

April 3, 2026

Commonwealth of Kentucky
Energy and Environment Cabinet
Department for Environmental Protection
Division for Air Quality

300 Sower Boulevard, 2nd Floor
Frankfort, Kentucky 40601

Subject: Permit Renewal Application – Valvoline Engine Test Laboratory

Facility: Permit F-21-021 R1
Agency Interest No.: 40443
Activity ID: APE20230001

To Whom It May Concern:

EHS Support LLC is submitting this permit renewal application on behalf of VGP Holdings LLC's Valvoline Engine Test Laboratory (the Facility), operating under Permit F-21-021 R1, in accordance with Section 17(1) of 401 KAR 52:030. Enclosed is the permit renewal application for the Valvoline Engine Test Laboratory located at 121 22nd Street in Ashland, Boyd County, Kentucky. This renewal application is consistent with the current permit conditions, and Valvoline is not requesting any changes to existing emission limits.

Since the previous renewal application, the Facility has implemented two updates pursuant to Kentucky Division for Air Quality procedures:

1. 401 KAR 52:030, Section 17(2) - Changes (submitted March 30, 2022):

Valvoline submitted modifications to Permit F21021 reflecting market driven changes in engine testing activities, testing hours, and fuel usage. These changes did not alter applicable requirements, monitoring methods, recordkeeping, reporting, or compliance certification obligations, and did not increase actual or potential or emissions.

2. 401 KAR 52:030, Section 17(1) - Off-Permit Change (submitted March 20, 2026):

In accordance with Section 17(1) of 401 KAR 52:030, Valvoline notified the Division of the planned replacement of Test Engine 10 (750 bhp gasoline internal combustion engine) with a functionally equivalent 1000 bhp gasoline internal combustion engine. The replacement engine uses the same fuel (unleaded racing gasoline) and performs the same heavy-duty vehicle testing function. The change does not modify the permitted emissions calculation methodology (AP-42 factors in grams per mile), testing parameters, fuel type, or hours of operation, and therefore results in no increase in actual or potential

emissions. The replacement does not constitute a modification under Title I of the Clean Air Act and does not trigger New Source Review.

3. Synthetic Minor Engine Test Hour Rebalancing

Valvoline is submitting modifications with this renewal application in accordance with Section 502(b)(10) of the Kentucky regulations. The following changes do not violate applicable requirements or contravene federally enforceable permit terms and conditions, monitoring methods, recordkeeping, reporting, or compliance certification requirements.

The Facility remains in compliance with all applicable requirements under Permit F-21-021 R1, as previously certified, and continues to operate within all approved permit terms and conditions.

4. Engine Description Changes

Engine descriptions and associated tests have been updated to reflect current operations. These updates do not alter emissions calculation methodologies, testing parameters, fuel type, or operating hours, and therefore do not increase actual or potential emissions. All changes are shown in the attached redline excerpt of Permit F-21-021 R1.

Should you have any questions or require additional information, please feel free to contact Katie Milk at 330-687-3664.

Sincerely,

Katie Milk
Senior Compliance Specialist

SECTION B - EMISSION POINTS, EMISSION UNITS, APPLICABLE REGULATIONS, AND OPERATING CONDITIONS**Test Engines****01 Gasoline Test Engine III**

Description: Internal Combustion Reciprocating Test Engine for Light Duty Gasoline Powered Vehicles.

Make: General Motors

Fuel: Unleaded gasoline only.

Horsepower / Displacement: 200 / 3.8L

Construction Date: 1999

02 Gasoline Test Engine ~~IV~~ VPS

Description: Internal Combustion Reciprocating Test Engine for Light Duty Gasoline Powered Vehicles.

Make: Nissan

Fuel: Unleaded gasoline only.

Horsepower / Displacement: 375 / 3.5L (~~Horsepower limited to less than 50~~)

Construction Date: 1999

03 Gasoline Test Engine VIII

Description: Internal Combustion Reciprocating Test Engine for Light Duty Gasoline Powered Vehicles.

Make: Cooperative Lubrication Research (Oil Test Engine)

Fuel: Unleaded gasoline only.

Horsepower / Displacement: 25 / 1L

Construction Date: 1999

04 Gasoline/~~Diesel~~ Test Engine ~~DB~~ X

Description: Internal Combustion Reciprocating Test Engine for Gasoline/~~Diesel~~ Powered Vehicles.

Make: Not Listed

Fuel: ~~Switching between~~ Unleaded gasoline only. ~~and Diesel~~

For DB Gasoline:

Horsepower / Displacement: 260/ 4.6L

Construction Date: ~~2006~~ 2010

~~For Light Diesel:~~

~~Horsepower / Displacement: 130/ 2.2L~~

~~Construction Date: 2009~~

05 Gasoline Test Engine VG

Description: Internal Combustion Reciprocating Test Engine for Light Duty Gasoline Powered Trucks.

Make: Ford

Fuel: Unleaded gasoline only.

Horsepower / Displacement: 190 / 4.6L

Construction Date: 1999

SECTION B - EMISSION POINTS, EMISSION UNITS, APPLICABLE REGULATIONS, AND OPERATING CONDITIONS (CONTINUED)**06 Gasoline Test Engine BL-2**

Description: Internal Combustion Reciprocating Test Engine for Light Duty Gasoline Powered Trucks.

Make: Not Listed

Fuel: Unleaded gasoline only.

Horsepower / Displacement: 190 / Not Listed

Construction Date: 1999

07 Gasoline Test Engine VI

Description: Internal Combustion Reciprocating Test Engine for Light Duty Gasoline Powered Trucks.

Make: Ford

Fuel: Unleaded gasoline only.

Horsepower / Displacement: 190 / 4.6L (Horsepower limited to less than 50)

Construction Date: 1999

08a ~~Diesel Test Engine ISB~~ Diesel HD-I Engine Stand

Description: Internal Combustion Reciprocating Test Engine for Heavy Duty Diesel Powered Vehicles.

Make: Not Listed

Fuel: Diesel fuel only.

Horsepower / Displacement: 175 / 5.9L

Construction Date: 1999

08b HD-I Engine Stand

Description: Internal Combustion Reciprocating Test Engine for Heavy Duty Gasoline Powered Vehicles.

Make: Not Listed

Fuel: Unleaded gasoline only.

Horsepower / Displacement: 250 / 9.0L

Construction Date: 2015

10 ~~Gasoline (Unleaded) High Horsepower Test Engine~~ HD Gasoline

Description: Internal Combustion Reciprocating Test Engine for Heavy Duty Gasoline Powered Vehicles.

Make: Not Listed (NASCAR Racing Engine)

Fuel: Unleaded racing gasoline only.

Horsepower / Displacement: ~~750~~ 1000 / Not Listed

Construction Date: 1999

13 Gasoline Test Marine Engine ME1

Description: Internal Combustion Reciprocating Test Engine for Non-road Gasoline Powered Marine

Make: Defender/Honda BF225

Fuel: Unleaded gasoline only.

Horsepower / Displacement: 225-30/ 3.5L

Construction Date: 2006

14 Gasoline Test Marine Engine ME2

Description: Internal Combustion Reciprocating Test Engine for Non-road Gasoline Powered Marine

Make: Defender/Honda BF225

Fuel: Unleaded gasoline only.

Horsepower / Displacement: 225-30/ 3.5L

Construction Date: 2006

SECTION B - EMISSION POINTS, EMISSION UNITS, APPLICABLE REGULATIONS, AND OPERATING CONDITIONS (CONTINUED)**15 ~~Heavy Duty Engine Test Stand-HD~~ Heavy Duty II Engine Test Stand**

Description: Internal Combustion Reciprocating Test Engine for two engines (4LB)

Make: Cummins Diesel

Fuel: Natural Gas and Diesel.

Horsepower / Displacement: 450/ 15L

Construction Date: ~~2015~~ 2014

APPLICABLE REGULATION:

401 KAR 59:010, New process operations. [Only opacity standard applies]

401 KAR 63:020, Potentially hazardous matter or toxic substances. [State-Origin Requirement]

1. Operating Limitations:

To preclude 401 KAR 52:020, test engines ~~III, IV, VIII, DB, VG, BL-2, VI, ISB, NASCAR, ME1, ME2, and HD~~ **III, VPS, VIII, X, V, BL-2, VI, HD-I, HD, ME1, ME2, and HD-II** shall be disassembled, inspected, and rebuilt prior to performing a subsequent test in order to support use of the “50,000 Mile Emission Level” emission factors from AP-42, Volume II, Appendix H.

Compliance Demonstration Method:

See **5. Specific Recordkeeping Requirements** and **6. Specific Reporting Requirements**.

2. Emission 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.

b. See **SECTION D - SOURCE EMISSION LIMITATIONS AND TESTING REQUIREMENTS** for source-wide requirements.

Compliance Demonstration Method:

Based upon the emission rates of toxics 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:

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:

a. Refer to **5. Specific Recordkeeping Requirements**.

**Air Permit Application
Administrative Information
DEP7007AI**

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: Valvoline Engine Test Laboratory

KY EIS (AFS) #: 21- 019-00110

Permit #: F-21-021

Agency Interest (AI) ID: 40443

Date: 25-Mar-26

Section AI.1: Source Information

Physical Location	Street:	<u>121 22nd Street</u>		
Address:	City:	<u>Ashland</u>	County:	<u>Boyd</u>
			Zip Code:	<u>41101</u>
Mailing Address:	Street or	<u>121 22nd Street</u>		
	P.O. Box:			
	City:	<u>Ashland</u>	State:	<u>KY</u>
			Zip Code:	<u>41101</u>

Standard Coordinates for Source Physical Location

Longitude: -82.6312 (decimal degrees) **Latitude:** 38.4767 (decimal degrees)

Primary (NAICS) Category: Research & Development in the Physical,
Engineering, & Life Sciences

Primary NAICS #: 541710

Classification (SIC) Category: Testing Laboratories Primary SIC #: 8734

Briefly discuss the type of business conducted at this site:
Conducts physical engine lubricant and coolant failure analysis

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: 16

Approximate distance to nearest residence or commercial property: 30 feet Property Area: 89,200 sq ft 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

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: VGP Holdings LLC

Title: (if individual) _____

Mailing Address: **Street or P.O. Box:** 121 22nd Street
City: Ashland **State:** KY **Zip Code:** 41101

Email: (if individual) _____

Phone: 606-329-1960

Technical Contact

Name: Don Gebhardt

Title: Environmental Compliance Manager

Mailing Address: **Street or P.O. Box:** 100 Valvoline Way
City: Lexington **State:** KY **Zip Code:** 40509

Email: degebhardt@valvolineglobal.com

Phone: 859-357-7884

Air Permit Contact for Source

Name: Amol Sawant

Title: Valvoline Engine Lab Manager

Mailing Address: **Street or P.O. Box:** 121 22nd Street
City: Ashland **State:** KY **Zip Code:** 41101

Email: acsawant@valvolineglobal.com

Phone: 606-585-8982

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
_____ No officers or individuals own 5% or more of the company	_____ Beneficial Owners
_____ Primary investors are investment firms.	_____ Beneficial Owners
_____ Company Officers and Board of Directors	_____ see note on AI.7

Section AI.4: Type of Application

Current Status:	☐ Title V	☒ Conditional Major	☐ State-Origin	☐ General Permit	☐ Registration	☐ None
	☐ Name Change	☐ Initial Registration	☐ Significant Revision	☐ Administrative Permit Amendment		
Requested Action: (check all that apply)	☒ Renewal Permit	☐ Revised Registration	☐ Minor Revision	☐ Initial Source-wide Operating Permit		
	☒ 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	<u>.38 tpy</u>	☒ Single HAP	<u><9 tpy</u>
☒ Volatile Organic Compounds (VOC)	<u>7.6 tpy</u>	☒ Combined HAPs	<u><22.5 tpy</u>
☒ Carbon Monoxide	<u><90 tpy</u>	☐ Air Toxics (40 CFR 68, Subpart F)	_____
☒ Nitrogen Oxides	<u>16.6 tpy</u>	☐ Carbon Dioxide	_____
☒ Sulfur Dioxide	<u>.33 tpy</u>	☐ Greenhouse Gases (GHG)	_____
☐ Lead	_____	☐ Other	_____

For New Construction:

Proposed Start Date of Construction:
(MM/YYYY)

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

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:

- | | |
|--|--|
| ☒ DEP7007A Indirect Heat Exchangers and Turbines | ☐ DEP7007CC Compliance Certification |
| ☐ DEP7007B Manufacturing or Processing Operations | ☒ DEP7007DD Insignificant Activities |
| ☐ DEP7007C Incinerators and Waste Burners | ☒ 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 |
| ☒ 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 buildings, 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.



Authorized Signature

Roger England, PhD

Type or Printed Name of Signatory

4/2/2026

Date

VP Chief R&D Officer

Title of Signatory

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

Section AI.7: Notes, Comments, and Explanations

Company Officers are listed below but do not have an interest in the company of 5% or more:

Sam Mitchell-CEO and Director

Tom Gerrald-Senior Vice President, Core North America

Roger England, Ph.D.- Vice President and Chief Research and Development Officer

Heidi Matheys-Senior Vice President and Chief Marketing Officer

Mary Meixelsperger-Chief Financial Officer

Craig Moughler-Senior Vice President and Chief Supply Chain Officer

Jamal Muashsher-Senior Vice President, International

Julie O'Daniel-Senior Vice President, Chief Legal Officer and Corporate Secretary

Tony Puckett-Senior Vice President and President, Quick Lubes

Certificate of Authority

Commonwealth of Kentucky
Michael G. Adams, Secretary of State

Michael G. Adams
Secretary of State
P. O. Box 718
Frankfort, KY 40602-0718
(502) 564-3490
<http://www.sos.ky.gov>

Certificate of Authorization

Authentication number: 363708
Visit <https://web.sos.ky.gov/ftshow/certvalidate.aspx> to authenticate this certificate.

I, Michael G. Adams, Secretary of State of the Commonwealth of Kentucky, do hereby certify that according to the records in the Office of the Secretary of State,

VGP HOLDINGS LLC

, a limited liability company authorized under the laws of the state of Delaware, is authorized to transact business in the Commonwealth of Kentucky, and received the authority to transact business in Kentucky on October 7, 2022.

I further certify that all fees and penalties owed to the Secretary of State have been paid; that an application for certificate of withdrawal has not been filed; that the most recent annual report required by KRS 14A.6-010 has been delivered to the Secretary of State; and is therefore in good standing.

IN WITNESS WHEREOF, I have hereunto set my hand and affixed my Official Seal at Frankfort, Kentucky, this 2nd day of April, 2026, in the 234th year of the Commonwealth.



Michael G. Adams

Michael G. Adams
Secretary of State
Commonwealth of Kentucky
363708/1235656

Map Location
Process Flow Diagram
Site Plan

4461 11 SE
(KITTS HILL)



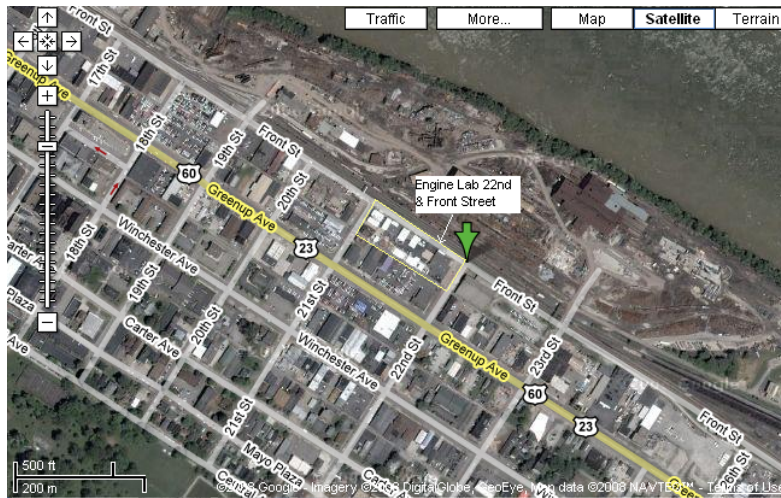
(BURNAUGH)
4460 1 SE

 Interstate Route  U. S. Route  State Route

38082-D6-TF-024
1968
PHOTOREVISED 1985
DMA 4480 1 1/2W-SERIES VERT

A: Site Location and Facility Diagram

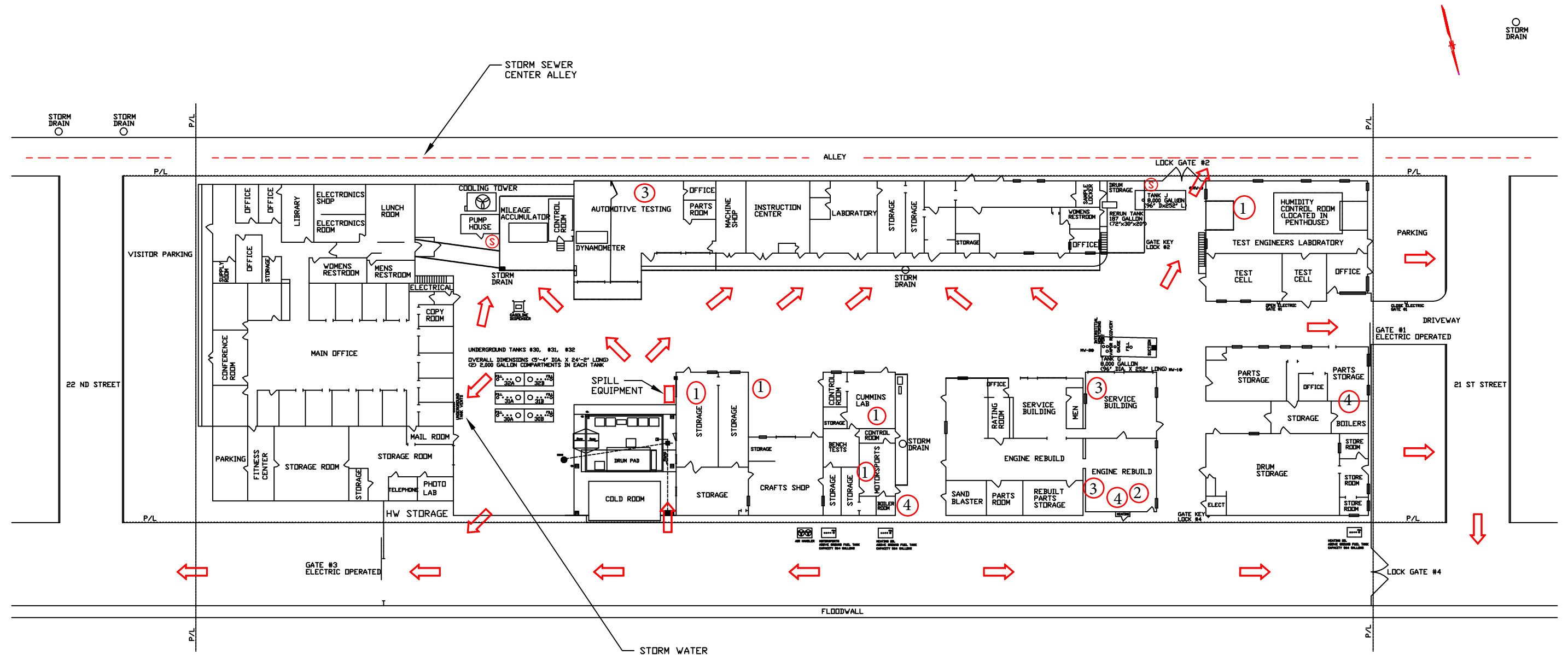
21st - 22nd and Front Street, Ashland KY, 41101



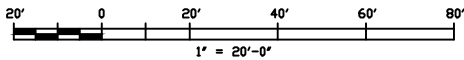
USGS Quad Name: Ashland
State: KY



Engine Stands
Boilers
Remediation System
Marine Engines



- LEGEND:
- ⑤ SPILL KIT
 - ➡ STORM WATER DRAINAGE
 - ① Engine Test Areas
 - ② Honing Machine
 - ③ Parts Washers
 - ④ Boilers



REV.	DATE	DRN.	CHK'D	REVISION DESCRIPTION	APPR.
 A DIVISION OF ASHLAND.					
SITE LOCATION ASHLAND, KY LABS				TITLE Engine Lab Environmental Drawing	
APPROVED FOR CONSTRUCTION		UNIT-BLDG		DRAWING NO. 5334-ZD-001	
BY	DATE	DRN.	RLS		
		DATE	7/9/13		
		CHK'D			
		DATE			
		SCALE	1"-20'	REV. 0	
		PLOT			
PRD. # E-5334		PRD. TITLE GENERAL PLANT			

