

**Commonwealth of Kentucky
Energy and Environment Cabinet
Department for Environmental Protection
Division for Air Quality
300 Sower Boulevard, 2nd Floor
Frankfort, Kentucky 40601
(502) 564-3999**

Draft

**AIR QUALITY PERMIT
Issued under 401 KAR 52:020**

Permittee Name: Westlake Chemical OpCo LP
Mailing Address: 2468 Industrial Parkway, Calvert City, KY 42029

Source Name: Westlake Chemical OpCo LP
Mailing Address: 2468 Industrial Parkway, Calvert City, KY 42029

Source Location: Same as above

Permit: V-20-022 R2
Agency Interest: 122899
Activity: APE20220006, APE20220007, APE20230002,
APE20230003, APE20230004

Review Type: Title V, Operating
Source ID: 21-157-00080

Regional Office: Paducah Regional Office
130 Eagle Nest Drive
Paducah, KY 42003
(270) 898-8468

County: Marshall

Application
Complete Date: October 16, 2020
Issuance Date: March 7, 2021
Revision Date:
Expiration Date: March 7, 2026

(

**For Michael J. Kennedy, P.E.
Director
Division for Air Quality**

TABLE OF CONTENTS

SECTION		ISSUANCE	PAGE																																																																				
A. PERMIT AUTHORIZATION		Revision 1	1																																																																				
B. EMISSION POINTS, EMISSIONS UNITS, APPLICABLE REGULATIONS, AND OPERATING CONDITIONS		Revision 2	2																																																																				
	<table><tr><th>EU#</th><th>EPN</th><th>Description</th><th></th></tr><tr><td>005</td><td>(305-307, 311)</td><td>4 Cracking Furnaces</td><td>2</td></tr><tr><td>006</td><td>(327, 328, 329)</td><td>3 Cracking Furnaces</td><td>2</td></tr><tr><td></td><td>(326A)</td><td>Ethylene Decoking Pot</td><td>13</td></tr><tr><td>DRH</td><td>(313)</td><td>Dryer Regeneration Heater</td><td>16</td></tr><tr><td>RRH</td><td>(314)</td><td>Reactor Regeneration Heater</td><td>16</td></tr><tr><td>332</td><td>(332BR)</td><td>Fuel Oil Storage Tank</td><td>19</td></tr><tr><td>022</td><td>(319, 320)</td><td>2 Gasoline Storage Tanks (TK-904A & B)</td><td>20</td></tr><tr><td>007A</td><td>(321A)</td><td>Ethylene Flare</td><td>25</td></tr><tr><td>025</td><td>(FUG-ETH-YY)</td><td>Ethylene Plant Fugitives</td><td>67</td></tr><tr><td>025A</td><td>(FUG-ETH-VVa)</td><td>Ethylene Plant Fugitives Subject to VVa</td><td>104</td></tr><tr><td>025B</td><td>(FUG-ETH)</td><td>Ethylene Plant Fugitives not in LDAR</td><td>104</td></tr><tr><td></td><td>(ET-1)</td><td>Ethylene Wastewater Pre-Treatment Plant</td><td>125</td></tr><tr><td>025C</td><td>(FF-1)</td><td>Plant-wide Uncontrolled Benzene Emissions</td><td>125</td></tr><tr><td>008</td><td>(342)</td><td>River VCU</td><td>138</td></tr><tr><td>023</td><td>(364A)</td><td>No. 4A Cooling Water Tower</td><td>140</td></tr><tr><td>379</td><td>(379)</td><td>EMACT Applicable Maintenance Vents</td><td>147</td></tr></table>	EU#	EPN	Description		005	(305-307, 311)	4 Cracking Furnaces	2	006	(327, 328, 329)	3 Cracking Furnaces	2		(326A)	Ethylene Decoking Pot	13	DRH	(313)	Dryer Regeneration Heater	16	RRH	(314)	Reactor Regeneration Heater	16	332	(332BR)	Fuel Oil Storage Tank	19	022	(319, 320)	2 Gasoline Storage Tanks (TK-904A & B)	20	007A	(321A)	Ethylene Flare	25	025	(FUG-ETH-YY)	Ethylene Plant Fugitives	67	025A	(FUG-ETH-VVa)	Ethylene Plant Fugitives Subject to VVa	104	025B	(FUG-ETH)	Ethylene Plant Fugitives not in LDAR	104		(ET-1)	Ethylene Wastewater Pre-Treatment Plant	125	025C	(FF-1)	Plant-wide Uncontrolled Benzene Emissions	125	008	(342)	River VCU	138	023	(364A)	No. 4A Cooling Water Tower	140	379	(379)	EMACT Applicable Maintenance Vents	147		
EU#	EPN	Description																																																																					
005	(305-307, 311)	4 Cracking Furnaces	2																																																																				
006	(327, 328, 329)	3 Cracking Furnaces	2																																																																				
	(326A)	Ethylene Decoking Pot	13																																																																				
DRH	(313)	Dryer Regeneration Heater	16																																																																				
RRH	(314)	Reactor Regeneration Heater	16																																																																				
332	(332BR)	Fuel Oil Storage Tank	19																																																																				
022	(319, 320)	2 Gasoline Storage Tanks (TK-904A & B)	20																																																																				
007A	(321A)	Ethylene Flare	25																																																																				
025	(FUG-ETH-YY)	Ethylene Plant Fugitives	67																																																																				
025A	(FUG-ETH-VVa)	Ethylene Plant Fugitives Subject to VVa	104																																																																				
025B	(FUG-ETH)	Ethylene Plant Fugitives not in LDAR	104																																																																				
	(ET-1)	Ethylene Wastewater Pre-Treatment Plant	125																																																																				
025C	(FF-1)	Plant-wide Uncontrolled Benzene Emissions	125																																																																				
008	(342)	River VCU	138																																																																				
023	(364A)	No. 4A Cooling Water Tower	140																																																																				
379	(379)	EMACT Applicable Maintenance Vents	147																																																																				
C. INSIGNIFICANT ACTIVITIES		Revision 2	151																																																																				
D. SOURCE EMISSION LIMITATIONS AND TESTING REQUIREMENTS		Revision 2	152																																																																				
E. SOURCE CONTROL EQUIPMENT REQUIREMENTS		Renewal	159																																																																				
F. MONITORING, RECORDKEEPING, AND REPORTING REQUIREMENTS		Renewal	160																																																																				
G. GENERAL PROVISIONS		Revision 2	163																																																																				
H. ALTERNATE OPERATING SCENARIOS		Renewal	170																																																																				
I. COMPLIANCE SCHEDULE		Renewal	170																																																																				

Permit	Permit Type	Log or Activity#	Complete Date	Issuance Date	Summary of Action
V-20-022	Minor Revision	APE20200002	5/22/2020	3/7/2021	De-Ethanizer Bottoms Processing, Replacement of EPN 332B, Addition of EPN 332C/D
	Renewal	APE20200003	10/16/2020		Title V Renewal
V-20-022 R1	Admin Amendment	APE20220001	3/14/2022	1/23/2023	Listed reqs. for EPN 329 only, asked for testing of CO ₂ rather than CO _{2e} at EPN 326A, incorporated 502(b)(10) Change from Jan. 17, 2017.
	Minor Revision	APE20220002	6/7/2022		Installation of Flare Gas Recovery System to route excess flare gas to existing combustion devices. Updates to FUG-ETH-VVa fugitive components, addition of FUG-ETH-YY fugitive components.
	Admin Amendment	APE20220003	3/14/2022		Removal of EPNs 332C, 332D, 373, and Insignificant Activity EPN 326
V-20-022 R2	Admin Amendment	APE20220006	1/24/2023		Corporate level name change. No change to facility name or permit
	Minor Revision	APE20220007	1/27/2023		Increased firing rates of Furnaces 1, 2, 3, and 7 based on production increase from the Advanced Process Control Project ((502)(b)(10) Change incorporated in permit V-20-022.)
	Minor Revision	APE20230002 APE20230003	4/30/2024		Revision of 40 CFR 63, Subpart YY requirements. Additional physical and operational changes.
	Significant Revision	APE20230004	5/2/2024		Incorporation of Consent Decree for EPN 321A

SECTION A - PERMIT AUTHORIZATION

Pursuant to a duly submitted application the Kentucky Energy and Environment Cabinet (Cabinet) hereby authorizes the operation of the equipment described herein in accordance with the terms and conditions of this permit. This permit was issued under the provisions of Kentucky Revised Statutes (KRS) Chapter 224 and regulations promulgated pursuant thereto.

The permittee shall not construct, reconstruct, or modify any affected facilities without first submitting a complete application and receiving a permit for the planned activity from the permitting authority, except as provided in this permit or in 401 KAR 52:020, Title V Permits.

Issuance of this permit does not relieve the permittee from the responsibility of obtaining any other permits, licenses, or approvals required by the Cabinet or any other federal, state, or local agency.

SINGLE SOURCE DETERMINATION:

Westlake Chemical OpCo LP, Westlake Vinyls Inc., and Westlake Vinyls, Inc. – PVC Plant, are each a single “major source” as defined in 401 KAR 52:001, Section 1(45)(a), definition of major source. Each owner/operator is responsible and liable for their own violations, unless there is a joint cause for the violations.

SECTION B - EMISSION UNITS, EMISSION POINTS, APPLICABLE REGULATIONS, AND OPERATING CONDITION**EU# 005A-C (EPN 305-307) Three (3) Cracking Furnaces (#1, #2 and #3)**

Rating: 170 mmBtu/hr each
Primary Fuel: Process fuel gas *
Date of construction: 1963, rebuilt 2013, modified 2020
Control Device: Low NOx burners (LNB)

EU# 005D (EPN 311) One (1) Cracking Furnace (#7)

Rating: 90 mmBtu/hr
Fuel: Process fuel gas*
Date of construction: 1967, rebuilt 2014, modified 2020
Control Device: Low NOx burners (LNB)

EU# 006A-B (EPN 327-328) Two (2) Cracking Furnaces (#8 and #9)

Rating: 127 mmBtu/hr each
Fuel: Process fuel gas *
Date of construction: 1976, modified 2014
Control Device: Low NOx burners (LNB)

EU# 006C (EPN 329) One (1) Cracking Furnace (#10)

Rating: 150 mmBtu/hr
Fuel: Process fuel gas *
Date of construction: Proposed 2025
Control Devices: Low NOx burners (LNB) and Selective Catalytic Reduction (SCR)

* Process fuel gas (PFG) includes natural gas, ethylene plant fuel gas, hydrogen, propane, ethane, recovered flare gas and mixtures thereof.

APPLICABLE REGULATIONS:

401 KAR 51:017, Prevention of Significant Deterioration of Air Quality. (For CO, PM, PM₁₀, PM_{2.5}, VOC and CO_{2e}, applies to EU# 006C (EPN 329))

401 KAR 59:015, New Indirect Heat Exchangers.

401 KAR 60:005, Section 2(2)(ttt), 40 C.F.R. 60.700 through 60.708 (Subpart RRR), Standards of Performance for Volatile Organic Compound Emissions from Synthetic Organic Chemical Manufacturing Industry (SOCMI) Reactor Processes.

401 KAR 63:002, Section 2(4)(oo), 40 C.F.R. 63.1100 through 63.1114 (Subpart YY), National Emission Standards for Hazardous Air Pollutants for Source Categories: Generic Maximum Achievable Control Technology Standards.

1. Operating Limitations:

- a. Pursuant to 401 KAR 52:020, Section 10, the following maximum hourly firing rates shall not be exceeded: (on a 24-hour average basis)
 - (1) For EU#005A-C (EPN 305-307): 190 mmBtu/hr each.
 - (2) For EU#005D (EPN 311): 105 mmBtu/hr.
 - (3) For EU#006A-B (EPN 327-328): 135 mmBtu/hr each.
 - (4) For EU#006C (EPN 329): 184 mmBtu/hr.

SECTION B - EMISSION POINTS, EMISSIONS UNITS, APPLICABLE REGULATIONS, AND OPERATING CONDITIONS (CONTINUED)

- b. Pursuant to 401 KAR 52:020, Section 10, the following annual average firing rates shall not be exceeded: (on a 12-month rolling basis)
- (1) For EU#005A-C (EPN 305-307): 170 mmBtu/hr each.
 - (2) For EU#005D (EPN 311): 90 mmBtu/hr.
 - (3) For EU#006A-B (EPN 327-328): 127 mmBtu/hr each.
 - (4) For EU#006C (EPN 329): 150 mmBtu/hr.

Compliance Demonstration Method:

- (1) For compliance with **1. Operating Limitations** a. and b. see **3. Source Operating Limitations** in **Section D**.

- c. Pursuant to 401 KAR 51:017, Section 8, for EU# 006C (EPN 329), the following control technology, equipment and method are required to meet Best Available Control Technology (BACT) demonstration for Carbon Monoxide (CO), Volatile Organic Compounds (VOC), Particulate Matter (PM), PM₁₀, and PM_{2.5} emissions:
- (1) Utilizing clean, gaseous fuel;
 - (2) Proper design and operation; and
 - (3) Conducting good combustion practices.

Compliance Demonstration Method:

- (1) Continuous compliance with **1. Operating Limitations** c.(1) shall be demonstrated by keeping records of the fuel used. See **3. Source Operating Limitations** in **Section D**.
 - (2) Continuous compliance with **1. Operating Limitations** c.(2) and c.(3) shall be demonstrated by keeping records in accordance with **3. Source Operating Limitations** in **Section D** and by the following:
 - (i) Calibrations on the excess oxygen analyzer as per the manufacturer's recommendations following 40 CFR 60 Appendix B4, but no less than once every quarter;
 - (ii) Calibrations and filter checks on the fuel gas analyzer as per the manufacturer's recommendations;
 - (iii) Calibration of the fuel gas flow meter as per the manufacturer's recommendations following the procedures in 40 CFR 98.33 and quality assurance requirements of 40 CFR 98.34;
 - (iv) Inspect the burners and clean / replace components as per the manufacturer's recommendations;
 - (v) Inspect the burner flame pattern and adjust as per the manufacturer's recommendations;
 - (vi) Inspect the furnace, insulation, piping and refractory and repair / replace components as per the manufacturer's recommendations;
- d. Pursuant to 401 KAR 51:017, Section 8, for EU# 006C (EPN 329), the following control technology, equipment and method are required to meet BACT demonstration for Greenhouse Gases (GHG) (as CO_{2e}) emissions:
- (1) Utilizing clean, gaseous fuel;
 - (2) Good heater design, including insulation and minimization of potential for air infiltration;

SECTION B - EMISSION POINTS, EMISSIONS UNITS, APPLICABLE REGULATIONS, AND OPERATING CONDITIONS (CONTINUED)

- (3) Good combustion practices and proper burner design and operation;
- (4) Proper furnace operation and maintenance; and
- (5) Preheating of combustion gases through a heat recovery system to reduce heat load and fuel consumption at the furnace.
- (6) Maintaining a minimum thermal efficiency of 87%.

Compliance Demonstration Method:

- (1) Continuous compliance with **1. Operating Limitations** d.(1) shall be demonstrated by keeping records of the fuel used. See **3. Source Operating Limitations** in **Section D**.
 - (2) Continuous compliance with **1. Operating Limitations** d.(2) through d.(6) shall be demonstrated by keeping records in accordance with **3. Source Operating Limitations** in **Section D** and by the following:
 - (i) Calibrations on the excess oxygen analyzer as per the manufacturer's recommendations following 40 CFR 60 Appendix B4, but no less than once every quarter;
 - (ii) Calibrations and filter checks on the fuel gas analyzer as per the manufacturer's recommendations;
 - (iii) Calibration of the fuel gas flow meter as per the manufacturer's recommendations following the procedures in 40 CFR 98.33 and quality assurance requirements of 40 CFR 98.34;
 - (iv) Inspect the burners and clean / replace components as per the manufacturer's recommendations;
 - (v) Inspect the burner flame pattern and adjust as per the manufacturer's recommendations;
 - (vi) Inspect the furnace, insulation, piping and refractory and repair / replace components as per the manufacturer's recommendations;
 - (vii) Conduct periodic thermography readings of the furnace shell in areas recommended by the manufacturer and according to the schedule recommended by the manufacturer (at least annually).
 - (3) Initial compliance with **1. Operating Limitations** d.(6) shall be demonstrated by providing the thermal efficiency of the furnace from the manufacturer. In addition, the permittee will conduct maintenance at the frequency as provided in the manufacturer's specifications.
 - (4) Continuous compliance with **1. Operating Limitations** d.(6) shall be demonstrated by keeping continuous records of furnace exhaust temperature, and any other parameters as recommended by the manufacturer.
- e. Pursuant to 401 KAR 52:020, Section 10, the decoking pot (EPN 326A) from all furnaces (EPN 306, 307, 308, 311, 327, 328 and 329) shall be limited to no more than 1,500 operating hours per year, based on a 12-month rolling basis.

Compliance Demonstration Method:

See **5. Specific Recordkeeping Requirements** for EPN 326A.

- f. Pursuant to 401 KAR 59:015, Section 7(1)(a), the permittee shall comply with 401 KAR 50:055, Section 2(5).

SECTION B - EMISSION POINTS, EMISSIONS UNITS, APPLICABLE REGULATIONS, AND OPERATING CONDITIONS (CONTINUED)

- g. Pursuant to 401 KAR 59:015, Section 7(1)(b), the frequency and duration of startup periods or shutdown periods shall be minimized by the affected facility.
- h. Pursuant to 401 KAR 59:015, Section 7(1)(c), all reasonable steps shall be taken by the permittee to minimize the impact of emissions on ambient air quality from the affected facility during startup periods and shutdown periods.
- i. Pursuant to 401 KAR 59:015, Section 7(1)(d), the actions, including duration of the startup period, during startup periods, and shutdown periods, shall be documented by signed, contemporaneous logs or other relevant evidence.
- j. Pursuant to 401 KAR 59:015, Section 7(1)(e), startups and shutdowns shall be conducted according to either:
 - (1) The manufacturer's recommended procedures or,
 - (2) Recommended procedures for a unit of similar design, for which manufacturer's recommended procedures are available, as approved by the Cabinet based on documentation provided by the permittee.

Compliance Demonstration Method:

For **1. Operating Limitations** f. through j., See **5. Specific Recordkeeping Requirements** g.

- k. Pursuant to 401 KAR 51:017, Section 8, the permittee shall prepare and maintain for EU# 006C (EPN 329), within 60 days of achieving the maximum rate at which the unit is to be operated but no later than 180 days of startup, a good combustion and operation practices plan (GCOPP) that defines, measures and verifies the use of operational and design practices determined as BACT for minimizing CO, VOC, PM, PM₁₀, PM_{2.5} and GHG (as CO₂e) emissions. The permittee shall develop and maintain a GCOPP which shall be submitted to the Division for review. The permittee shall operate according to the provisions of this plan at all times, including periods of startup, shutdown, and malfunction. The plan shall be incorporated into the plant standard operating procedures (SOP) and shall be made available for the Division's inspection. The plan shall include, but not be limited to:
 - (1) A list of combustion optimization practices and a means of verifying the practices have occurred.
 - (2) A list of combustion and operation practices to be used to lower energy consumption and a means of verifying the practices have occurred.
- l. Pursuant to 401 KAR 51:017, Section 8, for EU# 006C (EPN 329), within 60 days of achieving the maximum rate at which the unit is to be operated but no later than 180 days of startup, the permittee shall define the maximum exhaust temperature of the gas exiting the furnace that will satisfy the minimum thermal efficiency requirements. The maximum exhaust temperature will be based on engineering estimates and analysis of the combined furnace and heat recovery system being installed. See **6. Specific Reporting Requirements** b.

SECTION B - EMISSION POINTS, EMISSIONS UNITS, APPLICABLE REGULATIONS, AND OPERATING CONDITIONS (CONTINUED)

- m. *Ethylene cracking furnace isolation valve inspections.* Pursuant to 40 CFR 63.1103(e)(8), beginning no later than the compliance dates specified in 40 CFR 63.1102(c), the permittee must conduct ethylene cracking furnace isolation valve inspections as specified in 40 CFR 63.1103(e)(8)(i) and (ii).
- (1) Prior to decoking operation, inspect the applicable ethylene cracking furnace isolation valve(s) to confirm that the radiant tube(s) being decoked is completely isolated from the ethylene production process so that no emissions generated from decoking operations are sent to the ethylene production process. If poor isolation is identified, then the permittee must rectify the isolation issue prior to continuing decoking operations to prevent leaks into the ethylene production process.
 - (2) Prior to returning the ethylene cracking furnace to normal operations after a decoking operation, inspect the applicable ethylene cracking furnace isolation valve(s) to confirm that the radiant tube(s) that was decoked is completely isolated from the decoking pot or furnace firebox such that no emissions are sent from the radiant tube(s) to the decoking pot or furnace firebox once the ethylene cracking furnace returns to normal operation. If poor isolation is identified, then the permittee must rectify the isolation issue prior to continuing normal operations to prevent product from escaping to the atmosphere through the decoking pot or furnace firebox.
- n. *Decoking operation standards for ethylene cracking furnaces.* Pursuant to 40 CFR 63.1103(e)(7), beginning no later than the compliance dates specified in 40 CFR 63.1102(c), the permittee must comply with 40 CFR 63.1103(e)(7)(i) and also use at least two of the control measures specified in 40 CFR 63.1103(e)(7)(ii) through (v) to minimize coke combustion emissions from the decoking of the radiant tube(s) in each ethylene cracking furnace.
- (1) During normal operations, conduct daily inspections of the firebox burners and repair all burners that are impinging on the radiant tube(s) as soon as practical, but not later than 1 calendar day after the flame impingement is found. The permittee may delay burner repair beyond 1 calendar day using the procedures specified in 40 CFR 63.1103(e)(7)(i)(A) and (B) provided the repair cannot be completed during normal operations, the burner cannot be shutdown without significantly impacting the furnace heat distribution and firing rate, and action is taken to reduce flame impingement as much as possible during continued operation. An inspection may include, but is not limited to: visual inspection of the radiant tube(s) for localized bright spots (this may be confirmed with a temperature gun), use of luminescent powders injected into the burner to illuminate the flame pattern, or identifying continued localized coke build-up that causes short runtimes between decoking cycles. A repair may include, but is not limited to: Taking the burner out of service, replacing the burner, adjusting the alignment of the burner, adjusting burner configuration, making burner air corrections, repairing a malfunction of the fuel liquid removal equipment, or adding insulation around the radiant tube(s).
 - (i) If a shutdown for repair would cause greater emissions than the potential emissions from delaying repair, repair must be completed following the next planned decoking operation (and before returning the ethylene cracking furnace back to normal operations) or during the next ethylene cracking furnace complete shutdown

SECTION B - EMISSION POINTS, EMISSIONS UNITS, APPLICABLE REGULATIONS, AND OPERATING CONDITIONS (CONTINUED)

(when the ethylene cracking furnace firebox is taken completely off-line), whichever is earlier.

- (ii) If a shutdown for repair would cause lower emissions than the potential emissions from delaying repair, then shutdown of the ethylene cracking furnace must immediately commence and the repair must be completed before returning the ethylene cracking furnace back to normal operations.
- (2) During decoking operations, beginning before the expected end of the air-in decoke time, continuously monitor (or use a gas detection tube or equivalent sample technique every three hours to monitor) the CO₂ concentration in the combined decoke effluent downstream of the last component being decoked for an indication that the coke combustion in the ethylene cracking furnace radiant tube(s) is complete. The permittee must immediately initiate procedures to stop the coke combustion once the CO₂ concentration at the outlet consistently reaches a level that indicates combustion of coke is complete and site decoke completion assurance procedures have been concluded.
- (3) During decoking operations, continuously monitor the temperature at the radiant tube(s) outlet when air is being introduced to ensure the coke combustion occurring inside the radiant tube(s) is not so aggressive (i.e., too hot) that it damages either the radiant tube(s) or ethylene cracking furnace isolation valve(s). The permittee must immediately initiate procedures to reduce the temperature at the radiant tube(s) outlet once the temperature reaches a level that indicates combustion of coke inside the radiant tube(s) is too aggressive.
- (4) After decoking, but before returning the ethylene cracking furnace back to normal operations, verify that decoke air is no longer being added.
- (5) After decoking, but before returning the ethylene cracking furnace back to normal operations and/or during normal operations, inject materials into the steam or feed to reduce coke formation inside the radiant tube(s) during normal operation.

Compliance Demonstration Method:

See **Section D.6**, and **5. Specific Recordkeeping Requirements h.** and **6. Specific Reporting Requirements c.**

2. Emission Limitations:

- a. Pursuant to 401 KAR 59:015, Section 4(1)(b), emissions of particulate matter from EU# 005A-C and D (EPN 305-307 and EPN 311) and EU# 006A-C (EPN 327-329) shall not exceed 0.1 lb/mmBtu.
- b. Pursuant to 401 KAR 59:015, Section 5(1)(b), emissions of sulfur dioxide from EU# 005A-C and D (EPN 305-307 and EPN 311) and EU# 006A-C (EPN 327-329) shall not exceed 0.8 lb/mmBtu.
- c. Pursuant to 401 KAR 59:015, Section 4(2)(c), for any fuel used, the opacity of visible emissions from EU# 005A-C and D (EPN 305-307 and EPN 311) and EU# 006A-C (EPN 327-329) shall not exceed 20 percent.

Compliance Demonstration Method:

For **2. Emissions Limitations a.** through **c.**:

SECTION B - EMISSION POINTS, EMISSIONS UNITS, APPLICABLE REGULATIONS, AND OPERATING CONDITIONS (CONTINUED)

Compliance with the particulate matter limit (lb/mmBtu), the sulfur dioxide limit (lb/mmBtu), and the opacity limit is demonstrated while burning process fuel gas.

- d. Pursuant to 401 KAR 51:017, Section 8, the following emissions limitations shall not be exceeded for EU# 006C (EPN 329) based on fuel heat value of 448 mmBtu/mmBtu:
- (1) 0.013 lb/mmBtu and 8.54 tons per year on a 12-month rolling basis of CO;
 - (2) 0.007 lb/mmBtu and 4.6 tons per year on a 12-month rolling basis of PM;
 - (3) 0.007 lb/mmBtu and 4.6 tons per year on a 12-month rolling basis of PM₁₀;
 - (4) 0.007 lb/mmBtu and 4.6 tons per year on a 12-month rolling basis of PM_{2.5};
 - (5) 0.005 lb/mmBtu and 3.3 tons per year on a 12-month rolling basis of VOC; and
 - (6) 30,775 tons per year on a 12-month rolling basis of CO_{2e} (Based on Equation 5 from 40 CFR 98.33(a)(3)(iii) for CO₂ and 40 CFR 98 Subpart C Table 2, Fuel Gas for CH₄ and N₂O).

Compliance Demonstration Method:

- (1) For compliance with **2. Emission Limitations** d., see **1. Operating Limitations** c and d. and **5. Specific Recordkeeping Requirements** b.
 - (2) For compliance with **2. Emission Limitations** d.(1) through (4), see **3. Testing Requirements**.
- e. Pursuant to 401 KAR 52:020, Section 10, emissions of NO_x from EU# 006C (EPN 329) shall not exceed 0.0095 lb/mmBtu and NH₃ (ammonia slip) shall not exceed 10 ppmvd at 3% O₂.

Compliance Demonstration Method:

For compliance with **2. Emission Limitations** e., the permittee shall:

- (1) Operate EU# 006C (EPN 329) with the controls of the low NO_x burners and, maintain all elements of the SCR system in good working order and in a manner consistent with good air pollution control practice for minimizing emissions.
- (2) Operate the control device at all times while EU# 006C (EPN 329) is in operation.
- (3) Ensure proper operation of the SCR, by maintaining an ammonia slip rate not to exceed 10 ppmvd at 3% O₂.
- (4) See **3. Testing Requirements** d. and **4. Specific Monitoring Requirements** b. and c.

3. Testing Requirements:

- a. For EU# 005 (EPN 305-307 and EPN 311) and EU# 006 (EPN 327 & 328), pursuant to 401 KAR 59:015, Section 8, the reference methods in Appendix A of 40 CFR 60 except as provided in 401 KAR 50:045 shall be used to determine compliance with standards as prescribed in Section 4, 5, and 6 of 401 KAR 59:015. Testing is only required when requested by the Division or otherwise indicated by the permit and/or applicable regulation.
- b. For furnaces subject to 40 CFR 60, Subpart RRR, complying with requirements in 40 CFR Part 65, 40 CFR 65.149(b)(2)(ii) exempts boilers and process heaters where the vent stream is introduced with or as the primary fuel from performance tests.
- c. Pursuant to 401 KAR 52:020, Section 10, the permittee shall conduct an initial performance test using reference methods in 401 KAR 50:015 to determine the CO, PM/PM₁₀ (filterable

SECTION B - EMISSION POINTS, EMISSIONS UNITS, APPLICABLE REGULATIONS, AND OPERATING CONDITIONS (CONTINUED)

and condensable)/PM_{2.5} (filterable and condensable) outlet concentrations in terms of ppmw, lb/mmBtu, and lb/mmscf for EU# 006C (EPN 329). The permittee shall also measure the heat content of the gaseous fuel being combusted during the test. See **Section G. 4.** and 5. Subsequent performance testing shall be conducted within 5 years of the previous test approved by the Division.

- d. Pursuant to 401 KAR 52:020, Section 10, the permittee shall conduct an initial performance test for NO_x on EU# 006C (EPN 329). The permittee shall measure the NO_x concentration in terms of ppmvd, lb/mmBtu, lb/mmscf and lb/hr, using EPA Method 7E or EPA Method 20 in Appendix A of 40 CFR 60.

4. Specific Monitoring Requirements:

- a. For furnaces subject to 40 CFR 60, Subpart RRR, complying with requirements in 40 CFR Part 65, 40 CFR 65.149(c)(1) exempts boilers and process heaters where all vent streams are introduced with or as the primary fuel from monitoring.
- b. Pursuant to 401 KAR 52:020, Section 10, for EU# 006C (EPN 329), the permittee shall install, calibrate, operate and maintain a CEMS for ammonia slip. The CEMS shall meet the requirements of 40 CFR Part 75 and 40 CFR Part 60 Appendix A. See **5. Specific Recordkeeping Requirements e.**
- c. Pursuant to 401 KAR 52:020, Section 10, for EU# 006C (EPN 329), the permittee shall install, calibrate, operate and maintain a CEMS for NO_x and oxygen (O₂) levels. The CEMS shall meet the requirements of 40 CFR Part 75 and 40 CFR Part 60 Appendix A.
- d. Pursuant to 401 KAR 52:020, Section 10, the permittee shall continuously monitor the exhaust temperature, and any other parameter as recommended by the manufacturer for EU# 006C (EPN 329).
- e. Pursuant to 401 KAR 51:017, Section 16, to preclude 401 KAR 51:017 as related to the application received by the Division on October 18, 2022, the permittee shall monitor and calculate annual PM₁₀ and PM_{2.5} emissions from EPNs 305 - 307, EPN 311, and EPNs 327 - 328 and maintain a record of the annual emissions in tons per year on a calendar year basis for ten (10) years while the units are in operation. The source shall submit a report to the Division if:
 - (1) The annual PM₁₀ or PM_{2.5} emissions, in tons per year, from the proposed project exceeds the baseline actual emissions by a significant amount; and
 - (2) The PM₁₀ or PM_{2.5} emissions differ from the projected actual emissions as submitted in the application for the modification related to the proposed project.

5. Specific Recordkeeping Requirements:

- a. Pursuant to 401 KAR 52:020, Section 10, the permittee shall keep records on file of the manufacturer's recommendations for criteria listed in **Compliance Demonstration Method to 1 Operating Limitations c.** and d. These records shall be available for review by Division personnel upon request.

SECTION B - EMISSION POINTS, EMISSIONS UNITS, APPLICABLE REGULATIONS, AND OPERATING CONDITIONS (CONTINUED)

- b. Pursuant to 401 KAR 52:020, Section 10, the permittee shall calculate and keep records of the emissions of each pollutant - CO, VOC, PM, PM₁₀, PM_{2.5} and CO_{2e} from EU# 006C (EPN 329) on a monthly basis as well as a 12-month rolling total.
 - (1) The monthly emissions for each pollutant shall be calculated based on the emission factors and fuel usage. The emission factor shall be determined from the most recent performance test approved by the Division, and calculated using an average heat content of 448 Btu/scf.
 - (2) The CO_{2e} emission factor shall be based on equation 5 from 40 CFR 98. 33(a)(3)(iii) using the monthly average carbon content of the fuel gas consumed, the monthly average heat value of the fuel gas, the monthly average molecular weight of the fuel gas and the monthly volume of fuel burned.
- c. As an alternative, compliance with CO_{2e} in **5. Specific Recordkeeping Requirements** b.(2), the permittee may install, calibrate, maintain, and operate a continuous emissions monitoring system (CEMS), and record the output of the system, for measuring O₂ (or CO₂) emissions discharged to the atmosphere from EU# 006C (EPN 329).
- d. Pursuant to 401 KAR 52:020, Section 10, the permittee shall keep records of the total quantity of aqueous ammonia or urea injected into the SCR during each calendar month at EU# 006C (EPN 329).
- e. Pursuant to 401 KAR 52:020, Section 10, the permittee shall, prior to the startup of EU#006C (EPN 329), submit an operation and maintenance plan for the SCR system to the Division for approval. The operation and maintenance plan shall define the parameters to be monitored (catalyst bed inlet temperature, outlet ammonia concentration, direct outlet NO_x concentration, ammonia injection rate etc.) to demonstrate proper operation of the SCR system and the maintenance to be performed in order to maximize control of NO_x while maintaining ammonia slip below 10 ppmvd at 3% O₂, at all times.
- f. Pursuant to 401 KAR 52:020, Section 10, for EU# 006C (EPN 329), the permittee shall keep records to show that the monthly average exhaust temperature and any other parameters as provided by the manufacturer are within the range specified by the manufacturer, or that accepted by the Division per **1. Operating Limitation** k.
- g. Pursuant to 401 KAR 52:020, Section 10, the permittee shall keep records of the manufacturer's recommended procedures for startup and shutdown.
- h. *Decoking operation of ethylene cracking furnace records.* Pursuant to 40 CFR 63.1109(h), for each decoking operation of an ethylene cracking furnace subject to the standards in 40 CFR 63.1103(e)(7) and (8), the permittee must keep the records specified in 40 CFR 63.1109(h)(1) through (6).
 - (1) Records that document the day and time each inspection specified in 40 CFR 63.1103(e)(7)(i) took place, the results of each inspection, and any repairs made to correct the flame impingement; and for any repair that is delayed beyond 1 calendar day, the records specified in 40 CFR 63.1109(h)(1)(i) through (iii).
 - (i) The reason for the delay.

