65.85	lb/MMscf	
		Methylene Chloride	0.89	lb/MMscf	
		Naphthalene	2.09	lb/MMscf	

Section EE.5: Emission Factor Information

Emission factors expressed here are based on the potential to emit.

Emission Unit #	Fuel	Pollutant	Emission Factor	Emission Factor Units	Source of Emission Factor
EU11	Natural Gas	PAH	3.03	lb/MMscf	AP-42 Section 3.2 HAP value × ratio of AP-42 VOC to NSPS JJJJ VOC
		Styrene	0.26	lb/MMscf	
		Tetrachloroethane (1,1,2,2-)	0.54	lb/MMscf	
		Toluene	12.01	lb/MMscf	
		Trichloroethane (1,1,2-)	0.33	lb/MMscf	
		Vinyl Chloride	0.15	lb/MMscf	
		Xylenes	4.20	lb/MMscf	

Section EE.6: Notes, Comments, and Explanations

Division for Air Quality

300 Sower Boulevard
Frankfort, KY 40601
(502) 564-3999

DEP7007N

Source Emissions Profile

__ Section N.1: Emission Summary
__ Section N.2: Stack Information
__ Section N.3: Fugitive Information
__ Section N.4: Notes, Comments, and Explanations

Additional Documentation

___ Complete DEP7007AI

Source Name: Texas Eastern Transmission, LP - Danville Compressor Station
KY EIS (AFS) #: 21- 137-00008
Permit #: V-16-056
Agency Interest (AI) ID: 44065
Date: July 31, 2025

N.1: Emission Summary

Emission Unit #	Emission Unit Name	Process ID	Process Name	Control Device Name	Control Device ID	Stack ID	Maximum Design Capacity (SCC Units/hour)	Pollutant	Uncontrolled Emission Factor (lb/SCC Units)	Emission Factor Source (e.g. AP-42, Stack Test, Mass Balance)	Capture Efficiency (%)	Control Efficiency (%)	Hourly Emissions		Annual Emissions	
													Uncontrolled Potential (lb/hr)	Controlled Potential (lb/hr)	Uncontrolled Potential (tons/yr)	Controlled Potential (tons/yr)
EU08	Unit 4T Turbine	1	Normal Operations	CatOx-8	C08	S08	0.1562	NOX	32.9	Mass Balance	100%	0%	5.14	5.14	22.5	22.5
							0.1562	CO	55.7	Mass Balance	100%	95%	8.69	0.435	38.1	1.90
							0.1562	SO2	14.3	Mass balance based on 100% conversion of fuel sulfur to SO2	100%	0%	2.23	2.23	9.77	9.77
							0.1562	PM10/2.5	6.73	AP-42 Table 3.1-2a	100%	0%	1.05	1.05	4.60	4.60
							0.1562	CO2-e	120,799	Mass Balance	100%	0%	18,864	18,864	82,624	82,624
							0.1562	CO2	120,017	40 CFR 98 Table C-1	100%	0%	18,742	18,742	82,090	82,090
							0.1562	N2O	0.226	40 CFR 98 Table C-2	100%	0%	3.53E-02	3.53E-02	0.155	0.155
							0.1562	Methane	28.5	Scaling of AP-42 Table 3.1-2a	100%	0%	4.46	4.46	19.5	19.5
							0.1562	VOC (Total)	6.97		100%	50%	1.09	0.544	4.77	2.38
							0.1562	HAP (Total)	3.41	Scaling of AP-42 Table 3.1-3	100%	82%	0.533	9.44E-02	2.33	0.414
							0.1562	Acetaldehyde	0.133		100%	80%	2.07E-02	4.15E-03	9.08E-02	1.82E-02
							0.1562	Acrolein	2.12E-02		100%	50%	3.32E-03	1.66E-03	1.45E-02	7.27E-03
							0.1562	Benzene	3.98E-02		100%	50%	6.22E-03	3.11E-03	2.72E-02	1.36E-02
							0.1562	Butadiene (1,3-)	1.43E-03		100%	50%	2.23E-04	1.11E-04	9.76E-04	4.88E-04
							0.1562	Ethylbenzene	0.106		100%	50%	1.66E-02	8.29E-03	7.27E-02	3.63E-02
							0.1562	Formaldehyde	2.36		100%	95%	0.368	1.84E-02	1.61	8.06E-02
							0.1562	Naphthalene	4.32E-03		100%	50%	6.74E-04	3.37E-04	2.95E-03	1.48E-03
							0.1562	PAH	7.30E-03		100%	50%	1.14E-03	5.70E-04	4.99E-03	2.50E-03
							0.1562	Propylene Oxide	9.63E-02		100%	50%	1.50E-02	7.52E-03	6.58E-02	3.29E-02
							0.1562	Toluene	0.432		100%	50%	6.74E-02	3.37E-02	0.295	0.148
							0.1562	Xylenes	0.212		100%	50%	3.32E-02	1.66E-02	0.145	7.27E-02

Emission Unit #	Emission Unit Name	Process ID	Process Name	Control Device Name	Control Device ID	Stack ID	Maximum Design Capacity (SCC Units/hour)	Pollutant	Uncontrolled Emission Factor (lb/SCC Units)	Emission Factor Source (e.g. AP-42, Stack Test, Mass Balance)	Capture Efficiency (%)	Control Efficiency (%)	Hourly Emissions		Annual Emissions	
													Uncontrolled Potential (lb/hr)	Controlled Potential (lb/hr)	Uncontrolled Potential (tons/yr)	Controlled Potential (tons/yr)
EU08	Unit 4T Turbine	2	Start-up	--	--	S08	2	NOX	2.05	Mass Balance	100%	0%	4.10	4.10	0.213	0.213
							2	CO	200	Mass Balance	100%	0%	399	399	20.8	20.8
							2	SO2	0.138	Mass balance based on 100% conversion of fuel sulfur to SO2	100%	0%	0.277	0.277	1.44E-02	1.44E-02
							2	PM10/2.5	6.52E-02	AP-42 Table 3.1-2a	100%	0%	0.130	0.130	6.78E-03	6.78E-03
							2	CO2-e	2,162	Mass Balance	100%	0%	4,325	4,325	225	225
							2	CO2	1,162	40 CFR 98 Table C-1	100%	0%	2,323	2,323	121	121
							2	N2O	2.19E-03	40 CFR 98 Table C-2	100%	0%	4.38E-03	4.38E-03	2.28E-04	2.28E-04
							2	Methane	40.0	Scaling of AP-42 Table 3.1-2a	100%	0%	80.0	80.0	4.16	4.16
							2	VOC (Total)	9.77		100%	0%	19.5	19.5	1.02	1.02
							2	HAP (Total)	4.78	Scaling of AP-42 Table 3.1-3	100%	0%	9.56	9.56	0.497	0.497
							2	Acetaldehyde	0.186		100%	0%	0.372	0.372	1.93E-02	1.93E-02
							2	Acrolein	2.98E-02		100%	0%	5.95E-02	5.95E-02	3.10E-03	3.10E-03
							2	Benzene	5.58E-02		100%	0%	0.112	0.112	5.80E-03	5.80E-03
							2	Butadiene (1,3-)	2.00E-03		100%	0%	4.00E-03	4.00E-03	2.08E-04	2.08E-04
							2	Ethylbenzene	0.149		100%	0%	0.298	0.298	1.55E-02	1.55E-02
							2	Formaldehyde	3.30		100%	0%	6.60	6.60	0.343	0.343
							2	Naphthalene	6.05E-03		100%	0%	1.21E-02	1.21E-02	6.29E-04	6.29E-04
							2	PAH	1.02E-02		100%	0%	2.05E-02	2.05E-02	1.06E-03	1.06E-03
							2	Propylene Oxide	0.135		100%	0%	0.270	0.270	1.40E-02	1.40E-02
							2	Toluene	0.605		100%	0%	1.21	1.21	6.29E-02	6.29E-02
							2	Xylenes	0.298		100%	0%	0.595	0.595	3.10E-02	3.10E-02
EU08	Unit 4T Turbine	3	Shut-down	CatOx-8	C08	S08	2	NOX	2.33	Mass Balance	100%	0%	4.67	4.67	0.243	0.243
							2	CO	213	Mass Balance	100%	95%	426	21.3	22.2	1.11
							2	SO2	0.149	Mass balance based on 100% conversion of fuel sulfur to SO2	100%	0%	0.297	0.297	1.55E-02	1.55E-02
							2	PM10/2.5	7.00E-02	AP-42 Table 3.1-2a	100%	0%	0.140	0.140	7.28E-03	7.28E-03
							2	CO2-e	2,175	Mass Balance	100%	0%	4,350	4,350	226	226
							2	CO2	1,249	40 CFR 98 Table C-1	100%	0%	2,498	2,498	130	130
							2	N2O	2.35E-03	40 CFR 98 Table C-2	100%	0%	4.71E-03	4.71E-03	2.45E-04	2.45E-04
							2	Methane	37.0	Scaling of AP-42 Table 3.1-2a	100%	0%	74.0	74.0	3.85	3.85
							2	VOC (Total)	9.04		100%	50%	18.1	9.04	0.940	0.470
							2	HAP (Total)	4.42	Scaling of AP-42 Table 3.1-3	100%	82%	8.85	1.57	0.460	8.16E-02
							2	Acetaldehyde	0.172		100%	80%	0.344	6.89E-02	1.79E-02	3.58E-03
							2	Acrolein	2.76E-02		100%	50%	5.51E-02	2.76E-02	2.87E-03	1.43E-03
							2	Benzene	5.17E-02		100%	50%	0.103	5.17E-02	5.37E-03	2.69E-03
							2	Butadiene (1,3-)	1.85E-03		100%	50%	3.70E-03	1.85E-03	1.93E-04	9.63E-05
							2	Ethylbenzene	0.138		100%	50%	0.276	0.138	1.43E-02	7.16E-03
							2	Formaldehyde	3.06		100%	95%	6.11	0.306	0.318	1.59E-02
							2	Naphthalene	5.60E-03		100%	50%	1.12E-02	5.60E-03	5.82E-04	2.91E-04
							2	PAH	9.47E-03		100%	50%	1.89E-02	9.47E-03	9.85E-04	4.92E-04
							2	Propylene Oxide	0.125		100%	50%	0.250	0.125	1.30E-02	6.49E-03
							2	Toluene	0.560		100%	50%	1.12	0.560	5.82E-02	2.91E-02
							2	Xylenes	0.276		100%	50%	0.551	0.276	2.87E-02	1.43E-02

Emission Unit #	Emission Unit Name	Process ID	Process Name	Control Device Name	Control Device ID	Stack ID	Maximum Design Capacity (SCC Units/hour)	Pollutant	Uncontrolled Emission Factor (lb/SCC Units)	Emission Factor Source (e.g. AP-42, Stack Test, Mass Balance)	Capture Efficiency (%)	Control Efficiency (%)	Hourly Emissions		Annual Emissions	
													Uncontrolled Potential (lb/hr)	Controlled Potential (lb/hr)	Uncontrolled Potential (tons/yr)	Controlled Potential (tons/yr)
EU08	Unit 4T Turbine	4	Low Temperature	CatOx-8	C08	S08	0.1772	NOX	154	Mass Balance	100%	0%	27.4	27.4	2.49	2.49
							0.1772	CO	224	Mass Balance	100%	95%	39.7	1.98	3.61	0.181
							0.1772	SO2	14.3	Mass balance based on 100% conversion of fuel sulfur to SO2	100%	0%	2.53	2.53	0.230	0.230
							0.1772	PM10/2.5	6.73	AP-42 Table 3.1-2a	100%	0%	1.19	1.19	0.109	0.109
							0.1772	CO2-e	121,520	Mass Balance	100%	0%	21,537	21,537	1,960	1,960
							0.1772	CO2	120,017	40 CFR 98 Table C-1	100%	0%	21,270	21,270	1,936	1,936
							0.1772	N2O	0.226	40 CFR 98 Table C-2	100%	0%	4.01E-02	4.01E-02	3.65E-03	3.65E-03
							0.1772	Methane	57.4	Scaling of AP-42 Table 3.1-2a	100%	0%	10.2	10.2	0.926	0.926
							0.1772	VOC (Total)	14.0		100%	50%	2.48	1.24	0.226	0.113
							0.1772	HAP (Total)	6.86	Scaling of AP-42 Table 3.1-3	100%	82%	1.22	0.216	0.111	1.96E-02
							0.1772	Acetaldehyde	0.267		100%	80%	4.73E-02	9.47E-03	4.31E-03	8.61E-04
							0.1772	Acrolein	4.27E-02		100%	50%	7.57E-03	3.79E-03	6.89E-04	3.45E-04
							0.1772	Benzene	8.01E-02		100%	50%	1.42E-02	7.10E-03	1.29E-03	6.46E-04
							0.1772	Butadiene (1,3-)	2.87E-03		100%	50%	5.09E-04	2.54E-04	4.63E-05	2.32E-05
							0.1772	Ethylbenzene	0.214		100%	50%	3.79E-02	1.89E-02	3.45E-03	1.72E-03
							0.1772	Formaldehyde	4.74		100%	95%	0.840	4.20E-02	7.65E-02	3.82E-03
							0.1772	Naphthalene	8.68E-03		100%	50%	1.54E-03	7.69E-04	1.40E-04	7.00E-05
							0.1772	PAH	1.47E-02		100%	50%	2.60E-03	1.30E-03	2.37E-04	1.18E-04
							0.1772	Propylene Oxide	0.194		100%	50%	3.43E-02	1.72E-02	3.12E-03	1.56E-03
							0.1772	Toluene	0.868		100%	50%	0.154	7.69E-02	1.40E-02	7.00E-03
							0.1772	Xylenes	0.427		100%	50%	7.57E-02	3.79E-02	6.89E-03	3.45E-03
EU09	Unit 5T Turbine	1	Normal Operations	CatOx-9	C09	S09	0.1562	NOX	32.9	Mass Balance	100%	0%	5.14	5.14	22.5	22.5
							0.1562	CO	55.7	Mass Balance	100%	95%	8.69	0.435	38.1	1.90
							0.1562	SO2	14.3	Mass balance based on 100% conversion of fuel sulfur to SO2	100%	0%	2.23	2.23	9.77	9.77
							0.1562	PM10/2.5	6.73	AP-42 Table 3.1-2a	100%	0%	1.05	1.05	4.60	4.60
							0.1562	CO2-e	120,799	Mass Balance	100%	0%	18,864	18,864	82,624	82,624
							0.1562	CO2	120,017	40 CFR 98 Table C-1	100%	0%	18,742	18,742	82,090	82,090
							0.1562	N2O	0.226	40 CFR 98 Table C-2	100%	0%	3.53E-02	3.53E-02	0.155	0.155
							0.1562	Methane	28.5	Scaling of AP-42 Table 3.1-2a	100%	0%	4.46	4.46	19.5	19.5
							0.1562	VOC (Total)	6.97		100%	50%	1.09	0.544	4.77	2.38
							0.1562	HAP (Total)	3.41	Scaling of AP-42 Table 3.1-3	100%	82%	0.533	9.44E-02	2.33	0.414
							0.1562	Acetaldehyde	0.133		100%	80%	2.07E-02	4.15E-03	9.08E-02	1.82E-02
							0.1562	Acrolein	2.12E-02		100%	50%	3.32E-03	1.66E-03	1.45E-02	7.27E-03
							0.1562	Benzene	3.98E-02		100%	50%	6.22E-03	3.11E-03	2.72E-02	1.36E-02
							0.1562	Butadiene (1,3-)	1.43E-03		100%	50%	2.23E-04	1.11E-04	9.76E-04	4.88E-04
							0.1562	Ethylbenzene	0.106		100%	50%	1.66E-02	8.29E-03	7.27E-02	3.63E-02
							0.1562	Formaldehyde	2.36		100%	95%	0.368	1.84E-02	1.61	8.06E-02
							0.1562	Naphthalene	4.32E-03		100%	50%	6.74E-04	3.37E-04	2.95E-03	1.48E-03
							0.1562	PAH	7.30E-03		100%	50%	1.14E-03	5.70E-04	4.99E-03	2.50E-03
							0.1562	Propylene Oxide	9.63E-02		100%	50%	1.50E-02	7.52E-03	6.58E-02	3.29E-02
							0.1562	Toluene	0.432		100%	50%	6.74E-02	3.37E-02	0.295	0.148
							0.1562	Xylenes	0.212		100%	50%	3.32E-02	1.66E-02	0.145	7.27E-02

Emission Unit #	Emission Unit Name	Process ID	Process Name	Control Device Name	Control Device ID	Stack ID	Maximum Design Capacity (SCC Units/hour)	Pollutant	Uncontrolled Emission Factor (lb/SCC Units)	Emission Factor Source (e.g. AP-42, Stack Test, Mass Balance)	Capture Efficiency (%)	Control Efficiency (%)	Hourly Emissions		Annual Emissions	
													Uncontrolled Potential (lb/hr)	Controlled Potential (lb/hr)	Uncontrolled Potential (tons/yr)	Controlled Potential (tons/yr)
EU09	Unit 5T Turbine	2	Start-up	--	--	S09	2	NOX	2.05	Mass Balance	100%	0%	4.10	4.10	0.213	0.213
							2	CO	200	Mass Balance	100%	0%	399	399	20.8	20.8
							2	SO2	0.138	Mass balance based on 100% conversion of fuel sulfur to SO2	100%	0%	0.277	0.277	1.44E-02	1.44E-02
							2	PM10/2.5	6.52E-02	AP-42 Table 3.1-2a	100%	0%	0.130	0.130	6.78E-03	6.78E-03
							2	CO2-e	2,162	Mass Balance	100%	0%	4,325	4,325	225	225
							2	CO2	1,162	40 CFR 98 Table C-1	100%	0%	2,323	2,323	121	121
							2	N2O	2.19E-03	40 CFR 98 Table C-2	100%	0%	4.38E-03	4.38E-03	2.28E-04	2.28E-04
							2	Methane	40.0	Scaling of AP-42 Table 3.1-2a	100%	0%	80.0	80.0	4.16	4.16
							2	VOC (Total)	9.77		100%	0%	19.5	19.5	1.02	1.02
							2	HAP (Total)	4.78	Scaling of AP-42 Table 3.1-3	100%	0%	9.56	9.56	0.497	0.497
							2	Acetaldehyde	0.186		100%	0%	0.372	0.372	1.93E-02	1.93E-02
							2	Acrolein	2.98E-02		100%	0%	5.95E-02	5.95E-02	3.10E-03	3.10E-03
							2	Benzene	5.58E-02		100%	0%	0.112	0.112	5.80E-03	5.80E-03
							2	Butadiene (1,3-)	2.00E-03		100%	0%	4.00E-03	4.00E-03	2.08E-04	2.08E-04
							2	Ethylbenzene	0.149		100%	0%	0.298	0.298	1.55E-02	1.55E-02
							2	Formaldehyde	3.30		100%	0%	6.60	6.60	0.343	0.343
							2	Naphthalene	6.05E-03		100%	0%	1.21E-02	1.21E-02	6.29E-04	6.29E-04
							2	PAH	1.02E-02		100%	0%	2.05E-02	2.05E-02	1.06E-03	1.06E-03
							2	Propylene Oxide	0.135		100%	0%	0.270	0.270	1.40E-02	1.40E-02
							2	Toluene	0.605		100%	0%	1.21	1.21	6.29E-02	6.29E-02
							2	Xylenes	0.298		100%	0%	0.595	0.595	3.10E-02	3.10E-02
EU09	Unit 5T Turbine	3	Shut-down	CatOx-9	C09	S09	2	NOX	2.33	Mass Balance	100%	0%	4.67	4.67	0.243	0.243
							2	CO	213	Mass Balance	100%	95%	426	21.3	22.2	1.11
							2	SO2	0.149	Mass balance based on 100% conversion of fuel sulfur to SO2	100%	0%	0.297	0.297	1.55E-02	1.55E-02
							2	PM10/2.5	7.00E-02	AP-42 Table 3.1-2a	100%	0%	0.140	0.140	7.28E-03	7.28E-03
							2	CO2-e	2,175	Mass Balance	100%	0%	4,350	4,350	226	226
							2	CO2	1,249	40 CFR 98 Table C-1	100%	0%	2,498	2,498	130	130
							2	N2O	2.35E-03	40 CFR 98 Table C-2	100%	0%	4.71E-03	4.71E-03	2.45E-04	2.45E-04
							2	Methane	37.0	Scaling of AP-42 Table 3.1-2a	100%	0%	74.0	74.0	3.85	3.85
							2	VOC (Total)	9.04		100%	50%	18.1	9.04	0.940	0.470
							2	HAP (Total)	4.42	Scaling of AP-42 Table 3.1-3	100%	82%	8.85	1.57	0.460	8.16E-02
							2	Acetaldehyde	0.172		100%	80%	0.344	6.89E-02	1.79E-02	3.58E-03
							2	Acrolein	2.76E-02		100%	50%	5.51E-02	2.76E-02	2.87E-03	1.43E-03
							2	Benzene	5.17E-02		100%	50%	0.103	5.17E-02	5.37E-03	2.69E-03
							2	Butadiene (1,3-)	1.85E-03		100%	50%	3.70E-03	1.85E-03	1.93E-04	9.63E-05
							2	Ethylbenzene	0.138		100%	50%	0.276	0.138	1.43E-02	7.16E-03
							2	Formaldehyde	3.06		100%	95%	6.11	0.306	0.318	1.59E-02
							2	Naphthalene	5.60E-03		100%	50%	1.12E-02	5.60E-03	5.82E-04	2.91E-04
							2	PAH	9.47E-03		100%	50%	1.89E-02	9.47E-03	9.85E-04	4.92E-04
							2	Propylene Oxide	0.125		100%	50%	0.250	0.125	1.30E-02	6.49E-03
							2	Toluene	0.560		100%	50%	1.12	0.560	5.82E-02	2.91E-02
							2	Xylenes	0.276		100%	50%	0.551	0.276	2.87E-02	1.43E-02

Emission Unit #	Emission Unit Name	Process ID	Process Name	Control Device Name	Control Device ID	Stack ID	Maximum Design Capacity (SCC Units/hour)	Pollutant	Uncontrolled Emission Factor (lb/SCC Units)	Emission Factor Source (e.g. AP-42, Stack Test, Mass Balance)	Capture Efficiency (%)	Control Efficiency (%)	Hourly Emissions		Annual Emissions	
													Uncontrolled Potential (lb/hr)	Controlled Potential (lb/hr)	Uncontrolled Potential (tons/yr)	Controlled Potential (tons/yr)
EU09	Unit 5T Turbine	4	Low Temperature	CatOx-9	C09	S09	0.1772	NOX	154	Mass Balance	100%	0%	27.4	27.4	2.49	2.49
							0.1772	CO	224	Mass Balance	100%	95%	39.7	1.98	3.61	0.181
							0.1772	SO2	14.3	Mass balance based on 100% conversion of fuel sulfur to SO2	100%	0%	2.53	2.53	0.230	0.230
							0.1772	PM10/2.5	6.73	AP-42 Table 3.1-2a	100%	0%	1.19	1.19	0.109	0.109
							0.1772	CO2-e	121,520		100%	0%	21,537	21,537	1,960	1,960
							0.1772	CO2	120,017	40 CFR 98 Table C-1	100%	0%	21,270	21,270	1,936	1,936
							0.1772	N2O	0.226	40 CFR 98 Table C-2	100%	0%	4.01E-02	4.01E-02	3.65E-03	3.65E-03
							0.1772	Methane	57.4	Scaling of AP-42 Table 3.1-2a	100%	0%	10.2	10.2	0.926	0.926
							0.1772	VOC (Total)	14.0		100%	50%	2.48	1.24	0.226	0.113
							0.1772	HAP (Total)	6.86	Scaling of AP-42 Table 3.1-3	100%	82%	1.22	0.216	0.111	1.96E-02
							0.1772	Acetaldehyde	0.267		100%	80%	4.73E-02	9.47E-03	4.31E-03	8.61E-04
							0.1772	Acrolein	4.27E-02		100%	50%	7.57E-03	3.79E-03	6.89E-04	3.45E-04
							0.1772	Benzene	8.01E-02		100%	50%	1.42E-02	7.10E-03	1.29E-03	6.46E-04
							0.1772	Butadiene (1,3-)	2.87E-03		100%	50%	5.09E-04	2.54E-04	4.63E-05	2.32E-05
							0.1772	Ethylbenzene	0.214		100%	50%	3.79E-02	1.89E-02	3.45E-03	1.72E-03
							0.1772	Formaldehyde	4.74		100%	95%	0.840	4.20E-02	7.65E-02	3.82E-03
							0.1772	Naphthalene	8.68E-03		100%	50%	1.54E-03	7.69E-04	1.40E-04	7.00E-05
							0.1772	PAH	1.47E-02		100%	50%	2.60E-03	1.30E-03	2.37E-04	1.18E-04
							0.1772	Propylene Oxide	0.194		100%	50%	3.43E-02	1.72E-02	3.12E-03	1.56E-03
							0.1772	Toluene	0.868		100%	50%	0.154	7.69E-02	1.40E-02	7.00E-03
							0.1772	Xylenes	0.427		100%	50%	7.57E-02	3.79E-02	6.89E-03	3.45E-03
EU10	Unit 6T Turbine	1	Normal Operations	CatOx-10	C10	S10	0.1562	NOX	32.9	Mass Balance	100%	0%	5.14	5.14	22.5	22.5
							0.1562	CO	55.7	Mass Balance	100%	95%	8.69	0.435	38.1	1.90
							0.1562	SO2	14.3	Mass balance based on 100% conversion of fuel sulfur to SO2	100%	0%	2.23	2.23	9.77	9.77
							0.1562	PM10/2.5	6.73	AP-42 Table 3.1-2a	100%	0%	1.05	1.05	4.60	4.60
							0.1562	CO2-e	120,799	Mass Balance	100%	0%	18,864	18,864	82,624	82,624
							0.1562	CO2	120,017	40 CFR 98 Table C-1	100%	0%	18,742	18,742	82,090	82,090
							0.1562	N2O	0.226	40 CFR 98 Table C-2	100%	0%	3.53E-02	3.53E-02	0.155	0.155
							0.1562	Methane	28.5	Scaling of AP-42 Table 3.1-2a	100%	0%	4.46	4.46	19.5	19.5
							0.1562	VOC (Total)	6.97		100%	50%	1.09	0.544	4.77	2.38
							0.1562	HAP (Total)	3.41	Scaling of AP-42 Table 3.1-3	100%	82%	0.533	9.44E-02	2.33	0.414
							0.1562	Acetaldehyde	0.133		100%	80%	2.07E-02	4.15E-03	9.08E-02	1.82E-02
							0.1562	Acrolein	2.12E-02		100%	50%	3.32E-03	1.66E-03	1.45E-02	7.27E-03
							0.1562	Benzene	3.98E-02		100%	50%	6.22E-03	3.11E-03	2.72E-02	1.36E-02
							0.1562	Butadiene (1,3-)	1.43E-03		100%	50%	2.23E-04	1.11E-04	9.76E-04	4.88E-04
							0.1562	Ethylbenzene	0.106		100%	50%	1.66E-02	8.29E-03	7.27E-02	3.63E-02
							0.1562	Formaldehyde	2.36		100%	95%	0.368	1.84E-02	1.61	8.06E-02
							0.1562	Naphthalene	4.32E-03		100%	50%	6.74E-04	3.37E-04	2.95E-03	1.48E-03
							0.1562	PAH	7.30E-03		100%	50%	1.14E-03	5.70E-04	4.99E-03	2.50E-03
							0.1562	Propylene Oxide	9.63E-02		100%	50%	1.50E-02	7.52E-03	6.58E-02	3.29E-02
							0.1562	Toluene	0.432		100%	50%	6.74E-02	3.37E-02	0.295	0.148
							0.1562	Xylenes	0.212		100%	50%	3.32E-02	1.66E-02	0.145	7.27E-02

Emission Unit #	Emission Unit Name	Process ID	Process Name	Control Device Name	Control Device ID	Stack ID	Maximum Design Capacity (SCC Units/hour)	Pollutant	Uncontrolled Emission Factor (lb/SCC Units)	Emission Factor Source (e.g. AP-42, Stack Test, Mass Balance)	Capture Efficiency (%)	Control Efficiency (%)	Hourly Emissions		Annual Emissions	
													Uncontrolled Potential (lb/hr)	Controlled Potential (lb/hr)	Uncontrolled Potential (tons/yr)	Controlled Potential (tons/yr)
EU10	Unit 6T Turbine	2	Start-up	--	--	S10	2	NOX	2.05	Mass Balance	100%	0%	4.10	4.10	0.213	0.213
							2	CO	200	Mass Balance	100%	0%	399	399	20.8	20.8
							2	SO2	0.138	Mass balance based on 100% conversion of fuel sulfur to SO2	100%	0%	0.277	0.277	1.44E-02	1.44E-02
							2	PM10/2.5	6.52E-02	AP-42 Table 3.1-2a	100%	0%	0.130	0.130	6.78E-03	6.78E-03
							2	CO2-e	2,162	Mass Balance	100%	0%	4,325	4,325	225	225
							2	CO2	1,162	40 CFR 98 Table C-1	100%	0%	2,323	2,323	121	121
							2	N2O	2.19E-03	40 CFR 98 Table C-2	100%	0%	4.38E-03	4.38E-03	2.28E-04	2.28E-04
							2	Methane	40.0	Scaling of AP-42 Table 3.1-2a	100%	0%	80.0	80.0	4.16	4.16
							2	VOC (Total)	9.77		100%	0%	19.5	19.5	1.02	1.02
							2	HAP (Total)	4.78	Scaling of AP-42 Table 3.1-3	100%	0%	9.56	9.56	0.497	0.497
							2	Acetaldehyde	0.186		100%	0%	0.372	0.372	1.93E-02	1.93E-02
							2	Acrolein	2.98E-02		100%	0%	5.95E-02	5.95E-02	3.10E-03	3.10E-03
							2	Benzene	5.58E-02		100%	0%	0.112	0.112	5.80E-03	5.80E-03
							2	Butadiene (1,3-)	2.00E-03		100%	0%	4.00E-03	4.00E-03	2.08E-04	2.08E-04
							2	Ethylbenzene	0.149		100%	0%	0.298	0.298	1.55E-02	1.55E-02
							2	Formaldehyde	3.30		100%	0%	6.60	6.60	0.343	0.343
							2	Naphthalene	6.05E-03		100%	0%	1.21E-02	1.21E-02	6.29E-04	6.29E-04
							2	PAH	1.02E-02		100%	0%	2.05E-02	2.05E-02	1.06E-03	1.06E-03
							2	Propylene Oxide	0.135		100%	0%	0.270	0.270	1.40E-02	1.40E-02
							2	Toluene	0.605		100%	0%	1.21	1.21	6.29E-02	6.29E-02
							2	Xylenes	0.298		100%	0%	0.595	0.595	3.10E-02	3.10E-02
EU10	Unit 6T Turbine	3	Shut-down	CatOx-10	C10	S10	2	NOX	2.33	Mass Balance	100%	0%	4.67	4.67	0.243	0.243
							2	CO	213	Mass Balance	100%	95%	426	21.3	22.2	1.11
							2	SO2	0.149	Mass balance based on 100% conversion of fuel sulfur to SO2	100%	0%	0.297	0.297	1.55E-02	1.55E-02
							2	PM10/2.5	7.00E-02	AP-42 Table 3.1-2a	100%	0%	0.140	0.140	7.28E-03	7.28E-03
							2	CO2-e	2,175	Mass Balance	100%	0%	4,350	4,350	226	226
							2	CO2	1,249	40 CFR 98 Table C-1	100%	0%	2,498	2,498	130	130
							2	N2O	2.35E-03	40 CFR 98 Table C-2	100%	0%	4.71E-03	4.71E-03	2.45E-04	2.45E-04
							2	Methane	37.0	Scaling of AP-42 Table 3.1-2a	100%	0%	74.0	74.0	3.85	3.85
							2	VOC (Total)	9.04		100%	50%	18.1	9.04	0.940	0.470
							2	HAP (Total)	4.42	Scaling of AP-42 Table 3.1-3	100%	82%	8.85	1.57	0.460	8.16E-02
							2	Acetaldehyde	0.172		100%	80%	0.344	6.89E-02	1.79E-02	3.58E-03
							2	Acrolein	2.76E-02		100%	50%	5.51E-02	2.76E-02	2.87E-03	1.43E-03
							2	Benzene	5.17E-02		100%	50%	0.103	5.17E-02	5.37E-03	2.69E-03
							2	Butadiene (1,3-)	1.85E-03		100%	50%	3.70E-03	1.85E-03	1.93E-04	9.63E-05
							2	Ethylbenzene	0.138		100%	50%	0.276	0.138	1.43E-02	7.16E-03
							2	Formaldehyde	3.06		100%	95%	6.11	0.306	0.318	1.59E-02
							2	Naphthalene	5.60E-03		100%	50%	1.12E-02	5.60E-03	5.82E-04	2.91E-04
							2	PAH	9.47E-03		100%	50%	1.89E-02	9.47E-03	9.85E-04	4.92E-04
							2	Propylene Oxide	0.125		100%	50%	0.250	0.125	1.30E-02	6.49E-03
							2	Toluene	0.560		100%	50%	1.12	0.560	5.82E-02	2.91E-02
							2	Xylenes	0.276		100%	50%	0.551	0.276	2.87E-02	1.43E-02

Emission Unit #	Emission Unit Name	Process ID	Process Name	Control Device Name	Control Device ID	Stack ID	Maximum Design Capacity *(SCC Units/hour)*	Pollutant	Uncontrolled Emission Factor *(lb/SCC Units)*	Emission Factor Source (e.g. AP-42, Stack Test, Mass Balance)	Capture Efficiency *(%)*	Control Efficiency *(%)*	Hourly Emissions		Annual Emissions	
													Uncontrolled Potential *(lb/hr)*	Controlled Potential *(lb/hr)*	Uncontrolled Potential *(tons/yr)*	Controlled Potential *(tons/yr)*
EU10	Unit 6T Turbine	4	Low Temperature	CatOx-10	C10	S10	0.1772	NOX	154	Mass Balance	100%	0%	27.4	27.4	2.49	2.49
							0.1772	CO	224	Mass Balance	100%	95%	39.7	1.98	3.61	0.181
							0.1772	SO2	14.3	Mass balance based on 100% conversion of fuel sulfur to SO2	100%	0%	2.53	2.53	0.230	0.230
							0.1772	PM10/2.5	6.73	AP-42 Table 3.1-2a	100%	0%	1.19	1.19	0.109	0.109
							0.1772	CO2-e	121,520	Mass Balance	100%	0%	21,537	21,537	1,960	1,960
							0.1772	CO2	120,017	40 CFR 98 Table C-1	100%	0%	21,270	21,270	1,936	1,936
							0.1772	N2O	0.226	40 CFR 98 Table C-2	100%	0%	4.01E-02	4.01E-02	3.65E-03	3.65E-03
							0.1772	Methane	57.4	Scaling of AP-42 Table 3.1-2a	100%	0%	10.2	10.2	0.926	0.926
							0.1772	VOC (Total)	14.0		100%	50%	2.48	1.24	0.226	0.113
							0.1772	HAP (Total)	6.86	Scaling of AP-42 Table 3.1-3	100%	82%	1.22	0.216	0.111	1.96E-02
							0.1772	Acetaldehyde	0.267		100%	80%	4.73E-02	9.47E-03	4.31E-03	8.61E-04
							0.1772	Acrolein	4.27E-02		100%	50%	7.57E-03	3.79E-03	6.89E-04	3.45E-04
							0.1772	Benzene	8.01E-02		100%	50%	1.42E-02	7.10E-03	1.29E-03	6.46E-04
							0.1772	Butadiene (1,3-)	2.87E-03		100%	50%	5.09E-04	2.54E-04	4.63E-05	2.32E-05
							0.1772	Ethylbenzene	0.214		100%	50%	3.79E-02	1.89E-02	3.45E-03	1.72E-03
							0.1772	Formaldehyde	4.74		100%	95%	0.840	4.20E-02	7.65E-02	3.82E-03
							0.1772	Naphthalene	8.68E-03		100%	50%	1.54E-03	7.69E-04	1.40E-04	7.00E-05
							0.1772	PAH	1.47E-02		100%	50%	2.60E-03	1.30E-03	2.37E-04	1.18E-04
							0.1772	Propylene Oxide	0.194		100%	50%	3.43E-02	1.72E-02	3.12E-03	1.56E-03
							0.1772	Toluene	0.868		100%	50%	0.154	7.69E-02	1.40E-02	7.00E-03
							0.1772	Xylenes	0.427		100%	50%	7.57E-02	3.79E-02	6.89E-03	3.45E-03

Emission Unit #	Emission Unit Name	Process ID	Process Name	Control Device Name	Control Device ID	Stack ID	Maximum Design Capacity (SCC Units/hour)	Pollutant	Uncontrolled Emission Factor (lb/SCC Units)	Emission Factor Source (e.g. AP-42, Stack Test, Mass Balance)	Capture Efficiency (%)	Control Efficiency (%)	Hourly Emissions		Annual Emissions	
													Uncontrolled Potential (lb/hr)	Controlled Potential (lb/hr)	Uncontrolled Potential (tons/yr)	Controlled Potential (tons/yr)
EU11	Emergency Engine Generator	1	Natural Gas Combustion	NSCR-11	C11	S11	0.0126	NOX	516.6	NSPS JJJJ	100%	0%	6.50	6.50	1.63	1.63
							0.0126	CO	1,033	NSPS JJJJ	100%	0%	13.0	13.0	3.25	3.25
							0.0126	SO2	14.3	Mass balance based on 100% conversion of fuel sulfur to SO2	100%	0%	0.180	0.180	4.50E-02	4.50E-02
							0.0126	PM10/2.5	19.8	AP42 Table 3.2-3	100%	0%	0.249	0.249	6.23E-02	6.23E-02
							0.0126	CO2-e	258,673	Mass Balance	100%	0%	3,256	3,256	814	814
							0.0126	CO2	120,017	40 CFR 98 Subpart C, Table C-1	100%	0%	1,511	1,511	378	378
							0.0126	N2O	0.226	40 CFR 98 Subpart C, Table C-2	100%	0%	2.85E-03	2.85E-03	7.12E-04	7.12E-04
							0.0126	Methane	4,950	AP-42 Section 3.2 HAP value × ratio of AP-42 VOC to NSPS JJJJ VOC	100%	0%	62.3	62.3	15.6	15.6
							0.0126	VOC (Total)	699	NSPS JJJJ (1.0 g/bhp-hr) scaled up by ratio of VOC to formaldehyde from AP-42 Section 3.2	100%	0%	8.81	8.81	2.20	2.20
							0.0126	HAP (Total)	698	AP-42 Section 3.2 HAP value × ratio of AP-42 VOC to NSPS JJJJ VOC	100%	0%	8.78	8.78	2.20	2.20
							0.0126	Acetaldehyde	60.0		100%	0%	0.756	0.756	0.189	0.189
							0.0126	Acrolein	56.6		100%	0%	0.713	0.713	0.178	0.178
							0.0126	Benzene	34.0		100%	0%	0.428	0.428	0.107	0.107
							0.0126	Butadiene (1,3-)	14.3		100%	0%	0.180	0.180	4.49E-02	4.49E-02
							0.0126	Carbon Tetrachloride	0.381		100%	0%	4.80E-03	4.80E-03	1.20E-03	1.20E-03
							0.0126	Chlorobenzene	0.278		100%	0%	3.49E-03	3.49E-03	8.74E-04	8.74E-04
							0.0126	Chloroform	0.295		100%	0%	3.71E-03	3.71E-03	9.28E-04	9.28E-04
							0.0126	Dichloropropene (1,3-)	0.273		100%	0%	3.44E-03	3.44E-03	8.60E-04	8.60E-04
							0.0126	Ethylbenzene	0.534		100%	0%	6.72E-03	6.72E-03	1.68E-03	1.68E-03
							0.0126	Ethylene Dibromide	0.458		100%	0%	5.77E-03	5.77E-03	1.44E-03	1.44E-03
							0.0126	Formaldehyde	441		100%	0%	5.55	5.55	1.39	1.39
							0.0126	Methanol	65.9		100%	0%	0.829	0.829	0.207	0.207
							0.0126	Methylene Chloride	0.887		100%	0%	1.12E-02	1.12E-02	2.79E-03	2.79E-03
							0.0126	Naphthalene	2.09		100%	0%	2.63E-02	2.63E-02	6.58E-03	6.58E-03
							0.0126	PAH	3.03		100%	0%	3.82E-02	3.82E-02	9.55E-03	9.55E-03
							0.0126	Styrene	0.256		100%	0%	3.22E-03	3.22E-03	8.06E-04	8.06E-04
							0.0126	Tetrachloroethane (1,1,2,2-)	0.544		100%	0%	6.85E-03	6.85E-03	1.71E-03	1.71E-03
							0.0126	Toluene	12.0		100%	0%	0.151	0.151	3.78E-02	3.78E-02
							0.0126	Trichloroethane (1,1,2-)	0.329		100%	0%	4.15E-03	4.15E-03	1.04E-03	1.04E-03
							0.0126	Vinyl Chloride	0.155		100%	0%	1.95E-03	1.95E-03	4.86E-04	4.86E-04
							0.0126	Xylenes	4.20		100%	0%	5.28E-02	5.28E-02	1.32E-02	1.32E-02

Emission Unit #	Emission Unit Name	Process ID	Process Name	Control Device Name	Control Device ID	Stack ID	Maximum Design Capacity (SCC Units/hour)	Pollutant	Uncontrolled Emission Factor (lb/SCC Units)	Emission Factor Source (e.g. AP-42, Stack Test, Mass Balance)	Capture Efficiency (%)	Control Efficiency (%)	Hourly Emissions		Annual Emissions	
													Uncontrolled Potential (lb/hr)	Controlled Potential (lb/hr)	Uncontrolled Potential (tons/yr)	Controlled Potential (tons/yr)
EU12	Unit 4T-6T Fuel Gas Heaters	1	Unit 4T Fuel Gas Heater	--	--	S12	0.0011	NOX	98.4	Vendor Specifications	100%	0%	0.111	0.111	0.488	0.488
							0.0011	CO	150	Vendor Specifications	100%	0%	0.170	0.170	0.743	0.743
							0.0011	SO2	14.3	Mass balance based on 100% conversion of fuel sulfur to SO2	100%	0%	1.62E-02	1.62E-02	7.08E-02	7.08E-02
							0.0011	PM10/2.5	7.60	AP-42, Table 1.4-2	100%	0%	8.60E-03	8.60E-03	3.76E-02	3.76E-02
							0.0011	CO2-e	120,339	Mass Balance	100%	0%	136	136	596	596
							0.0011	CO2	120,017	40 CFR 98 Table C-1	100%	0%	136	136	595	595
							0.0011	N2O	0.226	40 CFR 98 Table C-2	100%	0%	2.56E-04	2.56E-04	1.12E-03	1.12E-03
							0.0011	Methane	10.2	Scaling of AP-42 Table 1.4-3	100%	0%	1.15E-02	1.15E-02	5.03E-02	5.03E-02
							0.0011	VOC (Total)	36.1		100%	0%	4.09E-02	4.09E-02	0.179	0.179
							0.0011	HAP (Total)	8.32	Scaling of AP-42 Table 1.4-3 & 1.4-4	100%	0%	9.40E-03	9.40E-03	4.12E-02	4.12E-02
							0.0011	Benzene	9.28E-03	Scaling of AP-42 Table 1.4-3	100%	0%	1.05E-05	1.05E-05	4.60E-05	4.60E-05
							0.0011	Formaldehyde	0.331		100%	0%	3.75E-04	3.75E-04	1.64E-03	1.64E-03
							0.0011	Hexane (n-)	7.95		100%	0%	8.99E-03	8.99E-03	3.94E-02	3.94E-02
							0.0011	Methylnaphthalene (2-)	1.06E-04		100%	0%	1.20E-07	1.20E-07	5.25E-07	5.25E-07
							0.0011	Naphthalene	2.69E-03		100%	0%	3.05E-06	3.05E-06	1.33E-05	1.33E-05
							0.0011	Toluene	1.50E-02		100%	0%	1.70E-05	1.70E-05	7.44E-05	7.44E-05
EU12	Unit 4T-6T Fuel Gas Heaters	2	Unit 5T Fuel Gas Heater	--	--	S12	0.0011	NOX	98.4	Vendor Specifications	100%	0%	0.111	0.111	0.488	0.488
							0.0011	CO	150	Vendor Specifications	100%	0%	0.170	0.170	0.743	0.743
							0.0011	SO2	14.3	Mass balance based on 100% conversion of fuel sulfur to SO2	100%	0%	1.62E-02	1.62E-02	7.08E-02	7.08E-02
							0.0011	PM10/2.5	7.60	AP-42, Table 1.4-2	100%	0%	8.60E-03	8.60E-03	3.76E-02	3.76E-02
							0.0011	CO2-e	120,339	Mass Balance	100%	0%	136	136	596	596
							0.0011	CO2	120,017	40 CFR 98 Table C-1	100%	0%	136	136	595	595
							0.0011	N2O	0.226	40 CFR 98 Table C-2	100%	0%	2.56E-04	2.56E-04	1.12E-03	1.12E-03
							0.0011	Methane	10.2	Scaling of AP-42 Table 1.4-3	100%	0%	1.15E-02	1.15E-02	5.03E-02	5.03E-02
							0.0011	VOC (Total)	36.1		100%	0%	4.09E-02	4.09E-02	0.179	0.179
							0.0011	HAP (Total)	8.32	Scaling of AP-42 Table 1.4-3 & 1.4-4	100%	0%	9.40E-03	9.40E-03	4.12E-02	4.12E-02
							0.0011	Benzene	9.28E-03	Scaling of AP-42 Table 1.4-3	100%	0%	1.05E-05	1.05E-05	4.60E-05	4.60E-05
							0.0011	Formaldehyde	0.331		100%	0%	3.75E-04	3.75E-04	1.64E-03	1.64E-03
							0.0011	Hexane (n-)	7.95		100%	0%	8.99E-03	8.99E-03	3.94E-02	3.94E-02
							0.0011	Methylnaphthalene (2-)	1.06E-04		100%	0%	1.20E-07	1.20E-07	5.25E-07	5.25E-07
							0.0011	Naphthalene	2.69E-03		100%	0%	3.05E-06	3.05E-06	1.33E-05	1.33E-05
							0.0011	Toluene	1.50E-02		100%	0%	1.70E-05	1.70E-05	7.44E-05	7.44E-05

Emission Unit #	Emission Unit Name	Process ID	Process Name	Control Device Name	Control Device ID	Stack ID	Maximum Design Capacity (SCC Units/hour)	Pollutant	Uncontrolled Emission Factor (lb/SCC Units)	Emission Factor Source (e.g. AP-42, Stack Test, Mass Balance)	Capture Efficiency (%)	Control Efficiency (%)	Hourly Emissions		Annual Emissions	
													Uncontrolled Potential (lb/hr)	Controlled Potential (lb/hr)	Uncontrolled Potential (tons/yr)	Controlled Potential (tons/yr)
EU12	Unit 4T-6T Fuel Gas Heaters	3	Unit 6T Fuel Gas Heater	--	--	S12	0.0011	NOX	98.4	Vendor Specifications	100%	0%	0.111	0.111	0.488	0.488
							0.0011	CO	150	Vendor Specifications	100%	0%	0.170	0.170	0.743	0.743
							0.0011	SO2	14.3	Mass balance based on 100% conversion of fuel sulfur to SO2	100%	0%	1.62E-02	1.62E-02	7.08E-02	7.08E-02
							0.0011	PM10/2.5	7.60	AP-42, Table 1.4-2	100%	0%	8.60E-03	8.60E-03	3.76E-02	3.76E-02
							0.0011	CO2-e	120,339	Mass Balance	100%	0%	136	136	596	596
							0.0011	CO2	120,017	40 CFR 98 Table C-1	100%	0%	136	136	595	595
							0.0011	N2O	0.226	40 CFR 98 Table C-2	100%	0%	2.56E-04	2.56E-04	1.12E-03	1.12E-03
							0.0011	Methane	10.2	Scaling of AP-42 Table 1.4-3	100%	0%	1.15E-02	1.15E-02	5.03E-02	5.03E-02
							0.0011	VOC (Total)	36.1		100%	0%	4.09E-02	4.09E-02	0.179	0.179
							0.0011	HAP (Total)	8.32	Scaling of AP-42 Table 1.4-3 & 1.4-4	100%	0%	9.40E-03	9.40E-03	4.12E-02	4.12E-02
							0.0011	Benzene	9.28E-03	Scaling of AP-42 Table 1.4-3	100%	0%	1.05E-05	1.05E-05	4.60E-05	4.60E-05
							0.0011	Formaldehyde	0.331		100%	0%	3.75E-04	3.75E-04	1.64E-03	1.64E-03
							0.0011	Hexane (n-)	7.95		100%	0%	8.99E-03	8.99E-03	3.94E-02	3.94E-02
							0.0011	Methylnaphthalene (2-)	1.06E-04		100%	0%	1.20E-07	1.20E-07	5.25E-07	5.25E-07
							0.0011	Naphthalene	2.69E-03		100%	0%	3.05E-06	3.05E-06	1.33E-05	1.33E-05
							0.0011	Toluene	1.50E-02		100%	0%	1.70E-05	1.70E-05	7.44E-05	7.44E-05
EU13	V05 Storage Tank	1	Standing	--	--	--	0.0009	CO2-e	4,785	Scaling of AP-42 Chapter 7 (06/2020)	100%	0%	4.33	4.33	18.9	18.9
							0.0009	CO2	6.20		100%	0%	5.60E-03	5.60E-03	2.45E-02	2.45E-02
							0.0009	Methane	171		100%	0%	0.154	0.154	0.676	0.676
							0.0009	Ethane	28.0		100%	0%	2.53E-02	2.53E-02	0.111	0.111
							0.0009	VOC (Total)	79.2		100%	0%	7.16E-02	7.16E-02	0.313	0.313
							0.0009	HAP (Total)	4.93		100%	0%	4.46E-03	4.46E-03	1.95E-02	1.95E-02
							0.0009	Benzene	1.19		100%	0%	1.08E-03	1.08E-03	4.72E-03	4.72E-03
							0.0009	Ethylbenzene	3.78E-02		100%	0%	3.41E-05	3.41E-05	1.50E-04	1.50E-04
							0.0009	Hexane (n-)	2.28		100%	0%	2.07E-03	2.07E-03	9.05E-03	9.05E-03
							0.0009	Toluene	1.08		100%	0%	9.78E-04	9.78E-04	4.28E-03	4.28E-03
							0.0009	Trimethylpentane (2,2,4-)	1.10E-02		100%	0%	9.95E-06	9.95E-06	4.36E-05	4.36E-05
							0.0009	Xylenes	0.322		100%	0%	2.91E-04	2.91E-04	1.28E-03	1.28E-03
EU13	V05 Storage Tank	2	Working	--	--	--	0.0009	CO2-e	519	Scaling of AP-42 Chapter 7 (06/2020)	100%	0%	0.469	0.469	2.06	2.06
							0.0009	CO2	0.673		100%	0%	6.08E-04	6.08E-04	2.66E-03	2.66E-03
							0.0009	Methane	18.5		100%	0%	1.67E-02	1.67E-02	7.33E-02	7.33E-02
							0.0009	Ethane	3.04		100%	0%	2.75E-03	2.75E-03	1.20E-02	1.20E-02
							0.0009	VOC (Total)	8.59		100%	0%	7.77E-03	7.77E-03	3.40E-02	3.40E-02
							0.0009	HAP (Total)	0.535		100%	0%	4.84E-04	4.84E-04	2.12E-03	2.12E-03
							0.0009	Benzene	0.129		100%	0%	1.17E-04	1.17E-04	5.12E-04	5.12E-04
							0.0009	Ethylbenzene	4.10E-03		100%	0%	3.70E-06	3.70E-06	1.62E-05	1.62E-05
							0.0009	Hexane (n-)	0.248		100%	0%	2.24E-04	2.24E-04	9.82E-04	9.82E-04
							0.0009	Toluene	0.117		100%	0%	1.06E-04	1.06E-04	4.65E-04	4.65E-04
							0.0009	Trimethylpentane (2,2,4-)	1.19E-03		100%	0%	1.08E-06	1.08E-06	4.73E-06	4.73E-06
							0.0009	Xylenes	3.50E-02		100%	0%	3.16E-05	3.16E-05	1.39E-04	1.39E-04

Emission Unit #	Emission Unit Name	Process ID	Process Name	Control Device Name	Control Device ID	Stack ID	Maximum Design Capacity (SCC Units/hour)	Pollutant	Uncontrolled Emission Factor (lb/SCC Units)	Emission Factor Source (e.g. AP-42, Stack Test, Mass Balance)	Capture Efficiency (%)	Control Efficiency (%)	Hourly Emissions		Annual Emissions	
													Uncontrolled Potential (lb/hr)	Controlled Potential (lb/hr)	Uncontrolled Potential (tons/yr)	Controlled Potential (tons/yr)
PC01	DANV-PC-NG	1	Valves	--	--	--	0.0797	CO2-e	2,072.674	Scaling of EPA 453 Table 2-4 and gas analysis weight percentages	100%	0%	165	165	723	723
							0.0797	CO2	2.961		100%	0%	0.236	0.236	1.03	1.03
							0.0797	Methane	82.789		100%	0%	6.60	6.60	28.9	28.9
							0.0797	VOC (Total)	3.709		100%	0%	0.296	0.296	1.29	1.29
							0.0797	HAP (Total)	0.190		100%	0%	1.52E-02	1.52E-02	6.65E-02	6.65E-02
							0.0797	Benzene	0.039		100%	0%	3.08E-03	3.08E-03	1.35E-02	1.35E-02
							0.0797	Ethylbenzene	0.007		100%	0%	5.71E-04	5.71E-04	2.50E-03	2.50E-03
							0.0797	Hexane (n-)	0.110		100%	0%	8.79E-03	8.79E-03	3.85E-02	3.85E-02
							0.0797	Toluene	0.052		100%	0%	4.17E-03	4.17E-03	1.82E-02	1.82E-02
							0.0797	Trimethylpentane (2,2,4-)	0.008		100%	0%	6.11E-04	6.11E-04	2.68E-03	2.68E-03
							0.0797	Xylenes	0.032		100%	0%	2.53E-03	2.53E-03	1.11E-02	1.11E-02
PC01	DANV-PC-NG	2	Connectors	--	--	--	0.3678	CO2-e	92.119	Scaling of EPA 453 Table 2-4 and gas analysis weight percentages	100%	0%	33.9	33.9	148	148
							0.3678	CO2	0.132		100%	0%	4.84E-02	4.84E-02	0.212	0.212
							0.3678	Methane	3.679		100%	0%	1.35	1.35	5.93	5.93
							0.3678	VOC (Total)	0.165		100%	0%	6.06E-02	6.06E-02	0.266	0.266
							0.3678	HAP (Total)	0.008		100%	0%	3.11E-03	3.11E-03	1.36E-02	1.36E-02
							0.3678	Benzene	0.002		100%	0%	6.33E-04	6.33E-04	2.77E-03	2.77E-03
							0.3678	Ethylbenzene	0.000		100%	0%	1.17E-04	1.17E-04	5.13E-04	5.13E-04
							0.3678	Hexane (n-)	0.005		100%	0%	1.80E-03	1.80E-03	7.90E-03	7.90E-03
							0.3678	Toluene	0.002		100%	0%	8.55E-04	8.55E-04	3.74E-03	3.74E-03
							0.3678	Trimethylpentane (2,2,4-)	0.000		100%	0%	1.25E-04	1.25E-04	5.49E-04	5.49E-04
							0.3678	Xylenes	0.001		100%	0%	5.18E-04	5.18E-04	2.27E-03	2.27E-03
PC01	DANV-PC-NG	3	Flanges	--	--	--	0.0532	CO2-e	179.632	Scaling of EPA 453 Table 2-4 and gas analysis weight percentages	100%	0%	9.56	9.56	41.9	41.9
							0.0532	CO2	0.257		100%	0%	1.36E-02	1.36E-02	5.98E-02	5.98E-02
							0.0532	Methane	7.175		100%	0%	0.382	0.382	1.67	1.67
							0.0532	VOC (Total)	0.321		100%	0%	1.71E-02	1.71E-02	7.49E-02	7.49E-02
							0.0532	VOC (non-HAP)	0.305		100%	0%	1.62E-02	1.62E-02	7.10E-02	7.10E-02
							0.0532	Benzene	0.003		100%	0%	1.78E-04	1.78E-04	7.82E-04	7.82E-04
							0.0532	Ethylbenzene	0.001		100%	0%	3.30E-05	3.30E-05	1.45E-04	1.45E-04
							0.0532	Hexane (n-)	0.010		100%	0%	5.08E-04	5.08E-04	2.23E-03	2.23E-03
							0.0532	Toluene	0.005		100%	0%	2.41E-04	2.41E-04	1.06E-03	1.06E-03
							0.0532	Trimethylpentane (2,2,4-)	0.001		100%	0%	3.54E-05	3.54E-05	1.55E-04	1.55E-04
							0.0532	Xylenes	0.003		100%	0%	1.46E-04	1.46E-04	6.40E-04	6.40E-04

Emission Unit #	Emission Unit Name	Process ID	Process Name	Control Device Name	Control Device ID	Stack ID	Maximum Design Capacity (SCC Units/hour)	Pollutant	Uncontrolled Emission Factor (lb/SCC Units)	Emission Factor Source (e.g. AP-42, Stack Test, Mass Balance)	Capture Efficiency (%)	Control Efficiency (%)	Hourly Emissions		Annual Emissions	
													Uncontrolled Potential (lb/hr)	Controlled Potential (lb/hr)	Uncontrolled Potential (tons/yr)	Controlled Potential (tons/yr)
PC01	DANV-PC-NG	4	Open-Ended Lines	--	--	--	0.0041	CO2-e	921.189	Scaling of EPA 453 Table 2-4 and gas analysis weight percentages	100%	0%	3.79	3.79	16.6	16.6
							0.0041	CO2	1.316		100%	0%	5.41E-03	5.41E-03	2.37E-02	2.37E-02
							0.0041	Methane	36.795		100%	0%	0.151	0.151	0.662	0.662
							0.0041	VOC (Total)	1.648		100%	0%	6.77E-03	6.77E-03	2.97E-02	2.97E-02
							0.0041	HAP (Total)	0.085		100%	0%	3.48E-04	3.48E-04	1.52E-03	1.52E-03
							0.0041	Benzene	0.017		100%	0%	7.07E-05	7.07E-05	3.10E-04	3.10E-04
							0.0041	Ethylbenzene	0.003		100%	0%	1.31E-05	1.31E-05	5.73E-05	5.73E-05
							0.0041	Hexane (n-)	0.049		100%	0%	2.01E-04	2.01E-04	8.82E-04	8.82E-04
							0.0041	Toluene	0.023		100%	0%	9.55E-05	9.55E-05	4.18E-04	4.18E-04
							0.0041	Trimethylpentane (2,2,4-)	0.003		100%	0%	1.40E-05	1.40E-05	6.14E-05	6.14E-05
							0.0041	Xylenes	0.014		100%	0%	5.79E-05	5.79E-05	2.54E-04	2.54E-04
PC01	DANV-PC-NG	5	Other	--	--	--	0.0081	CO2-e	4,053.230	Scaling of EPA 453 Table 2-4 and composition estimates	100%	0%	32.9	32.9	144	144
							0.0081	CO2	5.790		100%	0%	4.69E-02	4.69E-02	0.206	0.206
							0.0081	Methane	161.898		100%	0%	1.31	1.31	5.75	5.75
							0.0081	VOC (Total)	7.253		100%	0%	5.88E-02	5.88E-02	0.257	0.257
							0.0081	HAP (Total)	0.372		100%	0%	3.02E-03	3.02E-03	1.32E-02	1.32E-02
							0.0081	Benzene	0.076		100%	0%	6.14E-04	6.14E-04	2.69E-03	2.69E-03
							0.0081	Ethylbenzene	0.014		100%	0%	1.14E-04	1.14E-04	4.97E-04	4.97E-04
							0.0081	Hexane (n-)	0.216		100%	0%	1.75E-03	1.75E-03	7.66E-03	7.66E-03
							0.0081	Toluene	0.102		100%	0%	8.29E-04	8.29E-04	3.63E-03	3.63E-03
							0.0081	Trimethylpentane (2,2,4-)	0.015		100%	0%	1.22E-04	1.22E-04	5.33E-04	5.33E-04
							0.0081	Xylenes	0.062		100%	0%	5.02E-04	5.02E-04	2.20E-03	2.20E-03
PC02	DANV-PC-PL	1	Valves	--	--	--	0.0113	CO2-e	0.463	Scaling of EPA 453 Table 2-4 and composition estimates	100%	0%	5.24E-03	5.24E-03	2.29E-02	2.29E-02
							0.0113	CO2	0.006		100%	0%	7.11E-05	7.11E-05	3.11E-04	3.11E-04
							0.0113	Methane	0.018		100%	0%	2.07E-04	2.07E-04	9.05E-04	9.05E-04
							0.0113	VOC (Total)	48.213		100%	0%	0.545	0.545	2.39	2.39
							0.0113	HAP (Total)	7.021		100%	0%	7.93E-02	7.93E-02	0.348	0.348
							0.0113	Benzene	0.695		100%	0%	7.86E-03	7.86E-03	3.44E-02	3.44E-02
							0.0113	Ethylbenzene	0.230		100%	0%	2.60E-03	2.60E-03	1.14E-02	1.14E-02
							0.0113	Hexane (n-)	0.818		100%	0%	9.24E-03	9.24E-03	4.05E-02	4.05E-02
							0.0113	Toluene	2.168		100%	0%	2.45E-02	2.45E-02	0.107	0.107
							0.0113	Trimethylpentane (2,2,4-)	0.012		100%	0%	1.41E-04	1.41E-04	6.17E-04	6.17E-04
							0.0113	Xylenes	3.098		100%	0%	3.50E-02	3.50E-02	0.153	0.153

Emission Unit #	Emission Unit Name	Process ID	Process Name	Control Device Name	Control Device ID	Stack ID	Maximum Design Capacity (SCC Units/hour)	Pollutant	Uncontrolled Emission Factor (lb/SCC Units)	Emission Factor Source (e.g. AP-42, Stack Test, Mass Balance)	Capture Efficiency (%)	Control Efficiency (%)	Hourly Emissions		Annual Emissions	
													Uncontrolled Potential (lb/hr)	Controlled Potential (lb/hr)	Uncontrolled Potential (tons/yr)	Controlled Potential (tons/yr)
PC02	DANV-PC-PL	2	Connectors	--	--	--	0.0656	CO2-e	0.039	Scaling of EPA 453 Table 2-4 and composition estimates	100%	0%	2.56E-03	2.56E-03	1.12E-02	1.12E-02
							0.0656	CO2	0.001		100%	0%	3.47E-05	3.47E-05	1.52E-04	1.52E-04
							0.0656	TOC (Total)	4.055		100%	0%	0.266	0.266	1.17	1.17
							0.0656	Methane	0.002		100%	0%	1.01E-04	1.01E-04	4.42E-04	4.42E-04
							0.0656	VOC (Total)	4.050		100%	0%	0.266	0.266	1.16	1.16
							0.0656	HAP (Total)	0.590		100%	0%	3.87E-02	3.87E-02	0.170	0.170
							0.0656	Benzene	0.058		100%	0%	3.83E-03	3.83E-03	1.68E-02	1.68E-02
							0.0656	Ethylbenzene	0.019		100%	0%	1.27E-03	1.27E-03	5.55E-03	5.55E-03
							0.0656	Hexane (n-)	0.069		100%	0%	4.51E-03	4.51E-03	1.97E-02	1.97E-02
							0.0656	Toluene	0.182		100%	0%	1.20E-02	1.20E-02	5.24E-02	5.24E-02
							0.0656	Trimethylpentane (2,2,4-)	0.001		100%	0%	6.87E-05	6.87E-05	3.01E-04	3.01E-04
							0.0656	Xylenes	0.260		100%	0%	1.71E-02	1.71E-02	7.48E-02	7.48E-02
PC02	DANV-PC-PL	3	Flanges	--	--	--	0.0239	CO2-e	0.020	Scaling of EPA 453 Table 2-4 and composition estimates	100%	0%	4.87E-04	4.87E-04	2.13E-03	2.13E-03
							0.0239	CO2	0.000		100%	0%	6.60E-06	6.60E-06	2.89E-05	2.89E-05
							0.0239	Methane	0.001		100%	0%	1.92E-05	1.92E-05	8.41E-05	8.41E-05
							0.0239	VOC (Total)	2.121		100%	0%	5.06E-02	5.06E-02	0.222	0.222
							0.0239	HAP (Total)	0.309		100%	0%	7.37E-03	7.37E-03	3.23E-02	3.23E-02
							0.0239	Benzene	0.031		100%	0%	7.30E-04	7.30E-04	3.20E-03	3.20E-03
							0.0239	Ethylbenzene	0.010		100%	0%	2.41E-04	2.41E-04	1.06E-03	1.06E-03
							0.0239	Hexane (n-)	0.036		100%	0%	8.58E-04	8.58E-04	3.76E-03	3.76E-03
							0.0239	Toluene	0.095		100%	0%	2.28E-03	2.28E-03	9.97E-03	9.97E-03
							0.0239	Trimethylpentane (2,2,4-)	0.001		100%	0%	1.31E-05	1.31E-05	5.73E-05	5.73E-05
							0.0239	Xylenes	0.136		100%	0%	3.25E-03	3.25E-03	1.42E-02	1.42E-02
PC02	DANV-PC-PL	4	Open-Ended Lines	--	--	--	0.0041	CO2-e	0.260	Scaling of EPA 453 Table 2-4 and composition estimates	100%	0%	1.07E-03	1.07E-03	4.67E-03	4.67E-03
							0.0041	CO2	0.004		100%	0%	1.45E-05	1.45E-05	6.34E-05	6.34E-05
							0.0041	Methane	0.010		100%	0%	4.21E-05	4.21E-05	1.84E-04	1.84E-04
							0.0041	VOC (Total)	26.999		100%	0%	0.111	0.111	0.486	0.486
							0.0041	HAP (Total)	3.932		100%	0%	1.62E-02	1.62E-02	7.08E-02	7.08E-02
							0.0041	Benzene	0.389		100%	0%	1.60E-03	1.60E-03	7.01E-03	7.01E-03
							0.0041	Ethylbenzene	0.129		100%	0%	5.29E-04	5.29E-04	2.32E-03	2.32E-03
							0.0041	Hexane (n-)	0.458		100%	0%	1.88E-03	1.88E-03	8.24E-03	8.24E-03
							0.0041	Toluene	1.214		100%	0%	4.99E-03	4.99E-03	2.19E-02	2.19E-02
							0.0041	Trimethylpentane (2,2,4-)	0.007		100%	0%	2.87E-05	2.87E-05	1.26E-04	1.26E-04
							0.0041	Xylenes	1.735		100%	0%	7.13E-03	7.13E-03	3.12E-02	3.12E-02

Emission Unit #	Emission Unit Name	Process ID	Process Name	Control Device Name	Control Device ID	Stack ID	Maximum Design Capacity (SCC Units/hour)	Pollutant	Uncontrolled Emission Factor (lb/SCC Units)	Emission Factor Source (e.g. AP-42, Stack Test, Mass Balance)	Capture Efficiency (%)	Control Efficiency (%)	Hourly Emissions		Annual Emissions	
													Uncontrolled Potential (lb/hr)	Controlled Potential (lb/hr)	Uncontrolled Potential (tons/yr)	Controlled Potential (tons/yr)
PC02	DANV-PC-PL	5	Pump Seals	--	--	--	0.0001	CO2-e	2.410	Scaling of EPA 453 Table 2-4 and composition estimates	100%	0%	2.75E-04	2.75E-04	1.21E-03	1.21E-03
							0.0001	CO2	0.033		100%	0%	3.73E-06	3.73E-06	1.64E-05	1.64E-05
							0.0001	Methane	0.095		100%	0%	1.09E-05	1.09E-05	4.75E-05	4.75E-05
							0.0001	VOC (Total)	250.709		100%	0%	2.86E-02	2.86E-02	0.125	0.125
							0.0001	VOC (non-HAP)	214.199		100%	0%	2.45E-02	2.45E-02	0.107	0.107
							0.0001	HAP (Total)	36.510		100%	0%	4.17E-03	4.17E-03	1.83E-02	1.83E-02
							0.0001	Benzene	3.616		100%	0%	4.13E-04	4.13E-04	1.81E-03	1.81E-03
							0.0001	Ethylbenzene	1.195		100%	0%	1.36E-04	1.36E-04	5.98E-04	5.98E-04
							0.0001	Hexane (n-)	4.252		100%	0%	4.85E-04	4.85E-04	2.13E-03	2.13E-03
							0.0001	Toluene	11.274		100%	0%	1.29E-03	1.29E-03	5.64E-03	5.64E-03
							0.0001	Trimethylpentane (2,2,4-)	0.065		100%	0%	7.40E-06	7.40E-06	3.24E-05	3.24E-05
							0.0001	Xylenes	16.108		100%	0%	1.84E-03	1.84E-03	8.05E-03	8.05E-03
PC02	DANV-PC-PL	6	Other	0	0	0	0.0001	CO2-e	1.390	Scaling of EPA 453 Table 2-4 and composition estimates	100%	0%	1.59E-04	1.59E-04	6.95E-04	6.95E-04
							0.0001	CO2	0.019		100%	0%	2.15E-06	2.15E-06	9.44E-06	9.44E-06
							0.0001	Methane	0.055		100%	0%	6.26E-06	6.26E-06	2.74E-05	2.74E-05
							0.0001	VOC (Total)	144.640		100%	0%	1.65E-02	1.65E-02	7.23E-02	7.23E-02
							0.0001	HAP (Total)	21.063		100%	0%	2.40E-03	2.40E-03	1.05E-02	1.05E-02
							0.0001	Benzene	2.086		100%	0%	2.38E-04	2.38E-04	1.04E-03	1.04E-03
							0.0001	Ethylbenzene	0.690		100%	0%	7.87E-05	7.87E-05	3.45E-04	3.45E-04
							0.0001	Hexane (n-)	2.453		100%	0%	2.80E-04	2.80E-04	1.23E-03	1.23E-03
							0.0001	Toluene	6.504		100%	0%	7.42E-04	7.42E-04	3.25E-03	3.25E-03
							0.0001	Trimethylpentane (2,2,4-)	0.037		100%	0%	4.27E-06	4.27E-06	1.87E-05	1.87E-05
							0.0001	Xylenes	9.293		100%	0%	1.06E-03	1.06E-03	4.65E-03	4.65E-03
PC03	DANV-PC-OIL	1	Valves	--	--	--	0.0411	VOC (Total)	0.162	Scaling of EPA 453 Table 2-4 and MSDS weight percentages	100%	0%	6.67E-03	6.67E-03	2.92E-02	2.92E-02
PC03	DANV-PC-OIL	2	Connectors	--	--	--	0.1168	VOC (Total)	0.145	Scaling of EPA 453 Table 2-4 and MSDS weight percentages	100%	0%	1.69E-02	1.69E-02	7.41E-02	7.41E-02
PC03	DANV-PC-OIL	3	Flanges	--	--	--	0.0241	VOC (Total)	0.008	Scaling of EPA 453 Table 2-4 and MSDS weight percentages	100%	0%	1.81E-04	1.81E-04	7.95E-04	7.95E-04
PC03	DANV-PC-OIL	4	Pump Seals	--	--	--	0.0024	VOC (Total)	166.443	Scaling of EPA 453 Table 2-4 and MSDS weight percentages	100%	0%	0.399	0.399	1.75	1.75
PC03	DANV-PC-OIL	5	Other	--	--	--	0.0005	VOC (Total)	0.618	Scaling of EPA 453 Table 2-4 and MSDS weight percentages	100%	0%	2.82E-04	2.82E-04	1.24E-03	1.24E-03

Emission Unit #	Emission Unit Name	Process ID	Process Name	Control Device Name	Control Device ID	Stack ID	Maximum Design Capacity (SCC Units/hour)	Pollutant	Uncontrolled Emission Factor (lb/SCC Units)	Emission Factor Source (e.g. AP-42, Stack Test, Mass Balance)	Capture Efficiency (%)	Control Efficiency (%)	Hourly Emissions		Annual Emissions	
													Uncontrolled Potential (lb/hr)	Controlled Potential (lb/hr)	Uncontrolled Potential (tons/yr)	Controlled Potential (tons/yr)
GR-ST	DANV-GR-ST	1	Station Gas Release Emissions from Natural Gas	--	--	--	1	CO2-e	4,141	Mass balance	100%	0%	4,141	4,141	18,136	18,136
							1	CO2	5.91		100%	0%	5.91	5.91	25.9	25.9
							1	Methane	165		100%	0%	165	165	724	724
							1	VOC (Total)	3.82		100%	0%	3.82	3.82	16.7	16.7
							1	HAP (Total)	0.183		100%	0%	0.183	0.183	0.800	0.800
							1	Benzene	3.71E-02		100%	0%	3.71E-02	3.71E-02	0.163	0.163
							1	Ethylbenzene	1.43E-02		100%	0%	1.43E-02	1.43E-02	6.27E-02	6.27E-02
							1	Hexane (n-)	0.106		100%	0%	0.106	0.106	0.463	0.463
							1	Toluene	5.02E-02		100%	0%	5.02E-02	5.02E-02	0.220	0.220
							1	Trimethylpentane (2,2,4-)	1.19E-02		100%	0%	1.19E-02	1.19E-02	5.23E-02	5.23E-02
							1	Xylenes	4.35E-02		100%	0%	4.35E-02	4.35E-02	0.191	0.191
GR-PL	DANV-GR-PL	1	Pipeline Gas Release Emissions from Natural Gas	--	--	--	1	CO2-e	1,103	Mass balance	100%	0%	1,103	1,103	4,831	4,831
							1	CO2	1.58		100%	0%	1.58	1.58	6.90	6.90
							1	Methane	44.1		100%	0%	44.1	44.1	193	193
							1	VOC (Total)	2.15		100%	0%	2.15	2.15	9.41	9.41
							1	HAP (Total)	5.99E-02		100%	0%	5.99E-02	5.99E-02	0.262	0.262
							1	Benzene	2.05E-02		100%	0%	2.05E-02	2.05E-02	9.00E-02	9.00E-02
							1	Ethylbenzene	3.81E-03		100%	0%	3.81E-03	3.81E-03	1.67E-02	1.67E-02
							1	Hexane (n-)	4.44E-02		100%	0%	4.44E-02	4.44E-02	0.195	0.195
							1	Toluene	1.67E-02		100%	0%	1.67E-02	1.67E-02	7.31E-02	7.31E-02
							1	Trimethylpentane (2,2,4-)	3.18E-03		100%	0%	3.18E-03	3.18E-03	1.39E-02	1.39E-02
							1	Xylenes	2.08E-02		100%	0%	2.08E-02	2.08E-02	9.12E-02	9.12E-02

Section N.2: Stack Information

UTM Zone: 16S

Stack ID	Identify all Emission Units (with Process ID) and Control Devices that Feed to Stack	Stack Physical Data			Stack UTM Coordinates		Stack Gas Stream Data		
		Equivalent Diameter *(ft)*	Height *(ft)*	Base Elevation *(ft)*	Northing *(m)*	Easting *(m)*	Flowrate *(acfm)*	Temperature *(° F)*	Exit Velocity *(ft/sec)*
S08	EU08 (CatOx-8)	7	61		4,161,692.02	698,514.05	236,123	940	102
S09	EU09 (CatOx-9)	7	61		4,161,677.47	698,537.75	236,123	940	102
S10	EU10 (CatOx-10)	7	61		4161666.27	698,555.93	236,123	940	102
S11	EU11 (NSCR-11)	0.98	18		4161661.78	698,470.34	7,312	1,176	161
S12	EU12-1	0.81	15		4161654.79	698,478.74	TBD	750	TBD
S12	EU12-2	0.81	15		4161619.14	698536.54	TBD	750	TBD
S12	EU12-3	0.81	15		4161615.86	698541.77	TBD	750	TBD

Section N.3: Fugitive Information

UTM Zone: 16S

Emission Unit #	Emission Unit Name	Process ID	Area Physical Data		Area UTM Coordinates		Area Release Data	
			Length of the X Side *(ft)*	Length of the Y Side *(ft)*	Northing *(m)*	Easting *(m)*	Release Temperature *(°F)*	Release Height *(ft)*
Not Applicable to this Application								

Section N.4: Notes, Comments, and Explanations

Division for Air Quality
300 Sower Boulevard
Frankfort, KY 40601
(502) 564-3999

DEP7007DD

Insignificant Activities

___ Section DD.1: Table of Insignificant Activities
___ Section DD.2: Signature Block
___ Section DD.3: Notes, Comments, and Explanations

Source Name: Texas Eastern Transmission, LP - Danville Compressor Station
KY EIS (AFS 21- 137-00008
Permit #: V-16-056
Agency Interest (AI) ID: 44065
Date: July 31, 2025

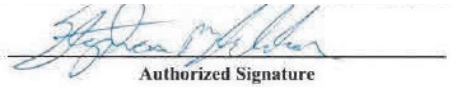
Section DD.1: Table of Insignificant Activities

*Identify each activity with a unique Insignificant Activity number (IA #); for example: 1, 2, 3… etc.