Engine List

Fuel	Engine Type	KY - DEP Test Engine Number (Section B)	Tests
Gasoline	Light Duty Vehicles	01	III
		02	VPS
		03	VIII
	Light Duty Trucks	04	X
		05	V
		06	BL-2
		07	VI
Diesel	Heavy Duty	08-A	HDI-I Eng. Stand
Gasoline	Heavy Duty	08-B	HDI-I Eng. Stand
Unleaded Gasoline Premium	Heavy Duty	10	HD Gasoline
HDD \ NG**	Heavy Duty	15	HD-II

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: Valvoline Engine Laboratory

KY EIS (AFS) #: 21- 019-00110

Permit #: F-21-021

Agency Interest (AI) ID: 4044 3

Date: 25-Mar-26

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
EP01	Gasoline Test Engine III	NA	NA	General Motors	See Note 1	See Note 1	See Note 1	01/1999	See Note 1	401 KAR 59:010 Section 3 (1)
EP02	Gasoline Test Engine VPS	NA	NA	Nissan	See Note 1	See Note 1	See Note 1	01/1999	See Note 1	401 KAR 59:010 Section 3 (1)
EP03	Gasoline Test Engine VIII	NA	NA	Cooperative Lubrication Research	See Note 1	See Note 1	See Note 1	01/1999	See Note 1	401 KAR 59:010 Section 3 (1)
EP04	Light Duty Test Engine X	NA	NA	See Note 1	See Note 1	See Note 1	See Note 1	01/2009	See Note 1	401 KAR 59:010 Section 3 (1)
EP05	Gasoline Test Engine V	NA	NA	Ford	See Note 1	See Note 1	See Note 1	01/1999	See Note 1	401 KAR 59:010 Section 3 (1)
EP06	Gasoline Test Engine BL-2	NA	NA	See Note 1	See Note 1	See Note 1	See Note 1	01/1999	See Note 1	401 KAR 59:010 Section 3 (1)
EP07	Gasoline Test Engine VI	NA	NA	Ford	See Note 1	See Note 1	See Note 1	01/1999	See Note 1	401 KAR 59:010 Section 3 (1)

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? <i>(Yes/No)</i>	Rental Time Period <i>(hrs)</i>	Alternate Operating Scenarios (Describe any operating scenarios in which the engine may be used in a different configuration)
EP01	Engine Lubricant Testing	24	No	No	Engine Test III or similar
EP02	Engine Lubricant Testing	24	No	No	Engine Test IV or similar
EP03	Engine Lubricant Testing	24	No	No	Engine Test Engine Test VIII or similar
EP04	Engine Lubricant Testing	24	No	No	Engine Test X or similar
EP05	Engine Lubricant Testing	24	No	No	Engine Test V or similar
EP06	Engine Lubricant Testing	24	No	No	Engine Test BL-2 or similar
EP07	Engine Lubricant Testing	24	No	No	Engine Test VI or similar

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
EP01	Stationary Test Engine	Spark	4 Stroke	200	5800	3.8	
EP02	Stationary Test Engine	Spark	4 Stroke	375	5000	3.5	
EP03	Stationary Test Engine	Spark	4 Stroke	25	3600	1	
EP04	Stationary Test Engine	Spark	4 Stroke	260	4000	4.6	
EP05	Stationary Test Engine	Spark	4 Stroke	190	6000	4.6	
EP06	Stationary Test Engine	Spark	4 Stroke	190	3500	4.6	
EP07	Stationary Test Engine	Spark	4 Stroke	190	5800	3.4	

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
EP01	Primary	Gasoline	Unleaded	100	10	0.125	0.008	3-99-999-97	Each
EP02	Primary	Gasoline	Unleaded	100	4	0.125	0.008	3-99-999-97	Each
EP03	Primary	Gasoline	Unleaded	100	0.26	0.125	0.008	3-99-999-97	Each
EP04	Primary	Gasoline	Unleaded	100	2.08	0.125	0.008	3-99-999-97	Each
EP05	Primary	Gasoline	Unleaded	100	3.24	0.125	0.008	3-99-999-97	Each
EP06	Primary	Gasoline	Unleaded	100	5	0.125	0.008	3-99-999-97	Each
EP07	Primary	Gasoline	Unleaded	100	2.5	0.125	0.008	3-99-999-97	Each

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
EP01	See Sheet EE.5A				
EP02	See Sheet EE.5A				
EP03	See Sheet EE.5A				
EP04	See Sheet EE.5A				
EP05	See Sheet EE.5A				
EP06	See Sheet EE.5A				
EP07	See Sheet EE.5A				

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
EP01, EP02. EP03	Gasoline	HC	4.18	grams/mile	EPA 1972-1974 Light Duty Gasoline Powered Vehicles without catalytic converters
EP01, EP02. EP03	Gasoline	CO	52.69	grams/mile	EPA 1972-1974 Light Duty Gasoline Powered Vehicles without catalytic converters
EP01, EP02. EP03	Gasoline	NOx*	3.11	grams/mile	EPA 1972-1974 Light Duty Gasoline Powered Vehicles without catalytic converters
EP01, EP02. EP03	Gasoline	Methane	0.580184	grams/mile	EPA Gasoline emission speciation
EP01, EP02. EP03	Gasoline	Acetone	0.019646	grams/mile	EPA Gasoline emission speciation
EP01, EP02. EP03	Gasoline	Hexane	0.02926	grams/mile	EPA Gasoline emission speciation
EP01, EP02. EP03	Gasoline	Acetaldehyde	0.0209	grams/mile	EPA Gasoline emission speciation
EP01, EP02. EP03	Gasoline	Acrolein	0.002508	grams/mile	EPA Gasoline emission speciation
EP01, EP02. EP03	Gasoline	Benzene	0.17138	grams/mile	EPA Gasoline emission speciation
EP01, EP02. EP03	Gasoline	Ethylbenzene	0.061446	grams/mile	EPA Gasoline emission speciation
EP01, EP02. EP03	Gasoline	Toluene	0.43472	grams/mile	EPA Gasoline emission speciation
EP01, EP02. EP03	Gasoline	1,3-butadiene	0.0209	grams/mile	EPA Gasoline emission speciation
EP01, EP02. EP03	Gasoline	Isopropylbenzene (Cumene)	0.000418	grams/mile	EPA Gasoline emission speciation
EP01, EP02. EP03	Gasoline	Formaldehyde	0.04598	grams/mile	EPA Gasoline emission speciation
EP01, EP02. EP03	Gasoline	Methyl Ethyl Ketone	0.007106	grams/mile	EPA Gasoline emission speciation
EP01, EP02. EP03	Gasoline	Propionaldehyde	0.002508	grams/mile	EPA Gasoline emission speciation
EP01, EP02. EP03	Gasoline	Styrene	0.1254	grams/mile	EPA Gasoline emission speciation
EP01, EP02. EP03	Gasoline	m-Xylene	0.180576	grams/mile	EPA Gasoline emission speciation
EP01, EP02. EP03	Gasoline	o-Xylene	0.064372	grams/mile	EPA Gasoline emission speciation
EP01, EP02. EP03	Gasoline	2,2,4-Trimethylpentane	0.180576	grams/mile	EPA Gasoline emission speciation
EP01, EP02. EP03	Gasoline	Naphthalene	0.00836	grams/mile	EPA Gasoline emission speciation
EP01, EP02. EP03	Gasoline	n-Pentane	0.049742	grams/mile	EPA Gasoline emission speciation
EP01, EP02. EP03	Gasoline	n-Heptane	0.010032	grams/mile	EPA Gasoline emission speciation
EP01, EP02. EP03	Gasoline	n-Octane	0.00836	grams/mile	EPA Gasoline emission speciation
EP01, EP02. EP03	Gasoline	n-Nonane	0.00209	grams/mile	EPA Gasoline emission speciation
EP01, EP02. EP03	Gasoline	n-Decane	0.007942	grams/mile	EPA Gasoline emission speciation
EP01, EP02. EP03	Gasoline	n-Undecane	0.01672	grams/mile	EPA Gasoline emission speciation
EP01, EP02. EP03	Gasoline	n-Dodecane	0.003762	grams/mile	EPA Gasoline emission speciation

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
EP01, EP02, EP03	Gasoline	Miscellaneous VOC	2.125112	grams/mile	EPA Gasoline emission speciation
EP04, EP05, EP06	Gasoline	HC	7.53	grams/mile	EPA Light Duty Gasoline Powered Trucks II 50,000 miles
EP04, EP05, EP06	Gasoline	CO	72.83	grams/mile	EPA Light Duty Gasoline Powered Trucks II 50,000 miles
EP04, EP05, EP06	Gasoline	NOx*	6.45	grams/mile	EPA Light Duty Gasoline Powered Trucks II 50,000 miles
EP04, EP05, EP06	Gasoline	Methane	1.045164	grams/mile	EPA Gasoline emission speciation
EP04, EP05, EP06	Gasoline	Acetone	0.035391	grams/mile	EPA Gasoline emission speciation
EP04, EP05, EP06	Gasoline	Hexane	0.05271	grams/mile	EPA Gasoline emission speciation
EP04, EP05, EP06	Gasoline	Acetaldehyde	0.03765	grams/mile	EPA Gasoline emission speciation
EP04, EP05, EP06	Gasoline	Acrolein	0.004518	grams/mile	EPA Gasoline emission speciation
EP04, EP05, EP06	Gasoline	Benzene	0.30873	grams/mile	EPA Gasoline emission speciation
EP04, EP05, EP06	Gasoline	Ethylbenzene	0.110691	grams/mile	EPA Gasoline emission speciation
EP04, EP05, EP06	Gasoline	Toluene	0.78312	grams/mile	EPA Gasoline emission speciation
EP04, EP05, EP06	Gasoline	1,3-butadiene	0.03765	grams/mile	EPA Gasoline emission speciation
EP04, EP05, EP06	Gasoline	Isopropylbenzene (Cumene)	0.000753	grams/mile	EPA Gasoline emission speciation
EP04, EP05, EP06	Gasoline	Formaldehyde	0.08283	grams/mile	EPA Gasoline emission speciation
EP04, EP05, EP06	Gasoline	Methyl Ethyl Ketone	0.012801	grams/mile	EPA Gasoline emission speciation
EP04, EP05, EP06	Gasoline	Propionaldehyde	0.004518	grams/mile	EPA Gasoline emission speciation
EP04, EP05, EP06	Gasoline	Styrene	0.2259	grams/mile	EPA Gasoline emission speciation
EP04, EP05, EP06	Gasoline	m-Xylene	0.325296	grams/mile	EPA Gasoline emission speciation
EP04, EP05, EP06	Gasoline	o-Xylene	0.115962	grams/mile	EPA Gasoline emission speciation
EP04, EP05, EP06	Gasoline	2,2,4-Trimethylpentane	0.325296	grams/mile	EPA Gasoline emission speciation
EP04, EP05, EP06	Gasoline	Naphthalene	0.01506	grams/mile	EPA Gasoline emission speciation
EP04, EP05, EP06	Gasoline	n-Pentane	0.089607	grams/mile	EPA Gasoline emission speciation
EP04, EP05, EP06	Gasoline	n-Heptane	0.018072	grams/mile	EPA Gasoline emission speciation
EP04, EP05, EP06	Gasoline	n-Octane	0.01506	grams/mile	EPA Gasoline emission speciation
EP04, EP05, EP06	Gasoline	n-Nonane	0.003765	grams/mile	EPA Gasoline emission speciation
EP04, EP05, EP06	Gasoline	n-Decane	0.014307	grams/mile	EPA Gasoline emission speciation
EP04, EP05, EP06	Gasoline	n-Undecane	0.03012	grams/mile	EPA Gasoline emission speciation
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
EP04, EP05,EP06	Gasoline	n-Dodecane	0.006777	grams/mile	EPA Gasoline emission speciation
EP04, EP05,EP06	Gasoline	Miscellaneous VOC	3.828252	grams/mile	EPA Gasoline emission speciation
EP07	Gasoline	HC	8.78	grams/mile	EPA Light Duty Gasoline Powered Trucks II, 100,000 miles
EP07	Gasoline	CO	85.58	grams/mile	
EP07	Gasoline	NOx*	6.45	grams/mile	
EP07	Gasoline	Methane	1.045164	grams/mile	EPA Gasoline emission speciation
EP07	Gasoline	Acetone	0.035391	grams/mile	EPA Gasoline emission speciation
EP07	Gasoline	Hexane	0.05271	grams/mile	EPA Gasoline emission speciation
EP07	Gasoline	Acetaldehyde	0.03765	grams/mile	EPA Gasoline emission speciation
EP07	Gasoline	Acrolein	0.004518	grams/mile	EPA Gasoline emission speciation
EP07	Gasoline	Benzene	0.30873	grams/mile	EPA Gasoline emission speciation
EP07	Gasoline	Ethylbenzene	0.110691	grams/mile	EPA Gasoline emission speciation
EP07	Gasoline	Toluene	0.78312	grams/mile	EPA Gasoline emission speciation
EP07	Gasoline	1,3-butadiene	0.03765	grams/mile	EPA Gasoline emission speciation
EP07	Gasoline	Isopropylbenzene (Cumene)	0.000753	grams/mile	EPA Gasoline emission speciation
EP07	Gasoline	Formaldehyde	0.08283	grams/mile	EPA Gasoline emission speciation
EP07	Gasoline	Methyl Ethyl Ketone	0.012801	grams/mile	EPA Gasoline emission speciation
EP07	Gasoline	Propionaldehyde	0.004518	grams/mile	EPA Gasoline emission speciation
EP07	Gasoline	Styrene	0.2259	grams/mile	EPA Gasoline emission speciation
EP07	Gasoline	m-Xylene	0.325296	grams/mile	EPA Gasoline emission speciation
EP07	Gasoline	o-Xylene	0.115962	grams/mile	EPA Gasoline emission speciation
EP07	Gasoline	2,2,4-Trimethylpentane	0.325296	grams/mile	EPA Gasoline emission speciation
EP07	Gasoline	Naphthalene	0.01506	grams/mile	EPA Gasoline emission speciation
EP07	Gasoline	n-Pentane	0.089607	grams/mile	EPA Gasoline emission speciation
EP07	Gasoline	n-Heptane	0.018072	grams/mile	EPA Gasoline emission speciation
EP07	Gasoline	n-Octane	0.01506	grams/mile	EPA Gasoline emission speciation
EP07	Gasoline	n-Nonane	0.003765	grams/mile	EPA Gasoline emission speciation
EP07	Gasoline	n-Decane	0.014307	grams/mile	EPA Gasoline emission speciation
EP07	Gasoline	n-Undecane	0.03012	grams/mile	EPA Gasoline emission speciation
EP07	Gasoline	n-Dodecane	0.006777	grams/mile	EPA Gasoline emission speciation
EP07	Gasoline	Miscellaneous VOC	3.828252	grams/mile	EPA Gasoline emission speciation

Section EE.6: Notes, Comments, and Explanations

Maximum engine horsepower, displacement, rpm and cylinders are provided for controlling and limiting emissions. Testing standards are provided to describe the engine operating practices. Engine model, make and year are not specified to allow the flexibility to run the engines to failure and replace the engines following the test with engines of equal or less emissions. This is explained in the current permit: "The applicant notified via e-mail to the Division on February 9, 2010 that the ability to rapidly initiate testing of new engines is important to the competitive nature of the engine testing business. The February 9, 2010 e-mail also explained that current engines on test stands would only be changed out with engines that use the same type of fuel and that would produce emissions equal to or less than the current engines on the test stands. Given that the aforementioned conditions are met, the Division concludes that engine change outs of this nature do not require a permit revision and would only require a notification pursuant to 401 KAR 52:030, Section 17, Off-Permit and Section 502(b)(10) Changes"

None of the engines are operated with a catalytic converter attached because a converter would interfere with the testing process by affecting the backpressure experienced by the engine. As a result of the lack of a catalytic converter, pre-1975 emission factors from AP-42, Volume II, Appendix H and for marine engine (non-road) EPA420-R-05-019 (NR-010e) were used to ensure conservative estimates from the engines.

Division for Air Quality

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Frankfort, KY 40601
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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: Valvoline Engine Laboratory

KY EIS (AFS) #: 21- 019-00110

Permit #: F-21-021

Agency Interest (AI) ID: 4044 3

Date: 27-Mar-26

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
EP08b	Heavy Duty Test Engine - I	NA	NA	See Note 1	See Note 1	See Note 1	See Note 1	01/1999	See Note 1	401 KAR 59:010 Section 3 (1)
EP08a	Gasoline Test Engine	NA	NA	See Note 1	See Note 1	See Note 1	See Note 1	01/1999	See Note 2	402 KAR 59:010 Section 3 (1)
EP10	Heavy Duty Test Engine - I	NA	NA	Honda	See Note 1	See Note 1	See Note 1	01/1999	See Note 1	401 KAR 59:010 Section 3 (1)
EP13	Marine Engine ME1	NA	NA	Honda	See Note 1	See Note 1	See Note 1	01/2006	See Note 1	401 KAR 59:010 Section 3 (1)
EP14	Marine Engine ME2	NA	NA	Honda	See Note 1	See Note 1	See Note 1	01/2006	See Note 1	401 KAR 59:010 Section 3 (1)
EP15	Heavy Duty Test Engine - II	NA	NA	Cummins	See Note 1	See Note 1	See Note 1	01/2015	See Note 1	401 KAR 59:010 Section 3 (1)

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? <i>(Yes/No)</i>	Rental Time Period <i>(hrs)</i>	Alternate Operating Scenarios (Describe any operating scenarios in which the engine may be used in a different configuration)
EP08-A	Lubricant Engine Testing	24	No	NA	Heavy Duty Diesel Engine Test or similar test methods
EP08-B	Lubricant Engine Testing	26	No	NA	Heavy Duty Gasoline Engine Test or similar test methods
EP10	Lubricant Engine Testing	24	No	NA	Heavy Duty Gasoline Engine Test or similar
EP13	Lubricant Engine Testing	24	No	NA	Marine Engine Testing or similar
EP14	Lubricant Engine Testing	24	No	NA	Marine Engine Testing or similar
EP15	Lubricant Engine Testing	24	No	NA	Heavy Duty Engine Testing or similar

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
EP08-A	Stationary Test Engine	Compression	4-stroke	175	2100	5.9	6
EP08-B	Stationary Test Engine	Spark Ignition	4-stroke	250	2600	9	8
EP10	Stationary Test Engine	Spark Ignition	4-stroke	1000	10000	Not Listed	8
EP13	Stationary Test Engine	Spark Ignition	4-stroke	230	5500	3.5	6
EP14	Stationary Test Engine	Spark Ignition	4-stroke	230	5500	3.5	6
EP15	Stationary Test Engine	Compression or Spark	4-stroke	450	2100	15	6

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
EP08-A	Primary	Diesel	Low Sulfur	50	8.75	19,349.00	0.0015	3-99-999-97	Each
EP08-B	Primary	Gasoline	Unleaded	50	13	19,807.00	0.003	3-99-999-97	Each
EP10	Primary	Gasoline	Unleaded	100	12.5	19,807.00	0.003	3-99-999-97	Each
EP13	Primary	Gasoline	Unleaded	100	3.36	19,807.00	0.003	3-99-999-97	Each
EP14	Primary	Gasoline	Unleaded	100	3.36	19,807.00	0.003	3-99-999-97	Each
EP15	Primary	Diesel	Low Sulfur	50	10.83	19,349.00	0.0015	3-99-999-97	Each
EP15	Primary	Natural Gas	NA	50	TBD	20,160.00	0.00015	3-99-999-97	Each

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
EP08-A	See Sheet EE.5A				
EP08-B	See Sheet EE.5A				
EP10	See Sheet EE.5A				
EP13	See Sheet EE.5A				
EP14	See Sheet EE.5A				
EP15	See Sheet EE.5A				