SECTION B - EMISSION POINTS, EMISSIONS UNITS, APPLICABLE REGULATIONS, AND OPERATING CONDITIONS (CONTINUED)

- (ii) An estimate of the emissions from shutdown for repair and an estimate of the emissions likely to result from delay of repair, and whether the requirements at 40 CFR 63.1103(e)(7)(i)(A) or (B) were met.
- (iii) The date the repair was completed or, if the repair has not been completed, a schedule for completing the repair.
- (2) If the permittee chooses to monitor the CO₂ concentration during decoking as specified in 40 CFR 63.1103(e)(7)(ii), then for each decoking cycle, records must be kept for all measured CO₂ concentration values beginning before the expected end of the air-in decoke time, the criterion used to begin the CO₂ monitoring, and the target used to indicate combustion is complete. The target record should identify any time period the site routinely extends air addition beyond the specified CO₂ concentration and any decoke completion assurance procedures used to confirm all coke has been removed prior to stopping air addition that occurs after the CO₂ target is reached.
- (3) If the permittee chooses to monitor the temperature at the radiant tube(s) outlet during decoking as specified in 40 CFR 63.1103(e)(7)(iii), then for each decoking cycle, records must be kept for all measured temperature values and the target used to indicate a reduction in temperature of the inside of the radiant tube(s) is necessary.
- (4) If the permittee chooses to comply with 40 CFR 63.1103(e)(7)(iv), then records must be kept that document that decoke air is no longer being added after each decoking cycle.
- (5) If the permittee chooses to treat steam or feed to reduce coke formation as specified in 40 CFR 63.1103(e)(7)(v), then records must be kept that document that the planned treatment occurred.
- (6) For each decoking operation of an ethylene cracking furnace subject to the requirements in 40 CFR 63.1103(e)(8), the permittee must keep records that document the day each inspection took place and the results of each inspection where an isolation problem was identified including any repairs made to correct the problem.

6. Specific Reporting Requirements:

- a. Pursuant to 40 CFR 65.165(f), the owner or operator shall identify in the Initial Compliance Status Report whether an exemption from performance testing or conducting a design evaluation, as provided in 40 CFR 65.145(b)(2), 40 CFR 65.148(b)(2), or 40 CFR 65.149(b)(2), is being invoked, and which of the provisions of 40 CFR 65.145(b)(2), 40 CFR 65.148(b)(2), or 40 CFR 65.149(b)(2) apply.
- b. Pursuant to 401 KAR 52:020, Section 10, for EU# 006C (EPN 329), the permittee shall submit the analysis conducted to determine the maximum furnace exhaust temperature that will provide a minimum thermal efficiency of 87%.
- c. *Decoking operation reports.* Pursuant to 40 CFR 63.1110(e)(7), for decoking operations of an ethylene cracking furnace subject to the requirements in 40 CFR 63.1103(e)(7) and (8), Periodic Reports must include the information specified in 40 CFR 63.1110(e)(7)(i) through (iii).
 - (1) For each control measure selected to minimize coke combustion emissions as specified in 40 CFR 63.1103(e)(7)(ii) through (v), report instances where the control measures were not followed.

SECTION B - EMISSION POINTS, EMISSIONS UNITS, APPLICABLE REGULATIONS, AND OPERATING CONDITIONS (CONTINUED)

- (2) Report instances where an isolation valve inspection was not conducted according to the procedures specified in 40 CFR 63.1103(e)(8).
 - (3) For instances where repair was delayed beyond 1 calendar day as specified in 40 CFR 63.1103(e)(7)(i), report the information specified in 40 CFR 63.1109(h)(1).
- d. Pursuant to 40 CFR 63.1110, the permittee shall follow the requirements of 40 CFR 63.1110(f), (g), and (h) for general report content, report and notification submission, and adjustment to timing of submittals and review of required communications.
- e. See **Section F**.

SECTION B - EMISSION POINTS, EMISSIONS UNITS, APPLICABLE REGULATIONS, AND OPERATING CONDITIONS (CONTINUED)**(EPN 326A)****Ethylene Decoking Pot**

Date of Construction:

December 2021

Control:

Integrated Cyclone and scrubber

APPLICABLE REGULATIONS:

401 KAR 51:017, Prevention of Significant Deterioration of Air Quality. (For PM, PM₁₀, PM_{2.5}, CO, and CO_{2e}).

401 KAR 59:010, New process operations.

1. Operating Limitations:

- a. Pursuant to 401 KAR 51:017, Section 8, for EPN 326A, the integrated cyclone-scrubber system must be operated under the same operating parameters as established by the most recent performance test approved by the Division.
- b. Pursuant to 401 KAR 51:017, Section 8, for EPN 326A, the hours of operation shall not exceed 1500 hours per year.

Compliance Demonstration Method:

Continuous compliance with **1. Operating Limitations** a. and b. shall be demonstrated by keeping records in accordance with **5. Specific Recordkeeping Requirements**.

2. Emission Limitations:

- a. The following emission limitations for particulate matter are pursuant to the mass emission limit of 401 KAR 59:010, Section 3(2):
 - (1) $E = 2.34 \text{ lbs/hr}$ for process rates up to 1,000 lbs/hr
 - (2) $E = 3.59 P^{0.62}$ for process rates greater than 1,000 lbs/hr up to 60,000 lbs/hr
 - (3) $E = 17.31 P^{0.16}$ for process rates greater than 60,000 lb/hrWhere:
E = rate of particulate emissions in lb(s)/hr, and
P = process weight rate* in tons/hr.

*Process weight rate for the decoking operation includes steam weight.

- b. Pursuant to 401 KAR 59:010, Section 3(1)(a), no person shall cause, suffer, allow, or permit any continuous emission into the open air from a control device or stack associated with any affected facility which is equal to or greater than twenty (20) percent opacity.
- c. Pursuant to 401 KAR 51:017, Section 8, visible emissions resulting from the decoking shall not exceed an opacity of 20 percent averaged over a six-minute period.

Compliance Demonstration Method:

- (1) For compliance with numerical standard in 401 KAR 59:010, the permittee shall operate and maintain the associated control device in accordance with the manufacturer's recommendations.
- (2) For compliance with the opacity limitations, refer to **4. Specific Monitoring Requirements** c. and **5. Specific Recordkeeping Requirements** b.

SECTION B - EMISSION POINTS, EMISSIONS UNITS, APPLICABLE REGULATIONS, AND OPERATING CONDITIONS (CONTINUED)

- d. Pursuant to 401 KAR 51:017, Section 8, the permittee shall install operate and maintain an integrated cyclone-scrubber system.

Compliance Demonstration Method:

See **4. Specific Monitoring Requirements** a. and **5. Specific Recordkeeping Requirements** a.

- e. Pursuant to 401 KAR 51:017, Section 8, for EPN 326A, CO_{2e} shall not exceed 932 tpy, on a 12-month rolling basis.

Compliance Demonstration Method:

- (1) See **3. Testing Requirements**.
 - (2) For continuous compliance, the permittee shall maintain proper furnace design and operation to minimize the coke formation to the maximum extent possible.
 - (3) For continuous compliance, the permittee shall maintain furnace conditions during decoking as specified by manufacturer or develop a good combustion and operation practices plan (GCOPP) that defines, measures and verifies the use of operational practices for minimizing CO_{2e} emissions. The plan shall be incorporated into the plant standard operating procedures (SOP) and shall be made available for the Division's inspection. Pursuant to 401 KAR 52:020, Section 10, the permittee shall implement a startup, shutdown and malfunction plan as defined in 40 CFR 63, Subpart YY as published in 86 FR 66126, Nov. 19, 2021, during decoking operations, which shall be made available for Division review.
 - (4) Refer to **5. Specific Recordkeeping Requirements** for EU# 006C (EPN 329).
- f. Pursuant to 401 KAR 52:020, Section 10, for EPN 326A, the following emissions limitations shall not be exceeded:
- (1) 6.15 lb/hr on a 24-hour average and 4.53 tons per year on a 12-monh rolling basis of PM;
 - (2) 6.04 lb/hr on a 24-hour average and 4.53 tons per year on a 12-month rolling basis of PM₁₀;
 - (3) 2.40 lb/hr on a 24-hour average and 1.79 tons per year on a 12-month rolling basis of PM_{2.5}; and
 - (4) 197.67 lb/hr on a 24-hour average and 148.25 tons per year on a 12-month rolling basis of CO.

Compliance Demonstration Method:

- (1) For compliance with the PM/PM₁₀/PM_{2.5} lb/hr limits, the permittee shall operate and maintain the associated control device in accordance with the manufacturer's recommendations.
- (2) For compliance with the CO lb/hr emission limit, See **3. Testing Requirements**.
- (3) For continuous compliance with the tons per year limits, refer to **5. Specific Recordkeeping Requirements** e.

SECTION B - EMISSION POINTS, EMISSIONS UNITS, APPLICABLE REGULATIONS, AND OPERATING CONDITIONS (CONTINUED)

3. Testing Requirements:

- a. Pursuant to 401 KAR 50:045, Section 1, testing shall be conducted at such times as may be requested by the Cabinet.
- b. Pursuant to 401 KAR 52:020, Section 10, the permittee shall conduct an initial performance test using reference methods in 401 KAR 50:015 to determine the CO and CO₂ emissions in terms of lb/hr while the furnace is operating in decoking mode. See **Section G. 4. and 5.** Subsequent performance testing shall be conducted within 5 years of the previous test approved by the Division.

4. Specific Monitoring Requirements:

- a. Pursuant to 401 KAR 52:020, Section 10, the permittee shall continuously monitor the pressure drop across the cyclone-scrubber system, scrubber liquid flow rate and any other parameter as specified by the manufacturer when the decoking pot is in operation.
- b. Pursuant to 401 KAR 52:020, Section 10, the permittee shall monitor and keep records of the number of decoking events and the hours of operation in each event.
- c. Pursuant to 401 KAR 52:020, Section 10, during decoking operations, the permittee shall perform at least one qualitative visual observation per calendar day at the time of highest expected emissions from the control device. The visual observation shall be conducted during daylight hours and the permittee shall maintain a log of the observations. If visible emissions are seen, not including condensed water in the plume, the permittee shall determine opacity using EPA Reference Method 9.

5. Specific Recordkeeping Requirements:

- a. Pursuant to 401 KAR 52:020, all routine and non-routine maintenance activities performed on the cyclone-scrubber system shall be recorded.
- b. Pursuant to 401 KAR 52:020, Section 10, the permittee shall keep a log of the qualitative visual observations required by **4. Specific Monitoring Requirements c.** including the date, time, initials of observer, whether any emissions were observed (yes/no), and any Method 9 readings taken.
- c. Pursuant to 401 KAR 52:020, Section 10, the permittee shall keep record of the number of decoking events per furnace, the dates of the event, and the duration of each event.
- d. Pursuant to 401 KAR 52:020, Section 10, the permittee shall keep continuous records of the pressure drop across the cyclone-scrubber system and scrubber liquid flow rate when the decoking pot is in operation.
- e. Pursuant to 401 KAR 52:020, Section 10, the permittee shall calculate and keep records of the emissions of each pollutant - PM, PM₁₀, PM_{2.5}, CO and CO_{2e} from EPN 326A on a monthly basis as well as a 12-month rolling total.
- f. See **Section F.**

SECTION B - EMISSION POINTS, EMISSIONS UNITS, APPLICABLE REGULATIONS, AND OPERATING CONDITIONS (CONTINUED)

6. **Specific Reporting Requirements:**
See Section F.

SECTION B - EMISSION POINTS, EMISSIONS UNITS, APPLICABLE REGULATIONS, AND OPERATING CONDITIONS (CONTINUED)**EU# DRH (EPN 313) Dryer Regeneration Heater**

Rating: 8.19 mmBtu/hr
Primary Fuel: Process fuel gas*
Date of construction: 1963
Control Device: None

EU# RRH (EPN 314) Reactor Regeneration Heater

Rating: 5.28 mmBtu/hr
Fuel: Process fuel gas*
Date of construction: 2005
Control Device: None

* Process fuel gas (PFG) includes natural gas, ethylene plant fuel gas, hydrogen, propane, ethane, recovered flare gas, and mixtures thereof.

APPLICABLE REGULATIONS:

401 KAR 59:015, New Indirect Heat Exchangers. EU# RRH (EPN 314)

401 KAR 60:005, Section 2(2)(ppp), 40 C.F.R. 60.660 through 60.668 (Subpart NNN), Standards of Performance for Volatile Organic Compound (VOC) Emissions From Synthetic Organic Chemical Manufacturing Industry (SOCMI) Distillation Operations.

401 KAR 60:005, Section 2(2)(ttt), 40 C.F.R. 60.700 through 60.708 (Subpart RRR), Standards of Performance for Volatile Organic Compound Emissions from Synthetic Organic Chemical Manufacturing Industry (SOCMI) Reactor Processes.

401 KAR 61:015, Existing Indirect Heat Exchangers.

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

1. Operating Limitations:

- a. Pursuant to 401 KAR 52:020, Section 10, the following maximum hourly firing rate shall not be exceeded: (on a 24-hour average basis)
 - (1) For EU#RRH (EPN 314): 5.90 mmBtu/hr.
- b. Pursuant to 401 KAR 52:020, Section 10, the following annual average firing rate shall not be exceeded: (on a 12-month rolling basis)
 - (1) For EU#RRH (EPN 314): 5.28 mmBtu/hr.

Compliance Demonstration Method:

For compliance with **1. Operating Limitations** a. and b. see **3. Source Operating Limitations** in Section D.

- c. Pursuant to 40 CFR 63.7500(a)(3), at all times, the permittee must operate and maintain EPN 313 and EPN 314, including associated air pollution control equipment and monitoring equipment, in a manner consistent with safety and good air pollution control

SECTION B - EMISSION POINTS, EMISSIONS UNITS, APPLICABLE REGULATIONS, AND OPERATING CONDITIONS (CONTINUED)

practices for minimizing emissions. Determination of whether such operation and maintenance procedures are being used will be based on information available to the Administrator that may include, but is not limited to, monitoring results, review of operation and maintenance procedures, review of operation and maintenance records, and inspection of the source.

- d. Pursuant to 40 CFR 63.7500(f), the standards in 40 CFR 63.7500. apply at all times when each unit is operating, except during periods of startup and shutdown of which time the permittee must comply only with Table 3 to 40 CFR 63, Subpart DDDDD.
- e. Pursuant to 401 KAR 59:015, Section 7(2)(a) and 401 KAR 61:015, Section 9(2)(a), during a startup period or shutdown period, the permittee shall meet the work practice standards established in 40 C.F.R. Part 63, Table 3 to Subpart DDDDD, as established in 401 KAR 63:002, Section 2(4)(iii).

2. Emission Limitations:

- a. Pursuant to 401 KAR 59:015, Section 4(1)(b), emissions of particulate matter from EPN 314 shall not exceed 0.1 lb/mmBtu.
- b. Pursuant to 401 KAR 59:015, Section 5(1)(b), Emissions of sulfur dioxide from EPN 314 shall not exceed 0.8 lb/mmBtu.
- c. Pursuant to 401 KAR 61:015, Section 4(1)(a), emissions of particulate matter from EPN 313 shall not exceed 0.16 lb/mmBtu.
- d. Pursuant to 401 KAR 61:015, Section 5(1), Emissions of sulfur dioxide from EPN 313 shall not exceed 0.33 lb/mmBtu.

Visible Emission Limits:

- e. Pursuant to 401 KAR 69:015, Section 4(2), for any fuel used, the opacity of visible emissions from EPN 314 shall not exceed 20 percent except as provided below:
 - (1) Pursuant to 401 KAR 59:015, Section 4(2)(c), for emissions from an affected facility caused by building a new fire, emissions during the period required to bring the boiler up to operating conditions shall be allowed, if the method used is recommended by the manufacturer and the time does not exceed the manufacturer's recommendations.
- f. Pursuant to 401 KAR 61:015, Section 4(1)(b), the opacity of visible emissions from EPN 313 shall not exceed 20 percent.

Compliance Demonstration Method:

Compliance with the particulate matter limits (lb/mmBtu), the sulfur dioxide limits (lb/mmBtu), and the opacity limit is demonstrated while burning process fuel gas.

3. Testing Requirements:

- a. Pursuant to 401 KAR 50:045, Section 1, testing shall be conducted at such times as may be requested by the Cabinet.

SECTION B - EMISSION POINTS, EMISSIONS UNITS, APPLICABLE REGULATIONS, AND OPERATING CONDITIONS (CONTINUED)

- b. Pursuant to 40 CFR 60.660(d) and 40 CFR 60.700(d), for equipment complying with requirements in 40 CFR 65, Subpart D, 40 CFR 65.149(b)(2)(ii) exempts boilers and process heaters where the vent stream is introduced with or as the primary fuel from performance tests.

4. Specific Monitoring Requirements:

- a. Pursuant to 401 KAR 61:015, Section 6(3)(a) and (b), For EPN 313, the rate of fuel burned shall be measured daily or at shorter intervals and recorded. The heating value and ash content of the fuel shall be ascertained at least once per week and recorded. Compliance with 401 KAR 61:015 can be demonstrated by monthly measurements and records of fuel burned.
- b. Pursuant to 40 CFR 60.660(d) and 40 CFR 60.700(d), for equipment complying with requirements in 40 CFR 65, Subpart D, 40 CFR 65.149(c)(1) exempts boilers and process heaters where all vent streams are introduced with or as the primary fuel from monitoring.

5. Specific Recordkeeping Requirements:

- a. For EPN 313, Refer to **4. Specific Monitoring Requirements.**
- b. Pursuant to 40 CFR 63.7555(i), the permittee must maintain records of the calendar date, time, occurrence and duration of each startup and shutdown.
- c. Pursuant to 40 CFR 63.7555(j), the permittee must maintain records of the type(s) and amount(s) of fuels used during each startup and shutdown.
- d. Pursuant to 40 CFR 63.7560(a), the above records must be in a form suitable and readily available for expeditious review, according to 40 CFR 63.10(b)(1).
- e. Pursuant to 40 CFR 63.7560(b), as specified in 40 CFR 63.10(b)(1), the permittee must keep each record for five (5) years following the date of each occurrence, measurement, maintenance, corrective action, report, or record.
- f. Pursuant to 40 CFR 63.7560(c), the permittee must keep each record on-site, or it must be accessible through a computer network for at least two (2) years after the date of each occurrence, measurement, maintenance, corrective action, report, or record, according to 40 CFR 63.10(b)(1). Records can be kept off-site for the remaining three (3) years.
- g. See **Section F.**

6. Specific Reporting Requirements:

See **Section F.**

SECTION B - EMISSION POINTS, EMISSIONS UNITS, APPLICABLE REGULATIONS, AND OPERATING CONDITIONS (CONTINUED)**EU# 332 (EPN 332BR) Fuel Oil Storage Tank***

Type of Tank: Fixed Roof
Maximum Capacity: 96,000 gallons capacity
Date of Construction: December 2020
True vapor pressure of organic HAP < 3.4kPa

*Aside from 40 CFR 63, Subpart YY National Emission Standards for Hazardous Air Pollutants for Source Categories: Generic Maximum Achievable Control Technology Standards applicability, EPN 332BR is considered an insignificant activity.

APPLICABLE REGULATIONS:

401 KAR 63:002, Section 2(4)(oo), 40 C.F.R. 63.1100 through 63.1114 (Subpart YY), National Emission Standards for Hazardous Air Pollutants for Source Categories: Generic Maximum Achievable Control Technology Standards.

1. Operating Limitations:

None

2. Emission Limitations:

None

3. Testing Requirements:

Pursuant to 401 KAR 50:045, Section 1, testing shall be conducted at such times as may be requested by the Cabinet.

4. Specific Monitoring Requirements:

None

5. Specific Recordkeeping Requirements:

None

6. Specific Reporting Requirements:

See Section F

SECTION B - EMISSION POINTS, EMISSIONS UNITS, APPLICABLE REGULATIONS, AND OPERATING CONDITIONS (CONTINUED)**EU# 022 (EPN 319) Gasoline Storage Tank (TK 904A)**

Type of Tank: Internal Floating Roof
Maximum Capacity: 259,308 gallons (981.6 m³)
Date of construction: 1963
Maximum true vapor pressure: 12.13 kilopascal

EU# 022 (EPN 320) Gasoline Storage Tank (TK 904B)

Type of Tank: Internal Floating Roof
Maximum Capacity: 259,308 gallons (981.6 m³)
Date of construction: 1963
Maximum true vapor pressure: 12.13 kilopascal

APPLICABLE REGULATIONS:

401 KAR 63:002, Section 2(4)(mm), 40 C.F.R. 63.1060 through 63.1067 (Subpart WW), National Emission Standards for Storage Vessels (Tanks).

401 KAR 63:002, Section 2(4)(oo), 40 C.F.R. 63.1100 through 63.1114 (Subpart YY), National Emission Standards for Hazardous Air Pollutants for Source Categories: Generic Maximum Achievable Control Technology Standards.

1. Operating Limitations:

- a. Pursuant to 40 CFR 63.1103(e)(3) and Table 7, item (b)(1) of 40 CFR 63, Subpart YY, the permittee of a storage vessel as defined in 40 CFR 63.1101, that stores liquid containing organic HAP and if the maximum true vapor pressure of total organic HAP is ≥ 3.4 kilopascals but < 76.6 kilopascals; and the capacity of the vessel is ≥ 95 cubic meters, the permittee shall:
 - (1) Except as specified in Table 7, item (b)(1)(iii) of 40 CFR 63, Subpart YY, comply with the requirements of 40 CFR 63, Subpart WW; or
 - (2) Except as specified in Table 7, item (b)(1)(iii) of 40 CFR 63, Subpart YY, reduce emissions of total organic HAP by 98 weight-percent by venting emissions through a closed vent system to any combination of control devices and meet the requirements of 40 CFR 63.982(a)(1).
 - (3) Beginning no later than the compliance dates specified in 40 CFR 63.1102(c), comply with Table 7, items (b)(1)(iii)(A), (B), (C), or (D) of 40 CFR 63, Subpart YY, and 40 CFR 63.1103(e)(10).
 - (i) Comply with the requirements of 40 CFR 63, Subpart WW; or
 - (ii) Reduce emissions of total organic HAP by 98 weight-percent by venting emissions through a closed vent system to a flare and meet the requirements of 40 CFR 63.983 and 40 CFR 63.1103(e)(4) and 40 CFR 63.1103(e)(9); or
 - (iii) Reduce emissions of total organic HAP by 98 weight-percent by venting emissions through a closed vent system to any combination of non-flare control devices and meet the requirements specified in 40 CFR 63.982(c)(1) and 40 CFR 63.1103(e)(9); or
 - (iv) Reduce emissions of total organic HAP by 98 weight-percent by routing emissions to a fuel gas system(a) or process and meet the requirements specified in 40 CFR 63.982(d) and 40 CFR 63.1103(e)(9).

SECTION B - EMISSION POINTS, EMISSIONS UNITS, APPLICABLE REGULATIONS, AND OPERATING CONDITIONS (CONTINUED)

- b. Pursuant to 40 CFR 63.1063, the permittee shall comply with the following design requirements for an internal floating roof tank as specified in 40 CFR 63.1063(a)(A) through 40 CFR 63.1063(a)(D):
- (1) The IFR shall be equipped with either:
 - (i) A liquid-mounted seal.
 - (ii) A mechanical shoe seal; or
 - (iii) Two seals mounted above the other.
- c. Pursuant to 40 CFR 63.1063(a)(1)(i)(D), If the IFR is equipped with a vapor-mounted seal as of the proposal date of 40 CFR 63, Subpart YY, the vessel is not required to meet the seal requirements of 63.1063(a)(1)(i) until the next time the storage vessel is completely emptied and degassed, or 10 years after the promulgation of 40 CFR 63, Subpart YY.
- d. Pursuant to 40 CFR 63.1063(a)(2), openings through the deck of the floating roof shall be equipped as follows:
- (1) Each opening except those for automatic bleeder vents (vacuum breaker vents) and rim space vents shall have its lower edge below the surface of the stored liquid.
 - (2) Each opening except those for automatic bleeder vents (vacuum breaker vents), rim space vents, leg sleeves, and deck drains shall be equipped with a deck cover. The deck cover shall be equipped with a gasket between the cover and the deck.
 - (3) Each automatic bleeder vent (vacuum breaker vent) and rim space vent shall be equipped with a gasketed lid, pallet, flapper, or other closure device.
 - (4) Each opening for a fixed roof support column may be equipped with a flexible fabric sleeve seal instead of a deck cover.
 - (5) Each opening for a sample well or deck drain (that empties into the stored liquid) may be equipped with a slit fabric seal or similar device that covers at least 90 percent of the opening, instead of a deck cover.
 - (6) Each cover on access hatches and gauge float wells shall be designed to be bolted or fastened when closed.
 - (7) Each opening for an unslotted guidepole shall be equipped with a pole wiper, and each unslotted guidepole shall be equipped with a gasketed cap on the top of the guidepole.
 - (8) Each opening for a slotted guidepole shall be equipped with one of the control device configurations specified as followed:
 - (i) A pole wiper and a pole float. The wiper or seal of the pole float shall be at or above the height of the pole wiper.
 - (ii) A pole wiper and a pole sleeve.
 - (9) If the floating roof does not meet the requirements listed in 40 CFR 63.1063(a)(2)(i) through 40 CFR 63.1063(a)(2)(viii) as of the proposal date of 40 CFR 63, Subpart YY, these requirements do not apply until the next time the vessel is completely emptied and degassed, or 10 years after the promulgation date of 40 CFR 63, Subpart YY, whichever occurs first.

Compliance Demonstration Method:

For compliance, refer to **Section F.9** for compliance reporting, **4. Specific Monitoring Requirements** and **6. Specific Reporting Requirements**.

SECTION B - EMISSION POINTS, EMISSIONS UNITS, APPLICABLE REGULATIONS, AND OPERATING CONDITIONS (CONTINUED)

- e. Pursuant to 40 CFR 63.1103(e)(10), beginning no later than the compliance dates specified in 40 CFR 63.1102(c), for each storage vessel subject to items (b) or (c) of table 7 to 40 CFR 63.1103(e), the permittee must comply with 40 CFR 63.1103(e)(10)(i) through (iv) during storage vessel shutdown operations (i.e., emptying and degassing of a storage vessel) until the vapor space concentration in the storage vessel is less than 10 percent of the LEL. The permittee must determine the concentration using process instrumentation or portable measurement devices and follow procedures for calibration and maintenance according to manufacturer's specifications.
- (1) Remove liquids from the storage vessel as much as practicable;
 - (2) Comply with one of the following:
 - (i) Reduce emissions of total organic HAP by 98 weight-percent by venting emissions through a closed vent system to a flare and meet the requirements of 40 CFR 63.983 and 40 CFR 63.1103(e)(4) and (9).
 - (ii) Reduce emissions of total organic HAP by 98 weight-percent by venting emissions through a closed vent system to any combination of non-flare control devices and meet the requirements specified in 40 CFR 63.982(c)(1) and 40 CFR 63.1103(e)(9).
 - (iii) Reduce emissions of total organic HAP by 98 weight-percent by routing emissions to a fuel gas system or process and meet the requirements specified in 40 CFR 63.982(d) and 40 CFR 63.1103(e)(9).

Compliance Demonstration Method:

See Requirements under EU 379 (EPN 379)

2. Emission Limitations:

None

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. Pursuant to 40 CFR 63.1063(c)(1), Internal floating roofs shall be inspected as specified in 40 CFR 63.1063(d)(1) before the initial filling of the storage vessel. Subsequent inspections shall be performed as follows:
- (1) At least once per year the IFR shall be inspected as specified in 40 CFR 63.1063(d)(2).
 - (2) Each time the storage vessel is completely emptied and degassed, or every 10 years, whichever occurs first, the IFR shall be inspected as specified in 40 CFR 63.1063(d)(1).
 - (3) Instead of the inspection frequency specified in 40 CFR 63.1063(c)(1)(i), internal floating roofs with two rim seals may be inspected as specified in 40 CFR 63.1063(d)(1) each time the storage vessel is completely emptied and degassed, or every 5 years, whichever occurs first.
- b. Pursuant to 40 CFR 63.1063(d)(1), floating roof inspections shall be conducted by visually inspecting the floating roof deck, deck fittings, and rim seals from within the storage vessel. The inspection may be performed entirely from the top side of the floating roof, as long as there is visual access to all deck components specified in 40 CFR 63.1063(a). Any of the

SECTION B - EMISSION POINTS, EMISSIONS UNITS, APPLICABLE REGULATIONS, AND OPERATING CONDITIONS (CONTINUED)

conditions described in 40 CFR 63.1063(d)(1)(i) through (d)(1)(v) as followed constitutes an inspection failure.

- (1) Stored liquid on the floating roof.
- (2) Holes or tears in the primary or secondary seal (if one is present).
- (3) Floating roof deck, deck fittings, or rim seals that are not functioning as designed (as specified in 40 CFR 63.1063(a)).
- (4) Failure to comply with the operational requirements of 40 CFR 63.1063(b).
- (5) Gaps of more than 0.32 centimeters (1/8 inch) between any deck fitting gasket, seal, or wiper (required by 40 CFR 63.1063(a)) and any surface that it is intended to seal.

- c. Pursuant to 40 CFR 63.1063(d)(2), tank-top inspections of IFR's shall be conducted by visually inspecting the floating roof deck, deck fittings, and rim seal through openings in the fixed roof. Any of the conditions described in 40 CFR 63.1063(d)(1)(i) through 40 CFR 63.1063(d)(1)(iv) constitutes an inspection failure. Identification of holes or tears in the rim seal is required only for the seal that is visible from the top of the storage vessel.

5. Specific Recordkeeping Requirements:

- a. Pursuant to 40 CFR 63.1065(a), a record shall be kept of the dimensions of the storage vessel, an analysis of the capacity of the storage vessel, and an identification of the liquid stored.
- b. Pursuant to 40 CFR 63.1065(b), records of floating roof inspection results shall be kept as specified in 40 CFR 63.1065(b)(1) and (2) as follows:
 - (1) If the floating roof passes inspection, a record shall be kept that includes the information specified in 40 CFR 63.1065(b)(1)(i) and (ii) . If the floating roof fails inspection, a record shall be kept that includes the information specified in 40 CFR 63.1065(b)(1)(i) through (v).
 - (i) Identification of the storage vessel that was inspected.
 - (ii) The date of the inspection.
 - (iii) A description of all inspection failures.
 - (iv) A description of all repairs and the dates they were made.
 - (v) The date the storage vessel was removed from service, if applicable.
 - (2) A record shall be kept of EFR seal gap measurements, including the raw data obtained and any calculations performed.
- c. Pursuant to 40 CFR 63.1065(c), the permittee shall keep a record of the date when a floating roof is set on its legs or other support devices. The permittee shall also keep a record of the date when the roof was refloated, and the record shall indicate whether the process of refloating was continuous.
- d. Pursuant to 40 CFR 63.1065(d), If the permittee elects to use an extension in accordance with 40 CFR 63.1063(e)(2) or 40 CFR 63.1063(c)(2)(iv)(B), the permittee shall keep the documentation required by those paragraphs.
- e. Pursuant to 40 CFR 63.1103(e)(10)(iii), the permittee must maintain records necessary to demonstrate compliance with the requirements in 40 CFR 63.1108(a)(4)(ii) including, if

SECTION B - EMISSION POINTS, EMISSIONS UNITS, APPLICABLE REGULATIONS, AND OPERATING CONDITIONS (CONTINUED)

appropriate, records of existing standard site procedures used to empty and degas (deinventory) equipment for safety purposes.

6. Specific Reporting Requirements:

- a. Pursuant to 40 CFR 63.1110(e) and 40 CFR 63.1066(b), the permittee shall report the information specified in 40 CFR 63.1066(b)(1) through (4), as applicable, in the periodic report specified in 40 CFR 63, Subpart YY.
 - (1) The permittee shall notify the Administrator in writing at least 30 calendar days before an inspection required by 40 CFR 63.1063(d)(1). If an inspection is unplanned and the permittee could not have known about the inspection 30 calendar days in advance, then the permittee shall notify the Division at least 7 calendar days before the inspection. Notification shall be made by telephone immediately followed by written documentation demonstrating why the inspection was unplanned. Alternatively, the notification including the written documentation may be made in writing and sent so that it is received by the Division at least 7 calendar days before the inspection.
 - (2) The permittee shall submit a copy of the inspection record (as required in 40 CFR 63.1065) when inspection failures occur.
 - (3) The permittee requesting the use of an alternate control device shall submit a written application including emissions test results and an analysis demonstrating that the alternate device has an emission factor that is less than or equal to the device specified in 40 CFR 63.1063.
 - (4) If the permittee elects to use an extension in accordance with 40 CFR 63.1063(e)(2) or 40 CFR 63.1063(c)(2)(iv)(B), the permittee shall submit the documentation required by those paragraphs.
- b. Pursuant to 40 CFR 63.1110, the permittee shall follow the requirements of 40 CFR 63.1110(f), (g), and (h) for general report content, report and notification submission, and adjustment to timing of submittals and review of required communications.
- c. See **Section F**.

SECTION B - EMISSION POINTS, EMISSIONS UNITS, APPLICABLE REGULATIONS, AND OPERATING CONDITIONS (CONTINUED)**EU# 007A (EPN 321A)****Ethylene Flare**

Type: John Zink, continuously operated, steam assisted with water seal
Auxiliary Fuel: Process Fuel Gas and/or Natural Gas
Maximum Rating: 5,979 mmBtu/hr
Date of Construction: May 2023

Description: The Ethylene Plant flare is used to burn hydrocarbon streams from the Ethylene plant and the contiguous Cymetech plant. The flare routinely burns excess plant process gas, tank car, barge, and tank truck loading/unloading venting and hose purges, transfer line purges, and vents from various tanks in the plant. It also burns relief valve venting and equipment venting during maintenance/ emergency shutdowns of the Ethylene plant.

APPLICABLE REGULATIONS:

401 KAR 51:017, Prevention of Significant Deterioration of Air Quality. (For CO, PM, PM₁₀, PM_{2.5}, VOC and CO_{2e})

401 KAR 60:005, Section 2(2)(ppp), 40 C.F.R. 60.660 through 60.668 (Subpart NNN), Standards of Performance for Volatile Organic Compound (VOC) Emissions From Synthetic Organic Chemical Manufacturing Industry (SOCMI) Distillation Operations.

401 KAR 60:005, Section 2(2)(ttt), 40 C.F.R. 60.700 through 60.708 (Subpart RRR), Standards of Performance for Volatile Organic Compound Emissions from Synthetic Organic Chemical Manufacturing Industry (SOCMI) Reactor Processes.