Insignificant Activity #	Description of Activity including Rated Capacity	Serial Number or Other Unique Identifier	Applicable Regulation(s)	Calculated Emissions
	DANV CHTR 01 (Boilers/Heaters) -- 0.004 MMBTU/hr (output)	DANV CHTR 01	401 KAR 59:015	Max -> CO PTE of 0.036 tpy
	DANV SVV V01C01 (Separator Vessel) -- 59 gal (accumulation)	DANV SVV V01C01	401 KAR 63:020	Max -> VOC PTE of 0.071 tpy
	DANV SVV V01C02 (Separator Vessel) -- 59 gal (accumulation)	DANV SVV V01C02	401 KAR 63:020	Max -> VOC PTE of 0.071 tpy
	DANV SVV V01C03 (Separator Vessel) -- 59 gal (accumulation)	DANV SVV V01C03	401 KAR 63:020	Max -> VOC PTE of 0.071 tpy
	DANV SLV V02 (Separator Vessel) -- 470 gal (accumulation)	DANV SLV V02	401 KAR 63:020	Max -> VOC PTE of 1.120 tpy
	DANV TNK OW01 (Separator Vessel) -- 220 gal (accumulation)	DANV TNK OW01	None	Max -> VOC PTE of 0.001 tpy
	DANV TL PL (Truck Loading Area) -- 150 gpm	DANV TL PL	401 KAR 63:020	Max -> VOC PTE of 0.022 tpy
	DANV TL OW (Truck Loading Area) -- 150 gpm	DANV TL OW	None	Max -> VOC PTE of <0.001 tpy
	Refer to Appendix B for Detailed Calculations for all Emission Units			

Section DD.2: Signature Block

I, THE UNDERSIGNED, HEREBY CERTIFY UNDER PENALTY OF LAW, THAT I AM A RESPONSIBLE OFFICIAL, AND THAT I HAVE PERSONALLY EXAMINED, AND AM FAMILIAR WITH, THE 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 INFORMATION IS ON KNOWLEDGE AND BELIEF, TRUE, ACCURATE, AND COMPLETE. I AM AWARE THAT THERE ARE SIGNIFICANT PENALTIES FOR SUBMITTING FALSE OR INCOMPLETE INFORMATION, INCLUDING THE POSSIBILITY OF FINE OR IMPRISONMENT.



Authorized Signature

July 31, 2025
Date

Stephen McFadden
Type or Printed Name of Signatory

Director Field Operations Central Region
Title of Signatory

Section DD.3: Notes, Comments, and Explanations
Refer to prior applications for emission calculations for existing insignificant activities not affected by this project.

Division for Air Quality

300 Sower Boulevard
Frankfort, KY 40601
(502) 564-3999

DEP7007V

Applicable Requirements and Compliance Activities

___ Section V.1: Emission and Operating Limitation(s)
___ Section V.2: Monitoring Requirements
___ Section V.3: Recordkeeping Requirements
___ Section V.4: Reporting Requirements
___ Section V.5: Testing Requirements
___ Section V.6: Notes, Comments, and Explanations

Additional Documentation
___ Complete DEP7007AI

Source Name: Texas Eastern Transmission, LP - Danville Compressor Station
KY EIS (AFS) #: 21-137-00008
Permit #: V-16-056
Agency Interest (AI) ID: 44065
Date: July 31, 2025

Section V.1: Emission and Operating Limitation(s)

Emission Unit #	Emission Unit Description	Applicable Regulation or Requirement	Pollutant	Emission Limit (if applicable)	Voluntary Emission Limit or Exemption (if applicable)	Operating Requirement or Limitation (if applicable)	Method of Determining Compliance with the Emission and Operating Requirement(s)
EU07	Fugitive Emissions from Piping Components, Station Gas Releases, Pipeline Gas Releases						
NSPS Subpart OOOOb for COMPRESSOR SEALS							
		40 CFR 60.5380b(a)(6)(i)	VOC/GHG	--	--	The volumetric flow rate per seal must not exceed 10 standard cubic feet per minute (scfm) per seal. If the individual seals are manifolded to a single open-ended vent line, the volumetric flow rate must not exceed the sum of the individual seals multiplied by 10 scfm. If the volumetric flow rate, measured in accordance with 40 CFR 60.5380(a)(7)(iii) exceeds 10 scfm multiplied by the number of dry seals connected to the vent, the seals connected to the measured vent must be repaired as provided in 40 CFR 60.5380(a)(8).	Refer to monitoring, recordkeeping, and reporting requirements

Emission Unit #	Emission Unit Description	Applicable Regulation or Requirement	Pollutant	Emission Limit (if applicable)	Voluntary Emission Limit or Exemption (if applicable)	Operating Requirement or Limitation (if applicable)	Method of Determining Compliance with the Emission and Operating Requirement(s)
NSPS Subpart OOOOb for ELC LDAR							
		40 CFR 60.5397b(b)	VOC/GHG	--	--	Develop an emissions monitoring plan that covers the collection of fugitive emissions components within each company-defined area in accordance with 40 CFR 60.5397b(c) and (d).	Refer to monitoring, recordkeeping, and reporting requirements
		40 CFR 60.5397b(c) 40 CFR 60.5397b(d)	VOC/GHG	--	--	Include in the fugitive emissions monitoring plan the elements specified in 40 CFR 60.5397b(c)(1) through (c)(8) and (d)(1) through (d)(2) as applicable.	Refer to monitoring, recordkeeping, and reporting requirements
		40 CFR 60.5397b(e)	VOC/GHG	--	--	Each fugitive emissions component shall be observed or monitored for fugitive emissions during each monitoring survey.	Refer to monitoring, recordkeeping, and reporting requirements
EU07 EU08 EU09	Unit 4T Gas Turbine Unit 5T Gas Turbine Unit 6T Gas Turbine						
NSPS Subpart KKKK for Combustion Turbines							
		40 CFR 60.4333(a)	na	na	na	Operate and maintain the emissions unit, air pollution control equipment, and monitoring equipment in a manner consistent with good air pollution control practices for minimizing emissions at all times including during startup, shutdown, and malfunction.	Operate the affected source in a manner consistent with safety and good air pollution control practices.
		40 CFR 60.4320(a), 40 CFR 60 Subpart KKKK Table 1	NO_X	For a new turbine firing natural gas that has a heat input at peak load > 50 MMBtu/hr and ≤ 850 MMBtu/hr: 25 ppm at 15% O2, or 1.2 lb/MWh gross energy output, based upon a 30-unit operating day rolling average.	na	na	Refer to monitoring, recordkeeping, reporting, and testing requirements
		40 CFR 60.4330(a)(2)	SO_2	The permittee must not burn in the subject stationary combustion turbine any fuel which contains total potential sulfur emissions in excess of 26 ng SO2/J (0.060 lb SO2/MMBtu) heat input.	na	na	Refer to specific monitoring requirements

Section V.2: Monitoring Requirements

Emission Unit #	Emission Unit Description	Pollutant	Applicable Regulation or Requirement	Parameter Monitored	Description of Monitoring
EU07	Fugitive Emissions from Piping Components, Station Gas Releases, Pipeline Gas Releases				
NSPS Subpart OOOOb for COMPRESSOR SEALS					
		VOC/GHG	40 CFR 60.5380b(a)(6)(ii)	Dry Seal Leaks	Conduct the first volumetric flow rate measurement from a centrifugal compressor equipped with a dry seal on or before 8,760 hours of operation after May 7, 2024, or on or before 8,760 hours of operation after startup, whichever date is later.
		VOC/GHG	40 CFR 60.5380b(a)(6)(iii)	Dry Seal Leaks	Conduct subsequent volumetric flow rate measurements from a centrifugal compressor equipped with dry seals on or before 8,760 hours of operation after the previous measurement which demonstrates compliance with the 10 scfm volumetric flow rate per seal. If the individual seals are manifolded to a single open-ended vent line, the volumetric flow rate must not exceed the sum of the individual seals multiplied by 10 scfm.
		VOC/GHG	40 CFR 60.5380b(a)(7)(iii)	Dry Seal Leaks	Determine the volumetric flow rate for a centrifugal compressor, as specified in 40 CFR 60.5380b(a)(7)(iii)(A) or (B).
		VOC/GHG	40 CFR 60.5380b(a)(8)	Dry Seal Leaks	The seal must be repaired within 90 calendar days after the date of the volumetric emissions measurement that exceeds the applicable required flow rate per seal. Delay of repair will be allowed if the conditions in 40 CFR 60.5380b(a)(8)(i) or (ii) are met.
NSPS Subpart OOOOb for ELC LDAR					
		VOC/GHG	40 CFR 60.5397b(f)(2)	ELC Leaks	Conduct an initial monitoring survey using OGI or Method 21 within 90 days of the startup of a new compressor station for each new collection of fugitive emissions components at the new compressor station as specified.
		VOC/GHG	40 CFR 60.5397b(g)(1)(v)(A)	ELC Leaks	A monitoring survey of the collection of fugitive emissions components must be conducted at least monthly using audible, visual, and olfactory (AVO), or any other detection method, after the initial survey.
		VOC/GHG	40 CFR 60.5397b(g)(1)(v)(B)	ELC Leaks	A monitoring survey must be conducted at least quarterly using OGI or Method 21 after the initial survey. Consecutive quarterly monitoring surveys must be conducted at least 60 calendar days apart.
		VOC/GHG	40 CFR 60.5397b(g)(2)	ELC Leaks	If using Method 21, Difficult to monitor components: Fugitive emissions components that are designated difficult-to -monitor must meet the specifications of 40 CFR 60.5397b(g)(2)(i) through (iv).
		VOC/GHG	40 CFR 60.5397b(g)(3)	ELC Leaks	If using Method 21, Unsafe to monitor components: Fugitive emissions components that are designated unsafe-to--monitor must meet the specifications of 40 CFR 60.5397b(g)(3)(i) through (iv).
		VOC/GHG	40 CFR 60.5397b(h)(1)	ELC Leaks	The first attempt at repair of an identified source of fugitive emissions shall be made no later than 15 calendar days after detection of fugitive emissions that were identified using AVO. If the source is complying with 40 CFR 60.5397b(g)(1)(i) through (vi) using OGI or Method 21, a first attempt at repair shall be made no later than 30 calendar days after detection of the fugitive emissions.
		VOC/GHG	40 CFR 60.5397b(h)(2)	ELC Leaks	Repair shall be completed as soon as practicable, but no later than 15 calendar days after the first attempt at repair as required in 40 CFR 60.5397b(h)(1)(i), and 30 calendar days after the first attempt at repair as required in paragraph 40 CFR 60.5397b(h)(1)(ii).

Emission Unit #	Emission Unit Description	Pollutant	Applicable Regulation or Requirement	Parameter Monitored	Description of Monitoring
		VOC/GHG	40 CFR 60.5397b(h)(3)	ELC Leaks	If the repair is technically infeasible, would require a compressor station shutdown or would be unsafe to repair during operation of the unit, the repair must be completed during the next scheduled compressor station shutdown or within 2 years, whichever is earlier. If the repair requires replacement of a fugitive emissions component, or a part thereof, but the replacement cannot be acquired and installed within the repair timelines specified in paragraphs 40 CFR 60.5397b(h)(1) and (2). Comply with the requirements as specified in 40 CFR 60.5397b(h)(3)(ii) (A) through (C).
		VOC/GHG	40 CFR 60.5397b(h)(4)	ELC Leaks	Each identified source of fugitive emissions must be resurveyed to complete repair according to 40 CFR 60.5397b(h)(4)(i) through (v), to ensure that there are no fugitive emissions.
EU07 EU08 EU09	Unit 4T Gas Turbine Unit 5T Gas Turbine Unit 6T Gas Turbine				
NSPS Subpart KKKK for Combustion Turbines					
		SO_2	40 CFR 60.4365(a)	Fuel sulfur content	The permittee will obtain a current tariff sheet for the fuel specifying that the maximum total sulfur content for natural gas use is 20 grains of sulfur or less per 100 standard cubic feet (SCF) and potential sulfur emissions are less than 0.060 lb SO2/MMBtu) heat input.

Section V.3: Recordkeeping Requirements

Emission Unit #	Emission Unit Description	Pollutant	Applicable Regulation or Requirement	Parameter Recorded	Description of Recordkeeping
EU07	Fugitive Emissions from Piping Components, Station Gas Releases, Pipeline Gas Releases				
NSPS Subpart OOOOb for COMPRESSOR SEALS					
		VOC/GHG	40 CFR 60.5380b(d)	Dry Seal Leaks	Comply with the recordkeeping requirements as specified in 40 CFR 60.5420b(c)(4), and (8) through (13), as applicable.
NSPS Subpart OOOOb for ELC LDAR					
		VOC/GHG	40 CFR 60.5397b(k)	ELC Leaks	Comply with the recordkeeping requirements as specified in 40 CFR 60.5420b(c)(14).
EU07 EU08 EU09	Unit 4T Gas Turbine Unit 5T Gas Turbine Unit 6T Gas Turbine				
NSPS Subpart KKKK for Combustion Turbines					
		SO_2	40 CFR 60.4365(a)	Fuel sulfur content	The permittee will maintain records of tariff sheet for the fuel specifying that the maximum total sulfur content for natural gas use is 20 grains of sulfur or less per 100 standard cubic feet (SCF) and potential sulfur emissions are less than 0.060 lb SO2/MMBtu) heat input.

Section V.4: Reporting Requirements

Emission Unit #	Emission Unit Description	Pollutant	Applicable Regulation or Requirement	Parameter Reported	Description of Reporting
EU07	Fugitive Emissions from Piping Components, Station Gas Releases, Pipeline Gas Releases				
NSPS Subpart OOOOb for COMPRESSOR SEALS					
		VOC/GHG	40 CFR 60.5380b(d)	Dry Seal Leaks	Comply with the reporting requirements as specified in 40 CFR 60.5420b(b)(1) and (5), and (b)(11) through (13), as applicable.
NSPS Subpart OOOOb for ELC LDAR					
		VOC/GHG	40 CFR 60.5397b(k)	ELC Leaks	Comply with the reporting requirements as specified in 40 CFR 60.5420b(b)(1) and (9).
		VOC/GHG	40 CFR 60.5420b(b)	ELC Leaks	Submit annual report: Due initially no later than 90 days after the end of the initial compliance period, as determined according to 40 CFR 60.5410b. Submit subsequent annual reports no later than the same date each year as the initial annual report. Include the general information specified in 40 CFR 60.5420b(b)(1)(i) through (b)(1)(v).
EU07 EU08 EU09	Unit 4T Gas Turbine Unit 5T Gas Turbine Unit 6T Gas Turbine				
NSPS Subpart KKKK for Combustion Turbines					
		NO_X	40 CFR 60.4375(b)	Performance Tests	The permittee must submit a written report of the results of each performance test before the close of business on the 60th day following the completion of the performance test.

Section V.5: Testing Requirements

Emission Unit #	Emission Unit Description	Pollutant	Applicable Regulation or Requirement	Parameter Tested	Description of Testing
EU07 EU08 EU09	Unit 4T Gas Turbine Unit 5T Gas Turbine Unit 6T Gas Turbine				
NSPS Subpart KKKK for Combustion Turbines					
		NO_X	40 CFR 60.4340(a)	NO_X emissions	For units not using water or steam injection to control NO_X emissions, the permittee must perform annual performance tests in accordance with 40 CFR 60.4400 to demonstrate continuous compliance. If the NO_X emission result from the performance test is less than or equal to 75 percent of the NO_X emission limit for the turbine, the permittee may reduce the frequency of subsequent performance tests to once every 2 years (no more than 26 calendar months following the previous performance test). If the results of any subsequent performance test exceed 75 percent of the NO_X emission limit for the turbine, the permittee must resume annual performance tests.

Section V.6: Notes, Comments, and Explanations
This 7007V form covers new federal regulations for the Danville Station -- 40 CFR 60 Subpart KKKK and Subpart OOOOb. All case-by-case determinations (e.g., Subpart OOOOb avoidance limits and PSD avoidance limits) as well as regulations previously referenced in the Title V permit (e.g., 401 KAR 59:015) are provided in the suggested permit edits.

APPENDIX D: SUGGESTED PERMIT EDITS

Commonwealth of Kentucky
Energy and Environment Cabinet
Department for Environmental Protection
Division for Air Quality
300 Sower Boulevard, 2nd Floor
Frankfort, Kentucky 40601
(502) 564-3999

Final

AIR QUALITY PERMIT

Issued under 401 KAR 52:020

Permittee Name:	**Texas Eastern Transmission, LP**
Mailing Address:	**P.O. Box 1642, Houston, TX 77251**
Source Name:	**Texas Eastern Transmission, LP - Danville Compressor Station**
Mailing Address:	**1745 Airport Road, Danville, KY 40422**
Source Location:	**same as above**
Permit:	**V-16-056**
Agency Interest:	**44065**
Activity:	**APE20160001, APE20160002**
Review Type:	**Title V/Synthetic Minor, Construction/Operating**
Source ID:	**21-137-00008**
Regional Office:	**London Regional Office 875 S. Main Street London, KY 40741 (606) 330-2080**
County:	**Lincoln**
Application Complete Date:	**7/21/2016**
Issuance Date:	**April 3, 2017**
Expiration Date:	**April 3, 2022**

Rick S. Shewekah

Sean Alteri, Director
Division for Air Quality

SECTION B - EMISSION UNITS, EMISSION POINTS, APPLICABLE REGULATIONS, AND OPERATING CONDITIONS

Emission Unit: 01 (01-07) Seven Compressor Engines
Process 001 Reciprocating Internal Combustion Engine (Plant ID 20901)
Process 002 Reciprocating Internal Combustion Engine (Plant ID 20902)
Process 003 Reciprocating Internal Combustion Engine (Plant ID 20903)
Process 004 Reciprocating Internal Combustion Engine (Plant ID 20904)
Process 005 Reciprocating Internal Combustion Engine (Plant ID 20905)
Process 006 Reciprocating Internal Combustion Engine (Plant ID 20906)
Process 007 Reciprocating Internal Combustion Engine (Plant ID 20907)

Description: 1,760 hp Clark HBA-8

Engine Type:	2 stroke lean burn
Fuel:	Natural gas
Maximum rating:	16.60 MMBTU/hr, each
Date Constructed:	1952

Emission Unit: 02 (08-10) Three Compressor Engines
Process 001 Reciprocating Internal Combustion Engine (Plant ID 20908)
Process 002 Reciprocating Internal Combustion Engine (Plant ID 20909)
Process 003 Reciprocating Internal Combustion Engine (Plant ID 20910)

Description: 2,050 hp Clark HBA-8T

Engine Type:	2 stroke lean burn
Fuel:	Natural gas
Maximum rating:	18.68 MMBTU/hr, each
Date Constructed:	1957
Controls:	Oxidation Catalyst (proposed installation 2017)

Commented [JG1]: Enbridge will follow up separately with dates for prior installations

Note: See **Section H, Alternate Operating Scenarios** for pre-project requirements.

APPLICABLE REGULATIONS:
401 KAR 63:002, incorporating by reference **40 CFR 63, Subpart ZZZZ**, *National Emissions Standards for Hazardous Air Pollutants for Stationary Reciprocating Internal Combustion Engines*.

1. **Operating Limitations:**
   a. Pursuant to 401 KAR 52:020, Section 10, the permittee shall conduct routine maintenance checks to ensure optimum engine operations, for all engines under Emission Unit 01 and Emission Unit 02.

   Compliance Demonstration Method:
   See **5. Specific Recordkeeping Requirements,** Conditions b. and d.

   b. To preclude applicability of 401 KAR 51:017, the permittee shall limit the total combined natural gas fuel usage of Emission Unit 01 (seven Clark HBA-8 compressor engines) to a maximum of 249,488,235 scf per year, based on a 12-month rolling total.

SECTION B - EMISSION UNITS, EMISSION POINTS, APPLICABLE REGULATIONS, AND OPERATING CONDITIONS (CONTINUED)

Emissions Unit: 03 (11-12) Two Gas Turbines
Process 001 GE Frame 3 Gas Combustion Turbine (Plant ID 21001)
Process 002 GE Frame 3 Gas Combustion Turbine (Plant ID 21002)

Description: 8,000 hp turbines

Fuel:	Natural gas
Maximum rating:	83.51 MMBTU/hr, each
Construction commenced:	1961
Controls:	Oxidation Catalyst and Selective Catalytic Reduction (proposed 2017)

Commented [JG2]: Enbridge will follow up separately with dates for prior installations

Emissions Unit: 04 (13) Gas Turbine

Description: GE Frame 5 Gas Combustion 18,500 hp Turbine (Plant ID 21003)

Fuel:	Natural gas
Maximum rating:	183.82 MMBTU/hr
Construction commenced:	1969
Controls:	Oxidation Catalyst (proposed 2017)

Commented [JG3]: Enbridge will follow up separately with dates for prior installations

Notes: See **Section H, Alternate Operating Scenarios** for pre-project requirements.
Normal operation does not include startup, shutdown, or low-temperature operation.

APPLICABLE REGULATIONS:
401 KAR 63:002, incorporating by reference **40 CFR 63, Subpart YYYY**, *National Emission Standards for Hazardous Air Pollutants for Stationary Combustion Turbines*.

40 CFR Part 64, *Compliance Assurance Monitoring.*

1. **Operating Limitations:**
Pursuant to 401 KAR 52:020, Section 10, the permittee shall conduct routine operation and maintenance procedures in accordance with the manufacturer's specifications for each turbine to ensure optimum operations.

Compliance Demonstration Method:
See **Section E, Source Control Equipment Requirements,** and **7. Specific Control Equipment Operating Conditions.**

2. **Emission Limitations:**
a. To preclude applicability of 401 KAR 51:017, NO_x emissions from each of the Frame 3 turbines under Emission Unit 03 shall not exceed 25 ppmvd at 15% O_2 during normal operation.

Compliance Demonstration Method:
The permittee shall demonstrate continuous compliance by complying with either **3. Testing Requirements.** Condition a, or **4. Specific Monitoring Requirements.** Conditions a. and b.

SECTION B - EMISSION UNITS, EMISSION POINTS, APPLICABLE REGULATIONS, AND OPERATING CONDITIONS (CONTINUED)

Emissions Unit: 05 (005) Auxiliary Emergency Generator

Description: Caterpillar G3516 Reciprocating Internal Combustion Engine

Capacity:	1,462 hp
Engine type:	4 cycle lean burn
Maximum rating:	12.64 MMBtu/hr
Engine manufactured:	June 29, 2010
Construction commenced:	October 15, 2010

Emissions Unit: 06 (006) Auxiliary Emergency Generator

Description: Caterpillar G3512 Reciprocating Internal Combustion Engine

Capacity:	1,102 hp
Engine type:	4 cycle lean burn
Maximum rating:	8.82 MMBtu/hr
Engine manufactured:	Proposed March 2017
Construction commenced:	Proposed September 2017

Commented [JG4]: Enbridge will follow up separately with dates for prior installations

Commented [JG5]: Enbridge will follow up separately with dates for prior installations

Emissions Unit: 11 (011) Auxiliary Emergency Generator

Description: Waukesha VGF48SE Reciprocating Internal Combustion Engine

Capacity:	1,475 hp
Engine type:	4 cycle lean burn
Maximum rating:	12.84 MMBtu/hr
Engine manufactured:	Proposed 2026
Construction commenced:	Proposed July 2026

APPLICABLE REGULATIONS:

401 KAR 63:002, incorporating by reference **40 CFR 63, Subpart ZZZZ**, *National Emissions Standards for Hazardous Air Pollutants for Stationary Reciprocating Internal Combustion Engines*.

401 KAR 60:005, incorporating by reference **40 CFR 60, Subpart JJJJ**, *Standards of Performance for Stationary Spark Ignition Internal Combustion Engines.*
Note: D.C. Circuit Court [Delaware v. EPA, 785 F. 3d 1 (D.C. Cir. 2015)] has vacated the provisions in 40 CFR 60, Subpart JJJJ that contain the 100-hour exemption for operation of emergency engines for purposes of emergency demand response under 40 CFR 60.4243(d)(2)(ii)-(iii). The D.C. Circuit Court issued the mandate for the vacatur on May 4, 2016.

1. **Operating Limitations:**
   a. Pursuant to 40 CFR 60.4243(d)(1) through (3), the permittee shall operate each emergency stationary ICE according to the requirements below. In order for an engine to be considered an emergency stationary ICE under 40 CFR 60, Subpart JJJJ, any operation other than emergency operation, maintenance and testing, emergency demand response,

SECTION B - EMISSION UNITS, EMISSION POINTS, APPLICABLE REGULATIONS, AND OPERATING CONDITIONS (CONTINUED)

Emissions Unit: 07
(PC-1 through PC-4) Fugitive Emissions from Piping Components (GR-ST) Station Gas Releases (GR-PL) Pipeline Gas Releases

Description:
Pipeline equipment component leaks, Station Gas Releases, and Pipeline Gas Releases

Component Type	Current	Post-TEM IV Project
Gas/Vapor Valves:	1,391	698
Gas/Vapor Connectors:	8,081	3,222
Gas/Vapor Flanges:	1,411	466
Gas/Vapor Open Ended Lines:	107	36
Gas Vapor Other*:	215	71
Light Oil Valves:	234	99
Light Oil Connectors:	710	575
Light Oil Flanges:	388	209
Light Oil Open Ended Lines	44	36
Light Oil Pump Seals:	1	1
Light Oil Other*:	19	1
Heavy Oil Valves:	563	360
Heavy Oil Connectors:	2,762	1,023
Heavy Oil Flanges:	591	211
Heavy Oil Open Ended Lines:	27	0
Heavy Oil Pump Seals:	38	21
Heavy Oil Other*:	41	4
Water/Oil Coolant Valves:	438	n/a
Water/Oil Coolant Connectors:	3,540	n/a
Water/Oil Coolant Flanges:	804	n/a
Water/Oil Coolant Open Ended Lines:	30	n/a
Water/Oil Coolant Pump Seals:	13	n/a
Water/Oil Coolant Other:	12	n/a

* The component type "Other" includes blowdown valves, relief valves, and compressor seals

The equipment count listed above reflects an approximate count of the equipment as of the date of issuance of this permit but is not intended to limit the permittee to the exact numbers specified. The permittee may add or remove pipeline equipment without a permit revision as long as the equipment continues to comply with the applicable requirements listed below and the changes do not have a significant impact on emissions or potential to emit.

APPLICABLE REGULATIONS:
401 KAR 60:005, incorporating by reference **40 CFR 60, Subpart OOOOb**, *Standards of Performance for Crude Oil and Natural Gas Facilities for Which Construction, Modification or Reconstruction Commenced After December 6, 2022.*

STATE-ORIGIN REQUIREMENTS:
401 KAR 63:020, *Potentially hazardous matter or toxic substances.*

SECTION B - EMISSION UNITS, EMISSION POINTS, APPLICABLE REGULATIONS, AND OPERATING CONDITIONS (CONTINUED)

1. **Operating Limitations:**

Refer to DEP 7007V form for NSPS Subpart OOOOb requirements

a. Pursuant to 401 KAR 63:020, Section 3, persons responsible for a source from which hazardous matter or toxic substances may be emitted shall provide the utmost care and consideration, in the handling of these materials, to the potentially harmful effects of the emissions resulting from such activities. The permittee shall not allow any affected facility to emit potentially hazardous matter or toxic substances in such quantities or duration as to be harmful to the health and welfare of humans, animals and plants. Evaluation of such facilities as to adequacy of controls and/or procedures and emission potential will be made on an individual basis by the Division.

Compliance Demonstration Method:
The source is in compliance with 401 KAR 63:020 based on the rates of emissions of airborne toxics provided in the application submitted by the source. If the permittee alters processes, process rates, material formulations, or any other factor that would result in increased emissions of these previously evaluated airborne toxics, or the emission of airborne toxics not previously evaluated by the Division, the permittee shall submit the appropriate application forms pursuant to 401 KAR 52:020, Section 3(1)(a).

2. **Emission Limitations:**

Refer to DEP 7007V form for NSPS Subpart OOOOb requirements

3. **Testing Requirements:**

Refer to DEP 7007V form for NSPS Subpart OOOOb requirements

a. Pursuant to 401 KAR 50:045, Section 1, performance testing using Reference methods specified in 401 KAR 50:015 shall be conducted as required by the Division.

4. **Specific Monitoring Requirements:**

Refer to DEP 7007V form for NSPS Subpart OOOOb requirements

See **Section F, Monitoring, Recordkeeping, and Reporting Requirements**.

5. **Specific Recordkeeping Requirements:**

Refer to DEP 7007V form for NSPS Subpart OOOOb requirements

See **Section F, Monitoring, Recordkeeping, and Reporting Requirements**.

6. **Specific Reporting Requirements:**

Refer to DEP 7007V form for NSPS Subpart OOOOb requirements

See **Section F, Monitoring, Recordkeeping, and Reporting Requirements**.

SECTION B - EMISSION UNITS, EMISSION POINTS, APPLICABLE REGULATIONS, AND OPERATING CONDITIONS (CONTINUED)

Emissions Unit: 08 (008) Unit 4T Gas Turbine

Description:	Solar Titan 130 18,000 hp Turbine	
	Fuel:	Natural gas
	Maximum rating:	159.28 MMBTU/hr
	Construction commenced:	Proposed 2026
	Add-on Controls:	Oxidation Catalyst

Emissions Unit: 09 (009) Unit 5T Gas Turbine

Description:	Solar Titan 130 18,000 hp Turbine	
	Fuel:	Natural gas
	Maximum rating:	159.28 MMBTU/hr
	Construction commenced:	Proposed 2026
	Add-on Controls:	Oxidation Catalyst

Emissions Unit: 10 (010) Unit 6T Gas Turbine

Description:	Solar Titan 130 18,000 hp Turbine	
	Fuel:	Natural gas
	Maximum rating:	159.28 MMBTU/hr
	Construction commenced:	Proposed 2026
	Add-on Controls:	Oxidation Catalyst

APPLICABLE REGULATIONS:

401 KAR 60:005, incorporating by reference **40 CFR 60, Subpart KKKK**, *Standards of Performance for Stationary Combustion Turbines.*

NON-APPLICABLE REGULATIONS:

401 KAR 63.002, incorporating by reference **40 CFR 63, Subpart YYYY**, *National Emission Standards for Hazardous Air Pollutants for Stationary Combustion Turbines.*

1. Operating Limitations:

Refer to DEP 7007V form for NSPS Subpart KKKK requirements

2. Emission Limitations:

Refer to DEP 7007V form for NSPS Subpart KKKK requirements

a. See Section D.3. for additional emission limitations

SECTION B - EMISSION UNITS, EMISSION POINTS, APPLICABLE REGULATIONS, AND OPERATING CONDITIONS (CONTINUED)

3. Testing Requirements:

Refer to DEP 7007V form for NSPS Subpart KKKK requirements

a. The permittee shall keep records of the natural gas fuel usage at each turbine used during each performance test.

4. Specific Monitoring Requirements:

Refer to DEP 7007V form for NSPS Subpart KKKK requirements

5. Specific Recordkeeping Requirements:

Refer to DEP 7007V form for NSPS Subpart KKKK requirements

a. Pursuant to 401 KAR 52:020, Section 10, the permittee shall record the amount of natural gas burned at each turbine on an annual basis.

b. Pursuant to 401 KAR 52:020, Section 10, the permittee shall keep record of the hours of operation of each turbine under Emission Units 08, 09, and 10 in startup mode, shutdown mode, low temperature modes, and steady state (normal) operation.

6. Specific Reporting Requirements:

Refer to DEP 7007V form for NSPS Subpart KKKK requirements

a. See **Section F, Monitoring, Recordkeeping, and Reporting Requirements.**

7. Specific Control Equipment Operating Conditions:

n/a

SECTION B - EMISSION UNITS, EMISSION POINTS, APPLICABLE REGULATIONS, AND OPERATING CONDITIONS (CONTINUED)

Emission Unit 12 (012) – Natural gas-fired indirect heat exchangers

Description:	Unit 4T Fuel Gas Heater (012-1)	
	Fuel:	Natural Gas
	Fuel Input:	1.2 MMBtu/hr
	Construction commenced:	Proposed 2026
	Controls:	None
	Unit 5T Fuel Gas Heater (012-2)	
	Fuel:	Natural Gas
	Fuel Input:	1.2 MMBtu/hr
	Construction commenced:	Proposed 2026
	Controls:	None
	Unit 6T Fuel Gas Heater (012-3)	
	Fuel:	Natural Gas
	Fuel Input:	1.2 MMBtu/hr
	Construction commenced:	Proposed 2026
	Controls:	None
	Natural Gas Fired Boiler (012-4)	
	Fuel:	Natural Gas
	Fuel Input:	6.28 MMBtu/hr
	Construction commenced:	2015
	Controls:	None

Commented [JG6]: Moved from Section C - Insignificant Activities

APPLICABLE REGULATIONS:

401 KAR 59:015, New indirect heat exchangers

1. Operating Limitations:

a. Pursuant to 401 KAR 59:015, Section 7(1)(a), the permittee shall comply with 401 KAR 50:055, Section 2(5).

b. Pursuant to 401 KAR 59:015, Section 7(1)(b), the frequency and duration of startup periods or shutdown periods shall be minimized by the affected facility.

c. Pursuant to 401 KAR 59:015, Section 7(1)(c), all reasonable steps shall be taken by the permittee to minimize the impact of emissions on ambient air quality from the affected facility during startup periods and shutdown periods.

d. Pursuant to 401 KAR 59:015, Section 7(1)(d), the actions, including duration of the startup period, of the permittee of each affected facility during startup periods and shutdown periods, shall be documented by signed, contemporaneous logs or other relevant evidence.

SECTION B - EMISSION UNITS, EMISSION POINTS, APPLICABLE REGULATIONS, AND OPERATING CONDITIONS (CONTINUED)

e. Pursuant to 401 KAR 59:015, Section 7(1)(e), startups and shutdowns shall be conducted according to either:
   i. The manufacturer's recommended procedures or,
   ii. Reco mmended procedures for a unit of similar design, for which manufacturer's recommended procedures are available, as approved by the Cabinet based on documentation provided by the permittee.

Compliance Demonstration Method:

Refer to **5. Specific Recordkeeping Requirements**

2. Emission Limitations:

a. Pursuant to 401 KAR 59:015, Section 5(1)(c)2., the permittee shall not cause emissions of gases that contain sulfur dioxide (SO_2) in excess of 3.0 lb/MMBtu actual heat input.

b. Pursuant to 401 KAR 59:015, Section 4(1)(c), the permittee shall not cause emissions of particulate matter (PM) in excess of 0.56 lb/MMBtu actual heat input.

c. Pursuant to 401 KAR 59:015, Section 4(2) the permittee shall not cause emissions of particulate matter in excess of twenty (20) percent opacity except as provided below:
   i. A maximum of forty (40) percent opacity shall be allowed for a maximum of six (6) consecutive minutes in any sixty (60) consecutive minutes during fire box cleaning or soot blowing; and
   ii. For emissions from an affected facility caused by building a new fire, emissions during the period required to bring the heater up to operating conditions shall be allowed, if the method used is recommended by the manufacturer and the time does not exceed the manufacturer's recommendations.

Compliance Demonstration Method:

(1) Compliance with the SO_2 limit, PM emission limits, and the opacity limitation, is assumed while burning natural gas.

(2) See **Section D.**

3. Testing Requirements:

Pursuant to 401 KAR 50:045, Section 1, testing shall be conducted at such times as may be requested by the Cabinet.

4. Specific Monitoring Requirements:

None

SECTION B - EMISSION UNITS, EMISSION POINTS, APPLICABLE REGULATIONS, AND OPERATING CONDITIONS (CONTINUED)

5. Specific Recordkeeping Requirements:

Pursuant to 401 KAR 52:020, Section 10, the permittee shall maintain records of the amount of the fuel combusted during each calendar month at each unit.

6. Specific Reporting Requirements:

Refer to **Section F. Monitoring, Recordkeeping, and Reporting Requirements.**

SECTION B - EMISSION UNITS, EMISSION POINTS, APPLICABLE REGULATIONS, AND OPERATING CONDITIONS (CONTINUED)

Emission Unit 13 (013) – V05 Pipeline Liquids Storage Tank

Description: TNK V05 Pipeline Liquids Storage Tank
Capacity: 2,640 gallons
Construction commenced: Proposed 2026

NON-APPLICABLE REGULATIONS:
401 KAR 60:005, incorporating by reference **40 CFR 60, Subpart OOOOb**, *Standards of Performance for Crude Oil and Natural Gas Facilities for Which Construction, Modification or Reconstruction Commenced After December 6, 2022.*

1. Operating Limitations:

a. Pursuant to 401 KAR 52:020, Section 10, the permittee shall limit the tank throughput volume to 7,920 gallons per 12-month rolling total to avoid applicability to NSPS Subpart OOOOb.

Compliance Demonstration:
The 12-month rolling throughput total will be determined by adding the current month's throughput to that of the previous 11 months. Tank throughput shall be recorded as required in **5. Specific Recordkeeping Requirements a.**

2. Emission Limitations:

a. Pursuant to 401 KAR 52:020, Section 10, the permittee shall limit VOC emissions to 0.35 tons per 12-month rolling total to avoid applicability to NSPS Subpart OOOOb.

b. Pursuant to 401 KAR 52:020, Section 10, the permittee shall limit methane emissions to 0.75 tons per 12-month rolling total to avoid applicability to NSPS Subpart OOOOb.

Compliance Demonstration:
The 12-month rolling emissions will be determined by adding the current month's emissions to that of the previous 11 months. Emissions shall be calculated using TankESP® and recorded as required in **5. Specific Recordkeeping Requirements b.**

3. Testing Requirements:

none

4. Specific Monitoring Requirements:

none

SECTION B - EMISSION UNITS, EMISSION POINTS, APPLICABLE REGULATIONS, AND OPERATING CONDITIONS (CONTINUED)

5. Specific Recordkeeping Requirements:

a. Pursuant to 401 KAR 52:020, Section 10, the permittee shall record monthly and 12-month rolling volume of pipeline liquids throughput.

b. Pursuant to 401 KAR 52:020, Section 10, the permittee shall record monthly and 12-month rolling emissions of methane and VOC.

6. Specific Reporting Requirements:

a. Pursuant to 401 KAR 52:020, Section 10, the records required by **5. Specific Recordkeeping Requirements a.** and **b.** shall be provided in the semiannual monitoring report required in **Section F. Monitoring, Recordkeeping, and Reporting Requirements.**

SECTION C - INSIGNIFICANT ACTIVITIES

Commented [JG7]: Refer to the 7007DD form for new insignificant activities as part of the TEM IV project

The following listed activities have been determined to be insignificant activities for this source pursuant to 401 KAR 52:020, Section 6. Although these activities are designated as insignificant the permittee must comply with the applicable regulation. Process and emission control equipment at each insignificant activity subject to an opacity standard shall be inspected monthly and a qualitative visible emissions evaluation made. Results of the inspection, evaluation, and any corrective action shall be recorded in a log.

	Description	Generally Applicable Regulation
1.	Diesel storage tank, 560 gal	None
2.	Lube oil storage tank, 8,800 gal	None
3.	Oily sump water storage tank, 16,920 gal	None
4.	Glycol/water storage tank, 940 gal	401 KAR 63:020
5.	Eight comfort/space heaters, less than 1 mmBtu/hr, each	None
6.	Two pipeline liquids storage tanks, 1,100 gal, each	401 KAR 63:020
7.	Five pipeline liquids storage tanks, 2,480 gal, each	401 KAR 63:020
8.	Fugitive emissions from truck loading	401 KAR 63:020
9.	~~Natural gas fired boiler, 150 hp (6.28 mmBtu/hr)~~	~~401 KAR 59:015~~
10.	Two HVAC boilers less than 1 mmBtu/hr, each	None
11.	Two water heaters, less than 1 mmBtu/hr, each	401 KAR 59:010
12.	Two ovens, less than 1 mmBtu/hr, each	401 KAR 59:010
13.	Oil storage tank, 560 gal	None
14.	Coolant storage tank, 940 gal	401 KAR 63:020
15.	Oily water storage tank, 20,300 gal	None
16.	Oily water storage tank, 12,690 gal	None
17.	Parts washer, 0.32 gal/hr (6.84 lb/gal)	None
18.	Nine separator vessels (≤ 300 gallons each)	401 KAR 63:020

Commented [JG8]: Moved to Section B since this unit is > 1 MMBtu/hr

SECTION D - SOURCE EMISSION LIMITATIONS AND TESTING REQUIREMENTS

1. As required by Section 1b of the *Cabinet Provisions and Procedures for Issuing Title V Permits* incorporated by reference in 401 KAR 52:020, Section 26; compliance with annual emissions and processing limitations contained in this permit, shall be based on emissions and processing rates for any twelve (12) consecutive months.

2. NO_x, CO, and VOC emissions, measured by applicable reference methods, or an equivalent or alternative method specified in 40 C.F.R. Chapter I, or by a test method specified in the state implementation plan shall not exceed the respective limitations specified herein.

3. To preclude applicability of 401 KAR 51:017, emissions from EU01-EU12 will not exceed 582.8 tpy NO_X, 129.3 tpy CO, 23.1 tpy $PM_{2.5}$, and 97.6 tpy VOC. This requirement will remain in effect until such time that the Kentucky Division for Air Quality has received written notice that EU01-EU06 have permanently ceased operation.

   Compliance Demonstration
   Upon start-up of EU 08, EU 09, EU 10, EU 11, and/or EU 12, the permittee shall calculate and record monthly and 12-month rolling totals of the NO_X, CO, $PM_{2.5}$, and VOC emissions from the emission units referenced above. The permittee shall use the emission factors provided in the application for construction and operation of EU 08-12. Monthly and 12-month rolling totals shall be provided in the semiannual monitoring report required in **Section F. Monitoring, Recordkeeping, and Reporting Requirements.**

Outlook

RE: Notice of Deficiency for AI 44065-TETLP/Danville, KY CS-Response to NOD

From Chuck Zukor <Chuck.Zukor@enbridge.com>
Date Fri 10/31/2025 4:42 PM
To Freeman, Colby (EEC) <colby.freeman@ky.gov>
Cc Ross, Dakota D (EEC) <dakota.ross@ky.gov>; Erika St. Pierre <Erika.St.Pierre@enbridge.com>; Keith Hamilton <keith.hamilton@enbridge.com>; Jarod Gregory <jgregory@trinityconsultants.com>

1 attachment (2 MB)
2025-1031 - Danville NOD 1 Response.pdf;

****CAUTION** PDF attachments may contain links to malicious sites. Please contact the COT Service Desk ServiceCorrespondence@ky.gov for any assistance.**

This Message Originated from Outside the Organization
This Message Is From an External Sender.

Report Suspicious

Dear Colby – Attached is a single PDF file that contains Enbridge's responses to each of the KDAQ questions, along with supporting information provided in Attachments 1 thru 7.

If you have any questions regarding our responses, please let me know.

We'd be more than happy to set up a Teams Meeting to talk through your questions. – Thanks!

Sincerely,

Chuck Zukor
Sr. Engineer
Safety & Reliability/Air Projects

TEL: 713-627-5791 | CELL: 713-819-9501 |Chuck.Zukor@enbridge.com

ENBRIDGE
915 N. Eldridge Parkway, Suite 1100
Houston, TX 77079

From: Freeman, Colby (EEC) <colby.freeman@ky.gov>
Sent: Tuesday, September 30, 2025 10:18 AM
To: Chuck Zukor <Chuck.Zukor@enbridge.com>
Cc: Ross, Dakota D (EEC) <dakota.ross@ky.gov>
Subject: [External] Notice of Deficiency for AI 44065

CAUTION! EXTERNAL SENDER
Were you expecting this email? TAKE A CLOSER LOOK. Is the sender legitimate? DO NOT click links or open attachments unless you are 100% sure that the email is safe.
This email was sent from colby.freeman@ky.gov.

Good morning,

Attached is the first Notice of Deficiency on the significant revision application for Texas Eastern Transmission, LP - Danville Compressor Station. This serves as your official copy and a paper copy will not be sent. We request t that you submit the information as soon as possible, but in no case later than October 31, 2025.

Please feel free to contact me if you have any questions or need additional clarification.

Thanks,

Colby Freeman
Environmental Engineer Technologist I
Chemical Section
Division for Air Quality
300 Sower Blvd
Frankfort, KY 40601
(502) 782 - 6671

Draft Danville NOD #1 Responses from Enbridge – October 31, 2025:

1. In the cover letter (page 3-11), the application states "*with the full implementation* of the TEM IV Project, the Danville Station will be designated as an area source of HAP; therefore, [40 CFR 63 Subpart YYYY] does not apply." However, pursuant to 40 CFR 63.1(c)(6)(i)(A), "A major source reclassifying to area source status under this part remains subject to any applicable major source requirements established under this part until the reclassification becomes effective."

   The Division has determined that prior to completion of the TEM IV project (including decommissioning of existing turbines and engines), the potential to emit of hazardous air pollutants (HAP) remains above major source thresholds (MST) established in 40 CFR 63.2 unless a federally enforceable limit below MST is established.

   Therefore, major source requirements would be applicable to the proposed units upon initial construction and prior to reclassification as listed below. If you do not intend to accept a minor source HAP limit upon issuance of the permit, please provide an updated 7007V form and suggested permit edits addressing applicable requirements for these UNITS:

   a. 40 CFR 63 Subpart YYYY will apply to proposed EUs 08, 09, and 10
   b. 40 CFR 63 Subpart ZZZZ major source requirements will apply to proposed EU 11
   c. 40 CFR 63 Subpart DDDDD will apply to proposed EU 12, including the existing natural gas fired boiler to be moved from Section C

   RESPONSE: *Enbridge acknowledges KDAQ's concern regarding the fact that the Danville Station is a major source of HAP until such time that the site reclassifies as an area source of HAP. Enbridge addressed a similar situation regarding Prevention of Significant Deterioration (PSD) implications of the new project by requesting PSD avoidance limitations, that effectively apply only during the interim period between operation of one or more new emission units and the shutdown of all existing emission units.*

   Enbridge would like to request a similar post-project, source classification change emissions limitation for HAP. Although the proposed PSD avoidance limitations are not expected to adversely affect existing operations due to the inclusion of baseline average emissions (BAE), a HAP limitation in effect at the time of permit issuance may cause compliance issues with existing operations. Therefore, Enbridge is proposing a deferred HAP avoidance limitation that will go into effect at the time of commencing operation for EU 08, EU 09, and/or EU 10 (i.e., the new Solar Titan 130 turbines)

accompanied by a requirement to submit a reclassification letter at that time. The limitation, proposed as a new Section D.4. of the permit, is provided below:

A. *To preclude applicability of major source requirements in 40 CFR Part 63 for EU 08, EU 09, EU 10 (Solar Titan 130 turbines); EU 11 (emergency engine generator); and EU 12 (group of three fuel gas heaters), the Danville Station will restrict emissions of hazardous air pollutants (HAP) as provided herein:*

   I. *Emissions of total HAP shall be restricted to less than 22.5 tons per year on a twelve (12) consecutive month basis. This requirement will be in effect upon startup of one or more of EU 08, EU 09, and EU 10 and remain in effect until such time that the Division has received written notice that existing emission units have shut down and the source is reclassifying as an area source of HAP.*

   II. *Emissions of formaldehyde shall be restricted to less than 9 tons per year on a twelve (12) consecutive month basis. This requirement will be in effect upon startup of one or more of EU 08, EU 09, and EU 10 and remain in effect until such time that the Kentucky Division for Air Quality has received written notice that existing emission units have shut down and the source is reclassifying as an area source of HAP.*

Compliance Demonstration

Upon start-up of EU 08, EU 09, EU 10, EU 11, and/or EU 12, the permittee shall calculate and record monthly and 12-month rolling totals of total HAP and formaldehyde emissions from all operating emission units. The permittee shall use the emission factors provided in the application for construction and operation of EU 08 through EU12 and as provided in prior applications for the existing emission units. Monthly and 12-month rolling totals shall be provided in the semiannual monitoring report required in Section F. Monitoring, Recordkeeping, and Reporting Requirements while the restrictions remain in effect.

2. Table B-1Ac footnote 7 (page 43 of the PDF) states "$PM_{10/2.5}$ emission factor based on AP-42, Section 3.1 (Revised 4/00), Table 3.1-2a, not Solar's PIL 171 dated 5/6/2015 (which is 127% greater)." Solar's PIL 171 Revision 6.2, dated 9/10/2020, recommends a PM emission factor (EF) of 0.01 lb/MMBtu heat input, higher than the AP-42 value of 0.0066 lb/MMBtu. Please justify use of the AP-42 EF when manufacturer data indicating a higher emissions rate is available.

RESPONSE: *Enbridge has conservatively used the PM emission factor of 0.0066 lb/MMBtu (HHV) from AP-42 Section 3.1, Table 3.1-2a in the emission calculations. As shown in the table below, Solar's PIL 171 has gone through a series of revisions with a trend of reducing PM emission factors. The agency referenced Solar's PIL 171 Revision 6.2 (dated 9/10/2020) which recommends a higher PM EF of 0.01 lb/MMBtu. However, Solar has continued to revise PIL 171 since 2020, and the more recent revisions of the PIL show a continued decrease in recommended PM EF values. The latest version of*

Solar PIL 171 is Version 8 dated 4/3/2025 (see Attachment 7)), recommends a PM EF of 0.006 lb/MMBtu, which is slightly lower than the AP-42 PM EF value. This trend is summarized in the table below, showing the decline in Solar's recommended PM emission factors over time. The use of the AP-42 value is therefore justified as a conservative and stable reference.

Reference	Date	PM EF (HHV) (lb/MMBtu)	% of AP-42 EF
Solar PIL 171 Ver. 5	05/06/15	0.0150	227%
Solar PIL 171 Ver. 6	03/08/17	0.0100	152%
Solar PIL 171 Ver. 7	04/03/23	0.0060	91%
Solar PIL 171 Ver. 8	**04/03/25**	**0.0060**	**91%**
US EPA AP-42 Table 3.1-2a	04/01/00	0.0066	100%

3. For the proposed tanks (DANV SVV V01C01, DANV SVV V01C02, DANV SVV V01C03, DANV SLV V02, DANV TNK V05, DANV TNK OW01) please provide a process flow diagram and any additional justification that supports DANV SLV V02 being the only tank with flashing losses. Also, justify why the tanks should not be treated as a tank battery as defined in 40 CFR 60.5430b (40 CFR 60 Subpart OOOOb).

RESPONSE: *For the emission sources listed in Question 3, some clarification is needed on the description and distinct function of these emission sources as described below and shown in the process flow diagram provided in Attachment 1. Regardless of the source's function, Enbridge applies USEPA's AP-42 methodologies for estimating working and breathing emission losses from these sources.*

A. *The first group of emission sources (DANV SVV V01C01, DANV SVV V01C02, DANV SVV V01C03) are referred to as turbine case vent "separator vessels." These vessels receive pressurized natural gas from the turbine compressors when a turbine unit shutdown occurs, and the compressor case is depressurized. The vessels act as a "knock out" pot when the pressurized natural gas is vented to atmosphere. As the pressurized natural gas normalizes to atmospheric pressure there is a possibility for a small amount of aerosol droplets to form containing pipeline liquids, water, and/or grease. Any captured liquids are accumulated within these turbine case vent separator vessels. There is one case vent separator dedicated to each new Solar turbine compressor. Any accumulated pipeline liquids, under atmospheric conditions, are then transferred to the pipeline liquids storage tank (DANV TNK V05), and subsequently shipped offsite for proper disposal.*

B. *The next emission source (DANV SLV V02) is referred as the pipeline liquids "separator vessel." This vessel receives pressurized pipeline liquids from various sitewide station operations such as inlet natural gas filter separators, strainers, and low-leg piping. This vessel acts as a "knock out" pot when the pressurized pipeline liquids are received and normalized to atmospheric*

pressure, where flash gas can be produced. As the pressurized pipeline liquids reach atmospheric pressure, there is a possibility for a small amount of aerosol droplets containing pipeline liquids, water, and/or grease to form. Any captured liquids are accumulated within this pipeline liquids separator vessel. The accumulated pipeline liquids, now under atmospheric conditions (post-flash), are then transferred to the pipeline liquids storage tank (DANV TNK V05), and subsequently shipped offsite for proper disposal.

C. *The next emission source (DANV TNK V05) is an "pipeline liquids" storage tank. This tank receives (non-pressurized, post-flash) pipeline liquids from various sitewide compressor station operations such as the pipeline liquids "separator vessel" (DANV SLV V02). Pipeline liquids may contain various oils, greases, water, as well as natural gas condensates. There is no potential for any flash emissions since the pipeline liquids are received at atmospheric pressure. Pipeline liquids are accumulated in an atmospheric storage tank (DANV TNK V05), and subsequently shipped offsite for proper disposal.*

D. *The last emission source (DANV TNK OW01) is an "oily water" storage tank. This tank receives (non-pressurized) oily water from various sitewide station operations such stormwater collection in sumps and dikes. The composition of the oily water is primarily water with small quantities of lube oils or greases from station operations. There is no potential for any flash emissions since the oily water is managed entirely at atmospheric pressure - never under pressure. Oily water is accumulated in an atmospheric storage tank (DANV TNK OW01), and subsequently shipped offsite for proper disposal.*

*The separator vessels described in paragraphs 3.A and 3.B (DANV SVV V01C01, DANV SVV V01C02, DANV SVV V01C03, DANV SLV V02) are considered "**process vessels**" which are not subject to NSPS OOOOb based on the definition of a storage vessel from 40 CFR §60.5430b below:*

> *Storage vessel* means a tank or other vessel that contains an accumulation of crude oil, condensate, intermediate hydrocarbon liquids, or produced water, and that is constructed primarily of nonearthen materials (such as wood, concrete, steel, fiberglass, or plastic) which provide structural support. A well completion vessel that receives recovered liquids from a well after startup of production following flowback for a period which exceeds 60 days is considered a storage vessel under this subpart. A tank or other vessel shall not be considered a storage vessel if it has been removed from service in accordance with the requirements of § 60.5395b(c)(1) until such time as such tank or other vessel has been returned to service. For the purposes of this subpart, the following are not considered storage vessels:
>
> (1) Vessels that are skid-mounted or permanently attached to something that is mobile (such as trucks, railcars, barges or ships), and are intended to be located at a site for less than 180 consecutive days. If you do not keep or are not able to produce records, as required by § 60.5420b(c)(7)(v), showing that the vessel has been located at a site for less than 180 consecutive days, the vessel described herein is considered to be a storage vessel from the date the original vessel was first located at the site. This exclusion does not apply to a well completion vessel as described above.
>
> (2) Process vessels such as surge control vessels, bottoms receivers or knockout vessels.
>
> (3) Pressure vessels designed to operate in excess of 204.9 kilopascals and without emissions to the atmosphere.

The separator vessels (DANV SVV V01C01, DANV SVV V01C02, DANV SVV V01C03, DANV SLV V02) are used as knockout vessels to remove entrained liquid, oil, water, or aerosols from the gas stream before it enters other processes, such as compression or distribution.

The pipeline liquids storage tank (DANV TNK V05), is not subject to the control requirements under NSPS OOOOb because the potential VOC emissions are less than 6 tpy, and potential methane emissions are less than 20 tpy. Enbridge can propose a set of conditions that can be added to the permit to make this claim Legally, Practicably, Enforceable (LPE) per the definitions in OOOOb. Below are the Danville site-specific conditions that should apply to the pipeline liquids tank DANV TNK V05:

I. *Keep records of the potential for emissions calculation for the life of the storage vessel. [40 CFR 60.5365b(e)]*

II. *Limit VOC emissions to 0.35 tons per 12-month rolling total. The 12-month rolling VOC emissions total will be determined by adding the current month's VOC emissions to that of the previous 11 months.*

III. *Limit methane emissions to 0.75 tons per 12-month rolling total. The 12-month rolling methane emissions total will be determined by adding the current month's methane emissions to that of the previous 11 months.*

IV. *Limit the tank throughput volume to 7,920 gallons per 12-month rolling total. The 12-month rolling total will be determined by adding the current month's throughput to that of the previous 11 months.*

V. *Monitor and record the monthly and 12-month rolling total VOC emissions in units of tons.*

VI. *Monitor and record the monthly and 12-month rolling total methane emissions in units of tons.*

VII. *Monitor and record the monthly and 12-month rolling total tank throughput of pipeline liquids in units of gallons.*

VIII. *Submit report: Due annually, by the 30th of April. Report the monthly and 12-month rolling totals of VOC and methane emissions and tank throughput of pipeline liquids for the preceding calendar year to the agency.*

Lastly, the "oily water" storage tank (DANV TNK OW01), is not subject to the control requirements under NSPS OOOOb because the tank does not store crude oil, produced water, or condensate. As previously discussed, this tank receives (non-pressurized) oily water from various sitewide compressor station operations such stormwater collection in sumps and dikes. The composition of the oily water is primarily water with small quantities of lube oils or greases from station operations. There is no potential for any flash emissions since the oily water is managed entirely at atmospheric pressure - never under pressure.

4. Please clarify the maximum daily average throughput used to determine flashing, working, and breathing losses for DANV SLV V02 and explain the engineering calculations used to project this value.

   RESPONSE: *Enbridge believes this question, pertaining to maximum daily average throughput for a storage tank, is for the purpose of demonstrating compliance with NSPS OOOOb. Please refer to our response to Question 3, in which Emission Point DANV SLV V02 is defined as a process vessel and is not subject to NSPS OOOOb.*

5. In Section 2.2 of the cover letter (page 2-2), the application indicates that emission characteristics / operating parameters for gas releases and fugitive piping components are to be modified upon completion of the TEM IV project. However, emissions estimates are based on post TEM IV fugitive component counts.

   Please clarify whether any new fugitive components will be added as part of the TEM IV project. If so, provide updated emission estimates which account for the full collection of components which would be present in the "overlap" period (including existing components to be removed and all new components). The Division notes that fugitive emissions of regulated air pollutants (RAP) will not be considered for major source or major modification determinations. However, fugitive emissions of HAPs will be counted toward PTE and any potentially applicable sitewide limits.

   RESPONSE: *With regard to equipment leak components (i.e., EU07 PC01 through PC04), Enbridge is providing a revised 7007B form (Attachment 2) and 7007N form (Attachment 3) that adds new Process IDs under PC01, PC02, and PC03 to account for the new components being constructed as part of the TEM IV project. Though this will lead to a certain number of components being double-counted during the short period of overlap operation among existing and new emission units, this will provide a "clean" way to account for the new components now without revising equipment leak component numbers from existing operations.*

   With regard to pipeline and station gas releases, the amount of such releases will decrease once the project is complete. Enbridge has provided the post-project PTE in the original application. Enbridge acknowledges that this PTE is not valid until the project has commenced and existing emission units are shut down; however, without a distinction between construction permits and operating permits there is not a mechanism to relay post-project PTE via the required 7007N form for modified emission units while retaining existing PTE. The current (i.e., pre-project) PTE may be considered valid up until the point that the project is complete because there will be minimal overlap of activities/emission unit operation that would cause an increase in pipeline and station gas releases between now and the completion of the project.

6. Certain tables in Appendix B to the application (B-1Ab, B-1Ad, etc.) represent a natural gas higher heating value (HHV) of 1043.6 Btu/scf, whereas other tables represent an HHV of 1020 Btu/Scf.

   Please explain why different heating values are used or indicate which value would be most appropriate for the pipeline quality natural gas used at the Danville Compressor Station.

   RESPONSE: *Solar assumed a lower heating value (LHV) of 939.2 Btu/scf, which corresponds to a higher heating value (HHV) of approximately 1,043.6 Btu/scf, when running their turbine performance model. Enbridge uses the same Solar program output for all locations where that turbine model is installed.*

   The specific heating value used in Solar's modeling does not affect the potential to emit (PTE) calculations, as these are based on mass emissions (lb/hr). The heating value of the fuel has a negligible effect on the mass emissions of NOx, CO, or UHC because turbine performance models adjust fuel consumption to maintain a constant power output. As a result, any variation in heating value is offset by a corresponding change in fuel flow rate, resulting in little to no change in total mass emissions.

   For emissions calculations, Enbridge used an HHV of 1,020 Btu/scf, consistent with EPA's AP-42 methodology. According to AP-42 Section 3.1, emission factors are based on an average natural gas heating value of 1,020 Btu/scf at 60°F, and conversions to other heating values are only appropriate when explicitly recalculated using the correct ratio. Additionally, EPA Method 19 uses default F-factors and assumes a standard heating value of 1,020 Btu/scf in its emission rate calculations.

   Therefore, the use of 1,020 Btu/scf in the emissions calculations is appropriate and aligns with EPA methodology, while the 1,043.6 Btu/scf value reflects the input used in Solar's turbine performance modeling.

7. Section 2.3.2 of the application states the 1,475 bhp Waukesha emergency generator (proposed EU11) is a four-stroke *rich-burn* natural gas-fired engine. However, the EF source listed is AP-42 Table 3.2-2, which is for *lean-burn* engines. Please indicate whether the Waukesha engine (proposed EU11) is a lean or rich burn engine.

   RESPONSE: *The 1,475 bhp Waukesha emergency generator (proposed EU11) is a four-stroke **rich-burn** natural gas-fired engine. The reference to AP-42 Table 3.2-2 in the application was incorrect and should have cited AP-42 **Table 3.2-3**, which corresponds to rich-burn engines. Please see the updated Table 2-4 below and Attachment 4 for a revised application report, which reflects the corrected emission factor references and values appropriate for a four-stroke rich-burn natural gas-fired engine. Please note that*

the calculations provided on the KDAQ forms are correct for a four-stroke rich-burn engine.

Pollutant	Emission Factor from Source	Source
NO_X	2.0 g/bhp-hr	NSPS Subpart JJJJ
CO	4.0 g/bhp-hr	NSPS Subpart JJJJ
VOC	1.0 g/bhp-hr	VOC (without formaldehyde): NSPS Subpart JJJJ Table 3.2-~~2~~ 3 of AP-42
CH_4	1.0 g VOC/bhp-hr ~~1.25~~0.23 lb/MMBtu (HHV)	VOC: NSPS Subpart JJJJ Table 3.2-~~2~~ 3 of AP-42
$PM_{10}/PM_{2.5}$	~~0.009999~~0.0194 lb/MMBtu (HHV)	Table 3.2-~~2~~ 3 of AP-42
SO_2	14.29 lb/MMscf	Using pipeline total sulfur tariff of 5 gr/100 dscf of gas, and Table 3.~~1-2a~~2-3 of AP-42 ~~(April 2000)~~
CO_2	53.02 kg/MMBtu (HHV)	40 CFR 98, Subpart C, Table C-1
N_2O	0.0001 kg/MMBtu (HHV)	40 CFR 98, Subpart C, Table C-2
Total HAP	1.0 g VOC/bhp-hr Multiple HAP factors	VOC: NSPS Subpart JJJJ Table 3.2-~~2~~ 3 of AP-42

In addition, the 7007EE form lists a fuel consumption of 1.26 MMscf/yr. However, Table A-1 and Table C-1A (pages 38 & 51 of the pdf) represent a fuel consumption of 6.295 MMscf/yr based on the heat rate and 500 hr/yr of operation. Please confirm that 6.295 MMscf/yr is the appropriate fuel consumption rate and that emission estimates are based on this value.

RESPONSE: *The correct annual fuel consumption rate for the 1,475 bhp Waukesha emergency generator (proposed EU11) is* ***6.295 MMscf/yr****, as shown in Tables A-1 and C-1A. The value of 1.26 MMscf/yr listed in the 7007EE form, Section EE.4, is incorrect. Attachment 5 provides the updated 7007EE form with the correct annual fuel consumption rate of 6.295 MMscf/yr. Please note that the emission calculations are based on the correct value of 6.295 MMscf/yr.*

8. Section 2.3.1.6 of the cover letter (page 2-9 and 2-10) proposes taking the maximum of "Normal" emissions as calculated by Equation 2-12 and "Normal and SU and SD" as calculated by Equation 2-13 as the maximum annual emissions on a per pollutant basis. The application states "The maximum annual emissions for the turbine is the sum of normal, startup (SU), shutdown (SD), and low temperature operation as shown in the equations." However, Equations 2-12 and 2-13 do not account for low temperature operation.

RESPONSE: *Enbridge acknowledges that the set of written equations listed under Section 2.3.1.6 of the cover letter (i.e., permit application report) did not accurately reflect how maximum annual emissions were determined in the actual calculations. The maximum annual emissions provided in the application do account for both low temperature (LT) and very low temperature (veryLT) turbine operations. The text and*

equations under Section 2.3.1.6 have been updated, as shown below and also in Attachment 4, the revised Application Report (changes shown in Yellow highlight):

***Equation 2-13**: Mathematics in the final polynomial was corrected.*

$$Normal\ and\ SU\ and\ SD\ \frac{ton}{yr} = \left[startup\ \frac{ton}{yr}\right] + \left[shutdown\ \frac{ton}{yr}\right] + \left[normal\ \frac{ton}{yr} \times \left\{1 - \left(\frac{startup\ hrs + shutdown\ hrs}{8760}\right)\right\}\right]$$

***Equation 2-14**: A new formula was inserted to show the calculation of Normal, Startup (SU), Shutdown (SD), and low temperature (LT) & very low temperature (veryLT) turbine operation emissions:*

$$Normal, SU, SD\ and\ LVLT\left(\frac{ton}{yr}\right) = \left[SU\ \frac{ton}{yr}\right] + \left[SD\ \frac{ton}{yr}\right] + \left[LT\ \frac{ton}{yr}\right] + \left[veryLT\ \frac{ton}{yr}\right] + \left[normal\ \frac{ton}{yr}\ x\left(1 - \frac{[SU\ hrs] + [SD\ hrs] + [LT\ hrs] + [veryLT\ hrs]}{8760}\right)\right]$$

***Equation 2-15**: The previous Equation 2-14 was updated and now becomes Equation 2-15. The update added the missing third emissions "term" for considering the turbine emissions associated with the following turbine operations: Normal, SU, SD, and low & very low temperature (LVLT).*

$$Annual\ PTE\ \left(\frac{ton}{yr}\right)_{Pollutant\ i} = \text{MAX}\left[Normal\left(\frac{ton}{yr}\right), Normal\ and\ SU\ and\ SD\ \left(\frac{ton}{yr}\right), Normal, SU, SD\ and\ \text{LVLT}\ \frac{ton}{yr}\right]_i$$

These equations demonstrate that low temperature operation was fully integrated into the emission scenarios evaluated in the application.

9. Table B-1Ai (page 49 of the pdf) provides Maximum Emission Estimates of each pollutant for the Solar turbines. It appears normal, startup and shutdown and low temperature emissions are added together without the adjustment for hours of operation implied by Equation 2-13. The Division notes that emission rates in low temperature modes are greater than or equal to Normal operation on a lb/hr basis for each pollutant.

   Therefore, please provide an updated annual emission calculations that compares the maximum of low temperature plus normal operation to low temperature plus normal operation and the maximum number of startups and shutdowns for each pollutant. Total hours of operation should be equal to 8760 per year across all modes of operation.

   Also provide updated 7007A and 7007N forms with separate process IDs, names, uncontrolled emission factors, hours of operation, and emission estimates for low temperature (0 °F to -20 °F) and extremely low temperature (< -20 °F) operation modes for the Solar turbines (EUs 08, 09, & 10).

RESPONSE: *Enbridge has reviewed the original application and, to add clarification, has made the following edits with regard to maximum emission rates:*

A. The application narrative (Attachment 4) has been revised to add a new Equation 2-14 to demonstrate calculation of normal operation that considers low and very low temperature operation as well as startups and shutdowns. Correspondingly, Equation 2-15 (previously Equation 2-14) for calculating annual PTE now shows the maximum of three operating scenarios: normal operation, normal operation with startups and shutdowns, and normal operation that considers low and very low temperature operation as well as startups and shutdowns. Each pollutant has an annual PTE calculated in Table B-1Ai on pg. 49 of the initial application based on which of these scenarios yields the highest annual emission rate.

B. Enbridge has also revised the attached DEP 7007N form (Attachment 3) to provide a Process ID 5 for each turbine to account for "very low temperature" operation, as requested in the NOD letter.

10. Please provide documentation, such as equipment specifications or a letter from the manufacturer, supporting emission guarantees relied upon for emission calculations (i.e. OxCat destruction or removal efficiency (DRE) and Solar turbine NOx/CO/VOC emission rates).

RESPONSE: *See Attachment 6 for documentation from Solar on the operational specifications and emissions performance of the Titan 130 turbines planned for installation at the Danville, KY compressor station. The low NOx emissions from the turbine exhaust are achieved by Solar's proprietary brand of dry low NOx burners, referred to as SoLoNOx. The emission reductions for CO/VOC emissions will be achieved using an oxidation catalyst (OxCat). The proposed CO/VOC DREs used in the Danville air permit application are consistent with industry practices in applying OxCats on simple cycle, natural gas fired, combustion turbines for on-demand operation.*

11. The Division believes the parts washer (DANV PW), currently listed as Insignificant Activity #17, may be subject to 401 KAR 59:185, a non-generally applicable regulation. If the parts washer is an affected facility as defined by 401 KAR 59:185 Section 1, please provide a complete DEP7007M form choosing between Section M.1, M.2, and M.3 based on the type of equipment and address applicable requirements with the 7007V form. Otherwise, please justify why the parts washer is not an affected facility.

RESPONSE: *Enbridge reviewed the comments regarding the parts washer (DANV PW), currently listed as Insignificant Activity #17, and its potential applicability to 401 KAR 59:185. Despite using a cold cleaner as a surrogate for estimating emissions from the*

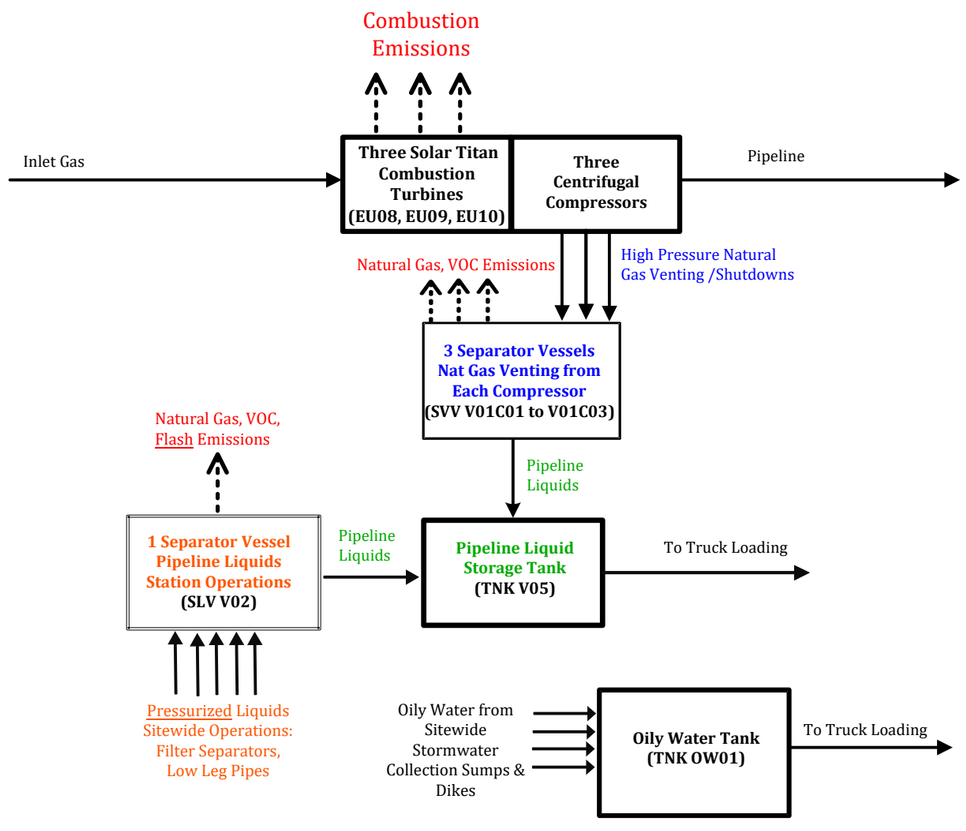
"parts washer" at the Danville Station, this existing insignificant activity refers to ***general maintenance solvent cleaning operations*** *that may occur during turnaround events or other maintenance activities. The maintenance parts washer at the Danville station does not share the same physical and operational characteristics as the types of solvent metal cleaning equipment that would meet the definition in 401 KAR 59:185:*

A. A cold cleaner,
B. Open vapor top degreaser, or
C. Conveyorized degreaser.

The parts washer is not a "batch-loaded degreaser" with a "drainage facility", "solvent spray" system, "flushing device" or other components associated with a cold cleaner option as the only potentially similar affected source type under 401 KAR 59:185. For these reasons, Enbridge has not considered this activity as subject to 401 KAR 59:185.