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
EP08	Diesel	Lubricant Engine Testing	4.21	grams/mile	EPA 1971-1973 Heavy Duty Diesel Powered Vehicles without catlytic converts
EP08	Diesel	CO	12.22	grams/mile	EPA 1971-1973 Heavy Duty Diesel Powered Vehicles without catlytic converts
EP08	Diesel	NO _x *	26.41	grams/mile	EPA 1971-1973 Heavy Duty Diesel Powered Vehicles without catlytic converts
EP08	Diesel	PM	0.42	grams/mile	EPA 1971-1973 Heavy Duty Diesel Powered Vehicles without catlytic converts
EP08	Diesel	Acetaldehyde	0.122511	grams/mile	EPA Diesel emission speciation
EP08	Diesel	Formaldehyde	0.362481	grams/mile	EPA Diesel emission speciation
EP08	Diesel	Propionaldehyde	0.01117755	grams/mile	EPA Diesel emission speciation
E10	Gasoline	HC	10.91	grams/mile	EPA 1974 Heavy Duty Gasoline Powered Vehicles
E10	Gasoline	CO	197.65	grams/mile	EPA 1974 Heavy Duty Gasoline Powered Vehicles
E10	Gasoline	NO _x *	7.56	grams/mile	EPA 1974 Heavy Duty Gasoline Powered Vehicles
E10	Gasoline	Methane	1.514308	grams/mile	EPA Gasoline emission speciation
E10	Gasoline	Acetone	0.051277	grams/mile	EPA Gasoline emission speciation
E10	Gasoline	Hexane	0.07637	grams/mile	EPA Gasoline emission speciation
E10	Gasoline	Acetaldehyde	0.05455	grams/mile	EPA Gasoline emission speciation
E10	Gasoline	Acrolein	0.006546	grams/mile	EPA Gasoline emission speciation
E10	Gasoline	Benzene	0.44731	grams/mile	EPA Gasoline emission speciation
E10	Gasoline	Ethylbenzene	0.160377	grams/mile	EPA Gasoline emission speciation
E10	Gasoline	Toluene	1.13464	grams/mile	EPA Gasoline emission speciation
E10	Gasoline	1,3-butadiene	0.05455	grams/mile	EPA Gasoline emission speciation
E10	Gasoline	Isopropylbenzene (Cumene)	0.001091	grams/mile	EPA Gasoline emission speciation
E10	Gasoline	Formaldehyde	0.12001	grams/mile	EPA Gasoline emission speciation
E10	Gasoline	Methyl Ethyl Ketone	0.018547	grams/mile	EPA Gasoline emission speciation
E10	Gasoline	Propionaldehyde	0.006546	grams/mile	EPA Gasoline emission speciation
E10	Gasoline	Styrene	0.3273	grams/mile	EPA Gasoline emission speciation
E10	Gasoline	m-Xylene	0.471312	grams/mile	EPA Gasoline emission speciation
E10	Gasoline	o-Xylene	0.168014	grams/mile	EPA Gasoline emission speciation
E10	Gasoline	2,2,4-Trimethylpentane	0.471312	grams/mile	EPA Gasoline emission speciation
E10	Gasoline	Naphthalene	0.02182	grams/mile	EPA Gasoline emission speciation
E10	Gasoline	n-Pentane	0.129829	grams/mile	EPA Gasoline emission speciation
E10	Gasoline	n-Heptane	0.026184	grams/mile	EPA Gasoline emission speciation
E10	Gasoline	n-Octane	0.02182	grams/mile	EPA Gasoline emission speciation
E10	Gasoline	n-Nonane	0.005455	grams/mile	EPA Gasoline emission speciation
E10	Gasoline	n-Decane	0.020729	grams/mile	EPA Gasoline emission speciation
E10	Gasoline	n-Undecane	0.04364	grams/mile	EPA Gasoline emission speciation
E10	Gasoline	n-Dodecane	0.009819	grams/mile	EPA Gasoline emission speciation
E10	Gasoline	Miscellaneous VOC	5.546644	grams/mile	EPA Gasoline emission speciation
E13,E14	Gasoline	HC	3.53	Gram/bhp-hr	
E13,E14	Gasoline	CO	104.252	Gram/bhp-hr	EPA Gasoline emission speciation
E13,E14	Gasoline	NO _x	5.82	Gram/bhp-hr	EPA Gasoline emission speciation
E13,E14	Gasoline	PM	0.06	Gram/bhp-hr	EPA Gasoline emission speciation
E13,E14	Gasoline	Methane	0.489964	grams/mile	EPA Gasoline emission speciation
E13,E14	Gasoline	Acetone	0.016591	grams/mile	EPA Gasoline emission speciation
E13,E14	Gasoline	Hexane	0.02471	grams/mile	EPA Gasoline emission speciation
E13,E14	Gasoline	Acetaldehyde	0.01765	grams/mile	EPA Gasoline emission speciation
E13,E14	Gasoline	Acrolein	0.002118	grams/mile	EPA Gasoline emission speciation
E13,E14	Gasoline	Benzene	0.14473	grams/mile	EPA Gasoline emission speciation

E13,E14	Gasoline	Ethylbenzene	0.051891	grams/mile	EPA Gasoline emission speciation
E13,E14	Gasoline	Toluene	0.36712	grams/mile	EPA Gasoline emission speciation
E13,E14	Gasoline	1,3-butadiene	0.01765	grams/mile	EPA Gasoline emission speciation
Emission Unit #	Fuel	Pollutant	Emission Factor	Emission Factor Units	Source of Emission Factor
E13,E14	Gasoline	Isopropylbenzene (Cumene)	0.000353	grams/mile	EPA Gasoline emission speciation
E13,E14	Gasoline	Formaldehyde	0.03883	grams/mile	EPA Gasoline emission speciation
E13,E14	Gasoline	Methyl Ethyl Ketone	0.006001	grams/mile	EPA Gasoline emission speciation
E13,E14	Gasoline	Propionaldehyde	0.002118	grams/mile	EPA Gasoline emission speciation
E13,E14	Gasoline	Styrene	0.1059	grams/mile	EPA Gasoline emission speciation
E13,E14	Gasoline	m-Xylene	0.152496	grams/mile	EPA Gasoline emission speciation
E13,E14	Gasoline	o-Xylene	0.054362	grams/mile	EPA Gasoline emission speciation
E13,E14	Gasoline	2,2,4-Trimethylpentane	0.152496	grams/mile	EPA Gasoline emission speciation
E13,E14	Gasoline	Naphthalene	0.00706	grams/mile	EPA Gasoline emission speciation
E13,E14	Gasoline	n-Pentane	0.042007	grams/mile	EPA Gasoline emission speciation
E13,E14	Gasoline	n-Heptane	0.008472	grams/mile	EPA Light Duty Gasoline Powered Trucks II, 100,000 miles
E13,E14	Gasoline	n-Octane	0.00706	grams/mile	EPA Light Duty Gasoline Powered Trucks II, 100,000 miles
E13,E14	Gasoline	n-Nonane	0.005455	grams/mile	EPA Light Duty Gasoline Powered Trucks II, 100,000 miles
E13,E14	Gasoline	n-Decane	0.006707	grams/mile	EPA Gasoline emission speciation
E13,E14	Gasoline	n-Undecane	0.01412	grams/mile	EPA Gasoline emission speciation
E13,E14	Gasoline	n-Dodecane	0.003177	grams/mile	EPA Gasoline emission speciation
E13,E14	Gasoline	Miscellaneous VOC	1.794652	grams/mile	EPA Gasoline emission speciation
EP15	NG	HC	1.57	Gram/bhp-hr	*Nonroad Exhaust Emissions Factors , EPA-420-R-10-019, NR-010f
EP15	NG	CO	3.92	Gram/bhp-hr	*Nonroad Exhaust Emissions Factors , EPA-420-R-10-019, NR-010f
EP15	NG	NOx	0.89	Gram/bhp-hr	*Nonroad Exhaust Emissions Factors , EPA-420-R-10-019, NR-010f
EP15	NG	PM10	0.05	Gram/bhp-hr	*Nonroad Exhaust Emissions Factors , EPA-420-R-10-019, NR-010f
EP15	NG	SO2	0.028582	Gram/bhp-hr	*Nonroad Exhaust Emissions Factors , EPA-420-R-10-019, NR-010f
EP15	NG	Methane	1.330833326	Gram/bhp-hr	AP42-UNCONTROLLED EMISSION FACTORS FOR 4-STROKE LEAN-BURN NATURAL GAS ENGINES
EP15	NG	1,1,2,2-Tetrachloroethane	4.25867E-05	Gram/bhp-hr	AP42-UNCONTROLLED EMISSION FACTORS FOR 4-STROKE LEAN-BURN NATURAL GAS ENGINES
EP15	NG	1,1,2-Trichloroethane	3.38564E-05	Gram/bhp-hr	AP42-UNCONTROLLED EMISSION FACTORS FOR 4-STROKE LEAN-BURN NATURAL GAS ENGINES
EP15	NG	1,1-Dichloroethane	2.51261E-05	Gram/bhp-hr	AP42-UNCONTROLLED EMISSION FACTORS FOR 4-STROKE LEAN-BURN NATURAL GAS ENGINES
EP15	NG	1,2,3-Trimethylbenzene	2.44873E-05	Gram/bhp-hr	AP42-UNCONTROLLED EMISSION FACTORS FOR 4-STROKE LEAN-BURN NATURAL GAS ENGINES
EP15	NG	1,2,4-Trimethylbenzene	1.52247E-05	Gram/bhp-hr	AP42-UNCONTROLLED EMISSION FACTORS FOR 4-STROKE LEAN-BURN NATURAL GAS ENGINES
EP15	NG	1,2-Dichloroethane	2.51261E-05	Gram/bhp-hr	AP42-UNCONTROLLED EMISSION FACTORS FOR 4-STROKE LEAN-BURN NATURAL GAS ENGINES
EP15	NG	1,2-Dichloropropane	2.86395E-05	Gram/bhp-hr	AP42-UNCONTROLLED EMISSION FACTORS FOR 4-STROKE LEAN-BURN NATURAL GAS ENGINES

Emission Unit #	Fuel	Pollutant	Emission Factor	Emission Factor Units	Source of Emission Factor
EP15	NG	1,3,5-Trimethylbenzene	3.59857E-05	Gram/bhp-hr	AP42-UNCONTROLLED EMISSION FACTORS FOR 4-STROKE LEAN-BURN NATURAL GAS ENGINES
EP15	NG	1,3-Butadiene	0.000284266	Gram/bhp-hr	AP42-UNCONTROLLED EMISSION FACTORS FOR 4-STROKE LEAN-BURN NATURAL GAS ENGINES
EP15	NG	1,3-Dichloropropene	0.000281072	Gram/bhp-hr	AP42-UNCONTROLLED EMISSION FACTORS FOR 4-STROKE LEAN-BURN NATURAL GAS ENGINES
EP15	NG	2-Methylnaphthalene	3.53469E-05	Gram/bhp-hr	AP42-UNCONTROLLED EMISSION FACTORS FOR 4-STROKE LEAN-BURN NATURAL GAS ENGINES
EP15	NG	2,2,4-Trimethylpentane	0.000266167	Gram/bhp-hr	AP42-UNCONTROLLED EMISSION FACTORS FOR 4-STROKE LEAN-BURN NATURAL GAS ENGINES
EP15	NG	Acenaphthene	1.33083E-06	Gram/bhp-hr	AP42-UNCONTROLLED EMISSION FACTORS FOR 4-STROKE LEAN-BURN NATURAL GAS ENGINES
EP15	NG	Acenaphthylene	5.88761E-06	Gram/bhp-hr	AP42-UNCONTROLLED EMISSION FACTORS FOR 4-STROKE LEAN-BURN NATURAL GAS ENGINES
EP15	NG	Acetaldehyde	0.008900613	Gram/bhp-hr	AP42-UNCONTROLLED EMISSION FACTORS FOR 4-STROKE LEAN-BURN NATURAL GAS ENGINES
EP15	NG	Acrolein	0.005472387	Gram/bhp-hr	AP42-UNCONTROLLED EMISSION FACTORS FOR 4-STROKE LEAN-BURN NATURAL GAS ENGINES
EP15	NG	Benzene	0.000468453	Gram/bhp-hr	AP42-UNCONTROLLED EMISSION FACTORS FOR 4-STROKE LEAN-BURN NATURAL GAS ENGINES
EP15	NG	Benzo(b)fluoranthene	1.76735E-07	Gram/bhp-hr	AP42-UNCONTROLLED EMISSION FACTORS FOR 4-STROKE LEAN-BURN NATURAL GAS ENGINES
EP15	NG	Benzo(e)pyrene	4.41837E-07	Gram/bhp-hr	AP42-UNCONTROLLED EMISSION FACTORS FOR 4-STROKE LEAN-BURN NATURAL GAS ENGINES
EP15	NG	Benzo(g,h,i)perylene	4.40772E-07	Gram/bhp-hr	AP42-UNCONTROLLED EMISSION FACTORS FOR 4-STROKE LEAN-BURN NATURAL GAS ENGINES
EP15	NG	Biphenyl	0.000225709	Gram/bhp-hr	AP42-UNCONTROLLED EMISSION FACTORS FOR 4-STROKE LEAN-BURN NATURAL GAS ENGINES
EP15	NG	Butane	0.000575985	Gram/bhp-hr	AP42-UNCONTROLLED EMISSION FACTORS FOR 4-STROKE LEAN-BURN NATURAL GAS ENGINES
EP15	NG	Butyr/Isobutyraldehyde	0.000107531	Gram/bhp-hr	AP42-UNCONTROLLED EMISSION FACTORS FOR 4-STROKE LEAN-BURN NATURAL GAS ENGINES
EP15	NG	Carbon Tetrachloride	3.90733E-05	Gram/bhp-hr	AP42-UNCONTROLLED EMISSION FACTORS FOR 4-STROKE LEAN-BURN NATURAL GAS ENGINES

Emission Unit #	Fuel	Pollutant	Emission Factor	Emission Factor Units	Source of Emission Factor
EP15	NG	Chlorobenzene	3.23659E-05	Gram/bhp-hr	AP42-UNCONTROLLED EMISSION FACTORS FOR 4-STROKE LEAN-BURN NATURAL GAS ENGINES
EP15	NG	Chloroethane	1.99093E-06	Gram/bhp-hr	AP42-UNCONTROLLED EMISSION FACTORS FOR 4-STROKE LEAN-BURN NATURAL GAS ENGINES
EP15	NG	Chloroform	3.0343E-05	Gram/bhp-hr	AP42-UNCONTROLLED EMISSION FACTORS FOR 4-STROKE LEAN-BURN NATURAL GAS ENGINES
EP15	NG	Chrysene	7.37814E-07	Gram/bhp-hr	AP42-UNCONTROLLED EMISSION FACTORS FOR 4-STROKE LEAN-BURN NATURAL GAS ENGINES
EP15	NG	Cyclopentane	0.000241679	Gram/bhp-hr	AP42-UNCONTROLLED EMISSION FACTORS FOR 4-STROKE LEAN-BURN NATURAL GAS ENGINES
EP15	NG	Ethane	0.111789999	Gram/bhp-hr	AP42-UNCONTROLLED EMISSION FACTORS FOR 4-STROKE LEAN-BURN NATURAL GAS ENGINES
EP15	NG	Ethylbenzene	4.22673E-05	Gram/bhp-hr	AP42-UNCONTROLLED EMISSION FACTORS FOR 4-STROKE LEAN-BURN NATURAL GAS ENGINES
EP15	NG	Ethylene Dibromide	4.71647E-05	Gram/bhp-hr	AP42-UNCONTROLLED EMISSION FACTORS FOR 4-STROKE LEAN-BURN NATURAL GAS ENGINES
EP15	NG	Fluoranthene	1.18178E-06	Gram/bhp-hr	AP42-UNCONTROLLED EMISSION FACTORS FOR 4-STROKE LEAN-BURN NATURAL GAS ENGINES
EP15	NG	Fluorene	6.03666E-06	Gram/bhp-hr	AP42-UNCONTROLLED EMISSION FACTORS FOR 4-STROKE LEAN-BURN NATURAL GAS ENGINES
EP15	NG	Formaldehyde	0.0562144	Gram/bhp-hr	AP42-UNCONTROLLED EMISSION FACTORS FOR 4-STROKE LEAN-BURN NATURAL GAS ENGINES
EP15	NG	Methanol	0.002661667	Gram/bhp-hr	AP42-UNCONTROLLED EMISSION FACTORS FOR 4-STROKE LEAN-BURN NATURAL GAS ENGINES
EP15	NG	Methylcyclohexane	0.00130954	Gram/bhp-hr	AP42-UNCONTROLLED EMISSION FACTORS FOR 4-STROKE LEAN-BURN NATURAL GAS ENGINES
EP15	NG	Methylene Chloride	2.12933E-05	Gram/bhp-hr	AP42-UNCONTROLLED EMISSION FACTORS FOR 4-STROKE LEAN-BURN NATURAL GAS ENGINES
EP15	NG	n-Hexane	0.00118178	Gram/bhp-hr	AP42-UNCONTROLLED EMISSION FACTORS FOR 4-STROKE LEAN-BURN NATURAL GAS ENGINES
EP15	NG	n-Nonane	0.000117113	Gram/bhp-hr	AP42-UNCONTROLLED EMISSION FACTORS FOR 4-STROKE LEAN-BURN NATURAL GAS ENGINES
EP15	NG	n-Octane	0.000373698	Gram/bhp-hr	AP42-UNCONTROLLED EMISSION FACTORS FOR 4-STROKE LEAN-BURN NATURAL GAS ENGINES

Emission Unit #	Fuel	Pollutant	Emission Factor	Emission Factor Units	Source of Emission Factor
EP15	NG	n-Pentane	0.002768133	Gram/bhp-hr	AP42-UNCONTROLLED EMISSION FACTORS FOR 4-STROKE LEAN-BURN NATURAL GAS ENGINES
EP15	NG	Naphthalene	7.92112E-05	Gram/bhp-hr	AP42-UNCONTROLLED EMISSION FACTORS FOR 4-STROKE LEAN-BURN NATURAL GAS ENGINES
EP15	NG	PAH	2.86395E-05	Gram/bhp-hr	AP42-UNCONTROLLED EMISSION FACTORS FOR 4-STROKE LEAN-BURN NATURAL GAS ENGINES
EP15	NG	Phenanthrene	1.10725E-05	Gram/bhp-hr	AP42-UNCONTROLLED EMISSION FACTORS FOR 4-STROKE LEAN-BURN NATURAL GAS ENGINES
EP15	NG	Phenol	2.5552E-05	Gram/bhp-hr	AP42-UNCONTROLLED EMISSION FACTORS FOR 4-STROKE LEAN-BURN NATURAL GAS ENGINES
EP15	NG	Propane	0.044609533	Gram/bhp-hr	AP42-UNCONTROLLED EMISSION FACTORS FOR 4-STROKE LEAN-BURN NATURAL GAS ENGINES
EP15	NG	Pyrene	1.44795E-06	Gram/bhp-hr	AP42-UNCONTROLLED EMISSION FACTORS FOR 4-STROKE LEAN-BURN NATURAL GAS ENGINES
EP15	NG	Styrene	2.51261E-05	Gram/bhp-hr	AP42-UNCONTROLLED EMISSION FACTORS FOR 4-STROKE LEAN-BURN NATURAL GAS ENGINES
EP15	NG	Tetrachloroethane	2.64037E-06	Gram/bhp-hr	AP42-UNCONTROLLED EMISSION FACTORS FOR 4-STROKE LEAN-BURN NATURAL GAS ENGINES
EP15	NG	Toluene	0.000434384	Gram/bhp-hr	AP42-UNCONTROLLED EMISSION FACTORS FOR 4-STROKE LEAN-BURN NATURAL GAS ENGINES
EP15	NG	Vinyl Chloride	1.58635E-05	Gram/bhp-hr	AP42-UNCONTROLLED EMISSION FACTORS FOR 4-STROKE LEAN-BURN NATURAL GAS ENGINES
EP15	NG	Xylene	0.000195899	Gram/bhp-hr	AP42-UNCONTROLLED EMISSION FACTORS FOR 4-STROKE LEAN-BURN NATURAL GAS ENGINES

Section EE.6: Notes, Comments, and Explanations

Maximum engine horsepower, displacement, rpm and cylinders are provided for controlling and limiting emissions. Testing standards are provided to describe the engine operating practices. Engine model, make and year are not specified to allow the flexibility to run the engines to failure and replace the engines following the test with engines of equal or less emissions. **This is explained in the current permit: "The applicant explained in an e-mail to the Division on February 9, 2010 that the ability to rapidly initiate testing of new engines is important to the competitive nature of the engine testing business. The February 9, 2010 e-mail also explained that current engines on test stands would only be changed out with engines that use the same type of fuel and that would produce emissions equal to 9% less than the current engines on the test stands. Given that the aforementioned conditions are met, the Division concludes that engine change outs of this nature do not require a permit revision and would only require a notification pursuant to 401 KAR 52:030, Section 17, Off-Permit and Section 502(b)(10) Changes"**

None of the engines are operated with a catalytic converter attached because a converter would interfere with the testing process by affecting the backpressure experienced by the engine. As a result of the lack of a catalytic converter, pre-1975 emission factors from AP-42, Volume II, Appendix H and for marine engine (non-road) EPA420-R-05-019 (NR-010e) were used to ensure conservative estimates from the engines.