401 KAR 63:002, Section 2(1), 40 C.F.R. 63.1 through 63.16, Table 1 (Subpart A), General Provisions.

401 KAR 63:002, Section 2(4)(t), 40 C.F.R. 63.640 through 63.679 (Subpart CC), National Emission Standards for Hazardous Air Pollutants from Petroleum Refineries. (As referenced by Subpart YY)

401 KAR 63:002, Section 2(4)(ii), 40 C.F.R. 63.980 through 63.999 (Subpart SS), National Emission Standards for Closed Vent Systems, Control Devices, Recovery Devices and Routing to a Fuel Gas System or a Process. (As referenced by Subpart YY)

401 KAR 63:002, Section 2(4)(oo), 40 C.F.R. 63.1100 through 63.1114 (Subpart YY), National Emission Standards for Hazardous Air Pollutants for Source Categories: Generic Maximum Achievable Control Technology Standards.

401 KAR 63:015, Flares.

Consent Decree (referenced herein as CD) 2:22-cv-01577-JDC-KK between United States of America and Westlake Vinyls, Inc., entered on October 26, 2022.

SECTION B - EMISSION POINTS, EMISSIONS UNITS, APPLICABLE REGULATIONS, AND OPERATING CONDITIONS (CONTINUED)

1. Operating Limitations:

- a. Pursuant to 401 KAR 51:017, Section 8, for EPN 321A, the flare must be operated in compliance with 40 CFR 60.18 and 40 CFR 63.11 in order to meet Best Available Control Technology (BACT) demonstration for CO, VOC, PM, PM₁₀, PM_{2.5} and GHG (as CO₂e) emissions.
- b. Pursuant to 40 CFR 60.18(c)(2) and 40 CFR 63.11(b)(5), the permittee shall operate the flare with a flame present at all times while vents are being sent to the flare.
- c. Pursuant to 40 CFR 60.18(c)(2)(ii) and 40 CFR 63.11(b)(6)(ii), the permittee shall operate the flare with a minimum net heating value of the gas being combusted of 11.2 megajoules per standard cubic meter (MJ/scm) (300 Btu/scf). The net heating value of the gas shall be determined by the methods specified in 40 CFR 60.18(f)(3) and 40 CFR 63.11(b)(6)(ii).
- d. Pursuant to 401 KAR 51:017, Section 8, the permittee shall follow good engineering practices and minimize the amount of gases vented to the flare.
- e. Pursuant to 401 KAR 51:017, Section 8, the permittee shall develop a startup and shutdown procedure for each process unit that vents to the flare.

Compliance Demonstration Method:

Refer to **Section F.9** for compliance reporting, **3. Testing Requirements** and **4. Specific Monitoring Requirements**.

- f. Pursuant to 40 CFR 63.1103(e)(4), beginning no later than the compliance dates specified in 40 CFR 63.1102(c), if a steam-assisted, air-assisted, non-assisted, or pressure-assisted multi-point flare is used as a control device for an emission point subject to the requirements in Table 7 to 40 CFR 63.1103, then the permittee must meet the applicable requirements for flares as specified in 40 CFR 63.670 and 40 CFR 63.671 of 40 CFR 63, Subpart CC, including the provisions in Tables 12 and 13 to 40 CFR 63, Subpart CC, except as specified in 40 CFR 63.1103(e)(4)(i) through (xiv). This requirement also applies to any flare using fuel gas from a fuel gas system, of which 50 percent or more of the fuel gas is derived from an ethylene production unit, being used to control an emission point subject to the requirements in Table 7 of 40 CFR 63.1103.
 - (1) Pursuant to 40 CFR 63.670(o), as referenced by 40 CFR 63.1103(e)(4), the permittee of a flare that has the potential to operate above its smokeless capacity under any circumstance shall comply with the provisions in 40 CFR 63.670(o)(1) through (7).
 - (2) Pursuant to 40 CFR 63.1103(e)(4)(ii), instead of complying with 40 CFR 63.670(o)(2)(i), the permittee must develop and implement the flare management plan no later than July 6, 2023.
 - (3) Pursuant to 40 CFR 63.1103(e)(4)(iii), instead of complying with 40 CFR 63.670(o)(2)(iii), if required to develop a flare management plan and submit it to the Administrator, then the permittee must also submit all versions of the plan in portable document format (PDF) to the EPA following the procedure specified in 40 CFR 63.9(k), except any medium submitted through U.S. mail must be sent to the attention of the Ethylene Production Sector Lead.

SECTION B - EMISSION POINTS, EMISSIONS UNITS, APPLICABLE REGULATIONS, AND OPERATING CONDITIONS (CONTINUED)

- (i) Pursuant to 40 CFR 63.9(k), if the permittee is required to submit notifications or reports following the procedure specified in 40 CFR 63.9(k), the permittee must submit notifications or reports to the EPA via the EPA's Compliance and Emissions Data Reporting Interface (CEDRI), which can be accessed through the EPA's Central Data Exchange (CDX) (<https://cdx.epa.gov/>). The notification or report must be submitted by the deadline specified. The EPA will make all the information submitted through CEDRI available to the public without further notice to you. The permittee must not use CEDRI to submit information claimed as confidential business information (CBI). Although the EPA does not expect persons to assert a claim of CBI, if the permittee wishes to assert a CBI claim for some of the information in the report or notification, the permittee must submit the information claimed to be CBI according to the procedures in 40 CFR 63.9(k)(3).
- (4) Pursuant to 40 CFR 63.1103(e)(4)(iv), 40 CFR 63.670(o)(3)(ii) and all references to 40 CFR 63.670(o)(3)(ii) do not apply. Instead, the permittee must comply with the maximum flare tip velocity operating limit at all times.
- (5) Pursuant to 40 CFR 63.1103(e)(4)(v), substitute "ethylene production unit" for each occurrence of "petroleum refinery."
- (6) Pursuant to 40 CFR 63.1103(e)(4)(vi), each occurrence of "refinery" does not apply.
- (7) Pursuant to 40 CFR 63.1103(e)(4)(viii), if the permittee chooses to determine compositional analysis for net heating value with a continuous process mass spectrometer, the permittee must comply with the requirements specified in 40 CFR 63.1103(e)(4)(viii)(A) through (G).
 - (i) The permittee must meet the requirements in 40 CFR 63.671(e)(2). The permittee may augment the minimum list of calibration gas components found in 40 CFR 63.671(e)(2) with compounds found during a pre-survey or known to be in the gas through process knowledge.
 - (ii) Calibration gas cylinders must be certified to an accuracy of 2 percent and traceable to National Institute of Standards and Technology (NIST) standards.
 - (iii) For unknown gas components that have similar analytical mass fragments to calibration compounds, the permittee may report the unknowns as an increase in the overlapped calibration gas compound. For unknown compounds that produce mass fragments that do not overlap calibration compounds, the permittee may use the response factor for the nearest molecular weight hydrocarbon in the calibration mix to quantify the unknown component's NHVvg.
 - (iv) The permittee may use the response factor for n-pentane to quantify any unknown components detected with a higher molecular weight than n-pentane.
 - (v) The permittee must perform an initial calibration to identify mass fragment overlap and response factors for the target compounds.
 - (vi) The permittee must meet applicable requirements in Performance Specification 9 of 40 CFR part 60, appendix B, for continuous monitoring system acceptance including, but not limited to, performing an initial multi-point calibration check at three concentrations following the procedure in Section 10.1 and performing the periodic calibration requirements listed for gas chromatographs in Table 13 to 40 CFR 63, Subpart CC, for the process mass spectrometer. The permittee may

SECTION B - EMISSION POINTS, EMISSIONS UNITS, APPLICABLE REGULATIONS, AND OPERATING CONDITIONS (CONTINUED)

use the alternative sampling line temperature allowed under Net Heating Value by Gas Chromatograph in Table 13 to 40 CFR 63, Subpart CC.

- (vii) The average instrument calibration error (CE) for each calibration compound at any calibration concentration must not differ by more than 10 percent from the certified cylinder gas value. The CE for each component in the calibration blend must be calculated using the following equation:

$$CE = \frac{C_m - C_a}{C_a} \times 100$$

Where:

C_m = Average instrument response (ppm)

C_a = Certified cylinder gas value (ppm)

- (8) Pursuant to 40 CFR 63.1103(e)(4)(ix), a permittee using a gas chromatograph or mass spectrometer for compositional analysis for net heating value may choose to use the CE of NHV_{measured} versus the cylinder tag value NHV as the measure of agreement for daily calibration and quarterly audits in lieu of determining the compound-specific CE. The CE for NHV at any calibration level must not differ by more than 10 percent from the certified cylinder gas value. The CE for must be calculated using the following equation:

$$CE = \frac{NHV_{\text{measured}} - NHV_a}{NHV_a} \times 100$$

Where:

NHV_{measured} = Average instrument response (Btu/scf)

NHV_a = Certified cylinder gas value (Btu/scf)

- (9) Pursuant to 40 CFR 63.1103(e)(4)(x), instead of complying with 40 CFR 63.670(p), the permittee must keep the flare monitoring records specified in 40 CFR 63.1109(e).
- (10) Pursuant to 40 CFR 63.1103(e)(4)(xi), instead of complying with 40 CFR 63.670(q), the permittee must comply with the reporting requirements specified in 40 CFR 63.1110(d) and (e)(4).
- (11) Pursuant to 40 CFR 63.1103(e)(4)(xii), when determining compliance with the pilot flame requirements specified in 40 CFR 63.670(b) and (g), substitute “pilot flame or flare flame” for each occurrence of “pilot flame.”
- (12) Pursuant to 40 CFR 63.1103(e)(4)(xiii), when determining compliance with the flare tip velocity and combustion zone operating limits specified in 40 CFR 63.670(d) and (e), the requirement effectively applies starting with the 15-minute block that includes a full 15 minutes of the flaring event. The permittee is required to demonstrate compliance with the velocity and NHV_{cz} requirements starting with the block that contains the fifteenth minute of a flaring event. The permittee is not required to demonstrate compliance for the previous 15-minute block in which the event started and contained only a fraction of flow.
- g. Pursuant to 40 CFR 63.670(b), as referenced by 40 CFR 63.1103(e)(4), the permittee shall operate each flare with a pilot flame present on an individual burner or stage of burners at all times when regulated material is routed to the flare. Each 15-minute block during which there is at least one minute where no pilot flame on an individual burner or stage of burners

SECTION B - EMISSION POINTS, EMISSIONS UNITS, APPLICABLE REGULATIONS, AND OPERATING CONDITIONS (CONTINUED)

is present when regulated material is routed to the flare is a deviation of the standard. Deviations in different 15-minute blocks from the same event are considered separate deviations. The permittee shall monitor for the presence of a pilot flame on an individual burner or stage of burners as specified in 40 CFR 63.670(g). See **4. Specific Monitoring Requirements** n.(5).

- h. Pursuant to 40 CFR 63.670(d), as referenced by 40 CFR 63.1103(e)(4), except as provided in 40 CFR 63.670(d)(3) for pressure-assisted flares, for each flare, the permittee shall comply with either 40 CFR 63.670(d)(1) or (2), provided the appropriate monitoring systems are in-place, whenever regulated material is routed to the flare for at least 15-minutes and the flare vent gas flow rate is less than the smokeless design capacity of the flare. See **4. Specific Monitoring Requirements** n.(5).

- (1) Except as provided in 40 CFR 63.670(d)(2), the actual flare tip velocity (V_{tip}) must be less than 60 feet per second. The permittee shall monitor V_{tip} using the procedures specified in 40 CFR 63.670(i) and (k).
- (2) V_{tip} must be less than 400 feet per second and also less than the maximum allowed flare tip velocity (V_{max}) as calculated according to the following equation. The permittee shall monitor V_{tip} using the procedures specified in 40 CFR 63.670(i) and (k) and monitor gas composition and determine NHV_{vg} using the procedures specified in 40 CFR 63.670(j) and (l).

$$\log_{10}(V_{max}) = \frac{NHV_{vg} + 1,212}{850}$$

Where:

V_{max} = Maximum allowed flare tip velocity, ft/sec.

NHV_{vg} = Net heating value of flare vent gas, as determined by 40 CFR 63.670(k)(4), Btu/scf.

1,212 = Constant.

850 = Constant.

Compliance Demonstration Method:

Refer to **4. Specific Monitoring Requirements** and CD Paragraph 26.e. as referenced in **4. Specific Monitoring Requirements** n.(5).

- i. Pursuant to 40 CFR 63.670(e), as referenced by 40 CFR 63.1103(e)(4), the permittee shall operate the flare to maintain the net heating value of flare combustion zone gas (NHV_{cz}) at or above the applicable limits in 40 CFR 63.670(e)(1) and (2) determined on a 15-minute block period basis when regulated material is routed to the flare for at least 15-minutes. The permittee shall monitor and calculate NHV_{cz} as specified in 40 CFR 63.670(m).
- j. Pursuant to 401 KAR 52:020, Section 10, for the purposes of emission unit 007A (EPN 321A), the following definitions shall apply:
 - (1) "Assist Steam" means all steam that is intentionally introduced before or at a Flare tip through nozzles or other hardware conveyance for the purposes of, including, but not limited to, protecting the design of the Flare tip, promoting turbulence for mixing, or inducing air into the flame. Assist Steam includes, but is not necessarily limited to, center steam, lower steam, and upper steam. [CD Paragraph 12.d.]

SECTION B - EMISSION POINTS, EMISSIONS UNITS, APPLICABLE REGULATIONS, AND OPERATING CONDITIONS (CONTINUED)

- (2) “Available for Operation” means, with respect to a Compressor within a FGRS, that the Compressor is capable of commencing the recovery of Potentially Recoverable Gas as soon as practicable but not more than one hour after the Need for a Compressor to Operate arises. The period of time, not to exceed one hour, allowed by this definition for the startup of a Compressor will be included in the amount of time that a Compressor is Available for Operation. The periods provided for in **1. Operating Limitations y. (Maintenance of FGRS)** and **1. Operating Limitations z. (Shut Down)** may be included in the amount of time that the Compressors are Available for Operation. [CD Paragraph 12.e.]
- (3) “Calvert City Ethylene Flare” means the Steam-Assisted Ethylene Flare at the Calvert City Plant. [CD, Paragraph 12.i.]
- (4) “Calvert City Ethylene Plant” means the petrochemical manufacturing plant owned and operated by Westlake Chemical OpCo LP, located at 2468 Industrial Parkway, Calvert City, Kentucky 42029. [CD Paragraph 12.h.]
- (5) “Capable of Receiving Sweep, Supplemental, and/or Waste Gas” means, for a Flare, that the flow of Sweep, Supplemental, and/or Waste Gas is/are not prevented from being directed to the Flare by means of an isolation device such as closed valves, blinds, or stopples. [CD, Paragraph 12.j.]
- (6) “Combustion Efficiency” or “CE” means a Flare’s efficiency in converting the organic carbon compounds found in Vent Gas to carbon dioxide. [CD, Paragraph 12.k.]
- (7) “Combustion Zone” means the area of the Flare flame where the Combustion Zone Gas combines for combustion. [CD, Paragraph 12.l.]
- (8) “Combustion Zone Gas” means all gases and vapors found after the Flare tip. This gas includes all Vent Gas, Pilot Gas, Total Steam, and Assist Air. [CD, Paragraph 12.m.]
- (9) “Compressor” means, with respect to a FGRS, a mechanical device designed and installed to recover gas from a flare header. Types of FGRS compressors include reciprocating compressors, centrifugal compressors, liquid ring compressors and liquid jet ejectors. [CD, Paragraph 12.o.]
- (10) “Covered Flare” means the Calvert City Ethylene Flare, as well as any Newly Installed Covered Flare or Portable Flare in use at the Calvert City Ethylene Plant, provided however that once a Covered Flare is permanently taken out of service after October 26, 2022 and that change is reported in the subsequent Semi-Annual Report, that Flare is no longer a Covered Flare. [CD, Paragraph 12.s.]
- (11) “Covered Steam-Assisted Flare” means the Calvert City Ethylene Flare, as well as any Newly Installed Covered Flare or Portable Flare in use at the Calvert City Ethylene Plant. [CD, Paragraph 12.t.]
- (12) “In Operation” or “Being In Operation” or “Operating,” with respect to a Flare, means any and all times that Sweep, Supplemental, and/or Waste Gas is or may be vented to a Flare. A Flare that is In Operation is Capable of Receiving Sweep, Supplemental, and/or Waste Gas unless all Sweep, Supplemental, and Waste Gas flow is prevented by means of an isolation device, such as closed valves, blinds and/or stopples. [CD, Paragraph 12.hh.]
- (13) “Need for a Compressor to Operate” means that Potentially Recoverable Gas (determined on a fifteen-minute block average) is flowing to a Covered Flare serviced by the FGRS. [CD, Paragraph 12.qq.]

SECTION B - EMISSION POINTS, EMISSIONS UNITS, APPLICABLE REGULATIONS, AND OPERATING CONDITIONS (CONTINUED)

- (14) “Net Heating Value” means the theoretical total quantity of heat liberated by the complete combustion of a unit volume or weight of a fuel initially at 25 degrees Centigrade and 760 mmHg, assuming that the produced water is vaporized and all combustion products remain at, or are returned to, 25 degrees Centigrade; however, the standard for determining the volume corresponding to one mole is 20 degrees Centigrade. [CD, Paragraph 12.rr.]
- (15) “Net Heating Value Analyzers” or “NHV Analyzers” means an instrument capable of measuring the Net Heating Value of Vent Gas in BTU/scf. The sample extraction point of a Net Heating Value Analyzer may be located upstream of the introduction of Supplemental and/or Sweep and/or Purge Gas if the composition and flow rate of any such Supplemental and/or Sweep and/or Purge Gas are known constants or measured and if the constant or measurements are then used in the calculation of the Net Heating Value of the Vent Gas. [CD, Paragraph 12.ss.]
- (16) “Net Heating Value of Combustion Zone Gas” or “NHV_{cz}” means the Net Heating Value, in BTU/scf, of the Combustion Zone Gas in a Flare. NHV_{cz} must be calculated in accordance with **1. Operating Limitations** cc. [CD, Paragraph 12.tt.]
- (17) “Net Heating Value of Vent Gas” or “NHV_{vg}” means the Net Heating Value, in Btu/scf, of the Vent Gas directed to a Flare. NHV_{vg} must be calculated in accordance with **1. Operating Limitations** cc. [CD, Paragraph 12.vv.]
- (18) “Newly Installed Covered Flare(s)” means any Air-Assisted Flare or Steam-Assisted Flare that is permanently installed, receives Waste Gas that has been redirected to it from the Calvert City Ethylene Flare (existing as of October 26, 2022), and commences operation at the Calvert City Ethylene Plant after October 26, 2022. [CD, Paragraph 12.ww.]
- (19) “Portable Flare” means a Flare that is not permanently installed and that receives Waste Gas that has been redirected to it from a Covered Flare. [CD, Paragraph 12.ccc.]
- (20) “Potentially Recoverable Gas” means the Sweep Gas, Supplemental Gas, and/or Waste Gas (including hydrogen, nitrogen, oxygen, carbon dioxide, carbon monoxide, and/or water/steam) directed to a Covered Flare’s FGRS. Waste Gas streams generated from the maintenance of the units listed in this definition due to buildup of polymer or oily material and that contain cleaning or neutralizing chemicals that would damage the fuel gas consumers if recovered are not Potentially Recoverable Gas. This includes Quench System, Depropanizer Column, Debutanizer Column, Gas Column, Caustic Column, Cracked Gas Compressors (i.e., Booster Compressor and Feed Gas Compressor). Regeneration Waste Gas Streams are also not included in the definition of Potentially Recoverable Gas. [CD, Paragraph 12.ddd.]
- (21) “Purge Gas” means the gas introduced between a Flare header’s water seal and the Flare tip to prevent oxygen infiltration (backflow) into the Flare tip. [CD, Paragraph 12.ggg.]
- (22) “Regeneration Waste Gas Streams” means Waste Gas streams produced during the regeneration of the dryers, reactors, and other vessels at the Covered Plants. Regeneration Waste Gas Streams are high in nitrogen and/or steam and have very low heating value, thus they are not a useful fuel. [CD, Paragraph 12.hhh.]
- (23) “Steam-Assisted Flare” means a Flare that uses steam piped to a Flare tip to assist in combustion. [CD, Paragraph 12.ppp.]

SECTION B - EMISSION POINTS, EMISSIONS UNITS, APPLICABLE REGULATIONS, AND OPERATING CONDITIONS (CONTINUED)

- (24) “Supplemental Gas” means all gas introduced to a Flare in order to improve the combustible characteristics of the Combustion Zone Gas. [CD, Paragraph 12.qqq.]
 - (25) “Sweep Gas” means: Gas intentionally introduced into a Flare header system to prevent oxygen buildup in the Flare header. Sweep Gas in this Flare is introduced prior to and recovered by the FGRS. [CD, Paragraph 12.rrr.(1)]
 - (26) “Total Steam” means the total of all steam that is supplied to a Flare and includes, but is not limited to, lower steam, center steam, and upper steam. [CD, Paragraph 12.sss.]
 - (27) “Unobstructed Cross Sectional Area of the Flare Tip” or “A_{tip-unob}” means the open, unobstructed area of a Flare tip through which Vent Gas and center steam pass. Diagrams of four common Flare types are set forth as Figures 1 and 2 in **1. Operating Limitations** bb. [CD, Paragraph 12.www.]
 - (28) “Vent Gas” means all gas found just before the Flare tip. This gas includes all Waste Gas, that portion of Sweep Gas that is not recovered, Purge Gas, and Supplemental Gas, but does not include Pilot Gas, Total Steam, or Assist Air. [CD, Paragraph 12.zzz.]
 - (29) “Visible Emissions” means five minutes or more of Smoke Emissions during any two consecutive hours. [CD, Paragraph 12.aaaa.]
 - (30) “Waste Gas” means the mixture of all gases from plant operations that is directed to a Flare for the purpose of disposing of the gas. “Waste Gas” does not include gas introduced to a Flare exclusively to make it operate safely and as intended; therefore, “Waste Gas” does not include Pilot Gas, Total Steam, Assist Air, or the minimum amount of Sweep Gas and Purge Gas that is necessary to perform the functions of Sweep Gas and Purge Gas. “Waste Gas” also does not include the minimum amount of gas introduced to a Flare to comply with regulatory and/or enforceable permit requirements regarding the combustible characteristics of Combustion Zone Gas; therefore, “Waste Gas” does not include Supplemental Gas. Figure 3 in **1. Operating Limitations** e. depicts the meaning of “Waste Gas,” together with its relation to other gases associated with Flares. [CD, Paragraph 12.cccc.]
- k. Pursuant to 401 KAR 52:020, Section 10, the permittee must install and commence operation of equipment, including, as necessary, main and trim control valves and piping that enables the permittee to control Assist Steam flow to each Covered Steam-Assisted Flare in a manner sufficient to ensure compliance with this permit. [CD, Paragraph 21.]
 - l. Pursuant to 401 KAR 52:020, Section 10, the permittee must install and commence operation of a video camera that is capable of recording, in digital format, the flame of and any Smoke Emissions from the Covered Flare. [CD, Paragraph 23.]
 - m. Pursuant to 401 KAR 52:020, Section 10, the permittee must operate each of the instruments and monitoring systems required by **4. Specific Monitoring Requirements** l. and d. and collect data on a continuous basis at all times when the Covered Flare that the instrument and/or monitoring system is associated with is In Operation and Capable of Receiving Sweep, Supplemental, and/or Waste Gas, except for periods of instrument downtime specified in **1. Operating Limitations** y. [CD, Paragraph 28.]

SECTION B - EMISSION POINTS, EMISSIONS UNITS, APPLICABLE REGULATIONS, AND OPERATING CONDITIONS (CONTINUED)

- n. Pursuant to 401 KAR 52:020, Section 10, for each Covered Flare that has a water seal, if all of the following conditions are met, then the Covered Flare is not receiving Potentially Recoverable Gas flow:
 - (1) For the water seal drum associated with the respective Covered Flare, the pressure difference between the inlet pressure and the outlet pressure is less than the water seal pressure as set by the static head of water between the opening of the dip tube in the drum and the water level in the drum; [CD, Paragraph 29.a.]
 - (2) For the water seal drum associated with the respective Covered Flare, the water level in the drum is: (i) at the level of the weir or (ii) if the water level in the drum is measured, the measurement indicates that the water seal is present; and [CD, Paragraph 29.b.]
 - (3) Downstream of the seal drum, there is no flow of Supplemental Gas directed to the Covered Flare. [CD, Paragraph 29.c.]
- o. Pursuant to 401 KAR 52:020, Section 10, the permittee must operate each FGRS in a manner to minimize Waste Gas to the applicable Covered Flare(s) while ensuring safe chemical plant operations. The permittee also must operate each FGRS consistent with good engineering and maintenance practices and in accordance with its design and the manufacturer's specifications. Nothing in this **1. Operating Limitations** o. will require the permittee to recover any Waste Gas stream that is not a Potentially Recoverable Gas stream. [CD, Paragraph 39.a.]
- p. Pursuant to 401 KAR 52:020, Section 10, each FGRS must be Available for Operation or in operation for 98% of the time, as calculated according to **1. Operating Limitations** s. (Averaging Periods). The periods provided for in **1. Operating Limitations** q. (Maintenance of FGRS) and **1. Operating Limitations** r. (Shut Down) below may be included in the amount of time that the FGRS is Available for Operation or in operation when determining compliance with the requirement of **1. Operating Limitations** p. [CD, Paragraph 39.c.]
- q. Pursuant to 401 KAR 52:020, Section 10, periods of maintenance on and subsequent restart of a Compressor may be included in the amount of time that a Compressor is Available for Operation or in operation when determining compliance with the requirement to have a Compressor Available for Operation or in operation; provided however, these periods of maintenance and subsequent restart must not exceed 1,344 hours per Compressor in a five-year rolling sum period, rolled daily. The permittee must use best efforts to schedule maintenance activities during a Turnaround of the process units venting to the Covered Flare(s) served by the applicable FGRS. To the extent it is not practicable to undertake these maintenance activities during a Turnaround of these units, the permittee must use best efforts to minimize the generation of Waste Gas during such periods. [CD, Paragraph 39.d.]
- r. Pursuant to 401 KAR 52:020, Section 10, periods in which the FGRS is shut down (including the subsequent restart) due to operating conditions (such as high temperatures or large quantities of entrained liquid in the Vent Gas) outside the design operating range of the FGRS, including the associated knock-out drum(s), such that the outage is necessary

SECTION B - EMISSION POINTS, EMISSIONS UNITS, APPLICABLE REGULATIONS, AND OPERATING CONDITIONS (CONTINUED)

for safety or to preserve the mechanical integrity of the FGRS may be included in the amount of time that a Compressor is Available for Operation or in operation when determining compliance with the requirement to have the Compressor Available for Operation or in operation. By no later than 45 Days after any such outage, the permittee must investigate the root cause and all contributing causes of the outage and must implement, as expeditiously as practicable, corrective action, if any, to prevent a recurrence of the cause(s). [CD, Paragraph 39.e.]

- s. Pursuant to 401 KAR 52:020, Section 10, for purposes of calculating compliance with the period of time that a Compressor must be Available for Operation and/or in operation, as required by **1. Operating Limitations** p, the period to be used must be an 8,760-hour rolling sum, rolled hourly, using only hours when Potentially Recoverable Gas was generated during all or part of the hour but excluding hours for flows that could not have been prevented through reasonable planning and were in anticipation of or caused by a natural disaster, act of war or terrorism, or External Utility Loss. When no Potentially Recoverable Gas was generated during an entire hour, then that hour must not be used in computing the 8,760-hour rolling sum. The rolling sum must include only the previous 8,760 1-hour periods when Potentially Recoverable Gas was generated during all or part of the hour, provided that the Potentially Recoverable Gas was not generated by flows that could not have been prevented through reasonable planning and were in anticipation of or caused by a natural disaster, act of war or terrorism, or External Utility Loss. [CD, Paragraph 39.g.]
- t. Pursuant to 401 KAR 52:020, Section 10, the permittee must comply with the following requirements at the Covered Flare at all times when the Covered Flare, including a Portable Flare, is In Operation:
 - (1) Operation during Emissions Venting. The permittee must operate the Covered Flare at all times when emissions may be vented to it. [CD, Paragraph 40.a.]
 - (2) No Visible Emissions. The permittee must specify the smokeless design capacity of the Covered Flare and operate with no Visible Emissions, except for periods not to exceed a total of 5 minutes during any 2 consecutive hours, when the Covered Flare is In Operation and the Vent Gas flow is less than the smokeless design capacity of the Covered Flare. Visible Emissions may be determined by a person trained pursuant to Method 22 or documented by a video camera. The permittee must monitor for Visible Emissions from the Covered Flare while it is In Operation as specified below in **1. Operating Limitations** t.(2)(i) and (ii). Subsequent Visible Emissions observations must be conducted using either method listed in **1. Operating Limitations** t.(2)(i) and (ii). The permittee must record and report any instances where Visible Emissions are observed for more than 5 minutes during any 2 consecutive hours as specified in 40 CFR 63.655(g)(11)(ii). [CD, Paragraph 40.b.]
 - (i) At least once per day, the permittee must conduct Visible Emissions observations using an observation period of 5 minutes using Method 22 at 40 CFR Part 60, Appendix A-7. If at any time the permittee sees Visible Emissions, even if the minimum required daily Visible Emissions monitoring has already been performed, the permittee must immediately begin an observation period of 5 minutes using Method 22 at 40 CFR Part 60, Appendix A-7. If Visible Emissions are observed

SECTION B - EMISSION POINTS, EMISSIONS UNITS, APPLICABLE REGULATIONS, AND OPERATING CONDITIONS (CONTINUED)

for more than one continuous minute during any 5-minute observation period, the observation period using Method 22 at 40 CFR Part 60, Appendix A-7 must be extended to 2 hours or until 5 minutes of Visible Emissions are observed. [CD, Paragraph 40.b.(1)]

- (ii) Alternatively, the permittee may use a video camera to continuously record (at least one frame every 15 seconds with time and date stamps) images of the Flare flame and a reasonable distance above the Flare flame at an angle suitable for Visible Emissions observations. The permittee must provide real-time video camera output to the control room or other continuously staffed location where the camera images may be viewed at any time. [CD, Paragraph 40.b.(2)]
 - (3) Pilot Flame Presence. The permittee must operate the Covered Flare with a pilot flame present at all times. The permittee must continuously monitor the presence of the pilot flame(s) using a device (including, but not limited to, a thermocouple, ultraviolet beam sensor, or infrared sensor) capable of detecting that the pilot flame is present. [CD, Paragraph 40.c.]
 - (4) Monitoring According to Applicable Provisions. The permittee must comply with all applicable Subparts of 40 CFR Parts 60, 61, or 63 that state how a particular Covered Flare must be monitored. [CD, Paragraph 40.d.]
 - (5) Good Air Pollution Control Practices. At all times, including during periods of startup, shutdown, and/or Malfunction, the permittee must implement good air pollution control practices to minimize emissions from the Covered Flare; provided however that the permittee is not in violation of this requirement for any practice that permit V-20-022 R2 requires the permittee to implement after October 26, 2022 for the period between October 26, 2022 and the compliance requirements. Nothing in **1. Operating Limitations** t.(5) requires the permittee to install or maintain Flare monitoring equipment in addition to or different from the equipment required by **4. Specific Monitoring Requirements** l. and m. [CD, Paragraph 40.e.]
- u. Pursuant to 401 KAR 52:020, Section 10, the permittee must operate the Covered Flare in compliance with either **1. Operating Limitations** u.(1) or (2), as follows, provided that the appropriate monitoring systems are in place, whenever the Vent Gas flow rate is less than the smokeless design capacity of the Covered Flare.
- (1) The actual Flare Tip Velocity (V_{tip}) must be less than 60 feet per second. The permittee must monitor V_{tip} using the procedures specified in **1. Operating Limitations** u.(3); or [CD, Paragraph 41.a.]
 - (2) V_{tip} must be less than 400 feet per second and also less than the maximum allowed Flare Tip Velocity (V_{max}) as calculated according to Equation 2 as specified by **1. Operating Limitations** u.(3)(iv). The permittee must monitor V_{tip} and gas composition and must determine NHV_{vg} using the procedures specified in **1. Operating Limitations** u.(4). The Unobstructed Cross Sectional Area of the Flare Tip must be calculated consistent with Figures 1 and 2 below. [CD, Paragraph 41.b.]
 - (3) **Calculation Method for Determining Compliance with V_{tip} Operating Limits.** The permittee shall determine V_{tip} on a 15-minute Block Average basis according to the following requirements:
 - (i) The permittee shall use design and engineering principles and the guidance in Figures 1 and 2 below to determine the Unobstructed Cross Sectional Area of the

SECTION B - EMISSION POINTS, EMISSIONS UNITS, APPLICABLE REGULATIONS, AND OPERATING CONDITIONS (CONTINUED)

Flare Tip. The Unobstructed Cross Sectional Area of the Flare Tip is the total tip area that Vent Gas can pass through. This area does not include any stability tabs, stability rings, and Upper Steam or air tubes because Vent Gas does not exit through them.

- (ii) The permittee shall determine the cumulative volumetric flow of Vent Gas for each 15-minute Block Average Period using the data from the continuous flow monitoring system required in **4. Specific Monitoring Requirements** c. according to the requirements in **1. Operating Limitations** u.(7).
- (iii) The 15-minute Block Average V_{tip} shall be calculated using Equation 1.

$$V_{tip} = \frac{Q_{cum}}{Area \times 900}$$

Equation 1

- (iv) If the permittee chooses to comply with **1. Operating Limitation** u.(1), the permittee shall also determine the NHV_{vg} using **1. Operating Limitation** u.(4) and calculate V_{max} using Equation 2 in order to compare V_{tip} to V_{max} on a 15-minute Block Average basis.

$$\log_{10}(V_{max}) = \frac{NHV_{vg} + 1,212}{850}$$

Equation 2

(4) Step 1: Determine the Net Heating Value of the Vent Gas (NHV_{vg})

The permittee shall determine the Net Heating Value of the Vent Gas (NHV_{vg}) based on composition monitoring data on a 15-minute block average basis according to the following requirements. If the permittee monitors separate gas streams that combine to comprise the total vent gas flow to a Covered Flare, the 15-minute block average Net Heating Value shall be determined separately for each measurement location according to the following requirements and a flow-weighted average of the gas stream Net Heating Values shall be used to determine the 15-minute block average Net Heating Value of the cumulative Vent Gas. The NHV_{vg} 15-minute block averages shall be calculated for set 15-minute time periods starting at 12 midnight to 12:15 AM, 12:15 AM to 12:30 AM and so on, concluding at 11:45 PM to midnight.