ATTACHMENT 1

FIGURE 1-1. PROCESS FLOW DIAGRAM FOR THE Danville COMPRESSOR STATION



Texas Eastern Transmission, LP
Danville, Kentucky

Process Flow Diagram for Separator Vessels and Tanks

ATTACHMENT 2

Division for Air Quality

300 Sower Boulevard
Frankfort, KY 40601
(502) 564-3999

DEP7007B

Manufacturing or Processing Operations

___ Section B.1: Process Information
___ Section B.2: Materials and Fuel Information
___ Section B.3: Notes, Comments, and Explanations

Additional Documentation

___ Complete DEP7007AI, DEP7007N, DEP7007V, and DEP7007GG.
___ Attach a flow diagram
___ Attach SDS

Source Name: Texas Eastern Transmission, LP - Danville Compressor Station
KY EIS (AFS) #: 21- 137-00008
Permit #: V-16-056
Agency Interest (AI) ID: 44065
Date: July 31, 2025

Section B.1: Process Information

Emission Unit #	Emission Unit Name	Describe Emission Unit	Process ID	Process Name	Manufacturer	Model No.	Proposed/Actual Date of Construction Commencement	Is the Process Continuous or Batch?	Number of Batches per 24 Hours	Hours per Batch *(if applicable)*
EU07 (PC01)	DANV-PC-NG	Piping Component Emissions from Natural Gas	6	Valves - TEM IV	--	--	2026	Continuous	--	--
			7	Connectors - TEM IV						
			8	Flanges - TEM IV						
			9	Open-Ended Lines - TEM IV						
			10	Other - TEM IV						
EU07 (PC02)	DANV-PC-PL	Piping Component Emissions from Light Oil	7	Valves - TEM IV	--	--	2026	Continuous	--	--
			8	Connectors - TEM IV						
			9	Flanges - TEM IV						
			10	Open-Ended						
			11	Pump Seals - TEM IV						
			12	Other - TEM IV						
EU07 (PC03)	DANV-PC-OIL	Piping Component Emissions from Heavy Oil	6	Valves - TEM IV	--	--	2026	Continuous	--	--
			7	Connectors - TEM IV						
			8	Flanges - TEM IV						
			9	Pump Seals - TEM IV						
			10	Other - TEM IV						
EU07 (GR-ST)	DANV-GR-ST	Station Gas Release Emissions from Natural	1	Station Gas Release	--	--	1956	Continuous	--	--
EU07 (GR-PL)	DANV-GR-PL	Pipeline Gas Release Emissions from Natural	1	Pipeline Gas Release	--	--	1956	Continuous	--	--

Section B.2: Materials and Fuel Information

**Maximum yearly fuel usage rate only applies if applicant request operating restrictions through federally enforceable limitations.*

Emission Unit #	Emission Unit Name	Name of Raw Materials Input	Maximum Quantity of Each Raw Material Input	(Specify Units/hr)	Total Process Weight Rate for Emission Unit (tons/hr)	Name of Finished Materials	Maximum Quantity of Each Finished Material Output	(Specify Units/hr)	Fuel Type	Maximum Hourly Fuel Usage Rate	(Specify Units)	Maximum Yearly Fuel Usage Rate	(Specify Units)	Sulfur Content (%)	Ash Content (%)
EU07 (PC01)-1	DANV-PC-Natural Gas	Valves	0.0797	comp/hr	--	--	--	--	--	--	--	--	--	--	--
		Connectors	0.3678	comp/hr	--	--	--	--	--	--	--	--	--	--	--
		Flanges	0.0532	comp/hr	--	--	--	--	--	--	--	--	--	--	--
		Open-Ended Lines	0.0041	comp/hr	--	--	--	--	--	--	--	--	--	--	--
		Other	0.0081	comp/hr	--	--	--	--	--	--	--	--	--	--	--
EU07 (PC02)-1	DANV-PC-Pipeline Liquids (Light Liquids)	Valves	0.0113	comp/hr	--	--	--	--	--	--	--	--	--	--	--
		Connectors	0.0656	comp/hr	--	--	--	--	--	--	--	--	--	--	--
		Flanges	0.0239	comp/hr	--	--	--	--	--	--	--	--	--	--	--
		Open-Ended Lines	0.0041	comp/hr	--	--	--	--	--	--	--	--	--	--	--
		Pump Seals	0.0001	comp/hr	--	--	--	--	--	--	--	--	--	--	--
		Other	0.0001	comp/hr	--	--	--	--	--	--	--	--	--	--	--
EU07 (PC03)-1	DANV-PC-Oil (Heavy Liquids)	Valves	0.0411	comp/hr	--	--	--	--	--	--	--	--	--	--	--
		Connectors	0.1168	comp/hr	--	--	--	--	--	--	--	--	--	--	--
		Flanges	0.0241	comp/hr	--	--	--	--	--	--	--	--	--	--	--
		Pump Seals	0.0024	comp/hr	--	--	--	--	--	--	--	--	--	--	--
		Other	0.0005	comp/hr	--	--	--	--	--	--	--	--	--	--	--
EU07 (GR-ST)	DANV-GR-ST	Natural Gas	--	--	--	--	--	--	--	--	--	--	--	--	--
EU07 (GR-PL)	DANV-GR-PL	Natural Gas	--	--	--	--	--	--	--	--	--	--	--	--	--

Section B.3: Notes, Comments, and Explanations

ATTACHMENT 3

Division for Air Quality

300 Sower Boulevard
Frankfort, KY 40601
(502) 564-3999

DEP7007N

Source Emissions Profile

__ Section N.1: Emission Summary
__ Section N.2: Stack Information
__ Section N.3: Fugitive Information
__ Section N.4: Notes, Comments, and Explanations

Additional Documentation

___ Complete DEP7007AI

Source Name: Texas Eastern Transmission, LP - Danville Compressor Station

KY EIS (AFS) #: 21- 137-00008

Permit #: V-16-056

Agency Interest (AI) ID: 44065

Date: July 31, 2025

N.1: Emission Summary

Emission Unit #	Emission Unit Name	Process ID	Process Name	Control Device Name	Control Device ID	Stack ID	Maximum Design Capacity (SCC Units/hour)	Pollutant	Uncontrolled Emission Factor (lb/SCC Units)	Emission Factor Source (e.g. AP-42, Stack Test, Mass Balance)	Capture Efficiency (%)	Control Efficiency (%)	Hourly Emissions		Annual Emissions	
													Uncontrolled Potential (lb/hr)	Controlled Potential (lb/hr)	Uncontrolled Potential (tons/yr)	Controlled Potential (tons/yr)
EU08	Unit 4T Turbine	1	Normal Operations	CatOx-8	C08	S08	0.1562	NOX	32.9	Mass Balance	100%	0%	5.14	5.14	22.5	22.5
							0.1562	CO	55.7	Mass Balance	100%	95%	8.69	0.435	38.1	1.90
							0.1562	SO2	14.3	Mass balance based on 100% conversion of fuel sulfur to SO2	100%	0%	2.23	2.23	9.77	9.77
							0.1562	PM10/2.5	6.73	AP-42 Table 3.1-2a	100%	0%	1.05	1.05	4.60	4.60
							0.1562	CO2-e	120,799	Mass Balance	100%	0%	18,864	18,864	82,624	82,624
							0.1562	CO2	120,017	40 CFR 98 Table C-1	100%	0%	18,742	18,742	82,090	82,090
							0.1562	N2O	0.226	40 CFR 98 Table C-2	100%	0%	3.53E-02	3.53E-02	0.155	0.155
							0.1562	Methane	28.5	Scaling of AP-42 Table 3.1-2a	100%	0%	4.46	4.46	19.5	19.5
							0.1562	VOC (Total)	6.97		100%	50%	1.09	0.544	4.77	2.38
							0.1562	HAP (Total)	3.41	Scaling of AP-42 Table 3.1-3	100%	82%	0.533	9.44E-02	2.33	0.414
							0.1562	Acetaldehyde	0.133		100%	80%	2.07E-02	4.15E-03	9.08E-02	1.82E-02
							0.1562	Acrolein	2.12E-02		100%	50%	3.32E-03	1.66E-03	1.45E-02	7.27E-03
							0.1562	Benzene	3.98E-02		100%	50%	6.22E-03	3.11E-03	2.72E-02	1.36E-02
							0.1562	Butadiene (1,3-)	1.43E-03		100%	50%	2.23E-04	1.11E-04	9.76E-04	4.88E-04
							0.1562	Ethylbenzene	0.106		100%	50%	1.66E-02	8.29E-03	7.27E-02	3.63E-02
							0.1562	Formaldehyde	2.36		100%	95%	0.368	1.84E-02	1.61	8.06E-02
							0.1562	Naphthalene	4.32E-03		100%	50%	6.74E-04	3.37E-04	2.95E-03	1.48E-03
							0.1562	PAH	7.30E-03		100%	50%	1.14E-03	5.70E-04	4.99E-03	2.50E-03
							0.1562	Propylene Oxide	9.63E-02		100%	50%	1.50E-02	7.52E-03	6.58E-02	3.29E-02
							0.1562	Toluene	0.432		100%	50%	6.74E-02	3.37E-02	0.295	0.148
							0.1562	Xylenes	0.212		100%	50%	3.32E-02	1.66E-02	0.145	7.27E-02

Emission Unit #	Emission Unit Name	Process ID	Process Name	Control Device Name	Control Device ID	Stack ID	Maximum Design Capacity (SCC Units/hour)	Pollutant	Uncontrolled Emission Factor (lb/SCC Units)	Emission Factor Source (e.g. AP-42, Stack Test, Mass Balance)	Capture Efficiency (%)	Control Efficiency (%)	Hourly Emissions		Annual Emissions	
													Uncontrolled Potential (lb/hr)	Controlled Potential (lb/hr)	Uncontrolled Potential (tons/yr)	Controlled Potential (tons/yr)
EU08	Unit 4T Turbine	2	Start-up	--	--	S08	2	NOX	2.05	Mass Balance	100%	0%	4.10	4.10	0.213	0.213
							2	CO	200	Mass Balance	100%	0%	399	399	20.8	20.8
							2	SO2	0.138	Mass balance based on 100% conversion of fuel sulfur to SO2	100%	0%	0.277	0.277	1.44E-02	1.44E-02
							2	PM10/2.5	6.52E-02	AP-42 Table 3.1-2a	100%	0%	0.130	0.130	6.78E-03	6.78E-03
							2	CO2-e	2,162	Mass Balance	100%	0%	4,325	4,325	225	225
							2	CO2	1,162	40 CFR 98 Table C-1	100%	0%	2,323	2,323	121	121
							2	N2O	2.19E-03	40 CFR 98 Table C-2	100%	0%	4.38E-03	4.38E-03	2.28E-04	2.28E-04
							2	Methane	40.0	Scaling of AP-42 Table 3.1-2a	100%	0%	80.0	80.0	4.16	4.16
							2	VOC (Total)	9.77		100%	0%	19.5	19.5	1.02	1.02
							2	HAP (Total)	4.78	Scaling of AP-42 Table 3.1-3	100%	0%	9.56	9.56	0.497	0.497
							2	Acetaldehyde	0.186		100%	0%	0.372	0.372	1.93E-02	1.93E-02
							2	Acrolein	2.98E-02		100%	0%	5.95E-02	5.95E-02	3.10E-03	3.10E-03
							2	Benzene	5.58E-02		100%	0%	0.112	0.112	5.80E-03	5.80E-03
							2	Butadiene (1,3-)	2.00E-03		100%	0%	4.00E-03	4.00E-03	2.08E-04	2.08E-04
							2	Ethylbenzene	0.149		100%	0%	0.298	0.298	1.55E-02	1.55E-02
							2	Formaldehyde	3.30		100%	0%	6.60	6.60	0.343	0.343
							2	Naphthalene	6.05E-03		100%	0%	1.21E-02	1.21E-02	6.29E-04	6.29E-04
							2	PAH	1.02E-02		100%	0%	2.05E-02	2.05E-02	1.06E-03	1.06E-03
							2	Propylene Oxide	0.135		100%	0%	0.270	0.270	1.40E-02	1.40E-02
							2	Toluene	0.605		100%	0%	1.21	1.21	6.29E-02	6.29E-02
							2	Xylenes	0.298		100%	0%	0.595	0.595	3.10E-02	3.10E-02
EU08	Unit 4T Turbine	3	Shut-down	CatOx-8	C08	S08	2	NOX	2.33	Mass Balance	100%	0%	4.67	4.67	0.243	0.243
							2	CO	213	Mass Balance	100%	95%	426	21.3	22.2	1.11
							2	SO2	0.149	Mass balance based on 100% conversion of fuel sulfur to SO2	100%	0%	0.297	0.297	1.55E-02	1.55E-02
							2	PM10/2.5	7.00E-02	AP-42 Table 3.1-2a	100%	0%	0.140	0.140	7.28E-03	7.28E-03
							2	CO2-e	2,175	Mass Balance	100%	0%	4,350	4,350	226	226
							2	CO2	1,249	40 CFR 98 Table C-1	100%	0%	2,498	2,498	130	130
							2	N2O	2.35E-03	40 CFR 98 Table C-2	100%	0%	4.71E-03	4.71E-03	2.45E-04	2.45E-04
							2	Methane	37.0	Scaling of AP-42 Table 3.1-2a	100%	0%	74.0	74.0	3.85	3.85
							2	VOC (Total)	9.04		100%	50%	18.1	9.04	0.940	0.470
							2	HAP (Total)	4.42	Scaling of AP-42 Table 3.1-3	100%	82%	8.85	1.57	0.460	8.16E-02
							2	Acetaldehyde	0.172		100%	80%	0.344	6.89E-02	1.79E-02	3.58E-03
							2	Acrolein	2.76E-02		100%	50%	5.51E-02	2.76E-02	2.87E-03	1.43E-03
							2	Benzene	5.17E-02		100%	50%	0.103	5.17E-02	5.37E-03	2.69E-03
							2	Butadiene (1,3-)	1.85E-03		100%	50%	3.70E-03	1.85E-03	1.93E-04	9.63E-05
							2	Ethylbenzene	0.138		100%	50%	0.276	0.138	1.43E-02	7.16E-03
							2	Formaldehyde	3.06		100%	95%	6.11	0.306	0.318	1.59E-02
							2	Naphthalene	5.60E-03		100%	50%	1.12E-02	5.60E-03	5.82E-04	2.91E-04
							2	PAH	9.47E-03		100%	50%	1.89E-02	9.47E-03	9.85E-04	4.92E-04
							2	Propylene Oxide	0.125		100%	50%	0.250	0.125	1.30E-02	6.49E-03
							2	Toluene	0.560		100%	50%	1.12	0.560	5.82E-02	2.91E-02
							2	Xylenes	0.276		100%	50%	0.551	0.276	2.87E-02	1.43E-02

Emission Unit #	Emission Unit Name	Process ID	Process Name	Control Device Name	Control Device ID	Stack ID	Maximum Design Capacity (SCC Units/hour)	Pollutant	Uncontrolled Emission Factor (lb/SCC Units)	Emission Factor Source (e.g. AP-42, Stack Test, Mass Balance)	Capture Efficiency (%)	Control Efficiency (%)	Hourly Emissions		Annual Emissions	
													Uncontrolled Potential (lb/hr)	Controlled Potential (lb/hr)	Uncontrolled Potential (tons/yr)	Controlled Potential (tons/yr)
EU08	Unit 4T Turbine	4	Low Temperature	CatOx-8	C08	S08	0.1772	NOX	154	Mass Balance	100%	0%	27.4	27.4	2.40	2.40
							0.1772	CO	224	Mass Balance	100%	95%	39.7	1.98	3.47	0.174
							0.1772	SO2	14.3	Mass balance based on 100% conversion of fuel sulfur to SO2	100%	0%	2.53	2.53	0.222	0.222
							0.1772	PM10/2.5	6.73	AP-42 Table 3.1-2a	100%	0%	1.19	1.19	0.104	0.104
							0.1772	CO2-e	121,520	Mass Balance	100%	0%	21,537	21,537	1,884	1,884
							0.1772	CO2	120,017	40 CFR 98 Table C-1	100%	0%	21,270	21,270	1,861	1,861
							0.1772	N2O	0.226	40 CFR 98 Table C-2	100%	0%	4.01E-02	4.01E-02	3.51E-03	3.51E-03
							0.1772	Methane	57.4	Scaling of AP-42 Table 3.1-2a	100%	0%	10.2	10.2	0.890	0.890
							0.1772	VOC (Total)	14.0		100%	50%	2.48	1.24	0.217	0.109
							0.1772	HAP (Total)	6.86	Scaling of AP-42 Table 3.1-3	100%	82%	1.22	0.216	0.106	1.89E-02
							0.1772	Acetaldehyde	0.267		100%	80%	4.73E-02	9.47E-03	4.14E-03	8.28E-04
							0.1772	Acrolein	4.27E-02		100%	50%	7.57E-03	3.79E-03	6.63E-04	3.31E-04
							0.1772	Benzene	8.01E-02		100%	50%	1.42E-02	7.10E-03	1.24E-03	6.21E-04
							0.1772	Butadiene (1,3-)	2.87E-03		100%	50%	5.09E-04	2.54E-04	4.45E-05	2.23E-05
							0.1772	Ethylbenzene	0.214		100%	50%	3.79E-02	1.89E-02	3.31E-03	1.66E-03
							0.1772	Formaldehyde	4.74		100%	95%	0.840	4.20E-02	7.35E-02	3.68E-03
							0.1772	Naphthalene	8.68E-03		100%	50%	1.54E-03	7.69E-04	1.35E-04	6.73E-05
							0.1772	PAH	1.47E-02		100%	50%	2.60E-03	1.30E-03	2.28E-04	1.14E-04
							0.1772	Propylene Oxide	0.194		100%	50%	3.43E-02	1.72E-02	3.00E-03	1.50E-03
							0.1772	Toluene	0.868		100%	50%	0.154	7.69E-02	1.35E-02	6.73E-03
							0.1772	Xylenes	0.427		100%	50%	7.57E-02	3.79E-02	6.63E-03	3.31E-03
EU08	Unit 4T Turbine	5	Very Low Temperature	CatOx-8	C08	S08	0.1772	NOX	441	Mass Balance	100%	0%	78.2	78.2	0.274	0.274
							0.1772	CO	336	Mass Balance	100%	95%	59.5	2.98	0.208	1.04E-02
							0.1772	SO2	14.3	Mass balance based on 100% conversion of fuel sulfur to SO2	100%	0%	2.53	2.53	8.86E-03	8.86E-03
							0.1772	PM10/2.5	6.73	AP-42 Table 3.1-2a	100%	0%	1.19	1.19	4.18E-03	4.18E-03
							0.1772	CO2-e	122,238	Mass Balance	100%	0%	21,664	21,664	75.8	75.8
							0.1772	CO2	120,017	40 CFR 98 Table C-1	100%	0%	21,270	21,270	74.4	74.4
							0.1772	N2O	0.226	40 CFR 98 Table C-2	100%	0%	4.01E-02	4.01E-02	1.40E-04	1.40E-04
							0.1772	Methane	86.1	Scaling of AP-42 Table 3.1-2a	100%	0%	15.3	15.3	5.34E-02	5.34E-02
							0.1772	VOC (Total)	21.0		100%	50%	3.73	1.86	1.30E-02	6.52E-03
							0.1772	HAP (Total)	10.3	Scaling of AP-42 Table 3.1-3	100%	82%	1.82	0.323	6.38E-03	1.13E-03
							0.1772	Acetaldehyde	0.401		100%	80%	7.10E-02	1.42E-02	2.48E-04	4.97E-05
							0.1772	Acrolein	6.41E-02		100%	50%	1.14E-02	5.68E-03	3.98E-05	1.99E-05
							0.1772	Benzene	0.120		100%	50%	2.13E-02	1.06E-02	7.45E-05	3.73E-05
							0.1772	Butadiene (1,3-)	4.31E-03		100%	50%	7.63E-04	3.82E-04	2.67E-06	1.34E-06
							0.1772	Ethylbenzene	0.320		100%	50%	5.68E-02	2.84E-02	1.99E-04	9.94E-05
							0.1772	Formaldehyde	7.11		100%	95%	1.26	6.30E-02	4.41E-03	2.21E-04
							0.1772	Naphthalene	1.30E-02		100%	50%	2.31E-03	1.15E-03	8.08E-06	4.04E-06
							0.1772	PAH	2.20E-02		100%	50%	3.90E-03	1.95E-03	1.37E-05	6.83E-06
							0.1772	Propylene Oxide	0.290		100%	50%	5.15E-02	2.57E-02	1.80E-04	9.01E-05
							0.1772	Toluene	1.30		100%	50%	0.231	0.115	8.08E-04	4.04E-04
							0.1772	Xylenes	0.641		100%	50%	0.114	5.68E-02	3.98E-04	1.99E-04

Emission Unit #	Emission Unit Name	Process ID	Process Name	Control Device Name	Control Device ID	Stack ID	Maximum Design Capacity (SCC Units/hour)	Pollutant	Uncontrolled Emission Factor (lb/SCC Units)	Emission Factor Source (e.g. AP-42, Stack Test, Mass Balance)	Capture Efficiency (%)	Control Efficiency (%)	Hourly Emissions		Annual Emissions	
													Uncontrolled Potential (lb/hr)	Controlled Potential (lb/hr)	Uncontrolled Potential (tons/yr)	Controlled Potential (tons/yr)
EU09	Unit 5T Turbine	1	Normal Operations	CatOx-9	C09	S09	0.1562	NOX	32.9	Mass Balance	100%	0%	5.14	5.14	22.5	22.5
							0.1562	CO	55.7	Mass Balance	100%	95%	8.69	0.435	38.1	1.90
							0.1562	SO2	14.3	Mass balance based on 100% conversion of fuel sulfur to SO2	100%	0%	2.23	2.23	9.77	9.77
							0.1562	PM10/2.5	6.73	AP-42 Table 3.1-2a	100%	0%	1.05	1.05	4.60	4.60
							0.1562	CO2-e	120,799	Mass Balance	100%	0%	18,864	18,864	82,624	82,624
							0.1562	CO2	120,017	40 CFR 98 Table C-1	100%	0%	18,742	18,742	82,090	82,090
							0.1562	N2O	0.226	40 CFR 98 Table C-2	100%	0%	3.53E-02	3.53E-02	0.155	0.155
							0.1562	Methane	28.5	Scaling of AP-42 Table 3.1-2a	100%	0%	4.46	4.46	19.5	19.5
							0.1562	VOC (Total)	6.97		100%	50%	1.09	0.544	4.77	2.38
							0.1562	HAP (Total)	3.41	Scaling of AP-42 Table 3.1-3	100%	82%	0.533	9.44E-02	2.33	0.414
							0.1562	Acetaldehyde	0.133		100%	80%	2.07E-02	4.15E-03	9.08E-02	1.82E-02
							0.1562	Acrolein	2.12E-02		100%	50%	3.32E-03	1.66E-03	1.45E-02	7.27E-03
							0.1562	Benzene	3.98E-02		100%	50%	6.22E-03	3.11E-03	2.72E-02	1.36E-02
							0.1562	Butadiene (1,3-)	1.43E-03		100%	50%	2.23E-04	1.11E-04	9.76E-04	4.88E-04
							0.1562	Ethylbenzene	0.106		100%	50%	1.66E-02	8.29E-03	7.27E-02	3.63E-02
							0.1562	Formaldehyde	2.36		100%	95%	0.368	1.84E-02	1.61	8.06E-02
							0.1562	Naphthalene	4.32E-03		100%	50%	6.74E-04	3.37E-04	2.95E-03	1.48E-03
							0.1562	PAH	7.30E-03		100%	50%	1.14E-03	5.70E-04	4.99E-03	2.50E-03
							0.1562	Propylene Oxide	9.63E-02		100%	50%	1.50E-02	7.52E-03	6.58E-02	3.29E-02
							0.1562	Toluene	0.432		100%	50%	6.74E-02	3.37E-02	0.295	0.148
							0.1562	Xylenes	0.212		100%	50%	3.32E-02	1.66E-02	0.145	7.27E-02
EU09	Unit 5T Turbine	2	Start-up	--	--	S09	2	NOX	2.05	Mass Balance	100%	0%	4.10	4.10	0.213	0.213
							2	CO	200	Mass Balance	100%	0%	399	399	20.8	20.8
							2	SO2	0.138	Mass balance based on 100% conversion of fuel sulfur to SO2	100%	0%	0.277	0.277	1.44E-02	1.44E-02
							2	PM10/2.5	6.52E-02	AP-42 Table 3.1-2a	100%	0%	0.130	0.130	6.78E-03	6.78E-03
							2	CO2-e	2,162	Mass Balance	100%	0%	4,325	4,325	225	225
							2	CO2	1,162	40 CFR 98 Table C-1	100%	0%	2,323	2,323	121	121
							2	N2O	2.19E-03	40 CFR 98 Table C-2	100%	0%	4.38E-03	4.38E-03	2.28E-04	2.28E-04
							2	Methane	40.0	Scaling of AP-42 Table 3.1-2a	100%	0%	80.0	80.0	4.16	4.16
							2	VOC (Total)	9.77		100%	0%	19.5	19.5	1.02	1.02
							2	HAP (Total)	4.78	Scaling of AP-42 Table 3.1-3	100%	0%	9.56	9.56	0.497	0.497
							2	Acetaldehyde	0.186		100%	0%	0.372	0.372	1.93E-02	1.93E-02
							2	Acrolein	2.98E-02		100%	0%	5.95E-02	5.95E-02	3.10E-03	3.10E-03
							2	Benzene	5.58E-02		100%	0%	0.112	0.112	5.80E-03	5.80E-03
							2	Butadiene (1,3-)	2.00E-03		100%	0%	4.00E-03	4.00E-03	2.08E-04	2.08E-04
							2	Ethylbenzene	0.149		100%	0%	0.298	0.298	1.55E-02	1.55E-02
							2	Formaldehyde	3.30		100%	0%	6.60	6.60	0.343	0.343
							2	Naphthalene	6.05E-03		100%	0%	1.21E-02	1.21E-02	6.29E-04	6.29E-04
							2	PAH	1.02E-02		100%	0%	2.05E-02	2.05E-02	1.06E-03	1.06E-03
							2	Propylene Oxide	0.135		100%	0%	0.270	0.270	1.40E-02	1.40E-02
							2	Toluene	0.605		100%	0%	1.21	1.21	6.29E-02	6.29E-02
							2	Xylenes	0.298		100%	0%	0.595	0.595	3.10E-02	3.10E-02

Emission Unit #	Emission Unit Name	Process ID	Process Name	Control Device Name	Control Device ID	Stack ID	Maximum Design Capacity *(SCC Units/hour)*	Pollutant	Uncontrolled Emission Factor *(lb/SCC Units)*	Emission Factor Source (e.g. AP-42, Stack Test, Mass Balance)	Capture Efficiency *(%)*	Control Efficiency *(%)*	Hourly Emissions		Annual Emissions	
													Uncontrolled Potential *(lb/hr)*	Controlled Potential *(lb/hr)*	Uncontrolled Potential *(tons/yr)*	Controlled Potential *(tons/yr)*
EU09	Unit 5T Turbine	3	Shut-down	CatOx-9	C09	S09	2	NOX	2.33	Mass Balance	100%	0%	4.67	4.67	0.243	0.243
							2	CO	213	Mass Balance	100%	95%	426	21.3	22.2	1.11
							2	SO2	0.149	Mass balance based on 100% conversion of fuel sulfur to SO2	100%	0%	0.297	0.297	1.55E-02	1.55E-02
							2	PM10/2.5	7.00E-02	AP-42 Table 3.1-2a	100%	0%	0.140	0.140	7.28E-03	7.28E-03
							2	CO2-e	2,175	Mass Balance	100%	0%	4,350	4,350	226	226
							2	CO2	1,249	40 CFR 98 Table C-1	100%	0%	2,498	2,498	130	130
							2	N2O	2.35E-03	40 CFR 98 Table C-2	100%	0%	4.71E-03	4.71E-03	2.45E-04	2.45E-04
							2	Methane	37.0	Scaling of AP-42 Table 3.1-2a	100%	0%	74.0	74.0	3.85	3.85
							2	VOC (Total)	9.04		100%	50%	18.1	9.04	0.940	0.470
							2	HAP (Total)	4.42	Scaling of AP-42 Table 3.1-3	100%	82%	8.85	1.57	0.460	8.16E-02
							2	Acetaldehyde	0.172		100%	80%	0.344	6.89E-02	1.79E-02	3.58E-03
							2	Acrolein	2.76E-02		100%	50%	5.51E-02	2.76E-02	2.87E-03	1.43E-03
							2	Benzene	5.17E-02		100%	50%	0.103	5.17E-02	5.37E-03	2.69E-03
							2	Butadiene (1,3-)	1.85E-03		100%	50%	3.70E-03	1.85E-03	1.93E-04	9.63E-05
							2	Ethylbenzene	0.138		100%	50%	0.276	0.138	1.43E-02	7.16E-03
							2	Formaldehyde	3.06		100%	95%	6.11	0.306	0.318	1.59E-02
							2	Naphthalene	5.60E-03		100%	50%	1.12E-02	5.60E-03	5.82E-04	2.91E-04
							2	PAH	9.47E-03		100%	50%	1.89E-02	9.47E-03	9.85E-04	4.92E-04
							2	Propylene Oxide	0.125		100%	50%	0.250	0.125	1.30E-02	6.49E-03
							2	Toluene	0.560		100%	50%	1.12	0.560	5.82E-02	2.91E-02
							2	Xylenes	0.276		100%	50%	0.551	0.276	2.87E-02	1.43E-02
EU09	Unit 5T Turbine	4	Low Temperature	CatOx-9	C09	S09	0.1772	NOX	154	Mass Balance	100%	0%	27.4	27.4	2.40	2.40
							0.1772	CO	224	Mass Balance	100%	95%	39.7	1.98	3.47	0.174
							0.1772	SO2	14.3	Mass balance based on 100% conversion of fuel sulfur to SO2	100%	0%	2.53	2.53	0.222	0.222
							0.1772	PM10/2.5	6.73	AP-42 Table 3.1-2a	100%	0%	1.19	1.19	0.104	0.104
							0.1772	CO2-e	121,520		100%	0%	21,537	21,537	1,884	1,884
							0.1772	CO2	120,017	40 CFR 98 Table C-1	100%	0%	21,270	21,270	1,861	1,861
							0.1772	N2O	0.226	40 CFR 98 Table C-2	100%	0%	4.01E-02	4.01E-02	3.51E-03	3.51E-03
							0.1772	Methane	57.4	Scaling of AP-42 Table 3.1-2a	100%	0%	10.2	10.2	0.890	0.890
							0.1772	VOC (Total)	14.0		100%	50%	2.48	1.24	0.217	0.109
							0.1772	HAP (Total)	6.86	Scaling of AP-42 Table 3.1-3	100%	82%	1.22	0.216	0.106	1.89E-02
							0.1772	Acetaldehyde	0.267		100%	80%	4.73E-02	9.47E-03	4.14E-03	8.28E-04
							0.1772	Acrolein	4.27E-02		100%	50%	7.57E-03	3.79E-03	6.63E-04	3.31E-04
							0.1772	Benzene	8.01E-02		100%	50%	1.42E-02	7.10E-03	1.24E-03	6.21E-04
							0.1772	Butadiene (1,3-)	2.87E-03		100%	50%	5.09E-04	2.54E-04	4.45E-05	2.23E-05
							0.1772	Ethylbenzene	0.214		100%	50%	3.79E-02	1.89E-02	3.31E-03	1.66E-03
							0.1772	Formaldehyde	4.74		100%	95%	0.840	4.20E-02	7.35E-02	3.68E-03
							0.1772	Naphthalene	8.68E-03		100%	50%	1.54E-03	7.69E-04	1.35E-04	6.73E-05
							0.1772	PAH	1.47E-02		100%	50%	2.60E-03	1.30E-03	2.28E-04	1.14E-04
							0.1772	Propylene Oxide	0.194		100%	50%	3.43E-02	1.72E-02	3.00E-03	1.50E-03
							0.1772	Toluene	0.868		100%	50%	0.154	7.69E-02	1.35E-02	6.73E-03
							0.1772	Xylenes	0.427		100%	50%	7.57E-02	3.79E-02	6.63E-03	3.31E-03

Emission Unit #	Emission Unit Name	Process ID	Process Name	Control Device Name	Control Device ID	Stack ID	Maximum Design Capacity *(SCC Units/hour)*	Pollutant	Uncontrolled Emission Factor *(lb/SCC Units)*	Emission Factor Source (e.g. AP-42, Stack Test, Mass Balance)	Capture Efficiency *(%)*	Control Efficiency *(%)*	Hourly Emissions		Annual Emissions	
													Uncontrolled Potential *(lb/hr)*	Controlled Potential *(lb/hr)*	Uncontrolled Potential *(tons/yr)*	Controlled Potential *(tons/yr)*
EU09	Unit 5T Turbine	5	Very Low Temperature	CatOx-9	C09	S09	0.1772	NOX	441	Mass Balance	100%	0%	78.2	78.2	0.274	0.274
							0.1772	CO	336	Mass Balance	100%	95%	59.5	2.98	0.208	1.04E-02
							0.1772	SO2	14.3	Mass balance based on 100% conversion of fuel sulfur to SO2	100%	0%	2.53	2.53	8.86E-03	8.86E-03
							0.1772	PM10/2.5	6.73	AP-42 Table 3.1-2a	100%	0%	1.19	1.19	4.18E-03	4.18E-03
							0.1772	CO2-e	122,238		100%	0%	21,664	21,664	75.8	75.8
							0.1772	CO2	120,017	40 CFR 98 Table C-1	100%	0%	21,270	21,270	74.4	74.4
							0.1772	N2O	0.226	40 CFR 98 Table C-2	100%	0%	4.01E-02	4.01E-02	1.40E-04	1.40E-04
							0.1772	Methane	86.1	Scaling of AP-42 Table 3.1-2a	100%	0%	15.3	15.3	5.34E-02	5.34E-02
							0.1772	VOC (Total)	21.0		100%	50%	3.73	1.86	1.30E-02	6.52E-03
							0.1772	HAP (Total)	10.3	Scaling of AP-42 Table 3.1-3	100%	82%	1.82	0.323	6.38E-03	1.13E-03
							0.1772	Acetaldehyde	0.401		100%	80%	7.10E-02	1.42E-02	2.48E-04	4.97E-05
							0.1772	Acrolein	6.41E-02		100%	50%	1.14E-02	5.68E-03	3.98E-05	1.99E-05
							0.1772	Benzene	0.120		100%	50%	2.13E-02	1.06E-02	7.45E-05	3.73E-05
							0.1772	Butadiene (1,3-)	4.31E-03		100%	50%	7.63E-04	3.82E-04	2.67E-06	1.34E-06
							0.1772	Ethylbenzene	0.320		100%	50%	5.68E-02	2.84E-02	1.99E-04	9.94E-05
							0.1772	Formaldehyde	7.11		100%	95%	1.26	6.30E-02	4.41E-03	2.21E-04
							0.1772	Naphthalene	1.30E-02		100%	50%	2.31E-03	1.15E-03	8.08E-06	4.04E-06
							0.1772	PAH	2.20E-02		100%	50%	3.90E-03	1.95E-03	1.37E-05	6.83E-06
							0.1772	Propylene Oxide	0.290		100%	50%	5.15E-02	2.57E-02	1.80E-04	9.01E-05
							0.1772	Toluene	1.30		100%	50%	0.231	0.115	8.08E-04	4.04E-04
							0.1772	Xylenes	0.641		100%	50%	0.114	5.68E-02	3.98E-04	1.99E-04
EU10	Unit 6T Turbine	1	Normal Operations	CatOx-10	C10	S10	0.1562	NOX	32.9	Mass Balance	100%	0%	5.14	5.14	22.5	22.5
							0.1562	CO	55.7	Mass Balance	100%	95%	8.69	0.435	38.1	1.90
							0.1562	SO2	14.3	Mass balance based on 100% conversion of fuel sulfur to SO2	100%	0%	2.23	2.23	9.77	9.77
							0.1562	PM10/2.5	6.73	AP-42 Table 3.1-2a	100%	0%	1.05	1.05	4.60	4.60
							0.1562	CO2-e	120,799	Mass Balance	100%	0%	18,864	18,864	82,624	82,624
							0.1562	CO2	120,017	40 CFR 98 Table C-1	100%	0%	18,742	18,742	82,090	82,090
							0.1562	N2O	0.226	40 CFR 98 Table C-2	100%	0%	3.53E-02	3.53E-02	0.155	0.155
							0.1562	Methane	28.5	Scaling of AP-42 Table 3.1-2a	100%	0%	4.46	4.46	19.5	19.5
							0.1562	VOC (Total)	6.97		100%	50%	1.09	0.544	4.77	2.38
							0.1562	HAP (Total)	3.41	Scaling of AP-42 Table 3.1-3	100%	82%	0.533	9.44E-02	2.33	0.414
							0.1562	Acetaldehyde	0.133		100%	80%	2.07E-02	4.15E-03	9.08E-02	1.82E-02
							0.1562	Acrolein	2.12E-02		100%	50%	3.32E-03	1.66E-03	1.45E-02	7.27E-03
							0.1562	Benzene	3.98E-02		100%	50%	6.22E-03	3.11E-03	2.72E-02	1.36E-02
							0.1562	Butadiene (1,3-)	1.43E-03		100%	50%	2.23E-04	1.11E-04	9.76E-04	4.88E-04
							0.1562	Ethylbenzene	0.106		100%	50%	1.66E-02	8.29E-03	7.27E-02	3.63E-02
							0.1562	Formaldehyde	2.36		100%	95%	0.368	1.84E-02	1.61	8.06E-02
							0.1562	Naphthalene	4.32E-03		100%	50%	6.74E-04	3.37E-04	2.95E-03	1.48E-03
							0.1562	PAH	7.30E-03		100%	50%	1.14E-03	5.70E-04	4.99E-03	2.50E-03
							0.1562	Propylene Oxide	9.63E-02		100%	50%	1.50E-02	7.52E-03	6.58E-02	3.29E-02
							0.1562	Toluene	0.432		100%	50%	6.74E-02	3.37E-02	0.295	0.148
							0.1562	Xylenes	0.212		100%	50%	3.32E-02	1.66E-02	0.145	7.27E-02

Emission Unit #	Emission Unit Name	Process ID	Process Name	Control Device Name	Control Device ID	Stack ID	Maximum Design Capacity (SCC Units/hour)	Pollutant	Uncontrolled Emission Factor (lb/SCC Units)	Emission Factor Source (e.g. AP-42, Stack Test, Mass Balance)	Capture Efficiency (%)	Control Efficiency (%)	Hourly Emissions		Annual Emissions	
													Uncontrolled Potential (lb/hr)	Controlled Potential (lb/hr)	Uncontrolled Potential (tons/yr)	Controlled Potential (tons/yr)
EU10	Unit 6T Turbine	2	Start-up	--	--	S10	2	NOX	2.05	Mass Balance	100%	0%	4.10	4.10	0.213	0.213
							2	CO	200	Mass Balance	100%	0%	399	399	20.8	20.8
							2	SO2	0.138	Mass balance based on 100% conversion of fuel sulfur to SO2	100%	0%	0.277	0.277	1.44E-02	1.44E-02
							2	PM10/2.5	6.52E-02	AP-42 Table 3.1-2a	100%	0%	0.130	0.130	6.78E-03	6.78E-03
							2	CO2-e	2,162	Mass Balance	100%	0%	4,325	4,325	225	225
							2	CO2	1,162	40 CFR 98 Table C-1	100%	0%	2,323	2,323	121	121
							2	N2O	2.19E-03	40 CFR 98 Table C-2	100%	0%	4.38E-03	4.38E-03	2.28E-04	2.28E-04
							2	Methane	40.0	Scaling of AP-42 Table 3.1-2a	100%	0%	80.0	80.0	4.16	4.16
							2	VOC (Total)	9.77		100%	0%	19.5	19.5	1.02	1.02
							2	HAP (Total)	4.78	Scaling of AP-42 Table 3.1-3	100%	0%	9.56	9.56	0.497	0.497
							2	Acetaldehyde	0.186		100%	0%	0.372	0.372	1.93E-02	1.93E-02
							2	Acrolein	2.98E-02		100%	0%	5.95E-02	5.95E-02	3.10E-03	3.10E-03
							2	Benzene	5.58E-02		100%	0%	0.112	0.112	5.80E-03	5.80E-03
							2	Butadiene (1,3-)	2.00E-03		100%	0%	4.00E-03	4.00E-03	2.08E-04	2.08E-04
							2	Ethylbenzene	0.149		100%	0%	0.298	0.298	1.55E-02	1.55E-02
							2	Formaldehyde	3.30		100%	0%	6.60	6.60	0.343	0.343
							2	Naphthalene	6.05E-03		100%	0%	1.21E-02	1.21E-02	6.29E-04	6.29E-04
							2	PAH	1.02E-02		100%	0%	2.05E-02	2.05E-02	1.06E-03	1.06E-03
							2	Propylene Oxide	0.135		100%	0%	0.270	0.270	1.40E-02	1.40E-02
							2	Toluene	0.605		100%	0%	1.21	1.21	6.29E-02	6.29E-02
							2	Xylenes	0.298		100%	0%	0.595	0.595	3.10E-02	3.10E-02
EU10	Unit 6T Turbine	3	Shut-down	CatOx-10	C10	S10	2	NOX	2.33	Mass Balance	100%	0%	4.67	4.67	0.243	0.243
							2	CO	213	Mass Balance	100%	95%	426	21.3	22.2	1.11
							2	SO2	0.149	Mass balance based on 100% conversion of fuel sulfur to SO2	100%	0%	0.297	0.297	1.55E-02	1.55E-02
							2	PM10/2.5	7.00E-02	AP-42 Table 3.1-2a	100%	0%	0.140	0.140	7.28E-03	7.28E-03
							2	CO2-e	2,175	Mass Balance	100%	0%	4,350	4,350	226	226
							2	CO2	1,249	40 CFR 98 Table C-1	100%	0%	2,498	2,498	130	130
							2	N2O	2.35E-03	40 CFR 98 Table C-2	100%	0%	4.71E-03	4.71E-03	2.45E-04	2.45E-04
							2	Methane	37.0	Scaling of AP-42 Table 3.1-2a	100%	0%	74.0	74.0	3.85	3.85
							2	VOC (Total)	9.04		100%	50%	18.1	9.04	0.940	0.470
							2	HAP (Total)	4.42	Scaling of AP-42 Table 3.1-3	100%	82%	8.85	1.57	0.460	8.16E-02
							2	Acetaldehyde	0.172		100%	80%	0.344	6.89E-02	1.79E-02	3.58E-03
							2	Acrolein	2.76E-02		100%	50%	5.51E-02	2.76E-02	2.87E-03	1.43E-03
							2	Benzene	5.17E-02		100%	50%	0.103	5.17E-02	5.37E-03	2.69E-03
							2	Butadiene (1,3-)	1.85E-03		100%	50%	3.70E-03	1.85E-03	1.93E-04	9.63E-05
							2	Ethylbenzene	0.138		100%	50%	0.276	0.138	1.43E-02	7.16E-03
							2	Formaldehyde	3.06		100%	95%	6.11	0.306	0.318	1.59E-02
							2	Naphthalene	5.60E-03		100%	50%	1.12E-02	5.60E-03	5.82E-04	2.91E-04
							2	PAH	9.47E-03		100%	50%	1.89E-02	9.47E-03	9.85E-04	4.92E-04
							2	Propylene Oxide	0.125		100%	50%	0.250	0.125	1.30E-02	6.49E-03
							2	Toluene	0.560		100%	50%	1.12	0.560	5.82E-02	2.91E-02
							2	Xylenes	0.276		100%	50%	0.551	0.276	2.87E-02	1.43E-02

Emission Unit #	Emission Unit Name	Process ID	Process Name	Control Device Name	Control Device ID	Stack ID	Maximum Design Capacity (SCC Units/hour)	Pollutant	Uncontrolled Emission Factor (lb/SCC Units)	Emission Factor Source (e.g. AP-42, Stack Test, Mass Balance)	Capture Efficiency (%)	Control Efficiency (%)	Hourly Emissions		Annual Emissions	
													Uncontrolled Potential (lb/hr)	Controlled Potential (lb/hr)	Uncontrolled Potential (tons/yr)	Controlled Potential (tons/yr)
EU10	Unit 6T Turbine	4	Low Temperature	CatOx-10	C10	S10	0.1772	NOX	154	Mass Balance	100%	0%	27.4	27.4	2.40	2.40
							0.1772	CO	224	Mass Balance	100%	95%	39.7	1.98	3.47	0.174
							0.1772	SO2	14.3	Mass balance based on 100% conversion of fuel sulfur to SO2	100%	0%	2.53	2.53	0.222	0.222
							0.1772	PM10/2.5	6.73	AP-42 Table 3.1-2a	100%	0%	1.19	1.19	0.104	0.104
							0.1772	CO2-e	121,520	Mass Balance	100%	0%	21,537	21,537	1,884	1,884
							0.1772	CO2	120,017	40 CFR 98 Table C-1	100%	0%	21,270	21,270	1,861	1,861
							0.1772	N2O	0.226	40 CFR 98 Table C-2	100%	0%	4.01E-02	4.01E-02	3.51E-03	3.51E-03
							0.1772	Methane	57.4	Scaling of AP-42 Table 3.1-2a	100%	0%	10.2	10.2	0.890	0.890
							0.1772	VOC (Total)	14.0		100%	50%	2.48	1.24	0.217	0.109
							0.1772	HAP (Total)	6.86	Scaling of AP-42 Table 3.1-3	100%	82%	1.22	0.216	0.106	1.89E-02
							0.1772	Acetaldehyde	0.267		100%	80%	4.73E-02	9.47E-03	4.14E-03	8.28E-04
							0.1772	Acrolein	4.27E-02		100%	50%	7.57E-03	3.79E-03	6.63E-04	3.31E-04
							0.1772	Benzene	8.01E-02		100%	50%	1.42E-02	7.10E-03	1.24E-03	6.21E-04
							0.1772	Butadiene (1,3-)	2.87E-03		100%	50%	5.09E-04	2.54E-04	4.45E-05	2.23E-05
							0.1772	Ethylbenzene	0.214		100%	50%	3.79E-02	1.89E-02	3.31E-03	1.66E-03
							0.1772	Formaldehyde	4.74		100%	95%	0.840	4.20E-02	7.35E-02	3.68E-03
							0.1772	Naphthalene	8.68E-03		100%	50%	1.54E-03	7.69E-04	1.35E-04	6.73E-05
							0.1772	PAH	1.47E-02		100%	50%	2.60E-03	1.30E-03	2.28E-04	1.14E-04
							0.1772	Propylene Oxide	0.194		100%	50%	3.43E-02	1.72E-02	3.00E-03	1.50E-03
							0.1772	Toluene	0.868		100%	50%	0.154	7.69E-02	1.35E-02	6.73E-03
							0.1772	Xylenes	0.427		100%	50%	7.57E-02	3.79E-02	6.63E-03	3.31E-03
EU10	Unit 6T Turbine	5	Very Low Temperature	CatOx-10	C10	S10	0.1772	NOX	441	Mass Balance	100%	0%	78.2	78.2	0.274	0.274
							0.1772	CO	336	Mass Balance	100%	95%	59.5	2.98	0.208	1.04E-02
							0.1772	SO2	14.3	Mass balance based on 100% conversion of fuel sulfur to SO2	100%	0%	2.53	2.53	8.86E-03	8.86E-03
							0.1772	PM10/2.5	6.73	AP-42 Table 3.1-2a	100%	0%	1.19	1.19	4.18E-03	4.18E-03
							0.1772	CO2-e	122,238	Mass Balance	100%	0%	21,664	21,664	75.8	75.8
							0.1772	CO2	120,017	40 CFR 98 Table C-1	100%	0%	21,270	21,270	74.4	74.4
							0.1772	N2O	0.226	40 CFR 98 Table C-2	100%	0%	4.01E-02	4.01E-02	1.40E-04	1.40E-04
							0.1772	Methane	86.1	Scaling of AP-42 Table 3.1-2a	100%	0%	15.3	15.3	5.34E-02	5.34E-02
							0.1772	VOC (Total)	21.0		100%	50%	3.73	1.86	1.30E-02	6.52E-03
							0.1772	HAP (Total)	10.3	Scaling of AP-42 Table 3.1-3	100%	82%	1.82	0.323	6.38E-03	1.13E-03
							0.1772	Acetaldehyde	0.401		100%	80%	7.10E-02	1.42E-02	2.48E-04	4.97E-05
							0.1772	Acrolein	6.41E-02		100%	50%	1.14E-02	5.68E-03	3.98E-05	1.99E-05
							0.1772	Benzene	0.120		100%	50%	2.13E-02	1.06E-02	7.45E-05	3.73E-05
							0.1772	Butadiene (1,3-)	4.31E-03		100%	50%	7.63E-04	3.82E-04	2.67E-06	1.34E-06
							0.1772	Ethylbenzene	0.320		100%	50%	5.68E-02	2.84E-02	1.99E-04	9.94E-05
							0.1772	Formaldehyde	7.11		100%	95%	1.26	6.30E-02	4.41E-03	2.21E-04
							0.1772	Naphthalene	1.30E-02		100%	50%	2.31E-03	1.15E-03	8.08E-06	4.04E-06
							0.1772	PAH	2.20E-02		100%	50%	3.90E-03	1.95E-03	1.37E-05	6.83E-06
							0.1772	Propylene Oxide	0.290		100%	50%	5.15E-02	2.57E-02	1.80E-04	9.01E-05
							0.1772	Toluene	1.30		100%	50%	0.231	0.115	8.08E-04	4.04E-04
							0.1772	Xylenes	0.641		100%	50%	0.114	5.68E-02	3.98E-04	1.99E-04

Emission Unit #	Emission Unit Name	Process ID	Process Name	Control Device Name	Control Device ID	Stack ID	Maximum Design Capacity *(SCC Units/hour)*	Pollutant	Uncontrolled Emission Factor *(lb/SCC Units)*	Emission Factor Source (e.g. AP-42, Stack Test, Mass Balance)	Capture Efficiency *(%)*	Control Efficiency *(%)*	Hourly Emissions		Annual Emissions	
													Uncontrolled Potential *(lb/hr)*	Controlled Potential *(lb/hr)*	Uncontrolled Potential *(tons/yr)*	Controlled Potential *(tons/yr)*
EU11	Emergency Engine Generator	1	Natural Gas Combustion	NSCR-11	C11	S11	0.0126	NOX	516.6	NSPS JJJJ	100%	0%	6.50	6.50	1.63	1.63
							0.0126	CO	1,033	NSPS JJJJ	100%	0%	13.0	13.0	3.25	3.25
							0.0126	SO2	14.3	Mass balance based on 100% conversion of fuel sulfur to SO2	100%	0%	0.180	0.180	4.50E-02	4.50E-02
							0.0126	PM10/2.5	19.8	AP42 Table 3.2-3	100%	0%	0.249	0.249	6.23E-02	6.23E-02
							0.0126	CO2-e	258,673	Mass Balance	100%	0%	3,256	3,256	814	814
							0.0126	CO2	120,017	40 CFR 98 Subpart C, Table C-1	100%	0%	1,511	1,511	378	378
							0.0126	N2O	0.226	40 CFR 98 Subpart C, Table C-2	100%	0%	2.85E-03	2.85E-03	7.12E-04	7.12E-04
							0.0126	Methane	4,950	AP-42 Section 3.2 HAP value × ratio of AP-42 VOC to NSPS JJJJ VOC	100%	0%	62.3	62.3	15.6	15.6
							0.0126	VOC (Total)	699	NSPS JJJJ (1.0 g/bhp-hr) scaled up by ratio of VOC to formaldehyde from AP-42 Section 3.2	100%	0%	8.81	8.81	2.20	2.20
							0.0126	HAP (Total)	698	AP-42 Section 3.2 HAP value × ratio of AP-42 VOC to NSPS JJJJ VOC	100%	0%	8.78	8.78	2.20	2.20
							0.0126	Acetaldehyde	60.0		100%	0%	0.756	0.756	0.189	0.189
							0.0126	Acrolein	56.6		100%	0%	0.713	0.713	0.178	0.178
							0.0126	Benzene	34.0		100%	0%	0.428	0.428	0.107	0.107
							0.0126	Butadiene (1,3-)	14.3		100%	0%	0.180	0.180	4.49E-02	4.49E-02
							0.0126	Carbon Tetrachloride	0.381		100%	0%	4.80E-03	4.80E-03	1.20E-03	1.20E-03
							0.0126	Chlorobenzene	0.278		100%	0%	3.49E-03	3.49E-03	8.74E-04	8.74E-04
							0.0126	Chloroform	0.295		100%	0%	3.71E-03	3.71E-03	9.28E-04	9.28E-04
							0.0126	Dichloropropene (1,3-)	0.273		100%	0%	3.44E-03	3.44E-03	8.60E-04	8.60E-04
							0.0126	Ethylbenzene	0.534		100%	0%	6.72E-03	6.72E-03	1.68E-03	1.68E-03
							0.0126	Ethylene Dibromide	0.458		100%	0%	5.77E-03	5.77E-03	1.44E-03	1.44E-03
							0.0126	Formaldehyde	441		100%	0%	5.55	5.55	1.39	1.39
							0.0126	Methanol	65.9		100%	0%	0.829	0.829	0.207	0.207
							0.0126	Methylene Chloride	0.887		100%	0%	1.12E-02	1.12E-02	2.79E-03	2.79E-03
							0.0126	Naphthalene	2.09		100%	0%	2.63E-02	2.63E-02	6.58E-03	6.58E-03
							0.0126	PAH	3.03		100%	0%	3.82E-02	3.82E-02	9.55E-03	9.55E-03
							0.0126	Styrene	0.256		100%	0%	3.22E-03	3.22E-03	8.06E-04	8.06E-04
							0.0126	Tetrachloroethane (1,1,2,2-)	0.544		100%	0%	6.85E-03	6.85E-03	1.71E-03	1.71E-03
							0.0126	Toluene	12.0		100%	0%	0.151	0.151	3.78E-02	3.78E-02
							0.0126	Trichloroethane (1,1,2-)	0.329		100%	0%	4.15E-03	4.15E-03	1.04E-03	1.04E-03
							0.0126	Vinyl Chloride	0.155		100%	0%	1.95E-03	1.95E-03	4.86E-04	4.86E-04
							0.0126	Xylenes	4.20		100%	0%	5.28E-02	5.28E-02	1.32E-02	1.32E-02

Emission Unit #	Emission Unit Name	Process ID	Process Name	Control Device Name	Control Device ID	Stack ID	Maximum Design Capacity *(SCC Units/hour)*	Pollutant	Uncontrolled Emission Factor *(lb/SCC Units)*	Emission Factor Source (e.g. AP-42, Stack Test, Mass Balance)	Capture Efficiency *(%)*	Control Efficiency *(%)*	Hourly Emissions		Annual Emissions	
													Uncontrolled Potential *(lb/hr)*	Controlled Potential *(lb/hr)*	Uncontrolled Potential *(tons/yr)*	Controlled Potential *(tons/yr)*
EU12	Unit 4T-6T Fuel Gas Heaters	1	Unit 4T Fuel Gas Heater	--	--	S12	0.0011	NOX	98.4	Vendor Specifications	100%	0%	0.111	0.111	0.488	0.488
							0.0011	CO	150	Vendor Specifications	100%	0%	0.170	0.170	0.743	0.743
							0.0011	SO2	14.3	Mass balance based on 100% conversion of fuel sulfur to SO2	100%	0%	1.62E-02	1.62E-02	7.08E-02	7.08E-02
							0.0011	PM10/2.5	7.60	AP-42, Table 1.4-2	100%	0%	8.60E-03	8.60E-03	3.76E-02	3.76E-02
							0.0011	CO2-e	120,339	Mass Balance	100%	0%	136	136	596	596
							0.0011	CO2	120,017	40 CFR 98 Table C-1	100%	0%	136	136	595	595
							0.0011	N2O	0.226	40 CFR 98 Table C-2	100%	0%	2.56E-04	2.56E-04	1.12E-03	1.12E-03
							0.0011	Methane	10.2	Scaling of AP-42 Table 1.4-3	100%	0%	1.15E-02	1.15E-02	5.03E-02	5.03E-02
							0.0011	VOC (Total)	36.1		100%	0%	4.09E-02	4.09E-02	0.179	0.179
							0.0011	HAP (Total)	8.32	Scaling of AP-42 Table 1.4-3 & 1.4-4	100%	0%	9.40E-03	9.40E-03	4.12E-02	4.12E-02
							0.0011	Benzene	9.28E-03	Scaling of AP-42 Table 1.4-3	100%	0%	1.05E-05	1.05E-05	4.60E-05	4.60E-05
							0.0011	Formaldehyde	0.331		100%	0%	3.75E-04	3.75E-04	1.64E-03	1.64E-03
							0.0011	Hexane (n-)	7.95		100%	0%	8.99E-03	8.99E-03	3.94E-02	3.94E-02
							0.0011	Methylnaphthalene (2-)	1.06E-04		100%	0%	1.20E-07	1.20E-07	5.25E-07	5.25E-07
							0.0011	Naphthalene	2.69E-03		100%	0%	3.05E-06	3.05E-06	1.33E-05	1.33E-05
							0.0011	Toluene	1.50E-02		100%	0%	1.70E-05	1.70E-05	7.44E-05	7.44E-05
EU12	Unit 4T-6T Fuel Gas Heaters	2	Unit 5T Fuel Gas Heater	--	--	S12	0.0011	NOX	98.4	Vendor Specifications	100%	0%	0.111	0.111	0.488	0.488
							0.0011	CO	150	Vendor Specifications	100%	0%	0.170	0.170	0.743	0.743
							0.0011	SO2	14.3	Mass balance based on 100% conversion of fuel sulfur to SO2	100%	0%	1.62E-02	1.62E-02	7.08E-02	7.08E-02
							0.0011	PM10/2.5	7.60	AP-42, Table 1.4-2	100%	0%	8.60E-03	8.60E-03	3.76E-02	3.76E-02
							0.0011	CO2-e	120,339	Mass Balance	100%	0%	136	136	596	596
							0.0011	CO2	120,017	40 CFR 98 Table C-1	100%	0%	136	136	595	595
							0.0011	N2O	0.226	40 CFR 98 Table C-2	100%	0%	2.56E-04	2.56E-04	1.12E-03	1.12E-03
							0.0011	Methane	10.2	Scaling of AP-42 Table 1.4-3	100%	0%	1.15E-02	1.15E-02	5.03E-02	5.03E-02
							0.0011	VOC (Total)	36.1		100%	0%	4.09E-02	4.09E-02	0.179	0.179
							0.0011	HAP (Total)	8.32	Scaling of AP-42 Table 1.4-3 & 1.4-4	100%	0%	9.40E-03	9.40E-03	4.12E-02	4.12E-02
							0.0011	Benzene	9.28E-03	Scaling of AP-42 Table 1.4-3	100%	0%	1.05E-05	1.05E-05	4.60E-05	4.60E-05
							0.0011	Formaldehyde	0.331		100%	0%	3.75E-04	3.75E-04	1.64E-03	1.64E-03
							0.0011	Hexane (n-)	7.95		100%	0%	8.99E-03	8.99E-03	3.94E-02	3.94E-02
							0.0011	Methylnaphthalene (2-)	1.06E-04		100%	0%	1.20E-07	1.20E-07	5.25E-07	5.25E-07
							0.0011	Naphthalene	2.69E-03		100%	0%	3.05E-06	3.05E-06	1.33E-05	1.33E-05
							0.0011	Toluene	1.50E-02		100%	0%	1.70E-05	1.70E-05	7.44E-05	7.44E-05

Emission Unit #	Emission Unit Name	Process ID	Process Name	Control Device Name	Control Device ID	Stack ID	Maximum Design Capacity *(SCC Units/hour)*	Pollutant	Uncontrolled Emission Factor *(lb/SCC Units)*	Emission Factor Source (e.g. AP-42, Stack Test, Mass Balance)	Capture Efficiency *(%)*	Control Efficiency *(%)*	Hourly Emissions		Annual Emissions	
													Uncontrolled Potential *(lb/hr)*	Controlled Potential *(lb/hr)*	Uncontrolled Potential *(tons/yr)*	Controlled Potential *(tons/yr)*
EU12	Unit 4T-6T Fuel Gas Heaters	3	Unit 6T Fuel Gas Heater	--	--	S12	0.0011	NOX	98.4	Vendor Specifications	100%	0%	0.111	0.111	0.488	0.488
							0.0011	CO	150	Vendor Specifications	100%	0%	0.170	0.170	0.743	0.743
							0.0011	SO2	14.3	Mass balance based on 100% conversion of fuel sulfur to SO2	100%	0%	1.62E-02	1.62E-02	7.08E-02	7.08E-02
							0.0011	PM10/2.5	7.60	AP-42, Table 1.4-2	100%	0%	8.60E-03	8.60E-03	3.76E-02	3.76E-02
							0.0011	CO2-e	120,339	Mass Balance	100%	0%	136	136	596	596
							0.0011	CO2	120,017	40 CFR 98 Table C-1	100%	0%	136	136	595	595
							0.0011	N2O	0.226	40 CFR 98 Table C-2	100%	0%	2.56E-04	2.56E-04	1.12E-03	1.12E-03
							0.0011	Methane	10.2	Scaling of AP-42 Table 1.4-3	100%	0%	1.15E-02	1.15E-02	5.03E-02	5.03E-02
							0.0011	VOC (Total)	36.1		100%	0%	4.09E-02	4.09E-02	0.179	0.179
							0.0011	HAP (Total)	8.32	Scaling of AP-42 Table 1.4-3 & 1.4-4	100%	0%	9.40E-03	9.40E-03	4.12E-02	4.12E-02
							0.0011	Benzene	9.28E-03	Scaling of AP-42 Table 1.4-3	100%	0%	1.05E-05	1.05E-05	4.60E-05	4.60E-05
							0.0011	Formaldehyde	0.331		100%	0%	3.75E-04	3.75E-04	1.64E-03	1.64E-03
							0.0011	Hexane (n-)	7.95		100%	0%	8.99E-03	8.99E-03	3.94E-02	3.94E-02
							0.0011	Methylnaphthalene (2-)	1.06E-04		100%	0%	1.20E-07	1.20E-07	5.25E-07	5.25E-07
							0.0011	Naphthalene	2.69E-03		100%	0%	3.05E-06	3.05E-06	1.33E-05	1.33E-05
							0.0011	Toluene	1.50E-02		100%	0%	1.70E-05	1.70E-05	7.44E-05	7.44E-05
EU13	V05 Storage Tank	1	Standing	--	--	--	0.0009	CO2-e	4,785	Scaling of AP-42 Chapter 7 (06/2020)	100%	0%	4.33	4.33	18.9	18.9
							0.0009	CO2	6.20		100%	0%	5.60E-03	5.60E-03	2.45E-02	2.45E-02
							0.0009	Methane	171		100%	0%	0.154	0.154	0.676	0.676
							0.0009	Ethane	28.0		100%	0%	2.53E-02	2.53E-02	0.111	0.111
							0.0009	VOC (Total)	79.2		100%	0%	7.16E-02	7.16E-02	0.313	0.313
							0.0009	HAP (Total)	4.93		100%	0%	4.46E-03	4.46E-03	1.95E-02	1.95E-02
							0.0009	Benzene	1.19		100%	0%	1.08E-03	1.08E-03	4.72E-03	4.72E-03
							0.0009	Ethylbenzene	3.78E-02		100%	0%	3.41E-05	3.41E-05	1.50E-04	1.50E-04
							0.0009	Hexane (n-)	2.28		100%	0%	2.07E-03	2.07E-03	9.05E-03	9.05E-03
							0.0009	Toluene	1.08		100%	0%	9.78E-04	9.78E-04	4.28E-03	4.28E-03
							0.0009	Trimethylpentane (2,2,4-)	1.10E-02		100%	0%	9.95E-06	9.95E-06	4.36E-05	4.36E-05
							0.0009	Xylenes	0.322		100%	0%	2.91E-04	2.91E-04	1.28E-03	1.28E-03
EU13	V05 Storage Tank	2	Working	--	--	--	0.0009	CO2-e	519	Scaling of AP-42 Chapter 7 (06/2020)	100%	0%	0.469	0.469	2.06	2.06
							0.0009	CO2	0.673		100%	0%	6.08E-04	6.08E-04	2.66E-03	2.66E-03
							0.0009	Methane	18.5		100%	0%	1.67E-02	1.67E-02	7.33E-02	7.33E-02
							0.0009	Ethane	3.04		100%	0%	2.75E-03	2.75E-03	1.20E-02	1.20E-02
							0.0009	VOC (Total)	8.59		100%	0%	7.77E-03	7.77E-03	3.40E-02	3.40E-02
							0.0009	HAP (Total)	0.535		100%	0%	4.84E-04	4.84E-04	2.12E-03	2.12E-03
							0.0009	Benzene	0.129		100%	0%	1.17E-04	1.17E-04	5.12E-04	5.12E-04
							0.0009	Ethylbenzene	4.10E-03		100%	0%	3.70E-06	3.70E-06	1.62E-05	1.62E-05
							0.0009	Hexane (n-)	0.248		100%	0%	2.24E-04	2.24E-04	9.82E-04	9.82E-04
							0.0009	Toluene	0.117		100%	0%	1.06E-04	1.06E-04	4.65E-04	4.65E-04
							0.0009	Trimethylpentane (2,2,4-)	1.19E-03		100%	0%	1.08E-06	1.08E-06	4.73E-06	4.73E-06
							0.0009	Xylenes	3.50E-02		100%	0%	3.16E-05	3.16E-05	1.39E-04	1.39E-04

Emission Unit #	Emission Unit Name	Process ID	Process Name	Control Device Name	Control Device ID	Stack ID	Maximum Design Capacity (SCC Units/hour)	Pollutant	Uncontrolled Emission Factor (lb/SCC Units)	Emission Factor Source (e.g. AP-42, Stack Test, Mass Balance)	Capture Efficiency (%)	Control Efficiency (%)	Hourly Emissions		Annual Emissions	
													Uncontrolled Potential (lb/hr)	Controlled Potential (lb/hr)	Uncontrolled Potential (tons/yr)	Controlled Potential (tons/yr)
EU07 (PC01)	DANV-PC-NG	6	Valves - TEM IV	--	--	--	0.0797	CO2-e	2,072.674	Scaling of EPA 453 Table 2-4 and gas analysis weight percentages	100%	0%	165	165	723	723
							0.0797	CO2	2.961		100%	0%	0.236	0.236	1.03	1.03
							0.0797	Methane	82.789		100%	0%	6.60	6.60	28.9	28.9
							0.0797	VOC (Total)	3.709		100%	0%	0.296	0.296	1.29	1.29
							0.0797	HAP (Total)	0.190		100%	0%	1.52E-02	1.52E-02	6.65E-02	6.65E-02
							0.0797	Benzene	0.039		100%	0%	3.08E-03	3.08E-03	1.35E-02	1.35E-02
							0.0797	Ethylbenzene	0.007		100%	0%	5.71E-04	5.71E-04	2.50E-03	2.50E-03
							0.0797	Hexane (n-)	0.110		100%	0%	8.79E-03	8.79E-03	3.85E-02	3.85E-02
							0.0797	Toluene	0.052		100%	0%	4.17E-03	4.17E-03	1.82E-02	1.82E-02
							0.0797	Trimethylpentane (2,2,4-)	0.008		100%	0%	6.11E-04	6.11E-04	2.68E-03	2.68E-03
							0.0797	Xylenes	0.032		100%	0%	2.53E-03	2.53E-03	1.11E-02	1.11E-02
EU07 (PC01)	DANV-PC-NG	7	Connectors - TEM IV	--	--	--	0.3678	CO2-e	92.119	Scaling of EPA 453 Table 2-4 and gas analysis weight percentages	100%	0%	33.9	33.9	148	148
							0.3678	CO2	0.132		100%	0%	4.84E-02	4.84E-02	0.212	0.212
							0.3678	Methane	3.679		100%	0%	1.35	1.35	5.93	5.93
							0.3678	VOC (Total)	0.165		100%	0%	6.06E-02	6.06E-02	0.266	0.266
							0.3678	HAP (Total)	0.008		100%	0%	3.11E-03	3.11E-03	1.36E-02	1.36E-02
							0.3678	Benzene	0.002		100%	0%	6.33E-04	6.33E-04	2.77E-03	2.77E-03
							0.3678	Ethylbenzene	0.000		100%	0%	1.17E-04	1.17E-04	5.13E-04	5.13E-04
							0.3678	Hexane (n-)	0.005		100%	0%	1.80E-03	1.80E-03	7.90E-03	7.90E-03
							0.3678	Toluene	0.002		100%	0%	8.55E-04	8.55E-04	3.74E-03	3.74E-03
							0.3678	Trimethylpentane (2,2,4-)	0.000		100%	0%	1.25E-04	1.25E-04	5.49E-04	5.49E-04
							0.3678	Xylenes	0.001		100%	0%	5.18E-04	5.18E-04	2.27E-03	2.27E-03
EU07 (PC01)	DANV-PC-NG	8	Flanges - TEM IV	--	--	--	0.0532	CO2-e	179.632	Scaling of EPA 453 Table 2-4 and gas analysis weight percentages	100%	0%	9.56	9.56	41.9	41.9
							0.0532	CO2	0.257		100%	0%	1.36E-02	1.36E-02	5.98E-02	5.98E-02
							0.0532	Methane	7.175		100%	0%	0.382	0.382	1.67	1.67
							0.0532	VOC (Total)	0.321		100%	0%	1.71E-02	1.71E-02	7.49E-02	7.49E-02
							0.0532	VOC (non-HAP)	0.305		100%	0%	1.62E-02	1.62E-02	7.10E-02	7.10E-02
							0.0532	Benzene	0.003		100%	0%	1.78E-04	1.78E-04	7.82E-04	7.82E-04
							0.0532	Ethylbenzene	0.001		100%	0%	3.30E-05	3.30E-05	1.45E-04	1.45E-04
							0.0532	Hexane (n-)	0.010		100%	0%	5.08E-04	5.08E-04	2.23E-03	2.23E-03
							0.0532	Toluene	0.005		100%	0%	2.41E-04	2.41E-04	1.06E-03	1.06E-03
							0.0532	Trimethylpentane (2,2,4-)	0.001		100%	0%	3.54E-05	3.54E-05	1.55E-04	1.55E-04
							0.0532	Xylenes	0.003		100%	0%	1.46E-04	1.46E-04	6.40E-04	6.40E-04
EU07 (PC01)	DANV-PC-NG	9	Open-Ended Lines - TEM IV	--	--	--	0.0041	CO2-e	921.189	Scaling of EPA 453 Table 2-4 and gas analysis weight percentages	100%	0%	3.79	3.79	16.6	16.6
							0.0041	CO2	1.316		100%	0%	5.41E-03	5.41E-03	2.37E-02	2.37E-02
							0.0041	Methane	36.795		100%	0%	0.151	0.151	0.662	0.662
							0.0041	VOC (Total)	1.648		100%	0%	6.77E-03	6.77E-03	2.97E-02	2.97E-02
							0.0041	HAP (Total)	0.085		100%	0%	3.48E-04	3.48E-04	1.52E-03	1.52E-03
							0.0041	Benzene	0.017		100%	0%	7.07E-05	7.07E-05	3.10E-04	3.10E-04
							0.0041	Ethylbenzene	0.003		100%	0%	1.31E-05	1.31E-05	5.73E-05	5.73E-05
							0.0041	Hexane (n-)	0.049		100%	0%	2.01E-04	2.01E-04	8.82E-04	8.82E-04
							0.0041	Toluene	0.023		100%	0%	9.55E-05	9.55E-05	4.18E-04	4.18E-04
							0.0041	Trimethylpentane (2,2,4-)	0.003		100%	0%	1.40E-05	1.40E-05	6.14E-05	6.14E-05
							0.0041	Xylenes	0.014		100%	0%	5.79E-05	5.79E-05	2.54E-04	2.54E-04