Unit for Heat Content mentioned in section EE.4 is BTU/lbs

Division for Air Quality 300 Sower Boulevard Frankfort, KY 40601 (502) 564-3999	DEP7007N Source Emissions Profile ☒_X_ Section N.1: Emission Summary ☒_X_ Section N.2: Stack Information ☒_X_ Section N.3: Fugitive Informatic ☒_X_ Section N.4: Notes, Comments, and Explanations	Additional Documentation ☐ Complete DEP7007AI
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Source Name:	Valvoline Engine Laboratory
KY EIS (AFS) #:	21- 019-00110
Permit #:	F-10-39
Agency Interest (AI) ID:	4044 3
Date:	15-Mar-26

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)
EP01	Test Engine III	EP01	Lubricant Testing	NA	NA	1	70	VOC	4.18	US EPA	0.00%	0.00%	0.645073105	0.645073105	2.825420201	2.825420201
EP01	Test Engine III	EP01	Lubricant Testing	NA	NA	1	70	CO	52.69	US EPA	0.00%	0.00%	8.131316249	8.131316249	35.61516517	35.61516517
EP01	Test Engine III	EP01	Lubricant Testing	NA	NA	1	70	NOx	3.11	US EPA	0.00%	0.00%	0.479946736	0.479946736	2.102166705	2.102166705
EP01	Test Engine III	EP01	Lubricant Testing	NA	NA	1	70	Total HAP	1.35641	US EPA	0.00%	0.00%	0.209326223	0.209326223	0.916848855	0.916848855
EP01	Test Engine III	EP01	Lubricant Testing	NA	NA	1	70	SO2	2.41342E-07	US EPA	0.00%	0.00%	3.72448E-08	3.72448E-08	1.63132E-07	1.63132E-07
EP01	Test Engine III	EP01	Lubricant Testing	NA	NA	1	70	Toluene	0.43472	US EPA	0.00%	0.00%	0.067087603	0.067087603	0.293843701	0.293843701
EP01	Test Engine III	EP01	Lubricant Testing	NA	NA	1	70	m-Xylene	0.180576	US EPA	0.00%	0.00%	0.027867158	0.027867158	0.122058153	0.122058153
EP01	Test Engine III	EP01	Lubricant Testing	NA	NA	1	70	2,2,4-Trimethylpentane	0.180576	US EPA	0.00%	0.00%	0.027867158	0.027867158	0.122058153	0.122058153
EP01	Test Engine III	EP01	Lubricant Testing	NA	NA	1	70	Benzene	0.17138	US EPA	0.00%	0.00%	0.026447997	0.026447997	0.115842228	0.115842228

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)
EP01	Test Engine III	EP01	Lubricant Testing	NA	NA	1	70	Styrene	0.1254	US EPA	0.00%	0.00%	0.019352193	0.019352193	0.084762606	0.084762606
EP01	Test Engine III	EP01	Lubricant Testing	NA	NA	1	70	o-Xylene	0.064372	US EPA	0.00%	0.00%	0.009934126	0.009934126	0.043511471	0.043511471
EP01	Test Engine III	EP01	Lubricant Testing	NA	NA	1	70	Ethylbenzene	0.061446	US EPA	0.00%	0.00%	0.009482575	0.009482575	0.041533677	0.041533677
EP01	Test Engine III	EP01	Lubricant Testing	NA	NA	1	70	Formaldehyde	0.04598	US EPA	0.00%	0.00%	0.007095804	0.007095804	0.031079622	0.031079622
EP01	Test Engine III	EP01	Lubricant Testing	NA	NA	1	70	Hexane	0.02926	US EPA	0.00%	0.00%	0.004515512	0.004515512	0.019777941	0.019777941
EP01	Test Engine III	EP01	Lubricant Testing	NA	NA	1	70	Acetaldehyde	0.0209	US EPA	0.00%	0.00%	0.003225366	0.003225366	0.014127101	0.014127101
EP01	Test Engine III	EP01	Lubricant Testing	NA	NA	1	70	1,3-butadiene	0.0209	US EPA	0.00%	0.00%	0.003225366	0.003225366	0.014127101	0.014127101
EP01	Test Engine III	EP01	Lubricant Testing	NA	NA	1	70	Naphthalene	0.00836	US EPA	0.00%	0.00%	0.001290146	0.001290146	0.00565084	0.00565084
EP01	Test Engine III	EP01	Lubricant Testing	NA	NA	1	70	Methyl Ethyl Ketone	0.007106	US EPA	0.00%	0.00%	0.001096624	0.001096624	0.004803214	0.004803214
EP02	Gasoline Test Engine VPS	EP02	Lubricant Testing	NA	NA	2	35	VOC	4.18	4.18	0.00%	0.00%	0.322536553	0.322536553	1.412710101	1.412710101
EP02	Gasoline Test Engine VPS	EP02	Lubricant Testing	NA	NA	2	35	CO	52.69	52.69	0.00%	0.00%	4.065658124	4.065658124	17.80758259	17.80758259
EP02	Gasoline Test Engine VPS	EP02	Lubricant Testing	NA	NA	2	35	NOx	3.11	3.11	0.00%	0.00%	0.239973368	0.239973368	1.051083352	1.051083352
EP02	Gasoline Test Engine VPS	EP02	Lubricant Testing	NA	NA	2	35	Total HAP	0.555522	0.555522	0.00%	0.00%	0.042865108	0.042865108	0.187749172	0.187749172
EP02	Gasoline Test Engine VPS	EP02	Lubricant Testing	NA	NA	2	35	SO2	2.34638E-07	2.34638E-07	0.00%	0.00%	1.81051E-08	1.81051E-08	7.93003E-08	7.93003E-08
EP02	Gasoline Test Engine VPS	EP02	Lubricant Testing	NA	NA	2	35	Toluene	0.43472	0.43472	0.00%	0.00%	0.033543801	0.033543801	0.14692185	0.14692185
EP02	Gasoline Test Engine VPS	EP02	Lubricant Testing	NA	NA	2	35	m-Xylene	0.180576	0.180576	0.00%	0.00%	0.013933579	0.013933579	0.061029076	0.061029076
EP02	Gasoline Test Engine VPS	EP02	Lubricant Testing	NA	NA	2	35	2,2,4-Trimethylpentane	0.180576	0.180576	0.00%	0.00%	0.013933579	0.013933579	0.061029076	0.061029076
EP02	Gasoline Test Engine VPS	EP02	Lubricant Testing	NA	NA	2	35	Benzene	0.17138	0.17138	0.00%	0.00%	0.013223999	0.013223999	0.057921114	0.057921114

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)
EP02	Gasoline Test Engine VPS	EP02	Lubricant Testing	NA	NA	2	35	Styrene	0.1254	0.1254	0.00%	0.00%	0.009676097	0.009676097	0.042381303	0.042381303
EP02	Gasoline Test Engine VPS	EP02	Lubricant Testing	NA	NA	2	35	o-Xylene	0.064372	0.064372	0.00%	0.00%	0.004967063	0.004967063	0.021755736	0.021755736
EP02	Gasoline Test Engine VPS	EP02	Lubricant Testing	NA	NA	2	35	Ethylbenzene	0.061446	0.061446	0.00%	0.00%	0.004741287	0.004741287	0.020766838	0.020766838
EP02	Gasoline Test Engine VPS	EP02	Lubricant Testing	NA	NA	2	35	Formaldehyde	0.04598	0.04598	0.00%	0.00%	0.003547902	0.003547902	0.015539811	0.015539811
EP02	Gasoline Test Engine VPS	EP02	Lubricant Testing	NA	NA	2	35	Hexane	0.02926	0.02926	0.00%	0.00%	0.002257756	0.002257756	0.009888971	0.009888971
EP02	Gasoline Test Engine VPS	EP02	Lubricant Testing	NA	NA	2	35	Acetaldehyde	0.0209	0.0209	0.00%	0.00%	0.001612683	0.001612683	0.007063551	0.007063551
EP02	Gasoline Test Engine VPS	EP02	Lubricant Testing	NA	NA	2	35	1,3-butadiene	0.0209	0.0209	0.00%	0.00%	0.001612683	0.001612683	0.007063551	0.007063551
EP02	Gasoline Test Engine VPS	EP02	Lubricant Testing	NA	NA	2	35	Naphthalene	0.00836	0.00836	0.00%	0.00%	0.000645073	0.000645073	0.00282542	0.00282542
EP02	Gasoline Test Engine VPS	EP02	Lubricant Testing	NA	NA	2	35	Methyl Ethyl Ketone	0.007106	0.007106	0.00%	0.00%	0.000548312	0.000548312	0.002401607	0.002401607
EP03	Gasoline Test Engine VIII	EP03	Lubricant Testing	NA	NA	3	35.5	VOC	4.18	US EPA	0.00%	0.00%	0.327144218	0.327144218	1.432891674	1.432891674
EP03	Gasoline Test Engine VIII	EP03	Lubricant Testing	NA	NA	3	35.5	CO	52.69	US EPA	0.00%	0.00%	4.123738955	4.123738955	18.06197662	18.06197662
EP03	Gasoline Test Engine VIII	EP03	Lubricant Testing	NA	NA	3	35.5	NOx	3.11	US EPA	0.00%	0.00%	0.243401559	0.243401559	1.066098829	1.066098829
EP03	Gasoline Test Engine VIII	EP03	Lubricant Testing	NA	NA	3	35.5	Total HAP	0.555522	US EPA	0.00%	0.00%	0.043477467	0.043477467	0.190431303	0.190431303
EP03	Gasoline Test Engine VIII	EP03	Lubricant Testing	NA	NA	3	35.5	SO2	5.94857E-08	US EPA	0.00%	0.00%	4.6556E-09	4.6556E-09	2.03915E-08	2.03915E-08
EP03	Gasoline Test Engine VIII	EP03	Lubricant Testing	NA	NA	3	35.5	Toluene	0.43472	US EPA	0.00%	0.00%	0.034022999	0.034022999	0.149020734	0.149020734
EP03	Gasoline Test Engine VIII	EP03	Lubricant Testing	NA	NA	3	35.5	m-Xylene	0.180576	US EPA	0.00%	0.00%	0.01413263	0.01413263	0.06190092	0.06190092

EP03	Gasoline Test Engine VIII	EP03	Lubricant Testing	NA	NA	3	35.5	2,2,4-Trimethylpentane	0.180576	US EPA	0.00%	0.00%	0.01413263	0.01413263	0.06190092	0.06190092
EP03	Gasoline Test Engine VIII	EP03	Lubricant Testing	NA	NA	3	35.5	Benzene	0.17138	US EPA	0.00%	0.00%	0.013412913	0.013412913	0.058748559	0.058748559
EP03	Gasoline Test Engine VIII	EP03	Lubricant Testing	NA	NA	3	35.5	Styrene	0.1254	US EPA	0.00%	0.00%	0.009814327	0.009814327	0.04298675	0.04298675
EP03	Gasoline Test Engine VIII	EP03	Lubricant Testing	NA	NA	3	35.5	o-Xylene	0.064372	US EPA	0.00%	0.00%	0.005038021	0.005038021	0.022066532	0.022066532

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)
EP03	Gasoline Test Engine VIII	EP03	Lubricant Testing	NA	NA	3	35.5	Ethylbenzene	0.061446	US EPA	0.00%	0.00%	0.00480902	0.00480902	0.021063508	0.021063508
EP03	Gasoline Test Engine VIII	EP03	Lubricant Testing	NA	NA	3	35.5	Formaldehyde	0.04598	US EPA	0.00%	0.00%	0.003598586	0.003598586	0.015761808	0.015761808
EP03	Gasoline Test Engine VIII	EP03	Lubricant Testing	NA	NA	3	35.5	Hexane	0.02926	US EPA	0.00%	0.00%	0.00229001	0.00229001	0.010030242	0.010030242
EP03	Gasoline Test Engine VIII	EP03	Lubricant Testing	NA	NA	3	35.5	Acetaldehyde	0.0209	US EPA	0.00%	0.00%	0.001635721	0.001635721	0.007164458	0.007164458
EP03	Gasoline Test Engine VIII	EP03	Lubricant Testing	NA	NA	3	35.5	1,3-butadiene	0.0209	US EPA	0.00%	0.00%	0.001635721	0.001635721	0.007164458	0.007164458
EP03	Gasoline Test Engine VIII	EP03	Lubricant Testing	NA	NA	3	35.5	Naphthalene	0.00836	US EPA	0.00%	0.00%	0.000654288	0.000654288	0.002865783	0.002865783
EP03	Gasoline Test Engine VIII	EP03	Lubricant Testing	NA	NA	3	35.5	Methyl Ethyl Ketone	0.007106	US EPA	0.00%	0.00%	0.000556145	0.000556145	0.002435916	0.002435916
EP04	Gasoline Test Engine X	EP04	Lubricant Testing	NA	NA	4	34	VOC	0.75	US EPA	0.00%	0.00%	0.056217923	0.056217923	0.246234501	0.246234501
EP04	Gasoline Test Engine X	EP04	Lubricant Testing	NA	NA	4	34	CO	3.4	US EPA	0.00%	0.00%	0.254854583	0.254854583	1.116263073	1.116263073
EP04	Gasoline Test Engine X	EP04	Lubricant Testing	NA	NA	4	34	NOx	0.05	US EPA	0.00%	0.00%	0.003747862	0.003747862	0.016415633	0.016415633
EP04	Gasoline Test Engine X	EP04	Lubricant Testing	NA	NA	4	34	Total HAP	0.099675	US EPA	0.00%	0.00%	0.007471362	0.007471362	0.032724565	0.032724565
EP04	Gasoline Test Engine X	EP04	Lubricant Testing	NA	NA	4	34	SO2	0.007838783	US EPA	0.00%	0.00%	0.000587573	0.000587573	0.002573572	0.002573572

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)
EP04	Gasoline Test Engine X	EP04	Lubricant Testing	NA	NA	4	34	Toluene	0.078	US EPA	0.00%	0.00%	0.005846664	0.005846664	0.025608388	0.025608388
EP04	Gasoline Test Engine X	EP04	Lubricant Testing	NA	NA	4	34	m-Xylene	0.0324	US EPA	0.00%	0.00%	0.002428614	0.002428614	0.01063733	0.01063733
EP04	Gasoline Test Engine X	EP04	Lubricant Testing	NA	NA	4	34	2,2,4-Trimethylpentane	0.0324	US EPA	0.00%	0.00%	0.002428614	0.002428614	0.01063733	0.01063733
EP04	Gasoline Test Engine X	EP04	Lubricant Testing	NA	NA	4	34	Benzene	0.03075	US EPA	0.00%	0.00%	0.002304935	0.002304935	0.010095615	0.010095615
EP04	Gasoline Test Engine X	EP04	Lubricant Testing	NA	NA	4	34	Styrene	0.0225	US EPA	0.00%	0.00%	0.001686538	0.001686538	0.007387035	0.007387035
EP05	Gasoline Test Engine V	EP05	Lubricant Testing	NA	NA	5	31.2	VOC	7.53	US EPA	0.00%	0.00%	0.517945643	0.517945643	2.268601915	2.268601915
EP05	Gasoline Test Engine V	EP05	Lubricant Testing	NA	NA	5	31.2	CO	72.83	US EPA	0.00%	0.00%	5.009559251	5.009559251	21.94186952	21.94186952
EP05	Gasoline Test Engine V	EP05	Lubricant Testing	NA	NA	5	31.2	NOx	6.45	US EPA	0.00%	0.00%	0.443658618	0.443658618	1.943224748	1.943224748
EP05	Gasoline Test Engine V	EP05	Lubricant Testing	NA	NA	5	31.2	Total HAP	1.000737	US EPA	0.00%	0.00%	0.068834976	0.068834976	0.301497195	0.301497195
EP05	Gasoline Test Engine V	EP05	Lubricant Testing	NA	NA	5	31.2	SO2	2.25613E-07	US EPA	0.00%	0.00%	1.55187E-08	1.55187E-08	6.79717E-08	6.79717E-08
EP05	Gasoline Test Engine V	EP05	Lubricant Testing	NA	NA	5	31.2	Toluene	0.78312	US EPA	0.00%	0.00%	0.053866347	0.053866347	0.235934599	0.235934599
EP05	Gasoline Test Engine V	EP05	Lubricant Testing	NA	NA	5	31.2	m-Xylene	0.325296	US EPA	0.00%	0.00%	0.022375252	0.022375252	0.098003603	0.098003603
EP05	Gasoline Test Engine V	EP05	Lubricant Testing	NA	NA	5	31.2	2,2,4-Trimethylpentane	0.325296	US EPA	0.00%	0.00%	0.022375252	0.022375252	0.098003603	0.098003603
EP05	Gasoline Test Engine V	EP05	Lubricant Testing	NA	NA	5	31.2	Benzene	0.30873	US EPA	0.00%	0.00%	0.021235771	0.021235771	0.093012679	0.093012679
EP05	Gasoline Test Engine V	EP05	Lubricant Testing	NA	NA	5	31.2	Styrene	0.2259	US EPA	0.00%	0.00%	0.015538369	0.015538369	0.068058057	0.068058057
EP05	Gasoline Test Engine V	EP05	Lubricant Testing	NA	NA	5	31.2	o-Xylene	0.115962	US EPA	0.00%	0.00%	0.007976363	0.007976363	0.034936469	0.034936469
EP05	Gasoline Test Engine V	EP01	Lubricant Testing	NA	NA	5	31.2	Ethylbenzene	0.110691	US EPA	0.00%	0.00%	0.007613801	0.007613801	0.033348448	0.033348448

EP05	Gasoline Test Engine V	EP01	Lubricant Testing	NA	NA	5	31.2	Formaldehyde	0.08283	US EPA	0.00%	0.00%	0.005697402	0.005697402	0.024954621	0.024954621
EP05	Gasoline Test Engine V	EP01	Lubricant Testing	NA	NA	5	31.2	Hexane	0.05271	US EPA	0.00%	0.00%	0.003625619	0.003625619	0.015880213	0.015880213
EP05	Gasoline Test Engine V	EP01	Lubricant Testing	NA	NA	5	31.2	Acetaldehyde	0.03765	US EPA	0.00%	0.00%	0.002589728	0.002589728	0.01134301	0.01134301

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)
EP05	Gasoline Test Engine V	EP01	Lubricant Testing	NA	NA	5	31.2	1,3-butadiene	0.03765	US EPA	0.00%	0.00%	0.002589728	0.002589728	0.01134301	0.01134301
EP05	Gasoline Test Engine V	EP01	Lubricant Testing	NA	NA	5	31.2	Naphthalene	0.01506	US EPA	0.00%	0.00%	0.001035891	0.001035891	0.004537204	0.004537204
EP05	Gasoline Test Engine V	EP01	Lubricant Testing	NA	NA	5	31.2	Methyl Ethyl Ketone	0.012801	US EPA	0.00%	0.00%	0.000880508	0.000880508	0.003856623	0.003856623
EP06	Gasoline Test Engine BL-2	EP06	Lubricant Testing	NA	NA	6	49.5	VOC	7.53	US EPA	0.00%	0.00%	0.821740683	0.821740683	3.599224193	3.599224193
EP06	Gasoline Test Engine BL-2	EP06	Lubricant Testing	NA	NA	6	49.5	CO	72.83	US EPA	0.00%	0.00%	7.947858428	7.947858428	34.81161991	34.81161991
EP06	Gasoline Test Engine BL-2	EP06	Lubricant Testing	NA	NA	6	49.5	NOx	6.45	US EPA	0.00%	0.00%	0.703881462	0.703881462	3.083000802	3.083000802
EP06	Gasoline Test Engine BL-2	EP06	Lubricant Testing	NA	NA	6	49.5	Total HAP	1.000737	US EPA	0.00%	0.00%	0.109209337	0.109209337	0.478336895	0.478336895
EP06	Gasoline Test Engine BL-2	EP06	Lubricant Testing	NA	NA	6	49.5	SO2	2.77744E-07	US EPA	0.00%	0.00%	3.03099E-08	3.03099E-08	1.32757E-07	1.32757E-07
EP06	Gasoline Test Engine BL-2	EP06	Lubricant Testing	NA	NA	6	49.5	Toluene	0.78312	US EPA	0.00%	0.00%	0.085461031	0.085461031	0.374319316	0.374319316
EP06	Gasoline Test Engine BL-2	EP06	Lubricant Testing	NA	NA	6	49.5	m-Xylene	0.325296	US EPA	0.00%	0.00%	0.035499198	0.035499198	0.155486485	0.155486485
EP06	Gasoline Test Engine BL-2	EP06	Lubricant Testing	NA	NA	6	49.5	2,2,4-Trimethylpentane	0.325296	US EPA	0.00%	0.00%	0.035499198	0.035499198	0.155486485	0.155486485
EP06	Gasoline Test Engine BL-2	EP06	Lubricant Testing	NA	NA	6	49.5	Benzene	0.30873	US EPA	0.00%	0.00%	0.033691368	0.033691368	0.147568192	0.147568192
EP06	Gasoline Test Engine BL-2	EP06	Lubricant Testing	NA	NA	6	49.5	Styrene	0.2259	US EPA	0.00%	0.00%	0.02465222	0.02465222	0.107976726	0.107976726
EP06	Gasoline Test Engine BL-2	EP06	Lubricant Testing	NA	NA	6	49.5	o-Xylene	0.115962	US EPA	0.00%	0.00%	0.012654807	0.012654807	0.055428053	0.055428053
EP06	Gasoline Test Engine BL-2	EP06	Lubricant Testing	NA	NA	6	49.5	Ethylbenzene	0.110691	US EPA	0.00%	0.00%	0.012079588	0.012079588	0.052908596	0.052908596
EP06	Gasoline Test Engine BL-2	EP06	Lubricant Testing	NA	NA	6	49.5	Formaldehyde	0.08283	US EPA	0.00%	0.00%	0.009039148	0.009039148	0.039591466	0.039591466
EP06	Gasoline Test Engine BL-2	EP06	Lubricant Testing	NA	NA	6	49.5	Hexane	0.05271	US EPA	0.00%	0.00%	0.005752185	0.005752185	0.025194569	0.025194569