(5) Step 1a: Equation or Output to be Used to Determine NHV_{vg} at a Measurement Location

- (i) For any gas stream for which the Company complies with **4. Specific Monitoring Requirements** m. by collecting compositional analysis data in accordance with the method set forth in **4. Specific Monitoring Requirements** m.(1): Equation 3 shall be used to determine the NHV_{vg} of a specific sample by summing the Net Heating Value for each individual component by individual component volume fractions. Individual component Net Heating Values are listed in Table 1 below.

$$NHV_{vg} = \sum_{i=1}^n x_i \times NHV_i$$

Equation 3

- (ii) For any gas stream for which the permittee complies with **4. Specific Monitoring Requirements** m. by collecting direct Net Heating Value monitoring data in

SECTION B - EMISSION POINTS, EMISSIONS UNITS, APPLICABLE REGULATIONS, AND OPERATING CONDITIONS (CONTINUED)

accordance with the method set forth in **4. Specific Monitoring Requirements** m.(2) but for which a Hydrogen Concentration Monitor is not used: Use the direct output (measured value) of the monitoring system(s) (in Btu/scf) to determine the NHV_{vg} for the sample.

- (iii) For any gas stream for which the permittee complies with **4. Specific Monitoring Requirements** m. by collecting direct Net Heating Value monitoring data in accordance with the method set forth in **4. Specific Monitoring Requirements** m.(2) and for which a Hydrogen Concentration Monitor is also used: Equation 4 shall be used to determine the NHV_{vg} for each sample measured via the Net Heating Value monitoring system. Where hydrogen concentration data is collected, Equation 4 performs a net correction for the measured heating value of hydrogen since the theoretical Net Heating Value for hydrogen is 274 Btu/scf, but for the purposes of permit V-19-016 R2, a Net Heating Value of 1,212 Btu/scf may be used ($1,212 - 274 = 938$ Btu/scf).

$$NHV_{vg} = NHV_{measured} + 938x_{H_2}$$

Equation 4

(6) Step 1b: Calculation Method to be Used in Applying Equation/Output to Determine NHV_{vg}

- (i) For any Covered Flare for which the permittee complies with **4. Specific Monitoring Requirements** m. by using a continuous monitoring system in accordance with the method set forth in **4. Specific Monitoring Requirements** m.(1) or (2): The permittee may elect to determine the 15-minute block average NHV_{vg} using either the Feed-Forward Calculation Method or the Direct Calculation Method (both described below). The permittee need not elect to use the same methodology at all Covered Flares with a continuous monitoring system; however, for each such Covered Flare, the permittee must elect one calculation method that will apply at all times, and use that method for all continuously monitored flare vent streams associated with that Covered Flare. If the permittee intends to change the calculation method that applies to a Covered Flare, the permittee must notify the EPA 30 days in advance of such a change.
- (ii) **Feed-Forward Calculation Method.** When calculating NHV_{vg} for a specific 15-minute block:
- (A) Use the results from the first sample collected during an event (for periodic Vent Gas flow events) for the first 15-minute block associated with that event.
 - (B) If the results from the first sample collected during an event (for periodic Vent Gas flow events) are not available until after the second 15-minute block starts, use the results from the first sample collected during an event for the second 15-minute block associated with that event.
 - (C) For all other cases, use the results that are available from the most recent sample prior to the 15-minute block period for that 15-minute block period for all Vent Gas streams. For the purpose of this requirement, use the time that the results become available rather than the time the sample was collected. For example, if a sample is collected at 12:25 AM and the analysis is completed at 12:38 AM, the results are available at 12:38 AM and these results would be used to

SECTION B - EMISSION POINTS, EMISSIONS UNITS, APPLICABLE REGULATIONS, AND OPERATING CONDITIONS (CONTINUED)

determine compliance during the 15-minute block period from 12:45 AM to 1:00 AM.

(iii) **Direct Calculation Method.** When calculating NHVvg for a specific 15-minute block:

- (A) If the results from the first sample collected during an event (for periodic Vent Gas flow events) are not available until after the second 15-minute block starts, use the results from the first sample collected during an event for the first 15-minute block associated with that event.
- (B) For all other cases, use the arithmetic average of all NHVvg measurement data results that become available during a 15-minute block to calculate the 15-minute block average for that period. For the purpose of this requirement, use the time that the results become available rather than the time the sample was collected. For example, if a sample is collected at 12:25 AM and the analysis is completed at 12:38 AM, the results are available at 12:38 AM and these results would be used to determine compliance during the 15-minute block period from 12:30 AM to 12:45 AM.

(7) Step 2: Determine Volumetric Flow Rates of Gas Streams

The permittee shall determine the volumetric flow rate in standard cubic feet (scf) of vent gas, along with the volumetric flow rates (in scf) of any Supplemental Gas, Assist Steam, and Premix Assist Air, over a 15-minute block average basis. The 15-minute block average volumetric flow rates shall be calculated for set 15-minute time periods starting at 12 midnight to 12:15 AM, 12:15 AM to 12:30 AM and so on, concluding at 11:45 PM to midnight.

- (i) **For any gas streams for which the permittee complies with 4. Specific Monitoring Requirements 1. by using a monitoring system that directly records volumetric flow rate:** Use the direct output (measured value) of the monitoring system(s) (in scf), as corrected for the temperature and pressure of the system to standard conditions (i.e., a temperature of 20 °C (68 °F) and a pressure of 1 atmosphere) to then calculate the average volumetric flow rate of that gas stream for the 15-minute block period.
- (ii) **For Vent Gas, Assist Steam, or Premix Assist Air gas streams for which the permittee complies with 4. Specific Monitoring Requirements 1. by using a mass flow monitor to determine volumetric flow rate:** Equation 3 shall be used to determine the volumetric flow rate of Vent Gas, Assist Air, or Assist Steam by converting mass flow rate to volumetric flow at standard conditions (i.e., a temperature of 20 °C (68 °F) and a pressure of 1 atmosphere). Equation 5 uses the molecular weight of the gas stream as an input to the equation; therefore, if the permittee elects to use a mass flow monitor to determine volumetric flow rate of Vent Gas, the permittee must collect compositional analysis data for such Vent Gas in accordance with the method set forth in **4. Specific Monitoring Requirements m.(1)**. For assist steam, use a molecular weight of 18 pounds per pound-mole. For assist air, use a molecular weight of 29 pounds per pound-mole. The converted volumetric flow rates at standard conditions from Equation 5 shall then be used to calculate the average volumetric flow rate of that gas stream for the 15-minute block period.

SECTION B - EMISSION POINTS, EMISSIONS UNITS, APPLICABLE REGULATIONS, AND OPERATING CONDITIONS (CONTINUED)

$$Q_{vol} = \frac{Q_{mass} \times 385.3}{MW_t}$$

Equation 5

(iii) **For gas streams for which the molecular weight of the gas is known and for which the permittee complies with 4. Specific Monitoring Requirements l. by using continuous pressure/temperature monitoring system(s):** Use appropriate engineering calculations to determine the average volumetric flow rate of that gas stream for the 15-minute block period. For assist steam, use a molecular weight of 18 pounds per pound-mole. For assist air, use a molecular weight of 29 pounds per pound-mole. For Vent Gas, molecular weight must be determined by collecting compositional analysis data for such Vent Gas in accordance with the method set forth in **4. Specific Monitoring Requirements m.(1)**.

(8) Key to the Abbreviations:

385.3	= conversion factor (scf/lb-mol)
850	= Constant
900	= Conversion factor, (seconds/15-minute block average)
1,212	= Constant for heating value of hydrogen (H ₂)
Area	= The unobstructed cross-sectional area of the flare tip is the total tip area that vent gas can pass through, ft ² . This area does not include any stability tabs, stability rings, and upper steam or air tubes because flare vent gas does not exit through them. Use design and engineering principles to determine the unobstructed cross-sectional area of the flare tip.
i	= individual component in Vent Gas (unitless)
MW _t	= molecular weight of the gas at the flow monitoring location (lb/lbmol)
n	= number of components in Vent Gas (unitless)
NHVi	= Net Heating Value of component i according to Table 1 below (Btu/scf)
NHV _{measured}	= Net Heating Value of Vent Gas stream as measured by monitoring system (Btu/scf)
NHV _{vg}	= Net Heating Value of Vent Gas (Btu/scf)
Q _{cum}	= cumulative volumetric flow over 15-minute block average period (scf)
Q _{mass}	= mass flow rate (pounds per second)
Q _{vol}	= volumetric flow rate (scf per second)
V _{max}	= Maximum allowed flare tip velocity (feet per second)
V _{tip}	= Flare tip velocity (feet per second)
X _i	= concentration of component i in Vent Gas (vol fraction)

SECTION B - EMISSION POINTS, EMISSIONS UNITS, APPLICABLE REGULATIONS, AND OPERATING CONDITIONS (CONTINUED)

Table 1. Individual Component Properties:

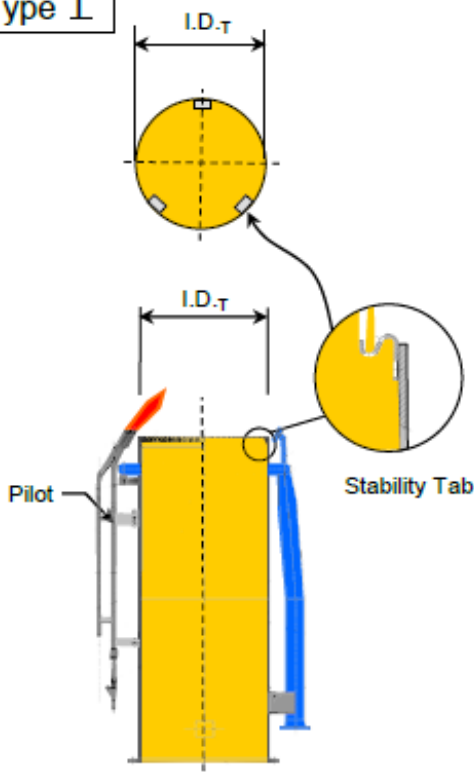
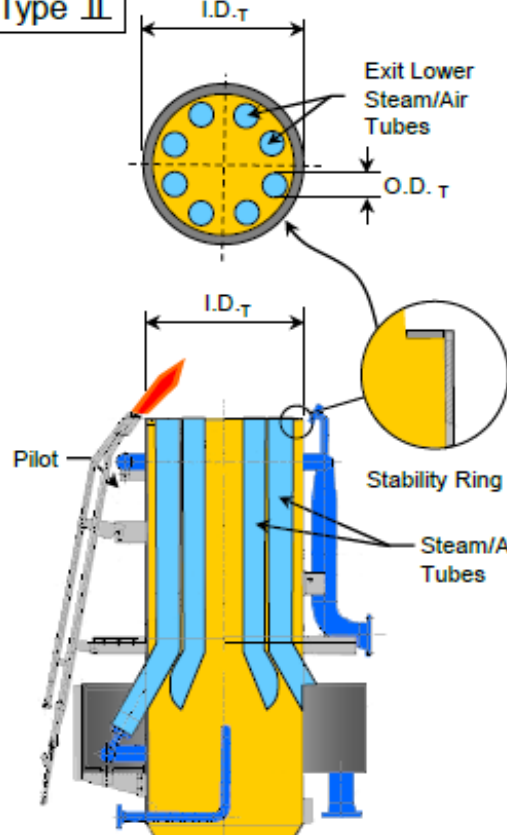
Component	Molecular Formula	MW _i (pounds per pound-mole)	CMN _i (mole per mole)	NHV _i (Btu per scf)	LFL _i (volume %)
Acetylene	C ₂ H ₂	26.04	2	1,404	2.5
Benzene	C ₆ H ₆	78.11	6	3,591	1.3
1,2-Butadiene	C ₄ H ₆	54.09	4	2,794	2.0
1,3-Butadiene	C ₄ H ₆	54.09	4	2,690	2.0
iso-Butane	C ₄ H ₁₀	58.12	4	2,957	1.8
n-Butane	C ₄ H ₁₀	58.12	4	2,968	1.8
cis-Butene	C ₄ H ₈	56.11	4	2,830	1.6
iso-Butene	C ₄ H ₈	56.11	4	2,928	1.8
trans-Butene	C ₄ H ₈	56.11	4	2,826	1.7
Carbon Dioxide	CO ₂	44.01	1	0	∞
Carbon Monoxide	CO	28.01	1	316	12.5
Cyclopropane	C ₃ H ₆	42.08	3	2,185	2.4
Ethane	C ₂ H ₆	30.07	2	1,595	3.0
Ethylene	C ₂ H ₄	28.05	2	1,477	2.7
Hydrogen	H ₂	2.02	0	1,212 ^A	4.0
Hydrogen Sulfide	H ₂ S	34.08	0	587	4.0
Methane	CH ₄	16.04	1	896	5.0
Methyl-Acetylene	C ₃ H ₄	40.06	3	2,088	1.7
Nitrogen	N ₂	28.01	0	0	∞
Oxygen	O ₂	32.00	0	0	∞
Pentane+ (C5+)	C ₅ H ₁₂	72.15	5	3,655	1.4
Propadiene	C ₃ H ₄	40.06	3	2,066	2.16
Propane	C ₃ H ₈	44.1	3	2,281	2.1
Propylene	C ₃ H ₆	42.08	3	2,150	2.4
Water	H ₂ O	18.02	0	0	∞

^A The theoretical Net Heating Value for hydrogen is 274 Btu/scf, but for the purposes of this section of this permit, a Net Heating Value of 1,212 Btu/scf shall be used.

Note: If a component is not specified in Table 1, the heats of combustion may be determined using any published values where the net enthalpy per mole of offgas is based on combustion at 25 °C and 1 atmosphere (or constant pressure) with offgas water in the gaseous state, but the standard temperature for determining the volume corresponding to one mole of vent gas is 20 °C.

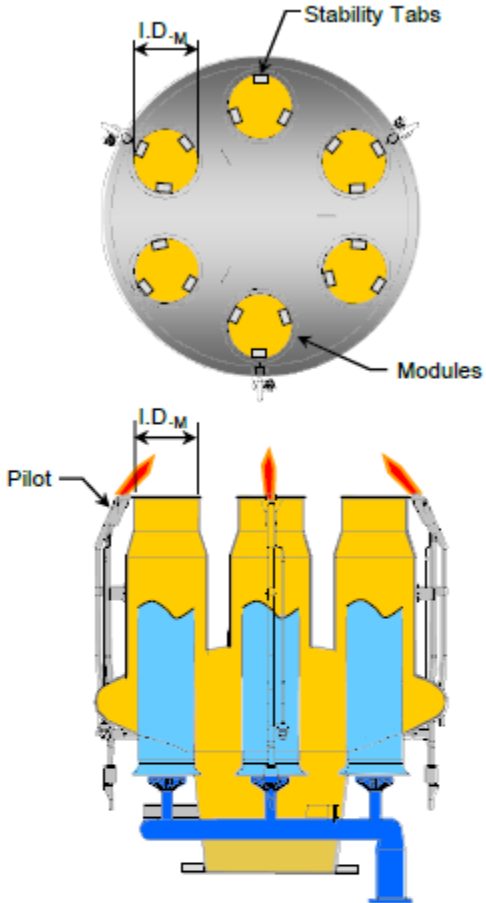
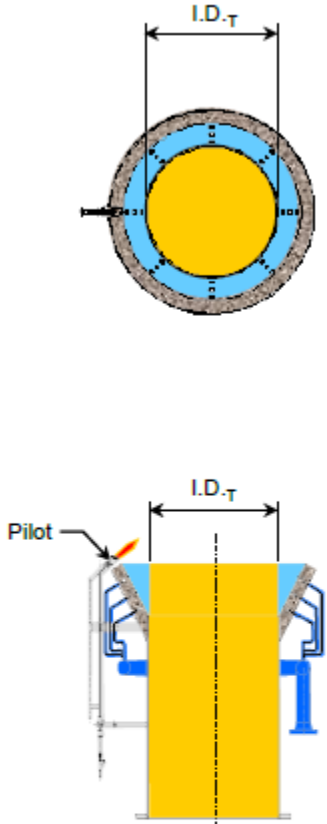
SECTION B - EMISSION POINTS, EMISSIONS UNITS, APPLICABLE REGULATIONS, AND OPERATING CONDITIONS (CONTINUED)

Figure 1. Diagram of Common Flare Tip Type I and II

<p>Type I</p>  $A_{tip-unob} = \pi(I.D.T)^2/4 - (X_T * A_{ST})$	<p>Type II</p>  $A_{tip-unob} = \pi(I.D.T)^2/4 - A_{ST} - N_T * \pi(O.D.T)^2/4$
<p>Where:</p> <ul style="list-style-type: none"> $A_{tip-unob}$ = Unobstructed Cross Sectional Area of Flare Tip $I.D.T$ = Inside Diameter Flare Tip X_T = Number of Stability Tabs A_{ST} = Area of a Stability Tab 	<p>Where:</p> <ul style="list-style-type: none"> $A_{tip-unob}$ = Unobstructed Cross Sectional Area of Flare Tip $I.D.T$ = Inside Diameter Flare Tip A_{ST} = Area of Stability Ring $O.D.T$ = Outside Diameter of Steam/Air Tubes N_T = Number of Steam/Air Tubes
<p>Example: $I.D.T = 41.5$ inches $X_T = 3$ $A_{ST} = 3$ Sq. inches</p>	<p>Example: $I.D.T = 47.5$ inches $A_{ST} = 100$ Sq. inches $O.D.T = 6.5$ inches $N_T = 8$</p>
<p>$A_{tip-unob} = \pi(41.5)^2/4 - (3 * 3)$ $A_{tip-unob} = 1344$ Sq. inches</p>	<p>$A_{tip-unob} = \pi(47.5)^2/4 - 100 - 8 * \pi(6.5)^2/4$ $A_{tip-unob} = 1322$ Sq. inches</p>

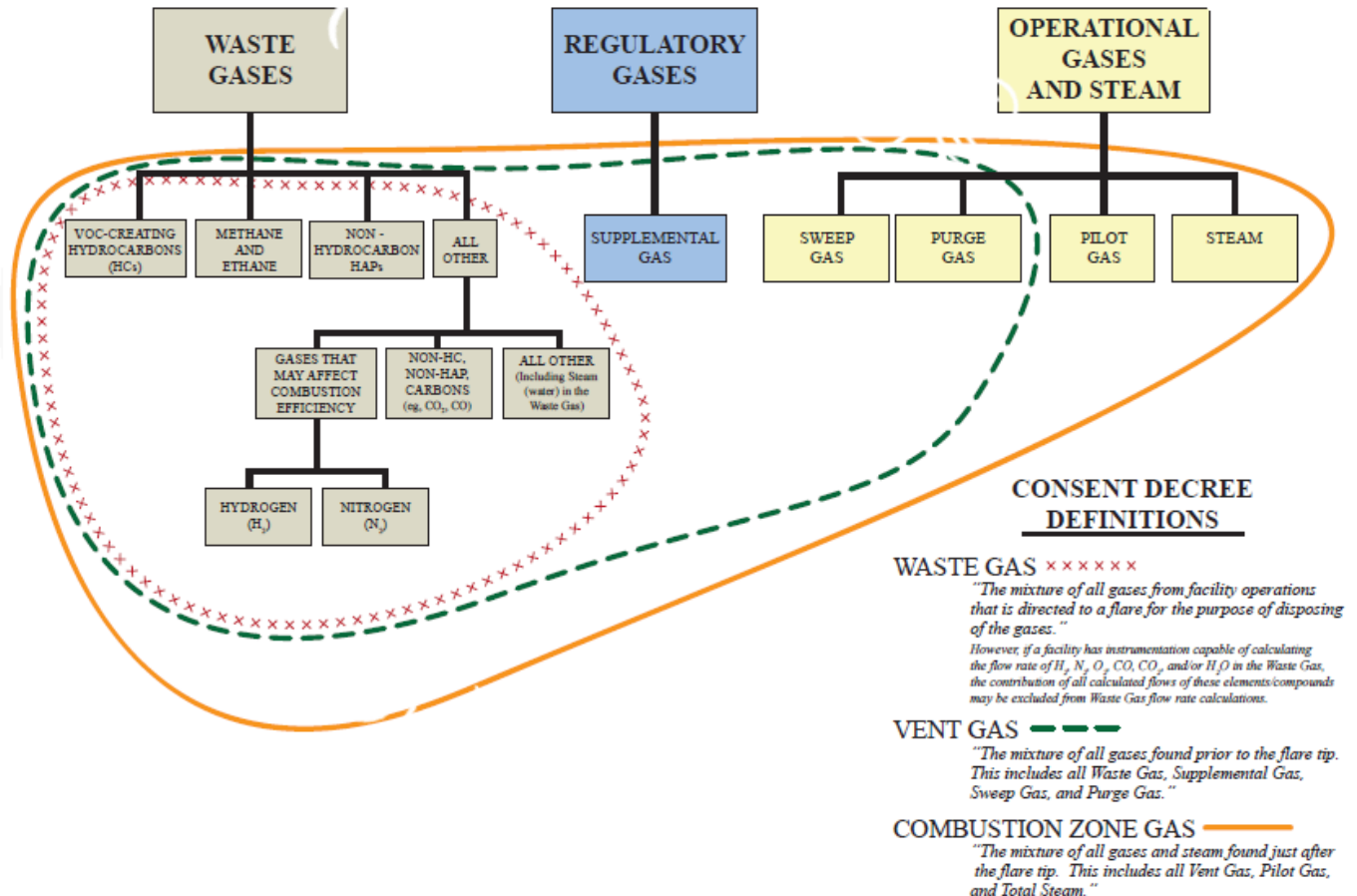
SECTION B - EMISSION POINTS, EMISSIONS UNITS, APPLICABLE REGULATIONS, AND OPERATING CONDITIONS (CONTINUED)

Figure 2. Diagram of Common Flare Tip Type III and IV

Type III	Type IV
 $A_{tip-unob} = N_M * (\pi * (I.D.M)^2 / 4 - X_T * A_{ST})$	 $A_{tip-unob} = \pi (I.D.T)^2 / 4$
<p>Where: $A_{tip-unob}$ = Unobstructed Cross Sectional Area of Flare Tip</p> <p>$I.D.M$ = Inside Diameter of One Tip Module</p> <p>N_M = Number of Modules</p> <p>X_T = Number of Stability Tabs per Module</p> <p>A_{ST} = Area of a Stability Tab</p>	<p>Where: $A_{tip-unob}$ = Unobstructed Cross Sectional Area of Flare Tip</p> <p>$I.D.T$ = Inside Diameter of Flare Tip</p>
<p>Example: $I.D.M$ = 17 inches</p> <p>N_M = 6 X_T = 3</p> <p>A_{ST} = 3 Sq. inches</p>	<p>Example: $I.D.T$ = 41.5 inches</p>
<p>$A_{tip-unob} = 6 * (\pi * (17)^2 / 4 - 3 * 3)$</p> <p>$A_{tip-unob} = 1308$ Sq. inches</p>	<p>$A_{tip-unob} = \pi (41.5)^2 / 4$</p> <p>$A_{tip-unob} = 1353$ Sq. inches</p>

SECTION B - EMISSION POINTS, EMISSIONS UNITS, APPLICABLE REGULATIONS, AND OPERATING CONDITIONS (CONTINUED)

Figure 3. Depiction of Gases Associated with Flares



- v. Pursuant to 401 KAR 52:020, Section 10, the permittee must operate and maintain the Covered Flare in accordance with its design and the requirements of this permit. [CD, Paragraph 43.]
- w. Pursuant to 401 KAR 52:020, Section 10, the permittee must comply with the following Net Heating Value standards, except as provided in **1. Operating Limitations** y. (Standard During Instrument Downtime):
 - (1) Net Heating Value of Vent Gas (NHV_{vg}). the permittee must operate the Ethylene Flare with an NHV_{vg} of greater than or equal to 300 Btu/scf determined on a 15-minute block period basis when Waste Gas is routed to the Ethylene Flare for at least 15 minutes. The permittee must monitor and calculate NHV_{vg} at the Covered Flare in accordance with **1. Operating Limitations** u. [CD, Paragraph 44.a.]
 - (2) Net Heating Value of Combustion Zone Gas (NHV_{cz}). The permittee must operate the Ethylene Flare so as to maintain the NHV_{cz} at or above 270 Btu/scf determined on a 15-minute block period basis when Waste Gas is routed to the Ethylene Flare for at least 15 minutes. The permittee must monitor and calculate NHV_{cz} at each Covered Flare in accordance with **1. Operating Limitations** u. [CD, Paragraph 44.b.]

SECTION B - EMISSION POINTS, EMISSIONS UNITS, APPLICABLE REGULATIONS, AND OPERATING CONDITIONS (CONTINUED)

- x. Pursuant to 401 KAR 52:020, Section 10, the permittee must operate the Ethylene Flare with a minimum of a 98% Combustion Efficiency at all times when Waste Gas is routed to the Ethylene Flare for at least 15 minutes. To demonstrate continuous compliance with the 98% Combustion Efficiency, the permittee must operate the Ethylene Flare in compliance with the applicable requirements in **1. Operating Limitations** w.(1). [CD, Paragraph 45.]
- y. Pursuant to 401 KAR 52:020, Section 10, if one or more of the following conditions (collectively referred to as "Instrument Downtime") is present and renders the permittee incapable of operating a Ethylene Flare in accordance with the applicable NHV standards in **1. Operating Limitations** w.(1), the permittee must operate the Ethylene Flare in accordance with good air pollution control practices so as to minimize emissions and ensure good Combustion Efficiency at the Ethylene Flare [CD, Paragraph 46.]:
 - (1) Malfunction of an instrument needed to meet the requirement(s); [CD, Paragraph 46.a.]
 - (2) Repairs following the Malfunction of an instrument needed to meet the requirement(s); [CD, Paragraph 46.b.]
 - (3) Recommended scheduled maintenance of an instrument in accordance with the manufacturer's recommended schedule, for an instrument needed to meet the requirement(s); and/or [CD, Paragraph 46.c.]
 - (4) Quality Assurance/Quality Control activities on an instrument needed to meet the requirement(s). Instrument Downtime must be calculated in accordance with 40 CFR 60.13(h)(2). [CD, Paragraph 46.d.]

In no event shall Instrument Downtime exceed 5% of the time in each Semi-Annual Period that the Covered Flare affected by the Instrument Downtime is In Operation. For purposes of calculating the 5%, the time used for NHV Analyzer, mass spectrometer, or gas chromatograph calibration and validation activities may be excluded.

Compliance Demonstration Method:

Refer to **4. Specific Monitoring Requirements** l. through n., **5. Specific Recordkeeping** e. and h., and **6. Specific Reporting Requirements** f.

2. Emission Limitations:

- a. Pursuant to 401 KAR 63:015, Section 3, visible emissions from the flare shall not exceed twenty (20) percent opacity for more than three (3) minutes in any one (1) day.
- b. Pursuant to 40 CFR 63.11(b)(4), the flare shall be operated with be no visible emissions, except for periods not to exceed a total of 5 minutes during any 2 consecutive hours.
- c. Pursuant to 40 CFR 63.670(c), as referenced by 40 CFR 63.1103(e)(4), the permittee shall specify the smokeless design capacity of each flare and operate with no visible emissions, except for periods not to exceed a total of 5 minutes during any 2 consecutive hours, when regulated material is routed to the flare and the flare vent gas flow rate is less than the smokeless design capacity of the flare. The permittee shall monitor for visible emissions from the flare as specified in 40 CFR 63.670(h).

SECTION B - EMISSION POINTS, EMISSIONS UNITS, APPLICABLE REGULATIONS, AND OPERATING CONDITIONS (CONTINUED)

Compliance Demonstration Method:

- (1) Compliance with the flare standards contained in 40 CFR 60.18(c) through (f) shall be deemed in compliance with the visible emissions standard in 401 KAR 63:015. Refer to **1. Operating Limitations**.
- (2) Pursuant to Item (d)(1)(ii)(A) of Table 7 to 40 CFR 63.1103(e)(4), if the permittee owns and operates an ethylene process vent (as defined in 40 CFR 63.1103(e)(2) and if the process vent is at a new source and the vent stream has a flow rate ≥ 0.008 scmm and a total organic HAP concentration ≥ 30 parts per million by volume on a dry basis, then the permittee must reduce emissions of organic HAP by 98 weight-percent; or reduce organic HAP or TOC to a concentration of 20 parts per million by volume on a dry basis corrected to 3-percent oxygen; whichever is less stringent, by venting emissions through a closed vent system to a flare and meet the requirements of 40 CFR 63.983 and 40 CFR 63.1103(e)(4) and (9).

3. Testing Requirements:

- a. Pursuant to 40 CFR 63.11(b)(4) and 40 CFR 60.18(f)(1), the permittee shall conduct a visible emission test by EPA Test Method 22, with a 2 hour observation period. The test shall be performed within 60 days after achieving maximum production rate at which the unit will be operated, but not later than 180 days after initial start-up.

4. Specific Monitoring Requirements:

- a. Pursuant to 40 CFR 63.670(g), as referenced by 40 CFR 63.1103(e)(4), the permittee shall continuously monitor the presence of the pilot flame(s) using a device (including, but not limited to, a thermocouple, ultraviolet beam sensor, or infrared sensor) capable of detecting that the pilot flame(s) is present.
- b. Pursuant to 40 CFR 63.670(h), as referenced by 40 CFR 63.1103(e)(4), the permittee shall conduct an initial visible emissions demonstration using an observation period of 2 hours using Method 22 at 40 CFR part 60, appendix A-7. Subsequent visible emissions observations must be conducted using either the methods in 40 CFR 63.670(h)(1) or, alternatively, the methods in 40 CFR 63.670(h)(2). The permittee must record and report any instances where visible emissions are observed for more than 5 minutes during any 2 consecutive hours as specified in 40 CFR 63.655(g)(11)(ii).
 - (1) Pursuant to 40 CFR 63.670(h)(1), as referenced by 40 CFR 63.1103(e)(4), at least once per day for each day regulated material is routed to the flare, conduct visible emissions observations using an observation period of 5 minutes using Method 22 at 40 CFR part 60, appendix A-7. If at any time the permittee sees visible emissions while regulated material is routed to the flare, even if the minimum required daily visible emission monitoring has already been performed, the permittee shall immediately begin an observation period of 5 minutes using Method 22 at 40 CFR part 60, appendix A-7. If visible emissions are observed for more than one continuous minute during any 5-minute observation period, the observation period using Method 22 at 40 CFR part 60, appendix A-7 must be extended to 2 hours or until 5-minutes of visible emissions are observed. Daily 5-minute Method 22 observations are not required to be conducted for days the flare does not receive any regulated material.

SECTION B - EMISSION POINTS, EMISSIONS UNITS, APPLICABLE REGULATIONS, AND OPERATING CONDITIONS (CONTINUED)

- (2) Pursuant to 40 CFR 63.670(h)(2), as referenced by 40 CFR 63.1103(e)(4), use a video surveillance camera to continuously record (at least one frame every 15 seconds with time and date stamps) images of the flare flame and a reasonable distance above the flare flame at an angle suitable for visual emissions observations. The permittee must provide real-time video surveillance camera output to the control room or other continuously manned location where the camera images may be viewed at any time.
- c. Pursuant to 40 CFR 63.670(i), as referenced by 40 CFR 63.1103(e)(4), the permittee shall install, operate, calibrate, and maintain a monitoring system capable of continuously measuring, calculating, and recording the volumetric flow rate in the flare header or headers that feed the flare as well as any flare supplemental gas used. Different flow monitoring methods may be used to measure different gaseous streams that make up the flare vent gas provided that the flow rates of all gas streams that contribute to the flare vent gas are determined. If assist air or assist steam is used, the permittee shall install, operate, calibrate, and maintain a monitoring system capable of continuously measuring, calculating, and recording the volumetric flow rate of assist air and/or assist steam used with the flare. If pre-mix assist air and perimeter assist are both used, the permittee shall install, operate, calibrate, and maintain a monitoring system capable of separately measuring, calculating, and recording the volumetric flow rate of premix assist air and perimeter assist air used with the flare. Flow monitoring system requirements and acceptable alternatives are provided in 40 CFR 63.670(i)(1) through (6).
- (1) The flow rate monitoring systems must be able to correct for the temperature and pressure of the system and output parameters in standard conditions (i.e., a temperature of 20 °C (68 °F) and a pressure of 1 atmosphere).
- (2) Mass flow monitors may be used for determining volumetric flow rate of flare vent gas provided the molecular weight of the flare vent gas is determined using compositional analysis as specified in 40 CFR 63.670(j) so that the mass flow rate can be converted to volumetric flow at standard conditions using the following equation.

$$Q_{\text{vol}} = \frac{W_{\text{mass}} \times 385.3}{MW_t}$$

Where:

Q_{vol} = Volumetric flow rate, standard cubic feet per second.

Q_{mass} = Mass flow rate, pounds per second.

385.3 = Conversion factor, standard cubic feet per pound-mole.

MW_t = Molecular weight of the gas at the flow monitoring location, pounds per pound-mole.

- (3) Mass flow monitors may be used for determining volumetric flow rate of assist air or assist steam. Use the equation in 40 CFR 63.670(i)(2) to convert mass flow rates to volumetric flow rates. Use a molecular weight of 18 pounds per pound-mole for assist steam and use a molecular weight of 29 pounds per pound-mole for assist air.
- (4) Continuous pressure/temperature monitoring system(s) and appropriate engineering calculations may be used in lieu of a continuous volumetric flow monitoring systems provided the molecular weight of the gas is known. For assist steam, use a molecular weight of 18 pounds per pound-mole. For assist air, use a molecular weight of 29

SECTION B - EMISSION POINTS, EMISSIONS UNITS, APPLICABLE REGULATIONS, AND OPERATING CONDITIONS (CONTINUED)

pounds per pound-mole. For flare vent gas, molecular weight must be determined using compositional analysis as specified in 40 CFR 63.670(j).