Emission Unit #	Emission Unit Name	Process ID	Process Name	Control Device Name	Control Device ID	Stack ID	Maximum Design Capacity (SCC Units/hour)	Pollutant	Uncontrolled Emission Factor (lb/SCC Units)	Emission Factor Source (e.g. AP-42, Stack Test, Mass Balance)	Capture Efficiency (%)	Control Efficiency (%)	Hourly Emissions		Annual Emissions	
													Uncontrolled Potential (lb/hr)	Controlled Potential (lb/hr)	Uncontrolled Potential (tons/yr)	Controlled Potential (tons/yr)
EU07 (PC01)	DANV-PC-NG	10	Other - TEM IV	--	--	--	0.0081	CO2-e	4,053.230	Scaling of EPA 453 Table 2-4 and composition estimates	100%	0%	32.9	32.9	144	144
							0.0081	CO2	5.790		100%	0%	4.69E-02	4.69E-02	0.206	0.206
							0.0081	Methane	161.898		100%	0%	1.31	1.31	5.75	5.75
							0.0081	VOC (Total)	7.253		100%	0%	5.88E-02	5.88E-02	0.257	0.257
							0.0081	HAP (Total)	0.372		100%	0%	3.02E-03	3.02E-03	1.32E-02	1.32E-02
							0.0081	Benzene	0.076		100%	0%	6.14E-04	6.14E-04	2.69E-03	2.69E-03
							0.0081	Ethylbenzene	0.014		100%	0%	1.14E-04	1.14E-04	4.97E-04	4.97E-04
							0.0081	Hexane (n-)	0.216		100%	0%	1.75E-03	1.75E-03	7.66E-03	7.66E-03
							0.0081	Toluene	0.102		100%	0%	8.29E-04	8.29E-04	3.63E-03	3.63E-03
							0.0081	Trimethylpentane (2,2,4-)	0.015		100%	0%	1.22E-04	1.22E-04	5.33E-04	5.33E-04
							0.0081	Xylenes	0.062		100%	0%	5.02E-04	5.02E-04	2.20E-03	2.20E-03
EU07 (PC02)	DANV-PC-PL	7	Valves - TEM IV	--	--	--	0.0113	CO2-e	0.463	Scaling of EPA 453 Table 2-4 and composition estimates	100%	0%	5.24E-03	5.24E-03	2.29E-02	2.29E-02
							0.0113	CO2	0.006		100%	0%	7.11E-05	7.11E-05	3.11E-04	3.11E-04
							0.0113	Methane	0.018		100%	0%	2.07E-04	2.07E-04	9.05E-04	9.05E-04
							0.0113	VOC (Total)	48.213		100%	0%	0.545	0.545	2.39	2.39
							0.0113	HAP (Total)	7.021		100%	0%	7.93E-02	7.93E-02	0.348	0.348
							0.0113	Benzene	0.695		100%	0%	7.86E-03	7.86E-03	3.44E-02	3.44E-02
							0.0113	Ethylbenzene	0.230		100%	0%	2.60E-03	2.60E-03	1.14E-02	1.14E-02
							0.0113	Hexane (n-)	0.818		100%	0%	9.24E-03	9.24E-03	4.05E-02	4.05E-02
							0.0113	Toluene	2.168		100%	0%	2.45E-02	2.45E-02	0.107	0.107
							0.0113	Trimethylpentane (2,2,4-)	0.012		100%	0%	1.41E-04	1.41E-04	6.17E-04	6.17E-04
							0.0113	Xylenes	3.098		100%	0%	3.50E-02	3.50E-02	0.153	0.153
EU07 (PC02)	DANV-PC-PL	8	Connectors - TEM IV	--	--	--	0.0656	CO2-e	0.039	Scaling of EPA 453 Table 2-4 and composition estimates	100%	0%	2.56E-03	2.56E-03	1.12E-02	1.12E-02
							0.0656	CO2	0.001		100%	0%	3.47E-05	3.47E-05	1.52E-04	1.52E-04
							0.0656	TOC (Total)	4.055		100%	0%	0.266	0.266	1.17	1.17
							0.0656	Methane	0.002		100%	0%	1.01E-04	1.01E-04	4.42E-04	4.42E-04
							0.0656	VOC (Total)	4.050		100%	0%	0.266	0.266	1.16	1.16
							0.0656	HAP (Total)	0.590		100%	0%	3.87E-02	3.87E-02	0.170	0.170
							0.0656	Benzene	0.058		100%	0%	3.83E-03	3.83E-03	1.68E-02	1.68E-02
							0.0656	Ethylbenzene	0.019		100%	0%	1.27E-03	1.27E-03	5.55E-03	5.55E-03
							0.0656	Hexane (n-)	0.069		100%	0%	4.51E-03	4.51E-03	1.97E-02	1.97E-02
							0.0656	Toluene	0.182		100%	0%	1.20E-02	1.20E-02	5.24E-02	5.24E-02
							0.0656	Trimethylpentane (2,2,4-)	0.001		100%	0%	6.87E-05	6.87E-05	3.01E-04	3.01E-04
							0.0656	Xylenes	0.260		100%	0%	1.71E-02	1.71E-02	7.48E-02	7.48E-02
EU07 (PC02)	DANV-PC-PL	9	Flanges - TEM IV	--	--	--	0.0239	CO2-e	0.020	Scaling of EPA 453 Table 2-4 and composition estimates	100%	0%	4.87E-04	4.87E-04	2.13E-03	2.13E-03
							0.0239	CO2	0.000		100%	0%	6.60E-06	6.60E-06	2.89E-05	2.89E-05
							0.0239	Methane	0.001		100%	0%	1.92E-05	1.92E-05	8.41E-05	8.41E-05
							0.0239	VOC (Total)	2.121		100%	0%	5.06E-02	5.06E-02	0.222	0.222
							0.0239	HAP (Total)	0.309		100%	0%	7.37E-03	7.37E-03	3.23E-02	3.23E-02
							0.0239	Benzene	0.031		100%	0%	7.30E-04	7.30E-04	3.20E-03	3.20E-03
							0.0239	Ethylbenzene	0.010		100%	0%	2.41E-04	2.41E-04	1.06E-03	1.06E-03
							0.0239	Hexane (n-)	0.036		100%	0%	8.58E-04	8.58E-04	3.76E-03	3.76E-03
							0.0239	Toluene	0.095		100%	0%	2.28E-03	2.28E-03	9.97E-03	9.97E-03
							0.0239	Trimethylpentane (2,2,4-)	0.001		100%	0%	1.31E-05	1.31E-05	5.73E-05	5.73E-05
							0.0239	Xylenes	0.136		100%	0%	3.25E-03	3.25E-03	1.42E-02	1.42E-02

Emission Unit #	Emission Unit Name	Process ID	Process Name	Control Device Name	Control Device ID	Stack ID	Maximum Design Capacity (SCC Units/hour)	Pollutant	Uncontrolled Emission Factor (lb/SCC Units)	Emission Factor Source (e.g. AP-42, Stack Test, Mass Balance)	Capture Efficiency (%)	Control Efficiency (%)	Hourly Emissions		Annual Emissions	
													Uncontrolled Potential (lb/hr)	Controlled Potential (lb/hr)	Uncontrolled Potential (tons/yr)	Controlled Potential (tons/yr)
EU07 (PC02)	DANV-PC-PL	10	Open-Ended Lines - TEM IV	--	--	--	0.0041	CO2-e	0.260	Scaling of EPA 453 Table 2-4 and composition estimates	100%	0%	1.07E-03	1.07E-03	4.67E-03	4.67E-03
							0.0041	CO2	0.004		100%	0%	1.45E-05	1.45E-05	6.34E-05	6.34E-05
							0.0041	Methane	0.010		100%	0%	4.21E-05	4.21E-05	1.84E-04	1.84E-04
							0.0041	VOC (Total)	26.999		100%	0%	0.111	0.111	0.486	0.486
							0.0041	HAP (Total)	3.932		100%	0%	1.62E-02	1.62E-02	7.08E-02	7.08E-02
							0.0041	Benzene	0.389		100%	0%	1.60E-03	1.60E-03	7.01E-03	7.01E-03
							0.0041	Ethylbenzene	0.129		100%	0%	5.29E-04	5.29E-04	2.32E-03	2.32E-03
							0.0041	Hexane (n-)	0.458		100%	0%	1.88E-03	1.88E-03	8.24E-03	8.24E-03
							0.0041	Toluene	1.214		100%	0%	4.99E-03	4.99E-03	2.19E-02	2.19E-02
							0.0041	Trimethylpentane (2,2,4-)	0.007		100%	0%	2.87E-05	2.87E-05	1.26E-04	1.26E-04
							0.0041	Xylenes	1.735		100%	0%	7.13E-03	7.13E-03	3.12E-02	3.12E-02
EU07 (PC02)	DANV-PC-PL	11	Pump Seals - TEM IV	--	--	--	0.0001	CO2-e	2.410	Scaling of EPA 453 Table 2-4 and composition estimates	100%	0%	2.75E-04	2.75E-04	1.21E-03	1.21E-03
							0.0001	CO2	0.033		100%	0%	3.73E-06	3.73E-06	1.64E-05	1.64E-05
							0.0001	Methane	0.095		100%	0%	1.09E-05	1.09E-05	4.75E-05	4.75E-05
							0.0001	VOC (Total)	250.709		100%	0%	2.86E-02	2.86E-02	0.125	0.125
							0.0001	VOC (non-HAP)	214.199		100%	0%	2.45E-02	2.45E-02	0.107	0.107
							0.0001	HAP (Total)	36.510		100%	0%	4.17E-03	4.17E-03	1.83E-02	1.83E-02
							0.0001	Benzene	3.616		100%	0%	4.13E-04	4.13E-04	1.81E-03	1.81E-03
							0.0001	Ethylbenzene	1.195		100%	0%	1.36E-04	1.36E-04	5.98E-04	5.98E-04
							0.0001	Hexane (n-)	4.252		100%	0%	4.85E-04	4.85E-04	2.13E-03	2.13E-03
							0.0001	Toluene	11.274		100%	0%	1.29E-03	1.29E-03	5.64E-03	5.64E-03
							0.0001	Trimethylpentane (2,2,4-)	0.065		100%	0%	7.40E-06	7.40E-06	3.24E-05	3.24E-05
							0.0001	Xylenes	16.108		100%	0%	1.84E-03	1.84E-03	8.05E-03	8.05E-03
EU07 (PC02)	DANV-PC-PL	12	Other - TEM IV	0	0	0	0.0001	CO2-e	1.390	Scaling of EPA 453 Table 2-4 and composition estimates	100%	0%	1.59E-04	1.59E-04	6.95E-04	6.95E-04
							0.0001	CO2	0.019		100%	0%	2.15E-06	2.15E-06	9.44E-06	9.44E-06
							0.0001	Methane	0.055		100%	0%	6.26E-06	6.26E-06	2.74E-05	2.74E-05
							0.0001	VOC (Total)	144.640		100%	0%	1.65E-02	1.65E-02	7.23E-02	7.23E-02
							0.0001	HAP (Total)	21.063		100%	0%	2.40E-03	2.40E-03	1.05E-02	1.05E-02
							0.0001	Benzene	2.086		100%	0%	2.38E-04	2.38E-04	1.04E-03	1.04E-03
							0.0001	Ethylbenzene	0.690		100%	0%	7.87E-05	7.87E-05	3.45E-04	3.45E-04
							0.0001	Hexane (n-)	2.453		100%	0%	2.80E-04	2.80E-04	1.23E-03	1.23E-03
							0.0001	Toluene	6.504		100%	0%	7.42E-04	7.42E-04	3.25E-03	3.25E-03
							0.0001	Trimethylpentane (2,2,4-)	0.037		100%	0%	4.27E-06	4.27E-06	1.87E-05	1.87E-05
							0.0001	Xylenes	9.293		100%	0%	1.06E-03	1.06E-03	4.65E-03	4.65E-03

Emission Unit #	Emission Unit Name	Process ID	Process Name	Control Device Name	Control Device ID	Stack ID	Maximum Design Capacity *(SCC Units/hour)*	Pollutant	Uncontrolled Emission Factor *(lb/SCC Units)*	Emission Factor Source (e.g. AP-42, Stack Test, Mass Balance)	Capture Efficiency *(%)*	Control Efficiency *(%)*	Hourly Emissions		Annual Emissions	
													Uncontrolled Potential *(lb/hr)*	Controlled Potential *(lb/hr)*	Uncontrolled Potential *(tons/yr)*	Controlled Potential *(tons/yr)*
EU07 (PC03)	DANV-PC-OIL	6	Valves - TEM IV	--	--	--	0.0411	VOC (Total)	0.162	Scaling of EPA 453 Table 2-4 and MSDS weight percentages	100%	0%	6.67E-03	6.67E-03	2.92E-02	2.92E-02
EU07 (PC03)	DANV-PC-OIL	7	Connectors - TEM IV	--	--	--	0.1168	VOC (Total)	0.145	Scaling of EPA 453 Table 2-4 and MSDS weight percentages	100%	0%	1.69E-02	1.69E-02	7.41E-02	7.41E-02
EU07 (PC03)	DANV-PC-OIL	8	Flanges - TEM IV	--	--	--	0.0241	VOC (Total)	0.008	Scaling of EPA 453 Table 2-4 and MSDS weight percentages	100%	0%	1.81E-04	1.81E-04	7.95E-04	7.95E-04
EU07 (PC03)	DANV-PC-OIL	9	Pump Seals - TEM IV	--	--	--	0.0024	VOC (Total)	166.443	Scaling of EPA 453 Table 2-4 and MSDS weight percentages	100%	0%	0.399	0.399	1.75	1.75
EU07 (PC03)	DANV-PC-OIL	10	Other - TEM IV	--	--	--	0.0005	VOC (Total)	0.618	Scaling of EPA 453 Table 2-4 and MSDS weight percentages	100%	0%	2.82E-04	2.82E-04	1.24E-03	1.24E-03
EU07 (GR-ST)	DANV-GR-ST	1	Station Gas Release Emissions from Natural Gas	--	--	--	1	CO2-e	4,141	Mass balance	100%	0%	4,141	4,141	18,136	18,136
							1	CO2	5.91		100%	0%	5.91	5.91	25.9	25.9
							1	Methane	165		100%	0%	165	165	724	724
							1	VOC (Total)	3.82		100%	0%	3.82	3.82	16.7	16.7
							1	HAP (Total)	0.183		100%	0%	0.183	0.183	0.800	0.800
							1	Benzene	3.71E-02		100%	0%	3.71E-02	3.71E-02	0.163	0.163
							1	Ethylbenzene	1.43E-02		100%	0%	1.43E-02	1.43E-02	6.27E-02	6.27E-02
							1	Hexane (n-)	0.106		100%	0%	0.106	0.106	0.463	0.463
							1	Toluene	5.02E-02		100%	0%	5.02E-02	5.02E-02	0.220	0.220
							1	Trimethylpentane (2,2,4-)	1.19E-02		100%	0%	1.19E-02	1.19E-02	5.23E-02	5.23E-02
							1	Xylenes	4.35E-02		100%	0%	4.35E-02	4.35E-02	0.191	0.191
EU07 (GR-PL)	DANV-GR-PL	1	Pipeline Gas Release Emissions from Natural Gas	--	--	--	1	CO2-e	1,103	Mass balance	100%	0%	1,103	1,103	4,831	4,831
							1	CO2	1.58		100%	0%	1.58	1.58	6.90	6.90
							1	Methane	44.1		100%	0%	44.1	44.1	193	193
							1	VOC (Total)	2.15		100%	0%	2.15	2.15	9.41	9.41
							1	HAP (Total)	5.99E-02		100%	0%	5.99E-02	5.99E-02	0.262	0.262
							1	Benzene	2.05E-02		100%	0%	2.05E-02	2.05E-02	9.00E-02	9.00E-02
							1	Ethylbenzene	3.81E-03		100%	0%	3.81E-03	3.81E-03	1.67E-02	1.67E-02
							1	Hexane (n-)	4.44E-02		100%	0%	4.44E-02	4.44E-02	0.195	0.195
							1	Toluene	1.67E-02		100%	0%	1.67E-02	1.67E-02	7.31E-02	7.31E-02
							1	Trimethylpentane (2,2,4-)	3.18E-03		100%	0%	3.18E-03	3.18E-03	1.39E-02	1.39E-02
							1	Xylenes	2.08E-02		100%	0%	2.08E-02	2.08E-02	9.12E-02	9.12E-02

ATTACHMENT 4

TITLE V SIGNIFICANT PERMIT REVISION APPLICATION



TEXAS EASTERN TRANSMISSION, LP
Danville Compressor Station
Danville, Kentucky

Prepared By:

TRINITY CONSULTANTS
909 Wright's Summit Pkwy, Suite 230
Covington, Kentucky 41011

July 2025

Project 252101.0021

Trinity Consultants

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1. APPLICATION OVERVIEW

1.1 Introduction

Texas Eastern Transmission, LP (Texas Eastern) owns and operates a natural gas compressor station located near Danville, Lincoln County, Kentucky (AI 44065). The Danville Compressor Station (Danville Station) compresses and transports natural gas to various parts of the country via transmission pipelines. Line pressure must be maintained in the transmission pipelines to ensure natural gas moves at sufficient volumes for reliable service at all delivery points. The Danville Station employs three (3) combustion turbine-driven centrifugal compressors and ten (10) reciprocating internal combustion engine (RICE)-driven compressors, as well as various ancillary support emission units (EUs).

Texas Eastern upgraded the Danville Station via changes authorized by a 2016 significant permit revision application, equipping two of the existing combustion turbines with selective catalytic reduction (SCR) control devices for nitrogen oxides (NO_X) mitigation and adding oxidation catalyst (OxCat) to all three turbines for carbon monoxide (CO) and formaldehyde reduction when the project was complete. The project also included replacing the existing wet gas seals with dry gas seals in the centrifugal compressors associated with two (2) of the combustion turbines and adding clean burn engine technology and OxCat to three (3) of the existing RICE-driven compressors.

The Danville Station is regulated as a "major source" under 401 KAR 52:020 and operates under Title V Operating Permit No. V-16-056 issued on April 3, 2016. V-16-056 has an expiration date of April 3, 2022; however, a Title V renewal application was submitted on October 1, 2021, prior to the renewal application deadline of October 3, 2021.

Texas Eastern is submitting this significant revision application to authorize construction of three new combustion turbines (and support operations) for natural gas compression to replace the existing combustion turbines, RICE units, and various existing support operations. This project is herein referred to as the "TEM IV project." Texas Eastern has provided all the required elements of a significant revision application as specified in 401 KAR 52:020 Sections 4 and 5, as summarized below:

- Section 2 provides a description of the project;
- Section 3 contains a description of the emission calculation methodologies and the corresponding updates to the potential to emit (PTE) calculations;
- Section 4 contains a regulatory applicability analysis;
- Appendix A contains an area map and plot plan;
- Appendix B contains detailed emissions calculations;
- Appendix C contains a complete set of DEP 7007 series forms AI, A, B, EE, N, DD, and V; and
- Appendix D includes suggested permit revisions.

2. FACILITY DESCRIPTION AND PTE UPDATES

2.1 Existing Facility Description

The Danville Station is located near Danville, in Lincoln County, Kentucky. Lincoln County is classified as an area of attainment for all criteria pollutants.

Currently, the Danville Station consists of the following significant EUs:

Natural Gas Compression Units

- 7 Clark HBA-8 natural gas (NG)-fired reciprocating engines – 1,760 HP (**EU 01**)
  - Uncontrolled with annual fuel limitation
- 3 Clark HBA-8T NG-fired reciprocating engines 2,050 HP (**EU 02**)
  - Equipped with clean-burn technologies with OxCat control system
- 2 GE Frame 3 NG-fired combustion turbines – 8,000 HP (**EU 03**)
  - Equipped with SCR and OxCat control systems
- 1 GE Frame 5 natural gas-fired combustion turbine – 18,500 HP (**EU 04**)
  - Equipped with OxCat control system

All the reciprocating engines and combustion turbines (EU 01 through EU 06) exclusively burn pipeline quality natural gas from Texas Eastern's pipeline network.

Emergency Units

- 1 Caterpillar G3516 emergency generator – 1,462 HP (**EU 05**)
- 1 Caterpillar G3512 emergency generator – 1,102 HP (**EU 06**)

The emergency generators are maintained on-site and used to generate emergency power in the event of a loss of electrical power from the utility grid.

Ancillary Support Operations

- Fugitive Emissions from Piping Components (PC-1 through PC-4), Station Gas Releases (GR-ST), and Pipeline Gas Releases (GR-PL) (**EU 07**)
- Additional support equipment that are designated as insignificant activities (IAs) such as various organic liquid storage tanks and separator vessels, truck loading, a parts washer, a small natural gas-fired boiler, and several natural gas-fired heat exchangers with firing rates of less than 1 million British thermal units per hour (MMBtu/hr).

Pipeline liquids are collected from various station operations and stored in a tank until they are transported by tank truck off-site. Routine station operations also result in fugitive emissions from piping equipment components (**EU 07**). Periodically, blowdown and purges of natural gas lines and equipment are required because of normal operations, process startups/shutdowns, routine maintenance, and/or emergency venting (**EU 07**). These gas releases are vented through a set of separator vessels.

2.2 TEM IV Project Changes

As part of this TEM IV project Title V significant revision application, Texas Eastern is proposing the following changes the Danville Station.

- **Remove** the following emission sources upon completion of the TEM IV project:
  - 10 natural gas-fired, reciprocating engines (**EU 01** and **EU 02**)
  - 3 natural gas-fired, combustion turbines (**EU 03** and **EU 04**)
  - 2 natural gas-fired emergency engine generators (**EU 05** and **EU 06**)
  - Existing separator vessels, storage tanks, truck loading areas (IAs)[1]

- **Add** the following new emission sources proposed under the TEM IV project:
  - 3 natural gas-fired Solar Titan 130 turbines – 18,000 HP (proposed **EU08-10**) equipped with the following control devices:
    - Dry Low NOx Burners (SoLoNOx) achieving 9 parts per million by volume (ppm_v) NO_X concentration
    - OxCat to reduce CO, volatile organic compound (VOC), and hazardous air pollutant (HAP) emissions
  - 1 Waukesha VGF48SE emergency engine generator – 1,100 HP (proposed **EU11**)
  - 3 natural gas-fired fuel gas heaters – 1.2 MMBtu/hr each (proposed **EU12**)
  - 6 pipeline liquids storage tanks/separator vessels, including the following:
    - One 2,640-gallon pipeline liquids tank, V05 (proposed **EU13**), including as a significant emission unit due to the need for legal and practical enforceable limits to avoid federal regulatory requirements as described elsewhere in this report; and
    - Five vessels (<500 gallons each) (IAs)
  - One 0.004 MMBtu/hr pipeline heater (IA) and two new truck loading areas (IAs)

- **Modify** the emission characteristics / operating parameters for the following emission sources upon completion of the TEM IV project:
  - Gas Releases (**EU 07**)
  - Fugitive Piping Components (**EU 07**)

2.3 Emissions Calculation Methodologies

2.3.1 Solar Titan 130 Turbine Emissions

To calculate emissions from the newly constructed Solar® Titan 130 natural gas-fired compressor turbines, emission factors were obtained from various sources. The turbine utilizes an oxidation catalyst to reduce potential emissions of CO and organic emissions and utilizes SoLoNOX™ technology to reduce emissions of NO_X. Table 2-1 provides a summary of the uncontrolled emission factors used for each pollutant during normal steady-state operation for the turbine.

[1] Due to timing of the project, Texas Eastern is not indicating any existing IAs as shutdown as part of this permit application.

Table 2-1. Turbine Pre-Control Emission Factors – Normal Operations

Pollutant	Emission Factor*	Source
NO_X	9 ppm_{vd} at 15% O_2	Vendor guaranteed emission rate
CO	25 ppm_{vd} at 15% O_2	Vendor guaranteed emission rate
VOC	25 ppm_{vd} of TOC at 15% O_2 or 6.97 lb VOC/MMscf	Based on vendor data for TOC, scaled to VOC based on ratio of TOC:VOC in Table 3.1-2a of AP-42 (April 2000)
CH_4	25 ppm_{vd} of TOC at 15% O_2 or 28.55 lb CH_4/MMscf	Based on vendor data for TOC, scaled to CH_4 based on ratio of TOC:CH_4 in Table 3.1-2a of AP-42 (April 2000)
$PM_{10}/PM_{2.5}$	0.0066 lb/MMBtu (HHV)	Table 3.1-2a of AP-42 (April 2000)
SO_2	14.29 lb/MMscf	Using pipeline total sulfur tariff of 5 gr/100 dscf of gas, and Table 3.1-2a of AP-42 (April 2000)
CO_2	53.06 kg/MMBtu (HHV)	40 CFR 98, Subpart C, Table C-1
N_2O	0.0001 kg/MMBtu (HHV)	40 CFR 98, Subpart C, Table C-2
Total HAP	Multiple HAP factors	Table 3.1-3 of AP-42 (April 2000); organic HAP were scaled using vendor data and AP-42 emission rates for TOC

*The emission factors provided in this table represent uncontrolled emissions (excluding add-on controls not inherent to the equipment) at temperatures above 0ºF.

Solar® has guaranteed NO_X emissions for these turbines at 9 ppm_v on a dry basis (ppm_{vd}) (at 15% O_2) during steady-state operation at 50-100 percent engine load for all ambient temperatures above 0°F. In order to calculate hourly emissions during normal operation, the emission factors provided in the table above are converted to factors in pounds per million standard cubic feet (lb/MMscf) as described in subsequent sections.

2.3.1.1 Turbine Emissions Factors – NO_X, CO, and UHC

NO_X, CO, and unburned hydrocarbons (UHC) emitted by the combustion turbine during normal operation are calculated based on vendor–supplied emission rates provided in Appendix B. Although UHC is not a criteria pollutant, it is used to derive the emission factors for VOC, CH_4 (a greenhouse gas), and organic hazardous air pollutants (HAP). Vendor data for several ambient temperatures and vendor literature for emissions were compiled to develop the data listed below:

- **Fuel**: Lower Heating Value (Btu/scf);
- **Turbine Performance**: Net Output Power (hp), Heat Input at LHV (MMBtu/hr), Heat Rate at LHV (Btu/hp-hr);
- **Exhaust Parameters**: Exhaust Temperature (°F), Water Fraction (%), O_2 Content (%, dry), Molecular Weight (lb/lb-mol), Flowrate (lb/hr and acfm); and
- **Vendor Supplied Emission Rates**: NO_X, CO and UHC (ppm_{vd} at 15% O_2).

Operating and emissions data at other ambient temperatures are estimated by fitting the data to a curve that best represents the data and interpolating/extrapolating to the desired temperatures. The mass emission rates of NO_X, CO, and UHC at a given load decrease with increasing ambient temperature conditions (i.e., fuel consumption at 100% load is highest at lower ambient temperatures). As such, short-term, maximum hourly emission rates are estimated based on operating and emissions data at 0.01°F to provide the most conservative estimate. Annual emissions estimates are based on the annual

average ambient conditions at the Danville Station. As such, for annual emissions estimates, the operating data (turbine performance and exhaust gas parameters) are interpolated to estimate emissions at the average annual ambient temperature at the station.[2] The emission factor at a given ambient temperature is calculated as illustrated in Equation 2-1 through Equation 2-3.

Equation 2-1:

$$[NO_x, CO, UHC]\ EF\ (ppmw) = [ppmvd, 15\%\ O_2] \times [nonwater\%] \times \left[\frac{20.9 - (vol\%\ O_2, dry\ \times 100)}{5.9}\right] = ppmw$$

Equation 2-2:

$$[NO_x, CO, UHC]\ hourly\ emissions\ \left(\frac{lb}{hr}\right) @\ T = \left[\frac{ppmw}{1,000,000}\right] \times \left[\frac{lb\ exhaust}{hr}\right]_T \times \left[\frac{\frac{lb\ pollutant}{lbmol}}{\left[\frac{lb\ exhaust}{lbmol}\right]_T}\right]$$

$$= \left[\frac{lb\ pollutant}{hr}\right]_T$$

Equation 2-3:

$$[NO_x, CO, UHC]\ EF\ @\ T = \left[\frac{lb}{hr}\right]_T \times \left[\frac{1,000,000\ \frac{scf}{MMscf}}{\left[\frac{scf\ fuel}{hr}\right]_T}\right] = \left[\frac{lb}{MMscf}\right]_T$$

Where: *EF = Emission Factor*
T = ambient temperature
Maximum hourly emissions estimated at T = 0.01 °F
Annual average hourly emissions

2.3.1.2 Turbine Emissions Factors – VOC, CH_4, and HAP

VOC, CH_4, and HAP emitted by the combustion turbine are calculated using the vendor-supplied UHC emission rate[3] and US Environmental Protection Agency (USEPA) AP-42 emission factors, as VOC, CH_4, and HAP are constituents of UHC. The UHC emission factor in terms of lb/MMscf, at a given ambient temperature, is calculated as outlined in the previous section.

Standard emission factors for VOC, CH_4, HAP, and UHC from stationary gas turbines are provided in Chapter 3.1 of USEPA's Compilation of Air Pollutant Emissions Factors (AP-42). Table 3.1-2a of AP-42 (version dated April 2000) provides emission factors of 0.0021 lb VOC per MMBtu, 0.0086 lb CH_4 per MMBtu, and 0.011 lb UHC per MMBtu from natural gas-fired turbines. Table 3.1-3 of AP-42 (version dated April 2000) provides emission factors for HAP emitted from natural gas-fired turbines. These HAP include, but are not limited to, the following:

[2] A weighted daily average ambient temperature is used in estimating potential annual emissions for Danville and is based on meteorological information in USEPA's AP-42 Table 7.1-7 (11/2019). To determine ambient temperatures, the meteorological stations in closest proximity to the station are reviewed, and the station with the most representative ambient temperatures is selected. The average annual temperature at Danville is 55.51°F.

[3] Vendor supplied emission rates are summarized in Appendix B.

- 1,3-butadiene;
- Acetaldehyde;
- Acrolein;
- Benzene;
- Ethylbenzene;
- Formaldehyde;
- Naphthalene;
- Polycyclic aromatic hydrocarbons (PAH);
- Propylene oxide;
- Toluene; and
- Xylenes.

A total HAP emission factor is calculated as the sum of all individual HAP emission factors.

Ratios of VOC, CH_4, and HAP to UHC from the AP-42 factors are applied to the UHC factor derived from vendor information to obtain emission factors for VOC, CH_4, and HAP. For normal operation, the uncontrolled VOC, CH_4, and HAP factors are derived as follows:

Equation 2-4:

$$\boldsymbol{VOC, CH_4, HAP\ EF = \frac{lb\ TOC}{MMscf} \times \frac{\left(\frac{lb\ pollutant}{MMBtu} \times 1{,}020\ \frac{MMBtu}{MMscf}\right)}{\left(0.011\ \frac{lb\ UHC}{MMBtu} \times 1{,}020\ \frac{MMBtu}{MMscf}\right)} = \frac{lb}{MMscf}}$$

2.3.1.3 Turbine Emissions Factors – PM_{10}, $PM_{2.5}$, and SO_2

Particulate matter less than 10 microns in diameter (PM_{10}) and particulate matter less than 2.5 microns in diameter ($PM_{2.5}$) emitted by the turbines during normal operation are calculated based on the emission factors listed in Table 3.1-2a of AP-42 (version dated April 2000) for stationary gas turbines. It is conservatively assumed that Total PM is equal to Total PM_{10} and Total $PM_{2.5}$. The AP-42 emission factors are converted to (lb/MMscf) as follows:

Equation 2-5:

$$\boldsymbol{[PM_{10}, PM_{2.5}]\ EF = \left[\frac{lb}{MMBtu}\right] \times \left[1{,}020\ \frac{MMBtu}{MMscf}\right] = \left[\frac{lb}{MMscf}\right]}$$

Texas Eastern updated its methodology for estimating sulfur dioxide (SO_2) emissions from the combustion of natural gas in turbines. Instead of using the default AP-42 sulfur content in natural gas, Texas Eastern applies its pipeline total sulfur tariff of 5 (gr/100 scf) of natural gas. The emission factor for SO_2 emitted by the turbines during normal, steady-state operation is calculated based on total sulfur mass balance based on the procedures listed in Table 3.1-2a of AP-42 (version dated April 2000) for stationary gas turbines. The emission factor is calculated as follows:

Equation 2-6:

$$\boldsymbol{[SO_2]\ EF\ \left(\frac{lb}{MMscf}\right)} = \left[\frac{5\ gr\ Total\ Sulfur}{100\ scf}\right] x \left[\frac{1\ lb}{7{,}000\ gr}\right] x \left[\frac{64\ \frac{lb\ SO_2}{lb\ mole}}{32\ \frac{lb\ S}{lb\ mole}}\right] \times \left[\frac{1{,}000{,}000}{1}\ \frac{scf}{MMscf}\right] = \boldsymbol{14.29\ \frac{lb\ SO_2}{MMscf}}$$

2.3.1.4 Turbine Emissions Factors – CO_2, N_2O, and CO_2e

Emission factors for CO_2 and nitrous oxide (N_2O) emitted by the combustion of natural gas are calculated based on the emission factors provided for pipeline natural gas combustion in 40 CFR Part 98, Subpart C, Tables C-1 and C-2, as follows:[4]

Equation 2-7:

$$[CO_2]\ EF = \left[53.06\frac{kg}{MMBtu}\right] \times \left[2.2046\frac{lb}{kg}\right] \times \left[1,026\frac{Btu}{scf}\right] = \left[120,017\frac{lb\ CO_2}{MMscf}\right]$$

For conservatism, it was assumed that a chemical reaction will occur as a result of the oxidation catalyst controlling CO emissions to produce CO_2. The station quantified the additional CO_2 emissions using the following equation:

Equation 2-8:

$$CO_2\ Emissions\ \left(\frac{lb}{hr}\right) = CO_2\ EF\left(\frac{lb\ CO_2}{MMscf}\right) * Fuel\ Use\ \left(\frac{MMscf}{hr}\right) + [CO\ Emissions\left(\frac{lb\ CO}{hr}\right) * 95\%\ CO\ Control * \frac{MW_{CO2}}{MW_{CO}}]$$

Equation 2-9:

$$[N_2O]\ EF = \left[0.0001\frac{kg}{MMBtu}\right] \times \left[2.2046\frac{lb}{kg}\right] \times \left[1,026\frac{Btu}{scf}\right] = \left[0.23\frac{lb\ N_2O}{MMscf}\right]$$

Total GHG emissions in terms of CO_2 equivalents (CO_2e) are equal to the sum of all individual GHGs emitted by the turbine, accounting for the respective global warming potential (GWP) of each GHG. The GWPs used to calculate CO_2e emissions for each pollutant emitted by the project are contained in the following table.

Table 2-2. Applicable Global Warming Potentials

Pollutant*	GWP**
CO_2	1
CH_4	28
N_2O	265

* Only those GHGs for which quantifiable emissions increases are expected due to this project are listed.
** GWPs are based on a 100-year time horizon, as identified in Table A-1 to 40 CFR Part 98, Subpart A (89 FR 31894, Apr. 25, 2024).

As such, the CO_2e factor is derived as follows:

Equation 2-10:

$$[CO_2e\ ]EF = \left[\frac{lb\ CO_2}{MMscf} \times 1\ GWP\right] + \left[\frac{lb\ CH_4}{MMscf} \times 28\ GWP\right] + \left[\frac{lb\ N_2O}{MMscf} \times 265\ GWP\right] = \left[\frac{lb\ CO_2e}{MMscf}\right]$$

[4] Note that emission factors utilized the corresponding natural gas heating value from the same subpart or reference (Part 98 for GHG, AP-42 for other factors). In this way, the factors and heating value are consistent with each other, although slightly different heating values were referenced for different factors.

2.3.1.5 Turbine Startup and Shutdown Hourly Emissions

Emissions during startups and shutdowns are calculated based on vendor-specified transient operation profiles which are used to determine the maximum pounds **per startup or shutdown event** as described in further detail in the following sections.

2.3.1.5.1 Turbine Startup Operation

The startup (SU) process for the turbine is estimated to take approximately 9 minutes from the initiation of startup to normal operation. This includes approximately 3 minutes of ignition-idle operation and 6 minutes of loading/thermal stabilization operation.[5]

The following table includes a summary of the emission factors used for each pollutant during the ignition-idle and loading/thermal stabilization phases of each startup event. It is assumed that the oxidation catalyst will not yet have a measurable destruction or removal efficiency (DRE) during startup, as it is designed to meet control specifications only during normal operation. It is also assumed that the SoLoNO$_X$™ will not result in reduced NO$_X$ during startup.

[5] These are referred to as "Step 2" and "Step 3", respectively, in the emissions calculations in Appendix B. Step 1 of turbine startup includes energizing the starter and observing the RPM until the ignition range is reached. During Step 1, ignition and combustion have not yet occurred in the turbine, and thus the turbine combustor is not yet a source of air emissions.

Table 2-3. Turbine Pre-Control Emission Factors – Startup Operation

Pollutant	Ignition-Idle Phase Emission Factor "Step 2" *	Loading/Thermal Stabilization Phase Emission Factor "Step 3" *	Source
NO_X	50 ppm_{vd} at 15% O_2	50 ppm_{vd} at 15% O_2	Based on vendor data[6]
CO	10,000 ppm_{vd} at 15% O_2	9,000 ppm_{vd} at 15% O_2	Based on vendor data[7]
VOC	5,490 ppm_{vd} TOC at 15% O_2	3,050 ppm_{vd} TOC at 15% O_2	Based on vendor data for TOC, scaled to VOC based on ratio of TOC:VOC in Table 3.1-2a of AP-42 (April 2000)
CH_4	5,490 ppm_{vd} TOC at 15% O_2	3,050 ppm_{vd} TOC at 15% O_2	Based on vendor data for TOC, scaled to CH_4 based on ratio of TOC:CH_4 in Table 3.1-2a of AP-42 (April 2000)
$PM_{10}/PM_{2.5}$	Same as normal operation		
SO_2	Same as normal operation		
CO_2	Same as normal operation		
N_2O	Same as normal operation		
Total HAP	5,490 ppm_{vd} TOC at 15% O_2 Multiple HAP factors	3,050 ppm_{vd} TOC at 15% O_2 Multiple HAP factors	Based on vendor data for TOC, scaled to HAP based on ratio of TOC:HAP in Table 3.1-2a of AP-42 (April 2000)

* The emission factors provided in this table represent uncontrolled emissions. The Solar® Titan 130 turbine will be equipped with oxidation catalyst; however, it is assumed that the catalyst does not have a DRE during startups.

All pollutants emitted by the combustion turbine during startup events are calculated based on the same methodology that is used to calculate emissions during normal operation. However, rather than calculate a lb/MMscf emission factor, pounds per startup event (lb/event) are calculated for each pollutant based on the fuel consumed during the 3-minute ignition-idle phase and during the 6-minute loading/thermal stabilization phase as follows:

Equation 2-11:

$$EF_i \; during \; SU \; event = \left[\frac{lb \; Pollutant \; i}{MMBtu}\right] \times \left[\frac{lb \; Pollutant \; i}{MMBtu} \times 1{,}020 \; \frac{MMBtu}{MMscf}\right] \times \left[\frac{scf \; fuel}{event}\right] \times \left[\frac{MMscf}{1{,}000{,}000 \; scf}\right]$$
$$= \left[\frac{lb \; Pollutant \; i}{event}\right]$$

Where: *EF is the emission factor for pollutant "i"*

[6] Vendor data is summarized in Appendix B.

[7] Ibid.

2.3.1.5.2 Turbine Shutdown Operation

The shutdown process for the turbine is estimated to take approximately 8.5 minutes from normal operation to shutdown for the turbine. The shutdown event consists of only the "Step 3" loading/thermal stabilization operation. It is assumed that the oxidation catalyst will continue to have a measurable DRE during turbine shutdown. The calculation for shutdowns is similar to that for startups as shown previously, utilizing the same emission rates identified during "Step 3" loading/thermal stabilization for startup.

2.3.1.6 Turbine Annual Potential Emissions

The emission factors described in the previous sections are multiplied by the following activity data to estimate annual potential emissions for the turbine:

- **Normal, Steady-State Operation**: Normal operations are defined as non-startup/shutdown operations at ambient temperatures above 0°F. Annual fuel consumption as estimated from vendor-provided turbine parameters at the annual average ambient temperature for the Danville Compressor Station. Annual PTE estimates assume 100% utilization (8,760 hours per year). CO, VOC, and HAP PTE estimates take the control efficiency of the proposed oxidation catalyst into account. Further, since an oxidation catalyst provides more complete conversion of CO to CO_2, the controlled portion of the CO emissions is added back to the CO_2 emissions rate. Note, however, that this increase is a small fraction of the overall CO_2 emissions.

- **Low and Very Low Temperature (LVLT) Operation**: Low temperature and very low temperature operations are defined as non-startup/shutdown operations between -20°F and 0°F and below -20°F, respectively. For purposes of determining PTE for these units, Texas Eastern has conservatively assumed 175 hours per year of low temperature operation and 7 hours per year of very low temperature operation. Calculations are performed in the same manner as for normal operations as described above, but with higher uncontrolled emission rates for select pollutants based on turbine performance at these lower temperatures.

  NO_X PTE estimates are based on the project-specific emissions guarantee of the proposed SoLoNO$_X^{TM}$ combustion technology.

- **Startup/Shutdown Operation:** The number of startup and shutdown events is estimated at 208 startup and 208 shutdown events per year for the turbine. For startups, no credit for control by the oxidation catalyst is accounted for in the estimation of startup emissions even though the oxidation catalyst inlet temperature should reach the effective temperature quickly. For shutdowns, the oxidation catalyst is assumed effective, and emission reductions are taken during shutdown since the oxidation catalyst inlet temperature shouldn't drop below the effective temperature until after the fuel is cut off.

For some pollutants, emission rates from the combustion turbines are higher during normal steady-state operation than they are during startup and shutdown and/or low and very low temperature (LVLT) operations. However, for other pollutants, emission rates may be higher during startup and shutdown and/or low and very low temperature operations than during normal operation. Although emission concentration may be higher, load is typically lower during startup and shutdown such that short-term mass emission rate may still be lower on an hourly basis. This varies, however, per pollutant. The maximum annual emissions for the turbine is the maximum combination of normal, startup (SU), shutdown (SD), and low and very low temperature (LVLT) operation as shown in the equations.

Equation 2-12:

$$Normal\frac{ton}{yr} = \left[Average\ Normal\frac{lb}{hr}\right] \times \left[\frac{8,760\ hr}{yr}\right] \times \left[\frac{ton}{2,000\ lb}\right]$$

Equation 2-13:

$$Normal\ and\ SU\ and\ SD\frac{ton}{yr} = \left[startup\frac{ton}{yr}\right] + \left[shutdown\frac{ton}{yr}\right] + \left[normal\frac{ton}{yr} \times \left\{1 - \left(\frac{startup\ hrs + shutdown\ hrs}{8760}\right)\right\}\right]$$

Equation 2-14:

$$Normal, SU, SD\ and\ LVLT\left(\frac{ton}{yr}\right) = \left[SU\frac{ton}{yr}\right] + \left[SD\frac{ton}{yr}\right] + \left[LT\frac{ton}{yr}\right] + \left[veryLT\frac{ton}{yr}\right] + \left[normal\frac{ton}{yr}x\left(1 - \frac{[SU\ hrs] + [SD\ hrs] + [LT\ hrs] + [veryLT\ hrs]}{8760}\right)\right]$$

Equation 2-15:

$$Annual\ PTE\ \left(\frac{ton}{yr}\right)_{Pollutant\ i} = \text{MAX}\left[Normal\left(\frac{ton}{yr}\right), Normal\ and\ SU\ and\ SD\ \left(\frac{ton}{yr}\right), Normal, SU, SD\ and\ \text{LVLT}\frac{ton}{yr}\right]_i$$

2.3.2 Emergency Generator Emissions

A Waukesha (1,475 bhp) four-stroke, rich-burn, natural gas-fired emergency generator equipped with a 3-way (non-selective) catalyst (NSCR) system is proposed for the TEM IV Project. The operation of the emergency engine is assumed to not exceed 500 hrs/yr[8]. The following table provides information on the emission factors used to calculate emissions from the emergency generator that are comparable to other equivalent emergency generators.

Table 2-4. Waukesha Emergency Generator Emission Factors

Pollutant	Emission Factor from Source	Source
NO_X	2.0 g/bhp-hr	NSPS Subpart JJJJ
CO	4.0 g/bhp-hr	NSPS Subpart JJJJ
VOC	1.0 g/bhp-hr	VOC (without formaldehyde): NSPS Subpart JJJJ Table 3.2-3 of AP-42
CH_4	1.0 g VOC/bhp-hr 0.23 lb/MMBtu (HHV)	VOC: NSPS Subpart JJJJ Table 3.2-3 of AP-42
$PM_{10}/PM_{2.5}$	0.0194 lb/MMBtu (HHV)	Table 3.2-3 of AP-42
SO_2	14.29 lb/MMscf	Using pipeline total sulfur tariff of 5 gr/100 dscf of gas, and Table 3.2-3 of AP-42
CO_2	53.02 kg/MMBtu (HHV)	40 CFR 98, Subpart C, Table C-1
N_2O	0.0001 kg/MMBtu (HHV)	40 CFR 98, Subpart C, Table C-2
Total HAP	1.0 g VOC/bhp-hr Multiple HAP factors	VOC: NSPS Subpart JJJJ Table 3.2-3 of AP-42

In order to calculate hourly emissions, the emission factors provided in the table above are converted to factors in lb/MMscf. These converted factors are multiplied by the generator's hourly fuel consumption in

[8] USEPA Memorandum: *Calculating Potential to Emit (PTE) for Emergency Generators* from John S. Seitz, Director of OAQPS (September 6, 1995) <https://www.epa.gov/sites/default/files/2015-08/documents/emgen.pdf>

scf/hr to obtain hourly emissions. The following sections summarize the methods used to obtain lb/MMscf emission factors for each pollutant emitted from the emergency generator.

2.3.2.1 Emergency Generator Emission Factors – NO_X, CO, and VOC

NO_X, CO, and VOC emitted by the emergency generator are calculated based on the emission limits established under NSPS Subpart JJJJ in grams per brake horsepower-hour (g/bhp-hr) for emergency engines greater than 130 hp installed on and after January 1, 2009.[9]

The VOC emission limit of 1.0 g/bhp-hr in NSPS Subpart JJJJ excludes formaldehyde.[10] A VOC factor inclusive of formaldehyde is calculated using the relative emissions of formaldehyde and VOC provided in Table 3.2-3 of AP-42 (version dated July 2000). A VOC factor is calculated as the sum of the factors for all trace organic compounds listed in Table 3.2-3 which are VOCs. Formaldehyde emissions are proportional to VOC emissions, because formaldehyde is a constituent of VOC. The VOC factor is adjusted to account for formaldehyde as follows:

Equation 2-16:

$$VOC\ EF = \frac{1.0\ g\ VOC\ (without\ formaldehye)}{bhphr} \times \frac{\left(\frac{0.119\ lb\ VOC}{MMBtu}\right)}{\left(\frac{0.119\ lb\ VOC}{MMBtu} - \frac{0.0528\ lb\ formaldehyde}{MMBtu}\right)} = 1.79\ \frac{g}{bhp-hr}$$

Vendor-specified power output and fuel consumption for the engine are used to convert the g/bhp-hr factors. NO_X, CO, and VOC factors are derived as follows:

Equation 2-17:

$$NO_x, CO, VOC\ EF = \frac{g}{bhp-hr} \times \frac{lb}{453.6\ g} \times hp \times \frac{hr}{scf\ fuel} \times \frac{1,000,000\ scf}{MMscf} = \frac{lb}{MMscf}$$

2.3.2.2 Emergency Generator Emission Factors – CH_4 and HAP

CH_4 and HAP emissions are calculated using the VOC emission rate and AP-42 emission factors. Standard emission factors for VOC, CH_4, and HAP from natural gas fired engines are provided in Chapter 3.3 of AP-42. Table 3.2-3 (version dated July 2000) provides emission factors for VOC, CH_4, and HAP from four stroke lean burn natural gas-fired engines.

Using the same ratio method used to calculate CH_4 and HAP emitted from the turbine (detailed in Section 4.1.2.), CH_4 and HAP emitted from engines are ratioed based on the VOC emission rate from NSPS Subpart JJJJ.

2.3.2.3 Emergency Generator Emission Factors – PM_{10}, $PM_{2.5}$, and SO_2

PM_{10} and $PM_{2.5}$ emitted by the emergency generator are calculated based on the emission factors listed in Table 3.2-3 of AP-42 (version dated July 2000) for natural gas fired engines. PM_{10} and $PM_{2.5}$ emission factors are calculated as the sum of the filterable and condensable PM emission factors.

[9] Per Table 1 to Subpart JJJJ of Part 60.

[10] Per footnote "d" of Table 1 to Subpart JJJJ of Part 60.

The SO_2 emission factor utilized is the same as described for the turbines. The emissions are based on a mass balance of the Texas Eastern pipeline tariff for total sulfur content of 5 gr/100 dscf of gas.

2.3.2.4 Emergency Generator Emission Factors – CO_2, N_2O, and CO_2e

CO_2 and N_2O emitted by the emergency generator are calculated based on the emission factors listed in 40 CFR 98, Subpart C, Tables C-1 and C-2. Equation 4-6 and Equation 4-8 show how factors in lb/MMscf are derived for these pollutants. GHGs emitted from the engine include CO_2, CH_4, and N_2O. CO_2e emissions are calculated using the GWPs provided in Table 4-2.

2.3.3 Fuel Gas Heater Emissions

As part of the TEM IV Project, Texas Eastern proposes to install three 1.154 MMBtu/hr input natural gas-fired fuel gas heaters.[11] The following table provides information on the emission factors used to calculate emissions from the fuel gas heater.

Table 2-5. Fuel Gas Heater Emission Factors

Pollutant	Emission Factor from Source	Source
NO_X	80 ppm_{vd} at 3% O_2 or 98.43 lb/MMscf	Vendor specified emission rate
CO	200 ppm_{vd} at 3% O_2 or 150 lb/MMscf	Vendor specified emission rate
TOC	140 ppm_{vd} at 3% O_2 or 60 lb/MMscf	Vendor specified emission rate
VOC	140 ppm_{vd} TOC at 3% O_2 or 36.15 lb VOC/MMscf	Based on vendor data for TOC, scaled to VOC based on ratio of TOC:VOC in Table 3.1-2a of AP-42 (April 2000)
CH_4	140 ppm_{vd} TOC at 3% O_2 or 10.16 lb CH_4/MMscf	Based on vendor data for TOC, scaled to CH_4 based on ratio of TOC:CH_4 in Table 3.1-2a of AP-42 (April 2000)
$PM_{10}/PM_{2.5}$	7.60 lb/MMscf	Table 1.4-2 of AP-42
SO_2	14.29 lb/MMscf	Using pipeline total sulfur tariff of 5 gr/100 dscf of gas, and Table 3.1-2a of AP-42 (April 2000)
CO_2	53.02 kg/MMBtu (HHV)	40 CFR 98, Subpart C, Table C-1
N_2O	0.0001 kg/MMBtu (HHV)	40 CFR 98, Subpart C, Table C-2
Total HAP	140 ppm_{vd} TOC at 3% O_2 Multiple HAP factors	TOC: vendor specified emission rate Table 1.4-3 of AP-42; organic HAP were scaled using the vendor data and AP-42 emission rates for TOC

In order to calculate hourly emissions, the emission factors provided in the table above are converted to units of lb/MMscf. These converted factors are multiplied by the heater's hourly fuel consumption in scf/hr to obtain hourly emissions. Fuel consumption is calculated from the heat output of the heater, assuming a thermal efficiency of 65% and a natural gas heating value of 1,020 Btu/scf. Annual potential emissions are calculated based on average hourly fuel consumption. Maximum hourly potential emissions are calculated based on maximum hourly fuel consumption, assuming an overload capability

[11] Heat output for fuel gas heater is 0.750 MMBtu/hr, while the corresponding heat input is 1.154 MMBtu/hr.

of 105%. The following sections summarize the methods used to obtain lb/MMscf emission factors for each pollutant emitted from the heater.

2.3.3.1 Heater Emissions Factors – NO_X, CO, and TOC

NO_X, CO, and TOC emitted by the heater are calculated based on vendor-specified emission rates and vendor-specified fuel consumption for the heater. NO_X, CO, and TOC factors are derived as follows:

Equation 2-18:

$$\boldsymbol{NO_x, CO, TOC\ EF = ppmvd, 3\%\ O_2 \times \frac{lb/MMBtu}{ppmvd, 3\%\ O_2} \times 1,020 \frac{MMBtu}{MMscf} = \frac{lb}{MMscf}}$$

2.3.3.2 Heater Emissions Factors – VOC, CH_4, and HAP

VOC, CH_4, and HAP emissions are calculated using the TOC emission rate and AP-42 emission factors. Standard emission factors for TOC, VOC, CH_4, and HAP from natural gas-fired heaters are provided in Chapter 1.4 of AP-42. Table 1.4-2 (version dated July 1998) provides a CH_4 emission factor for natural gas-fired external combustion sources. The TOC and VOC factors used in the calculations differ slightly from the factors provided in Table 1.4-2. Instead, TOC and VOC factors are calculated as the sum of the factors for all speciated organic compounds listed in AP-42 Table 1.4-3 which are TOCs and VOCs, respectively. These calculated values differently slightly from AP-42 Table 1.4-2. Table 1.4-3 of AP-42 (version dated July 2000) provides emission factors for the HAP emitted from natural gas-fired external combustion units.

Using the same ratio method used to calculate CH_4 and HAP emitted from the turbine (detailed in Section 2.3.1.2.), CH_4, HAP, and VOC emitted from the heater are ratioed based on the vendor-specified TOC emission rate.

2.3.3.3 Heater Emissions Factors – PM_{10}, $PM_{2.5}$, and SO_2

PM_{10} and $PM_{2.5}$ emitted by the heater are calculated based on the emission factors listed in Table 1.4-2 of AP-42 (version dated July 1998) for natural gas fired external combustion sources. The total PM emission factor of 7.6 lb/MMscf, which includes filterable and condensable particulate, is used and it is assumed that all particulate emitted from natural gas combustion is less than 2.5 microns in diameter, such that PM equals PM_{10} and $PM_{2.5}$.

The SO_2 emission factor is the same as for the turbines and emergency generator.

2.3.3.4 Heater Emissions Factors – CO_2, N_2O, and CO_2e

CO_2 and N_2O emitted by the heater are calculated based on the emission factors listed in 40 CFR 98, Subpart C, Tables C-1 and C-2. Equation 2-6 and Equation 2-8 show how factors in lb/MMscf are derived for these pollutants. GHGs emitted from the heater include CO_2, CH_4, and N_2O. CO_2e emissions are calculated using the GWPs provided in Table 2-2.

2.3.4 Fugitive Emissions (FUG001)

Fugitive emissions are being reconciled as part of this proposed permit modification application. Potential emissions are calculated from the piping components using emission factors from USEPA's Protocol for Equipment Leak Emission Estimates (EPA 453/R-95-017), Table 2-4 (November 1995) which provides leak emission factors for oil and gas production operations. Gas service factors are used for components in natural gas service, light oil service factors are used for components in pipeline liquids service (e.g., condensate), and heavy oil service factors are used for components in oil service (e.g., oils on-site). Because an emission factor is not provided for leaks from pump seals in heavy oil service in Table 2-4, the average SOCMI without ethylene emission factor for pumps in heavy oil service from

Table 2-1 is used to estimate emissions. Annual emissions are conservatively calculated assuming that the components are in continuous gas/liquid/oil service as follows:

Equation 2-19:

$$\textbf{Total Gas Emissions} = \#\ \boldsymbol{of\ components} \times \frac{\frac{\boldsymbol{kg}}{\boldsymbol{hr}}}{\boldsymbol{component}} \times \frac{\boldsymbol{8{,}760\ hrs}}{\boldsymbol{yr}} \times \frac{\boldsymbol{1{,}000\ g}}{\boldsymbol{kg}} \times \frac{\boldsymbol{lb}}{\boldsymbol{453.6\ g}} \times \frac{\boldsymbol{2{,}000\ ton}}{\boldsymbol{lb}} = \frac{\boldsymbol{tons}}{\boldsymbol{yr}}$$

The equation above is used to calculate total fugitive gas emitted from the piping components at the Danville Station. Emissions of individual VOCs, GHGs, and HAP are calculated by multiplying the total fugitive gas emissions from piping components in gas, pipeline liquid, and oil service by the weight percent of each pollutant in gas, pipeline liquids, and oil. Gas, pipeline liquid, and oil compositions are engineering estimates based on available worst-case data to be conservative.[12, 13]

2.3.5 Gas Releases (EQT0005, FG-2)

Gas releases due to periodic blowdown of the turbines and other events occur at the station. The majority of emissions from gas release events are associated with routine operations such as startup and shutdown, reduced pressure demand events, or maintenance activities. The potential volume of gas emitted was estimated in standard cubic feet per year based on design data for the Danville Compressor Station after the addition of the new turbines. Emissions of individual VOCs, GHGs, and HAP are calculated by multiplying the total gas emissions from gas releases by the weight percent of each pollutant in the natural gas compressed at the facility.

2.3.6 Tank Emissions

Danville utilizes several storage tanks and separator vessels as part of its operations. For the purpose of working and breathing loss emissions estimates, these tanks utilize the calculation methodology described in the latest updates to AP-42 Section 7.1. Detailed calculations are included in Appendix B.

2.4 Emissions Summary

The Danville Station's source classifications are characterized as follows:

- Existing major stationary source (i.e., > 250 tons per year [tpy]) of NO_X and CO under the Prevention of Significant Deterioration (PSD) program (Title 40, Code of Federal Regulations, Part 52 [40 CFR 52] and 401 KAR 51:017);
- Existing major source (i.e., > 100 tpy) of NO_X, CO, and VOC under the Title V program (40 CFR 70 and 401 KAR 52:020); and
- Existing major source of HAP (i.e., > 25 tpy of total HAP and > 10 tpy of any single HAP).

[12] Oil is assumed to be 100 percent VOC and contain no GHGs or HAP. Pipeline liquids composition is based on the composition of residual liquids following flashing, calculated based on a laboratory analysis of flashing from an operation in Atlanta, Texas in April 2009.

[13] Natural gas composition is conservatively estimated based on an extended gas analysis taken from a similar natural gas transmission stations.

- Upon completion of the proposed project, total HAP and any single HAP emissions will be reduced to <25 tpy/<10 tpy, and the **station will become an area (minor) source of HAP**.

A summary of the proposed PTE emissions is presented in Table 2-6. Detailed emissions calculations are available in Appendix B of this application.

Table 2-6. Facility-Wide Potential Emissions Summary

Pollutant --	**PTE in Previous Renewal** tpy[a]	**After Project PTE** tpy	**Change in PTE** tpy
PM_{10} / $PM_{2.5}$	27.4	14.1	**-13.3**
SO_2	5.4	29.7[b]	**+24.3**
NO_X	1,225.3	78.7	**-1,146.6**
CO	250.4	77.5	**-172.9**
VOC	202.9	59.9	**-143.0**
Total HAP	48.9	7.7	**-41.2**

a. Based on Title V No. V-16-056

b. The post-project SO_2 emissions value is based on a change in calculation methodology based on specific fuel characteristics (i.e., the pipeline tariff of 5 gr/100 dscf) at the Danville Station, not an "actual" increase in SO_2 being generated from combustion devices.

3. REGULATORY APPLICABILITY

This section provides a summary of the federal and state air quality regulations that are applicable to this permit application.

3.1 Federal Regulations

Applicable federal requirements for individual emission sources and a further explanation of applicability or non-applicability are provided below.

3.1.1 Title V Operating Permit Program

40 CFR Part 70 establishes the Federal Title V operating permits program. The Title V program was established as part of the 1990 Clean Air Act Amendments and is in the federal regulations at 40 CFR Part 70-71. The Title V program requires that all new and existing major sources of air emissions obtain federally approved state administered operating permits. A major source as defined under the Title V program is a facility that has the PTE either more than 100 tpy for any criteria pollutant, more than 10 tpy for any single hazardous air pollutant (HAP), or more than 25 tpy for all HAP.

As provided in Table 2-6, the post-project PTE will be less than the major source thresholds. However, due to the timing of construction and operation of the new EUs in relation to the submittal of this application, the Danville Station will maintain its designation as a major source with regard to Title V at this time.

3.1.2 Prevention of Significant Deterioration

3.1.2.1 PSD Source Classification

New Source Review (NSR) requires that federal construction permitting of new emission sources or modifications to existing emission sources be completed when a project results in a significant net emission increase. Two distinct NSR permitting programs apply depending on whether the facility is located in an attainment or nonattainment area for a particular pollutant. The PSD permitting program applies to project increases of those pollutants for which the area the facility is located in is classified as "attainment" or "unclassifiable". The Danville Station is located in Lincoln County, which has been classified as in attainment with or unclassifiable with regard to the National Ambient Air Quality Standard (NAAQS) for all regulated pollutants.[14] Thus, the Danville Station is potentially subject to PSD permitting requirements.

Kentucky has incorporated the requirements of the PSD permitting program into its SIP at 401 KAR 51:017.[15] These PSD regulations specifically define 28 industrial source categories for which the "major" source threshold is 100 tpy of any regulated pollutant.[16] The major source threshold for facilities not on this "List of 28" is 250 tpy. Natural gas compressor stations are not on the list of 28 named source categories; as such, the PSD major source thresholds are 250 tpy for all criteria pollutants.

[14] 401 KAR 51:010, Section 2
[15] 40 CFR 51.166(a)(1)
[16] 401 KAR 51:001, Section 1(118)(a)(2)

3.1.2.2 PSD Assessment—Post-Project

This sub-section is a PSD assessment for the project in a post-project, as-built phase, when all existing EUs that were designated to shut down are no longer in operation and all new EUs have been constructed and are in operation. Refer to Section 3.1.2.3 for an assessment of PSD implications during a short phase of overlapping operations.

3.1.2.2.1 PSD Applicability Methodology

At an existing major PSD source, PSD is triggered for a regulated NSR pollutant if the project under consideration constitutes a "major modification," as defined at 401 KAR 51:001, Section 1(114). To constitute a major modification, the proposed project must first be a "*physical change in or change in the method of operation of a stationary source*," not otherwise exempted. The proposed project meets this criterion. Second, both the emission increase from the project alone (known as the "Step 1" project emissions increase), and the net emissions increase over a five-year contemporaneous period (known as the "Step 2" net project emissions increase) must be "significant," meaning the increase exceeds the PSD significant emission rates (SERs) defined under 401 KAR 51:001, Section 1(218)(a) for a regulated NSR pollutant.

The methodology for calculating a significant emissions increase is provided in 401 KAR 51:017, Section 1(4). Within 401 KAR 51:017 Section 1(4)(a)3., a "hybrid test" for projects such as the TEM IV Project includes the assessment of both new construction (i.e., the installation of new EUs such as the turbines and emergency generator) as well as existing units (i.e., the shutdown of turbine- and RICE-driven compressors and changes to fugitives) to calculate a significant emissions increase as "the sum of emissions increases for each unit." In March 2018 and October 2020, USEPA recognized the uncertainty regarding the term "sum of emissions increases" but went on to state that, based upon their review of past regulatory interpretations and existing regulations, the "hybrid test" could include both increases and decreases as part of the Step 1 calculations.[17,18] On December 24, 2020, the federal PSD language for a "hybrid test" in 40 CFR 52.21(a)(2)(iv)(f) was modified for clarity, but the corresponding language in 401 KAR 51:017 has not been updated to reflect the federal changes.

Thus, the "sum of emission increases" for the TEM IV Project is effectively equal to the sum of the PTE for the new emission units as these are the "increases" associated with the project and the emissions decreases from the existing unit shutdowns cannot be used to "offset" these emissions increases from the new emission units that will replace the existing units. The sum of these increases as shown in Table 3-1 below exceeds the SER for NO_X and $PM_{2.5}$. Since Step 1 analysis exceeds one or more SERs, the net creditable emission increases and decreases over the contemporaneous period [as defined in 401 KAR 51:001 Section 1(144)(b)] are required to be estimated and the net emissions increase is required to be developed and compared against the SER (i.e., a "Step 2" net project emissions increase analysis).

[17] Letter from E. Scott Pruitt, to Regional Administrators, "Project Emissions Accounting Under the New Source Review Preconstruction Permitting Program," March 13, 2018, available at https://www.epa.gov/nsr/project-emissions-accounting-under-new-source-review-preconstruction-permitting-program

[18] Notice from Andrew R. Wheeler, "Prevention of Significant Deterioration (PSD) and Nonattainment New Source Review (NNSR): Project Emissions Accounting," October 22, 2020, available at https://www.epa.gov/nsr/nsr-regulatory-actions#:~:text=Final%20Action%20on%20%22Project%20Emissions,at%20existing%20air%20pollution%20sources.

3.1.2.2.2 Step 2 Net Project Emissions Increase

Pursuant to 401 KAR 51:001 Section 1(144)(a)-(c), the net emissions increase is equal to the increase calculated in Step 1 as described in the preceding subsection plus any other increases and decreases in actual emissions that are "contemporaneous" with the aforementioned change and "otherwise creditable."

- Pursuant to 401 KAR 51:001 Section 1(144)(b)2., contemporaneous increases and decreases are those that occurred within the 5 years prior to construction on the project commencing. For the TEM IV project, Texas Eastern is conservatively assuming that the project will commence construction on July 1, 2026.

To support an assessment of the Step 2 net project emissions changes for the proposed project, Texas Eastern has only identified one contemporaneous project other than the existing unit shutdowns previously noted as part of the TEM IV Project scope that resulted in an increase or decrease in NSR pollutants between July 1, 2021, and July 1, 2026. The March 2023 off-permit change application for the installation of two new filter separators resulted in a minimal increase in VOC and greenhouse gases (GHG) emissions. This project is included in Table 3-1 below along with all increases and decreases associated with the project, and the result is a net emissions increase for each NSR pollutant that is below the SER.

3.1.2.2.3 Reasonable Possibility

When the net emissions increase for a project exceeds 50% of one or more PSD SER, there exists a "reasonable possibility" that the actual emissions from the project will exceed the SER. For this reason, such projects require additional monitoring, recordkeeping, and reporting requirements to ensure that the emission units involved in the project maintain actual emissions below the SER once operation has commenced.

As shown in Table 3-1 below, the net emissions increase of SO_2 exceeds 50% of the corresponding SER. However, there are no modified emission units contributing to the net increase in SO_2 emissions and the net emissions increase would be under the SER without consideration of the shutdown of existing emission units (i.e., the PTE of all post-project emission units is less than 40 tpy SO_2). Therefore, "reasonable possibility" requirements are not necessary for this project.

3.1.2.3 PSD Assessment—Overlapping Operations

As discussed with the Division during a pre-application meeting on June 10, 2025, there may be a short overlap period during which new EUs are brought online for testing purposes while existing EUs are still in operation. As stated during the aforementioned meeting, any overlapping operation is expected to be minimal and have little effect on the emissions assessments provided in this application. Thus, to ensure there is no potential for triggering PSD permitting during the overlapping period, Texas Eastern is requesting the PSD avoidance permit requirement below to be in place until all existing EUs designated as being shut down as part of this project have ceased operation. Note that PM_{10} and SO_2 emissions from the new EUs will not exceed the SER regardless of existing EU decreases; therefore, no avoidance limits are necessary for these pollutants. Furthermore, the PTE of the new insignificant activities have been subtracted from these avoidance limits and, thus, will not be tabulated as part of compliance with the avoidance limit. In addition, existing insignificant activities would contribute a negligible change in actual emissions during the overlapping period which can be reasonably accounted for based on the 90% of SER "buffer" included in the derivation of the proposed PSD avoidance limits.

Section D.3.
To preclude applicability of 401 KAR 51:017, emissions from EU01-EU13 will not exceed 582.8 tpy NO_X, 129.3 tpy CO, 23.1 tpy $PM_{2.5}$, and 97.6 tpy VOC. This requirement will remain in effect until such time that the Kentucky Division for Air Quality has received written notice that EU01-EU06 have permanently ceased operation.

Compliance Demonstration Methods:
Upon start-up of EU 08, EU 09, EU 10, EU 11, and/or EU 12, the permittee shall calculate and record monthly and 12-month rolling totals of the NO_X, CO, $PM_{2.5}$, and VOC emissions from the emission units referenced above. The permittee shall use the emission factors provided in the application for construction and operation of EU 08-12.

This proposed requirement is reflected in the suggested permit edits in Appendix D.

3.1.2.4 PSD Applicability Calculation Summary

The baseline actual emissions (BAE), projected actual emissions (PAE), emissions increase and net emissions increase, and PSD avoidance limits are calculated as provided in Table 3-1 below.

Table 3-1. PSD Applicability Calculations

Post-Project Status Category	Emission Source		Pollutant						Notes
	ID	Description	NO_x	CO	$PM_{10/2.5}$	SO_2	VOC	CO_2e	
Shutdown Significant EUs	EU 03 (11-12)	Two Gas Turbines	29.1	6.60	2.52	1.30	2.19	45,756	CY2022-23 emissions from KYEIS
	EU 04 (13)	Gas Turbine	232.5	4.10	3.16	1.63	0.329	57,150	
	EU 01 (01-07)	IC Engines	266.3	18.6	2.75	3.35E-02	9.72	6,710	
	EU 02 (08-10)	IC Engines	18.8	9.94	5.67	6.90E-02	5.54	13,827	
	EU 05	Emergency Engine	3.76E-02	5.27E-02	1.10E-03	6.50E-05	7.40E-03	13.0	
	EU 06	Emergency Engine	3.45E-02	4.26E-02	8.37E-04	4.93E-05	2.23E-02	22.0	
New Significant EUs	EU 08 (proposed)	Unit 4T Turbine	25.0	23.9	4.62	9.80	3.92	82,984	Potential to emit of new emission units
	EU 09 (proposed)	Unit 5T Turbine	25.0	23.9	4.62	9.80	3.92	82,984	
	EU 10 (proposed)	Unit 6T Turbine	25.0	23.9	4.62	9.80	3.92	82,984	
	EU 11 (proposed)	Emergency Engine Generator	1.63	3.25	6.23E-02	4.50E-02	2.20	814	
	EU 12 (proposed)	Unit 4T-6T Fuel Gas Heaters	1.46	2.23	0.113	0.212	0.537	1,788	
	EU 13 (proposed)	TNK V05 - Separator Vessel	-	-	-	-	0.348	21	
Modified Existing Significant EUs	EU 07 (GR-ST; GR-PL)	Gas Release Events	-	-	-	-	25.44	5,986	CY2022-23 emissions from KYEIS
							26.13	22,967	Post-project PTE; actual emissions will be considerably less but not quantified as part of this application
	EU 07 (PC-1 - PC-4)	Piping Components	-	-	-	-	19.71	3,370	CY2022-23 emissions from KYEIS
							8.23	-	Post-project PTE
New Insignificant Activities	CHTR 01	Boiler/Heater	2.30E-03	3.62E-02	2.00E-04	4.00E-04	1.27E-02	3.00	Potential to emit of new emission units
	SVV V01C01	Separator Vessel					7.05E-02	4.26	
	SVV V01C02	Separator Vessel					7.05E-02	4.26	
	SVV V01C03	Separator Vessel					7.05E-02	4.26	
	SLV V02	Separator Vessel	-	-	-	-	1.12	35.4	
	TNK OW01	Separator Vessel					1.00E-03	-	
	TL PL	Truck Loading Area					2.22E-02	1.34	
	TL OW	Truck Loading Area					< 0.001	-	

Red values indicate pre-project actual emissions (CY2022-23) that are tabulated as part of the project baseline emissions
Green values indicate post-project potential emissions that are tabulated as part of the projected actual emissions (all new and modified units use post-project PTE as PAE)

PSD Calculations (tpy)	NOX	CO	$PM_{10/2.5}$	SO_2	VOC	CO_2e	Notes
Existing Sources to be Shutdown- Pre-Project Baseline Actual Emissions, BAE	546.8	39.4	14.1	3.0	17.8	132,833	Sum of CY2022-23 actual emissions data for existing affected EUs
New and Modified Sources- Post-Project Emissions (PTE for All)	78.1	77.2	14.0	29.7	50.6	274,595	Post-project emission rates from all new and modified emission units
PSD Significant Emission Rate, SER	**40**	**100**	**15/10**	**40**	**40**	**75,000**	The CO_2e SER for GHGs is not an SER in the same manner as for other NSR pollutants; a net project emissions increase above this level in conjunction with a net emissions increase of another NSR above the SER would trigger PSD review for GHGs
Step 1 Project Emissions Increase, PEI ** Red text indicates SER exceedance*	**78.1**	77.2	**14.0**	29.7	16.9	268,609	Each EU PAE - BAE, increases only (i.e., new EUs + marginal increase from gas release events); NO_X and $PM_{2.5}$ exceed SER
Emissions Changes from Contemporaneous Projects	-	-	-	-	0.271	156.2	Table 1 of March 2023 OPC for Installation of 2 New Filter Separators (using % increases shown)
Step 2 Net Emissions Increase ** Red text indicates SER exceedance*	(468.66)	37.9	(0.08)	26.62	(12.39)	141,761	New Source PTE + Modified Source PEI + Contemporaneous Increases - BAE for Shutdown Units; all pollutants are less than SER
Temporary PSD Avoidance Limits for Overlapping Operations	582.8	129.3	23.1	--	97.6	--	Equal to BAE for all existing/modified units + 90% × SER - PTE of "New Insignificant Activities"

3.1.3 Nonattainment New Source Review (NANSR)

The Danville Station is located in Danville County which is classified as an attainment area for all regulated pollutants. Therefore, NANSR does not apply.

3.1.4 New Source Performance Standards (NSPS)

The federal NSPS requires new, modified, or reconstructed sources to control emissions to the level that is achievable by the best demonstrated technology as specified in the applicable provisions of the rule. The following summary describes the applicability and non-applicability of NSPS subparts relevant to the Danville Station.

3.1.4.1 40 CFR 60 Subpart A – General Provisions

Any source subject to a source-specific NSPS is also subject to the general provisions of NSPS Subpart A, unless specifically excluded. NSPS Subpart A requires initial notification, performance testing, recordkeeping and monitoring, provides reference methods, and mandates general control device requirements for all other subparts as applicable.

3.1.4.2 40 CFR 60 Subpart Ka – Standards of Performance for Storage Vessels for Petroleum Liquids

NSPS Subpart Ka, Standards of Performance of Storage Vessels for Petroleum Liquids for which Construction, Reconstruction, or Modification Commenced After May 18, 1978, and prior to July 23, 1984, provides standards of performance for storage vessels for petroleum liquids with a storage capacity greater than or equal to 40,000 gallons for which construction is commenced after May 18, 1978, and prior to July 23, 1984. All of the storage vessels located at the Danville Station are sized to capacities less than 40,000 gallons and are not subject to this subpart.

3.1.4.3 40 CFR 60 Subpart Kb – Standards of Performance for Volatile Organic Liquid Storage Vessels

NSPS Subpart Kb, Standards of Performance for Volatile Organic Liquid Storage Vessels (Including Petroleum Liquid Storage Vessels) for Which Construction, Reconstruction, or Modification Commenced After July 23, 1984 and On or Before October 4, 2023, outlines performance standards for volatile organic liquids (VOL) storage vessels (including petroleum liquid storage vessels) for which construction, reconstruction, or modification commenced after July 23, 1984 or on or before October 4, 2023. However, this regulation does not apply to storage vessels with a capacity less than 75 m^3 (approximately 20,000 gallons); therefore, this regulation is not applicable to storage vessels at the Danville Station.