EP06	Gasoline Test Engine BL-2	EP06	Lubricant Testing	NA	NA	6	49.5	Acetaldehyde	0.03765	US EPA	0.00%	0.00%	0.004108703	0.004108703	0.017996121	0.017996121
EP06	Gasoline Test Engine BL-2	EP06	Lubricant Testing	NA	NA	6	49.5	1,3-butadiene	0.03765	US EPA	0.00%	0.00%	0.004108703	0.004108703	0.017996121	0.017996121
EP06	Gasoline Test Engine BL-2	EP06	Lubricant Testing	NA	NA	6	49.5	Naphthalene	0.01506	US EPA	0.00%	0.00%	0.001643481	0.001643481	0.007198448	0.007198448

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)
EP06	Gasoline Test Engine BL-2	EP06	Lubricant Testing	NA	NA	6	49.5	Methyl Ethyl Ketone	0.012801	US EPA	0.00%	0.00%	0.001396959	0.001396959	0.006118681	0.006118681
EP07	Gasoline Test Engine VI	EP07	Lubricant Testing	NA	NA	7	35.5	VOC	8.78	US EPA	0.00%	0.00%	0.687159386	0.687159386	3.009758109	3.009758109
EP07	Gasoline Test Engine VI	EP07	Lubricant Testing	NA	NA	7	35.5	CO	85.58	US EPA	0.00%	0.00%	6.697847405	6.697847405	29.33657163	29.33657163
EP07	Gasoline Test Engine VI	EP07	Lubricant Testing	NA	NA	7	35.5	NOx	6.45	US EPA	0.00%	0.00%	0.504803877	0.504803877	2.21104098	2.21104098
EP07	Gasoline Test Engine VI	EP07	Lubricant Testing	NA	NA	7	35.5	Total HAP	1.166862	US EPA	0.00%	0.00%	0.091323482	0.091323482	0.399996853	0.399996853
EP07	Gasoline Test Engine VI	EP07	Lubricant Testing	NA	NA	7	35.5	SO2	2.20317E-07	US EPA	0.00%	0.00%	1.72429E-08	1.72429E-08	7.55241E-08	7.55241E-08
EP07	Gasoline Test Engine VI	EP07	Lubricant Testing	NA	NA	7	35.5	Toluene	0.91312	US EPA	0.00%	0.00%	0.071464576	0.071464576	0.313014843	0.313014843
EP07	Gasoline Test Engine VI	EP07	Lubricant Testing	NA	NA	7	35.5	m-Xylene	0.379296	US EPA	0.00%	0.00%	0.029685285	0.029685285	0.13002155	0.13002155
EP07	Gasoline Test Engine VI	EP07	Lubricant Testing	NA	NA	7	35.5	2,2,4-Trimethylpentane	0.379296	US EPA	0.00%	0.00%	0.029685285	0.029685285	0.13002155	0.13002155
EP07	Gasoline Test Engine VI	EP07	Lubricant Testing	NA	NA	7	35.5	Benzene	0.35998	US EPA	0.00%	0.00%	0.028173535	0.028173535	0.123400082	0.123400082
EP07	Gasoline Test Engine VI	EP07	Lubricant Testing	NA	NA	7	35.5	Styrene	0.2634	US EPA	0.00%	0.00%	0.020614782	0.020614782	0.090292743	0.090292743
EP07	Gasoline Test Engine VI	EP07	Lubricant Testing	NA	NA	7	35.5	o-Xylene	0.135212	US EPA	0.00%	0.00%	0.010582255	0.010582255	0.046350275	0.046350275
EP07	Gasoline Test Engine VI	EP07	Lubricant Testing	NA	NA	7	35.5	Ethylbenzene	0.129066	US EPA	0.00%	0.00%	0.010101243	0.010101243	0.044243444	0.044243444
EP07	Gasoline Test Engine VI	EP07	Lubricant Testing	NA	NA	7	35.5	Formaldehyde	0.09658	US EPA	0.00%	0.00%	0.007558753	0.007558753	0.033107339	0.033107339
EP07	Gasoline Test Engine VI	EP07	Lubricant Testing	NA	NA	7	35.5	Hexane	0.06146	US EPA	0.00%	0.00%	0.004810116	0.004810116	0.021068307	0.021068307
EP07	Gasoline Test Engine VI	EP07	Lubricant Testing	NA	NA	7	35.5	Acetaldehyde	0.0439	US EPA	0.00%	0.00%	0.003435797	0.003435797	0.015048791	0.015048791
EP07	Gasoline Test Engine VI	EP07	Lubricant Testing	NA	NA	7	35.5	1,3-butadiene	0.0439	US EPA	0.00%	0.00%	0.003435797	0.003435797	0.015048791	0.015048791

EP07	Gasoline Test Engine VI	EP07	Lubricant Testing	NA	NA	7	35.5	Naphthalene	0.01756	US EPA	0.00%	0.00%	0.001374319	0.001374319	0.006019516	0.006019516
EP07	Gasoline Test Engine VI	EP07	Lubricant Testing	NA	NA	7	35.5	Methyl Ethyl Ketone	0.014926	US EPA	0.00%	0.00%	0.001168171	0.001168171	0.005116589	0.005116589
EP08-A	Heavy Duty 1 Test Diesel	EP08	Lubricant Testing	NA	NA	8	21.9	VOC	4.21	US EPA	0.00%	0.00%	0.203264167	0.203264167	0.890297051	0.890297051

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)
EP08-A	Heavy Duty 1 Test Diesel	EP08	Lubricant Testing	NA	NA	8	21.9	CO	12.22	US EPA	0.00%	0.00%	0.589997178	0.589997178	2.58418764	2.58418764
EP08-A	Heavy Duty 1 Test Diesel	EP08	Lubricant Testing	NA	NA	8	21.9	NOx	26.41	US EPA	0.00%	0.00%	1.275108468	1.275108468	5.584975088	5.584975088
EP08-A	Heavy Duty 1 Test Diesel	EP08	Lubricant Testing	NA	NA	8	21.9	Total HAP	0.559509	US EPA	0.00%	0.00%	0.027013808	0.027013808	0.118320478	0.118320478
EP08-A	Heavy Duty 1 Test Diesel	EP08	Lubricant Testing	NA	NA	8	21.9	SO2	2.77144E-06	US EPA	0.00%	0.00%	1.33809E-07	1.33809E-07	5.86083E-07	5.86083E-07
EP08-A	Heavy Duty 1 Test Diesel	EP08	Lubricant Testing	NA	NA	8	21.9	Acetaldehyde	0.122511	US EPA	0.00%	0.00%	0.005914987	0.005914987	0.025907644	0.025907644
EP08-A	Heavy Duty 1 Test Diesel	EP08	Lubricant Testing	NA	NA	8	21.9	Formaldehyde	0.362481	US EPA	0.00%	0.00%	0.017501045	0.017501045	0.076654576	0.076654576
EP08-A	Heavy Duty 1 Test Diesel	EP08	Lubricant Testing	NA	NA	8	21.9	Propionaldehyde	0.0114091	US EPA	0.00%	0.00%	0.000550846	0.000550846	0.002412705	0.002412705
EP08-B	Heavy Duty 1 Test Gasoline	EP08	Lubricant Testing	NA	NA	8	21.9	VOC	10.91	US EPA	0.00%	0.00%	0.526748708	0.526748708	2.307159341	2.307159341
EP08-B	Heavy Duty 1 Test Gasoline	EP08	Lubricant Testing	NA	NA	8	21.9	CO	197.65	US EPA	0.00%	0.00%	9.542793965	9.542793965	41.79743757	41.79743757
EP08-B	Heavy Duty 1 Test Gasoline	EP08	Lubricant Testing	NA	NA	8	21.9	NOx	7.56	US EPA	0.00%	0.00%	0.365006438	0.365006438	1.598728196	1.598728196
EP08-B	Heavy Duty 1 Test Gasoline	EP08	Lubricant Testing	NA	NA	8	21.9	Total HAP	1.449939	US EPA	0.00%	0.00%	0.070004903	0.070004903	0.306621476	0.306621476
EP08-B	Heavy Duty 1 Test Gasoline	EP08	Lubricant Testing	NA	NA	8	21.9	SO2	1.66E-07	US EPA	0.00%	0.00%	8.03304E-09	8.03304E-09	3.51847E-08	3.51847E-08
EP08-B	Heavy Duty 1 Test Gasoline	EP08	Lubricant Testing	NA	NA	8	21.9	Toluene	1.13464	US EPA	0.00%	0.00%	0.054781866	0.054781866	0.239944572	0.239944572
EP08-B	Heavy Duty 1 Test Gasoline	EP08	Lubricant Testing	NA	NA	8	21.9	m-Xylene	0.471312	US EPA	0.00%	0.00%	0.022755544	0.022755544	0.099669284	0.099669284
EP08-B	Heavy Duty 1 Test Gasoline	EP08	Lubricant Testing	NA	NA	8	21.9	2,2,4-Trimethylpentane	0.471312	US EPA	0.00%	0.00%	0.022755544	0.022755544	0.099669284	0.099669284
EP10	Gasoline (Unleaded) Test Engine	EP10	Lubricant Testing	NA	NA	10	150	VOC	10.91	US EPA	0.00%	0.00%	3.607867864	3.607867864	15.80246124	15.80246124
EP10	Gasoline (Unleaded) Test Engine	EP10	Lubricant Testing	NA	NA	10	150	CO	197.65	US EPA	0.00%	0.00%	65.3616025	65.3616025	286.2838189	286.2838189

EP10	Gasoline (Unleaded) Test Engine	EP10	Lubricant Testing	NA	NA	10	150	NOx	7.56	US EPA	0.00%	0.00%	2.500044092	2.500044092	10.95019313	10.95019313
EP10	Gasoline (Unleaded) Test Engine	EP10	Lubricant Testing	NA	NA	10	150	Total HAP	1.449939	US EPA	0.00%	0.00%	0.479485639	0.479485639	2.100147099	2.100147099
EP10	Gasoline (Unleaded) Test Engine	EP10	Lubricant Testing	NA	NA	10	150	SO2	1.6638E-07	US EPA	0.00%	0.00%	5.50207E-08	5.50207E-08	2.40991E-07	2.40991E-07
EP10	Gasoline (Unleaded) Test Engine	EP10	Lubricant Testing	NA	NA	10	150	Toluene	1.13464	US EPA	0.00%	0.00%	0.375218258	0.375218258	1.643455969	1.643455969
EP10	Gasoline (Unleaded) Test Engine	EP10	Lubricant Testing	NA	NA	10	150	m-Xylene	0.471312	US EPA	0.00%	0.00%	0.155859892	0.155859892	0.682666326	0.682666326
EP10	Gasoline (Unleaded) Test Engine	EP10	Lubricant Testing	NA	NA	10	150	2,2,4- Trimethylpent ane	0.471312	US EPA	0.00%	0.00%	0.155859892	0.155859892	0.682666326	0.682666326
EP10	Gasoline (Unleaded) Test Engine	EP10	Lubricant Testing	NA	NA	10	150	Benzene	0.44731	US EPA	0.00%	0.00%	0.147922582	0.147922582	0.647900911	0.647900911

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)
EP10	Gasoline (Unleaded) Test Engine	EP10	Lubricant Testing	NA	NA	10	150	Styrene	0.3273	US EPA	0.00%	0.00%	0.108236036	0.108236036	0.474073837	0.474073837
EP10	Gasoline (Unleaded) Test Engine	EP10	Lubricant Testing	NA	NA	10	150	o-Xylene	0.168014	US EPA	0.00%	0.00%	0.055561165	0.055561165	0.243357903	0.243357903
EP10	Gasoline (Unleaded) Test Engine	EP10	Lubricant Testing	NA	NA	10	150	Ethylbenzene	0.160377	US EPA	0.00%	0.00%	0.053035658	0.053035658	0.23229618	0.23229618
EP10	Gasoline (Unleaded) Test Engine	EP10	Lubricant Testing	NA	NA	10	150	Formaldehyde	0.12001	US EPA	0.00%	0.00%	0.039686546	0.039686546	0.173827074	0.173827074
EP10	Gasoline (Unleaded) Test Engine	EP10	Lubricant Testing	NA	NA	10	150	Hexane	0.07637	US EPA	0.00%	0.00%	0.025255075	0.025255075	0.110617229	0.110617229
EP10	Gasoline (Unleaded) Test Engine	EP10	Lubricant Testing	NA	NA	10	150	Acetaldehyde	0.05455	US EPA	0.00%	0.00%	0.018039339	0.018039339	0.079012306	0.079012306
EP10	Gasoline (Unleaded) Test Engine	EP10	Lubricant Testing	NA	NA	10	150	1,3-butadiene	0.05455	US EPA	0.00%	0.00%	0.018039339	0.018039339	0.079012306	0.079012306
EP10	Gasoline (Unleaded) Test Engine	EP10	Lubricant Testing	NA	NA	10	150	Naphthalene	0.02182	US EPA	0.00%	0.00%	0.007215736	0.007215736	0.031604922	0.031604922
EP10	Gasoline (Unleaded) Test Engine	EP10	Lubricant Testing	NA	NA	10	150	Methyl Ethyl Ketone	0.018547	US EPA	0.00%	0.00%	0.006133375	0.006133375	0.026864184	0.026864184
EP13-14	Gasoline Test Marine Engine MEI-ME2	EP13-14	Lubricant Testing	NA	NA	13, 14	225	VOC	4	US EPA	0.00%	0.00%	1.984161978	1.984161978	8.690629464	8.690629464
EP13-14	Gasoline Test Marine Engine MEI-ME2	EP13-14	Lubricant Testing	NA	NA	13, 14	225	CO	134.59	US EPA	0.00%	0.00%	66.76209016	66.76209016	292.4179549	292.4179549
EP13-14	Gasoline Test Marine Engine MEI-ME2	EP13-14	Lubricant Testing	NA	NA	13, 14	225	NOx	5.82	US EPA	0.00%	0.00%	2.886955678	2.886955678	12.64486587	12.64486587
EP13-14	Gasoline Test Marine Engine MEI-ME2	EP13-14	Lubricant Testing	NA	NA	13, 14	225	Total HAP	1.2808	US EPA	0.00%	0.00%	0.635328665	0.635328665	2.782739554	2.782739554
EP13-14	Gasoline Test Marine Engine MEI-ME2	EP13-14	Lubricant Testing	NA	NA	13, 14	225	SO2	0.241856925	US EPA	0.00%	0.00%	0.119970829	0.119970829	0.525472231	0.525472231

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)
EP13-14	Gasoline Test Marine Engine MEI-ME2	EP13-14	Lubricant Testing	NA	NA	13, 14	225	Toluene	0.36712	US EPA	0.00%	0.00%	0.182106386	0.182106386	0.797625972	0.797625972
EP13-14	Gasoline Test Marine Engine MEI-ME2	EP13-14	Lubricant Testing	NA	NA	13, 14	225	m-Xylene	0.152496	US EPA	0.00%	0.00%	0.075644191	0.075644191	0.331321558	0.331321558
EP13-14	Gasoline Test Marine Engine MEI-ME2	EP13-14	Lubricant Testing	NA	NA	13, 14	225	2,2,4-Trimethylpentane	0.152496	US EPA	0.00%	0.00%	0.075644191	0.075644191	0.331321558	0.331321558
EP13-14	Gasoline Test Marine Engine MEI-ME2	EP13-14	Lubricant Testing	NA	NA	13, 14	225	Benzene	0.14473	US EPA	0.00%	0.00%	0.071791941	0.071791941	0.314448701	0.314448701
EP13-14	Gasoline Test Marine Engine MEI-ME2	EP13-14	Lubricant Testing	NA	NA	13, 14	225	Styrene	0.1059	US EPA	0.00%	0.00%	0.052530688	0.052530688	0.230084415	0.230084415
EP13-14	Gasoline Test Marine Engine MEI-ME2	EP13-14	Lubricant Testing	NA	NA	13, 14	225	o-Xylene	0.054362	US EPA	0.00%	0.00%	0.026965753	0.026965753	0.11811	0.11811
EP13-14	Gasoline Test Marine Engine MEI-ME2	EP13-14	Lubricant Testing	NA	NA	13, 14	225	Ethylbenzene	0.051891	US EPA	0.00%	0.00%	0.025740037	0.025740037	0.112741363	0.112741363
EP13-14	Gasoline Test Marine Engine MEI-ME2	EP13-14	Lubricant Testing	NA	NA	13, 14	225	Formaldehyde	0.03883	US EPA	0.00%	0.00%	0.019261252	0.019261252	0.084364286	0.084364286
EP13-14	Gasoline Test Marine Engine MEI-ME2	EP13-14	Lubricant Testing	NA	NA	13, 14	225	Hexane	0.02471	US EPA	0.00%	0.00%	0.012257161	0.012257161	0.053686364	0.053686364
EP13-14	Gasoline Test Marine Engine MEI-ME2	EP13-14	Lubricant Testing	NA	NA	13, 14	225	Acetaldehyde	0.01765	US EPA	0.00%	0.00%	0.008755115	0.008755115	0.038347403	0.038347403
EP13-14	Gasoline Test Marine Engine MEI-ME2	EP13-14	Lubricant Testing	NA	NA	13, 14	225	1,3-butadiene	0.01765	US EPA	0.00%	0.00%	0.008755115	0.008755115	0.038347403	0.038347403
EP13-14	Gasoline Test Marine Engine MEI-ME2	EP13-14	Lubricant Testing	NA	NA	13, 14	225	Naphthalene	0.00706	US EPA	0.00%	0.00%	0.003502046	0.003502046	0.015338961	0.015338961