- d. Pursuant to 40 CFR 63.670(j), as referenced by 40 CFR 63.1103(e)(4), the permittee shall determine the concentration of individual components in the flare vent gas using either the methods provided in 40 CFR 63.670(j)(1) or (2), to assess compliance with the operating limits in 40 CFR 63.670(e) and, if applicable, 40 CFR 63.670(d) and (f). Alternatively, the permittee may elect to directly monitor the net heating value of the flare vent gas following the methods provided in 40 CFR 63.670(j)(3) and, if desired, may directly measure the hydrogen concentration in the flare vent gas following the methods provided in 40 CFR 63.670(j)(4). The permittee may elect to use different monitoring methods for different gaseous streams that make up the flare vent gas using different methods provided the composition or net heating value of all gas streams that contribute to the flare vent gas are determined.
 - (1) Except as provided in 40 CFR 63.670(j)(5) and (6), the permittee shall install, operate, calibrate, and maintain a monitoring system capable of continuously measuring (i.e., at least once every 15-minutes), calculating, and recording the individual component concentrations present in the flare vent gas.
 - (2) Except as provided in 40 CFR 63.670(j)(5) and (6), the permittee shall install, operate, and maintain a grab sampling system capable of collecting an evacuated canister sample for subsequent compositional analysis at least once every eight hours while there is flow of regulated material to the flare. Subsequent compositional analysis of the samples must be performed according to Method 18 of 40 CFR part 60, appendix A-6, ASTM D6420-99 (Reapproved 2010), ASTM D1945-03 (Reapproved 2010), ASTM D1945-14 or ASTM UOP539-12 (all incorporated by reference—see 40 CFR 63.14).
 - (3) Except as provided in 40 CFR 63.670(j)(5) and (6), the permittee shall install, operate, calibrate, and maintain a calorimeter capable of continuously measuring, calculating, and recording NHV_{vg} at standard conditions.
 - (4) If the permittee uses a continuous net heating value monitor according to 40 CFR 63.670(j)(3), the permittee may, at their discretion, install, operate, calibrate, and maintain a monitoring system capable of continuously measuring, calculating, and recording the hydrogen concentration in the flare vent gas.
 - (5) Direct compositional or net heating value monitoring is not required for purchased (“pipeline quality”) natural gas streams. The net heating value of purchased natural gas streams may be determined using annual or more frequent grab sampling at any one representative location. Alternatively, the net heating value of any purchased natural gas stream can be assumed to be 920 Btu/scf.
- e. Pursuant to 40 CFR 63.670(k), as referenced by 40 CFR 63.1103(e)(4), the permittee shall determine V_{tip} on a 15-minute block average basis according to the following requirements.
 - (1) The permittee shall use design and engineering principles to determine the unobstructed cross sectional area of the flare tip. The unobstructed cross sectional area of the flare tip is the total tip area that vent gas can pass through. This area does not include any stability tabs, stability rings, and upper steam or air tubes because flare vent gas does not exit through them.

SECTION B - EMISSION POINTS, EMISSIONS UNITS, APPLICABLE REGULATIONS, AND OPERATING CONDITIONS (CONTINUED)

- (2) The permittee shall determine the cumulative volumetric flow of flare vent gas for each 15-minute block average period using the data from the continuous flow monitoring system required in 40 CFR 63.670(i) according to the following requirements, as applicable. If desired, the cumulative flow rate for a 15-minute block period only needs to include flow during those periods when regulated material is sent to the flare, but the permittee may elect to calculate the cumulative flow rates across the entire 15-minute block period for any 15-minute block period where there is regulated material flow to the flare.
- (i) Use set 15-minute time periods starting at 12 midnight to 12:15 a.m., 12:15 a.m. to 12:30 a.m. and so on concluding at 11:45 p.m. to midnight when calculating 15-minute block average flow volumes.
 - (ii) If continuous pressure/temperature monitoring system(s) and engineering calculations are used as allowed under 40 CFR 63.670(i)(4), the permittee shall, at a minimum, determine the 15-minute block average temperature and pressure from the monitoring system and use those values to perform the engineering calculations to determine the cumulative flow over the 15-minute block average period. Alternatively, the permittee may divide the 15-minute block average period into equal duration subperiods (e.g., three 5-minute periods) and determine the average temperature and pressure for each subperiod, perform engineering calculations to determine the flow for each subperiod, then add the volumetric flows for the subperiods to determine the cumulative volumetric flow of vent gas for the 15-minute block average period.
- (3) The 15-minute block average V_{tip} shall be calculated using the following equation.

$$V_{tip} = \frac{Q_{cum}}{Area \times 900}$$

Where:

V_{tip} = Flare tip velocity, feet per second.

Q_{cum} = Cumulative volumetric flow over 15-minute block average period, standard cubic feet.

Area = Unobstructed area of the flare tip, square feet.

900 = Conversion factor, seconds per 15-minute block average.

- (4) If the permittee chooses to comply with 40 CFR 63.670(d)(2), the permittee shall also determine the net heating value of the flare vent gas following the requirements in 40 CFR 63.670(j) and (l) and calculate V_{max} using the equation in 40 CFR 63.670(d)(2) in order to compare V_{tip} to V_{max} on a 15-minute block average basis.
- f. Pursuant to 40 CFR 63.670(l), as referenced by 40 CFR 63.1103(e)(4), the permittee shall determine the net heating value of the flare vent gas (NHV_{vg}) based on the composition monitoring data on a 15-minute block average basis according to the following requirements.
- (1) If compositional analysis data are collected as provided in 40 CFR 63.670(j)(1) or (2), the permittee shall determine NHV_{vg} of a specific sample by using the following equation.

SECTION B - EMISSION POINTS, EMISSIONS UNITS, APPLICABLE REGULATIONS, AND OPERATING CONDITIONS (CONTINUED)

$$NHV_{vg} = \sum_{i=1}^n x_i NHV_i$$

Where:

NHV_{vg} = Net heating value of flare vent gas, Btu/scf.

i = Individual component in flare vent gas.

N = Number of components in flare vent gas.

X_i = Concentration of component i in flare vent gas, volume fraction.

NHV_i = Net heating value of component i according to table 12 of 40 CFR 63.670, Btu/scf. If the component is not specified in table 12 of 40 CFR 63.670, the heats of combustion may be determined using any published values where the net enthalpy per mole of offgas is based on combustion at 25 °C and 1 atmosphere (or constant pressure) with offgas water in the gaseous state, but the standard temperature for determining the volume corresponding to one mole of vent gas is 20 °C.

- (2) Use set 15-minute time periods starting at 12 midnight to 12:15 a.m., 12:15 a.m. to 12:30 a.m. and so on concluding at 11:45 p.m. to midnight when calculating 15-minute block averages.
- (3) When a continuous monitoring system is used as provided in 40 CFR 63.670(j)(1) or (3) and, if applicable, 40 CFR 63.670(j)(4), the permittee of a flare other than a pressure-assisted flare may elect to determine the 15-minute block average NHV_{vg} using either the calculation methods in 40 CFR 63.670(l)(5)(i) or the calculation methods in 40 CFR 63.670(l)(5)(ii). However, for each non-pressure-assisted flare, the permittee must elect one calculation method that will apply at all times, and use that method for all continuously monitored flare vent streams associated with that flare. If the permittee intends to change the calculation method that applies to a flare, the permittee must notify the Administrator 30 days in advance of such a change.
 - (i) When calculating NHV_{vg} for a specific 15-minute block:
 - (A) Use the results from the first sample collected during an event, (for periodic flare vent gas flow events) for the first 15-minute block associated with that event.
 - (B) If the results from the first sample collected during an event (for periodic flare vent gas flow events) are not available until after the second 15-minute block starts, use the results from the first sample collected during an event for the second 15-minute block associated with that event.
 - (C) For all other cases, use the results that are available from the most recent sample prior to the 15-minute block period for that 15-minute block period for all flare vent gas streams. For the purpose of this requirement, use the time that the results become available rather than the time the sample was collected. For example, if a sample is collected at 12:25 a.m. and the analysis is completed at 12:38 a.m., the results are available at 12:38 a.m. and these results would be used to determine compliance during the 15-minute block period from 12:45 a.m. to 1:00 a.m.
 - (ii) When calculating NHV_{vg} for a specific 15-minute block:
 - (A) If the results from the first sample collected during an event (for periodic flare vent gas flow events) are not available until after the second 15-minute block

SECTION B - EMISSION POINTS, EMISSIONS UNITS, APPLICABLE REGULATIONS, AND OPERATING CONDITIONS (CONTINUED)

starts, use the results from the first sample collected during an event for the first 15-minute block associated with that event.

- (B) For all other cases, use the arithmetic average of all NHV_{vg} measurement data results that become available during a 15-minute block to calculate the 15-minute block average for that period. For the purpose of this requirement, use the time that the results become available rather than the time the sample was collected. For example, if a sample is collected at 12:25 a.m. and the analysis is completed at 12:38 a.m., the results are available at 12:38 a.m. and these results would be used to determine compliance during the 15-minute block period from 12:30 a.m. to 12:45 a.m.

- g. Pursuant to 40 CFR 63.670(m), as referenced by 40 CFR 63.1103(e)(4), the permittee shall determine the net heating value of the combustion zone gas (NHV_{cz}) as specified in 40 CFR 63.670(m)(1) or (2), as applicable.

- (1) Except as specified in 40 CFR 63.670(m)(2), determine the 15-minute block average NHV_{cz} based on the 15-minute block average vent gas and assist gas flow rates using the following equation. For periods when there is no assist steam flow or premix assist air flow, $NHV_{cz} = NHV_{vg}$.

$$NHV_{cz} = \frac{Q_{vg} \times NHV_{vg}}{(Q_{vg} + Q_s + W_{a,premix})}$$

Where:

NHV_{cz} = Net heating value of combustion zone gas, Btu/scf.

NHV_{vg} = Net heating value of flare vent gas for the 15-minute block period, Btu/scf.

Q_{vg} = Cumulative volumetric flow of flare vent gas during the 15-minute block period, scf.

Q_s = Cumulative volumetric flow of total steam during the 15-minute block period, scf.

$Q_{a,premix}$ = Cumulative volumetric flow of premix assist air during the 15-minute block period, scf.

- (2) The permittee of flares that use the feed-forward calculation methodology in 40 CFR 63.670(l)(5)(i) and that monitor gas composition or net heating value in a location representative of the cumulative vent gas stream and that directly monitor flare supplemental gas flow additions to the flare must determine the 15-minute block average NHV_{cz} using the following equation.

$$NHV_{cz} = \frac{(Q_{vg} - Q_{NG2} + Q_{NG1}) \times NHV_{vg} + (Q_{NG2} - Q_{NG1}) \times NHV_{NG}}{(Q_{vg} + Q_s + Q_{a,premix})}$$

Where:

NHV_{cz} = Net heating value of combustion zone gas, Btu/scf.

NHV_{vg} = Net heating value of flare vent gas for the 15-minute block period, Btu/scf.

Q_{vg} = Cumulative volumetric flow of flare vent gas during the 15-minute block period, scf.

SECTION B - EMISSION POINTS, EMISSIONS UNITS, APPLICABLE REGULATIONS, AND OPERATING CONDITIONS (CONTINUED)

- Q_{NG2} = Cumulative volumetric flow of flare supplemental gas during the 15-minute block period, scf.
- Q_{NG1} = Cumulative volumetric flow of flare supplemental gas during the previous 15-minute block period, scf. For the first 15-minute block period of an event, use the volumetric flow value for the current 15-minute block period, i.e., $Q_{NG1} = Q_{NG2}$.
- NHV_{NG} = Net heating value of flare supplemental gas for the 15-minute block period determined according to the requirements in paragraph (j)(5) of this section, Btu/scf.
- Q_s = Cumulative volumetric flow of total steam during the 15-minute block period, scf.
- $Q_{a,premix}$ = Cumulative volumetric flow of premix assist air during the 15-minute block period, scf.
- h. Pursuant to 40 CFR 63.671(a), as referenced by 40 CFR 63.1103(e)(4), for each CPMS installed to comply with applicable provisions in 40 CFR 63.670, the permittee shall install, operate, calibrate, and maintain the CPMS as specified in 40 CFR 63.671(a)(1) through (8).
- (1) Except for CPMS installed for pilot flame monitoring, all monitoring equipment must meet the applicable minimum accuracy, calibration and quality control requirements specified in table 13 of 40 CFR 63, Subpart CC.
 - (2) The permittee shall ensure the readout (that portion of the CPMS that provides a visual display or record) or other indication of the monitored operating parameter from any CPMS required for compliance is readily accessible onsite for operational control or inspection by the operator of the source.
 - (3) All CPMS must complete a minimum of one cycle of operation (sampling, analyzing and data recording) for each successive 15-minute period.
 - (4) Except for periods of monitoring system malfunctions, repairs associated with monitoring system malfunctions and required monitoring system quality assurance or quality control activities (including, as applicable, calibration checks and required zero and span adjustments), the permittee shall operate all CPMS and collect data continuously at all times when regulated emissions are routed to the flare.
 - (5) The permittee shall operate, maintain, and calibrate each CPMS according to the CPMS monitoring plan specified in 40 CFR 63.671(b).
 - (6) For each CPMS except for CPMS installed for pilot flame monitoring, the permittee shall comply with the out-of-control procedures described in 40 CFR 63.671(c).
 - (7) The permittee shall reduce data from a CPMS as specified in 40 CFR 63.671(d).
 - (8) The CPMS must be capable of measuring the appropriate parameter over the range of values expected for that measurement location. The data recording system associated with each CPMS must have a resolution that is equal to or better than the required system accuracy.
- i. Pursuant to 40 CFR 63.671(b), as referenced by 40 CFR 63.1103(e)(4), the permittee shall develop and implement a CPMS quality control program documented in a CPMS monitoring plan that covers each flare subject to the provisions in 40 CFR 63.670 and each CPMS installed to comply with applicable provisions in 40 CFR 63.670. The permittee

SECTION B - EMISSION POINTS, EMISSIONS UNITS, APPLICABLE REGULATIONS, AND OPERATING CONDITIONS (CONTINUED)

shall have the CPMS monitoring plan readily available on-site at all times and shall submit a copy of the CPMS monitoring plan to the Administrator upon request by the Administrator. The CPMS monitoring plan must contain the information listed in 40 CFR 63.671(b)(1) through (5).

- (1) Identification of the specific flare being monitored and the flare type (air-assisted only, steam-assisted only, air- and steam-assisted, pressure-assisted, or non-assisted).
- (2) Identification of the parameter to be monitored by the CPMS and the expected parameter range, including worst case and normal operation.
- (3) Description of the monitoring equipment, including the information specified in 40 CFR 63.671(b)(3)(i) through (vii).
 - (i) Manufacturer and model number for all monitoring equipment components installed to comply with applicable provisions in 40 CFR 63.670.
 - (ii) Performance specifications, as provided by the manufacturer, and any differences expected for this installation and operation.
 - (iii) The location of the CPMS sampling probe or other interface and a justification of how the location meets the requirements of 40 CFR 63.671(a)(1).
 - (iv) Placement of the CPMS readout, or other indication of parameter values, indicating how the location meets the requirements of 40 CFR 63.671(a)(2).
 - (v) Span of the CPMS. The span of the CPMS sensor and analyzer must encompass the full range of all expected values.
 - (vi) How data outside of the span of the CPMS will be handled and the corrective action that will be taken to reduce and eliminate such occurrences in the future.
 - (vii) Identification of the parameter detected by the parametric signal analyzer and the algorithm used to convert these values into the operating parameter monitored to demonstrate compliance, if the parameter detected is different from the operating parameter monitored.
- (4) Description of the data collection and reduction systems, including the information specified in 40 CFR 63.671(b)(4)(i) through (iii).
 - (i) A copy of the data acquisition system algorithm used to reduce the measured data into the reportable form of the standard and to calculate the applicable averages.
 - (ii) Identification of whether the algorithm excludes data collected during CPMS breakdowns, out-of-control periods, repairs, maintenance periods, instrument adjustments or checks to maintain precision and accuracy, calibration checks, and zero (low-level), mid-level (if applicable) and high-level adjustments.
 - (iii) If the data acquisition algorithm does not exclude data collected during CPMS breakdowns, out-of-control periods, repairs, maintenance periods, instrument adjustments or checks to maintain precision and accuracy, calibration checks, and zero (low-level), mid-level (if applicable) and high-level adjustments, a description of the procedure for excluding this data when the averages calculated as specified in 40 CFR 63.671(e) are determined.
- (5) Routine quality control and assurance procedures, including descriptions of the procedures listed in 40 CFR 63.671(b)(5)(i) through (vi) and a schedule for conducting these procedures. The routine procedures must provide an assessment of CPMS performance.
 - (i) Initial and subsequent calibration of the CPMS and acceptance criteria.
 - (ii) Determination and adjustment of the calibration drift of the CPMS.

SECTION B - EMISSION POINTS, EMISSIONS UNITS, APPLICABLE REGULATIONS, AND OPERATING CONDITIONS (CONTINUED)

- (iii) Daily checks for indications that the system is responding. If the CPMS system includes an internal system check, the permittee may use the results to verify the system is responding, as long as the system provides an alarm to the permittee or the permittee checks the internal system results daily for proper operation and the results are recorded.
 - (iv) Preventive maintenance of the CPMS, including spare parts inventory.
 - (v) Data recording, calculations and reporting.
 - (vi) Program of corrective action for a CPMS that is not operating properly.
- j. Pursuant to 40 CFR 63.671(c), as referenced by 40 CFR 63.1103(e)(4), for each CPMS installed to comply with applicable provisions in 40 CFR 63.670 except for CPMS installed for pilot flame monitoring, the permittee shall comply with the out-of-control procedures described in 40 CFR 63.671(c)(1) and (2).
 - (1) A CPMS is out-of-control if the zero (low-level), mid-level (if applicable) or high-level calibration drift exceeds two times the accuracy requirement of table 13 of 40 CFR 63, Subpart CC.
 - (2) When the CPMS is out of control, the permittee shall take the necessary corrective action and repeat all necessary tests that indicate the system is out of control. The permittee shall take corrective action and conduct retesting until the performance requirements are below the applicable limits. The beginning of the out-of-control period is the hour a performance check (e.g., calibration drift) that indicates an exceedance of the performance requirements established in 40 CFR 63.671 is conducted. The end of the out-of-control period is the hour following the completion of corrective action and successful demonstration that the system is within the allowable limits. The permittee shall not use data recorded during periods the CPMS is out of control in data averages and calculations, used to report emissions or operating levels, as specified in 40 CFR 63.671(d)(3).
- k. Pursuant to 40 CFR 63.671(d), as referenced by 40 CFR 63.1103(e)(4), the permittee shall reduce data from a CPMS installed to comply with applicable provisions in 40 CFR 63.670 as specified in 40 CFR 63.671(d)(1) through (3).
 - (1) The permittee may round the data to the same number of significant digits used in that operating limit.
 - (2) Periods of non-operation of the process unit (or portion thereof) resulting in cessation of the emissions to which the monitoring applies must not be included in the 15-minute block averages.
 - (3) Periods when the CPMS is out of control must not be included in the 15-minute block averages.
- l. Pursuant to 401 KAR 52:020, Section 10:
 - (1) For the Covered Flare, the permittee must install, operate, calibrate, and maintain a monitoring system capable of continuously measuring, calculating, and recording the volumetric flow rate of Vent Gas in the header or headers feeding that Covered Flare. This system must also be able to continuously analyze pressure and temperature at each point of Vent Gas flow measurement. Different flow monitoring methods may be used to measure different gaseous streams that make up the Vent Gas provided that the flow

SECTION B - EMISSION POINTS, EMISSIONS UNITS, APPLICABLE REGULATIONS, AND OPERATING CONDITIONS (CONTINUED)

- rates of all gas streams that contribute to the Vent Gas are determined. Flow must be calculated in scfm. [CD, Paragraph 20.a.]
- (2) For each Covered Steam-Assisted Flare, the permittee must install, operate, calibrate, and maintain a monitoring system capable of continuously measuring, calculating, and recording the volumetric flow rate of Assist Steam used with each Covered Steam-Assisted Flare. This system must also be able to continuously analyze the pressure and temperature of Assist Steam at a representative point of steam flow measurement. Flow must be calculated in scfm. [CD, Paragraph 20.b.]
 - (3) Each flow rate monitoring system must be able to correct for the temperature and pressure of the system and output parameters in Standard Conditions. [CD, Paragraph 20.d.]
- m. Pursuant to 401 KAR 52:020, Section 10, for the Covered Flare, the permittee must either determine the concentration of individual components in the Vent Gas or directly monitor the Net Heating Value of the Vent Gas (NHV_{vg}) in compliance with one of the methods specified below. The permittee may elect to use different monitoring methods (of the methods provided below) for different gaseous streams that make up the Vent Gas provided the composition or Net Heating Value of all gas streams that contribute to the Vent Gas are determined. The permittee must [CD Paragraph 24.]:
- (1) Install, operate, calibrate, and maintain a monitoring system capable of continuously measuring (*i.e.*, at least once every 15 minutes), calculating, and recording the individual component concentrations present in the Vent Gas; or [CD, Paragraph 24.a.]
 - (2) Install, operate, calibrate, and maintain a calorimeter capable of continuously measuring (*i.e.*, at least once every 15 minutes), calculating, and recording the NHV_{vg} at Standard Conditions. If the permittee elects this method, the permittee may install, operate, calibrate, and maintain a monitoring system capable of continuously measuring, calculating, and recording the hydrogen concentration in the Vent Gas. The sample extraction point of the calorimeter may be located upstream of the introduction of Supplemental Gas and/or Sweep Gas and/or Purge Gas if the composition and flow rate of any such Supplemental Gas and/or Sweep Gas and/or Purge Gas is a known constant and if this constant then is used in the calculation of the Net Heating Value of the Vent Gas. [CD, Paragraph 24.b.]
 - (3) If the permittee elects the method in **4. Specific Monitoring Requirements** m.(1), and the Net Heating Value of the Vent Gas exceeds the upper calibrated span of the calorimeter on the Covered Flare, then the permittee must use the value of the upper calibrated span of that calorimeter for calculating the NHV_{vg} at Standard Conditions until the Net Heating Value of the Vent Gas returns to within the measured calibrated span. Use of this method will not constitute instrument system downtime for the period of time that the Net Heating Value of the Vent Gas exceeds the upper calibrated span of the calorimeter. [CD, Paragraph 24.c.]
 - (4) Direct compositional or Net Heating Value monitoring is not required for purchased ("pipeline quality") natural gas streams. The Net Heating Value of purchased natural gas streams may be determined using annual or more frequent grab sampling at any one representative location. Alternatively, the Net Heating Value of any purchased natural gas stream can be assumed to be 920 Btu/scf. [CD, Paragraph 24.d.]

SECTION B - EMISSION POINTS, EMISSIONS UNITS, APPLICABLE REGULATIONS, AND OPERATING CONDITIONS (CONTINUED)

n. Pursuant to 401 KAR 52:020, Section 10:

- (1) The instrumentation and monitoring systems identified in **4. Specific Monitoring Requirements** l. and m. must: [CD, Paragraph 26.a.]
 - (i) Meet or exceed all applicable minimum accuracy, calibration and quality control requirements specified in Table 13 of 40 CFR 63, Subpart CC; [CD, Paragraph 26.a.(1)]
 - (ii) Have an associated readout (*i.e.*, a visual display or record) or other indication of the monitored operating parameter that is readily accessible onsite for operational control or inspection by the permittee; [CD, Paragraph 26.a.(2)]
 - (iii) Be capable of measuring the appropriate parameter over the range of values expected for that measurement location; and [CD, Paragraph 26.a.(3)]
 - (iv) Have an associated data recording system with a resolution that is equal to or better than the required instrumentation/system accuracy. [CD, Paragraph 26.a.(4)]
- (2) The permittee must operate, maintain, and calibrate each instrument and monitoring system identified in **4. Specific Monitoring Requirements** l. and m. according to a monitoring plan that contains the information listed in 40 CFR 63.671(b)(1)-(5). However, if a permittee is determining NHV_{vg} using a process mass spectrometer, the permittee may use the methods established for determining NHV_{vg} as outlined in the February 5, 2018 letter to representatives of Extrel CMS, LLC and AMETEK, Energy & Process Division from Steffan M. Johnson, Group Leader, Measurement Technology Group, Office of Air Quality Planning and Standards in lieu of complying with 40 CFR 63.671(b)(1)-(5)'s requirements for determining NHV_{vg} using gas chromatographs. [CD, Paragraph 26.b.]
- (3) All gas chromatograph systems permitted by **4. Specific Monitoring Requirements** m.(1) must also meet the requirements of 40 CFR 63.671(e)(1)-(3) (Additional Requirements for Gas Chromatographs) regardless of whether the gas chromatographs are complying with 40 CFR 63.671(e)(1)-(3) or the methods outlined in the February 5, 2018 letter to representatives of Extrel CMS, LLC and AMETEK, Energy & Process Division from Steffan M. Johnson, Group Leader, Measurement Technology Group, Office of Air Quality Planning and Standards. [CD, Paragraph 26.c.]
- (4) For each instrumentation and monitoring system required by **4. Specific Monitoring Requirements** l. and m., the permittee must comply with the out-of-control procedures described in 40 CFR 63.671(c)(1) and (2), and with the data reduction requirements specified in 40 CFR 63.671(d)(1) through (3). [CD, Paragraph 26.d.]
- (5) The language in 40 CFR 63.671 or Table 13 of 40 CFR 63, Subpart CC, or in any regulatory provision cross-referenced in 40 CFR 63.671 or Table 13 of 40 CFR 63, Subpart CC, that limits the applicability of these regulatory requirements to periods when "regulated material" (as defined in 40 CFR 63.641) is routed to a Flare is not applicable. In addition, the language in 40 CFR 63.671 or Table 13 of 40 CFR 63, Subpart CC, or in any regulatory provision cross-referenced in 40 CFR 63.671 or Table 13 of 40 CFR 63, Subpart CC, that refers to a continuous parametric monitoring system will instead be read to refer to the instrumentation and monitoring systems required by **4. Specific Monitoring Requirements** l. and m. [CD Paragraph 26.e.]
- (6) The permittee may elect to utilize exceptions set forth in 40 CFR 63.1103(e)(4)(i)-(ix) when complying with **4. Specific Monitoring Requirements** n. [CD, Paragraph 26.f.]

SECTION B - EMISSION POINTS, EMISSIONS UNITS, APPLICABLE REGULATIONS, AND OPERATING CONDITIONS (CONTINUED)

- o. Pursuant to 401 KAR 52:020, Section 10, the permittee must maintain and operate at the Calvert City Plant a Fenceline Monitoring Mitigation Project. [CD, Paragraph 48.]
- p. Refer to **Section D** for Fenceline Monitoring Mitigation Project requirements.
- q. See **5. Specific Recordkeeping Requirements**.

5. Specific Recordkeeping Requirements:

- a. Pursuant to 401 KAR 52:020, Section 10, the permittee shall maintain records of routine and non-routine maintenance activities performed at the flare.
- b. Pursuant to 401 KAR 51:017, Section 8, the permittee shall prepare and maintain for EU# 007A (EPN 321A), within 60 days of startup, a good combustion and operation practices plan (GCOPP) that defines, measures and verifies the use of operational and design practices determined as BACT for minimizing CO, VOC and GHG (as CO₂e) emissions which shall be submitted to the Division for review. The permittee shall operate according to the provisions of this plan at all times, including periods of startup, shutdown, and malfunction. The plan shall be incorporated into the plant standard operating procedures (SOP) and shall be made available for the Division's inspection. The plan shall include, but not be limited to:
 - (1) A list of combustion optimization practices and a means of verifying the practices have occurred.
 - (2) A list of combustion and operation practices to be used to lower energy consumption and a means of verifying the practices have occurred.
- c. Pursuant to 401 KAR 52:020, Section 10, the permittee shall keep records of the daily average operating rate (in mmBtu/hr) of EU# 007A (EPN 321A) and calculate a 30-day rolling average. See **Section F**.
- d. Pursuant to 40 CFR 63.1103(e)(4)(x) and 40 CFR 63.1109(e), for each flare subject to the requirements in 40 CFR 63.1103(e)(4), the permittee must keep records specified in 40 CFR 63.1109(e)(1) through (15) in lieu of the information required in 40 CFR 63.998(a)(1) of Subpart SS.
- e. Pursuant to 401 KAR 52:020, Section 10, the instrumentation and monitoring systems identified in **4. Specific Monitoring Requirements** l. through m. must be able to produce and record data measurements and calculations for each parameter at the following time intervals:

<u>Instrumentation and Monitoring System</u>	<u>Recording and Averaging Times</u>
Vent Gas, Assist Steam Flow Monitoring Systems, Assist Air Flow Monitoring Systems and (if installed) Pilot Gas Flow	Measure continuously and record 15-minute block averages

SECTION B - EMISSION POINTS, EMISSIONS UNITS, APPLICABLE REGULATIONS, AND OPERATING CONDITIONS (CONTINUED)

Vent Gas Compositional Monitoring (if using the methodology in 4. Specific Monitoring Requirements d.(1))	Measure no less than once every 15-minutes and record that value
Vent Gas Net Heating Value Analyzer (if using the methodology in 4. Specific Monitoring Requirements d.(2))	Measure continuously and record 15-minute block averages
Video Camera	Record at a rate of no less than 4 frames per minute

The term “continuously” means to make a measurement as often as the manufacturer’s stated design capabilities of the flow monitors (for Vent Gas, Assist Steam, Assist Air, and if installed Pilot Gas) and the Vent Gas Net Heating Value Analyzers during each fifteen (15) minute block period, but in no case shall the flow monitors or the Vent Gas Net Heating Value Analyzers make less than one measurement in each fifteen (15) minute block period. The measurement results are then averaged and recorded to represent each fifteen (15) minute block period. Nothing in **5. Specific Recordkeeping Requirements e.** is intended to prohibit the permittee from setting up process control logic that uses different averaging times from those in this table provided that the recording and averaging times in this table are available and used for determining compliance. [CD, Paragraph 27.]

Until the termination of CD 2:22-cv-01577-JDC-KK between United States of America and Westlake Chemical OpCo LP the permittee shall comply **5. Specific Recordkeeping Requirements f.** and **g.** as follows:

- f. Pursuant to 401 KAR 52:020, Section 10, commencing no later than the applicable compliance dates set forth in Appendix 1.1 to the Consent Decree, except as provided in **6. Specific Reporting Requirements h.**, the permittee must conduct an investigation into the root cause(s) of each Reportable Flaring Incident at any of the Covered Plants and prepare and keep as a record an internal report that contains the information listed below. The permittee must conduct the investigation into the root cause(s) of each Reportable Flaring Incident and prepare the internal report by no later than 45 Days following the end of a Reportable Flaring Incident. The internal report must include, at a minimum, the following information:
- (1) The date and time that the Reportable Flaring Incident started and ended; [CD, Paragraph 35.a.(1)]
 - (2) The measured volume of Waste Gas flared and an estimate of the individual quantities of VOCs and HAPs that were emitted during the Reportable Flaring Incident and the calculations that were used to determine the quantities; [CD, Paragraph 35.a.(2)]
 - (3) The steps, if any, the permittee took to limit the duration of the Reportable Flaring Incident, and to limit the quantity of VOC and HAP emissions associated with the Reportable Flaring Incident; [CD, Paragraph 35.a.(3)]
 - (4) A detailed analysis that sets forth the root cause and all contributing causes of the Reportable Flaring Incident, to the extent determinable; [CD, Paragraph 35.a.(4)]
 - (5) An analysis of the measures, if any, that are available to reduce the likelihood of a recurrence of a Reportable Flaring Incident resulting from the same root cause or contributing causes. The analysis must discuss the alternatives, if any, that are available, the probable effectiveness and the cost of the alternatives, if an alternative is

SECTION B - EMISSION POINTS, EMISSIONS UNITS, APPLICABLE REGULATIONS, AND OPERATING CONDITIONS (CONTINUED)

- eliminated based on cost. Possible design, operation, and maintenance changes must be evaluated. If the permittee concludes that corrective action(s) is (are) required under **5. Specific Recordkeeping Requirements** g., the report must include a description of the action(s) and, if not already completed, a schedule for its (their) implementation, including proposed commencement and completion dates. If the permittee concludes that corrective action is not required under **5. Specific Recordkeeping Requirements** g., the report must explain the basis for that conclusion; and [CD, Paragraph 35.a.(5)]
- (6) To the extent that investigations of the causes or possible corrective actions are still underway 45 Days after the Reportable Flaring Incident ended, a statement of the anticipated date by which a follow-up report fully conforming to the requirements of **5. Specific Recordkeeping Requirements** f. of the Consent Decree will be completed. [CD, Paragraph 35.a.(6)]
- g. Pursuant to 401 KAR 52:020, Section 10, in response to any Reportable Flaring Incident, the Applicable Defendant must take, as expeditiously as practicable, such interim and long-term corrective actions, if any, as are consistent with good engineering practice to minimize the likelihood of a recurrence of the root cause and all contributing causes of that Reportable Flaring Incident. [CD, Paragraph 36.]
- h. Pursuant to 401 KAR 52:020, Section 10:
- (1) For the Ethylene Flare, the permittee must calculate and record each of the following parameters: [CD Paragraph 47.a.(1), (2), (4), and (5)]
- (i) Volumetric flow rates of all gas streams that contribute to the Vent Gas volumetric flow rate (in scfm) (in 15-minute block averages and in accordance with any calculation requirements of **4. Specific Monitoring Requirements** l. and n.; and Step 2 of **1. Operating Limitations** u.); [CD Paragraph 47.a.(1)]
- (ii) Assist Steam volumetric flow rate (in scfm) (in 15-minute block averages and in accordance with any calculation requirements of **4. Specific Monitoring Requirements** l. and n.; and Step 2 of **1. Operating Limitations** u.); [CD Paragraph 47.a.(2)]
- (iii) NHV_{vg} (in Btu/scf) (in 15-minute block averages in accordance with Step 1 of **1. Operating Limitations** u.); [CD Paragraph 47.a.(4)]
- (iv) NHV_{cz} (in Btu/scf) (in 15-minute block averages in accordance with Step 3 of **1. Operating Limitations** u.). [CD Paragraph 47.a.(5)]
- (2) For the Covered Flare, the permittee must record the duration of all periods of Instrument Downtime for the Covered Flare that exceed 5% of the time in a Semi-Annual Period that the Covered Flare is In Operation. The permittee must record which instrument(s) experienced the downtime, which Covered Flare was affected by the downtime, an explanation of the cause(s) of the deviation, and a description of the corrective action(s) that the permittee took. [CD, Paragraph 47.b.]
- (3) The permittee must record the dates and times of any periods that the permittee deviates from the standards in **1. Operating Limitations** p. (FGRS Compressor Availability). For all of the events described in **5. Specific Recordkeeping Requirements** h.(3), the permittee must also record the duration of the deviation, an explanation of the cause(s) of the deviation, and a description of the corrective action(s) that the permittee took. [CD, Paragraph 47.c.]

SECTION B - EMISSION POINTS, EMISSIONS UNITS, APPLICABLE REGULATIONS, AND OPERATING CONDITIONS (CONTINUED)

- (4) At any time that the permittee deviates from the emissions standards in **1. Operating Limitations** d. – e. at the Covered Flare, the permittee must record the duration of the deviation, an explanation of the cause(s) of the deviation, and a description of the corrective action(s) that the permittee took. [CD, Paragraph 47.d.]