3.1.4.4 40 CFR 60 Subpart Kc – Standards of Performance for Volatile Organic Liquid Storage Vessels

NSPS Subpart Kc, Standards of Performance for Volatile Organic Liquid Storage Vessels (Including Petroleum Liquid Storage Vessels) for Which Construction, Reconstruction, or Modification Commenced After October 4, 2023, outlines performance standards for volatile organic liquids (VOL) storage vessels (including petroleum liquid storage vessels) for which construction, reconstruction, or modification commenced after October 4, 2023. However, this regulation does not apply to storage vessels with a capacity less than 75 m^3 (approximately 20,000 gallons); therefore, this regulation is not applicable to storage vessels at the Danville Station.

3.1.4.5 40 CFR 60 Subpart GG – Standards of Performance for Stationary Gas Turbines

NSPS Subpart GG applies to each stationary combustion turbine with a heat input at peak load equal to or greater than 10 MMBtu/hr, and which commenced construction, modification, or reconstruction after October 3, 1977. The GE Frame 3 turbines at the Danville Station (EU 03-04) were installed prior to 1977 and are not subject to NSPS Subpart GG. The new Solar Titan 130 turbines will be installed after 1977 but will be subject to NSPS Subpart KKKK instead of NSPS Subpart GG.

3.1.4.6 40 CFR Subpart KKK – Standards of Performance for Equipment Leaks of VOC from Onshore Natural Gas Processing Plants

NSPS Subpart KKK establishes Standards of Performance for Equipment Leaks of VOC From Onshore Natural Gas Processing Plants for Which Construction, Reconstruction, or Modification Commenced After January 20, 1984, and on or Before August 23, 2011. This regulation is not applicable to the Danville Station as the facility is a gas transmission station and is not a gas processing plant.

3.1.4.7 40 CFR 60 Subpart JJJJ – Standards of Performance for Stationary Spark Ignition Internal Combustion Engines

NSPS Subpart JJJJ regulates criteria pollutant emissions from stationary spark ignition (SI) internal combustion engines (ICE) constructed after June 12, 2006. For the purposes of this Subpart, the constructed date is the date when the emergency engine is ordered by the owner or operator. For emergency engines with a maximum engine power greater than 25 hp, NSPS Subpart JJJJ is applicable if the engine was manufactured after January 1, 2009. The existing emergency RICE EUs at the Danville Station (**EU 05** and **EU 06**) are currently subject to the emission standards and operating requirements in NSPS Subpart JJJJ. The new emergency RICE, proposed **EU11**, will be subject to NSPS Subpart JJJJ in the same manner.

3.1.4.8 40 CFR 60 Subpart KKKK – Standards of Performance for Stationary Combustion Turbines

NSPS Subpart KKKK applies to each stationary combustion turbine with a heat input at peak load equal to or greater than 10 MMBtu/hr based on the higher heating value (HHV) of the fuel, and which commenced construction, modification, or reconstruction after February 18, 2005. Pursuant to 40 CFR 60.4305(a), each new Solar® Titan 130 gas turbine is subject to requirements of NSPS Subpart KKKK, because its heat input at peak load will be greater than or equal to 10 MMBtu/hr (HHV) and the construction at the Danville Station will have commenced after February 18, 2005.

Note that the USEPA has proposed new requirements for combustion turbines under 40 CFR Part 60, Subpart KKKKa (NSPS Subpart KKKKa). However, NSPS Subpart KKKKa is only proposed and may be subject to change based on USEPA's assessment of public comments. Thus, at the time of this application submittal, the new Solar Titan 130 turbines proposed under this project will be subject to NSPS KKKK. A summary of requirements from NSPS Subpart KKKK that will be applicable to the new turbines is provided in the subsections below.

3.1.4.8.1 Emissions Limitations

According to 40 CFR 60.4320(a) and Table 1 to NSPS Subpart KKKK titled "Nitrogen Oxide Emission Limits for New Stationary Combustion Turbines," the new gas turbines with HHV heat inputs of between 50 and 850 MMBtu/hr, will comply with a NO_X emission standard of 25 ppm at 15 percent O_2 or 1.2 lb/MWh useful output. Pursuant to 40 CFR 60.4330(a)(2), the new turbine will comply with fuel standard of equal to or less than 0.060 lb SO_2/MMBtu heat input.

3.1.4.8.2 General Compliance Requirements

Pursuant to 40 CFR 60.4333(a), the new turbine, its air pollution control equipment, and its monitoring equipment will be maintained in a manner that is consistent with good air pollution control practices for minimizing emissions. This requirement applies at all times including during startup, shutdown, and malfunction.

3.1.4.8.3 NO_X Monitoring

Pursuant to 40 CFR 60.4340(a), since the new turbine will not use water or steam injection to control NO_X emissions, the Danville Station will perform annual performance tests in accordance with 40 CFR 60.4400 to demonstrate continuous compliance. If the NO_X emission result from the performance test is less than or equal to 75 percent of the NO_X emission limit for a turbine (i.e., < 18.75 ppm NO_X at 15% O_2 or < 0.9 lb NO_X/MW-hr), the Danville Station may reduce the frequency of subsequent performance tests to once every 2 years (no more than 26 calendar months following the previous performance test). If the results of any subsequent performance test exceed 75% of the NO_X emission limit, the Danville Station will be required to resume annual performance testing.

Per 40 CFR 60.8(a), the initial NO_X performance tests for the new turbines are required to be conducted within 60 days after achieving the maximum production rate (i.e. the turbines' maximum rated heat output), but no later than 180 days after initial startup.

3.1.4.8.4 SO_2 Monitoring

Pursuant to 40 CFR 60.4365(a), the Danville Station will obtain a current tariff sheet for the fuel specifying that the maximum total sulfur content for natural gas use is 20 grains of sulfur or less per 100 standard cubic feet (SCF) and potential sulfur emissions are less than 0.060 lb SO_2/MMBtu) heat input.

3.1.4.8.5 Reporting

Pursuant to 40 CFR 60.4375(b), since the Danville Station will be conducting annual performance testing in accordance with 40 CFR 60.4340(a), a written report of the results of the performance test will be submitted to KDAQ and the USEPA before the close of business on the 60th day following the completion of the performance test.

Per 40 CFR 60.7(a)(1), the Danville Station will submit notification of the date construction of the new turbine commenced. The submittal will be postmarked no later than 30 days after the commencement of construction date. Per 40 CFR 60.7(a)(3), the submittal of the notifications of the actual date of initial startup of the new turbine will be postmarked by no later than 15 days after the initial startup dates. The reports will satisfy the construction and start-up reporting requirements required by Section G of the current permit.

3.1.4.9 40 CFR 60 Subpart KKKKa – Standards of Performance for Stationary Combustion Turbines

NSPS Subpart KKKKa for stationary combustion turbines was proposed on December 13, 2024, and is not yet promulgated as a final rule. The USEPA reopened and extended the public comment period to April 15, 2025, to allow additional time for stakeholders to review and comment on the proposed rule. Multiple aspects of the proposed NSPS Subpart KKKKa may be subject to change based on USEPA's assessment of public comments. The proposed NSPS Subpart KKKKa would apply to new stationary combustion turbines with a base load rating greater than 10 MMBtu/hr, based on the HHV of the fuel, which commenced construction, modification, or reconstruction after December 13, 2024. This subpart

would regulate NO_X and SO_2 emissions from such turbines. Once NSPS Subpart KKKKa is promulgated as final, a detailed applicability analysis will be performed for the new turbines.

3.1.4.10 40 CFR 60 Subpart OOOO – Natural Gas Production, Transmission and Distribution

NSPS Subpart OOOO establishes emission standards and compliance schedules for the control of emissions from affected facilities that commence construction, modification or reconstruction after August 23, 2011, and on or before September 18, 2015. Affected facilities include certain units and operations located in the oil and natural gas production segment, natural gas processing segment or natural gas transmission and storage segment.

Under NSPS Subpart OOOO, the only affected facilities in the natural gas transmission and storage segment are storage vessels that have the potential for VOC emissions equal to or greater than 6 tpy. The Danville Station does not include any storage vessels which have a PTE of 6 tpy or more of VOC. Also, units at the facility were put into operation before August 23, 2011, and have not been modified or reconstructed since installation. Therefore, NSPS Subpart OOOO does not apply to the Danville Station.

3.1.4.11 40 CFR 60 Subpart OOOOa – Natural gas Production, Transmission and Distribution

NSPS OOOOa establishes emission standards and compliance schedules for the control of GHG from affected facilities in the oil and natural gas industry that commence construction, modification or reconstruction after September 18, 2015.

The collection of fugitive equipment components from new or modified natural gas compressor stations is subject to leak detection and repair (LDAR) requirements under NSPS OOOOa. In addition, the rule also includes requirements for other affected facilities at natural gas transmission compressor stations, including reciprocating compressors with rod packing, storage vessels, pneumatic pumps, and continuous bleed pneumatic controllers.

- For the purposes of NSPS OOOOa, a "modification" to the collection of fugitive emission components at a compressor station occurs when:
  - An additional compressor is installed at a compressor station; or
  - One or more compressors at a compressor station are replaced by one or more compressors of greater total horsepower than the compressor(s) being replaced.
- All of the compressor units at the Danville Station were installed prior to September 18, 2015, and have not been modified or reconstructed since the rule's applicability date.
- The Danville Station does not include any storage vessels with a PTE of 6 tpy or more of VOC. Additionally, the units at the Danville Station were installed prior to September 18, 2015, and have not been modified or reconstructed since the rule's applicability date.
- The Danville Station does not include any pneumatic pumps.
- The Danville Station does not include any continuous bleed pneumatic controllers.

Therefore, NSPS OOOOa does not apply to any of the activities at the Danville Station.

3.1.4.12 40 CFR 60 Subpart OOOOb – Crude Oil & Natural Gas Facilities for Which Construction, Modification or Reconstruction Commenced After December 6, 2022

NSPS OOOOb establishes emission standards and compliance schedules for the control of greenhouse gases (GHG) from affected facilities in the oil and natural gas industry that commence construction, modification or reconstruction after December 6, 2022. The rule includes requirements for a variety of affected facilities at natural gas transmission compressor stations including:

- Centrifugal compressors,
- Reciprocating compressors,
- Storage vessels,
- Collection of natural gas-driven process controllers,
- Collection of natural gas-driven pumps, and
- Collection of fugitive emissions components.

Texas Eastern has determined that the TEM IV project will trigger applicable requirements for the construction of operation of various affected facilities covered under NSPS Subpart OOOOb as described in the subsections below. Note that there has been no net increase or modification of the collection of natural gas-driven process controllers at the station. Thus, the rule does not apply to the collection of natural gas-driven process controllers at the station.

3.1.4.12.1 Turbine-Fired Compressors

The new and increased horsepower rating of the compressor associated with the new Solar Titan 130 turbines will trigger applicable requirements for the new centrifugal compressors, and the leak detection and repair (LDAR) program for the collection of fugitive emission components. These requirements are outlined in the DEP 7007V form in Appendix C.

3.1.4.12.2 Pipeline Liquids Storage Tank

A new 2,640-gallon pipeline liquids storage tank (V05; proposed **EU13**) will be constructed but will not be an applicable facility as, pursuant to 40 CFR 60.5365b(e)(1)(i), the PTE of VOC from the "tank battery" (i.e., in this case, the single tank) will be less than 6 tpy. Pursuant to 40 CFR 60.5365b(e)(2)(i)(A)-(F), this determination may take into account requirements under a legally and practicably enforceable (LPE) limit(s) meeting the requirements for such limits listed therein. Texas Eastern's proposed LPE limits are as provided below. These limits are based on the presumed maximum annual throughput of pipeline liquids of 7,920 gallons per year and the corresponding emissions calculations as calculated in TankESP® (refer to Appendix B).

1. The permittee shall limit VOC emissions to 0.35 tons per 12-month rolling total.
    a. The 12-month rolling VOC emissions total will be determined by adding the current month's VOC emissions to that of the previous 11 months.
    b. The permittee shall monitor and record the monthly and 12-month rolling total VOC emissions in units of tons.
2. The permittee shall limit methane emissions to 0.75 tons per 12-month rolling total.
    a. The 12-month rolling methane emissions total will be determined by adding the current month's methane emissions to that of the previous 11 months.
    b. The permittee shall monitor and record the monthly and 12-month rolling total methane emissions in units of tons.

3. The permittee shall limit the tank throughput volume to 7,920 gallons per 12-month rolling total.
    a. The 12-month rolling total will be determined by adding the current month's throughput to that of the previous 11 months.
    b. The permittee shall monitor and record the monthly and 12-month rolling total tank throughput of pipeline liquids in units of gallons.
4. The permittee shall report the 12-month rolling limitations proposed above on a semiannual basis as a component of the required semiannual monitoring report.

3.1.5 National Emission Standards for Hazardous Air Pollutants

NESHAP or MACT standards apply to major sources of HAP or specifically designated area sources of HAP. A major source of HAP is defined as having potential emissions in excess of 10 tpy for any individual HAP, and/or 25 tpy for total HAP. The Danville Station is an area source of HAP, and therefore Texas Eastern has reviewed the applicability of the following standards.

3.1.5.1 40 CFR 63 Subpart A – General Provisions

NESHAP Subpart A, General Provisions, contains national emission standards for HAP defined in Section 112(b) of the Clean Air Act. All affected sources, which are subject to another NESHAP, are subject to the general provisions of NESHAP Subpart A, unless specifically excluded by the source-specific NESHAP. Subpart A is applicable because 40 CFR Part 63 Subpart ZZZZ is applicable (see below).

3.1.5.2 40 CFR 63 Subpart HH – National Emission Standards for Hazardous Air Pollutants from Oil and Natural Gas Production Facilities

NESHAP Subpart HH applies to major and area sources of HAP that process, upgrade, or store hydrocarbon liquids. The natural gas production facility to which the rule applies ends at the point that the natural gas enters a facility in the natural gas transmission and storage category per 40 CFR 63.760(a)(3). The Danville Station does not include any dehydration units, and the station is considered a natural gas transmission and storage facility. Therefore, NESHAP Subpart HH does not apply.

3.1.5.3 40 CFR 63 Subpart HHH – National Emission Standards for Hazardous Air Pollutants from Natural Gas Transmission and Storage Facilities

This subpart applies to owners and operators of natural gas transmission and storage facilities that transport or store natural gas prior to entering the pipeline to a local distribution company or to a final end user (if there is no local distribution company), and that are major sources of HAP emissions. The Danville Station does not include any glycol dehydration units. Thus, this regulation does not apply to the Danville Station.

3.1.5.4 40 CFR 63 Subpart YYYY – National Emission Standards for Hazardous Air Pollutants for Stationary Combustion Turbines

40 CFR 63 Subpart YYYY – National Emission Standards for Hazardous Air Pollutants for Stationary Combustion Turbines (NESHAP YYYY) establishes emissions and operating limitations for HAP from existing, reconstructed, or new stationary combustion turbines located at major stationary sources of HAP. The existing gas turbines (**EU03** and **EU04**) are subject to NESHAP YYYY, and all applicable requirements from this federal regulation are adequately captured in the current Title V permit V-16-056 with no necessary updates for the proposed project. With the full implementation of the TEM IV Project, the Danville Station will be designated as an area source of HAP; therefore, this regulation does not apply.

Note that on September 21, 2023, US EPA proposed a rule to refine "major source" review under the NESHAP program, proposing to allow major sources that limit emissions to reclassify as "area sources" but to also impose emission limitation safeguards on those sources. This stipulation was *not* included in the September 10, 2024, final rule.[19] Furthermore, the September 10, 2024, rule was revoked per the Congression Review Act (CRA) on June 20, 2025. Therefore, no federally-enforceable emissions limitations are necessary for Enbridge to reclassify as an area source of HAP on a post-project basis.

3.1.5.5 40 CFR 63 Subpart ZZZZ – Stationary Reciprocating Internal Combustion Engines

40 CFR 63 Subpart ZZZZ, National Emission Standards for Hazardous Air Pollutants for Stationary Reciprocating Internal Combustion Engines, provides national emission limitations and operating limitations for HAP emitted from stationary RICE located at major and area sources of HAP. Upon completion of the project, the Danville Station will be an area source of HAP that includes one natural gas-fired emergency engine subject to this rule. Compliance with the requirements of NSPS JJJJ satisfies the requirements of 40 CFR 63, Subpart ZZZZ.

3.1.6 Mandatory Greenhouse Gas Reporting Rule

40 CFR Part 98 establishes mandatory GHG reporting requirements for facilities that directly emit GHGs. The GHG reporting requirements and related monitoring and recordkeeping requirements apply to any facility that has an aggregate maximum rated heat input capacity of the stationary fuel combustion units of 30 MMBTU/hr or greater and has actual emissions of 25,000 metric tons of carbon dioxide equivalents (CO_2e) or more per year in combined emissions from all stationary fuel combustion sources. The Danville Station has an aggregate maximum rated heat input capacity of stationary fuel combustion units at the facility greater than 30 MMBTU/hr and has a CO_2e PTE greater than 25,000 metric tons per year. Therefore, the Texas Eastern will continue to comply with the requirements of 40 CFR Part 98.

3.1.7 Risk Management Plan

Subpart B of 40 CFR Part 68 outlines requirements for risk management prevention plans pursuant to Section 112(r) of the Clean Air Act. Applicability of the subpart is determined based on the type and quantity of chemicals stored at a facility. The Danville Station does not exceed the threshold quantity for any of the chemicals and is, therefore, not subject to 40 CFR 68 Subpart B. Texas Eastern is subject to the General Duty Clause under the Clean Air Act Section 112(r)(1), which states:

"The owners and operators of stationary sources producing, processing, handling or storing such substances [i.e., a chemical in 40 CFR part 68 or any other extremely hazardous substance] have a general duty [in the same manner and to the same extent as the general duty clause in the Occupational Safety and Health Act (OSHA)] to identify hazards which may result from (such) releases using appropriate hazard assessment techniques, to design and maintain a safe facility taking such steps as are necessary to prevent releases, and to minimize the consequences of accidental releases which do occur."

3.1.8 Stratospheric Ozone Protection Regulations

The requirements originating from Title VI of the Clean Air Act, entitled Protection of Stratospheric Ozone, are contained in 40 CFR Part 82. 40 CFR Part 82 Subpart F, Recycling and Emissions Reduction,

[19] *Review of Final Rule Reclassification of Major Sources as Area Sources Under Section 112 of the Clean Air Act* [89 FR 73293]

potentially applies if the facility maintains, repairs, services, or disposes of appliances that utilize Class I or Class II ozone depleting substances. Subpart F generally requires persons completing the repairs, service, or disposal to be properly certified. An appropriately certified technician will complete all repairs, service, and disposal of ozone depleting substances from the air conditioners at the facility. Subparts A through E and Subparts G and H are not applicable to the Facility. The Danville Station will continue to comply with 40 CFR Part 82, as appropriate.

3.1.9 Compliance Assurance Monitoring

The Compliance Assurance Monitoring (CAM) regulations apply to pollutant-specific emission units at a major source under the Title V operating permit program that satisfy the following criteria as detailed in 40 CFR§64.2(a):

- The unit is subject to an emission limitation or standard for the applicable regulated air pollutant (or a surrogate thereof), other than an emission limitation or standard that is exempt under 40 CFR 64.2(b);
- The unit uses a control device to achieve compliance with any such limitation or standard; and
- The unit has potential pre-control device emissions of the applicable regulated air pollutant that are equal to or greater than 100 percent of the amount, in tons per year, required for a source to be classified as a major source.

The pre-controlled emission levels for the new gas-fired turbines, which are equipped with OxCat to reduce CO, VOC, and HAP emissions, do not exceed the major source thresholds under the Title V operating permit program. Therefore, CAM requirements will not apply to the new units at the Danville Station.

3.2 State of Kentucky Regulations

This section of the renewal application identifies specific regulations in Kentucky's State Implementation Plan (SIP) relevant to the Danville Station.

3.2.1 401 KAR 59:015 – New Indirect Heat Exchangers

This regulation applies to equipment, apparatus, or contrivances used for the combustion of fuel in which the energy produced is transferred to its point of usage through a medium that does not come into contact with or add to the products of combustion. Affected sources must have a heat input capacity greater than 1 MMBtu/hr.

The 3 new natural gas-fired fuel gas heaters (proposed **EU12**) meet the definition of indirect heat exchangers under 401 KAR 59:015 as they each have a heat input rating of 1.2 MMBtu/hr and are new affected facilities. Section 4 of 401 KAR 59:015 establishes opacity standards and heat input-based particulate matter (PM) emission limits. Pursuant to 401 KAR 59:015, Section 4(2), opacity of continuous emissions from the proposed **EU12** are limited to 20%, except that a maximum of 40% shall be allowed for a maximum of six (6) consecutive minutes in any sixty (60) minute period during fire-box cleaning or soot blowing events.

The applicable PM emission limit is determined based on the total heat input capacity for all the affected facilities at the source at the time of construction of the new units. A different heat input-based PM allowable emission rate applies depending on whether the total heat input capacity for the facility is less than 10 MMBtu/hr, between 10 MMBtu/hr and 250 MMBtu/hr, or above 250 MMBtu/hr. The sum of the

heat input capacities for the proposed **EU12** plus the existing 401 KAR 59:015 affected facilities is less than 10 MMBtu/hr; therefore, the allowable PM emission factor using the applicable algorithm presented in 401 KAR 59:015, Section 4(1)(b), is 0.56 lb PM/MMBtu.[20] The potential PM emission factor from combusting natural gas in the new heat exchangers is lower than the allowable PM emission rate, so the Danville Station will be implicitly in compliance with these emission limits when burning natural gas.

Section 5 of the rule establishes SO_2 emissions standards. The SO_2 emissions standard is also limited based on the total heat input capacity for all affected facilities at the source. A different heat input capacity-based allowable emission rate algorithm applies based on the type of fuel to be burned (e.g., solid, liquid, or gaseous) and whether the total, facility-wide affected facility heat input capacity falls within one of the same ranges discussed above for the PM emission limit derivation. Thus, the allowable SO_2 emission factor is 3.0 lb SO_2/MMBtu.[21] Again, the potential SO_2 emission factor from combusting natural gas in the Danville Station's affected units is lower than the allowable SO_2 emission rate, so the units will be implicitly in compliance with these emission limits when burning natural gas.

3.2.2 401 KAR 63:020 – Kentucky Air Toxics Program

401 KAR 63:020 establishes Kentucky's Air Toxics Program, which restricts any affected facility from emitting potentially hazardous matter or toxic substances in such quantities or duration as to be harmful to the health and welfare of humans, animals and plants. Pursuant to Permit V-16-056, the Danville Station is in compliance with 401 KAR 63:020 based on the rates of emissions of airborne toxics provided in the most recent application submitted by the source. Texas Eastern does not anticipate that the compliance situation will be affected by this application, as the new turbines are well-controlled and are sources of standard natural gas combustion byproducts.

3.2.3 401 KAR 52:020 – Title V Permits

3.2.3.1 Qualification as a Significant Permit Revision

Pursuant to 401 KAR 52:020 Section 16, a significant permit revision is required for permit revisions that "[i]nvolve significant changes in the monitoring requirements or a relaxation in the reporting or recordkeeping requirements contained in the permit" or "[d]o not qualify as administrative permit amendments or minor permit revisions." As stated throughout this application, Texas Eastern will be requesting temporary PSD avoidance limits and LPE to avoid applicability to NSPS Subpart OOOOb. Texas Eastern considers each of these to be "case-by-case determinations" under 401 KAR 52:020 Section 14(1)(c). Meeting the criterion of Section 14(1)(c) precludes the use of a minor permit revision to institute the requested changes and, consequently, requires a significant permit revision.

3.2.3.2 Required Information for a Significant Permit Revision

Pursuant to 401 KAR 52:020 Section 16, significant permit revisions shall include all the same information as an initial permit application or renewal application.

[20] Pursuant to 401 KAR 59:015 Section 4.(1)(a).

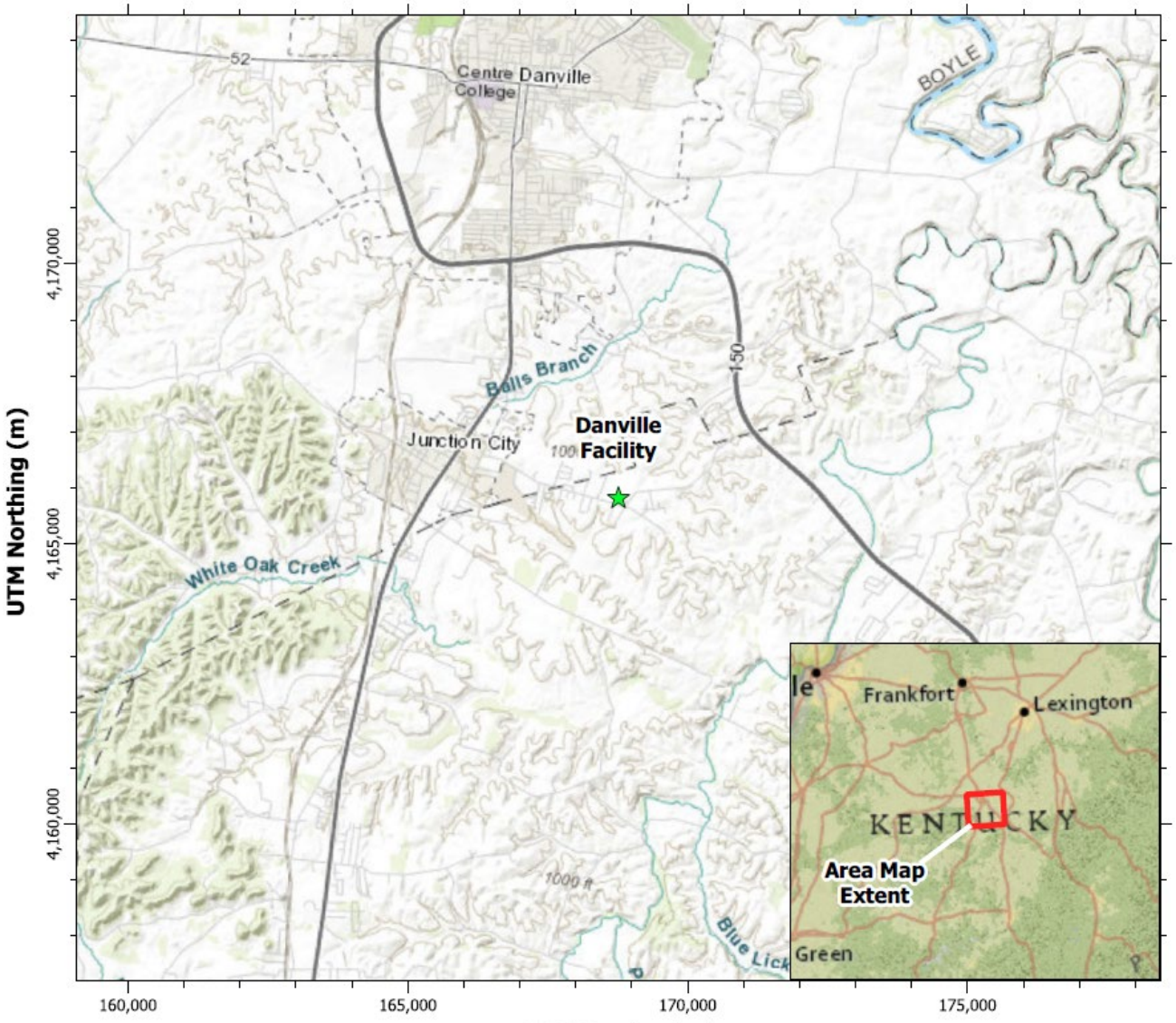
[21] Pursuant to 401 KAR 59:015 Section 5.(1)(a)1.

3.2.3.3 Certification Statement

Based on information and belief formed after reasonable inquiry, the statements and information contained in this notification are true, accurate, and complete. This declaration is affirmed by the Danville Station's responsible official via the signature on the DEP 7007AI form in Appendix C.

APPENDIX A: AREA MAP AND PLOT PLAN

Area Map for the Danville Compressor Station



All coordinates shown in UTM Coordinates, UTM Zone 16, NAD 83 Datum

APPENDIX B: DETAILED EMISSIONS CALCULATIONS

APPENDIX C: DEP 7007 FORMS

APPENDIX D: SUGGESTED PERMIT EDITS

ATTACHMENT 5

Division for Air Quality

300 Sower Boulevard
Frankfort, KY 40601
(502) 564-3999

DEP7007EE

Internal Combustion Engines

___ Section EE.1: General Information
___ Section EE.2: Operating Information
___ Section EE.3: Design Information
___ Section EE.4: Fuel Information
___ Section EE.5: Emission Factor Information
___ Section EE.6: Notes, Comments, and Explanations

Additional Documentation

___ Complete DEP7007AI, DEP7007N, DEP7007V, and DEP7007GG

___ Attach EPA certification of the engine

Source Name: Texas Eastern Transmission, LP - Danville Compressor Station
KY EIS (AFS) #: 21- 137-00008
Permit #: V-16-056
Agency Interest (AI) ID: 44065
Date: July 31, 2025

Section EE.1: General Information

Emission Unit #	Emission Unit Name	Control Device ID	Stack ID	Manufacturer	Model Number	Model Year	Date of Manufacture	Proposed/Actual Date of Construction Commencement *(MM/YYYY)*	Date Reconstructed/ Modified	List Applicable Regulations
EU11	Emergency Engine Generator	C11	S11	Waukesha	VGF48SE (or alternative)	TBD	TBD	2H 2026	--	40 CFR Part 60 Subpart JJJJ, 40 CFR Part 63 Subpart ZZZZ

Section EE.2: Operating Information

Emission Unit #	Engine Purpose (Identify if Non-Emergency, Emergency,Fire/Water Pump, Black-start engine for combustion turbine, Engine Testing)	Hours Operated	Is this engine a rental? *(Yes/No)*	Rental Time Period *(hrs)*	Alternate Operating Scenarios (Describe any operating scenarios in which the engine may be used in a different configuration)
EU11	Emergency	500	No	--	--

Section EE.3: Design Information

Emission Unit #	Engine Type (Identify all that apply: Commercial, Institutional, Stationary, Non-Road)	Ignition Type (Identify if either Compression or Spark Ignition)	Engine Family (Identify all that apply: 2-stroke, 4-stroke, Rich Burn, Lean Burn)	Maximum Engine Power *(bhp)*	Maximum Engine Speed *(rpm)*	Total Displacement *(L)*	Number of Cylinders
EU11	Stationary	Spark Ignition	4-stroke, Rich Burn	1,475	1800	48	16

Section EE.4: Fuel Information

Emission Unit #	Identify if Primary, Secondary, or Tertiary Fuel	Fuel Type (Identify if Diesel, Gasoline, Natural Gas, Liquefied Petroleum Gas (LPG), Landfill/Digester Gas, or Other)	Fuel Grade	Percent Time Used *(%)*	Maximum Fuel Consumption	Heat Content	Sulfur Content *(%)*	SCC Code	SCC Units
EU11	Primary	Natural Gas	--	100	6.295 MMscf/yr	1020 BTU/scf	0.05	20100202	MMscf

Section EE.5: Emission Factor Information

Emission factors expressed here are based on the potential to emit.

Emission Unit #	Fuel	Pollutant	Emission Factor	Emission Factor Units	Source of Emission Factor
EU11	Natural Gas	NOX	516.60	lb/MMscf	NSPS JJJJ
		CO	1,033.20	lb/MMscf	NSPS JJJJ
		SO2	14.29	lb/MMscf	Mass balance based on 100% conversion of fuel sulfur to SO2
		PM10/2.5	19.80	lb/MMscf	AP42 Section 3.2 Table 3.2-3
		CO2-e	258,672.61	lb/MMscf	Mass balance
		CO2	120,017.45	lb/MMscf	40 CFR 98 Subpart C, Table C-1
		N2O	0.23	lb/MMscf	40 CFR 98 Subpart C, Table C-2
		Methane	4,949.83	lb/MMscf	AP-42 Section 3.2 HAP value × ratio of AP-42 VOC to NSPS JJJJ VOC
		Ethane	2,055.21	lb/MMscf	
		VOC (Total)	699.48	lb/MMscf	NSPS JJJJ (1.0 g/bhp-hr) scaled up by ratio of VOC to formaldehyde from AP-42 Section 3.2
		HAP (Total)	697.67	lb/MMscf	AP-42 Section 3.2 HAP value × ratio of AP-42 VOC to NSPS JJJJ VOC
		Acetaldehyde	60.04	lb/MMscf	
		Acrolein	56.60	lb/MMscf	
		Benzene	34.00	lb/MMscf	
		Butadiene (1,3-)	14.27	lb/MMscf	
		Carbon Tetrachloride	0.38	lb/MMscf	
		Chlorobenzene	0.28	lb/MMscf	
		Chloroform	0.29	lb/MMscf	
		Dichloropropene (1,3-)	0.27	lb/MMscf	
		Ethylbenzene	0.53	lb/MMscf	
		Ethylene Dibromide	0.46	lb/MMscf	
		Formaldehyde	441.18	lb/MMscf	
		Methanol	65.85	lb/MMscf	
		Methylene Chloride	0.89	lb/MMscf	
		Naphthalene	2.09	lb/MMscf	

Section EE.5: Emission Factor Information

Emission factors expressed here are based on the potential to emit.

Emission Unit #	Fuel	Pollutant	Emission Factor	Emission Factor Units	Source of Emission Factor
EU11	Natural Gas	PAH	3.03	lb/MMscf	AP-42 Section 3.2 HAP value × ratio of AP-42 VOC to NSPS JJJJ VOC
		Styrene	0.26	lb/MMscf	
		Tetrachloroethane (1,1,2,2-)	0.54	lb/MMscf	
		Toluene	12.01	lb/MMscf	
		Trichloroethane (1,1,2-)	0.33	lb/MMscf	
		Vinyl Chloride	0.15	lb/MMscf	
		Xylenes	4.20	lb/MMscf	

Section EE.6: Notes, Comments, and Explanations

ATTACHMENT 6

Customer	**TEM IV Danville**
Job ID	**HO24-81332**
Inquiry Number	**HO24-81332**
Run By	**Stephen T Holloway**
Date Run	**4-Jun-24**

Engine Model	**TITAN 130-20502S CS/MD 59F MATCH**
Fuel Type	**CHOICE GAS**
Water Injection	**NO**
Engine Emissions Data	**REV. 0.0**

	NOx EMISSIONS	CO EMISSIONS	UHC EMISSIONS
1 — **20109 HP 100.0% Load Elev. 1052 ft Rel. Humidity 60.0% Temperature 0 Deg. F**			
PPMvd at 15% O2	9.00	25.00	25.00
ton/yr	23.82	40.28	23.07
lbm/MMBtu (Fuel LHV)	0.036	0.061	0.035
lbm/(MW-hr)	0.36	0.61	0.35
(gas turbine shaft pwr) lbm/hr	5.44	9.20	5.27
2 — **19811 HP 100.0% Load Elev. 1052 ft Rel. Humidity 60.0% Temperature 20.0 Deg. F**			
PPMvd at 15% O2	9.00	25.00	25.00
ton/yr	22.96	38.82	22.24
lbm/MMBtu (Fuel LHV)	0.036	0.061	0.035
lbm/(MW-hr)	0.35	0.60	0.34
(gas turbine shaft pwr) lbm/hr	5.24	8.86	5.08
3 — **19275 HP 100.0% Load Elev. 1052 ft Rel. Humidity 60.0% Temperature 40.0 Deg. F**			
PPMvd at 15% O2	9.00	25.00	25.00
ton/yr	22.23	37.59	21.53
lbm/MMBtu (Fuel LHV)	0.036	0.061	0.035
lbm/(MW-hr)	0.35	0.60	0.34
(gas turbine shaft pwr) lbm/hr	5.07	8.58	4.92

Notes

1. For short-term emission limits such as lbs/hr., Solar recommends using "worst case" anticipated operating conditions specific to the application and the site conditions. Worst case for one pollutant is not necessarily the same for another.
2. Solar's typical SoLoNOx warranty, for ppm values, is available for greater than 0 deg F or -20 deg F, and between 50% and 100% load for gas fuel, and between 65% and 100% load for liquid fuel (except for the Centaur 40). An emission warranty for non-SoLoNOx equipment is available for greater than 0 deg F or -20 deg F and between 80% and 100% load.
3. Fuel must meet Solar standard fuel specification ES 9-98. Emissions are based on the attached fuel composition, or, San Diego natural gas or equivalent.
4. If needed, Solar can provide Product Information Letters to address turbine operation outside typical warranty ranges, as well as non-warranted emissions of SO2, PM10/2.5, VOC, and formaldehyde.
5. Solar can provide factory testing in San Diego to ensure the actual unit(s) meet the above values within the tolerances quoted. Pricing and schedule impact will be provided upon request.
6. Any emissions warranty is applicable only for steady-state conditions and does not apply during start-up, shut-down, malfunction, or transient event.

Customer	**TEM IV Danville**
Job ID	**HO24-81332**
Inquiry Number	**HO24-81332**
Run By	**Stephen T Holloway**
Date Run	**4-Jun-24**

Engine Model	**TITAN 130-20502S CS/MD 59F MATCH**
Fuel Type	**CHOICE GAS**
Water Injection	**NO**
Engine Emissions Data	**REV. 0.0**

	NOx EMISSIONS	CO EMISSIONS	UHC EMISSIONS
4 — 18411 HP 100.0% Load — Elev. 1052 ft — Rel. Humidity 60.0% — Temperature 60.0 Deg. F			
PPMvd at 15% O2	9.00	25.00	25.00
ton/yr	21.40	36.19	20.73
lbm/MMBtu (Fuel LHV)	0.036	0.060	0.035
lbm/(MW-hr)	0.36	0.60	0.34
(gas turbine shaft pwr) lbm/hr	4.89	8.26	4.73
5 — 16863 HP 100.0% Load — Elev. 1052 ft — Rel. Humidity 60.0% — Temperature 80.0 Deg. F			
PPMvd at 15% O2	9.00	25.00	25.00
ton/yr	20.02	33.86	19.40
lbm/MMBtu (Fuel LHV)	0.036	0.060	0.034
lbm/(MW-hr)	0.36	0.61	0.35
(gas turbine shaft pwr) lbm/hr	4.57	7.73	4.43
6 — 15031 HP 100.0% Load — Elev. 1052 ft — Rel. Humidity 60.0% — Temperature 100.0 Deg. F			
PPMvd at 15% O2	9.00	25.00	25.00
ton/yr	18.56	31.39	17.98
lbm/MMBtu (Fuel LHV)	0.035	0.059	0.034
lbm/(MW-hr)	0.38	0.64	0.37
(gas turbine shaft pwr) lbm/hr	4.24	7.17	4.11

Notes

1. For short-term emission limits such as lbs/hr., Solar recommends using "worst case" anticipated operating conditions specific to the application and the site conditions. Worst case for one pollutant is not necessarily the same for another.
2. Solar's typical SoLoNOx warranty, for ppm values, is available for greater than 0 deg F or -20 deg F, and between 50% and 100% load for gas fuel, and between 65% and 100% load for liquid fuel (except for the Centaur 40). An emission warranty for non-SoLoNOx equipment is available for greater than 0 deg F or -20 deg F and between 80% and 100% load.
3. Fuel must meet Solar standard fuel specification ES 9-98. Emissions are based on the attached fuel composition, or, San Diego natural gas or equivalent.
4. If needed, Solar can provide Product Information Letters to address turbine operation outside typical warranty ranges, as well as non-warranted emissions of SO2, PM10/2.5, VOC, and formaldehyde.
5. Solar can provide factory testing in San Diego to ensure the actual unit(s) meet the above values within the tolerances quoted. Pricing and schedule impact will be provided upon request.
6. Any emissions warranty is applicable only for steady-state conditions and does not apply during start-up, shut-down, malfunction, or transient event.

Customer: *TEM IV Danville*	Model: **TITAN 130-20502S**
Job ID: **HO24-81332**	Package Type: **CS/MD**
Run By: **Stephen T Holloway** / Date Run: **4-Jun-24**	Match: **59F MATCH**
Engine Performance Code: **REV. 4.20.2.28.14** / Engine Performance Data: **REV. 1.1**	Fuel System: **GAS**
	Fuel Type: **CHOICE GAS**

DATA FOR MINIMUM PERFORMANCE

Elevation	feet	1052
Inlet Loss	in H2O	4.0
Exhaust Loss	in H2O	10.0
Accessory on GP Shaft	HP	29.2

		1	2	3	4	5	6
Engine Inlet Temperature	deg F	0	20.0	40.0	60.0	80.0	100.0
Relative Humidity	%	60.0	60.0	60.0	60.0	60.0	60.0
Driven Equipment Speed	RPM	8276	8290	8309	8299	8175	7984
Specified Load	HP	FULL	FULL	FULL	FULL	FULL	FULL
Net Output Power	HP	20109	19811	19275	18411	16863	15031
Fuel Flow	mmBtu/hr	151.10	145.77	141.38	136.62	128.68	120.73
Heat Rate	Btu/HP-hr	7514	7358	7335	7420	7631	8032
Therm Eff	%	33.862	34.582	34.689	34.290	33.345	31.677
Engine Exhaust Flow	lbm/hr	421230	406632	392124	376331	353624	326758
PT Exit Temperature	deg F	908	908	924	950	970	999
Exhaust Temperature	deg F	903	907	924	950	970	999

Fuel Gas Composition (Volume Percent)

Methane (CH4)	92.45
Ethane (C2H6)	6.30
Propane (C3H8)	0.55
I-Butane (C4H10)	0.06
N-Butane (C4H10)	0.07
I-Pentane (C5H12)	0.02
N-Pentane (C5H12)	0.01
Hexane (C6H14)	0.0080
Heptane (C7H16)	0.01
Octane (C8H18)	0.0057
Carbon Dioxide (CO2)	0.20
Nitrogen (N2)	0.31
Sulfur Dioxide (SO2)	0.0001

Fuel Gas Properties

LHV (Btu/Scf)	961.8	Specific Gravity	0.5961	Wobbe Index at 60F	1245.7

This performance was calculated with a basic inlet and exhaust system. Special equipment such as low noise silencers, special filters, heat recovery systems or cooling devices will affect engine performance. Performance shown is "Expected" performance at the pressure drops stated, not guaranteed.

Notes
Danville Full Load GFS: 100686

ATTACHMENT 7

Particulate Matter Emissions

Travis Domingo and Anthony Pocengal

PURPOSE

This Product Information Letter (PIL) provides guidance and background related to particulate matter (PM) emissions and the test methodologies to quantify PM emissions. This PIL includes Solar's recommended $PM_{10/2.5}$ emissions factors for air permitting.

PARTICULATE MATTER BACKGROUND

The Environmental Protection Agency (EPA) defines PM_{10} and $PM_{2.5}$ as particles with aerodynamic diameter smaller than 10/2.5 micrometers respectively. The EPA has designated National Ambient Air Quality Standards (NAAQS) for $PM_{10/2.5}$ to which States have implementation plans to meet the standards (i.e. be in "attainment").

Nearly all particulate matter from gas turbines exhaust is less than one micrometer (micron) in diameter. Therefore, the emission rates of PM_{10} and $PM_{2.5}$ from gas turbines are theoretically equivalent.

TESTING FOR PARTICULATE MATTER

The turbine combustion process has little effect on the particulate matter generated and measured. The largest contributor to particulate matter emissions for gas and liquid fired combustion turbines is measurement technique and error. Other, minor contributing, sources of particulate matter emissions include carbon, ash, fuel-bonded sulfur, artifact sulfate formation, compressor/lubricating oils, and inlet air.

Historical customer particulate matter source test data show that there is significant variability from test to test. The source test results support the common industry argument that particulate matter from natural gas fired combustion sources is difficult to measure accurately. The reference test methods for particulate matter were developed primarily for measuring emissions from coal-fired power plants and other major emitters of particulates. Generally, current turbines are much more efficient and the fuels they combust are subject to strict quality requirements. The test methods were not developed for these cleaner fuels or verified for low emission levels. There are interferences, insignificant at higher exhaust particulate matter concentrations that result in emissions greater than the actual emissions from gas turbines.

Due to measurement and procedural errors, the measured results may be significantly higher and not representative of actual particulate matter emitted. There are many potential error sources in measuring particulate matter. Most of these have to do with contamination of the samples, material from the sampling apparatus getting into the samples, and human error in samples and analysis. Source test firms are gaining experience in measuring particulate matter and are deploying best practices which has lessened the historical variability from test to test and the emissions levels measured have decreased.

RECOMMENDED PARTICULATE MATTER EMISSION FACTORS

When necessary to support the air permitting process Solar recommends the following $PM_{10/2.5}$ emission factors for all models and ratings except for the Mercury™ 50. Please refer to PIL 205 for the Mercury 50. The emission factors below are intended to include both the front half (filterable) and the back half (condensable).

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- Pipeline Natural Gas[*] and Natural Gas/Hydrogen Blends[&]: 0.006 lb/MMBtu fuel input (HHV)
- Landfill/Digester Gas[+]: 0.02 lb/MMBtu fuel input (HHV)
- Liquid Fuel[#]: 0.01 lb/MMBtu fuel input (HHV)

[*]Pipeline natural gas emissions factor assumes <1 grains of Sulfur per 100 standard cubic feet.
[&]Natural Gas/Hydrogen Blends can utilize the same emission factors as 100% natural gas.
[+]Landfill/digester gas emissions factor assumes <.15lb SO2/MMBtu heat input
[#]Liquid fuel emission factor assumes fuel Sulfur content is <500 ppm and ash content is <0.005% by wt.

Contact Solar's Environmental Programs group for particulate matter emissions estimates for fuels not listed above.

The conversion of particulate matter emissions request from mg/Nm^3 to lb/MMBtu (HHV) units involves several specific turbine parameters. Please contact Solar if you need the calculation performed.

TEST METHOD RECOMMENDATION

Solar recommends utilizing the preferred reference test method(s) required by applicable regulatory agency. When U.S. EPA reference test methods are specified for use, Solar recommends the below:

- EPA Method 201/201A to measure the "front half". The "Front half" represents filterable PM
- EPA Method 202[2] (with Nitrogen purge and field blanks) should be used to measure the "back half." "Back half" measurements represent the condensable portion of particulate matter.
    - Solar highly recommends utilizing EPA's recommended best practices[4] until more representative test methods are accepted for widespread use by EPA, State/Local regulatory authorities, or any other applicable regulatory authority.
    - In addition to the best practices for Method 202, Other Test Method (OTM) 59, Method for the Correction of Residual Ammonia in Condensable particulate Matter Samples Collected according to Method 202[4] must be followed to minimize additional biases from the presence of ammonia or sulfur dioxide
- EPA Method 5[5], which measures the front and back halves may be substituted (e.g. where exhaust temperatures do not allow the use of Method 202).

The turbine shall have a minimum of 300 operating hours prior to conducting particulate matter source testing. The turbine shall be running for 3-4 hours prior to conducting a particulate matter source test so that the turbine and auxiliary equipment is in a sustained "typical" operating mode prior to gathering samples.

Testing shall include a minimum of three 4-hour test runs.

ALTERNATE TEST METHODS FOR PM QUANTIFICATION

In addition to the EPA and EU standard reference test methods, there are alternate testing methodologies[6] available which measure PM emissions to higher accuracy levels. These methodologies utilize dilution sampling techniques that may lead to PM emissions ~10x lower than the current EPA reference test method. This method uses specialized equipment and experience in properly conducting these alternate test methods may not be as widespread. Moreover, utilization of these alternate methodologies requires prior approval from air permitting authorities. Contact Solar's Environmental Strategy Team for more information on these alternate methodologies.

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REFERENCES

[1]EPA Method 201, Determination of PM10 Emissions, Exhaust Gas Recycle Procedure. EPA Method 201A. Determination of PM10 Emissions, Constant Sampling Rate Procedure, 40 CFR 60, Part 60, Appendix A.
[2]EPA Method 202, Determination of Condensable Particulate Emissions from Station Sources, 40 CFR 60, Part 60. Appendix A.
[3]EPA Method 202 Best Practices Handbook, January 2016
[4]OTM 59, Method for the Correction of Residual Ammonia in Condensable particulate Matter Samples Collected according to Method 202
[5]EPA Method 5, Determination of Particulate Emissions from Station Sources, 40 CFR 60, Part 60, Appendix A.
[6]EPA Other Test Method (OTM) 37, Measurement of Direct PM2.5 and PM10 Emissions at Low Concentrations by Dilution Sampling (Constant Sampling Rate Procedure). Conditional Test Method (CTM) 39, Measurement of PM2.5 and PM10 Emissions By Dilution Sampling (Constant Sampling Rate Procedures)

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Outlook

RE: Notice of Deficiency for AI 44065-TETLP/Danville, KY CS-Response to NOD

From Chuck Zukor <Chuck.Zukor@enbridge.com>
Date Wed 1/7/2026 4:24 PM
To Freeman, Colby (EEC) <colby.freeman@ky.gov>; Jarod Gregory <jgregory@trinityconsultants.com>
Cc Ross, Dakota D (EEC) <dakota.ross@ky.gov>

This Message Originated from Outside the Organization
This Message Is From an External Sender.

Report Suspicious

Great – Thank you!

Sincerely,

Chuck Zukor
Sr. Engineer
Safety & Reliability/Air Projects

TEL: 713-627-5791 | CELL: 713-819-9501 |Chuck.Zukor@enbridge.com

ENBRIDGE
915 N. Eldridge Parkway, Suite 1100
Houston, TX 77079

From: Freeman, Colby (EEC) <colby.freeman@ky.gov>
Sent: Wednesday, January 7, 2026 3:09 PM
To: Chuck Zukor <Chuck.Zukor@enbridge.com>; Jarod Gregory <jgregory@trinityconsultants.com>
Cc: Ross, Dakota D (EEC) <dakota.ross@ky.gov>
Subject: [External] Re: Notice of Deficiency for AI 44065-TETLP/Danville, KY CS-Response to NOD

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This email was sent from colby.freeman@ky.gov.

Chuck,

Let's plan on 1 PM central/2 PM tomorrow. I will send a Teams call link in the morning once I have confirmed with my supervisor.

Thanks,

Colby Freeman

Environmental Engineer Technologist I

Chemical Section

Division for Air Quality

300 Sower Blvd

Frankfort, KY 40601

(502) 782 - 1467

From: Chuck Zukor <Chuck.Zukor@enbridge.com>
Sent: Wednesday, January 7, 2026 3:48 PM
To: Freeman, Colby (EEC) <colby.freeman@ky.gov>; Jarod Gregory <jgregory@trinityconsultants.com>
Cc: Ross, Dakota D (EEC) <dakota.ross@ky.gov>
Subject: RE: Notice of Deficiency for AI 44065-TETLP/Danville, KY CS-Response to NOD

Afternoon Colby – I just wrapped up a discussion with multiple stakeholders within Enbridge and our consultant Jarod Gregory/Trinity regarding the Commissioning duration, timeline, and activities at the Danville compressor station.

Would you have some time tomorrow, Thur 1/8/26 for a brief call where Jarod & I can share some general info with you?
And to get your feedback on the level of written detail the agency would like from Enbridge to support its TSD effort regarding Commissioning and PSD avoidance.

We're avail starting at 11am central/Noon eastern, or anytime after that. Please let me know what time works best? – Thanks!

Sincerely,

Chuck Zukor
Sr. Engineer
Safety & Reliability/Air Projects

TEL: 713-627-5791 | CELL: 713-819-9501 |Chuck.Zukor@enbridge.com

ENBRIDGE
915 N. Eldridge Parkway, Suite 1100
Houston, TX 77079

From: Freeman, Colby (EEC) <colby.freeman@ky.gov>
Sent: Tuesday, December 30, 2025 12:59 PM
To: Chuck Zukor <Chuck.Zukor@enbridge.com>
Cc: Ross, Dakota D (EEC) <dakota.ross@ky.gov>
Subject: [External] Re: Notice of Deficiency for AI 44065-TETLP/Danville, KY CS-Response to NOD

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Good afternoon,

Checking back on this as it has been a few weeks. I can move forward on drafting the permit as it relates to the TEM IV project once I have more information on the construction timeline. I want to reiterate that although a detailed timeline would be helpful, a rough estimate on the length of the "overlap" period is most critical for how we approach PSD avoidance limits.

With regard to the changes to existing units requested under APE20190001, I will need feedback on what still needs to be incorporated into the permit. If parts or all of the proposed changes are still desired, we will need time to work through these.

Please provide an update by Wednesday January 7th.

Thanks,

Colby Freeman

Environmental Engineer Technologist I

Chemical Section

Division for Air Quality

300 Sower Blvd

Frankfort, KY 40601

(502) 782 - 1467

From: Chuck Zukor <Chuck.Zukor@enbridge.com>
Sent: Tuesday, December 2, 2025 10:35 AM
To: Freeman, Colby (EEC) <colby.freeman@ky.gov>
Subject: RE: Notice of Deficiency for AI 44065-TETLP/Danville, KY CS-Response to NOD

Morning Colby – The Project Schedule has been getting revised for planned pipeline service outages, delivery updates on equipment, etc. I will check with the Project Team for the latest planned construction schedules and **provide this week** our currently proposed estimates (still subject to change as the project continues).

By mid-next week (~Wed Dec 10th), I will provide you updates on the outstanding conditions for the recips & turbines.

My apologies for the delay, but I've had to simultaneously coordinate air permit application submittals for similar Modernization/Expansion projects in OH, LA, and TX. I appreciate your patience as I can now focus on your questions regarding the TETLP/Danville, KY project.

Sincerely,

Chuck Zukor
Sr. Engineer
Safety & Reliability/Air Projects

TEL: 713-627-5791 | CELL: 713-819-9501 |Chuck.Zukor@enbridge.com

ENBRIDGE
915 N. Eldridge Parkway, Suite 1100
Houston, TX 77079

From: Freeman, Colby (EEC) <colby.freeman@ky.gov>
Sent: Tuesday, December 2, 2025 7:40 AM
To: Chuck Zukor <Chuck.Zukor@enbridge.com>
Subject: [External] Re: Notice of Deficiency for AI 44065-TETLP/Danville, KY CS-Response to NOD

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This email was sent from colby.freeman@ky.gov.

Good morning Chuck,

Just wanted to check back on this since it has been a few weeks.

Thanks,

Colby Freeman

Environmental Engineer Technologist I

Chemical Section

Division for Air Quality

300 Sower Blvd

Frankfort, KY 40601

(502) 782 - 1467

From: Chuck Zukor <Chuck.Zukor@enbridge.com>
Sent: Thursday, November 13, 2025 1:48 PM
To: Freeman, Colby (EEC) <colby.freeman@ky.gov>
Cc: Ross, Dakota D (EEC) <dakota.ross@ky.gov>; Erika St. Pierre <Erika.St.Pierre@enbridge.com>; Keith Hamilton <keith.hamilton@enbridge.com>; Jarod Gregory <jgregory@trinityconsultants.com>
Subject: RE: Notice of Deficiency for AI 44065-TETLP/Danville, KY CS-Response to NOD

Hey Colby – Just wanted to touch base with you.

- I have requested the latest set of construction schedules, and will reply by the end of next week.
- I will re-review the outstanding conditions for the recips & turbines to provide updates to you. – Thanks!

Sincerely,

Chuck Zukor
Sr. Engineer
Safety & Reliability/Air Projects

TEL: 713-627-5791 | CELL: 713-819-9501 |Chuck.Zukor@enbridge.com

ENBRIDGE
915 N. Eldridge Parkway, Suite 1100
Houston, TX 77079

From: Freeman, Colby (EEC) <colby.freeman@ky.gov>
Sent: Monday, November 3, 2025 9:33 AM
To: Chuck Zukor <Chuck.Zukor@enbridge.com>
Cc: Ross, Dakota D (EEC) <dakota.ross@ky.gov>; Erika St. Pierre <Erika.St.Pierre@enbridge.com>; Keith Hamilton <keith.hamilton@enbridge.com>; Jarod Gregory <jgregory@trinityconsultants.com>
Subject: [External] Re: Notice of Deficiency for AI 44065-TETLP/Danville, KY CS-Response to NOD

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Good morning Chuck,

Thank you for the response. We will begin evaluating this right away.

In the meantime, I also wanted to see if you have any estimates on the construction timeline, in particular how long you expect the "overlap" period to require. Also, with regards to the outstanding significant revision requesting changes for existing turbines and engines (APE20190001), do you have any updates on whether Texas Eastern wants those changes implemented with this renewal?

Thanks,

Colby Freeman

Environmental Engineer Technologist I

Chemical Section

Division for Air Quality

300 Sower Blvd

Frankfort, KY 40601

(502) 782 - 6671

From: Chuck Zukor <Chuck.Zukor@enbridge.com>
Sent: Friday, October 31, 2025 4:38 PM
To: Freeman, Colby (EEC) <colby.freeman@ky.gov>
Cc: Ross, Dakota D (EEC) <dakota.ross@ky.gov>; Erika St. Pierre <Erika.St.Pierre@enbridge.com>; Keith Hamilton <keith.hamilton@enbridge.com>; Jarod Gregory <jgregory@trinityconsultants.com>
Subject: RE: Notice of Deficiency for AI 44065-TETLP/Danville, KY CS-Response to NOD

****CAUTION** PDF attachments may contain links to malicious sites. Please contact the COT Service Desk ServiceCorrespondence@ky.gov for any assistance.**

Dear Colby – Attached is a single PDF file that contains Enbridge's responses to each of the KDAQ questions, along with supporting information provided in Attachments 1 thru 7.

If you have any questions regarding our responses, please let me know.

We'd be more than happy to set up a Teams Meeting to talk through your questions. – Thanks!

Sincerely,

Chuck Zukor
Sr. Engineer

Safety & Reliability/Air Projects

TEL: 713-627-5791 | CELL: 713-819-9501 |Chuck.Zukor@enbridge.com

ENBRIDGE

915 N. Eldridge Parkway, Suite 1100

Houston, TX 77079

From: Freeman, Colby (EEC) <colby.freeman@ky.gov>
Sent: Tuesday, September 30, 2025 10:18 AM
To: Chuck Zukor <Chuck.Zukor@enbridge.com>
Cc: Ross, Dakota D (EEC) <dakota.ross@ky.gov>
Subject: [External] Notice of Deficiency for AI 44065

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Good morning,

Attached is the first Notice of Deficiency on the significant revision application for Texas Eastern Transmission, LP - Danville Compressor Station. This serves as your official copy and a paper copy will not be sent. We request t that you submit the information as soon as possible, but in no case later than October 31, 2025.

Please feel free to contact me if you have any questions or need additional clarification.

Thanks,

Colby Freeman

Environmental Engineer Technologist I

Chemical Section

Division for Air Quality

300 Sower Blvd

Frankfort, KY 40601

(502) 782 - 6671

Outlook

RE: AI 44065: Danville Compressor Station - 40 CFR 60 Subpart KKKKa Updates

From Chuck Zukor <Chuck.Zukor@enbridge.com>
Date Wed 2/11/2026 10:35 PM
To Freeman, Colby (EEC) <colby.freeman@ky.gov>
Cc Jarod Gregory <jgregory@trinityconsultants.com>; Ross, Dakota D (EEC) <dakota.ross@ky.gov>; Harley, Brian (EEC) <Brian.Harley@ky.gov>; Keith Hamilton <keith.hamilton@enbridge.com>

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Hey Colby – I wanted to provide you with some initial responses to your questions below about NSPS KKKKa. See my responses in GREEN.
Also, Jarod/Trinity thought it would be a good idea to update the 7007V forms to specifically list the applicable NSPS KKKKa citations.
I am still in the process of reviewing the 7007V form, but hoping to complete it by the end of the week.

In addition, I did locate copies of the NOx CAM Plan for the two GE Frame 3 turbines, and a CO CAM Plan for the GE Frame 5 turbine. We can perhaps discuss further the option of continuing to use these CAM Plans.

Sincerely,

Chuck Zukor
Sr. Engineer
Safety & Reliability/Air Projects

TEL: 713-627-5791 | CELL: 713-819-9501 |Chuck.Zukor@enbridge.com

ENBRIDGE
915 N. Eldridge Parkway, Suite 1100
Houston, TX 77079

From: Freeman, Colby (EEC) <colby.freeman@ky.gov>
Sent: Wednesday, January 28, 2026 7:42 AM
To: Chuck Zukor <Chuck.Zukor@enbridge.com>
Cc: Jarod Gregory <jgregory@trinityconsultants.com>; Ross, Dakota D (EEC) <dakota.ross@ky.gov>; Harley, Brian (EEC) <Brian.Harley@ky.gov>
Subject: [External] AI 44065: Danville Compressor Station - 40 CFR 60 Subpart KKKKa Updates

CAUTION! EXTERNAL SENDER
Were you expecting this email? TAKE A CLOSER LOOK. Is the sender legitimate? DO NOT click links or open attachments unless you are 100% sure that the email is safe.
This email was sent from colby.freeman@ky.gov.
Good morning Chuck,

It has been a few weeks since we last spoke, so I wanted to check in on the outstanding permit conditions for the existing engines/turbines and the CO CAM plan for EU 04 (and EU 03 if NO_X CEMS is not going to be used to satisfy CAM).

Also, shortly after our meeting EPA finalized 40 CFR 60, Subpart KKKKa, which is applicable to the proposed turbines (EU 08 through 10). I have been working on updating the draft permit and although there does not appear to be any changes that will significantly affect this project, I wanted to highlight a few of the updates:

1. EPA finalized two different emission limits for the medium size category (>50 MMBtu/h and ≤850 MMBtu/h), which the proposed turbines fall into, based on utilization rate/annual capacity factor (15 ppm @ 15% O_2 at utilization rate > 45%, 25 ppm otherwise). I plan to include input-based and output-based emission standards for both utilization categories as it appears the annual capacity factor is determined on an ongoing basis each calendar year. Do you intend to comply with the heat input-based standards? If so, I will omit the references and equations relating to output-based standards in the testing requirements. **The proposed new Solar Titan 130 turbines will be categorized as "Medium" size category, and will be able to meet the NOx emission limit standard of 15 ppmvd @ 15% O2. Each turbine is actually rated at 9 ppmvd of NOx by Solar. We anticipate the utilization of the turbines to be greater than 45% and since the turbines are rated at 9 ppmvd, I see no need to include the higher NOx emission limit for when turbine utilization is less than 45%. Also, you can omit the heat output standards, equations, etc. for Enbridge will <u>not</u> be selecting the heat output compliance methodology. Hopefully, these answers can "streamline" the conditions for the new permit.**

2. I believe the application did not propose using NOx CEMS for the new turbines. There are three continuous compliance demonstration options without using NOx CEMS, if you do not use water or steam injection, under 40 CFR 60.4340a(a). Annual performance testing, with reduced frequency based on results less than 75% of the emission limit, as proposed for Subpart KKKK is still an option. I can include just the associated requirements for the testing option for clarity and brevity, or I can include the full suite of compliance options if you would prefer flexibility. Please advise. **I have received a preliminary answer that we are leaning at keeping the current NOx parametric monitoring compliance strategy – since the existing GE Frame 3 turbines have a very limited future. Thus, we are likely not going to rely on the NOx CEMS – and can avoid all the new permit conditions that would be required for demonstrating compliance with a NOx CEMS. I still have to meet with a couple of Enbridge stakeholders for a FINAL confirmation.**

3. Maintaining fuel records is still an option to demonstrate initial and continuous compliance with the SO_2 emissions standard. Likewise, I plan to include only this compliance option unless you prefer the full suite to be included in the permit. **Please maintain the current fuel records for demonstrating the KKKKa SO2 standards. Enbridge intends to continue to demonstrate SO2 compliance with a current, valid tariff contract that Total Sulfur is less than 20 gr S/100 scf of nat gas.**

That should be the extent of the information I need to update the conditions for the new turbines, but if you find anything else in your review of Subpart KKKKa please let me know.

Thanks,

Colby Freeman
Environmental Engineer Technologist I
Chemical Section
Division for Air Quality
300 Sower Blvd
Frankfort, KY 40601
(502) 782 - 1467

Freeman, Colby (EEC)

From: Jarod Gregory <jgregory@trinityconsultants.com>
Sent: Friday, February 27, 2026 8:35 AM
To: Freeman, Colby (EEC); Chuck Zukor
Cc: Ross, Dakota D (EEC); Harley, Brian (EEC); Keith Hamilton
Subject: RE: AI 44065: Danville Compressor Station - 40 CFR 60 Subpart KKKKa Updates
Attachments: DANV Frame 3 NOx CAM Plan.pdf; DANV Frame 5 CO CAM Plan.pdf

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Colby-

We have conducted a thorough review of documentation in response to your question regarding CAM. The two CAM plans attached to this email were developed in February 2018 and include parametric monitoring as follows:

1. For the **CO OxCat**, the proposed plan included catalyst inlet temperature monitoring. Note that the V-16-056 permit requires inlet and outlet temperature monitoring; however, Enbridge determined that inlet temperature monitoring is sufficient for continuous compliance demonstration. Enbridge included the indicator range, data representativeness, QA/QC practices and criteria, monitoring frequency, data collection procedures, and the averaging period as required by 40 CFR Part 64.
2. For the **SCR**, the proposed plan included ammonia injection rate and catalyst bed outlet temperature monitoring. V-16-056 simply requires Enbridge to "continuously monitor appropriate parameters to verify the proper operation of the emission controls." This CAM plan also includes the required information referenced above from 40 CFR Part 64.

Enbridge reviewed semiannual monitoring reports and Annual Compliance Certifications and verified that the Danville Station has been complying with these parameters and reporting on compliance/noncompliance since the control devices were installed. Pursuant to 40 CFR 64.5(b), the CAM plans would have been submitted with the 2021 Title V permit renewal application. However, Enbridge submitted an expansive significant permit revision (SPR) application in 2019 which was still in process at the time of the renewal application (and is still in process as of writing this email). Therefore, Enbridge merely submitted a cover letter that cross-referenced the 2019 SPR application with a signed DEP 7007AI in October 2021 to meet the requirement to submit a renewal application prior to 6 months before expiration of the permit. Furthermore, the 2019 SPR application proposed the use of NOx and CO CEMS, which would have rendered the parametric monitoring proposed in the CAM plans as unnecessary. For these reasons, the attached CAM plans were never submitted to KDAQ (to our knowledge).

Regardless, as the 2019 SPR application has never been formally approved and the units in question are nearing retirement as described in the recent 2025 SPR application, Enbridge requests the implementation of the attached CAM plans in the upcoming permit issuance for use until the units are fully decommissioned.

One final note – Enbridge is still reviewing 40 CFR 60 KKKKa in depth and will provide KDAQ with a further revised DEP 7007V form in the coming days to ensure all nuances of 40 CFR 60 KKKKa as it pertains to the Danville Station are captured. We will provide this revised form no later than Friday, March 6th.

Regards,

Jarod Gregory
Managing Consultant

P 859.341.8100 ext. 1805 | **M** 513.502.8219
Email jgregory@trinityconsultants.com

From: Freeman, Colby (EEC) <colby.freeman@ky.gov>
Sent: Tuesday, February 24, 2026 8:19 AM
To: Chuck Zukor <Chuck.Zukor@enbridge.com>
Cc: Jarod Gregory <jgregory@trinityconsultants.com>; Ross, Dakota D (EEC) <dakota.ross@ky.gov>; Harley, Brian (EEC) <Brian.Harley@ky.gov>; Keith Hamilton <keith.hamilton@enbridge.com>
Subject: Re: AI 44065: Danville Compressor Station - 40 CFR 60 Subpart KKKKa Updates

Chuck,

Thanks for the response on KKKKa. It was very helpful in streamlining the permit for the new units. Would you be able to send over the CAM plans this week? If not, we will need to issue an NOD on the renewal requesting them.

Thanks,

Colby Freeman

Environmental Engineer Technologist I

Chemical Section

Division for Air Quality

300 Sower Blvd

Frankfort, KY 40601

(502) 782 - 1467

40 CFR Part 64 Compliance Assurance Monitoring Plan

For NOx Emissions From the Frame 3 Turbines

Danville Compressor Station

Lincoln County, Kentucky

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1 Regulatory Background

Texas Eastern Transmission, LP, (TETLP) owns and operates the Danville Compressor Station (Danville), a natural gas compressor station in Danville, Lincoln County, Kentucky. The Kentucky Department for Environmental Protection (KDEP) issued Title V permit V-16-056 on April 3, 2017 authorizing the installation and operation of an emission reduction project. The emission reduction project included the installation of a Selective Catalytic Reduction system (SCR) to reduce NO_X emissions and an Oxidation Catalyst system (OxCat) to reduce CO emissions from two (2) GE Frame 3 turbines, Units 21001 and 21002, Emission Unit (EU) 03 [11 and 12].

On October 1997, the United States Environmental Protection Agency (EPA) issued and published the final Compliance Assurance Monitoring (CAM) rule codified in 40 CFR Part 64. The CAM rule applies to each pollutant specific emission unit (PSEU) that meets a three-part test. The PSEU must:

1. Be subject to an emission limitation or standard,
2. Use a control device to achieve compliance, and
3. Have pre-control emissions that exceed or are equivalent to the major source threshold.

The two GE Frame 3 turbines at Danville are subject to CO and NO_X emission limitations and use control devices to achieve compliance with the emission limitations. The CO pre-control emissions from each turbine are less than the major source threshold of 100 tpy.[1] Therefore, the GE Frame 3 turbines are not subject to CAM requirements for CO.

Each Frame 3 turbine has NO_X pre-control emissions of 285 tpy that exceed the major source threshold of 100 tpy. The NO_X emission limitation was requested by TETLP to limit facility-wide emissions below the PSD major modification threshold (i.e., SER <40 tpy of NOx), under the authority from 401 KAR 52:020, Section 26. The basis for this specific emission limitation was not the result of a proposal by the U.S. EPA after November 15, 1990, pursuant to section 111 or 112 of the Act, nor is it derived from Title VI, Title IV, or other emissions trading program of the Clean Air Act. TETLP is not utilizing a continuous emissions monitoring system (CEMS) for compliance demonstration.[2] As such, none of the exemptions delineated under 40 CFR 64.2(b) apply and each turbine is subject to CAM requirements for NO_X.

1.1 Equipment Description

Two (2) GE Frame 3 Diffusion Flame, Regenerative Cycle Turbines

- Rating: 8,000 bhp National Electrical Manufacturers Association (NEMA), each
- Heat Input: 94.22 mmBTU/hr, each
- Constructed: 1961 (EU03 [11 and 12])
- Fuel: Natural Gas
- Identification: Emission Unit 03

[1] Lincoln County is designated as attainment or unclassifiable for all pollutants, including NO_2, CO, and ozone (with NO_X as a precursor) – see 40 CFR 81.318, and thus the Title V major source threshold is 100 tpy, per the definition of "major source" at 40 CFR 70.2.

[2] See definition of "continuous compliance demonstration" under 40 CFR 64.1.

1.2 Emission Limits

NO_X emissions, from each Frame 3 turbine shall not exceed 25 ppmvd at 15 percent O_2 during normal operation. In addition, the total facility-wide emissions of NO_X shall not exceed 1,225.3 tons per year on a twelve month rolling total basis.

2 Monitoring Plan Requirements

The requirements of the monitoring plan are established in 40 CFR §64.4 and Title V permit V-16-056, Section B, Emission Units: 03, 4.a. and 4.b. Table 1 summarizes the requirements of the monitoring plan with its corresponding location in the plan.

Table 1- Monitoring Plan Requirements Cross Reference

Citation	Requirement	Location in Plan
§64.4(a)(1)	Indicators to be monitored and show there is a significant relationship to emissions and proper operation of the NO_X emission controls	Table 2
§64.4(a)(2)	Ranges (or designated conditions) of the indicators	Table 2
§64.4(a)(3)	Process the permittee will use to make certain that the data that are representative of the emissions or parameters being monitored	Table 2
§64.4	Quality assurance and control practices	Table 2
§64.4	Frequency of monitoring and data collection procedures	Table 2
§64.4(b)	Justification for the proposed elements of the monitoring	Section 4

3 Monitoring Approach

The key elements of the monitoring approach are presented in Table 2. The monitoring approach is identical for each Frame 3 turbine and consists of monitoring the SCR catalyst bed outlet temperature and the ammonia injection rate.

Table 2 - SCR System Monitoring Approach

Indicator	Catalyst Bed Outlet Temperature	Ammonia Injection Rate
Monitored Parameter	Operate and maintain a temperature gauge (thermocouple) to continuously record the outlet temperature of the SCR catalyst bed of each turbine.	Operate and maintain a flow indicator to continuously record the ammonia mass flow rate (lb/hr) sent to the SCR catalyst bed of each turbine. The measured actual ammonia injection rate (lb/hr) is compared to the set-point injection rate[3] (lb/hr) indicated by the control skid.
Indicator Range	Except during periods of start-up and shutdown[4], an excursion is defined as a 4-hour rolling temperature of less than 426°F or the average temperature recorded during a compliance emission test, whichever is lower. Excursions trigger an inspection, corrective action, and a reporting requirement. A computer system records and alerts if the catalyst bed temperature is not within the indicated range above.	Except during periods of start-up and shutdown[4], an excursion is defined as 4-hour rolling percent difference between the ammonia flow and the ammonia injection set-point of more than 15% as verified during a compliance emission test. Excursions trigger an inspection, corrective action, and a reporting requirement. A computer system automatically records and alerts if the ammonia injection rate is not within the indicated range above.
Data Representativeness	The thermocouple is located at the SCR catalyst bed outlet. The minimum accuracy is ±5ºF.	The flow indicator is located in the ammonia injection line. The minimum accuracy is ±5 %.
QA/QC Practices and Criteria	Thermocouple visually checked quarterly, and tested annually.	The ammonia flow meter was calibrated by the manufacturer upon installation. The meter is inspected and calibrated annually.
Monitoring Frequency	Temperature is measured continuously, at least once every clock hour.	Ammonia injection rate is measured continuously, at least once every clock hour.
Data Collection Procedures	A digital data recorder collects the temperature continuously.	A digital data recorder collects the ammonia injection rate and ammonia injection set-point continuously.
Averaging period	4-hour rolling average.	4-hour rolling average.

[3] The ammonia set-point injection rate is the flow rate of ammonia reagent determined by the unit Injection Controls System algorithm.

[4] A start-up is defined as the period initiated when a flame signal (or equivalent signal) is detected and ends when all permissives for the emission control systems are met. A shutdown is defined as the period initiated when the permissives for the emission control systems cannot be maintained and ends when fuel flow to the turbine is terminated. During periods of start-up and shutdown, the controls are not required to be operational and not relied upon to meet an emission limit. Therefore, these periods are not subject to CAM.