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)
EP13-14	Gasoline Test Marine Engine MEI-ME2	EP13-14	Lubricant Testing	NA	NA	13, 14	225	Methyl Ethyl Ketone	0.006001	US EPA	0.00%	0.00%	0.002976739	0.002976739	0.013038117	0.013038117
EP15	Heavy Duty Engine Test Stand HD Diesel	EP15	Lubricant Testing	NA	NA	15	65	VOC	4.21	US EPA	0.00%	0.00%	0.603295473	0.603295473	2.64243417	2.64243417
EP15	Heavy Duty Engine Test Stand HD Diesel	EP15	Lubricant Testing	NA	NA	15	65	CO	12.22	US EPA	0.00%	0.00%	1.751133177	1.751133177	7.669963315	7.669963315
EP15	Heavy Duty Engine Test Stand HD Diesel	EP15	Lubricant Testing	NA	NA	15	65	NOx	26.41	US EPA	0.00%	0.00%	3.784568511	3.784568511	16.57641008	16.57641008
EP15	Heavy Duty Engine Test Stand HD Diesel	EP15	Lubricant Testing	NA	NA	15	65	SO2	0.016	US EPA	0.00%	0.00%	0.002292809	0.002292809	0.010042505	0.010042505
EP15	Heavy Duty Engine Test Stand HD Diesel	EP15	Lubricant Testing	NA	NA	15	65	Total HAP	0.496359	US EPA	0.00%	0.00%	0.071128536	0.071128536	0.311542989	0.311542989
EP15	Heavy Duty Engine Test Stand HD Diesel	EP15	Lubricant Testing	NA	NA	15	65	Acetaldehyde	0.122511	US EPA	0.00%	0.00%	0.017555898	0.017555898	0.076894834	0.076894834
EP15	Heavy Duty Engine Test Stand HD Diesel	EP15	Lubricant Testing	NA	NA	15	65	Formaldehyde	0.362481	US EPA	0.00%	0.00%	0.05194374	0.05194374	0.227513582	0.227513582
EP15	Heavy Duty Engine Test Stand HD Diesel	EP15	Lubricant Testing	NA	NA	15	65	Propionaldehyde	0.0114091	US EPA	0.00%	0.00%	0.001634931	0.001634931	0.007160997	0.007160997
EP15	Heavy Duty Engine Test Stand HD NG	EP15	Lubricant Testing	NA	NA	15	65	VOC	4.78	US EPA	0.00%	0.00%	0.684976807	0.684976807	3.000198416	3.000198416
EP15	Heavy Duty Engine Test Stand HD NG	EP15	Lubricant Testing	NA	NA	15	65	CO	11.94	US EPA	0.00%	0.00%	1.711009013	1.711009013	7.494219475	7.494219475
EP15	Heavy Duty Engine Test Stand HD NG	EP15	Lubricant Testing	NA	NA	15	65	NOx	2.71	US EPA	0.00%	0.00%	0.388344592	0.388344592	1.700949311	1.700949311

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)
EP15	Heavy Duty Engine Test Stand HD NG	EP15	Lubricant Testing	NA	NA	15	65	SO2	0.09	US EPA	0.00%	0.00%	0.012897053	0.012897053	0.056489092	0.056489092
EP15	Heavy Duty Engine Test Stand HD NG	EP15	Lubricant Testing	NA	NA	15	65	Total HAP	0.007417578	US EPA	0.00%	0.00%	0.001062943	0.001062943	0.004655692	0.004655692
EP15	Heavy Duty Engine Test Stand HD NG	EP15	Lubricant Testing	NA	NA	15	65	Formaldehyde	0.005396008	US EPA	0.00%	0.00%	0.000773251	0.000773251	0.00338684	0.00338684
EP15	Heavy Duty Engine Test Stand HD NG	EP15	Lubricant Testing	NA	NA	15	65	Acetaldehyde	0.000854368	US EPA	0.00%	0.00%	0.000122431	0.000122431	0.00053625	0.00053625
EP15	Heavy Duty Engine Test Stand HD NG	EP15	Lubricant Testing	NA	NA	15	65	Acrolein	0.000525293	US EPA	0.00%	0.00%	7.52748E-05	7.52748E-05	0.000329704	0.000329704
EP15	Heavy Duty Engine Test Stand HD NG	EP15	Lubricant Testing	NA	NA	15	65	Methanol	0.000255493	US EPA	0.00%	0.00%	3.66123E-05	3.66123E-05	0.000160362	0.000160362
EP15	Heavy Duty Engine Test Stand HD NG	EP15	Lubricant Testing	NA	NA	15	65	n-Hexane	0.000113439	US EPA	0.00%	0.00%	1.62558E-05	1.62558E-05	7.12006E-05	7.12006E-05

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	EP01, Test Engine III	0.33	19.167	0	17 N 357593	4260025			
2	EP02, Test Engine VPS	0.33	17.167	0	17 N 357593	4260025			
3	EP03, Test Engine VIII	0.33	17.83	0	17 N 357593	4260025			
4	EP04, Test Engine X	0.25	19.167	0	17 N 357593	4260025			
5	EP05, Test Engine V	0.25	17.67	0	17 N 357593	4260025			
6	EP06, Test Engine BL2	0.25	20.25	0	17 N 357593	4260025			
7	EP07, Test Engine VI	0.25	18.25	0	17 N 357593	4260025			
8	EP08, Test Engine HD-1	0.33	20	0	17 N 357654	4260024			
10	EP10, HD Gasoline	0.33	26	0	17 N 357654	4260024			
13	EP13, Marine Engine ME1	NA	NA	NA	17 N 357660	4260006	NA	NA	NA
14	EP14, Marine Engine ME2	NA	NA	NA	17 N 357660	4260006	NA	NA	NA
15	EP15 , Test Stand HD-II	0.5	26.5	0	17 N 357670	4260003			

UTM

38°28'37.9"N, 82°37'57.3"W	17 N 357593 4260025	III	19'2	4"	19.16666667
38°28'37.9"N, 82°37'57.3"W	17 N 357593 4260025	IVA	17'2	4"	17.16666667
38°28'37.9"N, 82°37'57.3"W	17 N 357593 4260025	VIII	17'10	4"	17.83333333
38°28'37.9"N, 82°37'57.3"W	17 N 357593 4260025	DB	19'2	3"	19.16666667
38°28'37.9"N, 82°37'57.3"W	17 N 357593 4260025	VG	17'8	3"	17.66666667
38°28'37.9"N, 82°37'57.3"W	17 N 357593 4260025	VIE	18'6	3"	18.5
38°28'37.9"N, 82°37'57.3"W	17 N 357593 4260025	BL-2	20'3	4"	20.25
38°28'37.9"N 82°37'54.8"W	17 N 357654 4260024	MOTORSPC	26'	4"	26
38°28'37.9"N 82°37'54.8"W	17 N 357654 4260024	ISB	20'	4"	20
38°28'37.3"N, 82°37'54.5"W	17 N 357660 4260006	HD	26'6	6"	26.5
38°28'37.3"N, 82°37'54.5"W	17 N 357660 4260006				
38°28'37.2"N 82°37'54.1"W	17 N 357670 4260003				

Section N.3: Fugitive Information**UTM Zone:**

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)
N/A								

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:**Valvoline Engine Laboratory**KY EIS (AFS) #:**21- 019-00110**Permit #:**F-21-021**Agency Interest (AI) ID:**4044 3**Date:**25-Mar-26**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
IS1	storage tank 28G for Gasoline using permanent submerged fill 8000 gals.	28 "G"	401 KAR 61:050.	64.44 Uncontrolled lbs
IS2	storage tank 29J for Gasoline using permanent submerged fill 8000 gals.	29 "J"	401 KAR 61:050.	322.22 Uncontrolled lbs
IS3	storage tank 30A for Gasoline using permanent submerged fill 2000 gals.	30A	401 KAR 61:050.	55.24 Uncontrolled lbs
IS4	storage tank 30B for Gasoline using permanent submerged fill 2000 gals.	30B	401 KAR 61:050.	32.22 Uncontrolled lbs
IS5	storage tank 31A for Gasoline using permanent submerged fill 2000 gals	31A	401 KAR 61:050.	359.05 Uncontrolled lbs

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
IS6	storage tank 32A for Gasoline using permanent submerged fill 2000 gals.	31B	401 KAR 61:050.	359.05 Uncontrolled lbs
IS7	storage tank 31B for Gasoline using permanent submerged fill 2000 gals	32A	401 KAR 61:050.	13.81 Uncontrolled lbs
IS8	Aboveground storage tank 32B for gasoline using permanent submerged fill, 2000 gals	32B	401 KAR 61:050.	115.08 Uncontrolled lbs
IS9	Aboveground storage tank 33 unleaded premium gasoline 564 gals.	33L	401 KAR 61:050.	237.68 Uncontrolled lbs'
IS10	3 - Distillate oil-fired space heaters 0.4mmBTU/hr			36 lbs VOC per year
IS11	12 - natural gas fired space heaters varies			696 lbs CO, 96 lbs VOC, 1636 lbs Nox, 10 lbs SO2, 132 Lbs PM-10
IS12	2 - Honing machines (machining of metals)			309 lbs VOC
IS13	Laboratory fume hoods and vents used for chemical or physical analysis			Antifreeze and inorganic analysis De minimis
IS14	2 - Aboveground skid storage tanks for distillate fuel (used in boilers) 500-600 gals.			0.34 lbs VOC emissions per year
IS15	Parts Washer using powdered material as cleaning agent			Water based products minimal emissions

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
--------------------------	--	--	--------------------------	----------------------

IS16	Spray Cleaning and protective coating booth used to apply lubricants as temporary protective coatings and to clean engines			Limited use less than 350 lbs VOC emissions based upon solvent mass balance
IS17	Bead Blaster (uses glass beads and is Self-Contained)			Closed system no emissions
IS18	Small Cooling tower			2.74626 tons/yr Water vapor
IS19	Portable Honda Generator 13 HP			Emergency Generator less than 13 hp
IS20	1- Parts Washers using Safety Kleen			154.6 lbs VOC per year

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:


Authorized Signature

4/2/2026

Date

Roger England
Type/Print Name of Signatory

VP Chief Technology Officer
Title of Signatory

Engine Emissions
EPA Emission Factors

Emission Rates

Light Duty Gasoline Powered Vehicles			
	50,000 Mile Emission Level (grams/mile)		
	HC	CO	NOx*
1972-1974	4.180	52.690	3.110

Light Duty Gasoline Powered Trucks II			
	50,000 Mile Emission Level (grams/mile)		
	HC	CO	NOx
1970-1973	7.530	72.830	6.450
1999+	0.602	10.151	0.789

* Emission rates given are before catalytic converters

Light Duty Gasoline Powered Trucks II			
	100,000 Mile Emission Level (grams/mile)		
	HC	CO	NOx
pre-1970	10.470	105.230	5.440
1970-1973	8.780	85.580	6.450

Light Duty Diesel Powered Vehicles**			
	50,000 Mile Emission Level (grams/mile)		
	HC	CO	NOx
1967-	3.960	11.440	24.730
1969	4.080	11.790	25.490
1970	4.110	11.880	25.750
1971-1973	4.210	12.220	26.410

** Used heavy duty, light duty emission factors were not
PM = 0.42 grams/mile

Light Diesel Truck Emission Factors (grams/mile)

	HC	CO	NOx
LDT2	0.075	3.400	0.050
LDT1	0.250	3.400	1.000
LDDT34	0.560	7.300	1.500

Heavy Duty Diesel Powered Vehicles				
	50,000 Mile Emission Level (grams/mile)			
	HC	CO	NOx	PM
1971-1973	4.210	12.220	26.410	0.420

0.42 grams/mile

Heavy Duty Gasoline Powered Vehicles			
	50,000 Mile Emission Level (grams/mile)		
pre-1963	21.570	269.020	9.410
1974	10.910	197.650	7.560
1970-1973	11.680	201.510	9.870

Marine Outboard Emission Factors 175+ Hp				
	g/bhp-hr			
HP	HC	CO	NOx	PM
	3.530	120.310	5.820	0.060
225	3.530	104.252	5.820	0.060
184*	3.5	120.62	5.82	0.06
30*	4	134.59	5.82	0.06

* Calculated HP Based Upon RPM and Fuel Consumption

Heavy Duty Natural Gas Spark Engines ISX Test					
HP	HC	CO	NOx	PM10	SO2
	Heavy Duty Natural Gas Engines (g/BHP-hr)*				
HD-NG	1.57	3.92	0.89	0.05	0.0286
	Heavy Duty Natural Gas Engines (grams/mile)**				
198	4.78	11.94	2.71	0.15	0.09

*Nonroad Exhaust Emissions Factors , EPA-420-R-10-019, NR-010f

**Converted to grams/mile using DCOC cycle

50 K Miles

50 K Miles

Full Life Standard

Engine Lab Tank and Engine Info

Storage Tanks

Tank	Material in Tanks	Capacity	Diameter/Length	Recovery System on Delivery
28 "G"	Gasoline	8000	96" 252"	yes
29 "J"	Gasoline	8000	96" 252"	yes
30A	Gasoline	2000	64" 144"	yes
30B	Gasoline	2000	64" 144"	yes
31A	Gasoline	2000	64" 144"	yes
31B	Diesel	2000	64" 144"	yes
32A	Gasoline	2000	64" 144"	yes
32B	Gasoline	2000	64" 144"	yes
33L	Gasoline	1000	48" 126"	TBA

Engines

KyEIS ID#	Date Constructed	Engine Test Stand	HP	Displacement	Hours per Test	MPH	Test Condition (HP)	Steady State/Cycling
001	1999	III	200	3.8L	80	70	90	steady
002	1999	VPS	375	3.5L	100	35	20	avg. HP of 2 cycle
003	1999	VIII	25	1.0L	50	35.5	12	steady
004	2010	X	260	2.5L	288	34	100	avg. HP of 2 cycle
005	1999	V	190	4.6L	210	31.2	65	avg. HP of 3 cycle
006	1999	BL-2	190	4.6L	768	49.5	90	steady
007	1999	VI	190	3.4L***	135	35.5	30	avg. HP of 3 cycle
008a**	1999	HD-I Eng. Stand	175	5.9L	250	21.9	70	avg. HP of 6 cycle, Diesel
008b**	1999	HD-I Eng. Stand	250	9L	Varibale	21.9	Variable	Steady state, high throttle
010	2015	HD Gasoline	1000	Not Listed	500*	150	Variable	-
013	2006	Marine Engine 1	225 - 30	3.5L	Variable	65	Variable	8 hr - 5800 rpm HP 225 340 hr - 4500 rpm HP 183 1858 hr 1,000 rpm HP 30
014	2006	Marine Engine 2	225 - 30	3.5L	Variable	6000 RPM	Variable	8 hr - 5800 rpm HP 225 340 hr - 4500 rpm HP 183 1858 hr 1,000 rpm HP 30
15**	2014	HD-II Eng. Stand	450	15L	150	65	198	Avg. 198 HP of 300 Cycles
15**	2014	HD-II Eng. Stand	450	15L	150	65	198	Avg. 198 HP of 300 Cycles

*Racing Engine hours are per year

** Shared engine stand

**** Converted engine from 4.6 L to 3.4 L

SO2 Emission Calculations for the Test Engines

Test Stand #	Hours/test	Fuel Usage (gal/test)	Fuel Usage (gal/hr)	Requested Hours/Year	Requested Fuel Usage (gal/yr)	Potential Fuel Usage (gal/yr)	Sulfur Content (ppm)	Requested SO2 Emissions (lbs/yr)	Potential SO2 Emissions (lbs/yr)
III	90	900	10.00	2,500	25,000	87,600	80	24	86
VPS	50	200	4.00	2,000	8,000	35,040	80	8	34
VIII	50	13	0.26	-	-	2,278	80	-	2
X	216	450	2.08	1,800	3,750	18,250	80	4	18
V	216	700	3.24	2,000	6,481	28,389	80	6	28
BL-2	672	3360	5.00	2,200	11,000	43,800	80	11	43
VI	200	500	2.50	2,000	5,000	21,900	80	5	21
HDI Eng stand-Diesel	400	3500	8.75	1,200	10,500	76,650	500	74	469
HDI Eng Stand-Gasoline	250	3250	13.00	100	1,300	113,880	80	1	128
HD Gasoline	80	1000	12.50	1,476	18,450	109,500	80	18	107
HDD/NatGas	150		10.83	-	-	94,871	500	-	668
ME1	2206	7419	3.36	-	-	29,461	80	-	29
ME2	2206	7419	3.36	-	-	29,461	80	-	29

151	1,663
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Densities	(lbs/gal)
Unleaded Gasoline	6.130
Diesel	7.047

Mol Wt S = 32.06 g/mole
 Mol Wt SO2 = 64.0588 g/mole
 Ratio SO2/S = 2.00

PTE

		Tests	Test hours per year	Mileage per year	MPH	M (cumulative mileage/ 10,000 miles)	HC (g)	HC (lbs/yr)	HC (lbs/hr)	HC (tpy)	CO (g)	CO (lbs/yr)	CO (tpy)	CO (lbs/hr)	NOx (g)	NOx (lbs/yr)	NOx (tpy)	NOx (lbs/hr)	Lead (g)	Lead (lbs/yr)	Lead (tpy)	PM ₁₀ (g)	PM ₁₀ (lbs/yr)	PM ₁₀ (tpy)	SO2 (lbs/yr)	SO2 (tpy)	SO2 (lbs/hr)
Gasoline	Light Duty Vehicles	III	8,760	613,200	70	61.32	2,563,176	5,651	0.645	2.825	32,309,508	71,229	35.615	8.131	1,907,052	4,204	2.102	0.480	NA	NA	NA	NA	NA	NA	69	0.034	0.008
		VPS	8,760	39,420	4.5	3.942	164,776	363	0.041	0.182	2,077,040	4,579	2.290	0.523	122,596	270	0.135	0.031	NA	NA	NA	NA	NA	NA	4	0.002	0.000
		VIII	8,760	310,980	35.5	31.098	1,299,896	2,866	0.327	1.433	16,385,536	36,123	18.062	4.124	967,148	2,132	1.066	0.243	NA	NA	NA	NA	NA	NA	2	0.001	0.000
	Light Duty Trucks	X	8,760	525,600	60	52.56	3,957,768	8,725	0.996	4.363	38,279,448	84,390	42.195	9.634	3,390,120	7,474	3.737	0.853	NA	NA	NA	NA	NA	NA	84	0.042	0.010
		V	8,760	273,312	31.2	27.3312	2,058,039	4,537	0.518	2.269	19,905,313	43,883	21.941	5.009	1,762,862	3,886	1.943	0.444	NA	NA	NA	NA	NA	NA	29	0.014	0.003
		BL-2	8,760	433,620	49.5	43.362	3,265,159	7,198	0.822	3.599	31,580,545	69,622	34.811	7.948	2,796,849	6,166	3.083	0.704	NA	NA	NA	NA	NA	NA	56	0.028	0.006
		VI	8,760	310,980	35.5	31.098	2,730,404	6,019	0.687	3.010	26,613,668	58,672	29.336	6.698	2,005,821	4,422	2.211	0.505	NA	NA	NA	NA	NA	NA	32	0.016	0.004
Diesel	Heavy Duty	HDI-I Eng. Stand	8,760	665,760	76	66.576	49,932	110	0.013	0.055	2,263,584	4,986	2.493	0.569	33,288	73	0.037	0.008	NA	NA	NA	279,619	NA	NA	8	0.004	0.001
Unleaded	Heavy Duty	HDI-I Eng. Stand	8,760	1,927,200	220	192.72	21,025,752	46,353	5.291	23.177	380,911,080	839,751	419.876	95.862	14,569,632	32,120	16.060	3.667	NA	NA	NA	NA	NA	NA	149	0.074	0.017
Diesel	Heavy Duty	HD Gasoline	8,760	191,844	21.9	19.1844	807,663	1,781	0.203	0.890	2,344,334	5,168	2.584	0.590	5,066,600	11,170	5.585	1.275	NA	NA	NA	80,574	178	0.089	215	0.107	0.024
HDD \ NG**	Heavy Duty	HD-II	8,760	569,400	65	56.94	2,723,134	6,003	0.685	3.002	6,958,068	15,340	7.670	1.751	15,037,854	33,152	16.576	3.785	NA	NA	NA	239,148	527	0.264	215	0.107	0.024

** Maximum combine hours for the Heavy Duty Engine Stand will be 8,760 hours. The HDD was used to calculate PTE emissions.