6. Specific Reporting Requirements:

- a. Pursuant to 401 KAR 52:020, Section 10, the permittee shall send a notification of the anticipated date of initial start-up of an affected facility postmarked not more than sixty (60) day nor less than thirty (30) days prior to such date.
- b. Pursuant to 40 CFR 63.1110(e)(4), for each flare subject to the requirements in 40 CFR 63.1103(e)(4), the Periodic Report shall include the items specified in 40 CFR 63.1110(e)(4)(i) through (vi) in lieu of the information required in 40 CFR 63.999(c)(3).
- (1) Records as specified in 40 CFR 63.1109(e)(1) for each 15-minute block during which there was at least one minute when regulated material is routed to a flare and no pilot flame or flare flame is present. Include the start and stop time and date of each 15-minute block.
- (2) Visible emission records as specified in 40 CFR 63.1109(e)(2)(iv) for each period of 2 consecutive hours during which visible emissions exceeded a total of 5 minutes.
- (3) The periods specified in 40 CFR 63.1109(e)(6). Indicate the date and start time for the period, and the net heating value operating parameter(s) determined following the methods in 40 CFR 63.670(k) through (n) as applicable.
- (4) For flaring events meeting the criteria in 40 CFR 63.670(o)(3) and 40 CFR 63.1103(e)(4)(iv):
- (i) Flare identification name or number and the start and stop time and date of the flaring event.
- (ii) The length of time (in minutes) that emissions were visible from the flare during the event.
- (iii) Results of the root cause and corrective actions analysis completed during the reporting period, including the corrective actions implemented during the reporting period and, if applicable, the implementation schedule for planned corrective actions to be implemented subsequent to the reporting period.
- c. Pursuant to 40 CFR 63.1103(e)(4)(xi), instead of complying with 40 CFR 63.670(q), the permittee must comply with the reporting requirements specified in 40 CFR 63.1110(d) and (e)(4).
- (1) The permittee shall submit a Notification of Compliance Status for each affected source subject to 40 CFR 63, Subpart YY containing the information specified in 40 CFR 63.1110(d)(1)(i) and (ii). For flares subject to the requirements of 40 CFR 63.1103(e)(4), the permittee shall submit the information listed in 40 CFR 63.1110(d)(1)(iv) in a supplement to the Notification of Compliance Status within 150 calendar days after the first applicable compliance date for flare monitoring.
- (i) Except as specified in 40 CFR 63.1110(d)(1)(iv) and (v), the Notification of Compliance Status shall include the information specified in 40 CFR 63, Subpart YY and the subparts referenced by 40 CFR 63, Subpart YY. Alternatively, this information can be submitted as part of a title V permit application or amendment.

SECTION B - EMISSION POINTS, EMISSIONS UNITS, APPLICABLE REGULATIONS, AND OPERATING CONDITIONS (CONTINUED)

- (ii) The Notification of Compliance Status shall include a statement from the owner or operator identifying which subpart he or she has elected to comply with, where given a choice, as provided for in 40 CFR 63.1100(g).
 - (iii) For each flare subject to the requirements in 40 CFR 63.1103(e)(4), in lieu of the information required in 40 CFR 63.987(b) of 40 CFR 63, Subpart SS, the Notification of Compliance Status shall include flare design (e.g., steam-assisted, air-assisted, non-assisted, or pressure-assisted multi-point); all visible emission readings, heat content determinations, flow rate measurements, and exit velocity determinations made during the initial visible emissions demonstration required by 40 CFR 63.670(h), as applicable; and all periods during the compliance determination when the pilot flame or flare flame is absent.
 - (2) The permittee shall submit the Notification of Compliance Status for each affected source 240 calendar days after the compliance date specified for the affected source under 40 CFR 63, Subpart YY, or 60 calendar days after completion of the initial performance test or initial compliance assessment, whichever is earlier. Notification of Compliance Status reports may be combined for multiple affected sources as long as the due date requirements for all sources covered in the combined report are met.
- d. Pursuant to 40 CFR 63.1110(e), the permittee of an affected source subject to monitoring requirements of 40 CFR 63, Subpart YY, or to other requirements of 40 CFR 63, Subpart YY or subparts referenced by 40 CFR 63, Subpart YY, where periodic reporting is specified, shall submit a Periodic Report.
- (1) Except as specified in 40 CFR 63.1110(e)(4) through (8), Periodic Reports shall include all information specified in 40 CFR 63, Subpart YY and subparts referenced by 40 CFR 63, Subpart YY.
 - (2) The Periodic Report shall be submitted no later than 60 calendar days after the end of each 6-month period. The first report shall cover the 6-month period after the Notification of Compliance Status report is due. The first report shall be submitted no later than the last day of the month that includes the date 8 months (6 months and 60 calendar days) after the Notification of Compliance Status report is due.
 - (3) Information required by 40 CFR 63, Subpart YY, which is submitted with a title V periodic report, need not also be included in a subsequent Periodic Report required by this subpart or subpart referenced by 40 CFR 63, Subpart YY. The title V report shall be referenced in the Periodic Report required by 40 CFR 63, Subpart YY.
 - (4) The Periodic Report shall include the items specified in 40 CFR 63.1110(e)(4)(i) through (vi) in lieu of the information required in 40 CFR 63.999(c)(3) of Subpart SS.
 - (i) Records as specified in 40 CFR 63.1109(e)(1) for each 15-minute block during which there was at least one minute when regulated material is routed to a flare and no pilot flame or flare flame is present. Include the start and stop time and date of each 15-minute block.
 - (ii) Visible emission records as specified in 40 CFR 63.1109(e)(2)(iv) for each period of 2 consecutive hours during which visible emissions exceeded a total of 5 minutes.
 - (iii) The periods specified in 40 CFR 63.1109(e)(7). Indicate the date and start time for the period, and the net heating value operating parameter(s) determined following the methods in 40 CFR 63.670(k) through (n) as applicable.

SECTION B - EMISSION POINTS, EMISSIONS UNITS, APPLICABLE REGULATIONS, AND OPERATING CONDITIONS (CONTINUED)

- (iv) For flaring events meeting the criteria in 40 CFR 63.670(o)(3) and 40 CFR 63.1103(e)(4)(iv):
 - (A) The start and stop time and date of the flaring event.
 - (B) The length of time that emissions were visible from the flare during the event.
 - (C) Results of the root cause and corrective actions analysis completed during the reporting period, including the corrective actions implemented during the reporting period and, if applicable, the implementation schedule for planned corrective actions to be implemented subsequent to the reporting period.
- (v) For pressure-assisted multi-point flares, the periods of time when the pressure monitor(s) on the main flare header show the burners operating outside the range of the manufacturer's specifications.
- (vi) For pressure-assisted multi-point flares, the periods of time when the staging valve position indicator monitoring system indicates a stage should not be in operation and is or when a stage should be in operation and is not.

e. See **Section F**.

Until the termination of CD 2:22-cv-01577-JDC-KK between United States of America and Westlake Chemical OpCo LP the permittee shall comply **5. Specific Reporting Requirements** f. through p. as follows:

- f. For the Covered Flare, the permittee must submit a report, to the EPA that includes the following:
- (1) The information, diagrams, and drawings specified as follows [CD, Paragraph 18.a.]:
 - (i) Facility-Wide
 - (A) Facility plot plan showing the location of the Flare in relation to the general plant layout
 - (ii) General Description of Flare
 - (A) Ground or elevated
 - (B) Type of assist system
 - (C) Simple or integrated (e.g., sequential, staged)
 - (D) Date first installed
 - (E) History of any physical changes to the Flare
 - (F) Whether the Flare is a Temporary-Use Flare, and if so, the duration and time periods of use
 - (G) Flare Gas Recovery System ("FGRS"), if any, and date first installed
 - (iii) Flare Components: Complete description of each major component of the Flare, except the Flare Gas Recovery System (*see 6. Specific Reporting Requirements* b.(1)(v)), including but not limited to:
 - (A) Flare stack (for elevated flares)
 - (B) Flare tip
 - (1) Date installed
 - (2) Manufacturer
 - (3) Tip Size
 - (4) Tip Drawing
 - (5) Smokeless Design Capacity

SECTION B - EMISSION POINTS, EMISSIONS UNITS, APPLICABLE REGULATIONS, AND OPERATING CONDITIONS (CONTINUED)

- (C) Knockout or surge drum(s) or pot(s), including dimensions and design capacities
- (D) Water seal(s), including dimensions and design parameters
- (E) Flare header(s)
- (F) Sweep Gas system
- (G) Purge gas system
- (H) Pilot gas system
- (I) Supplemental gas system
- (J) Assist system
- (K) Ignition system
- (iv) Simplified process diagram(s) showing the configuration of the components listed in **6. Specific Reporting Requirements b.(1)(iii)**
- (v) Calvert Flare Gas Recovery Systems ("FGRSs")
 - (A) Complete description of each major component, including but not limited to:
 - (1) Compressor(s), including design capacities
 - (2) Water seal(s), rupture disk, or similar device to divert the flow
 - (B) Maximum actual past flow on an scfm basis and the annual average flow in scfm for the five years preceding Date of Lodging
 - (C) Simplified schematic showing the FGRSs
 - (D) Process Flow Diagram that adds the FGRSs to the PDF(s) in **6. Specific Reporting Requirements b.(1)(iv)**
- (vi) Flare Design Parameters
 - (A) Maximum Vent Gas Flow Rate and/or Mass Rate
 - (B) Maximum Sweep Gas Flow Rate and/or Mass Rate
 - (C) Maximum Purge Gas Flow and/or Mass Rate, if applicable
 - (D) Maximum Pilot Gas Flow and/or Mass Rate
 - (E) Maximum Supplemental Gas Flow Rate and/or Mass Rate
 - (F) If steam-assisted, Minimum Total Steam Rate, including all available information on how that Rate was derived
- (vii) Gases Venting to Flare
 - (A) Sweep Gas
 - (1) Type of gas used
 - (2) Actual set operating flow rate (in scfm)
 - (3) Average lower heating value expected for each type of gas used
 - (B) Purge Gas, if applicable
 - (1) Type of gas used
 - (2) Actual set operating flow rate (in scfm)
 - (3) Average lower heating value expected for each type of gas used
 - (C) Pilot Gas
 - (1) Type of gas used
 - (2) Actual set operating flow rate (in scfm)
 - (3) Average lower heating value expected for each type of gas used
 - (D) Supplemental Gas
 - (1) Type of gas used
 - (2) Average lower heating value expected for each type of gas used
 - (E) Steam (if applicable)

SECTION B - EMISSION POINTS, EMISSIONS UNITS, APPLICABLE REGULATIONS, AND OPERATING CONDITIONS (CONTINUED)

- (1) Drawing showing points of introduction of Lower, Center, Upper, and any other steam
 - (F) Simplified flow diagram that depicts the points of introduction of all gases, including Waste Gases, at the Flare (in this diagram, the detailed drawings of **6. Specific Reporting Requirements** f.(1)(vii)(E)(1) may be simplified; in addition, detailed Waste Gas mapping is not required; a simple identification of the header(s) that carries(y) the Waste Gas to the Flare and show(s) its(their) location in relation to the location of the introduction of the other gases is all that is required)
 - (2) A detailed description of each instrument and piece of monitoring equipment, including the specific model and manufacturer, that the permittee has installed or will install in compliance with **4. Specific Monitoring Requirements** l. – m. as follows [CD, Paragraph 18.b.]; and:
 - (i) Existing Monitoring Systems
 - (A) A brief narrative description, including manufacturer and date of installation, of all existing monitoring systems, including but not limited to:
 - (1) Waste Gas and/or Vent Gas flow monitoring
 - (2) Waste Gas and/or Vent Gas heat content analyzer
 - (3) Sweep Gas flow monitoring
 - (4) Purge Gas flow monitoring
 - (5) Supplemental Gas flow monitoring
 - (6) Steam flow monitoring
 - (7) Waste Gas or Vent Gas molecular weight analyzer
 - (8) Gas Chromatograph
 - (9) Sulfur analyzer(s)
 - (10) Video camera
 - (11) Thermocouple
 - (B) Drawing(s) showing locations of all existing monitoring systems
 - (ii) Monitoring Equipment to be Installed to show compliance.
 - (3) A narrative description of the monitoring methods and calculations that the permittee will use to comply with the requirements of **1. Operating Limitations** w. as follows [CD, Paragraph 18.c.]:
 - (i) Narrative Description of the Monitoring Methods and Calculations that will be used to comply with the NHV_{CZ} Requirements.
- g. For each Semi-Annual Report, the permittee must include a summary of the following items for each Reportable Flaring Incident that occurred during the six-month period that the Semi-Annual Report covers [CD, Paragraph 35 b]:
 - (1) Date;
 - (2) Duration;
 - (3) Amount of VOCs and HAPs emitted;
 - (4) Root cause(s);
 - (5) Corrective action(s) completed;
 - (6) Corrective action(s) still outstanding; and
 - (7) An analysis of any trends identified by the permittee in the number of Reportable Flaring Incidents, the root causes, or the types of corrective action(s).

SECTION B - EMISSION POINTS, EMISSIONS UNITS, APPLICABLE REGULATIONS, AND OPERATING CONDITIONS (CONTINUED)

- h. In lieu of preparing a new report under **6. Specific Reporting Requirements** g. and analyzing and implementing corrective action for a Reportable Flaring Incident that has as its root cause the same root cause as a previously reported Reportable Flaring Incident, the permittee may cross-reference and use the prior report and analysis when preparing the report required by **6. Specific Reporting Requirements** g. [CD, Paragraph 37]
- i. By no later than February 28th and August 31st of each year after the Effective Date, until termination of the Consent Decree pursuant to Section XX of the Consent Decree, the permittee must submit a "Semi-Annual Report" to the EPA and to the KDEP, except that the first Semi-Annual Report shall be due 60 Days after the first full half year after the Effective Date of the Consent Decree (a "half year" runs between January 1 and June 30 and between July 1 and December 31). Each Semi-Annual Report must contain the following information for the preceding six months (i.e., January through June will be addressed in the report to be submitted by August 31, and July through December will be addressed in the report submitted by February 28, except that the first Semi-Annual Report will cover the period between the Effective Date through the end of the first full half year) [CD, Paragraph 55]:
 - (1) A description of the status of work performed and progress made toward implementing all requirements of Section V (Compliance Requirements) at the Covered Plants. This topic should describe any major milestones completed and remaining to be completed; [CD, Paragraph 55.a.]
 - (2) A description of any problems encountered or anticipated in meeting the requirements in Section V (Compliance Requirements) at the Covered Plants, together with implemented or proposed solutions; [CD, Paragraph 55.b.]
 - (3) A description of the status of any permit applications, including a summary of all permitting activity, pertaining to compliance with the Consent Decree; [CD, Paragraph 55.c.]
 - (4) A copy of any reports that were submitted only to the KDEP and that pertain to compliance with the Consent Decree; [CD, Paragraph 55.d.]
 - (5) Any summary of internal flaring incident reports as required by Paragraphs 35-36 of the Consent Decree; [CD, Paragraph 55.f.]
 - (6) A summary of the following, per Covered Flare per Semi-Annual Period (hours shall be rounded to the nearest tenth): [CD, Paragraph 55.g.]
 - (i) The total number of hours of Instrument Downtime claimed pursuant to **1. Operating Limitations** y., expressed as both an absolute number and a percentage of time the Covered Flare that the instrument/equipment monitors is In Operation and Capable of Receiving Sweep, Supplemental, and/or Waste Gas; [CD, Paragraph 55.g.(1)]
 - (ii) If the total number of hours of Instrument Downtime claimed pursuant to **1. Operating Limitations** y. exceeds 5% of the time in a Semi-Annual Period, the Covered Flare affected by the downtime is In Operation, an identification of the periods of downtime by date, time, cause (including Malfunction or maintenance), and, if the cause is asserted to be a Malfunction, the corrective action taken; [CD, Paragraph 55.g.(2)]
 - (iii) The total number of hours, expressed as both an absolute number of hours and a percentage of time that the Covered Flare was In Operation, in which the

SECTION B - EMISSION POINTS, EMISSIONS UNITS, APPLICABLE REGULATIONS, AND OPERATING CONDITIONS (CONTINUED)

- requirements of **1. Operating Limitations** v. and w. were not applicable because the only gas or gases being vented were Pilot Gas or Purge Gas; [CD, Paragraph 55.g.(3)]
- (iv) Exceedances of Emissions Standards. [CD, Paragraph 55.g.(4)]
- (A) The total number of hours, expressed as both an absolute number of hours and a percentage of time the Covered Flare was In Operation, of exceedances of the emissions standards in **1. Operating Limitations** w. and x.; provided however, that if the exceedance of these standards was less than 5% of the time in a Semi-Annual Period and was due to one or more of the exceptions set forth in **1. Operating Limitations** y., the report shall so note; [CD, Paragraph 55.g.(4)(a)]
- (B) If the exceedance of the emissions standards in **1. Operating Limitations** w. and ff. was not due to one of the exceptions in **1. Operating Limitations** y. (Standard During Instrument Downtime), or if the exceedance was due to one or more of the exceptions in Paragraph 45 of the Consent Decree and the total number of hours caused by the exceptions exceeds 5% of the time in a Semi-Annual Period that the Covered Flare affected by the Instrument Downtime was In Operation, an identification of each block period that exceeded the standard, by time and date; the cause of the exceedance (including startup, shutdown, maintenance, or Malfunction), and if the cause is asserted to be a Malfunction, an explanation and any corrective actions taken; and [CD, Paragraph 55.g.(4)(b)]
- (v) Sufficient information to document compliance with the FGRS Compressor availability requirements of **1. Operating Limitations** p. For any period of non-compliance, the permittee must identify the date, cause, and corrective action taken. [CD, Paragraph 55.g.(5)]
- (7) Any additional matters that the permittee believes should be brought to the attention of the EPA or the KDEP. [CD, Paragraph 55.h.]
- j. In the Semi-Annual report that is submitted by February 28 of each year, the permittee must provide, for the Covered Flare, for the prior calendar year, the amount of emissions of the following compounds (in tons per year): VOCs, HAPs, CO₂, methane, and ethane. [CD, Paragraph 57]
- k. Each Semi-Annual report must also include a description of any non-compliance with the requirements of the Consent Decree not otherwise identified in **6. Specific Reporting Requirements** i. and an explanation of the violation's likely cause and of the remedial steps taken, or to be taken, to prevent or minimize such violation. If the cause of a violation cannot be fully explained at the time the report is due, the permittee must so state in the report. The permittee must investigate the cause of the violation and must then submit an amendment to the report, including a full explanation of the cause of the violation, within 30 Days of the Day the permittee becomes aware of the cause of the violation. Nothing in **6. Specific Reporting Requirements** k. or l. relieves the permittee of its obligation to provide the notice required by **6. Specific Reporting Requirements** p. [CD, Paragraph 58]

SECTION B - EMISSION POINTS, EMISSIONS UNITS, APPLICABLE REGULATIONS, AND OPERATING CONDITIONS (CONTINUED)

- l. All reports required under Section VIII of the Consent Decree must be submitted to the persons and in the manner designated in Section XVI of the Consent Decree (Notices). [CD, Paragraph 59]
- m. Each report submitted by the permittee under Section VIII of the Consent Decree must be signed by an official of the Covered Plant and include the following certification [CD, Paragraph 60]

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I have no personal knowledge that the information submitted is other than true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.
- n. The reporting requirements of the Consent Decree do not relieve the permittee of any reporting obligations required by the CAA, state or local laws, or their implementing regulations, or by any other federal, state, or local law, regulation, permit, or other requirement. [CD, Paragraph 61]
- o. Any information provided pursuant to the Consent Decree may be used by the United States, and KDEP in any proceeding to enforce the provisions of the Consent Decree and as otherwise permitted by law. [CD, Paragraph 62]
- p. “Force Majeure,” for purposes of the Consent Decree, is defined as any event beyond the control of the permittee, of any entity controlled by the permittee, or of the permittee’s contractors, which delays or prevents the performance of any obligation under the Consent Decree despite the permittee’s best efforts to fulfill the obligation. Refer to Paragraphs 76 through 80 of the Consent Decree. [CD, Paragraphs 76]

7. Specific Control Equipment Operating Conditions:

Pursuant to 401 KAR 52:020, Section 10, the permittee shall comply with 40 CFR 60.18 (c)-(f).

SECTION B - EMISSION POINTS, EMISSIONS UNITS, APPLICABLE REGULATIONS, AND OPERATING CONDITIONS (CONTINUED)**EU# 025 (EPN FUG-ETH-YY) Ethylene Plant Fugitives Subject to 40 CFR 63, Subpart YY**

The following is an approximate count of the total existing pipeline equipment at the ethylene plant subject to 40 CFR 63, Subpart YY. The pipeline equipment at the emission point listed above is included in this total.

Gas/Flanges:	7,304	Gas/Vapor Valves:	1,203
Pumps:	30	Compressors:	2
Light Liquid Flange:	8,315	Light Liquid Valves:	1,368
*Gas/Flanges:	273	*Light Liquid Flanges:	725

*Flanges are existing and insulated. Flanges are unable to be monitored, thus have no control associated with emissions.

Ethylene Plant Fugitives Subject to 40 CFR 63, Subpart YY and 401 KAR 51:017 from 2020 Expansion Project

The following pipeline equipment are from the 2020 Expansion Project and are subject to 401 KAR 51:017. The pipeline equipment count listed below reflects an accurate count of the equipment as of the date of issuance of permit V-14-022 R2 and reflects the number of each type of equipment subject to Best Available Control Technology (BACT) pursuant to 401 KAR 51:017, Section 8.

Gas/Flanges:	139	Gas/Vapor Valves:	21
Light Liquid Flange:	179	Light Liquid Valves:	27

NOTE - The pipeline equipment count listed above reflects an accurate count of the equipment as of the date of issuance of this permit but is not intended to limit the permittee to the exact numbers specified. The permittee may add or remove pipeline equipment without a permit revision as long as the equipment continues to comply with the applicable requirements listed below, and the changes do not cause a significant increase of emissions or potential to emit.

APPLICABLE REGULATIONS:

401 KAR 51:017, Prevention of Significant Deterioration of Air Quality [VOC and CO_{2e}]

401 KAR 57:002, Section 1(2), 40 CFR 61, Subpart J, National emission standard for equipment leaks (fugitive emission sources) of benzene.

401 KAR 63:002, Section 2(4)(kk) 40 C.F.R. 63.1019 through 63.1039, Table 1 (Subpart UU), National Emission Standards for Equipment Leaks - Control Level 2 Standards.

401 KAR 63:002, Section 2(4)(oo), 40 C.F.R. 63.1100 through 63.1114 (Subpart YY), National Emission Standards for Hazardous Air Pollutants for Source Categories: Generic Maximum Achievable Control Technology Standards.

SECTION B - EMISSION POINTS, EMISSIONS UNITS, APPLICABLE REGULATIONS, AND OPERATING CONDITIONS (CONTINUED)

1. Operating Limitations:

Pursuant 40 CFR 63.1103(e)(3) and Table 7, item (f)(1) of 40 CFR 63, Subpart YY, for Equipment (as defined in 40 CFR 63.1101) that contains or contacts organic HAP, and the equipment contains or contacts ≥ 5 weight-percent organic HAP; and the equipment is not in vacuum service, the permittee shall:

- (1) Except as specified in Table 7, item (f)(1)(ii) of 40 CFR 63, Subpart YY, comply with the requirements of 40 CFR 63, Subpart UU.
- (2) Beginning no later than the compliance dates specified in 40 CFR 63.1102(c), comply with the requirements of 40 CFR 63.1103(e)(9) and 40 CFR 63, Subpart UU, except instead of complying with the pressure relief device requirements of 40 CFR 63.1030 of Subpart UU, meet the requirements of 40 CFR 63.1107(h), and in lieu of the flare requirement of 40 CFR 63.1034(b)(2)(iii), comply with the requirements specified in 40 CFR 63.1103(e)(4).

Equipment Identification

- a. *General equipment identification.* Pursuant to 40 CFR 63.1022(a), equipment subject to this subpart shall be identified. Identification of the equipment does not require physical tagging of the equipment. For example, the equipment may be identified on a plant site plan, in log entries, by designation of process unit or affected facility boundaries by some form of weatherproof identification, or by other appropriate methods.
- b. *Additional equipment identification.* Pursuant to 40 CFR 63.1022(b), in addition to the general identification required by 40 CFR 63.1022(a), equipment subject to any of the provisions in 40 CFR 63.1023 through 63.1034 shall be specifically identified as required in paragraphs (b)(1) through (b)(5), as applicable. This paragraph does not apply to an owner or operator of a batch product process who elects to pressure test the batch product process equipment train pursuant to 40 CFR 63.1036.
 - (1) *Connectors.* Pursuant to 40 CFR 63.1022(b)(1), except for inaccessible, ceramic, or ceramic-lined connectors meeting the provision of 40 CFR 63.1027(e)(2) and instrumentation systems identified pursuant to paragraph (b)(4) of this section, identify the connectors subject to the requirements of this subpart. Connectors need not be individually identified if all connectors in a designated area or length of pipe subject to the provisions of this subpart are identified as a group, and the number of connectors subject is indicated. With respect to connectors, the identification shall be complete no later than the completion of the initial survey required by 40 CFR 63.1022(a).
 - (2) *Routed to a process or fuel gas system or equipped with a closed vent system and control device.* Pursuant to 40 CFR 63.1022(b)(2), identify the equipment that the permittee elects to route to a process or fuel gas system or equip with a closed vent system and control device, under the provisions of 40 CFR 63.1026(e)(3) (pumps in light liquid service), 40 CFR 63.1028 (e)(3) (agitators), 40 CFR 63.1031(e) (compressors), or 40 CFR 63.1037(a) (alternative means of emission limitation for enclosed-vented process units).
 - (3) *Instrumentation systems.* Pursuant to 40 CFR 1022(b)(4), identify instrumentation systems subject to the provisions of 40 CFR 63.1029 of 40 CFR 63, Subpart UU. Individual components in an instrumentation system need not be identified.
 - (4) *Equipment in service less than 300 hours per calendar year.* Pursuant to 40 CFR 63.1022(b)(5), the identity, either by list, location (area or group), or other method, of

SECTION B - EMISSION POINTS, EMISSIONS UNITS, APPLICABLE REGULATIONS, AND OPERATING CONDITIONS (CONTINUED)

equipment in regulated material service less than 300 hours per calendar year within a process unit or affected facilities subject to the provisions of this subpart shall be recorded.

- c. Special equipment designations: Pursuant to 40 CFR 63.1022(c), equipment that is unsafe or difficult-to-monitor.
 - (1) *Designation and criteria for unsafe-to-monitor.* Pursuant to 40 CFR 63.1022(c)(1), valves meeting the provisions of 40 CFR 63.1025(e)(1), pumps meeting the provisions of 40 CFR 63.1026(e)(6), connectors meeting the provisions of 40 CFR 63.1027(e)(1), and agitators meeting the provisions of 40 CFR 63.1028(e)(7) may be designated unsafe-to-monitor if the permittee determines that monitoring personnel would be exposed to an immediate danger as a consequence of complying with the monitoring requirements of this subpart. Examples of unsafe-to-monitor equipment include, but is not limited to, equipment under extreme pressure or heat.
 - (2) *Designation and criteria for difficult-to-monitor.* Pursuant to 40 CFR 63.1022(c)(2), valves meeting the provisions of 40 CFR 63.1025(e)(2) may be designated difficult-to-monitor if the provisions of 40 CFR 63.1022(c)(2)(i) apply. Agitators meeting the provisions of 40 CFR 63.1028(e)(5) may be designated difficult-to-monitor if the provisions of 40 CFR 63.1022(c)(2)(ii) apply.
 - (i) *Valves* [40 CFR 63.1022(c)(2)(i)].
 - (A) Pursuant to 40 CFR 63.1022(c)(2)(i)(A), the permittee of the valve determines that the valve cannot be monitored without elevating the monitoring personnel more than 2 meters (7 feet) above a support surface or it is not accessible in a safe manner when it is in regulated material service; and
 - (B) Pursuant to 40 CFR 63.1022(c)(2)(i)(B), the process unit or affected facility within which the valve is located is an existing source, or the permittee designates less than 3 percent of the total number of valves in a new source as difficult-to-monitor.
 - (ii) *Agitators.* Pursuant to 40 CFR 63.1022(c)(2)(ii), the permittee determines that the agitator cannot be monitored without elevating the monitoring personnel more than 2 meters (7 feet) above a support surface or it is not accessible in a safe manner when it is in regulated material service.
 - (3) *Identification of unsafe or difficult-to-monitor equipment.* Pursuant to 40 CFR 63.1022(c)(3), the permittee shall record the identity of equipment designated as unsafe-to-monitor according to the provisions of 40 CFR 63.1022(c)(1) and the planned schedule for monitoring this equipment. The permittee shall record the identity of equipment designated as difficult-to-monitor according to the provisions of 40 CFR 63.1022(c)(2), the planned schedule for monitoring this equipment, and an explanation why the equipment is unsafe or difficult-to-monitor. This record must be kept at the plant and be available for review by an inspector.
 - (4) *Written plan requirements* [40 CFR 63.1022(c)(4)]
 - (i) Pursuant to 40 CFR 63.1022(c)(4)(i), the permittee of equipment designated as unsafe-to-monitor according to the provisions of 40 CFR 63.1022(c)(1) shall have a written plan that requires monitoring of the equipment as frequently as practical during safe-to-monitor times, but not more frequently than the periodic monitoring

SECTION B - EMISSION POINTS, EMISSIONS UNITS, APPLICABLE REGULATIONS, AND OPERATING CONDITIONS (CONTINUED)

schedule otherwise applicable, and repair of the equipment according to the procedures in 40 CFR 63.1024 if a leak is detected.

- (ii) Pursuant to 40 CFR 63.1022(c)(4)(ii), the permittee of equipment designated as difficult-to-monitor according to the provisions of 40 CFR 63.1022(c)(2) shall have a written plan that requires monitoring of the equipment at least once per calendar year and repair of the equipment according to the procedures in 40 CFR 63.1024 if a leak is detected.
- d. *Special equipment designations: Equipment that is unsafe-to-repair* [40 CFR 63.1022(d)].
 - (1) *Designation and criteria.* Pursuant to 40 CFR 63.1022(d)(1), connectors subject to the provisions of 40 CFR 63.1024(e) may be designated unsafe-to-repair if the permittee determines that repair personnel would be exposed to an immediate danger as a consequence of complying with the repair requirements of this subpart, and if the connector will be repaired before the end of the next process unit or affected facility shutdown as specified in 40 CFR 63.1024(e)(2).
 - (2) *Identification of equipment.* Pursuant to 40 CFR 63.1022(d)(2), the identity of connectors designated as unsafe-to-repair and an explanation why the connector is unsafe-to-repair shall be recorded.
- e. *Special equipment designations: Compressors operating with an instrument reading of less than 500 parts per million above background.* Pursuant to 40 CFR 63.1022(e), identify the compressors that the permittee elects to designate as operating with an instrument reading of less than 500 parts per million (ppm) above background, under the provisions of 40 CFR 63.1031(f).
- f. *Special equipment designations: Equipment in heavy liquid service.* Pursuant to 40 CFR 63.1022(f), the permittee of equipment in heavy liquid service shall comply with the requirements of either 40 CFR 63.1022(f)(1) or 40 CFR 63.1022(f)(2), as provided in 40 CFR 63.1022(f)(3).
 - (1) Pursuant to 40 CFR 63.1022(f)(1), retain information, data, and analyses used to determine that a piece of equipment is in heavy liquid service.
 - (2) Pursuant to 40 CFR 63.1022(f)(3), when requested by the Administrator, demonstrate that the piece of equipment or process is in heavy liquid service.
 - (3) Pursuant to 40 CFR 63.1022(f)(3), a determination or demonstration that a piece of equipment or process is in heavy liquid service shall include an analysis or demonstration that the process fluids do not meet the definition of “in light liquid service.” Examples of information that could document this include, but are not limited to, records of chemicals purchased for the process, analyses of process stream composition, engineering calculations, or process knowledge.

Leak Repair

- g. *Leak repair schedule.* Pursuant to 40 CFR 63.1024(a), the permittee shall repair each leak detected as soon as practical, but not later than 15 calendar days after it is detected, except as provided in 40 CFR 63.1024(d) and 40 CFR 63.1024(e). A first attempt at repair as defined in 40 CFR 63, Subpart UU shall be made no later than 5 calendar days after the leak is detected. First attempt at repair for pumps includes, but is not limited to, tightening

SECTION B - EMISSION POINTS, EMISSIONS UNITS, APPLICABLE REGULATIONS, AND OPERATING CONDITIONS (CONTINUED)

the packing gland nuts and/or ensuring that the seal flush is operating at design pressure and temperature. First attempt at repair for valves includes, but is not limited to, tightening the bonnet bolts, and/or replacing the bonnet bolts, and/or tightening the packing gland nuts, and/or injecting lubricant into the lubricated packing.

h. *Leak identification removal.*

- (1) *Valves and connectors in gas/vapor and light liquid service.* Pursuant to 40 CFR 63.1024(c)(1), the leak identification on a valve in gas/vapor or light liquid service may be removed after it has been monitored as specified in 40 CFR 63.1025(d)(2), and no leak has been detected during that monitoring. The leak identification on a connector in gas/vapor or light liquid service may be removed after it has been monitored as specified in 40 CFR 63.1027(b)(3)(iv) and no leak has been detected during that monitoring.
- (2) *Other equipment.* Pursuant to 40 CFR 63.1024(c)(2), the identification that has been placed, pursuant to 40 CFR 63.1023(e)(1), on equipment determined to have a leak, except for a valve or for a connector in gas/vapor or light liquid service that is subject to the provisions of 40 CFR 63.1027(b)(3)(iv), may be removed after it is repaired.

i. *Delay of repair.* Pursuant to 40 CFR 63.1024(d), delay of repair is allowed for any of the conditions specified in 40 CFR 63.1024(d)(1) through (d)(5). The permittee shall maintain a record of the facts that explain any delay of repairs and, where appropriate, why the repair was technically infeasible without a process unit shutdown.