4 Justification

4.1 Selection of Performance Indicators

In the SCR, ammonia (NH_3) is injected into the exhaust gas of the combustion turbine, upstream of the catalyst bed. In the catalyst bed, NH_3 reacts with NO_X in the presence of oxygen (O_2) to form nitrogen (N_2) and water (H_2O). Any unreacted NH_3 is emitted from the stack as ammonia slip. The NO_X reduction efficiency is controlled by the ratio of NH_3 injected to the amount of NO_X in the gas stream (NH_3/ NO_X), the catalyst material and condition, and catalyst bed temperature.

The temperature at the outlet of the catalyst bed provides a good indication of catalytic reduction performance because it indicates that the gas stream and catalyst bed are at sufficient temperature to initiate ammonia injection and reduction of NO_X. If the temperature is too low, catalyst activity is reduced and ammonia slip increases.

The NH_3 volume injection rate should increase or decrease with changes in inlet NO_X mass levels due to varying process conditions. The ratio of ammonia to NO_X should be optimized; too much ammonia can result in excess "urea/ammonia slip," and too little ammonia can result in increased NO_X emissions. The ammonia injection rate is a good performance indicator because the ratio of ammonia to NO_X affects the NO_X reduction efficiency.

4.2 Rationale for Performance Indicator Ranges

The indicator range selected for the SCR catalyst bed outlet temperature is greater than or equal to 426°F, and for the ammonia injection rate, a difference between the ammonia flow and the ammonia injection set-point of less than 15%. When an excursion occurs, corrective action will be initiated, documented, and reported, as required.

These selected indicator ranges are based on the following:

- Engineering assessments and manufacturer's recommendations in accordance with 40 CFR 64.4(c)(1);
- Emissions, SCR catalyst bed outlet temperature, and the ammonia injection rate measured and recorded during performance testing in accordance with 40 CFR 64.4(c)(1); and
- The level of the measured emissions relative to the compliance limitation in accordance with 60 CFR 64.3(c).

The SCR catalyst bed outlet temperature and ammonia flow rate ranges were recommended by the manufacturer's operating instructions, tuned during equipment commissioning and verified through performance testing.

5 Recordkeeping and Reporting

TETLP maintains records of monitoring data, performance data, any corrective actions taken, written quality improvement plan (if required in the future), and all other supporting information required to be maintained for a period of at least 5 years.

Deviation reports in accordance with the issued Title V permit and 40 CFR §70.6(a)(3)(iii) are submitted to KYDEP at least every 6 months. The reports are certified by a responsible official and include the number, duration and cause of excursions or exceedances, as applicable, and the corrective actions taken. Deviation reports also include the number, duration and cause for any monitoring downtime incidents.



40 CFR Part 64 Compliance Assurance Monitoring Plan

For CO Emissions From the Frame 5 Turbine

Danville Compressor Station

Lincoln County, Kentucky

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5 Recordkeeping and Reporting 4

1 Regulatory Background

Texas Eastern Transmission, LP, (TETLP) owns and operates the Danville Compressor Station (Danville), a natural gas compressor station in Danville, Lincoln County, Kentucky. The Kentucky Department for Environmental Protection (KDEP) issued Title V permit V-16-056 on April 3, 2017 authorizing the installation and operation of an emission reduction project. The emission reduction project included the installation of an Oxidation Catalyst system (OxCat) to reduce CO emissions from one (1) GE Frame 5 turbine, Unit 21003, Emission Unit (EU) 04 [13].

On October 1997, the United States Environmental Protection Agency (EPA) issued and published the final Compliance Assurance Monitoring (CAM) rule codified in 40 CFR Part 64. The CAM rule applies to each pollutant specific emission unit (PSEU) that meets a three-part test. The PSEU must:

1. Be subject to an emission limitation or standard,
2. Use a control device to achieve compliance, and
3. Have pre-control emissions that exceed or are equivalent to the major source threshold.

The GE Frame 5 turbine at Danville is subject to a CO emissions limitation and uses a control device to achieve compliance with the emission limitation. The CO pre-control emissions of 190 tpy from the Frame 5 turbine exceed the major source threshold of 100 tpy.[1] The CO emission limitation was requested by TETLP to limit facility-wide emissions below the PSD major modification threshold (i.e., SER <100 tpy of CO), under the authority from 401 KAR 52:020, Section 26. The basis for this specific emission limitation was not the result of a proposal by the U.S. EPA after November 15, 1990, pursuant to section 111 or 112 of the Act, nor is it derived from Title VI, Title IV, or other emissions trading program of the Clean Air Act. TETLP is not utilizing a continuous emissions monitoring system (CEMS) for compliance demonstration.[2] As such, none of the exemptions delineated under 40 CFR 64.2(b) apply and the Frame 5 turbine is subject to CAM requirements for CO.

1.1 Equipment Description

One (1) GE Frame 5 Diffusion Flame, Regenerative Cycle Turbine

- Rating: 18,500 bhp National Electrical Manufacturers Association (NEMA)
- Heat Input: 190.36 mmBTU/hr
- Constructed: 1969 (EU04 [13])
- Fuel: Natural Gas
- Identification: Emission Unit 04 [13]

1.2 Emission Limits

CO emissions, from the Frame 5 turbine, shall not exceed 12.5 ppmvd at 15 percent O_2 during normal operation. In addition, the total facility-wide emissions of CO shall not exceed 250.8 tons per year on a twelve month rolling total basis.

[1] Lincoln County is designated as attainment or unclassifiable for all pollutants, including NO_2, CO, and ozone (with NO_X as a precursor) – see 40 CFR 81.318, and thus the Title V major source threshold is 100 tpy, per the definition of "major source" at 40 CFR 70.2.

[2] See definition of "continuous compliance demonstration" under 40 CFR 64.1.

2 Monitoring Plan Requirements

The requirements of the monitoring plan are established in 40 CFR §64.4 and Title V permit V-16-056, Section B, Emission Unit: 04, 4.c and 4.d. Table 1 summarizes the requirements of the monitoring plan with its corresponding location in the plan.

Table 1- Monitoring Plan Requirements Cross Reference

Citation	Requirement	Location in Plan
§64.4(a)(1)	Indicators to be monitored and show there is a significant relationship to emissions and proper operation of the NO_X emission controls	Table 2
§64.4(a)(2)	Ranges (or designated conditions) of the indicators	Table 2
§64.4(a)(3)	Process the permittee will use to make certain that the data that are representative of the emissions or parameters being monitored	Table 2
§64.4	Quality assurance and control practices	Table 2
§64.4	Frequency of monitoring and data collection procedures	Table 2
§64.4(b)	Justification for the proposed elements of the monitoring	Section 4

3 Monitoring Approach

The key elements of the monitoring approach are presented in Table 2. The monitoring approach for the Frame 5 turbine consists of monitoring the OxCat catalyst bed inlet temperature.

Table 2 - OxCat System Monitoring Approach

Indicator	Catalyst Bed Inlet Temperature
Monitored Parameter	Operate and maintain a temperature gauge (thermocouple) to continuously record the inlet temperature of the OxCat catalyst bed of the Frame 5 turbine.
Indicator Range	Except during periods of start-up and shutdown[3], an excursion is defined as a 4-hour rolling temperature of less than the vendor guarantee or the average temperature recorded during a compliance emission test, whichever is lower. Excursions trigger an inspection, corrective action, and a reporting requirement. A computer system records and alerts if the catalyst bed temperature is not within the indicated range above.
Data Representativeness	The thermocouple is located at the SCR catalyst bed outlet. The minimum accuracy is ±5ºF.
QA/QC Practices and Criteria	Thermocouple visually checked quarterly, and tested annually.
Monitoring Frequency	Temperature is measured continuously, at least once every clock hour.
Data Collection Procedures	A digital data recorder collects the temperature continuously.
Averaging period	4-hour rolling average.

[3] A start-up is defined as the period initiated when a flame signal (or equivalent signal) is detected and ends when all permissives for the emission control system are met. A shutdown is defined as the period initiated when the permissives for the emission control system cannot be maintained and ends when fuel flow to the turbine is terminated. During periods of start-up and shutdown, the controls are not required to be operational and not relied upon to meet an emission limit. Therefore, these periods are not subject to CAM.

4 Justification

4.1 Selection of Performance Indicators

An OxCat is able to increase the rate of a chemical oxidation reaction by adding a substance known as a catalyst which is not consumed in the reaction. In the presence of a catalyst, the chemical oxidation reaction occurs faster or at a lower reaction temperature because the catalyst provides an alternative reaction mechanism with lower activation energy.

Industrial oxidation catalyst systems use a honeycomb substrate which is coated with specially selected catalytic metal compounds. The substrate structure includes many small parallel channels creating a high catalytic contact surface area for the turbine exhaust gases. As the hot turbine exhaust flows through the OxCat substrate, the CO and oxygen in the turbine exhaust react over the OxCat substrate surfaces and are converted into carbon dioxide and water. The temperature at the outlet of the catalyst bed provides a good indication of catalytic reduction performance because it indicates that the gas stream and catalyst bed are at sufficient temperature for oxidation (i.e., reduction) of CO. If the temperature is too low, the OxCat activity is reduced.

4.2 Rationale for Performance Indicator Ranges

The indicator range selected for the OxCat catalyst bed inlet temperature is greater than or equal to the vendor guarantee. When an excursion occurs, corrective action will be initiated, documented, and reported, as required. The selected indicator range is based on the following:

- Engineering assessments and manufacturer's recommendations in accordance with 40 CFR 64.4(c)(1);
- Emissions and OxCat catalyst bed inlet temperature measured and recorded during performance testing in accordance with 40 CFR 64.4(c)(1); and
- The level of the measured emissions relative to the compliance limitation in accordance with 60 CFR 64.3(c).

The OxCat catalyst bed inlet temperature range was recommended by the manufacturer's operating instructions, tuned during equipment commissioning and verified through performance testing.

5 Recordkeeping and Reporting

TETLP maintains records of monitoring data, performance data, any corrective actions taken, written quality improvement plan (if required in the future), and all other supporting information required to be maintained for a period of at least 5 years.

Deviation reports in accordance with the issued Title V permit and 40 CFR §70.6(a)(3)(iii) are submitted to KYDEP at least every 6 months. The reports are certified by a responsible official and include the number, duration and cause of excursions or exceedances, as applicable, and the corrective actions taken. Deviation reports also include the number, duration and cause for any monitoring downtime incidents.

Freeman, Colby (EEC)

From: Jarod Gregory <jgregory@trinityconsultants.com>
Sent: Friday, March 20, 2026 5:32 PM
To: Freeman, Colby (EEC); Ross, Dakota D (EEC); Harley, Brian (EEC)
Cc: Keith Hamilton; Chuck Zukor
Subject: RE: AI 44065: Danville Compressor Station - 40 CFR 60 Subpart KKKKa Updates
Attachments: RFI 009_CO Catalyst Reference Curves - Danville Frame 5.pdf

Importance: High

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Good afternoon Colby and Division team,

We have addressed each of your questions with comments in blue text in the email below. **At this point we would like to remind the Division that the expected construction commencement date is July 1, 2026.** We are critically near this deadline and any further delays are going to delay the project because the project needs FERC approval after receiving a final permit. The project is a tremendous net benefit to the environment and will result in decreases in the order to 10-100+ tons of actual emissions of NOx, CO, etc. per year. The equipment in question will be retired as soon as mid-2028 if the project remains on track, and possibly sooner as Enbridge is evaluating a "fast-track" approach to bringing the new equipment online.

In order to stay as close as possible to this timeline, we would like to make two requests:

- If there are aspects of the pre-draft permit that are unrelated to CAM that we can begin reviewing ASAP please send those along; and
- Please request concurrent public and EPA review as FERC approval typically requires a final permit for approval (as opposed to other projects that may begin construction on a proposed permit).

Have a great weekend!

Jarod Gregory
Managing Consultant

P 859.341.8100 ext. 1805 | **M** 513.502.8219
Email jgregory@trinityconsultants.com

Trinity Consultants

From: Freeman, Colby (EEC) <colby.freeman@ky.gov>
Sent: Thursday, March 5, 2026 12:39 PM
To: Jarod Gregory <jgregory@trinityconsultants.com>; Chuck Zukor <Chuck.Zukor@enbridge.com>
Cc: Ross, Dakota D (EEC) <dakota.ross@ky.gov>; Harley, Brian (EEC) <Brian.Harley@ky.gov>; Keith Hamilton <keith.hamilton@enbridge.com>
Subject: Re: AI 44065: Danville Compressor Station - 40 CFR 60 Subpart KKKKa Updates

Jarod,

I have a few clarifying questions for the CAM plans:

For EU 03: The indicator range for the SCR catalyst bed outlet temperature is specified as greater than 426 °F or the average temperature recorded during a compliance emission test, whichever is lower. I assume this value comes from the low load testing performed on unit 12 on December 6, 2018 (CMN20180002). In my review of the testing history for both units, I have found the SCR catalyst bed outlet temperature is consistently much higher (~500 °F) under high load conditions. In addition, the margin of compliance under high load conditions has been lower than 5% on multiple occasions (for example, unit 12 performance test on January 21, 2022: 24.67 ppmvd @ 15% O_2 out of the 25 ppmvd limit). In light of these test results, we are concerned that a temperature indicator obtained during low load testing is not sufficient to assure compliance across the full range of turbine loads. We might be amenable to a scaled approach in concert with monitoring of the turbine horsepower if well justified.

You are correct that the original CAM plan was developed in conjunction with the referenced 2018 test. Upon commissioning of the SCR, the design was to ensure that 25 ppmvd @ 15% oxygen was achievable at all potential temperatures for the SCR including temperatures on the lower end of typical SCR operation. This was necessary because (a) the exhaust has a regenerator (i.e., a heat exchanger allowing the exhaust gas to pre-heat the fuel) resulting in lower exhaust temperature and (b) it was anticipated that temperatures at the SCR could be as low as approximately 425 °F.

It is important to understand that Enbridge does not have control over the temperature at the SCR. The aforementioned test at 426 °F was conducted in the early morning hours on a cold day in December and at lower operating load specifically and intentionally to demonstrate that the unit is capable of meeting the outlet ppm limit even at low temperatures. Yes it is true that subsequent tests were performed at higher loads and higher temperatures, but the SCR has consistently demonstrated compliance at each of these conditions. Temperature is only 1 factor – the system essentially works by calibrating ammonia injection based on NOx load and temperature to maximize reduction and maintain approximately 10 ppm ammonia slip (industry standard). In other words, the SCR may be able to meet the 25 ppm with less ammonia injection when temperature and NOx load conditions are favorable, but can also meet the 25 ppm limit with less favorable conditions with a corresponding adjustment of ammonia injection as demonstrated by the Dec 2018 test. Of course there is a minimum temperature at which the destruction of NOx will occur in the catalyst bed, but Enbridge demonstrated that this temperature is less than 426 °F. Regardless, Enbridge has explored the possibility of a tiered approach as suggested. We have learned that the answer to this question would be on the order of months not days, because it would require engineers both internally and externally to navigate the fact that there are instances of catalyst temperatures between 426 °F and ~ 500 °F that may be due to load *or* ambient conditions *or* a combination of the two that are simply not indicative of 'excess emissions.'

Therefore, at this time, we request to maintain 426 °F as a minimum temperature for assuring compliance with permit requirements.

For EU 04: There are inconsistent references to the performance indicator. In the header for Table 2, the indicator is listed as "Catalyst Bed Inlet Temperature." In the table next to Data Representativeness, it is stated that "the thermocouple is located at the SCR catalyst bed outlet." Section 4.1 of the plan states "The temperature at the outlet of the catalyst bed provides a good indication of catalytic reduction performance..." and under Section 4.2: "The OxCat catalyst bed inlet temperature range was recommended by..." Please indicate whether the selected performance indicator is the OxCat catalyst bed inlet or outlet temperature. Also, provide justification for why both the inlet and outlet temperatures are not monitored to measure temperature differential across the catalyst bed in accordance with the EPA's CAM Technical Guidance Document recommendations for catalytic oxidizers/incinerators.

Enbridge reviewed the original CAM plans and determined that the confusion is a result of template language that was not properly updated at the time of developing the original CAM plans. We agree that temperature should be and is monitored at both the inlet and outlet to the OxCat as required by various permit conditions that state "the permittee shall continuously monitor the inlet and outlet temperatures of the OxCat to ensure proper operation of the control device for [each EU 02 and EU 03 unit]."

For both units, please provide manufacturer recommendations for any indicator ranges.

Frame 3 SCR:	Compliance has been demonstrated at 426+ °F
Frame 5 OxCat:	481 °F (min) / 680 °F (max) at OxCat inlet
	465 °F (min) / 652 °F (max) at OxCat outlet

Thanks,

Colby Freeman

Environmental Engineer Technologist I

Chemical Section

Division for Air Quality

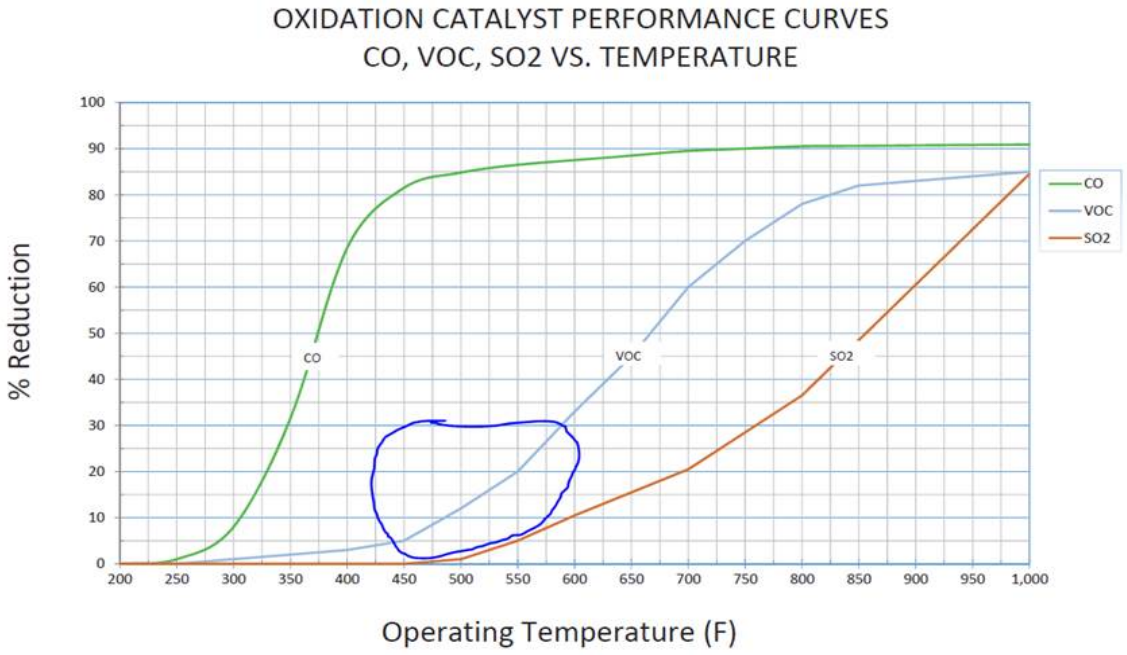
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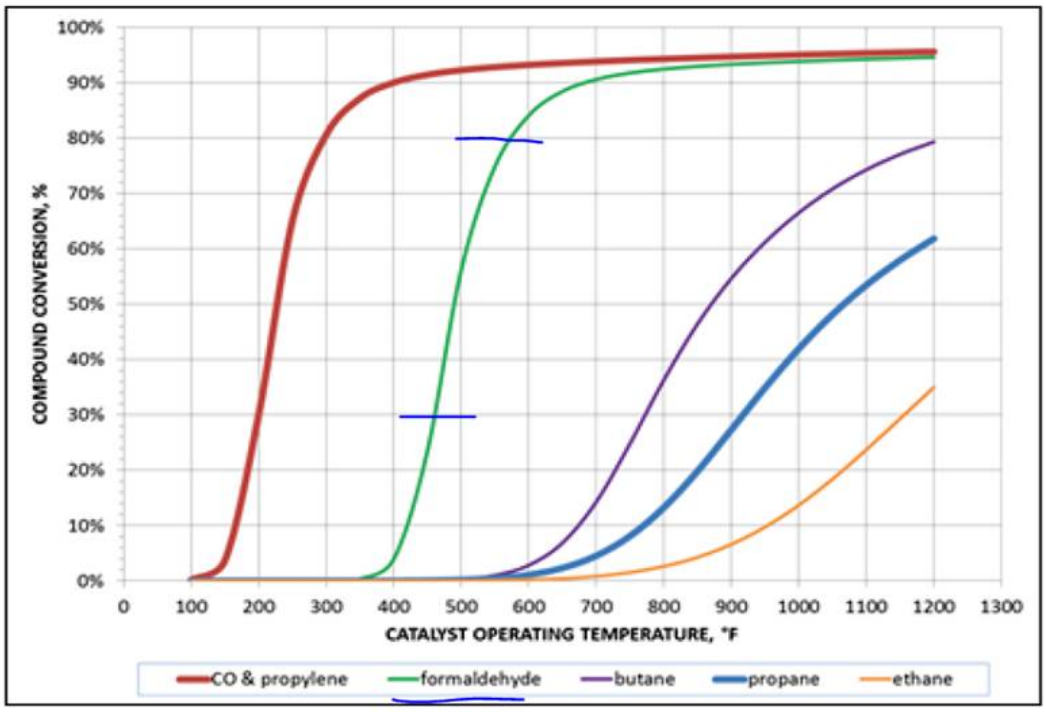
Frankfort, KY 40601

(502) 782 - 1467

From: Jarod Gregory <jgregory@trinityconsultants.com>
Sent: Friday, February 27, 2026 8:35 AM
To: Freeman, Colby (EEC) <colby.freeman@ky.gov>; Chuck Zukor <Chuck.Zukor@enbridge.com>
Cc: Ross, Dakota D (EEC) <dakota.ross@ky.gov>; Harley, Brian (EEC) <Brian.Harley@ky.gov>; Keith Hamilton <keith.hamilton@enbridge.com>
Subject: RE: AI 44065: Danville Compressor Station - 40 CFR 60 Subpart KKKKa Updates

Danville Frame 5 CO Catalyst





Outlook

RE: AI 44065 - Danville Compressor Station - Title V Renewal Courtesy Copy-Comments

From Chuck Zukor <Chuck.Zukor@enbridge.com>
Date Mon 4/20/2026 3:15 PM
To Freeman, Colby (EEC) <colby.freeman@ky.gov>; Jarod Gregory <jgregory@trinityconsultants.com>
Cc Bittner, Zachary P (EEC) <Zachary.Bittner@ky.gov>; Harley, Brian (EEC) <Brian.Harley@ky.gov>; Ross, Dakota D (EEC) <dakota.ross@ky.gov>; nathan.feldspausch@enbridge.com <nathan.feldspausch@enbridge.com>; Barry Goodrich <Barry.Goodrich@enbridge.com>; Keith Hamilton <keith.hamilton@enbridge.com>

1 attachment (692 KB)
V-26-017 Courtesy Copy_Comments_2026-0420.pdf;

****CAUTION** PDF attachments may contain links to malicious sites. Please contact the COT Service Desk ServiceCorrespondence@ky.gov for any assistance.**

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Hello to All – Per my email earlier today, attached are comments we have on the courtesy draft copy of the air permit.

The PDF file includes comment boxes and some text strikeout/text insert boxes – I believe they are all relatively minor/straight-forward.

If you have any questions, please let us know and we can discuss to clarify.

Sincerely,

Chuck Zukor
Sr. Engineer
Safety & Reliability/Air Projects

TEL: 713-627-5791 | CELL: 713-819-9501 |Chuck.Zukor@enbridge.com

ENBRIDGE
915 N. Eldridge Parkway, Suite 1100
Houston, TX 77079

From: Chuck Zukor
Sent: Monday, April 20, 2026 11:05 AM
To: Freeman, Colby (EEC) <colby.freeman@ky.gov>; Jarod Gregory <jgregory@trinityconsultants.com>; nathan.feldspausch@enbridge.com
Cc: Bittner, Zachary P (EEC) <Zachary.Bittner@ky.gov>; Harley, Brian (EEC) <Brian.Harley@ky.gov>; Ross, Dakota D

(EEC) <dakota.ross@ky.gov>
Subject: RE: AI 44065 - Danville Compressor Station - Title V Renewal Courtesy Copy

Morning Colby – I have a couple very minor comments that I would like to share with you later this afternoon.

Overall, the courtesy copy of the draft permit looked good! Appreciate this reminder and I will get you comments very shortly. – Thanks!

Sincerely,

Chuck Zukor
Sr. Engineer
Safety & Reliability/Air Projects

TEL: 713-627-5791 | CELL: 713-819-9501 |Chuck.Zukor@enbridge.com

ENBRIDGE
915 N. Eldridge Parkway, Suite 1100
Houston, TX 77079

From: Freeman, Colby (EEC) <colby.freeman@ky.gov>
Sent: Monday, April 20, 2026 9:03 AM
To: Jarod Gregory <jgregory@trinityconsultants.com>; nathan.feldspausch@enbridge.com
Cc: Chuck Zukor <Chuck.Zukor@enbridge.com>; Bittner, Zachary P (EEC) <Zachary.Bittner@ky.gov>; Harley, Brian (EEC) <Brian.Harley@ky.gov>; Ross, Dakota D (EEC) <dakota.ross@ky.gov>
Subject: [External] Re: AI 44065 - Danville Compressor Station - Title V Renewal Courtesy Copy

CAUTION! EXTERNAL SENDER
Were you expecting this email? TAKE A CLOSER LOOK. Is the sender legitimate? DO NOT click links or open attachments unless you are 100% sure that the email is safe.
This email was sent from colby.freeman@ky.gov.

Good morning,

Should the Division expect any comments on the courtesy copy? I know we had discussed extending the courtesy copy review period until last Friday the 17th during our meeting, but I have not received anything.

Thanks,

Colby Freeman

Environmental Engineer Technologist I

Chemical Section

Division for Air Quality

300 Sower Blvd

Frankfort, KY 40601

(502) 782 - 1467

From: Jarod Gregory <jgregory@trinityconsultants.com>
Sent: Tuesday, April 7, 2026 2:34 PM
To: Freeman, Colby (EEC) <colby.freeman@ky.gov>; nathan.feldspausch@enbridge.com <nathan.feldspausch@enbridge.com>
Cc: Chuck Zukor <chuck.zukor@enbridge.com>; Bittner, Zachary P (EEC) <Zachary.Bittner@ky.gov>; Harley, Brian (EEC) <Brian.Harley@ky.gov>; Ross, Dakota D (EEC) <dakota.ross@ky.gov>
Subject: RE: AI 44065 - Danville Compressor Station - Title V Renewal Courtesy Copy

Thanks Colby – we appreciate the promptness of providing this for review.

Regards,

Jarod Gregory
Managing Consultant

P 859.341.8100 ext. 1805 | **M** 513.502.8219
Email jgregory@trinityconsultants.com



From: Freeman, Colby (EEC) <colby.freeman@ky.gov>
Sent: Tuesday, April 7, 2026 2:21 PM
To: nathan.feldspausch@enbridge.com
Cc: Chuck Zukor <chuck.zukor@enbridge.com>; Jarod Gregory <jgregory@trinityconsultants.com>; Bittner, Zachary P (EEC) <Zachary.Bittner@ky.gov>; Harley, Brian (EEC) <Brian.Harley@ky.gov>; Ross, Dakota D (EEC) <dakota.ross@ky.gov>
Subject: AI 44065 - Danville Compressor Station - Title V Renewal Courtesy Copy

Please find attached a courtesy copy of the renewal Title V Construction/Operating Permit for Texas Eastern Transmission LP - Danville Compressor Station. Please submit any written comments or questions no later than April 14, 2026, so that the Division may continue processing the permitting action. Any submitted questions and comments will be part of the public permitting record and considered disclosable under the Kentucky Open Records Act. Be advised that the permit may differ from the attached even if there are no questions or comments as the permit package will undergo additional internal reviews and approvals.

Colby Freeman
Environmental Engineer Technologist I
Chemical Section
Division for Air Quality
300 Sower Blvd
Frankfort, KY 40601
(502) 782 - 1467

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	Permit type	**Activity#**	**Complete Date**	**Issuance Date**	**Summary of Action**
V-26-017	Renewal	APE20210001	10/16/2024	TBD	Operating permit renewal [and CAM related requirements]
	Significant Revision	APE20250001	11/14/2025		TEM IV Project adding EU 08 through 13.
	Significant Revision	APE20190001	1/14/2020		BL1 moved to Section B as EU 14. Updated emission factors for EU 02.

SECTION A - PERMIT AUTHORIZATION

Pursuant to a duly submitted application the Kentucky Energy and Environment Cabinet (Cabinet) hereby authorizes the operation of the equipment described herein in accordance with the terms and conditions of this permit. This permit was issued under the provisions of Kentucky Revised Statutes (KRS) Chapter 224 and regulations promulgated pursuant thereto.

The permittee shall not construct, reconstruct, or modify any affected facilities without first submitting a complete application and receiving a permit for the planned activity from the permitting authority, except as provided in this permit or in 401 KAR 52:020, Title V Permits.

Issuance of this permit does not relieve the permittee from the responsibility of obtaining any other permits, licenses, or approvals required by the Cabinet or any other federal, state, or local agency.

SECTION B - EMISSION POINTS, EMISSION UNITS, APPLICABLE REGULATIONS, AND OPERATING CONDITIONS

Emission Unit: 01 (01-07) Seven Compressor Engines

Process 001 Reciprocating Internal Combustion Engine (Plant ID 20901)
Process 002 Reciprocating Internal Combustion Engine (Plant ID 20902)
Process 003 Reciprocating Internal Combustion Engine (Plant ID 20903)
Process 004 Reciprocating Internal Combustion Engine (Plant ID 20904)
Process 005 Reciprocating Internal Combustion Engine (Plant ID 20905)
Process 006 Reciprocating Internal Combustion Engine (Plant ID 20906)
Process 007 Reciprocating Internal Combustion Engine (Plant ID 20907)

Description: 1,760 hp Clark HBA-8

Engine Type:	2 stroke lean burn
Fuel:	Natural gas
Maximum rating:	16.60 MMBTU/hr, each
Date Constructed:	1952

Emission Unit: 02 (08-10) Three Compressor Engines

Process 001 Reciprocating Internal Combustion Engine (Plant ID 20908)
Process 002 Reciprocating Internal Combustion Engine (Plant ID 20909)
Process 003 Reciprocating Internal Combustion Engine (Plant ID 20910)

Description: 2,050 hp Clark HBA-8T

Engine Type:	2 stroke lean burn
Fuel:	Natural gas
Maximum rating:	18.68 MMBTU/hr, each
Date Constructed:	1957
Controls:	Oxidation Catalyst (installed 2017)

APPLICABLE REGULATIONS:

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*

Note: The above-listed applicable regulations and related requirements shall apply upon reclassification of the facility as an area source of HAP emissions. See **Section H – Alternate Operating Scenario 1** for HAP major source requirements which apply prior to reclassification of the facility.

1. **Operating Limitations:**
   a. The permittee shall conduct routine maintenance checks to ensure optimum engine operations, for all engines under Emission Unit 01 and Emission Unit 02. [401 KAR 52:020, Section 10]

      Compliance Demonstration Method:
      See **5. Specific Recordkeeping Requirements b.** and **d.**

SECTION B - EMISSION POINTS, EMISSION UNITS, APPLICABLE REGULATIONS, AND OPERATING CONDITIONS (CONTINUED)

b. To preclude applicability of 401 KAR 51:017, the permittee shall limit the total combined natural gas fuel usage of Emission Unit 01 (seven Clark HBA-8 compressor engines) to a maximum of 249,488,235 scf per year, based on a 12-month rolling total. [401 KAR 52:020, Section 10]

Compliance Demonstration Method:
See **4. Specific Monitoring Requirements b.** and **5. Specific Recordkeeping Requirements a.**

c. To preclude applicability of 401 KAR 51:017, the permittee shall, at all times, operate the OxCat at each of the three (3) Clark HBA-8T engines under Emission Unit 02 when the associated engine is operating. [401 KAR 52:020, Section 10]

d. The permittee must be in compliance with the operating limitations and other requirements in 40 CFR 63, Subpart ZZZZ that apply at all times. [40 CFR 63.6605(a)]

e. At all times, the permittee must operate and maintain any affected source, including associated air pollution control equipment and monitoring equipment, in a manner consistent with safety and good air pollution control practices for minimizing emissions. The general duty to minimize emissions does not require the permittee to make any further efforts to reduce emissions if levels required by this standard have been achieved. Determination of whether such operation and maintenance procedures are being used will be based on information available to the Administrator which may include, but is not limited to, monitoring results, review of operation and maintenance procedures, review of operation and maintenance records, and inspection of the source. [40 CFR 63.6605(b)]

f. The permittee shall operate and maintain the stationary RICE and after-treatment control device (if any) according to the manufacturer's emission-related written instructions or develop their own maintenance plan which must provide to the extent practicable for the maintenance and operation of the engine in a manner consistent with good air pollution control practice for minimizing emissions. [40 CFR 63.6625(e) and (e)(5)]

g. The permittee must minimize the engine's time spent at idle during startup and minimize the engine's startup time to a period needed for appropriate and safe loading of the engine, not to exceed 30 minutes. [40 CFR 63.6625(h)]

h. The permittee must comply with the following requirements, except during periods of startup: [Table 2d to 40 CFR 63, Subpart ZZZZ]
   (1) Change oil and filter every 4,320 hours of operation or within 1 year + 30 days of the previous change, whichever comes first; [Item 6.a. of Table 2d to 40 CFR 63, Subpart ZZZZ]
      (i) The permittee has the option of utilizing an oil analysis program in order to extend the oil and filter change requirement specified above. The oil analysis must be performed at the same frequency for changing the oil and filter specified above. The analysis program must at a minimum analyze the following three parameters: Total Acid Number, viscosity, and percent water content. The condemning limits

SECTION B - EMISSION POINTS, EMISSION UNITS, APPLICABLE REGULATIONS, AND OPERATING CONDITIONS (CONTINUED)

for these parameters are as follows: Total Acid Number increases by more than 3.0 milligrams of potassium hydroxide (KOH) per gram from Total Acid Number of the oil when new; viscosity of the oil has changed by more than 20 percent from the viscosity of the oil when new; or percent water content (by volume) is greater than 0.5. If all of these condemning limits are not exceeded, the permittee is not required to change the oil and filter. If any of the limits are exceeded, the permittee must change the oil and filter within 2 business days of receiving the results of the analysis; if the engine is not in operation when the results of the analysis are received, the permittee must change the oil and filter within 2 business days or before commencing operation, whichever is later. permittee must keep records in accordance with **5. Specific Recordkeeping Requirements e.** The analysis program must be part of the maintenance plan for the engine. [40 CFR 63.6625(j)]

(2) Inspect spark plugs every 4,320 hours of operation or within 1 year + 30 days of the previous inspection, whichever comes first, and replace as necessary; and [Item 6.b. of Table 2d to 40 CFR 63, Subpart ZZZZ]

(3) Inspect all hoses and belts every 4,320 hours of operation or within 1 year + 30 days of the previous inspection, whichever comes first, and replace as necessary. [Item 6.c. of Table 2d to 40 CFR 63, Subpart ZZZZ]

Compliance Demonstration Method:
The permittee shall demonstrate continuous compliance according to one of the following methods:

(a) Operating and maintaining the stationary RICE according to the manufacturer's emission-related operation and maintenance instructions; or [Item 9.a.i. of Table 6 to 40 CFR 63, Subpart ZZZZ]

(b) Develop and follow their own maintenance plan which must provide to the extent practicable for the maintenance and operation of the engine in a manner consistent with good air pollution control practice for minimizing emissions. [Item 9.a.ii. of Table 6 to 40 CFR 63, Subpart ZZZZ]

2. <u>Emission Limitations</u>:

a. To preclude applicability of 401 KAR 51:017, CO emissions from each Clark HBA-8T engine under Emission Unit 02 shall not exceed 280 lb/mmscf. [401 KAR 52:020, Section 10]

Compliance Demonstration Method:
See **3. Testing Requirements a.** and **c.**

b. To preclude applicability of 401 KAR 51:017, total VOC (including volatile HAPs) emissions from each Clark HBA-8T engine under Emission Unit 02 shall not exceed 189 lb/mmscf. [401 KAR 52:020, Section 10]

Compliance Demonstration Method:
Compliance with the VOC emission limitation for EU 02 was demonstrated for each Clark HBA-8T engine through the required initial performance testing in April 2018.

SECTION B - EMISSION POINTS, EMISSION UNITS, APPLICABLE REGULATIONS, AND OPERATING CONDITIONS (CONTINUED)

3. Testing Requirements:

a. The permittee shall perform annual testing on each of the three Clark HBA-8T engines under Emission Unit 02, using reference methods specified in 401 KAR 50:015, to determine the outlet concentration of CO (in ppmvd, lbs/mmscf, lbs/hr). If the CO emission resulting from the performance test is less than or equal to 75 percent of the CO emission limit of 280 lb/mmscf, the permittee may reduce the frequency of subsequent performance tests to once every 2 years (no more than 26 calendar months following the previous performance test). If the results of any subsequent performance test exceed 75 percent of the CO emission limit for the turbine, the permittee shall resume annual performance tests. [401 KAR 50:045, Section 1]

b. The permittee shall keep records of the natural gas fuel usage per engine used during each performance test. [401 KAR 52:020, Section 10]

c. Performance testing using Reference methods specified in 401 KAR 50:015 shall be conducted as required by the Division. [401 KAR 50:045, Section 1]

4. Specific Monitoring Requirements:

a. The permittee shall monitor on a continuous basis the inlet and outlet temperature of the OxCat to ensure proper operation of the control device on each of the three Clark HBA-8T engines under Emission Unit 02. [401 KAR 52:020, Section 10]

b. The permittee shall monitor the combined natural gas fuel usage for the seven compressor engines under Emission Unit 01 on a monthly basis. [401 KAR 52:020, Section 10]

c. The permittee shall monitor the amount of natural gas fuel usage and hours of operation for each of the Clark HBA-8T engines under Emission Unit 02 on an annual basis. [401 KAR 52:020, Section 10]

d. See **Section F, Monitoring, Recordkeeping, and Reporting Requirements.**

5. Specific Recordkeeping Requirements:

a. The permittee shall keep monthly records of the combined natural gas fuel usage for the seven compressor engines under Emission Unit 01 on a 12-month rolling basis. [401 KAR 52:020, Section 10]

b. The permittee shall keep records of maintenance and operation of the OxCat controls on each of the Clark HBA-8T engines under Emission Unit 02. [401 KAR 52:020, Section 10]

c. The permittee shall keep records of the amount of natural gas fuel usage and hours of operation for each of the Clark HBA-8T engines under Emission Unit 02 on an annual basis. [401 KAR 52:020, Section 10]

d. The permittee shall keep records of all routine maintenance performed on each engine under Emission Units 01 and 02. [401 KAR 52:020, Section 10]

SECTION B - EMISSION POINTS, EMISSION UNITS, APPLICABLE REGULATIONS, AND OPERATING CONDITIONS (CONTINUED)

e. If the permittee elects to utilize an oil analysis program in order to extend the oil and filter change requirement specified in **1. Operating Limitations h.(1)**, the permittee must keep records of the parameters that are analyzed as part of the program, the results of the analysis, and the oil and filter changes for the engine. The analysis program must be part of the maintenance plan for the engine. [40 CFR 63.6625(j)]

f. The permittee must keep records of the maintenance conducted on each stationary RICE in order to demonstrate that the permittee operated and maintained the stationary RICE and after-treatment control device (if any) according to the permittee's own maintenance plan. [40 CFR 63.6655(e)]

g. The permittee shall maintain records in accordance with the following requirements: [40 CFR 63.6660]
   (1) The permittee's records must be in a form suitable and readily available for expeditious review according to 40 CFR 63.10(b)(1). [40 CFR 63.6660(a)]
   (2) As specified in 40 CFR 63.10(b)(1), the permittee must keep each record for 5 years following the date of each occurrence, measurement, maintenance, corrective action, report, or record. [40 CFR 63.6660(b)]
   (3) The permittee must keep each record readily accessible in hard copy or electronic form for at least 5 years after the date of each occurrence, measurement, maintenance, corrective action, report, or record, according to 40 CFR 63.10(b)(1). [40 CFR 63.6660(c)]

6. <u>Specific Reporting Requirements</u>:
The permittee must report all deviations, as defined in 40 CFR 63, Subpart ZZZZ, in the semiannual monitoring report. See **Section F, Monitoring, Recordkeeping, and Reporting Requirements.** [40 CFR 63.6650(f)]

7. <u>Specific Control Equipment Operating Conditions</u>:
The permittee shall install and operate the OxCat control device on each of the Clark HBA-8T engines under Emission Unit 02 according to the manufacturer's recommendations. Records shall be kept of the maintenance activities performed on the OxCat control device on each of the Clark HBA-8T engines under Emission Unit 02. [401 KAR 52:020, Section 10]

SECTION B - EMISSION POINTS, EMISSION UNITS, APPLICABLE REGULATIONS, AND OPERATING CONDITIONS (CONTINUED)

Emission Unit: **03 (11-12) Two Gas Turbines**
Process 001 GE Frame 3 Gas Combustion Turbine (Plant ID 21001)
Process 002 GE Frame 3 Gas Combustion Turbine (Plant ID 21002)

Description: 8,000 hp turbines

Fuel:	Natural gas
Maximum rating:	83.51 MMBTU/hr, each
Construction commenced:	1961
Controls:	Oxidation Catalyst and Selective Catalytic Reduction (SCR) (installed 2017)

Emission Unit: **04 (13) Gas Turbine**

Description: GE Frame 5 Gas Combustion 18,500 hp Turbine (Plant ID 21003)

Fuel:	Natural gas
Maximum rating:	183.82 MMBTU/hr
Construction commenced:	1969
Controls:	Oxidation Catalyst (installed 2017)

Notes: See **Section H, Alternate Operating ~~Scenarios~~ for** pre-project requirements.
Normal operation does not include startup, shutdown, or low-temperature operation.

APPLICABLE REGULATIONS:
40 CFR Part 64, *Compliance Assurance Monitoring. (CAM)* for EU 03 for NO_X, and for EU 04 for CO

STATE-ORIGIN REQUIREMENTS:
401 KAR 63:020, *Potentially hazardous matter or toxic substances*

1. **Operating Limitations:**
   The permittee shall conduct routine operation and maintenance procedures in accordance with the manufacturer's specifications for each turbine to ensure optimum operations. [401 KAR 52:020, Section 10]

   Compliance Demonstration Method:
   See **Section E - Source Control Equipment Requirements** and **7. Specific Control Equipment Operating Conditions**.

2. **Emission Limitations:**
   a. To preclude applicability of 401 KAR 51:017, NO_x emissions from each of the Frame 3 turbines under Emission Unit 03 shall not exceed 25 ppmvd at 15% O_2 during normal operation. [401 KAR 52:020, Section 10]

      Compliance Demonstration Method:
      The permittee shall demonstrate continuous compliance by complying with **3. Testing Requirements a.**, and **4. Specific Monitoring Requirements a.** and **c.** through **e.**

SECTION B - EMISSION POINTS, EMISSION UNITS, APPLICABLE REGULATIONS, AND OPERATING CONDITIONS (CONTINUED)

b. To preclude applicability of 401 KAR 51:017, CO emissions from each of the Frame 3 turbines under Emission Unit 03 shall not exceed 12.5 ppmvd at 15% O_2 during normal operation. [401 KAR 52:020, Section 10]

Compliance Demonstration Method:
See **3. Testing Requirements b.** and **4. Specific Monitoring Requirements b.**

c. To preclude applicability of 401 KAR 51:017, CO emissions from the Frame 5 turbine under Emission Unit 04 shall not exceed 12.5 ppmvd at 15% O_2 during normal operation. [401 KAR 52:020, Section 10]

Compliance Demonstration Method:
See **3. Testing Requirements b.** and **4. Specific Monitoring Requirements c.** through **g.**

d. To preclude applicability of 401 KAR 51:017, VOC emissions from the Frame 3 turbines under Emission Unit 03 shall not exceed 13.28 lb/mmscf during normal operation. [401 KAR 52:020, Section 10]

e. To preclude applicability of 401 KAR 51:017, VOC emissions from the Frame 5 turbines under Emission Unit 04 shall not exceed 10.36 lb/mmscf during normal operation. [401 KAR 52:020, Section 10]

Compliance Demonstration Method:
Compliance with the VOC emission limitations was demonstrated for each turbine through the required initial performance testing in March 2018.

f. The permittee shall provide the utmost care and consideration, in the handling of these materials, to the potentially harmful effects of the emissions resulting from such activities. The permittee shall not allow any affected facility to emit potentially hazardous matter or toxic substances in such quantities or duration as to be harmful to the health and welfare of humans, animals and plants. Evaluation of such facilities as to adequacy of controls and/or procedures and emission potential will be made on an individual basis by the Cabinet. [401 KAR 63:020, Section 3]

Compliance Demonstration Method:
Based upon the emission rates of toxic and hazardous air pollutants determined by the Cabinet using information provided in the application and supplemental information submitted by the source, the Cabinet determines the affected facility to be in compliance with 401 KAR 63:020.

3. <u>Testing Requirements</u>:

a. The permittee shall demonstrate continuous compliance with **2. Emission Limitation a.** through testing. The permittee shall conduct annual performance tests, using either EPA Method 7E or EPA Method 20 in Appendix A to 40 CFR Part 60. If the NO_x emission result from the performance test is less than or equal to 75 percent of the NO_x emission limit for the turbine, the permittee may reduce the frequency of subsequent performance

SECTION B - EMISSION POINTS, EMISSION UNITS, APPLICABLE REGULATIONS, AND OPERATING CONDITIONS (CONTINUED)

tests to once every 2 years (no more than 26 calendar months following the previous performance test). If the results of any subsequent performance test exceed 75 percent of the NO_x emission limit for the turbine, the permittee shall resume annual performance tests. [401 KAR 52:020, Section 10]

b. The permittee shall perform annual testing for CO emissions (ppmvd, lbs/mmscf, lbs/hr) on the Frame 3 turbines under Emission Unit 03 and the Frame 5 turbine under Emission Unit 04, using reference methods specified in 401 KAR 50:015. If the CO emission resulting from the performance test is less than or equal to 75 percent of the CO emission limit for the turbine, the permittee may reduce the frequency of subsequent performance tests to once every 2 years (no more than 26 calendar months following the previous performance test). If the results of any subsequent performance test exceed 75 percent of the CO emission limit for the turbine, the permittee shall resume annual performance tests. [401 KAR 52:020, Section 10]

c. The permittee shall keep records of the natural gas fuel usage at each turbine used during each performance test.

d. Performance testing using the reference methods specified in 401 KAR 50:015 shall be conducted if required by the Cabinet. [401 KAR 50:045, Section 1]

4. <u>Specific Monitoring Requirements</u>:

a. [CAM Requirements]

b. The permittee shall continuously monitor the inlet and outlet temperatures of the OxCat to ensure proper operation of the control device for each of the Frame 3 turbines under Emission Unit 03. [401 KAR 52:020, Section 10]

c. [CAM Requirements]

d. [CAM Requirements]

e. [CAM Requirements]

f. [CAM Requirements]

g. [CAM Requirements]

h. The permittee shall monitor the amount of natural gas burned (MMscf) at each turbine on a monthly basis [401 KAR 52:020, Section 10]

5. <u>Specific Recordkeeping Requirements</u>:

a. The permittee shall maintain records of the amount of natural gas burned (MMscf) at each turbine on a monthly basis. [401 KAR 52:020, Section 10]

SECTION B - EMISSION POINTS, EMISSION UNITS, APPLICABLE REGULATIONS, AND OPERATING CONDITIONS (CONTINUED)

b. The permittee shall keep record of the hours of operation of each turbine under Emission Units 03 and 04 in startup mode, shutdown mode, low temperature modes, and steady state (normal) operation. [401 KAR 52:020, Section 10]

c. [CAM Requirements]

d. [CAM Requirements]

6. Specific Reporting Requirements:

a. For each affected unit required to continuously monitor parameters or emissions, the permittee shall submit reports of excess emissions and monitor downtime, in accordance with 40 CFR 60.7(c). Excess emissions shall be reported for all periods of unit operation, including start-up, shutdown, and malfunction. [401 KAR 52:020, Section 10]

b. [CAM Requirements]

c. [CAM Requirements]

d. [CAM Requirements]

e. See **Section F, Monitoring, Recordkeeping, and Reporting Requirements**.

7. Specific Control Equipment Operating Conditions:

The permittee shall install and operate the OxCat and Selective Catalytic Reduction control devices according to the manufacturers' recommendations. Records shall be kept of the maintenance activities performed on the OxCat and Selective Catalytic Reduction control devices. [401 KAR 52:020, Section 10]

SECTION B - EMISSION POINTS, EMISSION UNITS, APPLICABLE REGULATIONS, AND OPERATING CONDITIONS (CONTINUED)

Emission Unit: 05 (005) Auxiliary Emergency Generator

Description:	Caterpillar G3516 Reciprocating Internal Combustion Engine	
	Capacity:	1,462 hp
	Engine type:	4 cycle lean burn
	Maximum rating:	12.64 MMBtu/hr
	Engine manufactured:	June 29, 2010
	Construction commenced:	October 15, 2010

Emission Unit: 06 (006) Auxiliary Emergency Generator

Description:	Caterpillar G3512 Reciprocating Internal Combustion Engine	
	Capacity:	1,102 hp
	Engine type:	4 cycle lean burn
	Maximum rating:	8.82 MMBtu/hr
	Engine manufactured:	2016
	Construction commenced:	June 2017

Emission Unit: 11 (011) Auxiliary Emergency Generator

Description:	Waukesha VGF48SE Reciprocating Internal Combustion Engine	
	Capacity:	1,475 hp
	Engine type:	4 cycle rich burn
	Maximum rating:	12.84 MMBtu/hr
	Engine manufactured:	Proposed 2026
	Construction commenced:	Proposed July 2026

APPLICABLE REGULATIONS:

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*.

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*.

Note: The above-listed applicable regulations and related requirements shall apply upon reclassification of the facility as an area source of HAP emissions. See **Section H – Alternate Operating Scenario 1** for HAP major source requirements which apply prior to reclassification of the facility.

1. **Operating Limitations:**
   a. The stationary RICE shall meet the requirements of 40 CFR 63, Subpart ZZZZ by meeting the requirements of 40 CFR 60, Subpart JJJJ, for spark ignition engines. No further requirements apply under 40 CFR 63, Subpart ZZZZ. [40 CFR 63.6590(c) and (c)(1)]

SECTION B - EMISSION POINTS, EMISSION UNITS, APPLICABLE REGULATIONS, AND OPERATING CONDITIONS (CONTINUED)

b. The permittee shall operate each emergency stationary ICE according to the requirements of 40 CFR 60.4243(d)(1) through (3). In order for an engine to be considered an emergency stationary ICE under 40 CFR 60, Subpart JJJJ, any operation other than emergency operation, maintenance and testing, emergency demand response, and operation in non-emergency situation for 50 hours per year, as described below, is prohibited. If the permittee does not operate each engine according to the requirements below, the engine will not be considered an emergency engine under 40 CFR 60, Subpart JJJJ and shall meet all requirements for non-emergency engines. [40 CFR 60.4243(d)]

(1) There is no time limit on the use of emergency stationary ICE in emergency situations [40 CFR 60.4243(d)(1)]

(2) The permittee may operate each emergency stationary ICE for the purpose specified in 40 CFR 60.4243(d)(2)(i) for a maximum of 100 hours per calendar year. Any operation for non-emergency situations as allowed by 40 CFR 60.4243(d)(3) counts as part of the 100 hours per calendar year allowed by 40 CFR 60.4243(d) [40 CFR 60.4243(d)(2)]

(i) Emergency stationary ICE may be operated for maintenance checks and readiness testing, provided that the tests are recommended by federal, state or local government, the manufacturer, the vendor, the regional transmission organization or equivalent balancing authority and transmission operator, or the insurance company associated with the engine. The permittee may petition the Administrator for approval of additional hours to be used for maintenance checks and readiness testing, but a petition is not required if the permittee maintains records indicating that federal, state, or local standards require maintenance and testing of emergency ICE beyond 100 hours per calendar year [40 CFR 60.4243(d)(2)(i)]

(3) Emergency stationary ICE may be operated for up to 50 hours per calendar year in non-emergency situations. The 50 hours of operation in non-emergency situations are counted as part of the 100 hours per calendar year for maintenance and testing provided in 40 CFR 60.4243(d)(2). Except as provided in 40 CFR 60.4243 (d)(3)(i), the 50 hours per year for non-emergency situations cannot be used for peak shaving or non-emergency demand response, or to generate income for a facility to an electric grid or otherwise supply power as part of a financial arrangement with another entity [40 CFR 60.4243(d)(3)].

(i) The 50 hours per year for non-emergency situations can be used to supply power as part of a financial arrangement with another entity if all of the following conditions are met: [40 CFR 60.4243(d)(3)(i)]

(A) The engine is dispatched by the local balancing authority or local transmission and distribution system operator; [40 CFR 60.4243(d)(3)(i)(A)]

(B) The dispatch is intended to mitigate local transmission and/or distribution limitations so as to avert potential voltage collapse or line overloads that could lead to the interruption of power supply in a local area or region [40 CFR 60.4243(d)(3)(i)(B)].

(C) The dispatch follows reliability, emergency operation or similar protocols that follow specific NERC, regional, state, public utility commission or local standards or guidelines [40 CFR 60.4243(d)(3)(i)(C)].

(D) The power is provided only to the facility itself or to support the local transmission and distribution system [40 CFR 60.4243(d)(3)(i)(D)].

SECTION B - EMISSION POINTS, EMISSION UNITS, APPLICABLE REGULATIONS, AND OPERATING CONDITIONS (CONTINUED)

(E) The permittee identifies and records the entity that dispatches the engine and the specific NERC, regional, state, public utility commission or local standards or guidelines that are being followed for dispatching the engine. The local balancing authority or local transmission and distribution system operator may keep these records on behalf of the permittee [40 CFR 60.4243(d)(3)(i)(E)].

c. The permittee may operate each engine using propane for a maximum of 100 hours per year as an alternative fuel solely during emergency operations but shall keep records of such use. If propane is used for more than 100 hours per year in an engine that is not certified to the emission standards when using propane, the permittee is required to conduct a performance test to demonstrate compliance with the emission standards of 40 CFR 60.4233 [40 CFR 60.4243(e)].

Compliance Demonstration Method:
See **5. Specific Recordkeeping Requirements c.**

d. The permittee shall operate and maintain the stationary spark ignition internal combustion engines to achieve the emission standards required by 40 CFR 60.4233 over the entire life of the engines [40 CFR 60.4234].

Compliance Demonstration Method:
See **2. Emission Limitations a. – Compliance Demonstration Method**

2. <u>Emission Limitations</u>:

a. For each stationary SI internal combustion engine, the permittee shall comply with the emission standards for emergency generators listed in Table 1 to 40 CFR 60, Subpart JJJJ as follows: [40 CFR 60.4233(e)]
(1) NO_x – 2.0 g/hp-hr (160 ppmvd at 15 percent O_2);
(2) CO – 4.0 g/hp-hr (540 ppmvd at 15 percent O_2); and
(3) VOC – 1.0 g/hp-hr (86 ppmvd at 15 percent O_2).

Compliance Demonstration Method:
The permittee shall demonstrate compliance according to one of the following methods:
(a) Purchase an engine certified according to procedures specified in 40 CFR 60, Subpart JJJJ, for the same model year and demonstrating compliance according to one of the methods specified in 40 CFR 60.4243(a); or [40 CFR 60.4243(b)(1)]

(b) Purchase a non-certified engine and demonstrate compliance with the emission standards specified in 40 CFR 60.4233(e) and according to the requirements specified in 40 CFR 60.4244, as applicable. The permittee shall keep a maintenance plan and records of conducted maintenance, and shall, to the extent practicable, maintain and operate the engine in a manner consistent with good air pollution control practice for minimizing emissions. Additionally, the permittee shall conduct an initial performance test and subsequent performance testing every 8,760 hours or three (3) years, whichever comes first, thereafter to demonstrate compliance [40 CFR 60.4243(b)(2) and 40 CFR 60.4243(b)(2)(i) through (ii)].

SECTION B - EMISSION POINTS, EMISSION UNITS, APPLICABLE REGULATIONS, AND OPERATING CONDITIONS (CONTINUED)

b. See **Section D – Source Emission Limitations and Testing Requirements** for group emission limitations on NO_x and $PM_{2.5}$, which apply to EU 11.

3. Testing Requirements:

The permittee shall conduct all necessary performance tests following the procedures in 40 CFR 60.4244(a) through (f), as follows: [40 CFR 60.4244]

a. Each performance test must be conducted within ten (10) percent of 100 percent peak (or the highest achievable) load and according to the requirements in 40 CFR 60.8 and under the specific conditions that are specified by Table 2 to 40 CFR 60, Subpart JJJJ [40 CFR 60.4244(a)].

b. The permittee shall not conduct performance tests during periods of startup, shutdown, or malfunction, as specified in 40 CFR 60.8(c). If the engine is non-operational, the permittee does not need to startup the engine solely to conduct a performance test; however, the permittee shall conduct the performance test immediately upon startup of the engine [40 CFR 60.4244(b)]

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c. The permittee shall conduct three (3) separate test runs for each performance test, as specified in 40 CFR 60.8(f). Each test run shall be conducted within 10 percent of 100 percent peak (or the highest achievable) load and last at least 1 hour [40 CFR 60.4244(c)].

d. To determine compliance with the NO_X mass per unit output emission limitation, convert the concentration of NO_X in the engine exhaust using Equation 1 in 40 CFR 60.4244(d) [40 CFR 60.4244(d)].

e. To determine compliance with the CO mass per unit output emission limitation, convert the concentration of CO in the engine exhaust using Equation 2 in 40 CFR 60.4244(e). [40 CFR 60.4244(e)].

f. When calculating emissions of VOC, emissions of formaldehyde should not be included. To determine compliance with the VOC mass per unit output emission limitation, convert the concentration of VOC in the engine exhaust using Equation 3 in 40 CFR 60.4244(f) [40 CFR 60.4244(f)].

g. If the permittee chooses to measure VOC emissions using either Method 18 of 40 CFR Part 60, Appendix A, or Method 320 of 40 CFR Part 63, Appendix A, then they have the option of correcting the measured VOC emissions to account for the potential differences in measured values between these methods and Method 25A. The results from Method 18 and Method 320 can be corrected for response factor differences using Equations 4 and 5 as provided in 40 CFR 60.4244(g). The corrected VOC concentration can then be placed on a propane basis using Equation 6 as provided in 40 CFR 60.4244(g) [40 CFR 60.4244(g)].

SECTION B - EMISSION POINTS, EMISSION UNITS, APPLICABLE REGULATIONS, AND OPERATING CONDITIONS (CONTINUED)

4. Specific Monitoring Requirements:

a. If an emergency stationary SI internal combustion engine does not meet the standards applicable to non-emergency engines, the permittee shall install a non-resettable hour meter [40 CFR 60.4237(a)].

b. The permittee shall monitor the following: [401 KAR 52:020, Section 10]
   (1) Natural gas fuel usage (MMscf) and the hours of operation;
   (2) Hours of operation for maintenance and testing; and
   (3) Hours of operation in non-emergency operation and operation for reasons other than maintenance and testing.

5. Specific Recordkeeping Requirements:

a. The permittee shall keep records of the information provided below: [40 CFR 60.4245(a)]
   (1) All notifications submitted to comply with 40 CFR 60, Subpart JJJJ and all documentation supporting any notification; [40 CFR 60.4245(a)(1)]
   (2) Maintenance conducted on the engine; [40 CFR 60.4245(a)(2)
   (3) If the engine is a certified engine, documentation from the manufacturer that the engine is certified to meet the emission standards and information as required in 40 CFR parts 90, 1048, 1054, and 1060, as applicable; and [40 CFR 60.4245(a)(3)]
   (4) If the engine is not a certified engine or is a certified engine operating in a non-certified manner and subject to 40 CFR 60.4243(a)(2), documentation that the engine meets the emission standards. [40 CFR 60.4245(a)(3)]

b. For stationary SI emergency internal combustion engines that do not meet the standards applicable to non-emergency engines, the permittee shall keep records of the hours of operation of the engine that is recorded through the non-resettable hour meter. The permittee shall document how many hours are spent for emergency operation, including what classified the operation as emergency and how many hours are spent for non-emergency operation. This only applies to Emission Unit 06 and Emission Unit 11, as Emission Unit 05 was manufactured prior to July 1, 2010 [40 CFR 60.4245(b)].

c. The permittee shall maintain the following records: [401 KAR 52:020, Section 10]
   (1) The type of fuel used and the hours of operation;
   (2) Hours of operation for maintenance and testing; and
   (3) Hours of operation in non-emergency operation and operation for reasons other than maintenance and testing.

6. Specific Reporting Requirements:

a. If an engine has not been certified by an engine manufacturer to meet the emission standards in 40 CFR 60.4231, the permittee shall submit an initial notification as required in 40 CFR 60.7(a)(1). The permittee must submit the notification electronically according to the procedure outlined in 40 CFR 60.4245(g). The notification must include the information in 40 CFR 4245(c)(1) through (5) shown below: [40 CFR 60.4245(c)]
   (1) Name and address of the owner or operator; [40 CFR 60.4245(c)(1)
   (2) The address of the affected source; [40 CFR 60.4245(c)(2)

SECTION B - EMISSION POINTS, EMISSION UNITS, APPLICABLE REGULATIONS, AND OPERATING CONDITIONS (CONTINUED)

(3) Engine information including make, model, engine family, serial number, model year, maximum engine power, and engine displacement; [40 CFR 60.4245(c)(3)
(4) Emission control equipment; and [40 CFR 60.4245(c)(4)]
(5) Fuel used [40 CFR 60.4245(c)(5)].

b. If an engine is subject to performance testing, the permittee must submit a copy of each performance test as conducted in 40 CFR 60.4244 within 60 days after the test has been completed. Performance test reports using EPA Method 18, EPA Method 320, or ASTM D6348-03 to measure VOC require reporting of all QA/QC data. For Method 18, report results from sections 8.4 and 11.1.1.4; for Method 320, report results from sections 8.6.2, 9.0, and 13.0; and for ASTM D6348-03 report results of all QA/QC procedures in Annexes 1-7. Performance tests must be reported electronically according to 40 CFR 60.4245(f) [40 CFR 60.4245(d)].
   (1) Within 60 days of completing each performance test, the permittee must submit the re results following the procedures specified in 40 CFR 60.4245(g). Data collected using test methods that are supported by the EPA's Electronic Reporting Tool (ERT) as listed on the EPA's ERT website at the time of the test must be submitted in a file format generated using the EPA's ERT. Alternatively, you may submit an electronic file consistent with the extensible markup language (XML) schema listed on the EPA's ERT website. Data collected using test methods that are not supported by the EPA's ERT as listed on the EPA's ERT website at the time of the test must be included as an attachment in the ERT or an alternate electronic file. [40 CFR 60.4245(f)]
   (2) The permittee must submit notifications or reports to the EPA via the Compliance and Emissions Data Reporting Interface (CEDRI), which can be accessed through the EPA's Central Data Exchange (CDX) (*https://cdx.epa.gov/*). The EPA will make all the information submitted through CEDRI available to the public without further notice to the permittee. Do not use CEDRI to submit information you claim as CBI. Although the EPA does not expect persons to assert a claim of CBI, if the permittee wishes to assert a CBI claim for some of the information in the report or notification, the permittee must submit a complete file in the format specified in 40 CFR 60, Subpart JJJJ, including information claimed to be CBI, to the EPA following the procedures in 40 CFR 60.4245(g)(1) and (2). Clearly mark the part or all of the information that the permittee claims to be CBI. Information not marked as CBI may be authorized for public release without prior notice. Information marked as CBI will not be disclosed except in accordance with procedures set forth in 40 CFR part 2. All CBI claims must be asserted at the time of submission. Anything submitted using CEDRI cannot later be claimed CBI. Furthermore, under CAA section 114(c), emissions data is not entitled to confidential treatment, and the EPA is required to make emissions data available to the public. Thus, emissions data will not be protected as CBI and will be made publicly available. The permittee must submit the same file submitted to the CBI office with the CBI omitted to the EPA via the EPA's CDX as described earlier in this paragraph. [40 CFR 60.4245(g)]

SECTION B - EMISSION POINTS, EMISSION UNITS, APPLICABLE REGULATIONS, AND OPERATING CONDITIONS (CONTINUED)

Emission Unit: 07 (PC-1 through PC-4) Fugitive Emissions from Piping Components

Description:
Construction Date: 1956
Modification Date: July 2026 (Proposed)

Designation	Component Type	Current[1.]	Post-TEM IV Project[2.]	Total[3.]
PC-1	Gas/Vapor Valves:	1,391	698	2,089
	Gas/Vapor Connectors:	8,081	3,222	11,303
	Gas/Vapor Flanges:	1,411	466	1,877
	Gas/Vapor Open Ended Lines:	107	36	143
	Gas Vapor Other:	215	71	286
PC-2	Light Oil Valves:	234	99	333
	Light Oil Connectors:	710	575	1,285
	Light Oil Flanges:	388	209	597
	Light Oil Open Ended Lines	44	36	80
	Light Oil Pump Seals:	1	1	2
	Light Oil Other:	19	1	20
PC-3	Heavy Oil Valves:	563	360	923
	Heavy Oil Connectors:	2,762	1,023	3,785
	Heavy Oil Flanges:	591	211	802
	Heavy Oil Open Ended Lines:	27	n/a	27
	Heavy Oil Pump Seals:	38	21	59
	Heavy Oil Other:	41	4	45
PC-4	Water/Oil Coolant Valves:	438	n/a	438
	Water/Oil Coolant Connectors:	3,540	n/a	3,540
	Water/Oil Coolant Flanges:	804	n/a	804
	Water/Oil Coolant Open Ended Lines:	30	n/a	30
	Water/Oil Coolant Pump Seals:	13	n/a	13
	Water/Oil Coolant Other:	12	n/a	12

1. The current equipment count listed above reflects an approximate count of the equipment as of the date of issuance of this permit but is not intended to limit the permittee to the exact numbers specified.

2. This component count represents an approximate count of the equipment which will be in place following completion of the TEM IV project. This includes new components installed during the project and some existing components which will be retained.

3. To be conservative, PTE and actual emissions are based on the sum of existing components and the estimated post-TEM IV components prior to decommissioning of existing equipment. The permittee may add or remove pipeline equipment without a permit revision as long as the equipment continues to comply with the applicable requirements listed below and the changes do not have a significant impact on emissions or potential to emit.

SECTION B - EMISSION POINTS, EMISSION UNITS, APPLICABLE REGULATIONS, AND OPERATING CONDITIONS (CONTINUED)

Emission Unit 07:

(GR-ST) Station Gas Releases
(GR-PL) Pipeline Gas Releases

Description:
Construction Date: 1956
Modification Date: July 2026 (Proposed)
Periodically, blowdown and purges of natural gas lines and equipment are required because of normal operations, process startups/shutdowns, routine maintenance, and/or emergency venting. These gas releases are vented through a set of separator vessels. Flashing, working, and breathing losses from these vessels are accounted for under the vessel designation, while direct emissions of gases and vapors are accounted for under this emission unit. Emissions from GR-ST and GR-PL are not "fugitive emissions" as defined by 401 KAR 52:001, Section 1(38).

APPLICABLE REGULATIONS:
401 KAR 50:012, *General application*

40 CFR 60.5360b through 60.5432b, **(Subpart OOOOb)**, *Standards of Performance for Crude Oil and Natural Gas Facilities for Which Construction, Modification or Reconstruction Commenced After December 6, 2022*

STATE-ORIGIN REQUIREMENTS:
401 KAR 63:020, *Potentially hazardous matter or toxic substances*

1. **Operating Limitations:**
   a. The permittee must be in compliance with the standards of 40 CFR 60, Subpart OOOOb upon initial startup after modification of the compressor station. [40 CR 60.5370b(a)]
      (1) For the purposes of 40 CFR 60.5397b and 60.5398b, a "modification" to a compressor station occurs when: [40 CFR 60.5365b(i)(3)]
         (i) An additional compressor is installed at a compressor station; or [40 CFR 60.5365b(i)(3)(i)]
         (ii) One or more compressors at a compressor station is replaced by one or more compressors of greater total horsepower than the compressor(s) being replaced. When one or more compressors is replaced by one or more compressors of an equal or smaller total horsepower than the compressor(s) being replaced, installation of the replacement compressor(s) does not trigger a modification of the compressor station for purposes of 40 CFR 60.5397b and 60.5398b. [40 CFR 60.5365b(i)(3)(ii)]

   b. At all times, including periods of startup, shutdown, and malfunction, the permittee shall maintain and operate any affected facility including associated air pollution control equipment in a manner consistent with good air pollution control practice for minimizing emissions. Determination of whether acceptable operating and maintenance procedures are being used will be based on information available to the Administrator which may include, but is not limited to, monitoring results, opacity observations, review of operating and maintenance procedures, and inspection of the source. The provisions for exemption from

SECTION B - EMISSION POINTS, EMISSION UNITS, APPLICABLE REGULATIONS, AND OPERATING CONDITIONS (CONTINUED)

compliance during periods of startup, shutdown and malfunctions provided for in 40 CFR 60.8(c) do not apply to 40 CFR 60, Subpart OOOOb. [40 CFR 60.5370b(b)]

c. The permittee must comply with the requirements of 40 CFR 60.5397b(a) through (l) to reduce fugitive emissions of methane and VOC. [40 CFR 60.5397b]

d. *General Requirements*. The permittee must monitor all fugitive emissions components affected facilities in accordance with 40 CFR 60.5397b(b) through (g). The permittee must repair all sources of fugitive emissions in accordance with 40 CFR 60.5397b(h). The permittee must demonstrate initial compliance in accordance with 40 CFR 60.5397b(i). The permittee must keep records in accordance with 40 CFR 60.5397b(j) and report in accordance with 40 CFR 60.5397b(k). [40 CFR 60.5397b(a)]

e. *Repairs*. Each identified source of fugitive emissions shall be repaired in accordance with 40 CFR 60.5397(h)(1) and (2): [40 CFR 60.5397b(h)]
   (1) A first attempt at repair shall be made in accordance with 40 CFR 60.5397b(h)(1)(i) and (ii). [40 CFR 60.5397b(h)(1)]
      (i) A first attempt at repair shall be made no later than 15 calendar days after detection of fugitive emissions that were identified using AVO. [40 CFR 60.5397b(h)(1)(i)]
      (ii) If the permittee is complying with 40 CFR 60.5397b(g)(1)(i) through (vi) using OGI or Method 21 of appendix A-7 of 40 CFR part 60, a first attempt at repair shall be made no later than 30 calendar days after detection of the fugitive emissions. [40 CFR 60.5397b(h)(1)(ii)]
   (2) Repair shall be completed as soon as practicable, but no later than 15 calendar days after the first attempt at repair as required in 40 CFR 60.5397b(h)(1)(i), and 30 calendar days after the first attempt at repair as required in 40 CFR 60.5397b(h)(1)(ii). [40 CFR 60.5397b(h)(2)]
   (3) Delay of repair will be allowed if the conditions in 40 CFR 60.5397b(h)(3)(i) or (ii) are met. [40 CFR 60.5397b(h)(3)]
      (i) If the repair is technically infeasible, would require a vent blowdown, a compressor station shutdown, a well shutdown or well shut-in, or would be unsafe to repair during operation of the unit, the repair must be completed during the next scheduled compressor station shutdown for maintenance, scheduled well shutdown, scheduled well shut-in, after a scheduled vent blowdown, or within 2 years of detecting the fugitive emissions, whichever is earliest. A vent blowdown is the opening of one or more blowdown valves to depressurize major production and processing equipment, other than a storage vessel. [40 CFR 60.5397b(h)(3)(i)]
      (ii) If the repair requires replacement of a fugitive emissions component or a part thereof, but the replacement cannot be acquired and installed within the repair timelines specified in 40 CFR 60.5397b(h)(1) and (2) due to either of the conditions specified in 40 CFR 60.5397b (h)(3)(ii)(A) or (B), the repair must be completed in accordance with 40 CFR 60.5397b(h)(3)(ii)(C) and documented in accordance with 40 CFR 60.5420b(c)(14)(v)(I). [40 CFR 60.5397b(h)(3)(ii)]
         (A) Valve assembly supplies had been sufficiently stocked but are depleted at the time of the required repair. [40 CFR 60.5397b(h)(3)(ii)(A)]

SECTION B - EMISSION POINTS, EMISSION UNITS, APPLICABLE REGULATIONS, AND OPERATING CONDITIONS (CONTINUED)

(B) A replacement fugitive emissions component or a part thereof requires custom fabrication. [40 CFR 60.5397b(h)(3)(ii)(B)]

(C) The required replacement must be ordered no later than 10 calendar days after the first attempt at repair. The repair must be completed as soon as practicable, but no later than 30 calendar days after receipt of the replacement component, unless the repair requires a compressor station or well shutdown. If the repair requires a compressor station or well shutdown, the repair must be completed in accordance with the timeframe specified in 40 CFR 60.5397b(h)(3)(i). [40 CFR 60.5397b(h)(3)(ii)(C)]

(4) Each identified source of fugitive emissions must be resurveyed to complete repair according to the requirements of 40 CFR 60.5397b(h)(4)(i) through (v), to ensure that there are no fugitive emissions. [40 CFR 60.5397b(h)(4)]

(i) The permittee may resurvey the fugitive emissions components to verify repair using either Method 21 of appendix A-7 of 40 CFR part 60 or OGI, except as specified in 40 CFR 60.5397b(h)(4)(v). [40 CFR 60.5397b(h)(4)(i)]

(ii) For each repair that cannot be made during the monitoring survey when the fugitive emissions are initially found, a digital photograph must be taken of that component, or the component must be tagged during the monitoring survey when the fugitive emissions were initially found for identification purposes and subsequent repair. The digital photograph must include the date that the photograph was taken and must clearly identify the component by location within the site (e.g., the latitude and longitude of the component or by other descriptive landmarks visible in the picture). [40 CFR 60.5397b(h)(4)(ii)]

(iii) Permittees that use Method 21 of appendix A-7 to 40 CFR Part 60 to resurvey the repaired fugitive emissions components are subject to the resurvey provisions specified in 40 CFR 60.5397b(h)(4)(iii)(A) and (B). [40 CFR 60.5397b(h)(4)(iii)]

(A) A fugitive emissions component is repaired when the Method 21 instrument indicates a concentration of less than 500 ppmv above background or when no soap bubbles are observed when the alternative screening procedures specified in section 8.3.3 of Method 21 of appendix A-7 to 40 CFR Part 60 are used. [40 CFR 60.5397b(h)(4)(iii)(A)]

(B) The permittee must use the Method 21 monitoring requirements specified in paragraph (c)(8)(ii) of this section or the alternative screening procedures specified in section 8.3.3 of Method 21 of appendix A-7 to 40 CFR Part 60. [40 CFR 60.5397b(h)(4)(iii)(B)]

(iv) Permittees that use OGI to resurvey the repaired fugitive emissions components are subject to the resurvey provisions specified in 40 CFR 60.5397b(h)(4)(iv)(A) and (B). [40 CFR 60.5397b(h)(4)(iv)]

(A) A fugitive emissions component is repaired when the OGI instrument shows no indication of visible emissions. [40 CFR 60.5397b(h)(4)(iv)(A)]

(B) The permittee must use the OGI monitoring requirements specified in 40 CFR 60.5397b(c)(7). [40 CFR 60.5397b(h)(4)(iv)(B)]

(v) For fugitive emissions identified using AVO detection methods, the permittee may resurvey using those same methods, Method 21 of appendix A-7 of 40 CFR part 60, or OGI. For permittees that use AVO detection methods, a fugitive emissions

SECTION B - EMISSION POINTS, EMISSION UNITS, APPLICABLE REGULATIONS, AND OPERATING CONDITIONS (CONTINUED)

component is repaired when there are no indications of fugitive emissions using these methods. [40 CFR 60.5397b(h)(4)(v)]

Compliance Demonstration Method:

(a) *Initial compliance.* The permittee must demonstrate initial compliance with the standards that apply to fugitive emissions components affected facilities as required by 40 CFR 60.5410b(k). [40 CFR 60.5397b(i)]

1) The permittee must develop a fugitive emissions monitoring plan as required in 40 CFR 60.5397b(b), (c), and (d). [40 CFR 60.5410b(k)(1)]
2) The permittee must conduct an initial monitoring survey as required in 40 CFR 60.5397b(e) and (f). [40 CFR 60.5410b(k)(2)]
3) The permittee must repair each identified source of fugitive emissions as required in 40 CFR 60.5397b(h). [40 CFR 60.5410b(k)(3)]
4) The permittee must submit the initial annual report for each fugitive emissions components affected facility as required in 40 CFR 60.5420b(b)(1) and (9). [40 CFR 60.5410b(k)(4)]
5) The permittee must maintain the records specified in 40 CFR 60.5420b(c)(14). [40 CFR 60.5410b(k)(5)]

(b) *Continuous compliance*. The permittee must demonstrate continuous compliance with the standards that apply to fugitive emissions components affected facilities as required by 40 CFR 60.5415b(l). [40 CFR 60.5397b(j)]

1) *Monitoring*. The permittee must conduct periodic monitoring surveys as required in 40 CFR 60.5397b(e) and (g). [40 CFR 60.5415b(l)(1)]
2) *Repairs.* The permittee must repair each identified source of fugitive emissions as required in 40 CFR 60.5397b(h). [40 CFR 60.5415b(l)(2)]
3) *Reports.* The permittee must submit annual reports for fugitive emissions components affected facilities as required in 40 CFR 60.5420b(b)(1) and (9). [40 CFR 60.5415b(l)(3)]
4) *Record*s. The permittee must maintain records as specified in 40 CFR 60.5420b(c)(14). [40 CFR 60.5415b(l)(4)]

f. All major air contaminant sources shall as a minimum apply control procedures that are reasonable, available, and practical. [401 KAR 50:012, Section 1(2)]

Compliance Demonstration Method:
See **Section D. 4.**

2. <u>Emission Limitations</u>:

The permittee shall provide the utmost care and consideration, in the handling of these materials, to the potentially harmful effects of the emissions resulting from such activities. The permittee shall not allow any affected facility to emit potentially hazardous matter or toxic substances in such quantities or duration as to be harmful to the health and welfare of humans, animals and plants. Evaluation of such facilities as to adequacy of controls and/or procedures and emission potential will be made on an individual basis by the Cabinet. [401 KAR 63:020, Section 3]

SECTION B - EMISSION POINTS, EMISSION UNITS, APPLICABLE REGULATIONS, AND OPERATING CONDITIONS (CONTINUED)

Compliance Demonstration Method:
Based upon the emission rates of toxic and hazardous air pollutants determined by the Cabinet using information provided in the application and supplemental information submitted by the source, the Cabinet determines the affected facility to be in compliance with 401 KAR 63:020.