		Tests	Test hours per	HP	RMP	M (cumulative Hrs)	HC (g)	HC (lbs/yr)	HC (lbs/hr)	HC (tpy)	CO (g)	CO (lbs/yr)	CO (tpy)	CO (lbs/hr)	NOx (g)	NOx (lbs/yr)	NOx (tpy)	NOx (lbs/hr)	Lead (g)	Lead (lbs/yr)	Lead (tpy)	PM ₁₀ (g)	PM ₁₀ (lbs/yr)	PM ₁₀ (tpy)	SO2 (lbs/yr)	SO2 (tpy)	SO2 (lbs/hr)
Gasoline	Marine	ME1	8,760	225	6000	8,760	6,957,630	15,339	1.751	7.669	205,480,692	453,000	226.500	51.712	11,471,220	25,289	12.645	2.887	NA	NA	NA	118260	261	0.13	-	0.000	-
Gasoline	Engine	ME2	8,760	225	6000	8,760	6,957,630	15,339	1.751	7.669	205,480,692	453,000	226.500	51.712	11,471,220	25,289	12.645	2.887	NA	NA	NA	118260	261	0.13	-	0.000	-

		g/yr	50,603,191
Total HCs	lb/yr		111,559
	ton/yr		55.780

		g/yr	970,589,508
Total CO	lb/yr		2,139,748
	ton/yr		1,069.87

		g/yr	67,212,142
Total NOx	lb/yr		148,175
	ton/yr		74.087

		g/yr	NA
Total Pb	lb/yr		NA
	ton/yr		NA

		g/yr	835,862
Total PM ₁₀	lb/yr		1,843
	ton/yr		0.921

Assumptions:

- Low altitude
- 50,000 mile emission rate used
- Emission rates from ~1970-1974 used (before catalytic converters were introduced)
- Light Diesel Engine emission factors EPA420-R-03-012 M6.EXH.013

		lb/yr	777
Total SO2	ton/yr		0.389

Requested Permitted Engine Emissions

Fuel	Engine Type	KY - DEP Test Engine Number (Section B)	Tests	Test Hours 2026 Sythetic Minor Permit Renewal Application	Mileage per year	MPH	M (cumulative mileage/ 10,000 miles)	HC (g)	HC (lbs/yr)	HC (tpy)	CO (g)	CO (lbs/yr)	CO (tpy)	NOx (g)	NOx (lbs/yr)	NOx (tpy)	Lead (g)	Lead (lbs/yr)	Lead (tpy)	PM ₁₀ (g)	PM ₁₀ (lbs/yr)	PM ₁₀ (tpy)	SO2 (lbs/yr)	SO2 (tpy)
Gasoline	Light Duty Vehicles	01	III	2,500	175,000	70	17.5	731,500	1,611	0.806	9,220,750	20,310	10.155	544,250	1,199	0.599	NA	NA	NA	NA	NA	NA	24	0.012
		02	VPS	2,000	70,000	35	7	292,600	644	0.322	3,688,300	8,124	4.062	217,700	480	0.240	NA	NA	NA	NA	NA	NA	1	0.000
		03	VIII	-	-	35.5	0	-	-	0.000	-	-	0.000	-	-	0.000	NA	NA	NA	NA	NA	NA	-	0.000
	Light Duty Trucks	04	X	1,800	61,200	34	6.12	460,836	1,015	0.508	3,224,628	7,103	3.551	190,332	419	0.210	NA	NA	NA	NA	NA	NA	3	0.001
		05	V	2,000	62,400	31.2	6.24	469,872	1,035	0.517	4,544,592	10,010	5.005	402,480	887	0.443	NA	NA	NA	NA	NA	NA	7	0.003
		06	BL-2	2,200	108,900	49.5	10.89	820,017	1,806	0.903	7,931,187	17,470	8.735	702,405	1,547	0.774	NA	NA	NA	NA	NA	NA	15	0.008
		07	VI	2,000	71,000	35.5	7.1	623,380	1,373	0.687	6,076,180	13,384	6.692	457,950	1,009	0.504	NA	NA	NA	NA	NA	NA	1	0.001
Diesel	Heavy Duty	08-A	HDI-I Eng. Stand	1,200	26,280	21.9	2.63	110,639	244	0.122	321,142	707	0.354	694,055	1,529	0.764	NA	NA	NA	11,038	24	0.012	6	0.003
Gasoline	Heavy Duty	08-B	HDI-I Eng. Stand	100	2,190	21.9	0.219	23,893	53	0.026	432,854	953	0.477	16,556	36	0.018	NA	NA	NA	NA	NA	NA	-	0.000
Unleaded Gasoline Premium	Heavy Duty	10	HD Gasoline	1,476	221,400	150	22.14	2,415,474	5,320	2.660	43,759,710	96,472	48.236	1,673,784	3,687	1.843	NA	NA	NA	NA	NA	NA	1	0.000
HDD \ NG**	Heavy Duty	15	HD-II	3,000	195,000	65	19.5	932,580	2,054	1.027	2,382,900	5,249	2.624	5,149,950	11,344	5.672	NA	NA	NA	81,900	180	0.090	24	0.012

** Maximum combine hours for the Heavy Duty Engine Stand will be 5,000 hours. The HDD was used to calculate maximum emissions.

Marine			Tests	Test hours per year	HP	RMP	M (cumulative Hrs)	HC (g)	HC (lbs/yr)	HC (tpy)	CO (g)	CO (lbs/yr)	CO (tpy)	NOx (g)	NOx (lbs/yr)	NOx (tpy)	Lead (g)	Lead (lbs/yr)	Lead (tpy)	PM ₁₀ (g)	PM ₁₀ (lbs/yr)	PM ₁₀ (tpy)	SO2 (lbs/yr)	SO2 (tpy)
Gasoline	M. Engine		ME1	0.00	225	6000	0.00	0.00	0.00	0.000	0.00	0.00	0.000	0.00	0.00	0.000	NA	NA	NA	0.000	0.000	0.000	0.00	0.000
Gasoline	M. Engine		ME1	0.00	184	4500	0.00	0.00	0.00	0.000	0.00	0.00	0.000	0.00	0.00	0.000	NA	NA	NA	0.000	0.000	0.000	0.00	0.000
Gasoline	M. Engine		ME1	0.00	30	1000	0.00	0.00	0.00	0.000	0.00	0.00	0.000	0.00	0.00	0.000	NA	NA	NA	0.000	0.000	0.000	0	0.000
Gasoline	M. Engine		ME2	0.00	225	6000	0.00	0.00	0.00	0.000	0.00	0.00	0.000	0.00	0.00	0.000	NA	NA	NA	0.000	0.000	0.000	0.00	0.000
Gasoline	M. Engine		ME2	0.00	184	4500	0.00	0.00	0.00	0.000	0.00	0.00	0.000	0.00	0.00	0.000	NA	NA	NA	0.000	0.000	0.000	0.00	0.000
Gasoline	M. Engine		ME2	0.00		1000	0.00	0.00	0.00	0.000	0.00	0.00	0.000	0.00	0.00	0.000	NA	NA	NA	0.000	0.000	0.000	0	0.000
			Total Per Engine	0.00			0.00	0.00	0.00	-	0.00	0.00	0.00	0.00	0.00	0.00	NA	NA	NA	0.00	0.00	0.00	0.00	-

g/yr		6,880,791
Total HCs	lb/yr	15,169
ton/yr		7.585

g/yr		81,582,242
Total CO	lb/yr	179,855
ton/yr		89.93

g/yr		10,049,462
Total NOx	lb/yr	22,155
ton/yr		11.077

g/yr		92,938
Total PM ₁₀	lb/yr	205
ton/yr		0.1024

Assumptions:
- Low altitude
- 50,000 mile emission rate used
- Emission rates from ~1970-1974 used (before catalytic converters were introduced)

lb/yr		82
Total SO2	ton/yr	0.041

Natural Engine HAP and VOC Emissions

1 boiler horsepower (BHP) = 33520 BTU/hr
198 BHP
6.63696 MM BTU/HR

Requested Hours	
3000 hrs	

Total Haps
3.19 Lbs HAPS/yr
Total HC Lbs/ yr
64.73

		Requested Permitting Engine Emissions				
Hydrocarbon	HAP	% of HC emissions	g/yr	lbs/hr	lb/yr	ton/yr
Methane	No	84.766%	2.49E+04	1.83E-02	54.86905	0.02743452
1,1,2,2-Tetrachloroethanek	Yes					
		0.003%	7.96E-01	5.85E-07	0.001756	8.779E-07
1,1,2-Trichloroethanek	Yes	0.002%	6.33E-01	4.65E-07	0.001396	6.9793E-07
1,1-Dichloroethane	Yes	0.002%	4.70E-01	3.45E-07	0.001036	5.1796E-07
1,2,3-Trimethylbenzene	No	0.002%	4.58E-01	3.37E-07	0.00101	5.048E-07
1,2,4-Trimethylbenzene	No	0.001%	2.85E-01	2.09E-07	0.000628	3.1385E-07
1,2-Dichloroethane	Yes	0.002%	4.70E-01	3.45E-07	0.001036	5.1796E-07
1,2-Dichloropropane	No	0.002%	5.36E-01	3.94E-07	0.001181	5.9039E-07
1,3,5-Trimethylbenzene	No	0.002%	6.73E-01	4.95E-07	0.001484	7.4183E-07
1,3-Butadienek	Yes	0.018%	5.32E+00	3.91E-06	0.01172	5.86E-06
1,3-Dichloropropene	Yes	0.018%	5.26E+00	3.86E-06	0.011588	5.7942E-06
2-Methylnaphthalene	Yes	0.002%	6.61E-01	4.86E-07	0.001457	7.2866E-07
2,2,4-Trimethylpentane	Yes	0.017%	4.98E+00	3.66E-06	0.010974	5.4869E-06
Acenaphthenek	Yes	0.000%	2.49E-02	1.83E-08	5.49E-05	2.7435E-08
Acenaphthylenek	Yes	0.000%	1.10E-01	8.09E-08	0.000243	1.2137E-07
Acetaldehydek,l	Yes	0.567%	1.66E+02	1.22E-04	0.366964	0.00018348
Acroleink,l	Yes	0.349%	1.02E+02	7.52E-05	0.225622	0.00011281
Benzenek	Yes	0.030%	8.76E+00	6.44E-06	0.019314	9.657E-06
Benzo(b)fluoranthenek	Yes	0.000%	3.31E-03	2.43E-09	7.29E-06	3.6433E-09
Benzo(e)pyrenek	Yes	0.000%	8.26E-03	6.07E-09	1.82E-05	9.1083E-09
Benzo(g,h,i)perylene	Yes	0.000%	8.24E-03	6.06E-09	1.82E-05	9.0863E-09
Biphenylk	Yes	0.014%	4.22E+00	3.10E-06	0.009306	4.6529E-06
Butane	No	0.037%	1.08E+01	7.92E-06	0.023747	1.1874E-05
Butyr/Isobutyraldehyde	Yes	0.007%	2.01E+00	1.48E-06	0.004433	2.2167E-06
Carbon Tetrachloridek	Yes	0.002%	7.31E-01	5.37E-07	0.001611	8.0548E-07
Chlorobenzenek	Yes	0.002%	6.05E-01	4.45E-07	0.001334	6.6721E-07
Chloroethane	No	0.000%	3.72E-02	2.74E-08	8.21E-05	4.1042E-08
Chloroformk	Yes	0.002%	5.67E-01	4.17E-07	0.001251	6.2551E-07
Chrysenek	Yes	0.000%	1.38E-02	1.01E-08	3.04E-05	1.521E-08
Cyclopentane	No	0.015%	4.52E+00	3.32E-06	0.009964	4.9821E-06
Ethane	No	7.120%	2.09E+03	1.54E-03	4.609	0.0023045
Ethylbenzenek	Yes	0.003%	7.90E-01	5.81E-07	0.001743	8.7132E-07
Ethylene Dibromidek	Yes	0.003%	8.82E-01	6.48E-07	0.001945	9.7228E-07
Fluoranthenek	Yes	0.000%	2.21E-02	1.62E-08	4.87E-05	2.4362E-08
Fluorenek	Yes	0.000%	1.13E-01	8.30E-08	0.000249	1.2444E-07
Formaldehydek,l	Yes	3.581%	1.05E+03	7.73E-04	2.317669	0.00115883
Methanolk	Yes	0.170%	4.98E+01	3.66E-05	0.109738	5.4869E-05
Methylcyclohexane	No	0.083%	2.45E+01	1.80E-05	0.053991	2.6996E-05
Methylene Chloridek	Yes	0.001%	3.98E-01	2.93E-07	0.000878	4.3895E-07
n-Hexanek	Yes	0.075%	2.21E+01	1.62E-05	0.048724	2.4362E-05
n-Nonane	No	0.007%	2.19E+00	1.61E-06	0.004828	2.4142E-06
n-Octane	No	0.024%	6.99E+00	5.14E-06	0.015407	7.7036E-06
n-Pentane	No	0.176%	5.18E+01	3.80E-05	0.114128	5.7064E-05
Naphthalene	Yes	0.005%	1.48E+00	1.09E-06	0.003266	1.6329E-06
PAH	Yes	0.002%	5.36E-01	3.94E-07	0.001181	5.9039E-07
Phenanthrene	Yes	0.001%	2.07E-01	1.52E-07	0.000457	2.2826E-07
Phenol	Yes	0.002%	4.78E-01	3.51E-07	0.001053	5.2674E-07
Propane	No	2.841%	8.34E+02	6.13E-04	1.83921	0.00091961
Pyrene	Yes	0.000%	2.71E-02	1.99E-08	5.97E-05	2.9849E-08
Styrene	Yes	0.002%	4.70E-01	3.45E-07	0.001036	5.1796E-07
Tetrachloroethane	Yes	0.000%	4.94E-02	3.63E-08	0.000109	5.443E-08
Toluene	Yes	0.028%	8.12E+00	5.97E-06	0.017909	8.9546E-06
Vinyl Chloride	Yes	0.001%	2.97E-01	2.18E-07	0.000654	3.2702E-07
Xylene	Yes	0.012%	3.66E+00	2.69E-06	0.008077	4.0384E-06
			29,361	0.02	64.73	0.03

1 boiler horsepower (BHP) = 33520 BTU/hr
198 BHP
6.63696 MM BTU/HR

PTE	
8760 hrs	

Total Haps
9.30 Lbs HAPS/yr
Total HC Lbs/ MM Btu
189.01

		% of HC emissions	PTE Engine Emissions			
Hydrocarbon	HAP		g/yr	lbs/hr	lb/yr	ton/yr
Methane	No	84.766%	7.27E+04	1.83E-02	160.2176	0.08010881
1,1,2,2-Tetrachloroethanek	Yes					
		0.003%	2.33E+00	5.85E-07	0.005127	2.56348E-06
1,1,2-Trichloroethanek	Yes	0.002%	1.85E+00	4.65E-07	0.004076	2.03797E-06
1,1-Dichloroethane	Yes	0.002%	1.37E+00	3.45E-07	0.003025	1.51245E-06
1,2,3-Trimethylbenzene	No	0.002%	1.34E+00	3.37E-07	0.002948	1.474E-06
1,2,4-Trimethylbenzene	No	0.001%	8.31E-01	2.09E-07	0.001833	9.16445E-07
1,2-Dichloroethane	Yes	0.002%	1.37E+00	3.45E-07	0.003025	1.51245E-06
1,2-Dichloropropane	No	0.002%	1.56E+00	3.94E-07	0.003448	1.72394E-06
1,3,5-Trimethylbenzene	No	0.002%	1.97E+00	4.95E-07	0.004332	2.16614E-06
1,3-Butadienek	Yes	0.018%	1.55E+01	3.91E-06	0.034222	1.71112E-05
1,3-Dichloropropene	Yes	0.018%	1.53E+01	3.86E-06	0.033838	1.6919E-05
2-Methylnaphthalene	Yes	0.002%	1.93E+00	4.86E-07	0.004255	2.12769E-06
2,2,4-Trimethylpentane	Yes	0.017%	1.45E+01	3.66E-06	0.032044	1.60218E-05
Acenaphthenek	Yes	0.000%	7.27E-02	1.83E-08	0.00016	8.01088E-08
Acenaphthylenek	Yes	0.000%	3.22E-01	8.09E-08	0.000709	3.54401E-07
Acetaldehydek,l	Yes	0.567%	4.86E+02	1.22E-04	1.071535	0.000535768
Acroleink,l	Yes	0.349%	2.99E+02	7.52E-05	0.658815	0.000329407
Benzenek	Yes	0.030%	2.56E+01	6.44E-06	0.056397	2.81983E-05
Benzo(b)fluoranthenek	Yes	0.000%	9.65E-03	2.43E-09	2.13E-05	1.06384E-08
Benzo(e)pyrenek	Yes	0.000%	2.41E-02	6.07E-09	5.32E-05	2.65961E-08
Benzo(g,h,i)perylene	Yes	0.000%	2.41E-02	6.06E-09	5.31E-05	2.6532E-08
Biphenylk	Yes	0.014%	1.23E+01	3.10E-06	0.027173	1.35865E-05
Butane	No	0.037%	3.15E+01	7.92E-06	0.069342	3.46711E-05
Butyr/Isobutyraldehyde	Yes	0.007%	5.87E+00	1.48E-06	0.012946	6.47279E-06
Carbon Tetrachloridek	Yes	0.002%	2.13E+00	5.37E-07	0.004704	2.35199E-06
Chlorobenzenek	Yes	0.002%	1.77E+00	4.45E-07	0.003896	1.94825E-06
Chloroethane	No	0.000%	1.09E-01	2.74E-08	0.00024	1.19843E-07
Chloroformk	Yes	0.002%	1.66E+00	4.17E-07	0.003653	1.82648E-06
Chrysenek	Yes	0.000%	4.03E-02	1.01E-08	8.88E-05	4.44123E-08
Cyclopentane	No	0.015%	1.32E+01	3.32E-06	0.029096	1.45478E-05
Ethane	No	7.120%	6.10E+03	1.54E-03	13.45828	0.00672914
Ethylbenzenek	Yes	0.003%	2.31E+00	5.81E-07	0.005089	2.54426E-06
Ethylene Dibromidek	Yes	0.003%	2.58E+00	6.48E-07	0.005678	2.83906E-06
Fluoranthenek	Yes	0.000%	6.45E-02	1.62E-08	0.000142	7.11366E-08
Fluorenek	Yes	0.000%	3.30E-01	8.30E-08	0.000727	3.63374E-07
Formaldehydek,l	Yes	3.581%	3.07E+03	7.73E-04	6.767592	0.003383796
Methanolk	Yes	0.170%	1.45E+02	3.66E-05	0.320435	0.000160218
Methylcyclohexane	No	0.083%	7.15E+01	1.80E-05	0.157654	7.88271E-05
Methylene Chloridek	Yes	0.001%	1.16E+00	2.93E-07	0.002563	1.28174E-06
n-Hexanek	Yes	0.075%	6.45E+01	1.62E-05	0.142273	7.11366E-05
n-Nonane	No	0.007%	6.40E+00	1.61E-06	0.014099	7.04958E-06
n-Octane	No	0.024%	2.04E+01	5.14E-06	0.044989	2.24946E-05
n-Pentane	No	0.176%	1.51E+02	3.80E-05	0.333253	0.000166626
Naphthalenek	Yes	0.005%	4.33E+00	1.09E-06	0.009536	4.76808E-06
PAHk	Yes	0.002%	1.56E+00	3.94E-07	0.003448	1.72394E-06
Phenanthrenek	Yes	0.001%	6.05E-01	1.52E-07	0.001333	6.66505E-07
Phenolk	Yes	0.002%	1.40E+00	3.51E-07	0.003076	1.53809E-06
Propane	No	2.841%	2.44E+03	6.13E-04	5.370495	0.002685247
Pyrenek	Yes	0.000%	7.91E-02	1.99E-08	0.000174	8.71584E-08
Styrenek	Yes	0.002%	1.37E+00	3.45E-07	0.003025	1.51245E-06
Tetrachloroethanek	Yes	0.000%	1.44E-01	3.63E-08	0.000318	1.58936E-07
Toluenek	Yes	0.028%	2.37E+01	5.97E-06	0.052295	2.61475E-05
Vinyl Chloridek	Yes	0.001%	8.66E-01	2.18E-07	0.00191	9.54897E-07
Xylenek	Yes	0.012%	1.07E+01	2.69E-06	0.023584	1.1792E-05
Total			85,735	0.02	189.01	0.09

AP-42

1 boiler horsepower (BHP) = 33520 BTU/hr			Total HAPS Lbs/hr
198	BHP		0.48
6.63696	MM BTU/HR		Total HC Lbs/ MM Btu
			1.47