- (1) Pursuant to 40 CFR 63.1024(d)(1), delay of repair of equipment for which leaks have been detected is allowed if repair within 15 days after a leak is detected is technically infeasible without a process unit or affected facility shutdown. Repair of this equipment shall occur as soon as practical, but no later than the end of the next process unit or affected facility shutdown, except as provided in 40 CFR 63.1024(d)(5).
- (2) Pursuant to 40 CFR 63.1024(d)(2), delay of repair of equipment for which leaks have been detected is allowed for equipment that is isolated from the process and that does not remain in regulated material service.
- (3) Pursuant to 40 CFR 63.1024(d)(3), delay of repair for valves, connectors, and agitators is also allowed if the provisions of paragraphs (d)(3)(i) and (d)(3)(ii) of this section are met.
- (4) Pursuant to 40 CFR 63.1024(d)(4), delay of repair for pumps is also allowed if the provisions of 40 CFR 63.1024(d)(4)(i) and 40 CFR 63.1024(d)(4)(ii) are met.
 - (i) Pursuant to 40 CFR 63.1024(d)(4)(i), repair requires replacing the existing seal design with a new system that the owner or operator has determined under the provisions of 40 CFR 63.1035(d) will provide better performance or one of the specifications of 40 CFR 63.1024(d)(4)(i)(A) through 40 CFR 63.1024(d)(4)(i)(C) are met.
 - (A) Pursuant to 40 CFR 63.1024(d)(4)(i)(A), a dual mechanical seal system that meets the requirements of 40 CFR 63.1026(e)(1) will be installed;
 - (B) Pursuant to 40 CFR 63.1024(d)(4)(i)(B), a pump that meets the requirements of 40 CFR 63.1026(e)(2) will be installed; or

SECTION B - EMISSION POINTS, EMISSIONS UNITS, APPLICABLE REGULATIONS, AND OPERATING CONDITIONS (CONTINUED)

- (C) Pursuant to 40 CFR 63.1024(d)(4)(i)(C), a system that routes emissions to a process or a fuel gas system or a closed vent system and control device that meets the requirements of 40 CFR 63.1026(e)(3) will be installed; and
 - (ii) Pursuant to 40 CFR 63.1024(d)(4)(ii), repair is completed as soon as practical, but not later than 6 months after the leak was detected.
 - (5) Pursuant to 40 CFR 63.1024(d)(5), delay of repair beyond a process unit or affected facility shutdown will be allowed for a valve if valve assembly replacement is necessary during the process unit or affected facility shutdown, and valve assembly supplies have been depleted, and valve assembly supplies had been sufficiently stocked before the supplies were depleted. Delay of repair beyond the second process unit or affected facility shutdown will not be allowed unless the third process unit or affected facility shutdown occurs sooner than 6 months after the first process unit or affected facility shutdown.
- j. *Unsafe-to-repair — connectors.* Pursuant to 40 CFR 63.1024(e), any connector that is designated, as described in 40 CFR 63.1022(d), as an unsafe-to-repair connector is exempt from the requirements of 40 CFR 63.1027(d), and 40 CFR 63.1024(a).
- k. *Leak repair records.* Pursuant to 40 CFR 63.1024(f), for each leak detected, the information specified in 40 CFR 63.1024(f)(1) through 40 CFR 63.1024(f)(5) shall be recorded and maintained pursuant to the referencing subpart.
- (1) Pursuant to 40 CFR 63.1024(f)(1), the date of first attempt to repair the leak.
 - (2) Pursuant to 40 CFR 63.1024(f)(2), the date of successful repair of the leak.
 - (3) Pursuant to 40 CFR 63.1024(f)(3), maximum instrument reading measured by Method 21 of 40 CFR part 60, appendix A at the time the leak is successfully repaired or determined to be nonrepairable.
 - (4) Pursuant to 40 CFR 63.1024(f)(4), “Repair delayed” and the reason for the delay if a leak is not repaired within 15 calendar days after discovery of the leak as specified in 40 CFR 63.1024(f)(4)(i) and 40 CFR 63.1024(f)(4)(ii).
 - (i) Pursuant to 40 CFR 63.1024(f)(4)(i), the permittee may develop a written procedure that identifies the conditions that justify a delay of repair. In such cases, reasons for delay of repair may be documented by citing the relevant sections of the written procedure.
 - (ii) Pursuant to 40 CFR 63.1024(f)(4)(ii), if delay of repair was caused by depletion of stocked parts, there must be documentation that the spare parts were sufficiently stocked on-site before depletion and the reason for depletion.
 - (5) Pursuant to 40 CFR 63.1024(f)(5), dates of process unit or affected facility shutdowns that occur while the equipment is unrepaired.

Sampling connection systems standards

- 1. *Equipment requirement.* Pursuant to 40 CFR 63.1032(b), each sampling connection system shall be equipped with a closed-purge, closed-loop, or closed vent system, except as provided in 40 CFR 63.1021(b), 40 CFR 63.1036, 40 CFR 63.1037, or 40 CFR 63.1032(d). Gases displaced during filling of the sample container are not required to be collected or captured.

SECTION B - EMISSION POINTS, EMISSIONS UNITS, APPLICABLE REGULATIONS, AND OPERATING CONDITIONS (CONTINUED)

- m. *Equipment design and operation.* Pursuant to 40 CFR 63.1032(c), each closed-purge, closed-loop, or closed vent system as required in 40 CFR 63.1032(b) shall meet the applicable requirements specified in 40 CFR 63.1032(c)(1) through 40 CFR 63.1032(c)(5).
- (1) Pursuant to 40 CFR 63.1032(c)(1), the system shall return the purged process fluid directly to a process line or to a fuel gas system that meets the requirements of either 40 CFR 63.1034 or 40 CFR 63.1021(b); or
 - (2) Pursuant to 40 CFR 63.1032(c)(3), be designed and operated to capture and transport all the purged process fluid to a control device that meets the requirements of either 40 CFR 63.1034 or 40 CFR 63.1021(b); or
 - (3) Pursuant to 40 CFR 63.1032(c)(4), collect, store, and transport the purged process fluid to a system or facility identified in 40 CFR 63.1032(c)(4)(i), 40 CFR 63.1032(c)(4)(ii), or 40 CFR 63.1032(c)(4)(iii).
 - (i) Pursuant to 40 CFR 63.1032(c)(4)(i), a waste management unit as defined in 40 CFR 63.111 or subpart G, if the waste management unit is subject to and operating in compliance with the provisions of 40 CFR part 63, subpart G, applicable to group 1 wastewater streams. If the purged process fluid does not contain any regulated material listed in Table 9 of 40 CFR part 63, subpart G, the waste management unit need not be subject to, and operated in compliance with the requirements of 40 CFR part 63, subpart G, applicable to group 1 wastewater streams provided the facility has a National Pollution Discharge Elimination System (NPDES) permit or sends the wastewater to an NPDES-permitted facility.
 - (ii) Pursuant to 40 CFR 63.1032(c)(4)(ii), a treatment, storage, or disposal facility subject to regulation under 40 CFR parts 262, 264, 265, or 266; or
 - (iii) Pursuant to 40 CFR 63.1032(c)(4)(iii), a facility permitted, licensed, or registered by a State to manage municipal or industrial solid waste, if the process fluids are not hazardous waste as defined in 40 CFR part 261.
 - (4) Pursuant to 40 CFR 63.1032(c)(5), containers that are part of a closed purge system must be covered or closed when not being filled or emptied.
- n. *In-situ sampling systems.* Pursuant to 40 CFR 63.1032(d), in-situ sampling systems and sampling systems without purges are exempt from the requirements of 40 CFR 63.1032(b) and 40 CFR 63.1032(c).

Compliance Demonstration Method:

Compliance with **1. Operating Limitations**, paragraphs a through n, shall be demonstrated by complying with the following requirements in **4. Specific Monitoring Requirements**, paragraphs c. through ll. **5. Specific Recordkeeping Requirements**, paragraphs a. through c. and **6. Specific Reporting Requirements**.

- o. Pursuant to 401 KAR 51:017, Section 8, the following control technology, equipment and method are required to meet Best Available Control Technology (BACT) demonstration for VOC and CO_{2e} emissions:
- (1) The permittee shall keep records of the count of fugitive components added which are subject to 401 KAR 51:017 and identify and label them as subject to 401 KAR 51:017 using the procedures of 40 CFR 63, Subpart UU.

SECTION B - EMISSION POINTS, EMISSIONS UNITS, APPLICABLE REGULATIONS, AND OPERATING CONDITIONS (CONTINUED)

- (2) For units subject to 40 CFR 63, Subpart UU, the permittee shall implement the requirements from 40 CFR 63, Subpart UU (LDAR) and the requirements in **Compliance Demonstration Method**.

Compliance Demonstration Method:

Pursuant to 401 KAR 51:017, for compliance with **1. Operating Limitations** o. the permittee shall comply with the following requirements for a leak as defined as a reading of 500 ppmv:

- (1) Construction of new and reworked piping, valves, pump systems, and compressor systems shall conform to applicable American National Standards Institute (ANSI), American Petroleum Institute (API), American Society of Mechanical Engineers (ASME), or equivalent codes.
- (2) New and reworked underground process pipelines shall contain no buried valves such that fugitive emission monitoring is rendered impractical. New and reworked buried connectors shall be welded.
- (3) To the extent that good engineering practice will permit, new and reworked valves and piping connections shall be so located to be reasonably accessible for leak-checking during plant operation. Difficult-to-monitor and unsafe-to-monitor valves, as defined by 40 CFR 63, Subpart UU, shall be identified in a list to be made available upon request. The difficult-to-monitor and unsafe-to-monitor valves may be identified by one or more of the methods described in 40 CFR 63, Subpart UU. If an unsafe to monitor component is not considered safe to monitor within a calendar year, then it shall be monitored as soon as possible during safe to monitor times. A difficult to monitor component for which quarterly monitoring is specified may instead be monitored annually.
- (4) New and reworked piping connections shall be welded or flanged. Screwed connections are permissible only on piping smaller than two-inch diameter. Gas or hydraulic testing of the new and reworked piping connections at no less than operating pressure shall be performed prior to returning the components to service or they shall be monitored for leaks using an approved gas analyzer within 15 days of the components being returned to service. Adjustments shall be made as necessary to obtain leak-free performance. Connectors shall be inspected by visual, audible, and/or olfactory means at least weekly by operating personnel walk-through.
- (5) Each open-ended valve or line shall be equipped with an appropriately sized cap, blind flange, plug, or a second valve to seal the line. Except during sampling, both valves shall be closed. If the isolation of equipment for hot work or the removal of a component for repair or replacement results in an open ended line or valve, it is exempt from the requirement to install a cap, blind flange, plug, or second valve for 72 hours. If the repair or replacement is not completed within 72 hours, the permit holder must complete either of the following actions within that time period;
 - (i) A cap, blind flange, plug, or second valve must be installed on the line or valve; or
 - (ii) The open-ended valve or line shall be monitored once for leaks above background for a plant or unit turnaround lasting up to 45 days with an approved gas analyzer and the results recorded. For all other situations, the open-ended valve or line shall be monitored once by the end of the 72 hours period following the creation of the open ended line and monthly thereafter with an approved gas analyzer and the

SECTION B - EMISSION POINTS, EMISSIONS UNITS, APPLICABLE REGULATIONS, AND OPERATING CONDITIONS (CONTINUED)

results recorded. For turnarounds and all other situations, leaks are indicated by readings of 500 ppmv and must be repaired within 24 hours or a cap, blind flange, plug, or second valve must be installed on the line or valve.

- (6) Accessible valves shall be monitored by leak checking for fugitive emissions at least quarterly using an approved gas analyzer. Sealless/leak-less valves (including, but not limited to, welded bonnet bellows and diaphragm valves) and relief valves equipped with a rupture disc upstream or venting to a control device are not required to be monitored. If a relief valve is equipped with a rupture disc, a pressure-sensing device shall be installed between the relief valve and the rupture disc to monitor disc integrity.
 - (i) A check of the reading of the pressure-sensing device to verify disc integrity shall be performed at least quarterly and recorded in the unit log or equivalent. Pressure-sensing devices that are continuously monitored with alarms are exempt from recordkeeping requirements specified in this paragraph.
 - (ii) All leaking discs shall be replaced at the earliest opportunity but no later than the next process shutdown.
 - (iii) A gas analyzer shall conform to requirements listed in Method 21 of 40 CFR 60, appendix A. The gas analyzer shall be calibrated with methane. In addition, the response factor of the instrument for a specific VOC of interest shall be determined and meet the requirements of Section 8 of Method 21. If a mixture of VOCs is being monitored, the response factor shall be calculated for the average composition of the process fluid. A calculated average is not required when all of the compounds in the mixture have a response factor less than 10 using methane. If a response factor less than 10 cannot be achieved using methane, then the instrument may be calibrated with one of the VOC to be measured or any other VOC so long as the instrument has a response factor of less than 10 for each of the VOC to be measured.
 - (iv) Replacements for leaking components shall be re-monitored within 15 days of being placed back into VOC service.
- (7) All pump and compressor seals shall be monitored with an approved gas analyzer at least quarterly or be equipped with a shaft sealing system that prevents or detects emissions of VOC from the seal. Seal systems designed and operated to prevent emissions or seals equipped with an automatic seal failure detection and alarm system need not be monitored. These seal systems may include (but are not limited to) dual pump seals with barrier fluid at higher pressure than process pressure, seals degassing to vent control systems kept in good working order, or seals equipped with an automatic seal failure detection and alarm system. Submerged pumps or sealless pumps (including, but not limited to, diaphragm, canned, or magnetic-driven pumps) may be used to satisfy the requirements of this condition and need not be monitored.
- (8) Damaged or leaking valves, connectors, pump seals, and compressor seals found to be emitting VOC in excess of 500 parts per million by volume (ppmv) or found by visual inspection to be leaking (e.g., dripping process fluids) shall be tagged and replaced or repaired. A first attempt to repair the leak must be made within 5 days and a record of the attempt shall be maintained.
- (9) A leaking component shall be repaired as soon as practicable, but no later than 15 days after the leak is found. If the repair of a component would require a unit shutdown that would create more emissions than the repair would eliminate, the repair may be delayed until the next scheduled shutdown. All leaking components which cannot be repaired

SECTION B - EMISSION POINTS, EMISSIONS UNITS, APPLICABLE REGULATIONS, AND OPERATING CONDITIONS (CONTINUED)

- until a scheduled shutdown shall be identified for such repair by tagging within 15 days of the detection of the leak. A listing of all components that qualify for delay of repair shall be maintained on a delay of repair list. The cumulative daily emissions from all components on the delay of repair list shall be estimated by multiplying by 24 the mass emission rate for each component calculated in accordance with the methods in the EPA correlation approach in Section 2.3.3 alone or in combination with the mass emission sampling approach in Chapter 4 of the EPA guidance document *Protocol for Equipment Leak Emission Estimates* (EPA-453/R-95-017, November 1995). The calculations of the cumulative daily emissions from all components on the delay of repair list shall be updated within ten days of when the latest leaking component is added to the delay of repair list. When the cumulative daily emission rate of all components on the delay of repair list times the number of days until the next scheduled unit shutdown is equal to or exceeds the total emissions from a unit shutdown, the Division shall be notified and may require early unit shutdown or other appropriate action based on the number and severity of tagged leaks awaiting shutdown. This notification shall be made within 15 days of making this determination.
- (10) Records of repairs shall include date of repairs, repair results, justification for delay of repairs, and corrective actions taken for all components. Records of instrument monitoring shall indicate dates and times, test methods, and instrument readings. The instrument monitoring record shall include the time that monitoring took place for no less than 95% of the instrument readings recorded. Records of physical inspections shall be noted in the permittee's log or equivalent.
 - (11) Records of repairs shall include date of repairs, repair results, justification for delay of repairs, and corrective actions taken for all components. Records of instrument monitoring shall indicate dates and times, test methods, and instrument readings. The instrument monitoring record shall include the time that monitoring took place for no less than 95% of the instrument readings recorded. Records of physical inspections shall be noted in the permittee's log or equivalent.
 - (12) In addition to the weekly physical inspection required by **Compliance Demonstration Method** (4), all connectors in gas/vapor and light liquid service shall be monitored annually with an approved gas analyzer in accordance with **Compliance Demonstration Method** (6) through (11).
 - (13) New relief valves are required to vent to a control device for any potential releases and as a result, any fugitive emissions are reduced. Exceptions may be made if venting relief valves to control will result in a safety concern, but this does not exempt the company from controls such as equipping the valve with a rupture disk and pressure-sensing device.
- p. Pursuant to 401 KAR 52:020, Section 10, the permittee shall use the following control efficiencies while calculating potential emissions from each fugitive component that is subject to the requirements in **1. Operating Limitations** o.
- (1) 97% for valves in gas/vapor and light liquid service;
 - (2) 0% for valves in heavy liquid service;
 - (3) 85% for pumps in light liquid service;
 - (4) 0% for pumps in heavy liquid service;
 - (5) 75% for connectors in gas/vapor, and light liquid;

SECTION B - EMISSION POINTS, EMISSIONS UNITS, APPLICABLE REGULATIONS, AND OPERATING CONDITIONS (CONTINUED)

- (6) 85% for all compressors; and
- (7) 97% for relief valves in gas/vapor service.

- q. *Ethylene production pressure release requirements.* Pursuant to 40 CFR 63.1107(h), beginning no later than the compliance dates specified in 40 CFR 63.1102(c), except as specified in 40 CFR 63.1107(h)(4), the permittee must comply with the requirements specified in 40 CFR 63.1107(h)(1) and (2) for pressure relief devices, such as relief valves or rupture disks, in organic HAP gas or vapor service instead of the pressure relief device requirements of 40 CFR 63.1030 of subpart UU or 40 CFR 63.165 of Subpart H. Beginning no later than the compliance dates specified in 40 CFR 63.1102(c), except as specified in 40 CFR 63.1107(h)(4) and (5), the permittee must also comply with the requirements specified in 40 CFR 63.1107(h)(3) and (6) through (8) for all pressure relief devices.
- (1) *Operating requirements.* Except during a pressure release, operate each pressure relief device in organic HAP gas or vapor service with an instrument reading of less than 500 ppm above background as measured by the method in 40 CFR 63.1023(b) of Subpart UU or 40 CFR 63.180(b) and (c) of Subpart H.
 - (2) *Pressure release requirements.* For pressure relief devices in organic HAP gas or vapor service, the permittee must comply with the applicable requirements in 40 CFR 63.1107(h)(2)(i) through (iii) following a pressure release.
 - (i) If the pressure relief device does not consist of or include a rupture disk, conduct instrument monitoring, as specified in 40 CFR 63.1023(b) of Subpart UU or 40 CFR 63.180(b) and (c) of Subpart H, no later than 5 calendar days after the pressure relief device returns to organic HAP gas or vapor service following a pressure release to verify that the pressure relief device is operating with an instrument reading of less than 500 ppm.
 - (ii) If the pressure relief device includes a rupture disk, either comply with the requirements in 40 CFR 63.1107(h)(2)(i) (and do not replace the rupture disk) or install a replacement disk as soon as practicable after a pressure release, but no later than 5 calendar days after the pressure release.
 - (iii) If the pressure relief device consists only of a rupture disk, install a replacement disk as soon as practicable after a pressure release, but no later than 5 calendar days after the pressure release. The permittee must not initiate startup of the equipment served by the rupture disk until the rupture disk is replaced.
 - (3) *Pressure release management.* Except as specified in 40 CFR 63.1107(h)(4) and (5), the permittee must comply with the requirements specified in 40 CFR 63.1107(h)(3)(i) through (v) for all pressure relief devices in organic HAP service.
 - (i) The permittee must equip each affected pressure relief device with a device(s) or use a monitoring system that is capable of:
 - (A) Identifying the pressure release;
 - (B) Recording the time and duration of each pressure release; and
 - (C) Notifying operators immediately that a pressure release is occurring. The device or monitoring system must be either specific to the pressure relief device itself or must be associated with the process system or piping, sufficient to indicate a pressure release to the atmosphere. Examples of these types of devices and systems include, but are not limited to, a rupture disk indicator,

SECTION B - EMISSION POINTS, EMISSIONS UNITS, APPLICABLE REGULATIONS, AND OPERATING CONDITIONS (CONTINUED)

magnetic sensor, motion detector on the pressure relief valve stem, flow monitor, or pressure monitor.

- (ii) The permittee must apply at least three redundant prevention measures to each affected pressure relief device and document these measures. Examples of prevention measures include:
 - (A) Flow, temperature, liquid level and pressure indicators with deadman switches, monitors, or automatic actuators. Independent, non-duplicative systems within this category count as separate redundant prevention measures.
 - (B) Documented routine inspection and maintenance programs and/or operator training (maintenance programs and operator training may count as only one redundant prevention measure).
 - (C) Inherently safer designs or safety instrumentation systems.
 - (D) Deluge systems.
 - (E) Staged relief system where the initial pressure relief device (with lower set release pressure) discharges to a flare or other closed vent system and control device.
- (iii) If any affected pressure relief device releases to atmosphere as a result of a pressure release event, the permittee must perform root cause analysis and corrective action analysis according to the requirement in 40 CFR 63.1107(h)(6) and implement corrective actions according to the requirements in 40 CFR 63.1107(h)(7). The permittee must also calculate the quantity of organic HAP released during each pressure release event and report this quantity as required in 40 CFR 63.1110(e)(8)(iii). Calculations may be based on data from the pressure relief device monitoring alone or in combination with process parameter monitoring data and process knowledge.
- (iv) The permittee must determine the total number of release events that occurred during the calendar year for each affected pressure relief device separately. The permittee must also determine the total number of release events for each pressure relief device for which the root cause analysis concluded that the root cause was a force majeure event, as defined in 40 CFR 63.1103(e)(2).
- (v) Except for pressure relief devices described in 40 CFR 63.1107(h)(4) and (5), the following release events from an affected pressure relief device are a violation of the pressure release management work practice standards.
 - (A) Any release event for which the root cause of the event was determined to be operator error or poor maintenance.
 - (B) A second release event not including force majeure events from a single pressure relief device in a 3-calendar year period for the same root cause for the same equipment.
 - (C) A third release event not including force majeure events from a single pressure relief device in a 3-calendar year period for any reason.
- (4) *Pressure relief devices routed to a control device, process, fuel gas system, or drain system.* Pursuant to 40 CFR 63.1107(h)(4);
 - (i) If all releases and potential leaks from a pressure relief device are routed through a closed vent system to a control device, back into the process, a fuel gas system, or drain system, then the permittee is not required to comply with 40 CFR 63.1107(h)(1), (2), or (3).

SECTION B - EMISSION POINTS, EMISSIONS UNITS, APPLICABLE REGULATIONS, AND OPERATING CONDITIONS (CONTINUED)

- (ii) Before the compliance dates specified in 40 CFR 63.1102(c), both the closed vent system and control device (if applicable) referenced in 40 CFR 63.1107(h)(4)(i) must meet the applicable requirements specified in 40 CFR 63.982(b) and (c)(2). Beginning no later than the compliance dates specified in 40 CFR 63.1102(c), both the closed vent system and control device (if applicable) referenced in 40 CFR 63.1107(h)(4)(i) of this section must meet the applicable requirements specified in 40 CFR 63.982(c)(2), 63.983, and 63.1103(e)(4). For purposes of compliance with this paragraph, the phrase “Except for equipment needed for safety purposes such as pressure relief devices” in 40 CFR 63.983(a)(3) does not apply.
- (iii) The drain system (if applicable) referenced in 40 CFR 63.1107(h)(4)(i) must meet the applicable requirements specified in 40 CFR 61.346 or 40 CFR 63.136.
- (5) *Pressure relief devices exempted from pressure release management requirements.* Pursuant to 40 CFR 63.1107(h)(5), the following types of pressure relief devices are not subject to the pressure release management requirements in 40 CFR 63.1107(h)(3).
 - (i) Pressure relief devices in heavy liquid service, as defined in 40 CFR 63.1020 of Subpart UU.
 - (ii) Thermal expansion relief valves.
 - (iii) Pressure relief devices on mobile equipment.
 - (iv) Pilot-operated pressure relief devices where the primary release valve is routed through a closed vent system to a control device or back into the process, a fuel gas system, or drain system.
 - (v) Balanced bellows pressure relief devices where the primary release valve is routed through a closed vent system to a control device or back into the process, a fuel gas system, or drain system.
- (6) *Root cause analysis and corrective action analysis.* Pursuant to 40 CFR 63.1107(h)(6), a root cause analysis and corrective action analysis must be completed as soon as possible, but no later than 45 days after a release event. Special circumstances affecting the number of root cause analyses and/or corrective action analyses are provided in 40 CFR 63.1107(h)(6)(i) through (iv).
 - (i) The permittee may conduct a single root cause analysis and corrective action analysis for a single emergency event that causes two or more pressure relief devices that are installed on the same equipment to release.
 - (ii) The permittee may conduct a single root cause analysis and corrective action analysis for a single emergency event that causes two or more pressure relief devices to release, regardless of the equipment served, if the root cause is reasonably expected to be a force majeure event, as defined in 40 CFR 63.1103(e)(2).
 - (iii) Except as provided in 40 CFR 63.1107(h)(6)(i) and (ii), if more than one pressure relief device has a release during the same time period, an initial root cause analysis must be conducted separately for each pressure relief device that had a release. If the initial root cause analysis indicates that the release events have the same root cause(s), the initial separate root cause analyses may be recorded as a single root cause analysis and a single corrective action analysis may be conducted.
- (7) *Corrective action implementation.* If the permittee is required to conduct a root cause analysis and corrective action analysis as specified in 40 CFR 63.1107(h)(3)(iii) and (6), the permittee must implement the corrective action(s) identified in the corrective

SECTION B - EMISSION POINTS, EMISSIONS UNITS, APPLICABLE REGULATIONS, AND OPERATING CONDITIONS (CONTINUED)

- action analysis in accordance with the applicable requirements in 40 CFR 63.1107(h)(7)(i) through (iii).
- (i) All corrective action(s) must be implemented within 45 days of the event for which the root cause and corrective action analyses were required or as soon thereafter as practicable. If the permittee concludes that no corrective action should be implemented, the permittee must record and explain the basis for that conclusion no later than 45 days following the event.
 - (ii) For corrective actions that cannot be fully implemented within 45 days following the event for which the root cause and corrective action analyses were required, the permittee must develop an implementation schedule to complete the corrective action(s) as soon as practicable.
 - (iii) No later than 45 days following the event for which a root cause and corrective action analyses were required, the permittee must record the corrective action(s) completed to date, and, for action(s) not already completed, a schedule for implementation, including proposed commencement and completion dates.
- (8) *Flowing pilot-operated pressure relief devices*. For ethylene production affected sources that commenced construction or reconstruction on or before October 9, 2019, the permittee will be prohibited from installing a flowing pilot-operated pressure relief device or replacing any pressure relief device with a flowing pilot-operated pressure relief device after July 6, 2023. A flowing pilot-operated pressure relief device means “the type of pilot-operated pressure relief device where the pilot discharge vent continuously releases emissions to the atmosphere when the pressure relief device is actuated”.
- r. Pursuant to 40 CFR 63.1100(g)(4)(iii), beginning no later than the compliance dates specified in 40 CFR 63.1102(c), for ethylene production affected sources, equipment that must be controlled according to 40 CFR 63, Subpart YY and 40 CFR 60, Subpart VVa is required only to comply with the equipment leak requirements of 40 CFR 63, Subpart YY, except the permittee must also comply with the calibration drift assessment requirements specified at 40 CFR 60.485a(b)(2) if they are required to do so in 40 CFR 60, Subpart VVa. When complying with the calibration drift assessment requirements at 40 CFR 60.485a(b)(2), the requirement at 40 CFR 60.486a(e)(8)(v) to record the instrument reading for each scale used applies.

Compliance Demonstration Method:

See Section D.6. See **5. Specific Recordkeeping Requirements** e. and f. and **6. Specific Reporting Requirements** c. through e.

2. Emission Limitations:

See **1. Operating Limitations**.

3. Testing Requirements:

- a. Pursuant to 40 CFR 60.485a(b)(2), a calibration drift assessment shall be performed, at a minimum, at the end of each monitoring day. Check the instrument using the same calibration gas(es) that were used to calibrate the instrument before use. Follow the procedures specified in Method 21 of appendix A-7 to 40 CFR part 60, section 10.1, except

SECTION B - EMISSION POINTS, EMISSIONS UNITS, APPLICABLE REGULATIONS, AND OPERATING CONDITIONS (CONTINUED)

do not adjust the meter readout to correspond to the calibration gas value. Record the instrument reading for each scale used as specified in 40 CFR 60.486a(e)(8). Divide the arithmetic difference of the initial and post-test calibration response by the corresponding calibration gas value for each scale and multiply by 100 to express the calibration drift as a percentage.

- (1) If a calibration drift assessment shows a negative drift of more than 10 percent, then all equipment with instrument readings between the appropriate leak definition and the leak definition multiplied by (100 minus the percent of negative drift/divided by 100) that was monitored since the last calibration must be re-monitored.
- (2) If any calibration drift assessment shows a positive drift of more than 10 percent from the initial calibration value, then, at the discretion of the permittee, all equipment with instrument readings above the appropriate leak definition and below the leak definition multiplied by (100 plus the percent of positive drift/divided by 100) monitored since the last calibration may be re-monitored.

4. Specific Monitoring Requirements:

- a. Pursuant to 401 KAR 52:020, Section 10, gas/vapor valves added as a result of the Ethane Conversion Project (~9 valves) in permit V-05-011 R2, which are subject to 40 CFR 63, Subpart YY, shall be monitored quarterly.
- b. Pursuant to 401 KAR 52:020, Section 10, flange/connectors added as a result of the Ethane Conversion Project (~21 connectors) in permit V-05-011 R2, which are subject to 40 CFR 63, Subpart YY, shall be monitored annually.

Instrument and sensory monitoring for leaks

- c. *Monitoring for leaks.* Pursuant to 40 CFR 63.1023(a), the permittee of a regulated source subject to 40 CFR 63, Subpart UU shall monitor regulated equipment as specified in 40 CFR 63.1023(a)(1) for instrument monitoring and 40 CFR 63.1023(a)(2) for sensory monitoring.
 - (1) *Instrument monitoring for leaks* [40 CFR 63.1023(a)(1)].
 - (i) Pursuant to 40 CFR 63.1023(a)(1)(i), valves in gas and vapor service and in light liquid service shall be monitored pursuant to 40 CFR 63.1025(b).
 - (ii) Pursuant to 40 CFR 63.1023(a)(1)(ii), pumps in light liquid service shall be monitored pursuant to 40 CFR 63.1026(b).
 - (iii) Pursuant to 40 CFR 63.1023(a)(1)(iii), connectors in gas and vapor service and in light liquid service shall be monitored pursuant to 40 CFR 63.1027(b).
 - (iv) Pursuant to 40 CFR 63.1023(a)(1)(iv), agitators in gas and vapor service and in light liquid service shall be monitored pursuant to 40 CFR 63.1028(c).
 - (v) Pursuant to 40 CFR 63.1023(a)(1)(vi), compressors designated to operate with an instrument reading less than 500 ppm above background, as described in 40 CFR 63.1022(e), shall be monitored pursuant to 40 CFR 63.1031(f).
 - (2) *Sensory monitoring for leaks* [40 CFR 63.1023(a)(2)].
 - (i) Pursuant to 40 CFR 63.1023(a)(2)(i), pumps in light liquid service shall be observed pursuant to 40 CFR 63.1026(b)(4) and 40 CFR 63.1026(e)(1)(v).

SECTION B - EMISSION POINTS, EMISSIONS UNITS, APPLICABLE REGULATIONS, AND OPERATING CONDITIONS (CONTINUED)

- (ii) Pursuant to 40 CFR 63.1023(a)(2)(iii), agitators in gas and vapor service and in light liquid service shall be observed pursuant to 40 CFR 63.1028(c)(3) or 40 CFR 63.1028(e)(1)(iv).
- d. *Instrument monitoring methods.* Pursuant to 40 CFR 63.1023(b), instrument monitoring, as required under 40 CFR Subpart UU, shall comply with the requirements specified in 40 CFR 63.1023(b)(1) through 40 CFR 63.1023(b)(6).
 - (1) *Monitoring method.* Pursuant to 40 CFR 63.1023(b)(1), monitoring shall comply with Method 21 of 40 CFR part 60, appendix A, except as otherwise provided in 40 CFR 63.1023.
 - (2) *Detection instrument performance criteria.* [40 CFR 63.1023(b)(2)].
 - (i) Pursuant to 40 CFR 63.1023(b)(2)(i), except as provided for in 40 CFR 63.1023(b)(2)(ii), the detection instrument shall meet the performance criteria of Method 21 of 40 CFR part 60, appendix A, except the instrument response factor criteria in section 3.1.2, paragraph (a) of Method 21 shall be for the representative composition of the process fluid not each individual VOC in the stream. For process streams that contain nitrogen, air, water or other inerts that are not HAP or VOC, the representative stream response factor shall be determined on an inert-free basis. The response factor may be determined at any concentration for which monitoring for leaks will be conducted.
 - (ii) Pursuant to 40 CFR 63.1023(b)(2)(ii), If there is no instrument commercially available that will meet the performance criteria specified in 40 CFR 63.1023(b)(2)(i) of this section, the instrument readings may be adjusted by multiplying by the representative response factor of the process fluid, calculated on an inert-free basis as described in 40 CFR 63.1023(b)(2)(i).
 - (3) *Detection instrument calibration procedure.* Pursuant to 40 CFR 63.1023(b)(3), the detection instrument shall be calibrated before use on each day of its use by the procedures specified in Method 21 of 40 CFR part 60, appendix A.
 - (4) *Detection instrument calibration gas.* Pursuant to 40 CFR 63.1023(b)(4), calibration gases shall be zero air (less than 10 parts per million of hydrocarbon in air); and the gases specified in 40 CFR 63.1023(b)(4)(i) except as provided in 40 CFR 63.1023(b)(4)(ii).
 - (i) Pursuant to 40 CFR 63.1023(b)(4)(i), mixtures of methane in air at a concentration no more than 2,000 parts per million greater than the leak definition concentration of the equipment monitored. If the monitoring instrument's design allows for multiple calibration scales, then the lower scale shall be calibrated with a calibration gas that is no higher than 2,000 parts per million above the concentration specified as a leak, and the highest scale shall be calibrated with a calibration gas that is approximately equal to 10,000 parts per million. If only one scale on an instrument will be used during monitoring, the owner or operator need not calibrate the scales that will not be used during that day's monitoring.
 - (ii) Pursuant to 40 CFR 63.1023(b)(4)(ii), a calibration gas other than methane in air may be used if the instrument does not respond to methane or if the instrument does not meet the performance criteria specified in 40 CFR 63.1023(b)(2)(i). In such cases, the calibration gas may be a mixture of one or more of the compounds to be measured in air.