3. Testing Requirements:
Performance testing using the reference methods specified in 401 KAR 50:015 shall be conducted if required by the Cabinet. [401 KAR 50:045, Section 1]

4. Specific Monitoring Requirements:

a. *Develop fugitive emissions monitoring plan*. The permittee must develop a fugitive emissions monitoring plan that covers all fugitive emissions components affected facilities within each company-defined area in accordance with 40 CFR 60.5397b(c) and (d). [40 CFR 60.5397b(b)]

b. *Elements of fugitive emissions monitoring plan.* The fugitive emission monitoring plan must include the elements specified in 40 CFR 60.5397b(c)(1) through (8) below, at a minimum: [40 CFR 60.5397b(c)]
   (1) Frequency for conducting surveys. Surveys must be conducted at least as frequently as required by 40 CFR 60.5397b(f) and (g). [40 CFR 60.5397b(c)(1)]
   (2) Technique for determining fugitive emissions (*i.e.,* audible, visual, and olfactory (AVO) or other detection methods, Method 21 of appendix A-7 of 40 CFR part 60, and/or OGI and meeting the requirements of 40 CFR 60.5397b(c)(7)(i) through (vii)). [40 CFR 60.5397b(c)(2)]
   (3) Manufacturer and model number of fugitive emissions detection equipment to be used, if applicable. [40 CFR 60.5397b(c)(3)]
   (4) Procedures and timeframes for identifying and repairing fugitive emissions components from which fugitive emissions are detected, including timeframes for fugitive emission components that are unsafe to repair. The permittee's repair schedule must meet the requirements of 40 CFR 60.5397b(h) at a minimum. [40 CFR 60.5397b(c)(4)]
   (5) Procedures and timeframes for verifying fugitive emission component repairs. [40 CFR 60.5397b(c)(5)]
   (6) Records that will be kept and the length of time records will be kept. [40 CFR 60.5397b(c)(6)]
   (7) If the permittee is using OGI, the monitoring plan must also include the elements specified in 40 CFR 60.5397b(c)(7)(i) through (vii). [40 CFR 60.5397b(c)(7)]
      (i) Verification that the OGI equipment meets the specifications of 40 CFR 60.5397b(c)(7)(i)(A) and (B). This verification is an initial verification, and may either be performed by the permittee, by the manufacturer, or by a third party. For the purposes of complying with the fugitive emissions monitoring program with OGI, fugitive emissions are defined as any visible emissions observed using OGI. [40 CFR 60.5397b(c)(7)(i)]
         (A) The OGI equipment must be capable of imaging gases in the spectral range for the compound of highest concentration in the potential fugitive emissions. [40 CFR 60.5397b(c)(7)(i)(A)]

SECTION B - EMISSION POINTS, EMISSION UNITS, APPLICABLE REGULATIONS, AND OPERATING CONDITIONS (CONTINUED)

(B) The OGI equipment must be capable of imaging a gas that is half methane, half propane at a concentration of 10,000 ppm at a flow rate of ≤60 g/hr from a quarter inch diameter orifice. [40 CFR 60.5397b(c)(7)(i)(B)]

(ii) Procedure for a daily verification check. [40 CFR 60.5397b(c)(7)(ii)]

(iii) Procedure for determining the operator's maximum viewing distance from the equipment and how the operator will ensure that this distance is maintained. [40 CFR 60.5397b(c)(7)(iii)]

(iv) Procedure for determining maximum wind speed during which monitoring can be performed and how the operator will ensure monitoring occurs only at wind speeds below this threshold. [40 CFR 60.5397b(c)(7)(iv)]

(v) Procedures for conducting surveys, including the items specified in paragraphs (A) through (C) below:

(A) How the operator will ensure an adequate thermal background is present in order to view potential fugitive emissions. [40 CFR 60.5397b(c)(7)(v)(A)]

(B) How the operator will deal with adverse monitoring conditions, such as wind. [40 CFR 60.5397b(c)(7)(v)(B)]

(C) How the operator will deal with interferences (e.g., steam). [40 CFR 60.5397b(c)(7)(v)(C)]

(vi) Training and experience needed prior to performing surveys. [40 CFR 60.5397b(c)(7)(vi)]

(vii) Procedures for calibration and maintenance. At a minimum, procedures must comply with those recommended by the manufacturer. [40 CFR 60.5397b(c)(7)(vii)]

(8) If the permittee is using Method 21 of appendix A-7 of 40 CFR part 60, the permittee's plan must also include the elements specified in 40 CFR 60.5397b(c)(8)(i) through (iv) below. For the purposes of complying with the fugitive emissions monitoring program using Method 21 of appendix A-7 of 40 CFR part 60, a fugitive emission is defined as an instrument reading of 500 ppmv or greater. [40 CFR 60.5397b(c)(8)]

(i) *Verification that the permittee's monitoring equipment meets the requirements specified in Section 6.0 of Method 21 of appendix A-7 of 40 CFR part 60.* For purposes of instrument capability, the fugitive emissions definition shall be 500 ppmv or greater methane using a FID-based instrument. If the permittee wishes to use an analyzer other than an FID-based instrument, the permittee must develop a site-specific fugitive emission definition that would be equivalent to 500 ppmv methane using a FID-based instrument (e.g., 10.6 eV PID with a specified isobutylene concentration as the fugitive emission definition would provide equivalent response to the permittee's compound of interest). [40 CFR 60.5397b(c)(8)(i)]

(ii) *Procedures for conducting surveys*. At a minimum, the procedures shall ensure that the surveys comply with the relevant sections of Method 21 of appendix A-7 of 40 CFR part 60, including Section 8.3.1. [40 CFR 60.5397b(c)(8)(ii)]

(iii) *Procedures for calibration*. The instrument must be calibrated before use each day of its use by the procedures specified in Method 21 of appendix A-7 of 40 CFR part 60. At a minimum, the permittee must also conduct precision tests at the interval specified in Method 21 of appendix A-7 of 40 CFR part 60, Section 8.1.2, and a calibration drift assessment at the end of each monitoring day. The

SECTION B - EMISSION POINTS, EMISSION UNITS, APPLICABLE REGULATIONS, AND OPERATING CONDITIONS (CONTINUED)

calibration drift assessment must be conducted as specified in 40 CFR 60.5397b(c)(8)(iii)(A) below. Corrective action for drift assessments is specified in 40 CFR 60.5397b(c)(8)(iii)(B) and (C) below. [40 CFR 60.5397b(c)(8)(iii)]

(A) Check the instrument using the same calibration gas that was used to calibrate the instrument before use. Follow the procedures specified in Method 21 of appendix A-7 of 40 CFR part 60, Section 10.1, except do not adjust the meter readout to correspond to the calibration gas value. If multiple scales are used, record the instrument reading for each scale used. Divide the arithmetic difference of the initial and post-test calibration response by the corresponding calibration gas value for each scale and multiply by 100 to express the calibration drift as a percentage. [40 CFR 60.5397b(c)(8)(iii)(A)]

(B) If a calibration drift assessment shows a negative drift of more than 10 percent, then all equipment with instrument readings between the fugitive emission definition multiplied by (100 minus the percent of negative drift) divided by 100 and the fugitive emission definition that was monitored since the last calibration must be re-monitored. [40 CFR 60.5397b(c)(8)(iii)(B)]

(C) If any calibration drift assessment shows a positive drift of more than 10 percent from the initial calibration value, then, at the permittee's discretion, all equipment with instrument readings above the fugitive emission definition and below the fugitive emission definition multiplied by (100 plus the percent of positive drift) divided by 100 monitored since the last calibration may be re-monitored. [40 CFR 60.5397b(c)(8)(iii)(C)]

(iv) *Procedures for monitoring yard piping (other than buried yard piping).* At a minimum, place the probe inlet at the surface of the yard piping and run the probe down the length of the piping. Connection points on the piping must be monitored following the procedures specified in Method 21 of appendix A-7 of 40 CFR part 60. [40 CFR 60.5397b(c)(8)(iv)]

c. *Additional elements of fugitive emissions monitoring plan*. Each fugitive emissions monitoring plan must include the elements specified in 40 CFR 60.5397b(d)(1) and (2) included below, at a minimum, as applicable. [40 CFR 60.5397b(d)]

(1) If the permittee is using OGI, the monitoring plan must include procedures to ensure that all fugitive emissions components, except buried yard piping and associated components (e.g., connectors), are monitored during each survey. Example procedures include, but are not limited to, a sitemap with an observation path, a written narrative of where the fugitive emissions components are located and how they will be monitored, or an inventory of fugitive emissions components. [40 CFR 60.5397b(d)(1)]

(2) If the permittee is using Method 21 of appendix A-7 of 40 CFR part 60, the monitoring plan must include a list of fugitive emissions components to be monitored and method for determining the location of fugitive emissions components to be monitored in the field (e.g., tagging, identification on a process and instrumentation diagram, etc.). The fugitive emissions monitoring plan must include the written plan developed for all of the fugitive emissions components designated as difficult-to-monitor in accordance with 40 CFR 60.5397b(g)(2), and the written plan for fugitive emissions components designated as unsafe-to-monitor in accordance with 40 CFR 60.5397b(g)(3). [40 CFR 60.5397b(d)(2)]

SECTION B - EMISSION POINTS, EMISSION UNITS, APPLICABLE REGULATIONS, AND OPERATING CONDITIONS (CONTINUED)

d. *Monitoring of fugitive emissions components*. Each fugitive emissions component, except buried yard piping and associated components (e.g., connectors), shall be observed or monitored for fugitive emissions during each monitoring survey. [40 CFR 60.5397b(e)]

e. *Initial monitoring survey*. The permittee must conduct an initial monitoring survey for the modified fugitive emissions components affected facility within 90 days of the startup of production for each fugitive emissions component affected facility after the modification. [40 CFR 60.5397b(f) and 60.5397b(f)(3)]

f. *Monitoring frequency*. A monitoring survey of each fugitive emissions components affected facility must be performed as specified in CFR 60.5397b(g)(1), with the exceptions noted in CFR 60.5397b(g)(2) through (4). [CFR 60.5397b(g)]
   (1) A monitoring survey of the fugitive emissions components affected facility located at a compressor station must be conducted at the frequencies in 40 CFR 60.5397b(g)(1)(v)(A) and (B), included below: [40 CFR 60.5397b(g)(1)(v)]
      (i) A monitoring survey must be conducted at least monthly using AVO, or any other detection method, after the initial survey. Any indications of fugitive emissions using these methods are considered fugitive emissions that must be repaired in accordance with 40 CFR 60.5397b(h). [40 CFR 60.5397b(g)(1)(v)(A)]
      (ii) A monitoring survey must be conducted at least quarterly using OGI or Method 21 of appendix A-7 to 40 CFR Part 60 after the initial survey. Consecutive quarterly monitoring surveys must be conducted at least 60 calendar days apart. [40 CFR 60.5397b(g)(1)(v)(B)]
   (2) If the permittee is using Method 21 of appendix A-7 of 40 CFR part 60, fugitive emissions components that cannot be monitored without elevating the monitoring personnel more than 2 meters above the surface may be designated as difficult-to-monitor. Fugitive emissions components that are designated difficult-to-monitor must meet the specifications of 40 CFR 60.5397b(g)(2)(i) through (iv) included below: [40 CFR 60.5397b(g)(2)]
      (i) A written plan must be developed for all the fugitive emissions components designated difficult-to-monitor. This written plan must be incorporated into the fugitive emissions monitoring plan required by 40 CFR 60.5397b(b), (c), and (d). [40 CFR 60.5397b(g)(2)(i)]
      (ii) The plan must include the identification and location of each fugitive emissions component designated as difficult-to-monitor. [40 CFR 60.5397b(g)(2)(ii)]
      (iii) The plan must include an explanation of why each fugitive emissions component designated as difficult-to-monitor is difficult-to-monitor. [40 CFR 60.5397b(g)(2)(iii)]
      (iv) The plan must include a schedule for monitoring the difficult-to-monitor fugitive emissions components at least once per calendar year. [40 CFR 60.5397b(g)(2)(iv)]
   (3) If the permittee is using Method 21 of appendix A-7 of 40 CFR part 60, fugitive emissions components that cannot be monitored because monitoring personnel would be exposed to immediate danger while conducting a monitoring survey may be designated as unsafe-to-monitor. Fugitive emissions components that are designated unsafe-to-monitor must meet the specifications of 40 CFR 60.5397b(g)(3)(i) through (iv) included below: [40 CFR 60.5397b(g)(3)]

SECTION B - EMISSION POINTS, EMISSION UNITS, APPLICABLE REGULATIONS, AND OPERATING CONDITIONS (CONTINUED)

(i) A written plan must be developed for all the fugitive emissions components designated unsafe-to-monitor. This written plan must be incorporated into the fugitive emissions monitoring plan required by 40 CFR 60.5397b(b), (c), and (d). [40 CFR 60.5397b(g)(3)(i)]
(ii) The plan must include the identification and location of each fugitive emissions component designated as unsafe-to-monitor. [40 CFR 60.5397b(g)(3)(ii)]
(iii) The plan must include an explanation of why each fugitive emissions component designated as unsafe-to-monitor is unsafe-to-monitor. [40 CFR 60.5397b(g)(3)(iii)]
(iv) The plan must include a schedule for monitoring the fugitive emissions components designated as unsafe-to-monitor. [40 CFR 60.5397b(g)(3)(iv)]

g. See **Section F**, **Monitoring, Recordkeeping, and Reporting Requirements**.

5. <u>Specific Recordkeeping Requirements</u>:

a. *Recordkeeping Requirements*. The permittee must maintain the records identified as specified in 40 CFR 60.7(f) and in 40 CFR 60.5420b(c)(14) as applicable. All records required by 40 CFR 60, Subpart OOOOb, must be maintained either onsite or at the nearest local field office for at least 5 years. Any records required to be maintained by 40 CFR 60, Subpart OOOOb, that are submitted electronically via the EPA's CEDRI may be maintained in electronic format. This ability to maintain electronic copies does not affect the requirement for the permittee to make records, data, and reports available upon request to a delegated air agency or the EPA as part of an on-site compliance evaluation. [40 CFR 60.5420b(c)]

b. Maintain the records identified in 40 CFR 60.5420b (c)(14)(i) through (v), as follows: [40 CFR 60.5420b(c)(14)]
(1) The date of startup or the date of modification for the fugitive emissions components affected facility at a compressor station. [40 CFR 60.5420b(c)(14)(i)]
(2) The fugitive emissions monitoring plan as required in 40 CFR 60.5397b(b), (c), and (d). [40 CFR 60.5420b(c)(14)(iv)]
(3) The records of each monitoring survey as specified in 40 CFR 60.5420b(c)(14)(v)(A) through (I). [40 CFR 60.5420b(c)(14)(v)]
(i) Date of the survey. [40 CFR 60.5420b(c)(14)(v)(A)]
(ii) Beginning and end time of the survey. [40 CFR 60.5420b(c)(14)(v)(B)]
(iii) Name of operator(s), training, and experience of the operator(s) performing the survey. [40 CFR 60.5420b(c)(14)(v)(C)]
(iv) Monitoring instrument or method used. [40 CFR 60.5420b(c)(14)(v)(D)]
(v) Fugitive emissions component identification when Method 21 of appendix A-7 of 40 CFR part 60 is used to perform the monitoring survey. [40 CFR 60.5420b(c)(14)(v)(E)]
(vi) Ambient temperature, sky conditions, and maximum wind speed at the time of the survey. For compressor stations, operating mode of each compressor (*i.e.,* operating, standby pressurized, and not operating-depressurized modes) at the station at the time of the survey. [40 CFR 60.5420b(c)(14)(v)(F)]
(vii) Any deviations from the monitoring plan or a statement that there were no deviations from the monitoring plan. [40 CFR 60.5420b(c)(14)(v)(G)]

SECTION B - EMISSION POINTS, EMISSION UNITS, APPLICABLE REGULATIONS, AND OPERATING CONDITIONS (CONTINUED)

(viii) Records of calibrations for the instrument used during the monitoring survey. [40 CFR 60.5420b(c)(14)(v)(H)]

(ix) Documentation of each fugitive emission detected during the monitoring survey, including the information specified in 40 CFR 60.5420b(c)(14)(v)(I)(*1*) through (*9*). [40 CFR 60.5420b(c)(14)(v)(I)]

(A) Location of each fugitive emission identified. [40 CFR 60.5420b(c)(14)(v)(I)(*1*)]

(B) Type of fugitive emissions component, including designation as difficult-to-monitor or unsafe-to-monitor, if applicable. [40 CFR 60.5420b(c)(14)(v)(I)(*2*)]

(C) If Method 21 of appendix A-7 of 40 CFR part 60 is used for detection, record the component ID and instrument reading. [40 CFR 60.5420b(c)(14)(v)(I)(*3*)]

(D) For each repair that cannot be made during the monitoring survey when the fugitive emissions are initially found, a digital photograph or video must be taken of that component or the component must be tagged for identification purposes. The digital photograph must include the date that the photograph was taken and must clearly identify the component by location within the site (*e.g.,* the latitude and longitude of the component or by other descriptive landmarks visible in the picture). The digital photograph or identification (*e.g.,* tag) may be removed after the repair is completed, including verification of repair with the resurvey. [40 CFR 60.5420b(c)(14)(v)(I)(*4*)]

(E) The date of first attempt at repair of the fugitive emissions component(s). [40 CFR 60.5420b(c)(14)(v)(I)(*5*)]

(F) The date of successful repair of the fugitive emissions component, including the resurvey to verify repair and instrument used for the resurvey. [40 CFR 60.5420b(c)(14)(v)(I)(*6*)]

(G) Identification of each fugitive emission component placed on delay of repair and explanation for each delay of repair. [40 CFR 60.5420b(c)(14)(v)(I)(*7*)]

(H) For each fugitive emission component placed on delay of repair for reason of replacement component unavailability, the permittee must document: the date the component was added to the delay of repair list, the date the replacement fugitive component or part thereof was ordered, the anticipated component delivery date (including any estimated shipment or delivery date provided by the vendor), and the actual arrival date of the component. [40 CFR 60.5420b(c)(14)(v)(I)(*8*)]

(I) Date of planned shutdowns that occur while there are any components that have been placed on delay of repair. [40 CFR 60.5420b(c)(14)(v)(I)(*9*)]

c. The permittee shall maintain record of pipeline and compressor station gas release events, including the reason for the release event, date of the release, estimated release volume, and amount of each pollutant emitted in lbs. [401 KAR 52:020, Section 10]

d. See **Section F**, **Monitoring, Recordkeeping, and Reporting Requirements**.

SECTION B - EMISSION POINTS, EMISSION UNITS, APPLICABLE REGULATIONS, AND OPERATING CONDITIONS (CONTINUED)

6. Specific Reporting Requirements:

a. *Reporting requirements.* The permittee must submit annual reports containing the information specified in 40 CFR 60.5420b(b)(1) through (14) following the procedure specified in 40 CFR 60.5420b(b)(15). The permittee must submit performance test reports as specified in 40 CFR 60.5420b(b)(12) or (13), if applicable. Subject to the exception in the next sentence, the initial annual report is due no later than 90 days after the end of the initial compliance period as determined according to 40 CFR 60.5410b. Notwithstanding the preceding sentence, no annual report is due before November 30, 2026, on or before the date you must submit all annual reports that were due before November 30, 2026 per the timing specified in the preceding sentence; then subsequent annual reports thereafter are due no later than 90 days after the end of each annual compliance period. The permittee may submit one report for multiple affected facilities provided the report contains all of the information required as specified in 40 CFR 60.5420b(b)(1) through (14). Annual reports may coincide with title V reports as long as all the required elements of the annual report are included. You may arrange with the Administrator a common schedule on which reports required by 40 CFR 60, Subpart OOOOb may be submitted as long as the schedule does not extend the reporting period. [40 CFR 60.5420b(b)]

b. The permittee must submit notifications or reports to the EPA via CEDRI, which can be accessed through the EPA's Central Data Exchange (CDX) (https://cdx.epa.gov/). The EPA will make all the information submitted through CEDRI available to the public without further notice to the permittee. Do not use CEDRI to submit information the permittee claims as CBI. Although the EPA does not expect persons to assert a claim of CBI, if the permittee wishes to assert a CBI claim for some of the information in the report or notification, the permittee must submit a complete file in the format specified in 40 CFR 60, Subpart OOOOb, including information claimed to be CBI, to the EPA following the procedures in 40 CFR 60.5420b(d)(1) and (2). Clearly mark the part or all of the information that the permittee claims to be CBI. Information not marked as CBI may be authorized for public release without prior notice. Information marked as CBI will not be disclosed except in accordance with procedures set forth in 40 CFR part 2. All CBI claims must be asserted at the time of submission. Anything submitted using CEDRI cannot later be claimed CBI. Furthermore, under CAA section 114(c), emissions data is not entitled to confidential treatment, and the EPA is required to make emissions data available to the public. Thus, emissions data will not be protected as CBI and will be made publicly available. The permittee must submit the same file submitted to the CBI office with the CBI omitted to the EPA via the EPA's CDX as described earlier in this paragraph. [40 CFR 60.5420b(d)]

c. See **Section F**, **Monitoring, Recordkeeping, and Reporting Requirements**.

SECTION B - EMISSION POINTS, EMISSION UNITS, APPLICABLE REGULATIONS, AND OPERATING CONDITIONS (CONTINUED)

Emission Unit 08 (008) **Unit 4T Gas Turbine**
Description: Solar Titan 130 18,000 hp Turbine

Fuel:	Natural gas
Maximum rating:	159.28 MMBtu/hr
Construction commenced:	Proposed 2026
Add-on Controls:	Oxidation Catalyst

Emission Unit 09 (009) **Unit 5T Gas Turbine**
Description: Solar Titan 130 18,000 hp Turbine

Fuel:	Natural gas
Maximum rating:	159.28 MMBtu/hr
Construction commenced:	Proposed 2026
Add-on Controls:	Oxidation Catalyst

Emission Unit 10 (010) **Unit 6T Gas Turbine**
Description: Solar Titan 130 18,000 hp Turbine

Fuel:	Natural gas
Maximum rating:	159.28 MMBtu/hr
Construction commenced:	Proposed 2026
Add-on Controls:	Oxidation Catalyst

APPLICABLE REGULATIONS:
40 CFR 60.4300a through 60.4420a (**Subpart KKKKa**), *Standards of Performance for Stationary Combustion Turbines*

40 CFR 60.5360b through 60.5432b (**Subpart OOOOb**), *Standards of Performance for Crude Oil and Natural Gas Facilities for Which Construction, Modification or Reconstruction Commenced After December 6, 2022*

STATE-ORIGIN REQUIREMENTS:
401 KAR 63:020, *Potentially hazardous matter or toxic substances*

Note: The above-listed applicable regulations and related requirements shall apply upon reclassification of the facility as an area source of HAP emissions. See **Section H – Alternate Operating Scenario 1** for HAP major source requirements which apply prior to reclassification of the facility.

1. **Operating Limitations:**
   a. For centrifugal compressor affected facilities, the permittee must comply with the requirements of 40 CFR 60.5370b(a)(7)(i) or (ii), as applicable. [40 CFR 60.5370b(a)(7)]
      (1) For centrifugal compressor affected facilities, the permittee must comply with the requirements of 40 CFR 60.5380(a)(1) and (2) or (a)(3) for each centrifugal compressor upon initial startup. [40 CFR 60.5370b(a)(7)(i)]
      (2) Each centrifugal compressor affected facility that uses dry seals, complying with one of the alternatives in 40 CFR 60.5380b(a)(4), (5), or (6), must comply with the specified performance-based volumetric flow rate work practice standards on or before 8,760

SECTION B - EMISSION POINTS, EMISSION UNITS, APPLICABLE REGULATIONS, AND OPERATING CONDITIONS (CONTINUED)

hours of operation after last seal replacement, or on or before 8,760 hours of operation after startup, whichever date is later. [40 CFR 60.5370b(a)(7)(ii)]

b. Each centrifugal compressor affected facility must comply with the GHG and VOC standards in 40 CFR 60.5380b(a) through (d). [40 CFR 60.5380b]

c. Each centrifugal compressor affected facility that uses dry seals must comply with 40 CFR 60.5380b(a)(6) through (8), or with of the alternatives in 40 CFR 60.5380b(a)(9). [40 CFR 60.5380b(a)]

d. The permittee must comply with the GHG and VOC requirements as specified in 40 CFR 60.5380b(a)(6)(i) through (iii), using volumetric flow rate as a surrogate. The permittee must determine the volumetric flow rate in accordance with 40 CFR 60.5380b(a)(7)(iii). [40 CFR 60.5380b(a)(6)]
   (1) The volumetric flow rate per seal must not exceed 10 standard cubic feet per minute (scfm) per seal. If the individual seals are manifolded to a single open-ended vent line, the volumetric flow rate must not exceed the sum of the individual seals multiplied by 10 scfm. If the volumetric flow rate, measured in accordance with 40 CFR 60.5380b(a)(7)(iii) exceeds 10 scfm multiplied by the number of dry seals connected to the vent, the seals connected to the measured vent must be repaired as provided in 40 CFR 60.5380b(a)(8) of this section. [40 CFR 60.5380b(a)(6)(i)]

e. Each centrifugal compressor dry seal must be repaired within 90 calendar days after the date of the volumetric emissions measurement that exceeds the applicable required flow rate per seal. The permittee must conduct follow-up volumetric flow rate measurements from seal vents using the methods specified in 40 CFR 60.5380b(a)(7) within 15 days after the repair to document that the rate has been reduced to less than the applicable required flow rate per seal. If the individual seals are manifolded to a single open-ended vent line or vent, the volumetric flow rate must be reduced to less than the sum of the individual seals multiplied by the applicable required flow rate per seal specified in 40 CFR 60.5380b(a)(4) through (6), as applicable. Delay of repair will be allowed if the conditions in 40 CFR 60.5380b(a)(8)(i) or (ii) are met. [40 CFR 60.5380b(a)(8)]
   (1) If the repair of the dry seal is technically infeasible, would require a vent blowdown, a compressor station shutdown, or would be unsafe to repair during operation of the unit, the repair must be completed during the next scheduled compressor station shutdown for maintenance, after a scheduled vent blowdown, or within 2 years of the date of the volumetric emissions measurement that exceeds the applicable required flow rate per seal, whichever is earliest. A vent blowdown is the opening of one or more blowdown valves to depressurize major production and processing equipment, other than a storage vessel. [40 CFR 60.5380b(a)(8)(i)]
   (2) If the repair requires replacement of the compressor seal or a part thereof, but the replacement cannot be acquired and installed within the repair timelines specified under 40 CFR 60.5380b due to the condition specified in 40 CFR 60.5380b(a)(8)(ii)(A), the repair must be completed in accordance with 40 CFR 60.5380b(a)(8)(ii)(B) and documented in accordance with 40 CFR 60.5420b(c)(4)(iii)(F) through (H). [40 CFR 60.5380b(a)(8)(ii)]

SECTION B - EMISSION POINTS, EMISSION UNITS, APPLICABLE REGULATIONS, AND OPERATING CONDITIONS (CONTINUED)

(i) Seal or part thereof supplies had been sufficiently stocked but are depleted at the time of the required repair. [40 CFR 60.5380b(a)(8)(ii)(A)]

(ii) The required replacement must be ordered no later than 10 calendar days after the centrifugal compressor seal is added to the delay of repair list due to parts unavailability. The repair must be completed as soon as practicable, but no later than 30 calendar days after receipt of the replacement seal or part, unless the repair requires a compressor station shutdown. If the repair requires a compressor station shutdown, the repair must be completed in accordance with the timeframe specified in 40 CFR 60.5380b (a)(8)(i). [40 CFR 60.5380b(a)(8)(ii)(B)]

f. As an alternative to meeting the requirements for centrifugal compressors with dry seals specified in paragraphs (a)(6) through (8) of this section, the permittee is allowed to comply with the standard by meeting the requirements specified in 40 CFR 60.5380b(a)(9)(i) and (ii), or 40 CFR 60.5380b(a)(9)(iii). [40 CFR 60.5380b(a)(9)]

g. At all times, including periods of startup, shutdown, and malfunction, owners and operators shall maintain and operate any affected facility including associated air pollution control equipment in a manner consistent with good air pollution control practice for minimizing emissions. Determination of whether acceptable operating and maintenance procedures are being used will be based on information available to the Administrator which may include, but is not limited to, monitoring results, opacity observations, review of operating and maintenance procedures, and inspection of the source. The provisions for exemption from compliance during periods of startup, shutdown and malfunctions provided for in 40 CFR 60.8(c) do not apply to 40 CFR 60, Subpart OOOOb. [40 CFR 60.5370b(b)]

Compliance Demonstration Method:

(a) See **3. Testing Requirements c.** through **e.**

(b) To demonstrate initial compliance with the GHG and VOC alternative standards for each dry seal centrifugal compressor as required by 40 CFR 60.5380b, the permittee must comply with 40 CFR 60.5410b(d)(6) through (8). [40 CFR 60.5410b(d)]

1) The permittee must maintain the volumetric flow rates for each centrifugal compressor as specified in 40 CFR 60.5410b(iii): For each dry seal centrifugal compressor, the permittee must maintain the volumetric flow rate at or below 10 scfm per seal. The permittee must conduct the initial annual volumetric measurement as required by 40 CFR 60.5380b(a)(6). See **3. Testing Requirements c.** and **d.** [40 CFR 60.5410b(d)(6) and (d)(6)(iii)]

2) The permittee must submit the initial annual report for the centrifugal compressor affected facilities as required in 40 CFR 60.5420b(b)(1) and (5) and (b)(11) through (13), as applicable. See **6. Specific Reporting Requirements b.** [40 CFR 60.5410b(d)(7)]

3) The permittee must maintain the records as specified in 40 CFR 60.5420b(c)(4). See **5. Specific Recordkeeping Requirements d.** [40 CFR 60.5410b(d)(8)]

SECTION B - EMISSION POINTS, EMISSION UNITS, APPLICABLE REGULATIONS, AND OPERATING CONDITIONS (CONTINUED)

(c) For each dry seal centrifugal compressor complying with the requirements in 40 CFR 60.5380b(a)(6), the permittee must demonstrate continuous compliance according to 40 CFR 60.5415b(d)(2) through (4): [40 CFR 60.5415b(d)]

1) The permittee must maintain volumetric flow rate at or below the flow rates specified in 40 CFR 60.5380b(a)(6) for each centrifugal compressor equipped with dry seals. The permittee must conduct the required volumetric flow rate measurement of each dry seal centrifugal compressor in accordance with 40 CFR 60.5380b(a)(6) on or before 8,760 hours of operation after the last volumetric flow rate measurement which demonstrates compliance with the volumetric flow rate specified in 40 CFR 60.5380b(a)(6) for each centrifugal compressor equipped with dry seals. [40 CFR 60.5415b(d)(2)]
2) The permittee must submit the annual reports as required in 40 CFR 60.5420b(b)(1), and (b)(5), as applicable. See **6. Specific Reporting Requirements b.** [40 CFR 60.5415b(d)(3)]
3) The permittee must maintain records as required in 40 CFR 60.5420b(c)(4), (8) through (10), and (12), as applicable. See **5. Specific Recordkeeping Requirements d.** [40 CFR 60.5415b(d)(4)]

h. The permittee must operate and maintain stationary combustion turbines, air pollution control equipment, and monitoring equipment in a manner consistent with good air pollution control practices for minimizing emissions at all times including during startup, shutdown, and malfunction [40 CFR 60.4333a(a)].

2. <u>Emission Limitations</u>:

a. Except as provided in 40 CFR 60.4320a(c), for each stationary combustion turbine, the permittee must not discharge from the affected facility any gases that contain an amount of NO_X that exceeds the applicable emissions standard and be in accordance with the requirements specified in 40 CFR 60.4320a(b). [40 CFR 60.4320a(a)].

b. The permittee must meet the applicable NO_X emissions standard to each affected facility during all times that the affected facility is operating (including periods of startup, shutdown, and malfunction). [40 CFR 60.4320a(d)]

(1) For each new combustion turbine firing natural gas, NO_X emissions shall not exceed 15 ppm at 15 percent O_2 or 24 ng/J (0.55 lb/MMBtu) on a 4-operating-hour rolling average basis. [Table 1 to 40 CFR 60, Subpart KKKKa]

Compliance Demonstration Method:

(a) For the purpose of demonstrating compliance with the applicable emissions standard, the permittee must also meet the requirements specified in 40 CFR 60.4320a(b)(1) through (4), as applicable to their affected facility. [40 CFR 60.4320a(b)]

1) As an alternative to the requirements specified in 40 CFR 60.4320a(b)(1) , the permittee may elect to use the lowest NO_X emission standard that is applicable to their affected facility, as determined using Table 1 to 40 CFR 60, Subpart KKKKa, for the entire required compliance period. [40 CFR 60.4320a(b)(2)]

SECTION B - EMISSION POINTS, EMISSION UNITS, APPLICABLE REGULATIONS, AND OPERATING CONDITIONS (CONTINUED)

(b) The permittee must conduct an initial performance test according to 40 CFR 60.8 using the applicable methods in 40 CFR 60.4400a. See **3. Testing Requirements a.** Thereafter, unless the permittee performs continuous monitoring consistent with 40 CFR 60.4335a, 60.4340a, or 60.4345a, the permittee must conduct subsequent performance tests according to the applicable requirements in 40 CFR 60.4333a(b)(1) through (6). See **3. Testing Requirements b.** [40 CFR 60.4333a(b)]

(c) If the permittee's stationary combustion turbine does not use water injection, steam injection, or post-combustion controls to meet the applicable NO_X emissions standard in 40 CFR 60.4320a, the permittee may elect to demonstrate continuous compliance with an input-based standard according to the provisions in 40 CFR 60.4340a. [40 CFR 60.4333a(c)(2)]

1) If the permittee qualifies and elects to demonstrate continuous compliance according to the provisions of 40 CFR 60.4333a(c)(2), the permittee must demonstrate compliance with the NO_X emissions standard using one of the methods specified in 40 CFR 60.4340a(a)(1) through (3). [40 CFR 60.4340a(a)]
   i. Conduct performance tests according to requirements in 40 CFR 60.4400a; [40 CFR 60.4340a(a)(1)]
   ii. Monitor the NO_X emissions rate using the methodology in appendix E to 40 CFR part 75, or the low mass emissions methodology in 40 CFR 75.19; or [40 CFR 60.4340a(a)(2)]
   iii. Install, calibrate, maintain, and operate an operating parameter continuous monitoring system according to the requirements specified in 40 CFR 60.4340a(b) and consistent with the requirements specified in 40 CFR 60.4342a. See **4. Specific Monitoring Requirements b.** and **c.**

c. Except as provided for in 40 CFR 60.4330a(b) through (e), for each new stationary combustion turbine the permittee must not cause to be discharged from the affected facility and into the atmosphere any gases that contain SO_2 exceeding either: [40 CFR 60.4330a(a)]
(1) 110 nanograms per Joule (ng/J) (0.90 pounds per megawatt-hour (lb/MWh)) gross energy output; or [40 CFR 60.4330a(a)(1)]
(2) 26 ng SO_2/J (0.060 lb SO_2/MMBtu) heat input. [40 CFR 60.4330a(a)(2)]

Compliance Demonstration Method:
The permittee must demonstrate compliance using one of the methods specified in 40 CFR 60.4330a(d)(1) through (4). [40 CFR 60.4333a(d)]

(a) Conduct an initial performance test according to 40 CFR 60.8 and use the applicable methods in 40 CFR 60.4415a. Thereafter, maintain records according to **5. Specific Recordkeeping Requirements b.** [40 CFR 60.4333a(d)(3)]

1) The permittee must submit fuel records (such as a current, valid purchase contract, transportation contract, or results of a fuel analysis) to satisfy the requirements of 40 CFR 60.8. [40 CFR 60.4415a(a)]

SECTION B - EMISSION POINTS, EMISSION UNITS, APPLICABLE REGULATIONS, AND OPERATING CONDITIONS (CONTINUED)

d. The permittee shall provide the utmost care and consideration, in the handling of these materials, to the potentially harmful effects of the emissions resulting from such activities. The permittee shall not allow any affected facility to emit potentially hazardous matter or toxic substances in such quantities or duration as to be harmful to the health and welfare of humans, animals and plants. Evaluation of such facilities as to adequacy of controls and/or procedures and emission potential will be made on an individual basis by the Cabinet. [401 KAR 63:020, Section 3]

Compliance Demonstration Method:
Based upon the emission rates of toxic and hazardous air pollutants determined by the Cabinet using information provided in the application and supplemental information submitted by the source, the Cabinet determines the affected facility to be in compliance with 401 KAR 63:020.

e. See **Section D – Source Emission Limitations and Testing Requirements** for group emission limitations on NO_x and $PM_{2.5}$ which apply to EUs 08, 09, and 10 prior to decommissioning of existing turbines and engines.

3. <u>Testing Requirements</u>:

a. The permittee must conduct the initial performance test for each turbine according to the requirements in 40 CFR 60.8 and 40 CFR 60.4400a(b) through (d). [40 CFR 60.4400a(a)]

(1) The permittee must use the methods in either 40 CFR 60.4400a(b)(1) or (2) to measure the NO_X concentration for each test run. [40 CFR 60.4400a(b)]

(i) Measure the NO_X concentration using EPA Method 7E in appendix A-4 to 40 CFR part 60, EPA Method 20 in appendix A-7 to 40 CFR part 60, EPA Method 320 in appendix A to 40 CFR part 63, or ASTM D6348-12 (Reapproved 2020) (incorporated by reference, see 40 CFR 60.17). [40 CFR 60.4400a(b)(1)]

(ii) Measure the NO_X and diluent gas concentrations using either EPA Method 7E in appendix A-4 to 40 CFR part 60 and EPA Method 3A in appendix A-2 to 40 CFR part 60, or EPA Method 20 in appendix A-7 to 40 CFR part 60. In addition, when only natural gas is being combusted ASTM D6522-20 (incorporated by reference, see 40 CFR 60.17) can be used instead of EPA Method 3A in appendix A-2 to 40 CFR part 60 or EPA Method 20 in appendix A-7 to 40 CFR part 60 to determine the oxygen content in the exhaust gas. Concurrently measure the heat input to the unit, using a fuel flowmeter (or flowmeters), an O_2 or CO_2 CEMS along with a stack flow monitor, or the methodologies in appendix F to 40 CFR part 75. Use EPA Method 19 in appendix A-7 to 40 CFR part 60 to calculate the NO_X emissions rate in lb/MMBtu. [40 CFR 60.4400a(b)(2)]

(2) The permittee must use the methods in either 40 CFR 60.4400a(c)(1) or (2) to select the sampling traverse points for NO_X and (if applicable) diluent gas. [40 CFR 60.4400a(c)]

SECTION B - EMISSION POINTS, EMISSION UNITS, APPLICABLE REGULATIONS, AND OPERATING CONDITIONS (CONTINUED)

(i) The permittee must select the sampling traverse point for NO_X and (if applicable) diluent gas according to EPA Method 20 in appendix A-7 to 40 CFR part 60 or EPA Method 1 in appendix A-1 to 40 CFR part 60 (non-particulate procedures) and sampled for equal time intervals. The sampling must be performed with a traversing single-hole probe, or, if feasible, with a stationary multi-hole probe that samples each of the points sequentially. Alternatively, a multi-hole probe designed and documented to sample equal volumes from each hole may be used to sample simultaneously at the required points. [40 CFR 60.4400a(c)(1)]

(ii) As an alternative to 40 CFR 60.4400a(c)(1), the permittee may select the sampling traverse points for NO_X and (if applicable) diluent gas according to requirements in 40 CFR 60.4400a(c)(2)(i) and (ii). [40 CFR 60.4400a(c)(2)]

(A) The permittee performs a stratification test for NO_X and diluent pursuant to the procedures specified in section 6.5.6.1(a) through (e) in appendix A to 40 CFR part 75. [40 CFR 60.4400a(c)(2)(i)]

(B) Once the stratification sampling is completed, the permittee uses the following alternative sample point selection criteria for the performance test specified in 40 CFR 60.4400a(c)(2)(ii)(A) through (C). [40 CFR 60.4400a(c)(2)(ii)]

(1) If each of the individual traverse point NO_X concentrations is within ±10 percent of the mean concentration for all traverse points, or the individual traverse point diluent concentrations differs by no more than ±0.5 percent CO_2 (or O_2) from the mean for all traverse points, then the permittee may use three points (located either 16.7, 50.0 and 83.3 percent of the way across the stack or duct, or, for circular stacks or ducts greater than 2.4 meters (7.8 feet) in diameter, at 0.4, 1.2, and 2.0 meters from the wall). The three points must be located along the measurement line that exhibited the highest average NO_X concentration during the stratification test; or [40 CFR 60.4400a(c)(2)(ii)(A)]

(2) For a stationary combustion turbine subject to a NO_X emissions standard less than or equal to 15 ppm at 15 percent O_2, the permittee may sample at a single point, located at least 1 meter from the stack wall or at the stack centroid if each of the individual traverse point NO_X concentrations is within ±2.5 percent of the mean concentration for all traverse points, or the individual traverse point diluent concentrations differs by no more than ±0.15 percent CO_2 (or O_2) from the mean for all traverse points. [40 CFR 60.4400a(c)(2)(ii)(C)]

(3) The performance test must be done at any load condition within ±25 percent of 100 percent of the base load rating. The permittee may perform testing at the highest achievable load point, if at least 75 percent of the base load rating cannot be achieved in practice. The permittee must conduct three separate test runs for each performance test. The minimum time per run is 20 minutes. [40 CFR 60.4400a(d)]

(i) The ambient temperature must be greater than 0 °F during the performance test. The Administrator or delegated authority may approve performance testing below 0 °F if the timing of the required performance test and environmental conditions make it impractical to test at ambient conditions greater than 0 °F. [40 CFR 60.4400a(d)(5)]

SECTION B - EMISSION POINTS, EMISSION UNITS, APPLICABLE REGULATIONS, AND OPERATING CONDITIONS (CONTINUED)

b. Except as provided in 40 CFR 60.4333a(b)(2) through (5), the permittee must conduct subsequent performance tests of each stationary combustion turbine within 12 calendar months of the date that the previous performance test was conducted for that stationary combustion turbine. [40 CFR 60.4333a(b)(1)]
   (1) If the NO_X emission result from the most recent performance test is less than or equal to 75 percent of the NO_X emissions standard for the stationary combustion turbine, the permittee may reduce the frequency of subsequent performance tests to 26 calendar months following the date the previous performance test was conducted. If the results of any subsequent performance test exceed 75 percent of the NO_X emissions standard for the stationary combustion turbine, the permittee must resume 14-calendar-month performance testing. [40 CFR 60.4333a(b)(2)]
   (2) An affected facility that has not operated for the 60 calendar days prior to the due date of a performance test is not required to perform the subsequent performance test until 45 calendar days or 10 operating days, whichever is longer, after the next operating day. The Administrator or delegated authority must be notified of recommencement of operation consistent with 40 CFR 60.4375a(d). [40 CFR 60.4333a(b)(3)]
   (3) If the permittee owns or operates an affected facility that has operated 168 operating hours or less, either in total or using a particular fuel, since the date on which the previous performance test was conducted, the permittee may request that the otherwise required performance test be postponed until the affected facility has operated more than 168 operating hours, either in total or using a particular fuel, since the date on which the previous performance test was conducted. A request for an extension under 40 CFR 60.4333a(b)(4) must be addressed to the relevant air division or office director of the appropriate Regional Office of the U.S. EPA as identified in 40 CFR 60.4(a) for his or her approval at least 30 calendar days prior to the date on which the performance test is required to be conducted. If a postponement is approved, a performance test must be conducted within 45 calendar days after the day that the facility reaches 168 hours of operation since the date on which the previous performance test was conducted. When the facility has operated more than 168 operating hours since the date on which the previous performance test was conducted, the Administrator or delegated authority must be notified consistent with 40 CFR 60.4375a(e). [40 CFR 60.4333a(b)(4)]
   (4) For a facility at which a group consisting of no more than five similar stationary combustion turbines (i.e., same manufacturer and model number) is operated, the permittee may request the use of a custom testing schedule by submitting a written request to the Administrator or delegated authority. The minimum requirements of the custom schedule include the conditions specified in 40 CFR 60.4333a(b)(5)(i) through (v). [40 CFR 60.4333a(b)(5)]
      (i) Emissions from the most recent performance test for each individual affected facility are 75 percent or less of the applicable standard; [40 CFR 60.4333a(b)(5)(i)]
      (ii) Each stationary combustion turbine uses the same emissions control technology; [40 CFR 60.4333a(b)(5)(ii)]
      (iii) Each stationary combustion turbine is operated in a similar manner; [40 CFR 60.4333a(b)(5)(iii)]
      (iv) Each stationary combustion turbine and its emissions control equipment are maintained according to the manufacturer's recommended maintenance procedures; and [40 CFR 60.4333a(b)(5)(iv)]

SECTION B - EMISSION POINTS, EMISSION UNITS, APPLICABLE REGULATIONS, AND OPERATING CONDITIONS (CONTINUED)

(v) A performance test is conducted on each affected facility at least once every 5 calendar years. [40 CFR 60.4333a(b)(5)(v)]

(5) A stationary combustion turbine subject to a NO_X emissions standard in 40 CFR 60.4320a that exchanges the combustion turbine engine for an overhauled combustion turbine engine as part of an exchange program, must conduct an initial performance test according to 40 CFR 60.8 using the applicable methods in 40 CFR 60.4400a or 40 CFR 60.4405a. (as applicable). [40 CFR 60.4333a(b)(6)]

c. The permittee must conduct their first volumetric flow rate measurement from each centrifugal compressor equipped with a dry seal on or before 8,760 hours of operation after startup. [40 CFR 60.5380b(a)(6)(ii)]

d. The permittee must conduct subsequent volumetric flow rate measurements from each centrifugal compressor equipped with dry seals on or before 8,760 hours of operation after the previous measurement which demonstrates compliance with the 10 scfm volumetric flow rate per seal. If the individual seals are manifolded to a single open-ended vent line, the volumetric flow rate must not exceed the sum of the individual seals multiplied by 10 scfm. [40 CFR 60.5380b(a)(6)(iii)]

e. The permittee must determine volumetric flow rate for each centrifugal compressor, as specified in 40 CFR 60.5380b(a)(7)(iii). [40 CFR 60.5380b(a)(7)]

(1) The permittee must determine the volumetric flow rate from each centrifugal compressor equipped with dry seals as specified in 40 CFR 60.5380b(a)(7)(iii)(A) or (B). If the volumetric flow rate exceeds 10 scfm multiplied by the number of dry seals connected to the vent, the dry seals connected to the measured vent must be repaired as provided in 40 CFR 60.5380b(a)(8). See **1. Operating Limitations f**. [40 CFR 60.5380b(a)(7)(iii)]

(i) For centrifugal compressors equipped with dry seals in operating-mode or in standby-pressurized-mode, determine volumetric flow rate at standard conditions from each centrifugal compressor equipped with dry seals using one of the methods specified in 40 CFR 60.5380b(a)(7)(iii)(A)(1) through (3). [40 CFR 60.5380b(a)(7)(iii)(A)]

(A) The permittee may choose to use any of the methods set forth in 40 CFR 60.5386b(a) to screen for leaks/emissions. For the purposes of this paragraph, when using any of the methods in 40 CFR 60.5386b(a), emissions are detected whenever a leak is detected according to the method. If emissions are detected using the methods set forth in 40 CFR 60.5386b(a), then the permittee must use one of the methods specified in 40 CFR 60.5380b(a)(7)(iii)(A)(*2*) or (*3*) to determine the volumetric flow rate. If emissions are not detected using the methods in 40 CFR 60.5386b(a), then the permittee may assume that the volumetric emissions are zero. [40 CFR 60.5380b(a)(7)(iii)(A)(*1*)]

(B) Use a temporary or permanent flow meter according to methods set forth in 40 CFR 60.5386b(b). [40 CFR 60.5380b(a)(7)(iii)(A)(*2*)]

(C) Use a high-volume sampler according to the method set forth in 40 CFR 60.5386b(c). [40 CFR 60.5380b(a)(7)(iii)(A)(*3*)]

SECTION B - EMISSION POINTS, EMISSION UNITS, APPLICABLE REGULATIONS, AND OPERATING CONDITIONS (CONTINUED)

(ii) For conducting measurements on manifolded groups of centrifugal compressors equipped with dry seals, the permittee must determine the volumetric flow rate from the dry seal centrifugal compressors as specified in 40 CFR 60.5380b(a)(7)(iii)(B)(1) or (2). [40 CFR 60.5380b(a)(7)(iii)(B)]

(A) Measure at a single point in the manifold downstream of all centrifugal compressors equipped with dry seals inputs and, if practical, prior to comingling with other non-compressor emission sources. [40 CFR 60.5380b(a)(7)(iii)(B)(*1*)]

(B) Determine the volumetric flow rate at standard conditions from the common stack using one of the methods specified in 40 CFR 60.5380b(a)(7)(iii)(A)(1) through (3). [40 CFR 60.5380b(a)(7)(iii)(B)(*2*)]

f. The permittee must use one of the methods described in 40 CFR 60.5386b(a)(1) and (2) to screen for emissions or leaks from applicable wet seal centrifugal compressor and dry seal centrifugal compressor vents when complying with 40 CFR 60.5380b(a)(3) through (6). [40 CFR 60.5386b(a)]

(1) *OGI instrument*. Use an OGI instrument for equipment leak detection as specified in either 40 CFR 60.5386b(a)(1)(i) or (ii). For the purposes of 40 CFR 60.5386b (a)(1)(i) and (ii), any visible emissions observed by the OGI instrument from reciprocating rod packing or compressor dry or wet seal vent is a leak. [40 CFR 60.5386b(a)(1)]

(i) *OGI instrument as specified in 40 CFR 60.5397b*. For reciprocating compressor, applicable wet seal centrifugal compressor, and dry seal centrifugal compressor affected facilities located at compressor stations, or other location that is not an onshore natural gas processing plant, use an OGI instrument to screen for emissions from compressor dry seals in accordance with the elements of 40 CFR 60.5397b(c)(7). [40 CFR 60.5386b(a)(1)(ii)]

(2) *Method 21*. Use Method 21 in appendix A-7 of 40 CFR part 60 according to 40 CFR 60.5403b(b)(1) and (2). For the purposes of this section, an instrument reading of 500 parts per million by volume (ppmv) above background or greater is a leak. [40 CFR 60.5386b(a)(2)]

4. <u>Specific Monitoring Requirements</u>:

a. The permittee shall monitor the following for each turbine on a monthly basis: [401 KAR 52:020, Section 10]

(1) Fuel usage during normal operation periods (MMscf)

(2) Fuel usage in low temperature (-20 °F to 0 °F) and very low temperature (< -20 °F) operating modes

(3) Number of startups and shutdowns

b. If the permittee opts to demonstrate compliance according to the procedures described in 40 CFR 60.4340a(a)(3), continuous operating parameter monitoring must be performed using the methods specified in 40 CFR 60.4340a(b)(1) through (b)(4) as applicable to the stationary combustion turbine. [40 CFR 60.4340a(b)]

SECTION B - EMISSION POINTS, EMISSION UNITS, APPLICABLE REGULATIONS, AND OPERATING CONDITIONS (CONTINUED)

(1) Selection of the operating parameters used to comply with 40 CFR 60.4340a(b) must be identified in the performance test report. The selection of operating parameters is subject to the review and approval of the Administrator or delegated authority. [40 CFR 60.4340a(b)(1)]
(2) For a lean premix stationary combustion turbine, the permittee must continuously monitor the appropriate parameters to determine whether the unit is operating in low-NO_X mode during periods when low-NO_X operation is required to comply with the applicable emission NO_X standard. [40 CFR 60.4340a(b)(2)]
(3) For a stationary combustion turbine other than a lean premix stationary combustion turbine, the permittee must define parameters indicative of the unit's NO_X formation characteristics and monitor these parameters continuously. [40 CFR 60.4340a(b)(3)]
(4) The permittee must perform the parametric monitoring described in section 2.3 in appendix E to 40 CFR part 75 or in 40 CFR 75.19(c)(1)(iv)(H). [40 CFR 60.4340a(b)(4)]

c. If the permittee monitors parameters according to 40 CFR 60.4340a, the applicable parameters must be continuously monitored and recorded during the performance test, to establish acceptable values and ranges. The permittee may supplement the performance test data with engineering analyses, design specifications, manufacturer's recommendations, and other relevant information to define the acceptable parametric ranges more precisely. The permittee must develop and keep on-site a parameter monitoring plan which explains the procedures used to document proper operation of the NO_X emission controls. See **5. Specific Recordkeeping Requirements c.** [40 CFR 60.4342a(a)]

5. <u>Specific Recordkeeping Requirements</u>:

a. The permittee shall maintain records of the following for each turbine on a monthly basis: [401 KAR 52:020, Section 10]
(1) Fuel usage during normal operation periods (MMscf)
(2) Fuel usage in low temperature (-20 °F to 0 °F) and very low temperature (< -20 °F) operating modes
(3) Number of startups and shutdowns

b. If the permittee elects to demonstrate compliance with a SO_2 emissions standard according to 40 CFR 60.4333a(d)(3), the permittee must maintain on-site records (such as a current, valid purchase contract, tariff sheet, or transportation contract) documenting that total sulfur content for the fuel combusted in the permittee's stationary combustion turbines at all times does not exceed the conditions specified in 40 CFR 60.4372a(b) through (e), as applicable to the permittee's stationary combustion turbines. [40 CFR 60.4333a(d)(3), 40 CFR 60.4372a(a), and 40 CFR 60.4390a(f)]
(1) The fuel combusted must have a potential SO_2 emissions rate of 26 ng/J (0.060 lb/MMBtu) heat input or less. [40 CFR 60.4372a(b)]

SECTION B - EMISSION POINTS, EMISSION UNITS, APPLICABLE REGULATIONS, AND OPERATING CONDITIONS (CONTINUED)

c. If the permittee monitors parameters according to 40 CFR 60.4340a, the permittee must develop and keep on-site a parameter monitoring plan which explains the procedures used to document proper operation of the NOX emission controls. The plan must include the information specified in 40 CFR 60.4342a(a)(1) through (a)(6) as follows: [40 CFR 60.4342a(a)]
   (1) Identification of the parameters to be monitored and show there is a significant relationship to emissions and proper operation of the NO_X emission controls; [40 CFR 60.4342a(a)(1)]
   (2) Selected parameter ranges (or designated conditions) indicative of proper operation of the stationary combustion turbine NO_X emission controls, or describe the process by which such range (or designated condition) will be established; [40 CFR 60.4342a(a)(2)]
   (3) Explanation of the process the permittee will use to make certain that the permittee obtains data that are representative of the emissions or parameters being monitored (such as detector location, installation specification if applicable); [40 CFR 60.4342a(a)(3)]
   (4) Description of quality assurance and control practices used to ensure the continuing validity of the data; [40 CFR 60.4342a(a)(4)]
   (5) Description of the frequency of monitoring and the data collection procedures which the permittee will use (e.g., the permittee is using a computerized data acquisition over a number of discrete data points with the average (or maximum value) being used for purposes of determining whether an exceedance has occurred); and [40 CFR 60.4342a(a)(5)]
   (6) Justification for the proposed elements of the monitoring. If a proposed performance specification differs from manufacturer recommendation, the permittee must explain the reasons for the differences. The permittee must submit the data supporting the justification, but may refer to generally available sources of information used to support the justification. The permittee may rely on engineering assessments and other data, provided they demonstrate factors which assure compliance or explain why performance testing is unnecessary to establish indicator ranges. [40 CFR 60.4342a(a)(6)]

d. The permittee must maintain the records identified as specified in 40 CFR 60.7(f) and in 40 CFR 60.5420b(c)(4). All records required by 40 CFR 60, Subpart OOOOb must be maintained either onsite or at the nearest local field office for at least 5 years. Any records required to be maintained by this subpart that are submitted electronically via the EPA's CEDRI may be maintained in electronic format. This ability to maintain electronic copies does not affect the requirement for facilities to make records, data, and reports available upon request to a delegated air agency or the EPA as part of an on-site compliance evaluation. [40 CFR 60.5420b(c) and 60.5420b(c)(4)]
   (1) For each centrifugal compressor affected facility, you must maintain records of deviations in cases where the centrifugal compressor was not operated in compliance with the requirements specified in 40 CFR 60.5380b, including a description of each deviation, the date and time each deviation began and the duration of each deviation. [40 CFR 60.5420b(c)(4)(i)]

SECTION B - EMISSION POINTS, EMISSION UNITS, APPLICABLE REGULATIONS, AND OPERATING CONDITIONS (CONTINUED)

(2) For each centrifugal compressor affected facility dry seal compressor complying with the standard in 40 CFR 60.5380b(a)(4), (5) or (6), the permittee must maintain the records specified in 40 CFR 60.5420b(c)(4)(iii)(A) through (H).
[40 CFR 60.5420b(c)(4)(iii)]

(i) Records of the cumulative number of hours of operation since initial startup, or since the previous volumetric flow rate measurement, as applicable.
[40 CFR 60.5420b(c)(4)(iii)(A)]

(ii) A description of the method used and the results of the volumetric flow rate measurement or emissions screening, as applicable.
[40 CFR 60.5420b(c)(4)(iii)(B)]

(iii) Records for all flow meters, composition analyzers and pressure gauges used to measure volumetric flow rates as specified in 40 CFR 60.5420b(c)(4)(iii)(C)(*1*) through (*6*). [40 CFR 60.5420b(c)(4)(iii)(C)]

(A) Description of standard method published by a consensus-based standards organization or industry standard practice. [40 CFR 60.5420b(c)(4)(iii)(C)(*1*)]

(B) Records of volumetric flow rate emissions calculations conducted according to 40 CFR 60.5380b(a)(4) through (6), as applicable.
[40 CFR 60.5420b(c)(4)(iii)(C)(*2*)]

(C) Records of manufacturer's operating procedures and measurement methods.
[40 CFR 60.5420b(c)(4)(iii)(C)(*3*)]

(D) Records of manufacturer's recommended procedures or an appropriate industry consensus standard method for calibration and results of calibration, recalibration, and accuracy checks. [40 CFR 60.5420b(c)(4)(iii)(C)(*4*)]

(E) Records which demonstrate that measurements at the remote location(s) can, when appropriate correction factors are applied, reliably and accurately represent the actual temperature or total pressure at the flow meter under all expected ambient conditions. The permittee must include the date of the demonstration, the data from the demonstration, the mathematical correlation(s) between the remote readings and actual flow meter conditions derived from the data, and any supporting engineering calculations. If adjustments were made to the mathematical relationships, a record and description of such adjustments.
[40 CFR 60.5420b(c)(4)(iii)(C)(*5*)]

(F) Record of each initial calibration or a recalibration which failed to meet the required accuracy specification and the date of the successful recalibration.
[40 CFR 60.5420b(c)(4)(iii)(C)(*6*)]

(iv) Date when performance-based volumetric flow rate is exceeded.
[40 CFR 60.5420b(c)(4)(iii)(D)]

(v) The date of successful repair of the compressor seal, including follow-up performance-based volumetric flow rate measurement to confirm successful repair.
[40 CFR 60.5420b(c)(4)(iii)(E)]

(vi) Identification of each compressor seal placed on delay of repair and explanation for each delay of repair. [40 CFR 60.5420b(c)(4)(iii)(F)]

(vii) For each compressor seal or part needed for repair placed on delay of repair because of replacement seal or part unavailability, the permittee must document: the date the seal or part was added to the delay of repair list, the date the replacement seal or part was ordered, the anticipated seal or part delivery date (including any

SECTION B - EMISSION POINTS, EMISSION UNITS, APPLICABLE REGULATIONS, AND OPERATING CONDITIONS (CONTINUED)

estimated shipment or delivery date provided by the vendor), and the actual arrival date of the seal or part. [40 CFR 60.5420b(c)(4)(iii)(G)]

(viii) Date of planned shutdowns that occur while there are any seals or parts that have been placed on delay of repair. [40 CFR 60.5420b(c)(4)(iii)(H)]

e. The permittee must maintain records of their information used to demonstrate compliance with 40 CFR 60, Subpart KKKKa, as specified in 40 CFR 60.7. [40 CFR 60.4390a(a)]

f. Any records required to be maintained by 40 CFR 60, Subpart KKKKa that are submitted via the EPA's CEDRI may be maintained in electronic format. This ability to maintain electronic copies does not affect the requirement to make records, data, and reports available upon request to a delegated air agency or the EPA as part of an on-site compliance evaluation. [40 CFR 60.4375a(j)]

6. <u>Specific Reporting Requirements</u>:

a. If the permittee elects to continuously monitor parameters of the stationary combustion turbine, the permittee must submit reports of excess emissions and monitor downtime according to 40 CFR 60.7(c). Excess emissions must be reported for all periods of unit operation, including startup, shutdown, and malfunction. [40 CFR 60.4375a(a)]

b. For reports required under 40 CFR 60.4375a(a), periods of excess emissions and monitor downtime for stationary combustion turbines using combustion parameters are reported as specified in 40 CFR 60.4380a(c)(1) and (2). [40 CFR 60.4380a(c)]

(1) Excess emissions that must be reported are each 4-operating-hour rolling average in which any monitored parameter (as averaged over the 4-operating-hour period) does not achieve the target value or is outside the acceptable range defined in the parameter monitoring plan for the unit. [40 CFR 60.4380a(c)(1)]

(2) Periods of monitor downtime that must be reported are each operating hour in which any of the required parametric data that are used to calculate the emission rate, as applicable, used to determine compliance, are either not recorded or are out-of-control. [40 CFR 60.4380a(c)(2)]

c. The notification requirements of 40 CFR 60.8 apply to the initial and subsequent performance tests. [40 CFR 60.4375a(b)]

d. The permittee must submit to the Administrator semiannual reports of the following recorded information. Beginning on January 15, 2027, or once the report template 40 CFR 60, Subpart KKKKa, has been available on the Compliance and Emissions Data Reporting Interface (CEDRI) website (*https://www.epa.gov/electronic-reporting-air-emissions/cedri*) for one year, whichever date is later, submit all subsequent reports using the appropriate electronic report template on the CEDRI website for 40 CFR 60, Subpart KKKKa, and following the procedure specified in 40 CFR 60.4375a(g). The date report templates become available will be listed on the CEDRI website. Unless the Administrator or delegated State agency or other authority has approved a different schedule for submission of reports, the report must be submitted by the deadline specified in 40 CFR

SECTION B - EMISSION POINTS, EMISSION UNITS, APPLICABLE REGULATIONS, AND OPERATING CONDITIONS (CONTINUED)

60, Subpart KKKKa, regardless of the method in which the report is submitted. [40 CFR 60.4375a(f)]

d. *Reporting requirements.* The permittee must submit annual reports containing the information specified in 40 CFR 60.5420b(b)(1) through (14) following the procedure specified in 40 CFR 60.5420b(b)(15). The permittee must submit performance test reports as specified in 40 CFR 60.5420b(b)(12) or (13), if applicable. Subject to the exception in the next sentence, the initial annual report is due no later than 90 days after the end of the initial compliance period as determined according to 40 CFR 60.5410b. Notwithstanding the preceding sentence, no annual report is due before November 30, 2026, on or before the date the permittee must submit all annual reports that were due before November 30, 2026 per the timing specified in the preceding sentence; then subsequent annual reports thereafter are due no later than 90 days after the end of each annual compliance period. The permittee may submit one report for multiple affected facilities provided the report contains all of the information required as specified in 40 CFR 60.5420b(b)(1) through (14). Annual reports may coincide with title V reports as long as all the required elements of the annual report are included. The permittee may arrange with the Administrator a common schedule on which reports required by 40 CFR 60, Subpart OOOOb may be submitted as long as the schedule does not extend the reporting period. [40 CFR 60.5420b(b)]

e. Refer to **SECTION F Monitoring, Recordkeeping, and Reporting Requirements.**

SECTION B - EMISSION POINTS, EMISSION UNITS, APPLICABLE REGULATIONS, AND OPERATING CONDITIONS (CONTINUED)

Emission Unit 12 (012-1, 012-2, 012-3) - Natural Gas-Fired Indirect Heat Exchangers
Description: Units 4T, 5T, and 6T Fuel Gas Heaters

Fuel:	Natural Gas
Maximum hourly capacity:	1.154 MMBtu/hr each
Construction commenced:	Proposed 2026
Controls:	None

Emission Unit 14 (014) – BL1 Sellers 150 HP Boiler
Description:

Fuel:	Natural Gas
Maximum hourly capacity:	6.28 MMBtu/hr each
Construction commenced:	2015
Controls:	None

APPLICABLE REGULATIONS:
401 KAR 59:015, *New indirect heat exchangers*

STATE-ORIGIN REQIREMENTS:
401 KAR 63:020, *Potentially hazardous matter or toxic substances*

Note: The above-listed applicable regulations and related requirements shall apply upon reclassification of the facility as an area source of HAP emissions. See **Section H – Alternate Operating Scenario 1** for HAP major source requirements which apply prior to reclassification of the facility.

1. **Operating Limitations:**
During a startup period or shutdown period, the permittee shall comply with the work practice standards established in 401 KAR 59:015, Section 7. [401 KAR 59:015, Section 7]

   a. The permittee shall comply with 401 KAR 50:055, Section 2(5); [401 KAR 59:015, Section 7(1)(a)]

   b. The frequency and duration of startup periods or shutdown periods shall be minimized by the affected facility; [401 KAR 59:015, Section 7(1)(b)]

   c. All reasonable steps shall be taken by the permittee to minimize the impact of emissions on ambient air quality from the affected facility during startup periods and shutdown periods; [401 KAR 59:015, Section 7(1)(c)]

   d. The actions, including duration of the startup period, of the permittee during startup and shutdown periods, shall be documented in signed, contemporaneous logs or other relevant evidence, and; [401 KAR 59:015, Section 7(1)(d)]

   e. Startups and shutdowns shall be conducted according to either: [401 KAR 59:015, Section 7(1)(e)]
   (1) The manufacturer's recommended procedures; or [401 KAR 59:015, Section 7(1)(e)1.]

SECTION B - EMISSION POINTS, EMISSION UNITS, APPLICABLE REGULATIONS, AND OPERATING CONDITIONS (CONTINUED)

(2) Recommended procedures for a unit of similar design, for which manufacturer's recommended procedures are available, as approved by the cabinet based on documentation provided by the permittee. [401 KAR 59:015, Section 7(1)(e)2.]

Compliance Demonstration Method:
Compliance shall be demonstrated according to **5. Specific Recordkeeping Requirements b.**

2. <u>Emission Limitations</u>:

a. The permittee shall not cause emissions of particulate matter in excess of 0.56 lb/MMBtu actual heat input. [401 KAR 59:015, Section 4(1)(c)]

b. The permittee shall not cause emissions of particulate matter in excess of 20 percent opacity, except: [401 KAR 59:015, Section (4)(2)]
   (1) A maximum of 40 percent opacity shall be allowed for a maximum of 6 consecutive minutes in any 60 consecutive minutes during fire box cleaning or soot blowing; and [401 KAR 59:015, Section 4(2)(b)]
   (2) For emissions from an affected facility caused by building a new fire, emissions during the period required to bring the boiler up to operating conditions shall be allowed, if the method used is recommended by the manufacturer and the time does not exceed the manufacturer's recommendations. [401 KAR 59:015, Section 4(2)(c)]

c. The permittee shall not cause emissions of gases that contain sulfur dioxide in excess of 3.00 lb/MMBtu actual heat input. [401 KAR 59:015, Section 5(1)(c)]

Compliance Demonstration Method:
Compliance with the 401 KAR 59:015 emission standards is assumed. [401 KAR 50:045, Section 4(3)(c)1.]

d. The permittee shall provide the utmost care and consideration, in the handling of these materials, to the potentially harmful effects of the emissions resulting from such activities. The permittee shall not allow any affected facility to emit potentially hazardous matter or toxic substances in such quantities or duration as to be harmful to the health and welfare of humans, animals and plants. Evaluation of such facilities as to adequacy of controls and/or procedures and emission potential will be made on an individual basis by the Cabinet. [401 KAR 63:020, Section 3]

   Compliance Demonstration Method:
   Based upon the emission rates of toxic and hazardous air pollutants determined by the Cabinet using information provided in the application and supplemental information submitted by the source, the Cabinet determines the affected facility to be in compliance with 401 KAR 63:020.

e. See **Section D – Source Emission Limitations and Testing Requirements** for group emission limitations on NO_x and $PM_{2.5}$ which apply to EU 12.

SECTION B - EMISSION POINTS, EMISSION UNITS, APPLICABLE REGULATIONS, AND OPERATING CONDITIONS (CONTINUED)

3. **Testing Requirements:**
   Performance testing using the reference methods specified in 401 KAR 50:015 shall be conducted if required by the Cabinet. [401 KAR 50:045, Section 1, and 401 KAR 59:005, Section 2(2)]

4. **Specific Monitoring Requirements:**
   The permittee shall monitor the amount of natural gas combusted, in MMscf, on a monthly basis [401 KAR 52:020, Section 10].