UNCONTROLLED EMISSION FACTORS FOR
4-STROKE LEAN-BURN NATURAL GAS ENGINES

Pollutant	HAP	Emission Factor (lb/MMBtu) (fuel input)	Emissions ISX Test Lbs/Hr (198 BPH)
Methane	NO	1.25	8.30E+00
1,1,2,2-Tetrachloroethanek	Yes		
		4.00E-05	2.65E-04
1,1,2-Trichloroethanek	Yes	3.18E-05	2.11E-04
1,1-Dichloroethane	Yes	2.36E-05	1.57E-04
1,2,3-Trimethylbenzene	No	2.30E-05	1.53E-04
1,2,4-Trimethylbenzene	No	1.43E-05	9.49E-05
1,2-Dichloroethane	Yes	2.36E-05	1.57E-04
1,2-Dichloropropane	No	2.69E-05	1.79E-04
1,3,5-Trimethylbenzene	No	3.38E-05	2.24E-04
1,3-Butadienek	Yes	2.67E-04	1.77E-03
1,3-Dichloropropene	Yes		
		2.64E-04	1.75E-03
2-Methylnaphthalene	Yes		
		3.32E-05	2.20E-04
2,2,4-Trimethylpentane	Yes	2.50E-04	1.66E-03
Acenaphthenek	Yes	1.25E-06	8.30E-06
Acenaphthylenek	Yes		
		5.53E-06	3.67E-05
Acetaldehydek,l	Yes	8.36E-03	5.55E-02
Acroleink,l	Yes		
		5.14E-03	3.41E-02
Benzenek	Yes		
		4.40E-04	2.92E-03
Benzo(b)fluoranthenek	Yes	1.66E-07	1.10E-06
Benzo(e)pyrenek	Yes		
		4.15E-07	2.75E-06
Benzo(g,h,i)perylenek	Yes		
		4.14E-07	2.75E-06
Biphenylk	Yes		
		2.12E-04	1.41E-03
Butane	No	5.41E-04	3.59E-03
Butyr/Isobutyraldehyde	Yes	1.01E-04	6.70E-04
Carbon Tetrachloridek	Yes	3.67E-05	2.44E-04
Chlorobenzenek	Yes	3.04E-05	2.02E-04
Chloroethane	No	1.87E-06	1.24E-05
Chloroformk	Yes	2.85E-05	1.89E-04
Chrysene	Yes	6.93E-07	4.60E-06
Cyclopentane	No		
		2.27E-04	1.51E-03
Ethane	No	1.05E-01	6.97E-01
Ethylbenzenek	Yes	3.97E-05	2.63E-04
Ethylene Dibromidek	Yes	4.43E-05	2.94E-04
Fluoranthenek	Yes	1.11E-06	7.37E-06
Fluorene	Yes	5.67E-06	3.76E-05
Formaldehydek,l	Yes	5.28E-02	3.50E-01
Methanolk	Yes	2.50E-03	1.66E-02
Methylcyclohexane	No	1.23E-03	8.16E-03
Methylene Chloridek	Yes	2.00E-05	1.33E-04
n-Hexanek	Yes	1.11E-03	7.37E-03
n-Nonane	No		
		1.10E-04	7.30E-04
n-Octane	No		
		3.51E-04	2.33E-03
n-Pentane	No	2.60E-03	1.73E-02
Naphthalenek	Yes	7.44E-05	4.94E-04
PAHk	Yes	2.69E-05	1.79E-04
Phenanthrene	Yes	1.04E-05	6.90E-05
Phenolk	Yes	2.40E-05	1.59E-04
Propane	No	4.19E-02	2.78E-01
Pyrene	Yes	1.36E-06	9.03E-06
Styrene	Yes	2.36E-05	1.57E-04
Tetrachloroethane	Yes	2.48E-06	1.65E-05
Toluene	Yes	4.08E-04	2.71E-03
Vinyl Chloridek	Yes	1.49E-05	9.89E-05
Xylene	Yes	1.84E-04	1.22E-03

NG HAP Speciation
UNCONTROLLED EMISSION FACTORS FOR
4-STROKE LEAN-BURN NATURAL GAS ENGINES

Pollutant	HAP	Emission Factor (lb/MMBtu) (fuel input)	Emissions HD II Test Lbs/Hr (198 BPH)	Percent of HAPS
Formaldehydek,l	Yes	5.28E-02	3.50E-01	72.7%
Acetaldehydek,l	Yes	8.36E-03	5.55E-02	11.5%
Acroleink,l	Yes	5.14E-03	3.41E-02	7.1%
Methanolk	Yes	2.50E-03	1.66E-02	3.4%
n-Hexanek	Yes	1.11E-03	7.37E-03	1.5%
Benzenek	Yes	4.40E-04	2.92E-03	0.6%
Toluene	Yes	4.08E-04	2.71E-03	0.6%
1,3-Butadienek	Yes	2.67E-04	1.77E-03	0.4%
1,3-Dichloropropene	Yes			
		2.64E-04	1.75E-03	0.4%
2,2,4-Trimethylpentane	Yes			
		2.50E-04	1.66E-03	0.3%
Biphenylk	Yes	2.12E-04	1.41E-03	0.3%
Xylene	Yes	1.84E-04	1.22E-03	0.3%
Butyr/Isobutyraldehydek	Yes			
		1.01E-04	6.70E-04	0.1%
Naphthalenek	Yes	7.44E-05	4.94E-04	0.1%
Ethylene Dibromidek	Yes			
		4.43E-05	2.94E-04	0.1%
1,1,2,2-Tetrachloroethanek	Yes			
		4.00E-05	2.65E-04	0.1%
Ethylbenzenek	Yes	3.97E-05	2.63E-04	0.1%
Carbon Tetrachloridek	Yes			
		3.67E-05	2.44E-04	0.1%
2-Methylnaphthalene	Yes			
		3.32E-05	2.20E-04	0.0%
1,1,2-Trichloroethanek	Yes			
		3.18E-05	2.11E-04	0.0%
Chlorobenzenek	Yes	3.04E-05	2.02E-04	0.0%
Chloroformk	Yes	2.85E-05	1.89E-04	0.0%
PAHk	Yes	2.69E-05	1.79E-04	0.0%
Phenolk	Yes	2.40E-05	1.59E-04	0.0%
1,1-Dichloroethane	Yes	2.36E-05	1.57E-04	0.0%
1,2-Dichloroethane	Yes	2.36E-05	1.57E-04	0.0%
Styrene	Yes	2.36E-05	1.57E-04	0.0%
Methylene Chloridek	Yes			
		2.00E-05	1.33E-04	0.0%
Vinyl Chloridek	Yes	1.49E-05	9.89E-05	0.0%
Phenanthrene	Yes	1.04E-05	6.90E-05	0.0%
Fluorene	Yes	5.67E-06	3.76E-05	0.0%
Acenaphthylenek	Yes	5.53E-06	3.67E-05	0.0%
Tetrachloroethane	Yes	2.48E-06	1.65E-05	0.0%
Pyrene	Yes	1.36E-06	9.03E-06	0.0%
Acenaphthenek	Yes	1.25E-06	8.30E-06	0.0%
Fluoranthenek	Yes	1.11E-06	7.37E-06	0.0%
Chrysene	Yes	6.93E-07	4.60E-06	0.0%
Benzo(e)pyrene	Yes	4.15E-07	2.75E-06	0.0%
Benzo(g,h,i)perylene	Yes			
		4.14E-07	2.75E-06	0.0%
Benzo(b)fluoranthenek	Yes			
		1.66E-07	1.10E-06	0.0%

7.26E-02

Storage Tank Emission Calculation Methods and Assumptions

$L_b = 0.0226 (M_v)(V_p/14.7-V_p)^{0.68}(D)^{1.73}(H)^{0.51}(dT)^{0.5}(F_p)(C)(K_c)$

where:		
L _b =	calculated	breathing losses, pounds per year
M _v =	on Tank Calc	vapor molecular weight of the material being stored, lb/lb-mol
V _p =	on Tank Calc	vapor pressure of the material at the average liquid surface temperature, psia
D =	on Tank Calc	tank diameter, feet
H =	on Tank Calc	average height of the tank's vapor space, feet (see note "a" below)
dT =	on Tank Calc	average daily change in temperature, °F (see note "b" below)
F _p =	on Tank Calc	paint factor (see note "c" below)
C =	on Tank Calc	small diameter adjustment factor (see note "d" below)
K _c =	on Tank Calc	product factor (see note "e" below)

- Notes:**
- a The average vapor space height is usually assumed to be half of the tank height.
 - b The average daily temperature change in temperature can be obtained from local weather stations; a default value of 21 °F is used in this spreadsheet.
 - c Tanks may attract and retain heat differently depending on the color of the paint. The default paint factors used in this spreadsheet is F_p
 - d There is an adjustment factor for small diameter tanks; for this spreadsheet, the default value of C = 1 will be used to assume worst case emissions.
 - e The product factor used for this spreadsheet is K_p = 1.
K_p = 0.75 for crude oils; K_p = 1 for all other organic liquids

REFERENCE: Former AP-42 storage tank calculation; shown to be more conservative than latest versions.

M _v =	150		
V _p =	0.007663	L _b =	0.133661 Lbs
D =	2		
H =	6		
dT =	21		
F _p =	1		
C =	1		
K _c =	1		

$L_w = 2.4 * 10^{-5} (M_v)(V_p)(Q)(K_n)(K_p)$

where:		
L _w =	calculated	working losses, pounds per unit of time
M _v =	on Tank Calc	vapor molecular weight of the material being loaded, lb/lb-mol
V _p =	on Tank Calc	vapor pressure of the material at the average liquid surface temperature, psia
Q =	on Tank Calc	net throughput, gallons per unit of time
K _n =	on Tank Calc	turnover factor (see note "a" below)
K _p =	on Tank Calc	product factor (see note "b" below)

- Notes:**
- a The turnover factor is adjusted to 1.0 to assure a conservative estimate of emissions. For tank turnovers greater than 36, total tank emissions are reduced by using the following equations:
where, K_n = (180+N)/6N if N>36, else K_n=1 (N = number of turnovers),
and N = 5.614Q/V_{LX}, where V_{LX} is the tank maximum liquid volume.
 - b The working loss product factor used for this spreadsheet is K_p = 1.
K_p = 0.75 for crude oils; K_p = 1 for all other organic liquids

REFERENCE: Former AP-42 storage tank calculation; shown to be more conservative than latest versions.

L _w =	0.456203404		
	0.000024		
M _v =	150		
V _p =	0.007663	Total Emissions	0.589864 PTE
Q =	25029		
K _n =	0.880952381		
K _p =	0.75		

Gasoline Hydrocarbon Speciation

		% of emissions	Requested Permitting Engine Emissions		
	Hydrocarbon	oxygenate free	g/yr	lb/yr	ton/yr
Non-VOC	Methane	13.88%	955,054	2,105	1.0527
	Acetone	0.47%	32,340	71	0.0356
HAP	Hexane	0.70%	48,166	106	0.0531
	Acetaldehyde	0.50%	34,404	76	0.0379
	Acrolein	0.06%	4,128	9	0.0046
	Benzene	4.10%	282,112	622	0.3110
	Ethylbenzene	1.47%	101,148	223	0.1115
	Toluene	10.40%	715,602	1,578	0.7888
	1,3-butadiene	0.50%	34,404	76	0.0379
	Isopropylbenzene (Cumene)	0.01%	688	2	0.0008
	Formaldehyde	1.10%	75,689	167	0.0834
	Methyl Ethyl Ketone	0.17%	11,697	26	0.0129
	Propionaldehyde	0.06%	4,128	9	0.0046
	Styrene	3.00%	206,424	455	0.2275
	m-Xylene	4.32%	297,250	655	0.3277
	o-Xylene	1.54%	105,964	234	0.1168
	2,2,4-Trimethylpentane	4.32%	297,250	655	0.3277
	Naphthalene	0.20%	13,762	30	0.0152
Other VOC	n-Pentane	1.19%	81,881	181	0.0903
	n-Heptane	0.24%	16,514	36	0.0182
	n-Octane	0.20%	13,762	30	0.0152
	n-Nonane	0.05%	3,440	8	0.0038
	n-Decane	0.19%	13,074	29	0.0144
	n-Undecane	0.40%	27,523	61	0.0303
	n-Dodecane	0.09%	6,193	14	0.0068
	Miscellaneous VOC	50.84%	3,498,194	7,712	3.8560

HAP Totals	32.45%	2,232,817	4,922	2.461
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Unspeciated Emissions

	Requested Permitting Engine Emissions		
	g/yr	lb/yr	ton/yr
Oxygenate Free	6880791	15169.3	7.5846

Boiler Emissions

Methodology: No.2 oil Emission Factor for <100 Mbtu/hr boiler (lb/1000 gal) from AP-42 table 1.3-1

Pollutant	Emission Factor lb/10 ³ gal	
PM	3.3	
SO ₂	0.0027	S= %of sulfur S = 500 ppm (0.05%)
NO _x	20	
CO	5	
VOC	0.34	

BTU Content:	140,000	BTU/gal of #2 Fuel Oil
Max. Heat Input/Boiler:	400,000	BTU/hr
Consumption Rate:	2.86	gal/hr/boiler
Potential Consumption Rate (8760 hr/yr):	25,029	gal/yr/boiler
No. of Boilers:	3	

Potential to Emit (PTE) per Boiler

	lbs/yr		TPY
PM	83	=>	0.041
SO ₂	178	=>	0.089
NO _x	501	=>	0.250
CO	125	=>	0.063
VOC	9	=>	0.004

PTE - all 3 boilers

0.124	TPY
0.267	TPY
0.751	TPY
0.188	TPY
0.013	TPY

Potential to Emit - Natural Gas Fired Space Heaters

Space Heater #	Max. Heat Input (BTU/hr)	Natural Gas Consumption (cfh)	Natural Gas Consumption (cfy)	CO (lbs/yr)	VOC (lbs/yr)	NOx (lbs/yr)	SO2 (lbs/yr)	PM-10 (lbs/yr)
1	204,000	204	1,787,040	71	10	168	1	14
2	204,000	204	1,787,040	71	10	168	1	14
3	125,000	125	1,095,000	44	6	103	1	8
4	125,000	125	1,095,000	44	6	103	1	8
5	115,000	115	1,007,400	40	6	95	1	8
6	190,000	190	1,664,400	67	9	156	1	13
7	100,000	100	876,000	35	5	82	1	7
8	204,000	204	1,787,040	71	10	168	1	14
9	245,000	245	2,146,200	86	12	202	1	16
10	125,000	125	1,095,000	44	6	103	1	8
11	100,000	100	876,000	35	5	82	1	7
12	375,000	375	3,285,000	131	18	309	2	25
				740	102	1,739	11	141

BTU Content: 1,000 BTU/cubic foot of natural gas

Pollutant	Emission Factor (lbs/million cubic feet)
CO	40
VOC	5.5
NOx	94
SO2	0.6
PM-10	7.6

Emission factors obtained from section 1.4 of AP-42 (July 1998), tables 1.4-1 and 1.4-2.

Cooling Tower PM-10 Emission Factor Obtained from Table 13.4-1 of AP-42

Type: Induced Draft
Emission Factor: 0.019 lbs/1000 gallons
Recirculation Rate: 550 Gallons/minute
Minutes/Hour: 60
Hours/Year: 8,760
Pounds/Ton: 2,000

PTE: 2.746 tons/yr

Storage Tank Emissions

								Requested Controlled Speciated Emissions												
Tank	Material in Tanks	Capacity	Diameter/ Length	Recovery System on Delivery	Requested Fuel Used (gal/yr)	Uncontrolled Emissions (lbs/yr)	Requested Controlled Emissions (lbs/yr)	Lead (lbs/yr)	Benzene (lbs/yr)	Ethylbenzene (lbs/yr)	n-Hexane (lbs/yr)	Isopropylb enzene {Cumene} (lbs/yr)	Styrene (lbs/yr)	Toluene (lbs/yr)	2,2,4- Trimethyl benzene (lbs/yr)	m- and p- Xylene (lbs/yr)	o-Xylene (lbs/yr)	MTBE (lbs/yr)	Naphthalene (lbs/yr)	Anthracene (lbs/yr)
28 "G"	Gasoline	8000	96" 252"	Yes	7,000	64.44	6.44	0.00	0.071	0.017	0.115	0.001	0.001	0.202	0.095	0.061	0.021	0.000	0.000	0.000
29 "J"	Gasoline	8000	96" 252"	Yes	35,000	322.22	32.22	0.00	0.354	0.087	0.577	0.006	0.003	1.009	0.474	0.303	0.106	0.000	0.000	0.000
30A	Gasoline	2000	64" 144"	Yes	6,000	55.24	5.52	0.00	0.061	0.015	0.099	0.001	0.001	0.173	0.081	0.052	0.018	0.000	0.000	0.000
30B	Gasoline	2000	64" 144"	Yes	3,500	32.22	3.22	0.00	0.035	0.009	0.058	0.001	0.000	0.101	0.047	0.030	0.011	0.000	0.000	0.000
31A	Gasoline	2000	64" 144"	Yes	39,000	359.05	35.91	0.00	0.395	0.097	0.643	0.007	0.004	1.124	0.528	0.338	0.118	0.000	0.000	0.000
31B	Diesel	2000	64" 144"	Yes	16,000	0.27	0.03	0.00	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.001	0.002
32A	Gasoline	2000	64" 144"	Yes	1,500	13.81	1.38	0.00	0.015	0.004	0.025	0.000	0.000	0.043	0.020	0.013	0.005	0.000	0.000	0.000
32B	Gasoline	2000	64" 144"	Yes	12,500	115.08	11.51	0.00	0.127	0.031	0.206	0.002	0.001	0.360	0.169	0.108	0.038	0.000	0.000	0.000
33L	Gasoline	564	48" 72"	Yes	9,000	237.68	23.77	0.00	0.261	0.064	0.425	0.005	0.002	0.744	0.349	0.223	0.078	0.000	0.000	0.000
6				Totals	129,500	1200.01	120.00	0.00	1.32	0.32	2.15	0.02	0.01	3.76	1.76	1.13	0.40	0.00	0.00	0.00
								Tons	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

HAP	Oxygenate Free	Diesel
Benzene	1.10	0.00
Ethylbenzene	0.27	0.00
n-Hexane	1.79	0.00
Isopropylbenzene	0.02	0.00
Styrene	0.01	0.00
Toluene	3.13	0.00
2,2,4-Trimethylpentane	1.47	0.00
m- and p-Xylene	0.94	0.00
o-Xylene	0.33	0.00
Methyl t-Butyl Ether	0.00	0.00
Naphthalene	0.00	3.00
Anthracene	0.00	9.20

Combined Emissions

VOC	HAP	Hydrocarbon	Engines (ton/yr)	Storage Tanks (ton/yr)	Parts Washers (tons/yr)	Total (tons/yr)
NO	NO	Methane	1.0527	0.00	0.00	1.05
NO	NO	Acetone	0.0356	0.00	0.00	0.04
YES	YES	Hexane	0.0531	0.00	0.00	0.05
YES	YES	Acetaldehyde	0.0968	0.00	0.00	0.10
YES	YES	Acrolein	0.0046	0.00	0.00	0.00
YES	YES	Anthracene	0.0000	0.00	0.00	0.00
YES	YES	Benzene	0.3110	0.00	0.00	0.31
YES	YES	Toluene	0.7888	0.00	0.00	0.79
YES	YES	1,3-butadiene	0.0379	0.00	0.00	0.04
YES	YES	Ethylbenzene	0.1115	0.00	0.00	0.11
YES	YES	Isopropylbenzene (Cumene)	0.0008	0.00	0.00	0.00
YES	YES	Formaldehyde	0.2576	0.00	0.00	0.26
YES	YES	Methyl Ethyl Ketone	0.0129	0.00	0.00	0.01
YES	YES	Styrene	0.2275	0.00	0.00	0.23
YES	YES	Propionaldehyde	0.0099	0.00	0.00	0.01
YES	YES	2,2,4- Trimethylpentane	0.3277	0.00	0.00	0.33
YES	YES	Naphthalene	0.0152	0.00	0.00	0.02
YES	YES	Xylenes	0.4445	0.00	0.00	0.45

Tank	Material in Tanks	Emissions (TPY)
28 "G"	Gasoline	0.0032
29 "J"	Gasoline	0.0161
30A	Gasoline	0.0028
30B	Gasoline	0.0016
31A	Gasoline	0.0180
31B	Diesel	0.0000
32A	Gasoline	0.0007
32B	Gasoline	0.0058
33L	Gasoline	0.0119

	Indirect Heat Exchangers (Boilers)	Engines	Storage Tanks	Parts Washers	Space Heaters
PM (TPY)	0.124	0.102	0.000	0.000	0.070
SO ₂ (TPY)	0.267	0.087	0.000	0.000	0.006
NO _x (TPY)	0.751	11.077	0.000	0.000	0.870
CO (TPY)	0.188	89.928	0.000	0.000	0.370
VOC (TPY)	0.013	7.585	0.060	0.077	0.051
Pb (TPY)	N/A	0.000	NA	N/A	N/A

Pollutant	Calculated (tons/yr)	Requested (tons/yr)
Total VOC	7.786	15.0
Total HAP	2.705	10.0
Ind. Hap	0.791	3.0
PM10	0.297	2.0
NO _x	12.698	15.0
CO	90.485	90.0
SO _x	0.359	1.0
Pb (TPY)	NA	NA