5. **Specific Recordkeeping Requirements:**
   The permittee shall maintain records of the amount of natural gas combusted, in MMscf, on a monthly basis. [401 KAR 52:020, Section 10]

6. **Specific Reporting Requirements:**
   Refer to **Section F – Monitoring, Recordkeeping, and Reporting Requirements.**

SECTION B - EMISSION POINTS, EMISSION UNITS, APPLICABLE REGULATIONS, AND OPERATING CONDITIONS (CONTINUED)

Emission Unit 13 (013) V05 Pipeline Liquids Storage Tank

Description: TNK V05 Pipeline Liquids Storage Tank
Capacity: 2640 gallons
Construction commenced: Proposed 2026

APPLICABLE REGULATIONS:
401 KAR 63:020, *Potentially hazardous matter or toxic substances* [State-Origin Requirement]

PRECLUDED REGULATIONS:
40 CFR 60.5360b through 60.5432b, **(Subpart OOOOb)**, *Standards of Performance for Crude Oil and Natural Gas Facilities for Which Construction, Modification or Reconstruction Commenced After December 6, 2022*

1. **Operating Limitations:**
To preclude 40 CFR 60, Subpart OOOOb, the permittee shall limit the pipeline liquids throughput to the tank to no more than 7,920 gallons per year on a 12-month rolling basis. [401 KAR 52:020, Section 10]

Compliance Demonstration Method:
(a) See **4. Specific Monitoring Requirements**, **5. Specific Recordkeeping Requirements**, and **6. Specific Reporting Requirements**

(b) The permittee shall calculate the 12-month rolling throughput total using the following equation:

$$Q = \sum_{i=1}^{12} Q_i$$

Where:
Q = Pipeline liquids throughput 12-month rolling total, gallons
i = 1, 2, … 11, 12 months, where the actual calendar months used in the compliance calculation are specific to each rolling 12-month compliance period
Q_i = Pipeline liquids throughput in month i, gallons

2. **Emission Limitations:**
a. The permittee shall provide the utmost care and consideration, in the handling of these materials, to the potentially harmful effects of the emissions resulting from such activities. The permittee shall not allow any affected facility to emit potentially hazardous matter or toxic substances in such quantities or duration as to be harmful to the health and welfare of humans, animals and plants. Evaluation of such facilities as to adequacy of controls and/or procedures and emission potential will be made on an individual basis by the Cabinet. [401 KAR 63:020, Section 3]

SECTION B - EMISSION POINTS, EMISSION UNITS, APPLICABLE REGULATIONS, AND OPERATING CONDITIONS (CONTINUED)

Compliance Demonstration Method:
Based upon the emission rates of toxic and hazardous air pollutants determined by the Cabinet using information provided in the application and supplemental information submitted by the source, the Cabinet determines the affected facility to be in compliance with 401 KAR 63:020.

b. To preclude 40 CFR 60, Subpart OOOOb, the permittee shall limit emissions of VOC from the tank to less than 5.4 tpy on a 12-month rolling basis. [401 KAR 52:020, Section 10]

c. To preclude 40 CFR 60, Subpart OOOOb, the permittee shall limit emissions of methane from the tank to less than 18 tpy on a 12-month rolling basis. [401 KAR 52:020, Section 10]

Compliance Demonstration Method:
Initial compliance with **2. Emission Limitations b.** and **c.** was demonstrated by determination of the potential for VOC and methane emissions using a generally accepted calculation methodology accounting for working and breathing losses in the application received August 5, 2025, and supplemental information received by the Division on October 31, 2025, which accounted for flashing losses. Continuous compliance is demonstrated by complying with **1. Operating Limitations** and the associated monitoring, recordkeeping, and periodic reporting requirements.

3. **Testing Requirements:**
Performance testing using the reference methods specified in 401 KAR 50:015 shall be conducted if required by the Cabinet. [401 KAR 50:045, Section 1]

4. **Specific Monitoring Requirements:**
The permittee shall ~~install, calibrate, and maintain according to manufacturer specifications a device capable of continuously~~ monitor~~ing~~ the volume of pipeline liquids throughput in gallons. [401 KAR 52:020, Section 10]

5. **Specific Recordkeeping Requirements:**
The permittee shall maintain records of the volume of pipeline liquids throughput in gallons on a monthly basis, and the 12-month rolling total of pipeline liquids throughput as determined according to **Compliance Demonstration Method (b)**. [401 KAR 52:020, Section 10]

6. **Specific Reporting Requirements:**
The permittee shall provide the volume of pipeline liquids throughput on a monthly basis and the 12-month rolling totals of pipeline liquid throughput for each month in the semiannual monitoring report required by **Section F - Monitoring, Recordkeeping, and Reporting Requirements**

SECTION C - INSIGNIFICANT ACTIVITIES

The following listed activities have been determined to be insignificant activities for this source pursuant to 401 KAR 52:020, Section 6. Although these activities are designated as insignificant the permittee must comply with the applicable regulation. Process and emission control equipment at each insignificant activity subject to an opacity standard shall be inspected monthly and a qualitative visible emissions evaluation made. Results of the inspection, evaluation, and any corrective action shall be recorded in a log.

	Description	Generally Applicable Regulation
1.	Diesel storage tank (DF01), 560 gal	None
2.	Lube oil storage tank, 8,800 gal	None
3.	Oily sump water storage tank, 16,920 gal	None
4.	Glycol/water storage tank, 940 gal	401 KAR 63:020
5.	Eight comfort/space heaters, less than 1 mmBtu/hr, each	401 KAR 59:010, 401 KAR 63:020
6.	Two pipeline liquids storage tanks, 1,100 gal, each	401 KAR 63:020
7.	Five pipeline liquids storage tanks, 2,480 gal, each	401 KAR 63:020
8.	Emissions from truck loading pipeline liquids (TL PL)	401 KAR 63:020
9.	Emissions from truck loading oily water (TL OW)	None
10.	Two HVAC boilers less than 1 mmBtu/hr, each	401 KAR 59:010, 401 KAR 63:020
11.	Two water heaters, less than 1 mmBtu/hr, each	401 KAR 59:010, 401 KAR 63:020
12.	Two ovens, less than 1 mmBtu/hr, each	401 KAR 59:010
13.	Oil storage tank, 560 gal	None
14.	Coolant storage tank, 940 gal	401 KAR 63:020
15.	Oily water storage tank, 20,300 gal	None
16.	Oily water storage tank, 12,690 gal	None
17.	Parts washer, 0.32 gal/hr (6.84 lb/gal)	None
18.	Nine separator vessels, ≤ 300 gal, each	401 KAR 63:020

SECTION C - INSIGNIFICANT ACTIVITIES (CONTINUED)

19.	Boiler/Heater (CHTR 01), 0.004 mmBtu/hr	401 KAR 59:010, 401 KAR 63:020
20.	Separator vessels (SVV V01C01 through 03), 59 gal, each	401 KAR 63:020
21.	Separator vessel (V02), 470 gal	401 KAR 63:020
22.	Oily water tank (OW01), 220 gal	None

SECTION D - SOURCE EMISSION LIMITATIONS AND TESTING REQUIREMENTS

1. As required by Section 1b of the *Cabinet Provisions and Procedures for Issuing Title V Permits* incorporated by reference in 401 KAR 52:020, Section 26; compliance with annual emissions and processing limitations contained in this permit, shall be based on emissions and processing rates for any twelve (12) consecutive months.

2. Nitrogen Dioxide (NOx), CO, particulate matter (PM/PM10/PM2.5), and VOC emissions, measured by applicable reference methods, or an equivalent or alternative method specified in 40 C.F.R. Chapter I, or by a test method specified in the state implementation plan shall not exceed the respective limitations specified herein.

3. **Source Emission Limitations:**
   a. To preclude applicability of major source requirements in 40 CFR part 63, the permittee shall comply with the following emission limitations upon startup of any one of the Emission Units listed below: [401 KAR 52:020, Section 10]

   Emission Units

   08 (008)
   09 (009)
   10 (010)

   (1) Source-wide emissions of total HAP shall not equal or exceed twenty-two and a half (22.5) tons per year on a rolling twelve (12) month basis.
   (2) Source-wide emissions of each individual HAP shall not equal or exceed 9 tons per year on a rolling twelve (12) month basis.

   Compliance Demonstration Method:

   (a) Beginning immediately prior to start-up of any one of EU 08, EU 09, and/or EU 10, and continuing until the permittee submits written notice that existing emission units have shut down such that the source-wide uncontrolled PTE of hazardous air pollutants is less than major source thresholds established in 40 CFR 63.2, the permittee shall calculate and record monthly and 12-month rolling totals of total HAP and individual HAP (formaldehyde) emissions from all operating emission units. The permittee shall use the emission factors provided in the application for construction and operation of EU 08 through EU 12 and the emission factors most recently approved by the Division for the existing emission units. Monthly and 12-month rolling totals shall be provided in the semiannual monitoring report required by **Section F. 5.** for each reporting period during which the emission limitations are in effect. The permittee shall maintain records of detailed emission calculations and shall provide such records to the Division upon request.

   (b) A major source reclassifying to an area source status under 40 CFR part 63 remains subject to any applicable major source requirements established under 40 CFR part 63 until the reclassification becomes effective. Major source requirements, as applicable, are contained in **Section H** under Alternate Operating Scenario #1. After the reclassification becomes effective, the source is subject to any applicable area source requirements established under 40 CFR part 63 immediately, provided the compliance date for the area source requirements has passed. Area source requirements, as

SECTION D - SOURCE EMISSION LIMITATIONS AND TESTING REQUIREMENTS (CONTINUED)

applicable, are contained in **Section B**. The permittee of a major source that becomes an area source subject to newly applicable area source requirements under 40 CFR part 63 must comply with the initial notification requirements pursuant to 40 CFR 63.9(b). The permittee of a major source that becomes an area source must also provide to the Administrator any change in the information already provided under 40 CFR 63.9(b) per 40 CFR 63.9(j). For the purposes of this requirement, reclassification is effective upon submittal of these notifications.

b. To preclude applicability of 401 KAR 51:017, the permittee shall comply with the following emission limitations upon startup of any one of the New Emission Units listed below. These emission limitations shall remain in effect until the Division receives notice that all of the Existing Emission Units listed under **3. Source Emission Limitations c.** have been decommissioned and removed from service. [401 KAR 52:020, Section 10]

New Emission Units

08 (008)
09 (009)
10 (010)
11 (011)
12 (012-1, 012-2, 012-3)

(1) Emissions of NO_x from the group of New Emission Units shall not exceed 36 tpy total on a rolling twelve (12) month basis.
(2) Emissions of $PM_{2.5}$ from the group of New Emission Units shall not exceed 9 tpy total on a rolling twelve (12) month basis.

c. To preclude applicability of 401 KAR 51:017, the permittee shall decommission and remove from service the following Existing Emission Units. The permittee shall notify the Division once all of the Existing Emission Units have been decommissioned and removed from service. Once the Division receives such notification, the permittee is prohibited from operating the Existing Emission Units. [401 KAR 52:020, Section 10]

Existing Emission Units

01 (01-07)
02 (08-10)
03 (11-12)
04 (13)
05 (005)
06 (006)

Compliance Demonstration Method:

(a) Upon startup of any one of the New Emission Units and prior to notifying the Division of the decommissioning and removal from service of all of the Existing Emission Units, the permittee shall calculate and record monthly and 12-month rolling totals of NO_X and $PM_{2.5}$. The permittee shall use the emission factors provided in the application for construction and operation of EU 08 through EU 12. Monthly and 12-month rolling totals shall be provided in the semiannual monitoring report required by **Section F. 5.** for each reporting period during which the emission limitations are in effect. The permittee shall maintain

SECTION D - SOURCE EMISSION LIMITATIONS AND TESTING REQUIREMENTS (CONTINUED)

records of detailed emission calculations and shall provide such records to the Division upon request.

(b) The permittee shall notify the Division once all the Existing Emission Units have been decommissioned and removed from service. Once the Division receives such notification, **3. Source Emission Limitations b.** shall no longer apply

4. **Reasonable, Available, and Practical Control Procedures:**
The permittee shall submit a Reasonable, Available, and Practical (RAP) control procedure analysis addressing VOC emissions from the process units EU 07 (GR-ST and GR-PL) and Insignificant Activity #17 (Parts Washer) within 90 days after issuance of the final permit V-26-017. The Division will notify the permittee in writing within 60 days from the date the submittal of the proposed RAP determination of the approval or denial of the submittal. If the proposed RAP determination is denied, the Division will identify the deficiencies in the written notification and specify a timeframe to submit a revised RAP determination. Once the RAP determination is approved by the Division, the permittee shall operate according to the selected control procedures in the RAP determination. The RAP determination will be incorporated into the permit at the next significant revision or renewal of the permit.

SECTION E - SOURCE CONTROL EQUIPMENT REQUIREMENTS

1. Pursuant to 401 KAR 50:055, Section 2(5), at all times, including periods of startup, shutdown and malfunction, owners and operators shall, to the extent practicable, maintain and operate any affected facility including associated air pollution control equipment in a manner consistent with good air pollution control practice for minimizing emissions. Determination of whether acceptable operating and maintenance procedures are being used will be based on information available to the Division which may include, but is not limited to, monitoring results, opacity observations, review of operating and maintenance procedures, and inspection of the source.

SECTION F - MONITORING, RECORDKEEPING, AND REPORTING REQUIREMENTS

1. Pursuant to Section 1b-IV-1 of the *Cabinet Provisions and Procedures for Issuing Title V Permits* incorporated by reference in 401 KAR 52:020, Section 26, when continuing compliance is demonstrated by periodic testing or instrumental monitoring, the permittee shall compile records of required monitoring information that include:
   a. Date, place as defined in this permit, and time of sampling or measurements;
   b. Analyses performance dates;
   c. Company or entity that performed analyses;
   d. Analytical techniques or methods used;
   e. Analyses results; and
   f. Operating conditions during time of sampling or measurement.

2. Records of all required monitoring data and support information, including calibrations, maintenance records, and original strip chart recordings, and copies of all reports required by the Division for Air Quality, shall be retained by the permittee for a period of five (5) years and shall be made available for inspection upon request by any duly authorized representative of the Division for Air Quality [Sections 1b-IV-2 and 1a-8 of the *Cabinet Provisions and Procedures for Issuing Title V Permits* incorporated by reference in 401 KAR 52:020, Section 26].

3. In accordance with the requirements of 401 KAR 52:020, Section 3(1)h, the permittee shall allow authorized representatives of the Cabinet to perform the following during reasonable times:
   a. Enter upon the premises to inspect any facility, equipment (including air pollution control equipment), practice, or operation;
   b. To access and copy any records required by the permit:
   c. Sample or monitor, at reasonable times, substances or parameters to assure compliance with the permit or any applicable requirements.

   Reasonable times are defined as during all hours of operation, during normal office hours; or during an emergency.

4. No person shall obstruct, hamper, or interfere with any Cabinet employee or authorized representative while in the process of carrying out official duties. Refusal of entry or access may constitute grounds for permit revocation and assessment of civil penalties.

5. Summary reports of any monitoring required by this permit shall be submitted to the Regional Office listed on the front of this permit at least every six (6) months during the life of this permit, unless otherwise stated in this permit. For emission units that were still under construction or which had not commenced operation at the end of the 6-month period covered by the report and are subject to monitoring requirements in this permit, the report shall indicate that no monitoring was performed during the previous six months because the emission unit was not in operation [Sections 1b-V-1 of the *Cabinet Provisions and Procedures for Issuing Title V Permits* incorporated by reference in 401 KAR 52:020, Section 26].

SECTION F - MONITORING, RECORDKEEPING, AND REPORTING REQUIREMENTS (CONTINUED)

6. The semi-annual reports are due by January 30th and July 30th of each year. All reports shall be certified by a responsible official pursuant to 401 KAR 52:020, Section 23. If continuous emission and opacity monitors are required by regulation or this permit, data shall be reported in accordance with the requirements of 401 KAR 59:005, General Provisions, Section 3(3). All deviations from permit requirements shall be clearly identified in the reports.

7. In accordance with the provisions of 401 KAR 50:055, Section 1, the owner or operator shall notify the Regional Office listed on the front of this permit concerning startups, shutdowns, or malfunctions as follows:
   a. When emissions during any planned shutdowns and ensuing startups will exceed the standards, notification shall be made no later than three (3) days before the planned shutdown, or immediately following the decision to shut down, if the shutdown is due to events which could not have been foreseen three (3) days before the shutdown.
   b. When emissions due to malfunctions, unplanned shutdowns and ensuing startups are or may be in excess of the standards, notification shall be made as promptly as possible by telephone (or other electronic media) and shall be submitted in writing upon request.

8. The permittee shall promptly report deviations from permit requirements, including those attributable to upset conditions as defined in the permit, the probable cause of such deviations, and any corrective actions or preventive measures taken shall be submitted to the Regional Office listed on the front of this permit. Where the underlying applicable requirement contains a definition of prompt or otherwise specifies a time frame for reporting deviations, that definition or time frame shall govern. Where the underlying applicable requirement does not identify a specific time frame for reporting deviations, prompt reporting, as required by Sections 1b-V, 3 and 4 of the *Cabinet Provisions and Procedures for Issuing Title V Permits* incorporated by reference in 401 KAR 52:020, Section 26, shall be defined as follows:
   a. For emissions of a hazardous air pollutant or a toxic air pollutant (as identified in an applicable regulation) that continue for more than an hour in excess of permit requirements, the report must be made within 24 hours of the occurrence.
   b. For emissions of any regulated air pollutant, excluding those listed in F.8.a., that continue for more than two hours in excess of permit requirements, the report must be made within 48 hours.
   c. All deviations from permit requirements, including those previously reported, shall be included in the semiannual report required by F.6.

9. Pursuant to 401 KAR 52:020, Title V permits, Section 21, the permittee shall annually certify compliance with the terms and conditions contained in this permit, by completing and returning a Compliance Certification Form (DEP 7007CC) (or an alternative approved by the regional office) to the Regional Office listed on the front of this permit and the U.S. EPA in accordance with the following requirements:
   a. Identification of the term or condition;
   b. Compliance status of each term or condition of the permit;
   c. Whether compliance was continuous or intermittent;
   d. The method used for determining the compliance status for the source, currently and over the reporting period.

SECTION F - MONITORING, RECORDKEEPING, AND REPORTING REQUIREMENTS (CONTINUED)

e. For an emissions unit that was still under construction or which has not commenced operation at the end of the 12-month period covered by the annual compliance certification, the permittee shall indicate that the unit is under construction and that compliance with any applicable requirements will be demonstrated within the timeframes specified in the permit.

f. The certification shall be submitted by January 30th of each year. Annual compliance certifications shall be sent to the following addresses:

Division for Air Quality London Regional Office 875 S. Main Street London, KY 40741	U.S. EPA Region 4 Air Enforcement Branch Atlanta Federal Center 61 Forsyth St. SW Atlanta, GA 30303-8960

10. In accordance with 401 KAR 52:020, Section 22, the permittee shall provide the Division with all information necessary to determine its subject emissions within 30 days of the date the Kentucky Emissions Inventory System (KYEIS) emissions survey is mailed to the permittee.

SECTION G - GENERAL PROVISIONS

1. General Compliance Requirements

   a. The permittee shall comply with all conditions of this permit. Noncompliance shall be a violation of 401 KAR 52:020, Section 3(1)(b), and a violation of Federal Statute 42 USC 7401 through 7671q (the Clean Air Act). Noncompliance with this permit is grounds for enforcement action including but not limited to termination, revocation and reissuance, revision or denial of a permit [Section 1a-3 of the *Cabinet Provisions and Procedures for Issuing Title V Permits* incorporated by reference in 401 KAR 52:020, Section 26].

   b. The filing of a request by the permittee for any permit revision, revocation, reissuance, or termination, or of a notification of a planned change or anticipated noncompliance, shall not stay any permit condition [Section 1a-6 of the *Cabinet Provisions and Procedures for Issuing Title V Permits* incorporated by reference in 401 KAR 52:020, Section 26].

   c. This permit may be revised, revoked, reopened and reissued, or terminated for cause in accordance with 401 KAR 52:020, Section 19. The permit will be reopened for cause and revised accordingly under the following circumstances:
      (1) If additional applicable requirements become applicable to the source and the remaining permit term is three (3) years or longer. In this case, the reopening shall be completed no later than eighteen (18) months after promulgation of the applicable requirement. A reopening shall not be required if compliance with the applicable requirement is not required until after the date on which the permit is due to expire, unless this permit or any of its terms and conditions have been extended pursuant to 401 KAR 52:020, Section 12;
      (2) The Cabinet or the United States Environmental Protection Agency (U. S. EPA) determines that the permit must be revised or revoked to assure compliance with the applicable requirements;
      (3) The Cabinet or the U. S. EPA determines that the permit contains a material mistake or that inaccurate statements were made in establishing the emissions standards or other terms or conditions of the permit;
      (4) New requirements become applicable to a source subject to the Acid Rain Program.

      Proceedings to reopen and reissue a permit shall follow the same procedures as apply to initial permit issuance and shall affect only those parts of the permit for which cause to reopen exists. Reopenings shall be made as expeditiously as practicable. Reopenings shall not be initiated before a notice of intent to reopen is provided to the source by the Division, at least thirty (30) days in advance of the date the permit is to be reopened, except that the Division may provide a shorter time period in the case of an emergency.

   d. The permittee shall furnish information upon request of the Cabinet to determine if cause exists for modifying, revoking and reissuing, or terminating the permit; or to determine compliance with the conditions of this permit [Sections 1a- 7 and 8 of the *Cabinet Provisions and Procedures for Issuing Title V Permits* incorporated by reference in 401 KAR 52:020, Section 26].

   e. Emission units described in this permit shall demonstrate compliance with applicable requirements if requested by the Division [401 KAR 52:020, Section 3(1)(c)].

SECTION G - GENERAL PROVISIONS (CONTINUED)

f. The permittee, upon becoming aware that any relevant facts were omitted or incorrect information was submitted in the permit application, shall promptly submit such supplementary facts or corrected information to the permitting authority [401 KAR 52:020, Section 7(1)].

g. Any condition or portion of this permit which becomes suspended or is ruled invalid as a result of any legal or other action shall not invalidate any other portion or condition of this permit [Section 1a-14 of the *Cabinet Provisions and Procedures for Issuing Title V Permits* incorporated by reference in 401 KAR 52:020, Section 26].

h. The permittee shall not use as a defense in an enforcement action the contention that it would have been necessary to halt or reduce the permitted activity in order to maintain compliance [Section 1a-4 of the *Cabinet Provisions and Procedures for Issuing Title V Permits* incorporated by reference in 401 KAR 52:020, Section 26].

i. All emission limitations and standards contained in this permit shall be enforceable as a practical matter. All emission limitations and standards contained in this permit are enforceable by the U.S. EPA and citizens except for those specifically identified in this permit as state-origin requirements. [Section 1a-15 of the *Cabinet Provisions and Procedures for Issuing Title V Permits* incorporated by reference in 401 KAR 52:020, Section 26].

j. This permit shall be subject to suspension if the permittee fails to pay all emissions fees within 90 days after the date of notice as specified in 401 KAR 50:038, Section 3(6) [Section 1a-10 of the *Cabinet Provisions and Procedures for Issuing Title V Permits* incorporated by reference in 401 KAR 52:020, Section 26].

k. Nothing in this permit shall alter or affect the liability of the permittee for any violation of applicable requirements prior to or at the time of permit issuance [401 KAR 52:020, Section 11(3) b].

l. This permit does not convey property rights or exclusive privileges [Section 1a-9 of the *Cabinet Provisions and Procedures for Issuing Title V Permits* incorporated by reference in 401 KAR 52:020, Section 26].

m. Issuance of this permit does not relieve the permittee from the responsibility of obtaining any other permits, licenses, or approvals required by the Cabinet or any other federal, state, or local agency.

n. Nothing in this permit shall alter or affect the authority of U.S. EPA to obtain information pursuant to Federal Statute 42 USC 7414, Inspections, monitoring, and entry [401 KAR 52:020, Section 11(3) d.].

o. Nothing in this permit shall alter or affect the authority of U.S. EPA to impose emergency orders pursuant to Federal Statute 42 USC 7603, Emergency orders [401 KAR 52:020, Section 11(3) a.].

SECTION G - GENERAL PROVISIONS (CONTINUED)

p. This permit consolidates the authority of any previously issued PSD, NSR, or Synthetic Minor source preconstruction permit terms and conditions for various emission units and incorporates all requirements of those existing permits into one single permit for this source.

q. Pursuant to 401 KAR 52:020, Section 11, a permit shield shall not protect the owner or operator from enforcement actions for violating an applicable requirement prior to or at the time of permit issuance. Compliance with the conditions of this permit shall be considered compliance with:
(1) Applicable requirements that are included and specifically identified in this permit; and
(2) Non-applicable requirements expressly identified in this permit.

2. Permit Expiration and Reapplication Requirements

a. This permit shall remain in effect for a fixed term of five (5) years following the original date of issue. Permit expiration shall terminate the source's right to operate unless a timely and complete renewal application has been submitted to the Division at least six (6) months prior to the expiration date of the permit. Upon a timely and complete submittal, the authorization to operate within the terms and conditions of this permit, including any permit shield, shall remain in effect beyond the expiration date, until the renewal permit is issued or denied by the Division [401 KAR 52:020, Section 12].

b. The authority to operate granted shall cease to apply if the source fails to submit additional information requested by the Division after the completeness determination has been made on any application, by whatever deadline the Division sets [401 KAR 52:020, Section 8(2)].

3. Permit Revisions

a. A minor permit revision procedure may be used for permit revisions involving the use of economic incentive, marketable permit, emission trading, and other similar approaches, to the extent that these minor permit revision procedures are explicitly provided for in the State Implementation Plan (SIP) or in applicable requirements and meet the relevant requirements of 401 KAR 52:020, Section 14(2).

b. This permit is not transferable by the permittee. Future owners and operators shall obtain a new permit from the Division for Air Quality. The new permit may be processed as an administrative amendment if no other change in this permit is necessary, and provided that a written agreement containing a specific date for transfer of permit responsibility coverage and liability between the current and new permittee has been submitted to the permitting authority within ten (10) days following the transfer.

SECTION G - GENERAL PROVISIONS (CONTINUED)

4. Construction, Start-Up, and Initial Compliance Demonstration Requirements

Pursuant to a duly submitted application the Kentucky Division for Air Quality hereby authorizes the construction of the equipment described herein, emission units 08 (008), 09 (009), 10 (010), 11 (011), 12 (012-1, 012-2, 012-3), 13 (013) in accordance with the terms and conditions of permit V-26-017.

a. Construction of any process and/or air pollution control equipment authorized by this permit shall be conducted and completed only in compliance with the conditions of this permit.

b. Within thirty (30) days following commencement of construction and within fifteen (15) days following start-up and attainment of the maximum production rate specified in the permit application, or within fifteen (15) days following the issuance date of this permit, whichever is later, the permittee shall furnish to the Regional Office listed on the front of this permit in writing, notification of the following:
   (1) The date when construction commenced.
   (2) The date of start-up of the affected facilities listed in this permit.
   (3) The date when the maximum production rate specified in the permit application was achieved.

c. Pursuant to 401 KAR 52:020, Section 3(2), unless construction is commenced within eighteen (18) months after the permit is issued, or begins but is discontinued for a period of eighteen (18) months or is not completed within a reasonable timeframe then the construction and operating authority granted by this permit for those affected facilities for which construction was not completed shall immediately become invalid. Upon written request, the Cabinet may extend these time periods if the source shows good cause.

d. Pursuant to 401 KAR 50:055, Section 2(1)(a), an owner or operator of any affected facility subject to any standard within the administrative regulations of the Division for Air Quality shall demonstrate compliance with the applicable standard(s) within sixty (60) days after achieving the maximum production rate at which the affected facility will be operated, but not later than 180 days after initial start-up of such facility. Pursuant to 401 KAR 52:020, Section 3(3)(c), sources that have not demonstrated compliance within the timeframes prescribed in 401 KAR 50:055, Section 2(1)(a), shall operate the affected facility only for purposes of demonstrating compliance unless authorized under an approved compliance plan or an order of the cabinet.

e. This permit shall allow time for the initial start-up, operation, and compliance demonstration of the affected facilities listed herein. However, within sixty (60) days after achieving the maximum production rate at which the affected facilities will be operated but not later than 180 days after initial start-up of such facilities, the permittee shall conduct a performance demonstration on the affected facilities in accordance with 401 KAR 50:055, General compliance requirements. Testing must also be conducted in accordance with General Provisions G.5 of this permit.

SECTION G - GENERAL PROVISIONS (CONTINUED)

f. Terms and conditions in this permit established pursuant to the construction authority of 401 KAR 51:017 or 401 KAR 51:052 shall not expire.

5. Testing Requirements

a. Pursuant to 401 KAR 50:045, Section 2, a source required to conduct a performance test shall submit a completed Compliance Test Protocol form, DEP form 6028, or a test protocol a source has developed for submission to other regulatory agencies, in a format approved by the cabinet, to the Division's Frankfort Central Office a minimum of sixty (60) days prior to the scheduled test date. Pursuant to 401 KAR 50:045, Section 7, the Division shall be notified of the actual test date at least thirty (30) days prior to the test.

b. Pursuant to 401 KAR 50:045, Section 5, in order to demonstrate that a source is capable of complying with a standard at all times, any required performance test shall be conducted under normal conditions that are representative of the source's operations and create the highest rate of emissions. If [When] the maximum production rate represents a source's highest emissions rate and a performance test is conducted at less than the maximum production rate, a source shall be limited to a production rate of no greater than 110 percent of the average production rate during the performance tests. If and when the facility is capable of operation at the rate specified in the application, the source may retest to demonstrate compliance at the new production rate. The Division for Air Quality may waive these requirements on a case-by-case basis if the source demonstrates to the Division's satisfaction that the source is in compliance with all applicable requirements.

c. Results of performance test(s) required by the permit shall be submitted to the Division by the source or its representative within forty-five days or sooner if required by an applicable standard, after the completion of the fieldwork.

6. Acid Rain Program Requirements

a. If an applicable requirement of Federal Statute 42 USC 7401 through 7671q (the Clean Air Act) is more stringent than an applicable requirement promulgated pursuant to Federal Statute 42 USC 7651 through 7651o (Title IV of the Act), both provisions shall apply, and both shall be state and federally enforceable.

b. The permittee shall comply with all applicable requirements and conditions of the Acid Rain Permit and the Phase II permit application (including the Phase II NOx compliance plan and averaging plan, if applicable) incorporated into the Title V permit issued for this source. The source shall also comply with all requirements of any revised or future acid rain permit(s) issued to this source.

7. Emergency Provisions

a. Pursuant to 401 KAR 52:020, Section 24(1), an emergency shall constitute an affirmative defense to an action brought for the noncompliance with the technology-based emission limitations if the permittee demonstrates through properly signed contemporaneous operating logs or relevant evidence that:

SECTION G - GENERAL PROVISIONS (CONTINUED)

(1) An emergency occurred and the permittee can identify the cause of the emergency;
(2) The permitted facility was at the time being properly operated;
(3) During an emergency, the permittee took all reasonable steps to minimize levels of emissions that exceeded the emissions standards or other requirements in the permit; and
(4) Pursuant to 401 KAR 52:020, 401 KAR 50:055, and KRS 224.1-400, the permittee notified the Division as promptly as possible and submitted written notice of the emergency to the Division when emission limitations were exceeded due to an emergency. The notice shall include a description of the emergency, steps taken to mitigate emissions, and corrective actions taken.
(5) This requirement does not relieve the source of other local, state or federal notification requirements.

b. Emergency conditions listed in General Condition G.7.a above are in addition to any emergency or upset provision(s) contained in an applicable requirement [401 KAR 52:020, Section 24(3)].

c. In an enforcement proceeding, the permittee seeking to establish the occurrence of an emergency shall have the burden of proof [401 KAR 52:020, Section 24(2)].

8. Ozone Depleting Substances

a. The permittee shall comply with the standards for recycling and emissions reduction pursuant to 40 CFR 82, Subpart F, except as provided for Motor Vehicle Air Conditioners (MVACs) in Subpart B:
(1) Persons opening appliances for maintenance, service, repair, or disposal shall comply with the required practices contained in 40 CFR 82.156.
(2) Equipment used during the maintenance, service, repair, or disposal of appliances shall comply with the standards for recycling and recovery equipment contained in 40 CFR 82.158.
(3) Persons performing maintenance, service, repair, or disposal of appliances shall be certified by an approved technician certification program pursuant to 40 CFR 82.161.
(4) Persons disposing of small appliances, MVACs, and MVAC-like appliances (as defined at 40 CFR 82.152) shall comply with the recordkeeping requirements pursuant to 40 CFR 82.155.
(5) Persons owning commercial or industrial process refrigeration equipment shall comply with the leak repair requirements pursuant to 40 CFR 82.156 and 40 CFR 82.157.
(6) Owners/operators of appliances normally containing 50 or more pounds of refrigerant shall keep records of refrigerant purchased and added to such appliances pursuant to 40 CFR 82.166.

b. If the permittee performs service on motor (fleet) vehicle air conditioners containing ozone-depleting substances, the source shall comply with all applicable requirements as specified in 40 CFR 82, Subpart B, *Servicing of Motor Vehicle Air Conditioners*.

SECTION G - GENERAL PROVISIONS (CONTINUED)

9. Risk Management Provisions

   a. The permittee shall comply with all applicable requirements of 401 KAR Chapter 68, Chemical Accident Prevention, which incorporates by reference 40 CFR Part 68, Risk Management Plan provisions. If required, the permittee shall comply with the Risk Management Program and submit a Risk Management Plan to U.S. EPA using the RMP* eSubmit software.

   b. If requested, submit additional relevant information to the Division or the U.S. EPA.

SECTION H - ALTERNATE OPERATING SCENARIOS

The alternate operating scenarios set forth below have been approved by the Division based on information supplied with the application and during the application review process. The terms and conditions of each alternate operating scenario have been developed to ensure compliance with the applicable regulations. The permittee, when making a change from one operating scenario to another, shall record contemporaneously in a log at the permitted facility a record of the scenario under which the facility is operating. The permit shield, as provided in Section G shall extend to each alternate operating scenario set forth in this Section. All conditions not specified under an alternate operating scenario shall remain unchanged from their permit values or requirements.

ALTERNATE OPERATING SCENARIO

The following requirements shall apply upon issuance of the permit and prior to reclassification of the facility as an area source of HAP emissions. As specified in **Section D 3.a.**, upon startup of any one of the listed Emission Units, emissions of each individual HAP shall not equal or exceed nine (9) tpy on a twelve (12) month rolling basis, and the summation of all HAP emissions shall not equal or exceed twenty-two and a half (22.5) tpy on a twelve-month rolling basis. Pursuant to 40 CFR 63.1(c)(6), a major source may become an area source at any time upon reducing its emissions of and potential to emit hazardous air pollutants, as defined in 40 CFR 63, Subpart A, to below the major source thresholds established in 40 CFR 63.2, subject to the provisions in 40 CFR 63.1(c)(6)(i) and (ii). The above referenced source-wide emission limitations are federally-enforceable conditions which function to limit the facility's potential to emit hazardous air pollutants to below major source thresholds. Thus, upon notification of the reclassification from a major source to an area source as required by 40 CFR 63.1(c)(6)(i)(A), the terms of **Section B** shall apply for these units.

SECTION H - ALTERNATE OPERATING SCENARIOS (CONTINUED)

Emission Unit: 01 (01-07) Seven Compressor Engines

Process 001 Reciprocating Internal Combustion Engine (Plant ID 20901)
Process 002 Reciprocating Internal Combustion Engine (Plant ID 20902)
Process 003 Reciprocating Internal Combustion Engine (Plant ID 20903)
Process 004 Reciprocating Internal Combustion Engine (Plant ID 20904)
Process 005 Reciprocating Internal Combustion Engine (Plant ID 20905)
Process 006 Reciprocating Internal Combustion Engine (Plant ID 20906)
Process 007 Reciprocating Internal Combustion Engine (Plant ID 20907)

Description: 1,760 hp Clark HBA-8

Engine Type:	2 stroke lean burn
Fuel:	Natural gas
Maximum rating:	16.60 MMBTU/hr, each
Date Constructed:	1952

Emission Unit: 02 (08-10) Three Compressor Engines

Process 001 Reciprocating Internal Combustion Engine (Plant ID 20908)
Process 002 Reciprocating Internal Combustion Engine (Plant ID 20909)
Process 003 Reciprocating Internal Combustion Engine (Plant ID 20910)

Description: 2,050 hp Clark HBA-8T

Engine Type:	2 stroke lean burn
Fuel:	Natural gas
Maximum rating:	18.68 MMBTU/hr, each
Date Constructed:	1957
Controls:	Oxidation Catalyst (installed October 2017)

APPLICABLE REGULATIONS:

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 Engines*

1. **Operating Limitations:**
   a. The permittee shall conduct routine maintenance checks to ensure optimum engine operations, for all engines under Emission Unit 01 and Emission Unit 02. [401 KAR 52:020, Section 10]

   Compliance Demonstration Method:
   See **5. Specific Recordkeeping Requirements b.** and **d.**

   b. To preclude applicability of 401 KAR 51:017, the permittee shall limit the total combined natural gas fuel usage of Emission Unit 01 (seven Clark HBA-8 compressor engines) to a maximum of 249,488,235 scf per year, based on a 12-month rolling total. [401 KAR 52:020, Section 10]

SECTION H - ALTERNATE OPERATING SCENARIOS (CONTINUED)

Compliance Demonstration Method:
See **4. Specific Monitoring Requirements b.** and **5. Specific Recordkeeping Requirements a.**

c. To preclude applicability of 401 KAR 51:017, the permittee shall, at all times, operate the OxCat at each of the three (3) Clark HBA-8T engines under Emission Unit 02 when the associated engine is operating. [401 KAR 52:020, Section 10]

2. Emission Limitations:

a. To preclude applicability of 401 KAR 51:017, CO emissions from each Clark HBA-8T engine under Emission Unit 02 shall not exceed 280 lb/mmscf. [401 KAR 52:020, Section 10]

Compliance Demonstration Method:
See **3. Testing Requirements a.** and **c.**

b. To preclude applicability of 401 KAR 51:017, total VOC (including volatile HAPs) emissions from each Clark HBA-8T engine under Emission Unit 02 shall not exceed 189 lb/mmscf. [401 KAR 52:020, Section 10]

Compliance Demonstration Method:
Compliance with the VOC emission limitation for EU 02 was demonstrated for each Clark HBA-8T engine through the required initial performance testing in April 2018..

3. Testing Requirements:

a. The permittee shall perform annual testing on each of the three Clark HBA-8T engines under Emission Unit 02, using reference methods specified in 401 KAR 50:015, to determine the outlet concentration of CO (in ppmvd, lbs/mmscf, lbs/hr). If the CO emission resulting from the performance test is less than or equal to 75 percent of the CO emission limit of 280 lb/mmscf, the permittee may reduce the frequency of subsequent performance tests to once every 2 years (no more than 26 calendar months following the previous performance test). If the results of any subsequent performance test exceed 75 percent of the CO emission limit for the turbine, the permittee shall resume annual performance tests. [401 KAR 50:045, Section 1]

b. The permittee shall keep records of the natural gas fuel usage per engine used during each performance test. [401 KAR 52:020, Section 10]

c. Performance testing using Reference methods specified in 401 KAR 50:015 shall be conducted as required by the Division. [401 KAR 50:045, Section 1]

4. Specific Monitoring Requirements:

a. The permittee shall monitor on a continuous basis the inlet and outlet temperature of the OxCat to ensure proper operation of the control device on each of the three Clark HBA-8T engines under Emission Unit 02. [401 KAR 52:020, Section 10]

SECTION H - ALTERNATE OPERATING SCENARIOS (CONTINUED)

b. The permittee shall monitor the amount of natural gas fuel usage and hours of operation for each of the Clark HBA-8T engines under Emission Unit 02 on an annual basis. [401 KAR 52:020, Section 10]

c. See **Section F, Monitoring, Recordkeeping, and Reporting Requirements.**

5. Specific Recordkeeping Requirements:

a. The permittee shall keep monthly records of the combined natural gas fuel usage for the seven compressor engines under Emission Unit 01 on a 12-month rolling basis. [401 KAR 52:020, Section 10]

b. The permittee shall keep records of maintenance and operation of the OxCat controls on each of the Clark HBA-8T engines under Emission Unit 02. [401 KAR 52:020, Section 10]

c. The permittee shall keep records of the amount of natural gas fuel usage and hours of operation for each of the Clark HBA-8T engines under Emission Unit 02 on an annual basis. [401 KAR 52:020, Section 10]

d. The permittee shall keep records of all routine maintenance performed on each engine under Emission Units 01 and 02. [401 KAR 52:020, Section 10]

6. Specific Reporting Requirements:

See **Section F, Monitoring, Recordkeeping, and Reporting Requirements.**

7. Specific Control Equipment Operating Conditions:

The permittee shall install and operate the OxCat control device on each of the Clark HBA-8T engines under Emission Unit 02 according to the manufacturer's recommendations. Records shall be kept of the maintenance activities performed on the OxCat control device on each of the Clark HBA-8T engines under Emission Unit 02. [401 KAR 52:020, Section 10]

SECTION H - ALTERNATE OPERATING SCENARIOS (CONTINUED)

Emissions Unit: 03 (11-12) Two Gas Turbines
Process 001 GE Frame 3 Gas Combustion Turbine (Plant ID 21001)
Process 002 GE Frame 3 Gas Combustion Turbine (Plant ID 21002)

Description: 8,000 hp turbines

Fuel:	Natural gas
Maximum rating:	83.51 MMBTU/hr, each
Construction commenced:	1961
Controls:	Oxidation Catalyst and Selective Catalytic Reduction (proposed 2017)

Emissions Unit: 04 (13) Gas Turbine

Description: GE Frame 5 Gas Combustion 18,500 hp Turbine (Plant ID 21003)

Fuel:	Natural gas
Maximum rating:	183.82 MMBTU/hr
Construction commenced:	1969
Controls:	Oxidation Catalyst (proposed 2017)

Notes: Normal operation does not include startup, shutdown, or low-temperature operation.

APPLICABLE REGULATIONS:
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*

40 CFR Part 64, *Compliance Assurance Monitoring* (**CAM**) for EU 03 for NO_X, and for EU 04 for CO

1. **Operating Limitations:**
   a. The permittee shall conduct routine operation and maintenance procedures in accordance with the manufacturer's specifications for each turbine to ensure optimum operations. [401 KAR 52:020, Section 10]

   Compliance Demonstration Method:
   See **Section E, Source Control Equipment Requirements**, and **7. Specific Control Equipment Operating Conditions**.

   b. Existing stationary combustion turbines in all subcategories do not have to meet the requirements of 40 CFR 63, Subpart YYYY and of Subpart A of 40 CFR 63. [40 CFR 63.6090(b)(4)]

2. **Emission Limitations:**
   a. To preclude applicability of 401 KAR 51:017, NO_x emissions from each of the Frame 3 turbines under Emission Unit 03 shall not exceed 25 ppmvd at 15% O_2 during normal operation. [401 KAR 52:020, Section 10]

SECTION H - ALTERNATE OPERATING SCENARIOS (CONTINUED)

Compliance Demonstration Method:
The permittee shall demonstrate continuous compliance by complying with **3. Testing Requirements a.**, and **4. Specific Monitoring Requirements a.** and **c.** through **e.**

b. To preclude applicability of 401 KAR 51:017, CO emissions from each of the Frame 3 turbines under Emission Unit 03 shall not exceed 12.5 ppmvd at 15% O_2 during normal operation. [401 KAR 52:020, Section 10]

Compliance Demonstration Method:
See **3. Testing Requirements b.** and **4. Specific Monitoring Requirements b.**

c. To preclude applicability of 401 KAR 51:017, CO emissions from the Frame 5 turbine under Emission Unit 04 shall not exceed 12.5 ppmvd at 15% O_2 during normal operation. [401 KAR 52:020, Section 10]

Compliance Demonstration Method:
See **3. Testing Requirements b.** and **4. Specific Monitoring Requirements c.** through **g.**

d. To preclude applicability of 401 KAR 51:017, VOC emissions from the Frame 3 turbines under Emission Unit 03 shall not exceed 13.28 lb/mmscf during normal operation. [401 KAR 52:020, Section 10]

e. To preclude applicability of 401 KAR 51:017, VOC emissions from the Frame 5 turbines under Emission Unit 04 shall not exceed 10.36 lb/mmscf during normal operation. [401 KAR 52:020, Section 10]

Compliance Demonstration Method:
Compliance with the VOC emission limitations was demonstrated for each turbine through the required initial performance testing in March 2018.

3. <u>Testing Requirements</u>:

a. The permittee shall demonstrate continuous compliance with **2. Emission Limitation a.** through testing. The permittee shall conduct annual performance tests, using either EPA Method 7E or EPA Method 20 in Appendix A to 40 CFR Part 60. If the NO_x emission result from the performance test is less than or equal to 75 percent of the NO_x emission limit for the turbine, the permittee may reduce the frequency of subsequent performance tests to once every 2 years (no more than 26 calendar months following the previous performance test). If the results of any subsequent performance test exceed 75 percent of the NO_x emission limit for the turbine, the permittee shall resume annual performance tests. [401 KAR 52:020, Section 10]

b. The permittee shall perform annual testing for CO emissions (ppmvd, lbs/mmscf, lbs/hr) on the Frame 3 turbines under Emission Unit 03 and the Frame 5 turbine under Emission Unit 04, using reference methods specified in 401 KAR 50:015. If the CO emission resulting from the performance test is less than or equal to 75 percent of the CO emission limit for the turbine, the permittee may reduce the frequency of subsequent performance tests to once every 2 years (no more than 26 calendar months following the previous

SECTION H - ALTERNATE OPERATING SCENARIOS (CONTINUED)

performance test). If the results of any subsequent performance test exceed 75 percent of the CO emission limit for the turbine, the permittee shall resume annual performance tests. [401 KAR 52:020, Section 10]

c. The permittee shall keep records of the natural gas fuel usage at each turbine used during each performance test.

4. Specific Monitoring Requirements:

a. [CAM Requirements]

b. The permittee shall continuously monitor the inlet and outlet temperatures of the OxCat to ensure proper operation of the control device for each of the Frame 3 turbines under Emission Unit 03. [401 KAR 52:020, Section 10]

c. [CAM Requirements]

d. [CAM Requirements]

e. [CAM Requirements]

f. [CAM Requirements]

g. [CAM Requirements]

h. The permittee shall monitor the amount of natural gas burned (MMscf) at each turbine on a monthly basis [401 KAR 52:020, Section 10]

5. Specific Recordkeeping Requirements:

a. The permittee shall maintain records of the amount of natural gas burned (MMscf) at each turbine on a monthly basis. [401 KAR 52:020, Section 10]

b. The permittee shall keep record of the hours of operation of each turbine under Emission Units 03 and 04 in startup mode, shutdown mode, low temperature modes, and steady state (normal) operation. [401 KAR 52:020, Section 10]

c. [CAM Requirements]

d. [CAM Requirements]

6. Specific Reporting Requirements:

a. For each affected unit required to continuously monitor parameters or emissions, the permittee shall submit reports of excess emissions and monitor downtime, in accordance with 40 CFR 60.7(c). Excess emissions shall be reported for all periods of unit operation, including start-up, shutdown, and malfunction. [401 KAR 52:020, Section 10]

b. [CAM Requirements]

SECTION H - ALTERNATE OPERATING SCENARIOS (CONTINUED)

c. [CAM Requirements]

d. [CAM Requirements]

e. See **Section F, Monitoring, Recordkeeping, and Reporting Requirements**.

7. Specific Control Equipment Operating Conditions:
The permittee shall install and operate the OxCat and Selective Catalytic Reduction control devices according to the manufacturers' recommendations. Records shall be kept of the maintenance activities performed on the OxCat and Selective Catalytic Reduction control devices. [401 KAR 52:020, Section 10]

SECTION H - ALTERNATE OPERATING SCENARIOS (CONTINUED)

Emission Unit: 05 (005) Auxiliary Emergency Generator

Description:	Caterpillar G3516 Reciprocating Internal Combustion Engine
Capacity:	1,462 hp
Engine type:	4 cycle lean burn
Maximum rating:	12.64 MMBtu/hr
Engine manufactured:	June 29, 2010
Construction commenced:	October 15, 2010

Emission Unit: 06 (006) Auxiliary Emergency Generator

Description:	Caterpillar G3512 Reciprocating Internal Combustion Engine
Capacity:	1,102 hp
Engine type:	4 cycle lean burn
Maximum rating:	8.82 MMBtu/hr
Engine manufactured:	Proposed March 2017
Construction commenced:	Proposed September 2017

Emission Unit: 11 (011) Auxiliary Emergency Generator

Description:	Waukesha VGF48SE Reciprocating Internal Combustion Engine
Capacity:	1,475 hp
Engine type:	4 cycle rich burn
Maximum rating:	12.84 MMBtu/hr
Engine manufactured:	Proposed 2026
Construction commenced:	Proposed July 2026

APPLICABLE REGULATIONS:

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*.

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*.

1. **Operating Limitations:**
   a. The new emergency stationary RICE with a site rating of more than 500 brake HP located at a major source of HAP emissions does not have to meet the requirements of 40 CFR 63, Subpart ZZZZ, and of 40 CFR 63 Subpart A, except for the initial notification requirements of 40 CFR 63.6645(f). [40 CFR 63.6590(b)(1) and (1)(i)]

   b. The permittee shall operate each emergency stationary ICE according to the requirements of 40 CFR 60.4243(d)(1) through (3). In order for an engine to be considered an emergency stationary ICE under 40 CFR 60, Subpart JJJJ, any operation other than emergency operation, maintenance and testing, emergency demand response, and operation in non-emergency situation for 50 hours per year, as described below, is prohibited. If the

SECTION H - ALTERNATE OPERATING SCENARIOS (CONTINUED)

permittee does not operate each engine according to the requirements below, the engine will not be considered an emergency engine under 40 CFR 60, Subpart JJJJ and shall meet all requirements for non-emergency engines. [40 CFR 60.4243(d)]

(1) There is no time limit on the use of emergency stationary ICE in emergency situations [40 CFR 60.4243(d)(1)]

(2) The permittee may operate each emergency stationary ICE for the purpose specified in 40 CFR 60.4243(d)(2)(i) for a maximum of 100 hours per calendar year. Any operation for non-emergency situations as allowed by 40 CFR 60.4243(d)(3) counts as part of the 100 hours per calendar year allowed by 40 CFR 60.4243(d) [40 CFR 60.4243(d)(2)]

(i) Emergency stationary ICE may be operated for maintenance checks and readiness testing, provided that the tests are recommended by federal, state or local government, the manufacturer, the vendor, the regional transmission organization or equivalent balancing authority and transmission operator, or the insurance company associated with the engine. The permittee may petition the Administrator for approval of additional hours to be used for maintenance checks and readiness testing, but a petition is not required if the permittee maintains records indicating that federal, state, or local standards require maintenance and testing of emergency ICE beyond 100 hours per calendar year [40 CFR 60.4243(d)(2)(i)]

(3) Emergency stationary ICE may be operated for up to 50 hours per calendar year in non-emergency situations. The 50 hours of operation in non-emergency situations are counted as part of the 100 hours per calendar year for maintenance and testing provided in 40 CFR 60.4243(d)(2). Except as provided in 40 CFR 60.4243 (d)(3)(i), the 50 hours per year for non-emergency situations cannot be used for peak shaving or non-emergency demand response, or to generate income for a facility to an electric grid or otherwise supply power as part of a financial arrangement with another entity [40 CFR 60.4243(d)(3)].

(i) The 50 hours per year for non-emergency situations can be used to supply power as part of a financial arrangement with another entity if all of the following conditions are met: [40 CFR 60.4243(d)(3)(i)]

(A) The engine is dispatched by the local balancing authority or local transmission and distribution system operator; [40 CFR 60.4243(d)(3)(i)(A)]

(B) The dispatch is intended to mitigate local transmission and/or distribution limitations so as to avert potential voltage collapse or line overloads that could lead to the interruption of power supply in a local area or region [40 CFR 60.4243(d)(3)(i)(B)].

(C) The dispatch follows reliability, emergency operation or similar protocols that follow specific NERC, regional, state, public utility commission or local standards or guidelines [40 CFR 60.4243(d)(3)(i)(C)].

(D) The power is provided only to the facility itself or to support the local transmission and distribution system [40 CFR 60.4243(d)(3)(i)(D)].

(E) The permittee identifies and records the entity that dispatches the engine and the specific NERC, regional, state, public utility commission or local standards or guidelines that are being followed for dispatching the engine. The local balancing authority or local transmission and distribution system operator may keep these records on behalf of the permittee [40 CFR 60.4243(d)(3)(i)(E)].

SECTION H - ALTERNATE OPERATING SCENARIOS (CONTINUED)

c. The permittee may operate each engine using propane for a maximum of 100 hours per year as an alternative fuel solely during emergency operations but shall keep records of such use. If propane is used for more than 100 hours per year in an engine that is not certified to the emission standards when using propane, the permittee is required to conduct a performance test to demonstrate compliance with the emission standards of 40 CFR 60.4233 [40 CFR 60.4243(e)].

Compliance Demonstration Method:
See **5. Specific Recordkeeping Requirements c.**

d. The permittee shall operate and maintain the stationary spark ignition internal combustion engines to achieve the emission standards required by 40 CFR 60.4233 over the entire life of the engines [40 CFR 60.4234].

Compliance Demonstration Method:
See **2. Emission Limitations a. – Compliance Demonstration Method**

2. <u>Emission Limitations</u>:

a. For each stationary SI internal combustion engine, the permittee shall comply with the emission standards for emergency generators listed in Table 1 to 40 CFR 60, Subpart JJJJ as follows: [40 CFR 60.4233(e)]
(1) NO_x – 2.0 g/hp-hr (160 ppmvd at 15 percent O_2);
(2) CO – 4.0 g/hp-hr (540 ppmvd at 15 percent O_2); and
(3) VOC – 1.0 g/hp-hr (86 ppmvd at 15 percent O_2).

Compliance Demonstration Method:
The permittee shall demonstrate compliance according to one of the following methods:
(a) Purchase an engine certified according to procedures specified in 40 CFR 60, Subpart JJJJ, for the same model year and demonstrating compliance according to one of the methods specified in 40 CFR 60.4243(a); or [40 CFR 60.4243(b)(1)]

(b) Purchase a non-certified engine and demonstrate compliance with the emission standards specified in 40 CFR 60.4233(e) and according to the requirements specified in 40 CFR 60.4244, as applicable. The permittee shall keep a maintenance plan and records of conducted maintenance, and shall, to the extent practicable, maintain and operate the engine in a manner consistent with good air pollution control practice for minimizing emissions. Additionally, the permittee shall conduct an initial performance test and subsequent performance testing every 8,760 hours or three (3) years, whichever comes first, thereafter to demonstrate compliance [40 CFR 60.4243(b)(2) and 40 CFR 60.4243(b)(2)(i) through (ii)].

3. <u>Testing Requirements</u>:
The permittee shall conduct all necessary performance tests following the procedures in 40 CFR 60.4244(a) through (f), as follows: [40 CFR 60.4244]

SECTION H - ALTERNATE OPERATING SCENARIOS (CONTINUED)

a. Each performance test must be conducted within ten (10) percent of 100 percent peak (or the highest achievable) load and according to the requirements in 40 CFR 60.8 and under the specific conditions that are specified by Table 2 to 40 CFR 60, Subpart JJJJ [40 CFR 60.4244(a)].

b. The permittee shall not conduct performance tests during periods of startup, shutdown, or malfunction, as specified in 40 CFR 60.8(c). If the engine is non-operational, the permittee does not need to startup the engine solely to conduct a performance test; however, the permittee shall conduct the performance test immediately upon startup of the engine [40 CFR 60.4244(b)]

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c. The permittee shall conduct three (3) separate test runs for each performance test, as specified in 40 CFR 60.8(f). Each test run shall be conducted within 10 percent of 100 percent peak (or the highest achievable) load and last at least 1 hour [40 CFR 60.4244(c)].

d. To determine compliance with the NO_X mass per unit output emission limitation, convert the concentration of NO_X in the engine exhaust using Equation 1 in 40 CFR 60.4244(d) [40 CFR 60.4244(d)].

e. To determine compliance with the CO mass per unit output emission limitation, convert the concentration of CO in the engine exhaust using Equation 2 in 40 CFR 60.4244(e). [40 CFR 60.4244(e)].

f. When calculating emissions of VOC, emissions of formaldehyde should not be included. To determine compliance with the VOC mass per unit output emission limitation, convert the concentration of VOC in the engine exhaust using Equation 3 in 40 CFR 60.4244(f) [40 CFR 60.4244(f)].

g. If the permittee chooses to measure VOC emissions using either Method 18 of 40 CFR Part 60, Appendix A, or Method 320 of 40 CFR Part 63, Appendix A, then they have the option of correcting the measured VOC emissions to account for the potential differences in measured values between these methods and Method 25A. The results from Method 18 and Method 320 can be corrected for response factor differences using Equations 4 and 5 as provided in 40 CFR 60.4244(g). The corrected VOC concentration can then be placed on a propane basis using Equation 6 as provided in 40 CFR 60.4244(g) [40 CFR 60.4244(g)].

4. <u>Specific Monitoring Requirements</u>:

a. If an emergency stationary SI internal combustion engine does not meet the standards applicable to non-emergency engines, the permittee shall install a non-resettable hour meter [40 CFR 60.4237(a)].

b. The permittee shall monitor the following: [401 KAR 52:020, Section 10]
   (1) Natural gas fuel usage (MMscf) and the hours of operation;
   (2) Hours of operation for maintenance and testing; and
   (3) Hours of operation in non-emergency operation and operation for reasons other than maintenance and testing.

SECTION H - ALTERNATE OPERATING SCENARIOS (CONTINUED)

5. Specific Recordkeeping Requirements:

a. The permittee shall keep records of the information provided below: [40 CFR 60.4245(a)]
   (1) All notifications submitted to comply with 40 CFR 60, Subpart JJJJ and all documentation supporting any notification; [40 CFR 60.4245(a)(1)]
   (2) Maintenance conducted on the engine; [40 CFR 60.4245(a)(2)
   (3) If the engine is a certified engine, documentation from the manufacturer that the engine is certified to meet the emission standards and information as required in 40 CFR parts 90, 1048, 1054, and 1060, as applicable; and [40 CFR 60.4245(a)(3)]
   (4) If the engine is not a certified engine or is a certified engine operating in a non-certified manner and subject to 40 CFR 60.4243(a)(2), documentation that the engine meets the emission standards. [40 CFR 60.4245(a)(3)]

b. For stationary SI emergency internal combustion engines that do not meet the standards applicable to non-emergency engines, the permittee shall keep records of the hours of operation of the engine that is recorded through the non-resettable hour meter. The permittee shall document how many hours are spent for emergency operation, including what classified the operation as emergency and how many hours are spent for non-emergency operation. This only applies to Emission Unit 06 and Emission Unit 11, as Emission Unit 05 was manufactured prior to July 1, 2010 [40 CFR 60.4245(b)].

c. The permittee shall maintain the following records: [401 KAR 52:020, Section 10]
   (1) The type of fuel used and the hours of operation;
   (2) Hours of operation for maintenance and testing; and
   (3) Hours of operation in non-emergency operation and operation for other than maintenance and testing.

6. Specific Reporting Requirements:

a. If an engine has not been certified by an engine manufacturer to meet the emission standards in 40 CFR 60.4231, the permittee shall submit an initial notification as required in 40 CFR 60.7(a)(1). The permittee must submit the notification electronically according to the procedure outlined in 40 CFR 60.4245(g). The notification must include the information in 40 CFR 4245(c)(1) through (5) shown below: [40 CFR 60.4245(c)]
   (1) Name and address of the owner or operator; [40 CFR 60.4245(c)(1)
   (2) The address of the affected source; [40 CFR 60.4245(c)(2)
   (3) Engine information including make, model, engine family, serial number, model year, maximum engine power, and engine displacement; [40 CFR 60.4245(c)(3)
   (4) Emission control equipment; and [40 CFR 60.4245(c)(4)]
   (5) Fuel used [40 CFR 60.4245(c)(5)].

b. If an engine is subject to performance testing, the permittee must submit a copy of each performance test as conducted in 40 CFR 60.4244 within 60 days after the test has been completed. Performance test reports using EPA Method 18, EPA Method 320, or ASTM D6348-03 to measure VOC require reporting of all QA/QC data. For Method 18, report results from sections 8.4 and 11.1.1.4; for Method 320, report results from sections 8.6.2, 9.0, and 13.0; and for ASTM D6348-03 report results of all QA/QC procedures in Annexes 1-7. Performance tests must be reported electronically according to 40 CFR 60.4245(f) [40 CFR 60.4245(d)].

SECTION H - ALTERNATE OPERATING SCENARIOS (CONTINUED)

(1) Within 60 days of completing each performance test, the permittee must submit the re results following the procedures specified in 40 CFR 60.4245(g). Data collected using test methods that are supported by the EPA's Electronic Reporting Tool (ERT) as listed on the EPA's ERT website at the time of the test must be submitted in a file format generated using the EPA's ERT. Alternatively, the permittee may submit an electronic file consistent with the extensible markup language (XML) schema listed on the EPA's ERT website. Data collected using test methods that are not supported by the EPA's ERT as listed on the EPA's ERT website at the time of the test must be included as an attachment in the ERT or an alternate electronic file. [40 CFR 60.4245(f)]

(2) The permittee must submit notifications or reports to the EPA via the Compliance and Emissions Data Reporting Interface (CEDRI), which can be accessed through the EPA's Central Data Exchange (CDX) (*https://cdx.epa.gov/*). The EPA will make all the information submitted through CEDRI available to the public without further notice to the permittee. Do not use CEDRI to submit information the permittee claims as CBI. Although the EPA does not expect persons to assert a claim of CBI, if the permittee wishes to assert a CBI claim for some of the information in the report or notification, the permittee must submit a complete file in the format specified in 40 CFR 60, Subpart JJJJ, including information claimed to be CBI, to the EPA following the procedures in 40 CFR 60.4245(g)(1) and (2). Clearly mark the part or all of the information that the permittee claims to be CBI. Information not marked as CBI may be authorized for public release without prior notice. Information marked as CBI will not be disclosed except in accordance with procedures set forth in 40 CFR part 2. All CBI claims must be asserted at the time of submission. Anything submitted using CEDRI cannot later be claimed CBI. Furthermore, under CAA section 114(c), emissions data is not entitled to confidential treatment, and the EPA is required to make emissions data available to the public. Thus, emissions data will not be protected as CBI and will be made publicly available. The permittee must submit the same file submitted to the CBI office with the CBI omitted to the EPA via the EPA's CDX as described earlier in this paragraph. [40 CFR 60.4245(g)]

c. The permittee shall submit an initial notification, electronically in PDF consistent with 40 CFR 63.9(k), not later than 120 days after startup of EU 11 [40 CFR 63.6645(c)].

(1) The initial notification shall include the information in 40 CFR 63.9(b)(2)(i) through (v), and a statement that the stationary RICE has no additional requirements and explain the basis of the exclusion (for example, that it operates exclusively as an emergency stationary RICE if it has a site rating of more than 500 brake HP located at a major source of HAP emissions). [40 CFR 63.6645(f)]

SECTION H - ALTERNATE OPERATING SCENARIOS (CONTINUED)

Emission Unit 12 (012-1, 012-2, 012-3) - Natural Gas-Fired Indirect Heat Exchangers

Description: Units 4T, 5T, and 6T Fuel Gas Heaters

Fuel:	Natural Gas
Maximum hourly capacity:	1.154 MMBtu/hr each
Construction commenced:	Proposed 2026
Controls:	None

Emission Unit 14 (014) – BL1 Sellers 150 HP Boiler

Description:

Fuel:	Natural Gas
Maximum hourly capacity:	6.28 MMBtu/hr each
Construction commenced:	2015
Controls:	None

APPLICABLE REGULATIONS:

401 KAR 59:015, *New indirect heat exchangers*

401 KAR 63:002 Section 2(4)(iiii), 40 CFR 63.7480 through 63.7575 (**Subpart DDDDD**), *National Emission Standards for Hazardous Air Pollutants for Major Sources: Industrial, Commercial, and Institutional Boilers and Process Heaters*

1. **Operating Limitations:**
   a. During a startup period or shutdown period, the permittee shall comply with the work practice standards established in 401 KAR 59:015, Section 7. [401 KAR 59:015, Section 7]
      (1) An affected facility subject to 40 C.F.R. 63.7500 shall meet the work practice standards established in 40 C.F.R. Part 63, Table 3 to Subpart DDDDD, as established in 401 KAR 63:002, Section 2(4)(iiii). [401 KAR 59:015, Section 7(2)(a)]

      Compliance Demonstration Method:
      Compliance shall be demonstrated according to **5. Specific Recordkeeping Requirements b.**

   b. The permittee shall comply with 40 CFR 63, Subpart DDDDD, upon startup for each boiler or process heater. [40 CFR 63.7495(a)]

   c. Process heaters in the units designed to burn gas 1 fuels subcategory with a heat input capacity of less than or equal to 5 MMBtu/hr (emission units 012-1, 012-2, and 012-3) must complete a tune-up every 5 years as specified in 40 CFR 63.7540. Boilers in the units designed to burn gas 1 fuels subcategory with a heat input capacity greater than 5 million Btu per hour and less than 10 million Btu per hour (emission unit ~~012-4~~) must complete a tune-up every 2 years as specified in 40 CFR 63.7540. Boilers and process heaters in the units designed to burn gas 1 fuels subcategory are not subject to the operating limits in Table 4 to 40 CFR 63, Subpart DDDDD. [40 CFR 63.7500(e), Items 1 and 2 of Table 3 to 40 CFR 63, Subpart DDDDD]

   d. The permittee must conduct a 5-year performance tune-up (for emission units 012-1, 012-2, and 012-3) according to 40 CFR 63.7540(a)(12) and biennial performance tune-up (for

SECTION H - ALTERNATE OPERATING SCENARIOS (CONTINUED)

emission unit ~~012-4~~) according to 40 CFR 63.7540(a)(11). Each biennial performance tune-up specified in 40 CFR 63.7540(a)(11) must be conducted no more than 25 months after the previous tune-up. Each 5-year tune-up specified in 40 CFR 63.7540(a)(12) must be conducted no more than 61 months after the previous tune-up. The first biennial or 5-year tune-up must be no later than 25 months, or 61 months, respectively, after the initial startup of the affected source. [40 CFR 63.7515(d)]

Compliance Demonstration Method:
The permittee must demonstrate initial compliance with the applicable work practice standards in Table 3 to 40 CFR 63, Subpart DDDDD, within the applicable biennial or 5-year schedule as specified in 40 CFR 63.7515(d), following startup as specified in 40 CFR 63.7495(a). Thereafter, the permittee is required to complete the applicable biennial, or 5-year tune-up as specified in 40 CFR 63.7515(d).

2. <u>Emission Limitations</u>:

a. The permittee shall not cause emissions of particulate matter in excess of 0.56 lb/MMBtu actual heat input. [401 KAR 59:015, Section 4(1)(c)]

b. The permittee shall not cause emissions of particulate matter in excess of 20 percent opacity, except: [401 KAR 59:015, Section (4)(2)]
   (1) A maximum of 40 percent opacity shall be allowed for a maximum of 6 consecutive minutes in any 60 consecutive minutes during fire box cleaning or soot blowing; and [401 KAR 59:015, Section 4(2)(b)]
   (2) For emissions from an affected facility caused by building a new fire, emissions during the period required to bring the boiler up to operating conditions shall be allowed, if the method used is recommended by the manufacturer and the time does not exceed the manufacturer's recommendations. [401 KAR 59:015, Section 4(2)(c)]

c. The permittee shall not cause emissions of gases that contain sulfur dioxide in excess of 3.00 lb/MMBtu actual heat input [401 KAR 59:015, Section 5(1)(c)].

Compliance Demonstration Method:
Compliance with the 401 KAR 59:015 emission standards is assumed [401 KAR 50:045, Section 4(3)(c)1.]

d. Boilers and process heaters in the units designed to burn gas 1 fuels subcategory are not subject to the emission limits in Tables 1 and 2 or Tables 11 through 15 to 40 CFR 63, Subpart DDDDD. [40 CFR 63.7500(e)]

3. <u>Testing Requirements</u>:
Performance testing using the reference methods specified in 401 KAR 50:015 shall be conducted if required by the Cabinet. [401 KAR 50:045, Section 1, and 401 KAR 59:005, Section 2(2)]

4. <u>Specific Monitoring Requirements</u>:
The permittee shall monitor the amount of natural gas combusted, in MMscf, on a monthly basis. [401 KAR 52:020, Section 10]

SECTION H - ALTERNATE OPERATING SCENARIOS (CONTINUED)

5. Specific Recordkeeping Requirements:
The permittee shall maintain records of the hours of operation and the amount of natural gas combusted, in MMscf, on a monthly basis. [401 KAR 52:020, Section 10]

6. Specific Reporting Requirements:

a. The permittee must submit to the Administrator all of the notifications in 40 CFR 63.7(b) and (c), 63.8(e), (f)(4) and (6), and 63.9(b) through (h) that apply to the permittee by the dates specified. [40 CFR 63.7545(a)]

b. As specified in 40 CFR 63.9(b)(4) and (5), the permittee must submit an Initial Notification not later than 15 days after the actual date of startup of the affected source. [40 CFR 63.7545(c)]

c. If the permittee intends to use a fuel other than natural gas, refinery gas, gaseous fuel subject to another subpart of 40 CFR 63, 60, 61, or 65, or other gas 1 fuel to fire the affected unit during a period of natural gas curtailment or supply interruption, as defined in 40 CFR 63.7575, the permittee must submit a notification of alternative fuel use within 48 hours of the declaration of each period of natural gas curtailment or supply interruption, as defined in 40 CFR 63.7575. The notification must include the information specified in 40 CFR 63.7545(f)(1) through (5), included below: [40 CFR 63.7545(f)]
   (1) Company name and address. [40 CFR 63.7545(f)(1)]
   (2) Identification of the affected unit.[40 CFR 63.7545(f)(2)]
   (3) Reason the permittee is unable to use natural gas or equivalent fuel, including the date when the natural gas curtailment was declared or the natural gas supply interruption began. [40 CFR 63.7545(f)(3)]
   (4) Type of alternative fuel that the permittee intends to use. [40 CFR 63.7545(f)(4)]
   (5) Dates when the alternative fuel use is expected to begin and end. [40 CFR 63.7545(f)(5)]

d. If the permittee has switched fuels or made a physical change to the boiler or process heater and the fuel switch or physical change resulted in the applicability of a different subcategory, the permittee must provide notice of the date upon which they switched fuels or made the physical change within 30 days of the switch/change. The notification must identify: [40 CFR 63.7545(h)]
   (1) The name of the owner or operator of the affected source, as defined in 40 CFR 63.7490, the location of the source, the boiler(s) and process heater(s) that have switched fuels, were physically changed, and the date of the notice. [40 CFR 63.7545(h)(1)]
   (2) The currently applicable subcategory under 40 CFR 63, Subpart DDDDD. [40 CFR 63.7545(h)(2)]
   (3) The date upon which the fuel switch or physical change occurred. [40 CFR 63.7545(h)(3)]

e. Unless the EPA Administrator has approved a different schedule for submission of reports under 40 CFR 63.10(a), the permittee must submit each report, according to 40 CFR 63.7550(h), by the date in Table 9 to this subpart and according to the requirements in 40 CFR 63.7550(b)(1) through (4). The permittee may submit only a biennial, or 5-year

SECTION H - ALTERNATE OPERATING SCENARIOS (CONTINUED)

compliance report, as applicable, as specified in 40 CFR 63.7550(b)(1) through (4), instead of a semi-annual compliance report. [40 CFR 63.7550(b)]

(1) The first semi-annual compliance report must cover the period beginning on the compliance date that is specified for each boiler or process heater in 40 CFR 63.7495 and ending on June 30 or December 31, whichever date is the first date that occurs at least 180 days after the compliance date that is specified for the affected source in 40 CFR 63.7495. If submitting an annual, biennial, or 5-year compliance report, the first compliance report must cover the period beginning on the compliance date that is specified for each boiler or process heater in 40 CFR 63.7495 and ending on December 31 within 1, 2, or 5 years, as applicable, after the compliance date that is specified for the affected source in 40 CFR 63.7495. [40 CFR 63.7550(b)(1)]

(2) The first semi-annual compliance report must be postmarked or submitted no later than July 31 or January 31, whichever date is the first date following the end of the first calendar half after the compliance date that is specified for each boiler or process heater in 40 CFR 63.7495. The first annual, biennial, or 5-year compliance report must be postmarked or submitted no later than January 31. [40 CFR 63.7550(b)(2)]

(3) Each subsequent semi-annual compliance report must cover the semiannual reporting period from January 1 through June 30 or the semiannual reporting period from July 1 through December 31. Annual, biennial, and 5-year compliance reports must cover the applicable 1-, 2-, or 5-year periods from January 1 to December 31. [40 CFR 63.7550(b)(3)]

(4) Each subsequent semi-annual compliance report must be postmarked or submitted no later than July 31 or January 31, whichever date is the first date following the end of the semiannual reporting period. Annual, biennial, and 5-year compliance reports must be postmarked or submitted no later than January 31. [40 CFR 63.7550(b)(4)]

f. A compliance report must contain the information in 40 CFR 63.7550(c)(5)(i) through (iii), (xiv), and (xvii), included below: [40 CFR 63.7550(c)(1)]

(1) Company and Facility name and address. [40 CFR 63.7550(c)(5)(i)]

(2) Process unit information, emissions limitations, and operating parameter limitations. [40 CFR 63.7550(c)(5)(ii)]

(3) Date of report and beginning and ending dates of the reporting period. [40 CFR 63.7550(c)(5)(iii)]

(4) Include the date of the most recent tune-up for each unit. Include the date of the most recent burner inspection if it was not done annually, biennially, or on a 5-year period and was delayed until the next scheduled or unscheduled unit shutdown. [40 CFR 63.7550(c)(5)(xiv)]

(5) Statement by a responsible official with that official's name, title, and signature, certifying the truth, accuracy, and completeness of the content of the report. [40 CFR 63.7550(c)(5)(xvii)]

SECTION H - ALTERNATE OPERATING SCENARIOS (CONTINUED)

g. The permittee must submit all reports required by Table 9 to 40 CFR 63, Subpart DDDDD electronically to the EPA via the CEDRI. (CEDRI can be accessed through the EPA's CDX.) The permittee must use the appropriate electronic report in CEDRI for 40 CFR 63, Subpart DDDDD. Instead of using the electronic report in CEDRI for 40 CFR 63, Subpart DDDDD, the permittee may submit an alternate electronic file consistent with the XML schema listed on the CEDRI Web site (http://www.epa.gov/ttn/chief/cedri/index.html). [40 CFR 63.7550(h)(3)]

h. Refer to **Section F – Monitoring, Recordkeeping, and Reporting Requirements.**

SECTION I - COMPLIANCE SCHEDULE

None