SECTION B - EMISSION POINTS, EMISSIONS UNITS, APPLICABLE REGULATIONS, AND OPERATING CONDITIONS (CONTINUED)

- (5) *Monitoring performance.* Pursuant to 40 CFR 63.1023(b)(5), monitoring shall be performed when the equipment is in regulated material service or is in use with any other detectable material.
- (6) *Monitoring data.* Pursuant to 40 CFR 63.1023(b)(6), monitoring data obtained prior to the regulated source becoming subject to the referencing subpart that do not meet the criteria specified in 40 CFR 63.1023(b)(1) through 40 CFR 63.1023(b)(5) of this section may still be used to qualify initially for less frequent monitoring under the provisions in 40 CFR 63.1025(a)(2), 40 CFR 63.1025(b)(3) or 40 CFR 63.1025(b)(4) for valves or 40 CFR 63.1027(b)(3) for connectors provided the departures from the criteria or from the specified monitoring frequency of 40 CFR 63.1025(b)(3) or 40 CFR 63.1025(b)(4) or 40 CFR 63.1027(b)(3) are minor and do not significantly affect the quality of the data. Examples of minor departures are monitoring at a slightly different frequency (such as every 6 weeks instead of monthly or quarterly), following the performance criteria of section 3.1.2, paragraph (a) of Method 21 of appendix A of 40 CFR part 60 instead of 40 CFR 63.1023(b)(2), or monitoring using a different leak definition if the data would indicate the presence or absence of a leak at the concentration specified in this subpart. Failure to use a calibrated instrument is not considered a minor departure.
- e. *Instrument monitoring using background adjustments.* Pursuant to 40 CFR 63.1023(c), the permittee may elect to adjust or not to adjust the instrument readings for background. If permittee elects not to adjust instrument readings for background, the permittee shall monitor the equipment according to the procedures specified in 40 CFR 63.1023(b)(1) through 40 CFR 63.1023(b)(5). In such cases, all instrument readings shall be compared directly to the applicable leak definition for the monitored equipment to determine whether there is a leak or to determine compliance with 40 CFR 63.1031(f) (alternative compressor standard). If permittee elects to adjust instrument readings for background, the permittee shall monitor the equipment according to the procedures specified in 40 CFR 63.1023(c)(1) through 40 CFR 63.1023(c)(4).
- f. *Sensory monitoring methods.* Pursuant to 40 CFR 63.1023(d), sensory monitoring consists of visual, audible, olfactory, or any other detection method used to determine a potential leak to the atmosphere.
- g. *Leaking equipment identification and records* [40 CFR 63.1023(e)].
- (1) Pursuant to 40 CFR 63.1023(e)(1), when each leak is detected pursuant to the monitoring specified in 40 CFR 63.1023(a), a weatherproof and readily visible identification, shall be attached to the leaking equipment.
- (2) Pursuant to 40 CFR 63.1023(e)(2), when each leak is detected, the information specified in 40 CFR 63.1024(f) shall be recorded and kept pursuant to the referencing subpart, except for the information for connectors complying with the 8 year monitoring period allowed under 40 CFR 63.1027(b)(3)(iii) shall be kept 5 years beyond the date of its last use.

SECTION B - EMISSION POINTS, EMISSIONS UNITS, APPLICABLE REGULATIONS, AND OPERATING CONDITIONS (CONTINUED)

Valves in gas and vapor service and in light liquid service standards

- h. *Compliance schedule.* Pursuant to 40 CFR 63.1025(a)(2), the use of monitoring data generated before the regulated source became subject to the referencing subpart to qualify initially for less frequent monitoring is governed by the provisions of 40 CFR 63.1023(b)(6).
- i. *Leak detection.* Pursuant to 40 CFR 63.1025(b), unless otherwise specified in 40 CFR 63.1021(b) or 40 CFR 1025(e), or the referencing subpart, the permittee shall monitor all valves at the intervals specified in 40 CFR 63.1025(b)(3) and/or 40 CFR 63.1025(b)(4) and shall comply with all other provisions of this section.
 - (1) *Monitoring method.* Pursuant to 40 CFR 63.1025(b)(1), the valves shall be monitored to detect leaks by the method specified in 40 CFR 63.1023(b) and, as applicable, 40 CFR 63.1023(c).
 - (2) *Instrument reading that defines a leak.* Pursuant to 40 CFR 63.1025(b)(2), the instrument reading that defines a leak is 500 ppm or greater.
 - (3) *Monitoring frequency.* Pursuant to 40 CFR 63.1025(b)(3), the permittee shall monitor valves for leaks at the intervals specified in 40 CFR 63.1025(b)(3)(i) through 40 CFR 63.1025 (b)(3)(v) and shall keep the record specified in 40 CFR 63.1025(b)(3)(vi).
 - (i) Pursuant to 40 CFR 63.1025(b)(3)(i), if at least the greater of 2 valves or 2 percent of the valves in a process unit leak, as calculated according to 40 CFR 63.1025(c), the permittee shall monitor each valve once per month.
 - (ii) Pursuant to 40 CFR 63.1025(b)(3)(ii), at process units with less than the greater of 2 leaking valves or 2 percent leaking valves, the permittee shall monitor each valve once each quarter, except as provided in 40 CFR 63.1025(b)(3)(iii) through 40 CFR 63.1025(b)(3)(v). Monitoring data generated before the regulated source became subject to the referencing subpart and meeting the criteria of either 40 CFR 63.1023(b)(1) through 40 CFR 63.1023(b)(5), or 40 CFR 63.1023(b)(6), may be used to qualify initially for less frequent monitoring under 40 CFR 63.1025(b)(3)(iii) through 40 CFR 63.1025(b)(3)(v).
 - (iii) Pursuant to 40 CFR 63.1025(b)(3)(iii), at process units with less than 1 percent leaking valves, the permittee may elect to monitor each valve once every two quarters.
 - (iv) Pursuant to 40 CFR 63.1025(b)(3)(iv), at process units with less than 0.5 percent leaking valves, the permittee may elect to monitor each valve once every four quarters.
 - (v) Pursuant to 40 CFR 63.1025(b)(3)(v), at process units with less than 0.25 percent leaking valves, the permittee may elect to monitor each valve once every 2 years.
 - (vi) Pursuant to 40 CFR 63.1025(b)(3)(vi), the permittee shall keep a record of the monitoring schedule for each process unit.
 - (4) *Valve subgrouping.* Pursuant to 40 CFR 63.1025(b)(4), for a process unit or a group of process units to which this subpart applies, an permittee may choose to subdivide the valves in the applicable process unit or group of process units and apply the provisions of 40 CFR 63.1025(b)(3) to each subgroup. If the permittee elects to subdivide the valves in the applicable process unit or group of process units, then the provisions of 40 CFR 63.1025 (b)(4)(i) through 40 CFR 63.1025(b)(4)(viii) apply.

SECTION B - EMISSION POINTS, EMISSIONS UNITS, APPLICABLE REGULATIONS, AND OPERATING CONDITIONS (CONTINUED)**j. *Percent leaking valves calculation*** [40 CFR 63.1025(c)].**(1) *Calculation basis and procedures*** [40 CFR 63.1025(c)(1)].

- (i) Pursuant to 40 CFR 63.1025(c)(1)(i), the permittee shall decide no later than the compliance date of 40 CFR 63, Subpart UU or upon revision of an operating permit whether to calculate percent leaking valves on a process unit or group of process units basis. Once the permittee has decided, all subsequent percentage calculations shall be made on the same basis and this shall be the basis used for comparison with the subgrouping criteria specified in 40 CFR 63.1025(b)(4)(i) of this section.
- (ii) Pursuant to 40 CFR 63.1025(c)(1)(ii), the percent leaking valves for each monitoring period for each process unit or valve subgroup, as provided in 40 CFR 63.1025(b)(4), shall be calculated using equation 2 of 40 CFR 63.1025(c)(1)(ii) as follows:

$$\% V_L = (V_L/V_T) \times 100$$

Where:

$\% V_L$ = Percent leaking valves.

V_L = Number of valves found leaking, excluding nonrepairable valves, as provided in 40 CFR 63.1025(c)(3), and including those valves found leaking pursuant to 40 CFR 63.1025(d)(2)(iii)(A) and 40 CFR 63.1025(d)(2)(iii)(B).

V_T = The sum of the total number of valves monitored.

- (2) *Calculation for monitoring frequency.* Pursuant to 40 CFR 63.1025(c)(2), when determining monitoring frequency for each process unit or valve subgroup subject to monthly, quarterly, or semiannual monitoring frequencies, the percent leaking valves shall be the arithmetic average of the percent leaking valves from the last two monitoring periods. When determining monitoring frequency for each process unit or valve subgroup subject to annual or biennial (once every 2 years) monitoring frequencies, the percent leaking valves shall be the arithmetic average of the percent leaking valves from the last three monitoring periods.

(3) *Nonrepairable valves.*

- (i) Pursuant to 40 CFR 63.1025(c)(3)(i), nonrepairable valves shall be included in the calculation of percent leaking valves the first time the valve is identified as leaking and nonrepairable and as required to comply with 40 CFR 63.1025(c)(3)(ii). Otherwise, a number of nonrepairable valves (identified and included in the percent leaking valves calculation in a previous period) up to a maximum of 1 percent of the total number of valves in regulated material service at a process unit or affected facility may be excluded from calculation of percent leaking valves for subsequent monitoring periods.
- (ii) Pursuant to 40 CFR 63.1025(c)(3)(i), if the number of nonrepairable valves exceeds 1 percent of the total number of valves in regulated material service at a process unit or affected facility, the number of nonrepairable valves exceeding 1 percent of the total number of valves in regulated material service shall be included in the calculation of percent leaking valves.

SECTION B - EMISSION POINTS, EMISSIONS UNITS, APPLICABLE REGULATIONS, AND OPERATING CONDITIONS (CONTINUED)**k. *Leak repair*** [40 CFR 63.1025(d)].

- (1) Pursuant to 40 CFR 63.1025(d)(1), if a leak is determined pursuant to 40 CFR 63.1025(b), 40 CFR 63.1025(e)(1), or 40 CFR 63.1025(e)(2), then the leak shall be repaired using the procedures in 40 CFR 63.1024, as applicable.
- (2) Pursuant to 40 CFR 63.1025(d)(2), after a leak has been repaired, the valve shall be monitored at least once within the first 3 months after its repair. The monitoring required by this paragraph is in addition to the monitoring required to satisfy the definition of repaired and first attempt at repair.
 - (i) Pursuant to 40 CFR 63.1025(d)(2)(i), the monitoring shall be conducted as specified in 40 CFR 63.1023(b) and (c), as appropriate, to determine whether the valve has resumed leaking.
 - (ii) Pursuant to 40 CFR 63.1025(d)(2)(ii), periodic monitoring required by 40 CFR 63.1025(b) may be used to satisfy the requirements of this paragraph, if the timing of the monitoring period coincides with the time specified in this paragraph. Alternatively, other monitoring may be performed to satisfy the requirements of this paragraph, regardless of whether the timing of the monitoring period for periodic monitoring coincides with the time specified in this paragraph.
 - (iii) Pursuant to 40 CFR 63.1025(d)(2)(iii), if a leak is detected by monitoring that is conducted pursuant to 40 CFR 63.1025(d)(2) of this section, the permittee shall follow the provisions of 40 CFR 63.1025(d)(2)(iii)(A) and 40 CFR 63.1025(d)(2)(iii)(B), to determine whether that valve must be counted as a leaking valve for purposes of 40 CFR 63.1025(c)(1)(ii).
 - (A) Pursuant to 40 CFR 63.1025(d)(2)(iii)(A), if the permittee elected to use periodic monitoring required by 40 CFR 63.1025(b) to satisfy the requirements of 40 CFR 63.1025(d)(2), then the valve shall be counted as a leaking valve.
 - (B) Pursuant to 40 CFR 63.1025(d)(2)(iii)(B), if the permittee elected to use other monitoring, prior to the periodic monitoring required by 40 CFR 63.1025(b), to satisfy the requirements of 40 CFR 63.1025(d)(2), then the valve shall be counted as a leaking valve unless it is repaired and shown by periodic monitoring not to be leaking.

l. *Special provisions for valves* [40 CFR 63.1025(e)].

- (1) *Unsafe-to-monitor valves.* Pursuant to 40 CFR 63.1025(e)(1), any valve that is designated, as described in 40 CFR 63.1022(c)(1), as an unsafe-to-monitor valve is exempt from the requirements of 40 CFR 63.1025(b) and 40 CFR 63.1025(d)(2) and the permittee shall monitor the valve according to the written plan specified in 40 CFR 63.1022(c)(4).
- (2) *Difficult-to-monitor valves.* Pursuant to 40 CFR 63.1025(e)(2), any valve that is designated, as described in 40 CFR 63.1022(c)(2), as a difficult-to-monitor valve is exempt from the requirements of 40 CFR 63.1025(b) and the permittee shall monitor the valve according to the written plan specified in 40 CFR 63.1022(c)(4).

Pumps in light liquid service standards

- m. *Leak detection.* Pursuant to 40 CFR 63.1026(b), unless otherwise specified in 40 CFR 63.1021(b), 40 CFR 63.1036, 40 CFR 63.1037, or 40 CFR 63.1025(e), the permittee shall monitor each pump to detect leaks and shall comply with all other provisions of this section.

SECTION B - EMISSION POINTS, EMISSIONS UNITS, APPLICABLE REGULATIONS, AND OPERATING CONDITIONS (CONTINUED)

- (1) *Monitoring method and frequency.* Pursuant to 40 CFR 63.1026(b)(1), the pumps shall be monitored monthly to detect leaks by the method specified in 40 CFR 63.1023(b) and, as applicable, 40 CFR 63.1023(c).
 - (2) *Instrument reading that defines a leak.* Pursuant to 40 CFR 63.1026(b)(2), the instrument reading that defines a leak is specified in 40 CFR 63.1026(b)(2)(i) and 40 CFR 63.1026(b)(2)(iii).
 - (i) Pursuant to 40 CFR 63.1026(b)(2)(i), 5,000 ppm or greater for pumps handling polymerizing monomers;
 - (ii) Pursuant to 40 CFR 63.1026(b)(2)(iii), 1,000 ppm or greater for all other pumps.
 - (3) *Leak repair exception.* Pursuant to 40 CFR 63.1026(b)(3), for pumps to which a 1,000 ppm leak definition applies, repair is not required unless an instrument reading of 2,000 ppm or greater is detected.
 - (4) *Visual inspection.* Pursuant to 40 CFR 63.1026(b)(4), each pump shall be checked by visual inspection each calendar week for indications of liquids dripping from the pump seal. The permittee shall document that the inspection was conducted and the date of the inspection. If there are indications of liquids dripping from the pump seal at the time of the weekly inspection, the permittee shall follow the procedure specified in either 40 CFR 63.1026(b)(4)(i) or 40 CFR 63.1026(b)(4)(ii).
 - (i) Pursuant to 40 CFR 63.1026(b)(4)(i), the permittee shall monitor the pump as specified in 40 CFR 63.1023(b) and, as applicable, 40 CFR 63.1023(c). If the instrument reading indicates a leak as specified in 40 CFR 63.1026(b)(2), a leak is detected and it shall be repaired using the procedures in 40 CFR 63.1024, except as specified in 40 CFR 63.1026(b)(3); or
 - (ii) Pursuant to 40 CFR 63.1026(b)(4)(ii), the permittee shall eliminate the visual indications of liquids dripping.
- n. *Percent leaking pumps calculation* [40 CFR 63.1026(c)].
- (1) Pursuant to 40 CFR 63.1026(c)(1), the permittee shall decide no later than the compliance date of 40 CFR 63, Subpart UU or upon revision of an operating permit whether to calculate percent leaking pumps on a process unit basis or group of process units basis. Once the permittee has decided, all subsequent percentage calculations shall be made on the same basis.
 - (2) Pursuant to 40 CFR 63.1026(c)(2), if, when calculated on a 6-month rolling average, at least the greater of either 10 percent of the pumps in a process unit or three pumps in a process unit leak, the permittee shall implement a quality improvement program for pumps that complies with the requirements of 40 CFR 63.1035.
 - (3) Pursuant to 40 CFR 63.1026(c)(3), the number of pumps at a process unit or affected facility shall be the sum of all the pumps in regulated material service, except that pumps found leaking in a continuous process unit or affected facility within 1 month after start-up of the pump shall not count in the percent leaking pumps calculation for that one monitoring period only.
 - (4) Pursuant to 40 CFR 63.1026(c)(4), percent leaking pumps shall be determined by Equation 3 of 40 CFR 63.1026(c)(4) as follows:

$$\%P_L = ((P_L - P_S)/(P_T - P_S))$$

Where:

SECTION B - EMISSION POINTS, EMISSIONS UNITS, APPLICABLE REGULATIONS, AND OPERATING CONDITIONS (CONTINUED)

$\%P_L$ = Percent leaking pumps.

P_L = Number of pumps found leaking as determined through monthly monitoring as required in 40 CFR 63.1026(b)(1). Do not include results from inspection of unsafe-to-monitor pumps pursuant to 40 CFR 63.1026(e)(6).

P_S = Number of pumps leaking within 1 month of start-up during the current monitoring period.

P_T = Total pumps in regulated material service, including those meeting the criteria in 40 CFR 63.1026 (e)(1), 40 CFR 63.1026 (e)(2), 40 CFR 63.1026 (e)(3), and 40 CFR 63.1026 (e)(6) of this section.

- o. *Leak repair.* Pursuant to 40 CFR 63.1026(d), if a leak is detected pursuant to 40 CFR 63.1026 (b), then the leak shall be repaired using the procedures in 40 CFR 63.1024, as applicable, unless otherwise specified in 40 CFR 63.1026(b)(5) for leaks identified by visual indications of liquids dripping.
- p. *Special provisions for pumps* [40 CFR 63.1026(e)].
 - (1) *Dual mechanical seal pumps.* Pursuant to 40 CFR 63.1026(e)(1), each pump equipped with a dual mechanical seal system that includes a barrier fluid system is exempt from the requirements of 40 CFR 63.1026(b), provided the requirements specified in 40 CFR 63.1026(e)(1)(i) through 40 CFR 63.1026(e)(1)(viii) are met.
 - (2) *No external shaft.* Pursuant to 40 CFR 63.1026(e)(2), any pump that is designed with no externally actuated shaft penetrating the pump housing is exempt from the requirements of 40 CFR 63.1026(b).
 - (3) *Routed to a process or fuel gas system or equipped with a closed vent system.* Pursuant to 40 CFR 63.1026(e)(3), any pump that is routed to a process or fuel gas system or equipped with a closed vent system capable of capturing and transporting leakage from the pump to a control device meeting the requirements of 40 CFR 63.1034 of 40 CFR 63, Subpart UU or 40 CFR 63.1021(b) is exempt from the requirements of 40 CFR 63.1026(b).
 - (4) *90 percent exemption.* Pursuant to 40 CFR 63.1026(e)(5), if more than 90 percent of the pumps at a process unit or affected facility meet the criteria in either 40 CFR 63.1026(e)(1) or 40 CFR 63.1026(e)(2), the process unit or affected facility is exempt from the percent leaking calculation in 40 CFR 63.1026(c).
 - (5) *Unsafe-to-monitor pumps.* Pursuant to 40 CFR 63.1026(e)(6), any pump that is designated, as described in 40 CFR 63.1022(c)(1), as an unsafe-to-monitor pump is exempt from the requirements of 40 CFR 63.1026(b), the monitoring and inspection requirements of 40 CFR 63.1026(e)(1)(v) through 40 CFR 63.1026(e)(1)(viii), and the permittee shall monitor and inspect the pump according to the written plan specified in 40 CFR 63.1022(c)(4).

Connectors in gas and vapor service and in light liquid service standards

- q. *Compliance schedule.* Pursuant to 40 CFR 63.1027(a), the permittee shall monitor all connectors in each process unit initially for leaks by the later of either 12 months after the compliance date as specified in a referencing subpart or 12 months after initial startup. If all connectors in each process unit have been monitored for leaks prior to the compliance date specified in the referencing subpart, no initial monitoring is required provided either

SECTION B - EMISSION POINTS, EMISSIONS UNITS, APPLICABLE REGULATIONS, AND OPERATING CONDITIONS (CONTINUED)

no process changes have been made since the monitoring or the permittee can determine that the results of the monitoring, with or without adjustments, reliably demonstrate compliance despite process changes. If required to monitor because of a process change, the permittee is required to monitor only those connectors involved in the process change.

- r. *Leak detection.* Pursuant to 40 CFR 63.1027(b), except as allowed in 40 CFR 63.1021(b), 40 CFR 63.1036, 40 CFR 63.1037, or as specified in 40 CFR 63.1027(e), the permittee shall monitor all connectors in gas and vapor and light liquid service as specified in 40 CFR 63.1027(a) and 40 CFR 63.1027(b)(3).
- (1) *Monitoring method.* Pursuant to 40 CFR 63.1027(b)(1), the connectors shall be monitored to detect leaks by the method specified in 40 CFR 63.1023(b) and, as applicable, 40 CFR 63.1023(c).
- (2) *Instrument reading that defines a leak.* Pursuant to 40 CFR 63.1027(b)(2), if an instrument reading greater than or equal to 500 ppm is measured, a leak is detected.
- (3) *Monitoring periods.* Pursuant to 40 CFR 63.1027(b)(3), the permittee shall perform monitoring, subsequent to the initial monitoring required in 40 CFR 63.1027(a), as specified in 40 CFR 63.1027(b)(3)(i) through 40 CFR 63.1027(b)(3)(iii), and shall comply with the requirements of 40 CFR 63.1027(b)(3)(iv) and 40 CFR 63.1027(b)(3)(v). The required period in which monitoring must be conducted shall be determined from 40 CFR 63.1027(b)(3)(i) through 40 CFR 63.1027(b)(3)(iii) using the monitoring results from the preceding monitoring period. The percent leaking connectors shall be calculated as specified in 40 CFR 63.1027(c).
- s. *Percent leaking connectors calculation.* Pursuant to 40 CFR 63.1027(c), for use in determining the monitoring frequency, as specified in 40 CFR 63.1027(a) and 40 CFR 63.1027(b)(3), the percent leaking connectors as used in 40 CFR 63.1027(a) and 40 CFR 63.1027(b)(3) shall be calculated by using equation number 4 as follows:

$$\%C_L = C_L/C_t \times 100$$

Where:

$\%C_L$ = Percent leaking connectors as determined through periodic monitoring required in 40 CFR 63.1027(a) and 40 CFR 63.1027(b)(3)(i) through 40 CFR 63.1027(b)(3)(iii).

C_L = Number of connectors measured at 500 parts per million or greater, by the method specified in 40 CFR 63.1023(b).

C_t = Total number of monitored connectors in the process unit or affected facility.

- t. *Leak repair.* Pursuant to 40 CFR 63.1027(d), If a leak is detected pursuant to 40 CFR 63.1027(a) and 40 CFR 63.1027(b), then the leak shall be repaired using the procedures in 40 CFR 63.1024, as applicable.
- u. *Special provisions for connectors* [40 CFR 63.1027(e)].
- (1) *Unsafe-to-monitor connectors.* Pursuant to 40 CFR 63.1027(e)(1), any connector that is designated, as described in 40 CFR 63.1022(c)(1), as an unsafe-to-monitor connector is exempt from the requirements of 40 CFR 63.1027(a) and 40 CFR 63.1027(b) and the

SECTION B - EMISSION POINTS, EMISSIONS UNITS, APPLICABLE REGULATIONS, AND OPERATING CONDITIONS (CONTINUED)

permittee shall monitor according to the written plan specified in 40 CFR 63.1022(c)(4).

(2) *Inaccessible, ceramic, or ceramic-lined connector* [40 CFR 63.1027(e)(2)].

(i) Pursuant to 40 CFR 63.1027(e)(2)(i), any connector that is inaccessible or that is ceramic or ceramic-lined (e.g., porcelain, glass, or glass-lined), is exempt from the monitoring requirements of 40 CFR 63.1027(a) and 40 CFR 63.1027(b), from the leak repair requirements of 40 CFR 63.1027(d), and from the recordkeeping and reporting requirements of 40 CFR 63.1038 and 63.1039. An inaccessible connector is one that meets any of the provisions specified in 40 CFR 63.1027(e)(2)(i)(A) through 40 CFR 63.1027(e)(2)(i)(F) of this section, as applicable.

(A) Buried;

(B) Insulated in a manner that prevents access to the connector by a monitor probe;

(C) Obstructed by equipment or piping that prevents access to the connector by a monitor probe;

(D) Unable to be reached from a wheeled scissor-lift or hydraulic-type scaffold that would allow access to connectors up to 7.6 meters (25 feet) above the ground.

(E) Inaccessible because it would require elevating the monitoring personnel more than 2 meters (7 feet) above a permanent support surface or would require the erection of scaffold;

(F) Not able to be accessed at any time in a safe manner to perform monitoring. Unsafe access includes, but is not limited to, the use of a wheeled scissor-lift on unstable or uneven terrain, the use of a motorized man-lift basket in areas where an ignition potential exists, or access would require near proximity to hazards such as electrical lines, or would risk damage to equipment.

(ii) Pursuant to 40 CFR 63.1027(e)(2)(ii), if any inaccessible, ceramic or ceramic-lined connector is observed by visual, audible, olfactory, or other means to be leaking, the visual, audible, olfactory, or other indications of a leak to the atmosphere shall be eliminated as soon as practical.

Agitators in gas and vapor service and in light liquid service standards

v. *Leak detection* [40 CFR 63.1028 (c)].

(1) *Monitoring method.* Pursuant to 40 CFR 63.1028(c)(1), each agitator seal shall be monitored monthly to detect leaks by the methods specified in 40 CFR 63.1023(b) and, as applicable, 40 CFR 63.1023(c), except as provided in 40 CFR 63.1021(b), 40 CFR 63.1036, 40 CFR 63.1037, or 40 CFR 63.1028(e).

(2) *Instrument reading that defines a leak.* Pursuant to 40 CFR 63.1028(c)(1), if an instrument reading equivalent of 10,000 ppm or greater is measured, a leak is detected.

(3) *Visual inspection* [40 CFR 63.1028 (c)(3)].

(i) Pursuant to 40 CFR 63.1028(c)(3)(i), each agitator seal shall be checked by visual inspection each calendar week for indications of liquids dripping from the agitator seal. The permittee shall document that the inspection was conducted and the date of the inspection.

(ii) Pursuant to 40 CFR 63.1028(c)(3)(ii), if there are indications of liquids dripping from the agitator seal, the permittee shall follow the procedures specified in 40 CFR 63.1028(c)(3)(ii)(A) or 40 CFR 63.1028(c)(3)(ii)(B) of this section prior to the next required inspection.

SECTION B - EMISSION POINTS, EMISSIONS UNITS, APPLICABLE REGULATIONS, AND OPERATING CONDITIONS (CONTINUED)

- (A) The owner or operator shall monitor the agitator seal as specified in 40 CFR 63.1023(b) and, as applicable, 40 CFR 63.1023(c), to determine if there is a leak of regulated material. If an instrument reading of 10,000 parts per million or greater is measured, a leak is detected, and it shall be repaired according to 40 CFR 63.1028(d); or
 - (B) The owner or operator shall eliminate the indications of liquids dripping from the agitator seal.
- w. *Leak repair.* Pursuant to 40 CFR 63.1028(d), if a leak is detected, then the leak shall be repaired using the procedures in 40 CFR 63.1024.
- x. *Special provisions for agitators* [40 CFR 63.1028(e)].
 - (1) *Dual mechanical seal.* Pursuant to 40 CFR 63.1028(e)(1), each agitator equipped with a dual mechanical seal system that includes a barrier fluid system is exempt from the requirements of 40 CFR 63.1028(c) of this section, provided the requirements specified in 40 CFR 63.1028(e)(1)(i) through 40 CFR 63.1028(e)(1)(vi) are met.
 - (2) *No external shaft.* Pursuant to 40 CFR 63.1028(e)(2), any agitator that is designed with no externally actuated shaft penetrating the agitator housing is exempt from 40 CFR 63.1028(c).
 - (3) *Routed to a process or fuel gas system or equipped with a closed vent system.* Pursuant to 40 CFR 63.1028(e)(3), any agitator that is routed to a process or fuel gas system that captures and transports leakage from the agitator to a control device meeting the requirements of either 40 CFR 63.1034 or 40 CFR 63.1021(b) is exempt from the requirements of 40 CFR 63.1028(c).
 - (4) *Difficult-to-monitor agitator seals.* Pursuant to 40 CFR 63.1028(e)(5), any agitator seal that is designated, as described in 40 CFR 63.1022(c)(2), as a difficult-to-monitor agitator seal is exempt from the requirements of 40 CFR 63.1028(c) and the permittee shall monitor the agitator seal according to the written plan specified in 40 CFR 63.1022(c)(4).
 - (5) *Equipment obstructions.* Pursuant to 40 CFR 63.1028(e)(6), any agitator seal that is obstructed by equipment or piping that prevents access to the agitator by a monitor probe is exempt from the monitoring requirements of 40 CFR 63.1028(c).
 - (6) *Unsafe-to-monitor agitator seals.* Pursuant to 40 CFR 63.1028(e)(7), any agitator seal that is designated, as described in 40 CFR 63.1022(c)(1), as an unsafe-to-monitor agitator seal is exempt from the requirements of 40 CFR 63.1028(c) of this section and the permittee of the agitator seal monitors the agitator seal according to the written plan specified in 40 CFR 63.1022(c)(4).

Pumps, valves, connectors, and agitators in heavy liquid service; pressure relief devices in liquid service; and instrumentation monitoring standards

- y. *Leak detection* [40 CFR 63.1029(b)].
 - (1) *Monitoring method.* Pursuant to 40 CFR 63.1029(b)(1), unless otherwise specified in 40 CFR 63.1021(b), 40 CFR 63.1036, or 40 CFR 63.1037, the permittee shall comply with 40 CFR 63.1029(b)(1) and 40 CFR 63.1029(b)(2). Pumps, valves, connectors, and agitators in heavy liquid service; pressure relief devices in light liquid or heavy liquid service; and instrumentation systems shall be monitored within 5 calendar days by the

SECTION B - EMISSION POINTS, EMISSIONS UNITS, APPLICABLE REGULATIONS, AND OPERATING CONDITIONS (CONTINUED)

- method specified in 40 CFR 63.1023(b) and, as applicable, 40 CFR 63.1023(c), if evidence of a potential leak to the atmosphere is found by visual, audible, olfactory, or any other detection method, unless the potential leak is repaired as required in 40 CFR 63.1029(c).
- (2) *Instrument reading that defines a leak.* Pursuant to 40 CFR 63.1029(b)(2), if an instrument reading of 10,000 ppm or greater for agitators, 5,000 ppm or greater for pumps handling polymerizing monomers, or 2,000 ppm or greater for all other pumps, or 500 ppm or greater for valves, connectors, instrumentation systems, and pressure relief devices is measured pursuant to 40 CFR 63.1029(b)(1), a leak is detected and shall be repaired pursuant to 40 CFR 63.1024, as applicable.
- z. *Leak repair.* Pursuant to 40 CFR 63.1029(c), for equipment identified in 40 CFR 63.1029(b) of this section that is not monitored by the method specified in 40 CFR 63.1023(b) and, as applicable, 40 CFR 63.1023(c), repaired shall mean that the visual, audible, olfactory, or other indications of a leak to the atmosphere have been eliminated; that no bubbles are observed at potential leak sites during a leak check using soap solution; or that the system will hold a test pressure.

Compressor standards

- aa. *Seal system standard.* Pursuant to 40 CFR 63.1031(b), each compressor shall be equipped with a seal system that includes a barrier fluid system and that prevents leakage of process fluid to the atmosphere, except as provided in 40 CFR 63.1021(b), 40 CFR 63.1036, 40 CFR 63.1037, and 40 CFR 63.1031(e) and 40 CFR 63.1031(f). Each compressor seal system shall meet the applicable requirements specified in 40 CFR 63.1031(b)(1), 40 CFR 63.1031(b)(2), or 40 CFR 63.1031(b)(3).
- (1) Pursuant to 40 CFR 63.1031(b)(1), operated with the barrier fluid at a pressure that is greater than the compressor stuffing box pressure at all times; or
- (2) Pursuant to 40 CFR 63.1031(b)(2), equipped with a barrier fluid system degassing reservoir that is routed to a process or fuel gas system or connected by a closed-vent system to a control device that meets the requirements of either 40 CFR 63.1034 or 40 CFR 63.1021(b); or
- (3) Pursuant to 40 CFR 63.1031(b)(3), equipped with a closed-loop system that purges the barrier fluid directly into a process stream.
- bb. *Barrier fluid system.* Pursuant to 40 CFR 63.1031(c), the barrier fluid shall not be in light liquid service. Each barrier fluid system shall be equipped with a sensor that will detect failure of the seal system, barrier fluid system, or both. Each sensor shall be observed daily or shall be equipped with an alarm unless the compressor is located within the boundary of an unmanned plant site.
- cc. *Failure criterion and leak detection.* [40 CFR 63.1031(d)]
- (1) Pursuant to 40 CFR 63.1031(d)(1), the permittee shall determine, based on design considerations and operating experience, a criterion that indicates failure of the seal system, the barrier fluid system, or both. If the sensor indicates failure of the seal system, the barrier fluid system, or both based on the criterion, a leak is detected and shall be repaired pursuant to 40 CFR 63.1024, as applicable.

SECTION B - EMISSION POINTS, EMISSIONS UNITS, APPLICABLE REGULATIONS, AND OPERATING CONDITIONS (CONTINUED)

- (2) Pursuant to 40 CFR 63.1031(d)(1), for compressors, the permittee shall keep records of the design criteria and an explanation of the design criteria; and any changes to these criteria and the reasons for the changes.

dd. *Alternative compressor standard* [40 CFR 63.1031(f)].

- (1) Pursuant to 40 CFR 63.1031(f)(1), any compressor that is designated, as described in 40 CFR 63.1022(e), as operating with an instrument reading of less than 500 ppm above background shall operate at all times with an instrument reading of less than 500 ppm. A compressor so designated is exempt from the requirements of 40 CFR 63.1031(b) through 40 CFR 63.1031(d) if the compressor is demonstrated, initially upon designation, annually, and at other times requested by the Administrator to be operating with an instrument reading of less than 500 ppm above background, as measured by the method specified in 40 CFR 63.1023(b) and, as applicable, 40 CFR 63.1023(c).
- (2) Pursuant to 40 CFR 63.1031(f)(2), the permittee shall record the dates and results of each compliance test including the background level measured and the maximum instrument reading measured during each compliance test.

- ee. *Routed to a process or fuel gas system or equipped with a closed vent system.* Pursuant to 40 CFR 63.1031(e), a compressor is exempt from the requirements of 40 CFR 63.1031(b) through 40 CFR 63.1031(d) if it is equipped with a system to capture and transport leakage from the compressor drive shaft seal to a process or a fuel gas system or to a closed vent system that captures and transports leakage from the compressor to a control device meeting the requirements of either 40 CFR 63.1034 or 63.1021(b).

Quality improvement program for pumps

- ff. *Criteria.* Pursuant to 40 CFR 63.1035(a), if, on a 6-month rolling average, at least the greater of either 10 percent of the pumps in a process unit or affected facility (or plant site) or three pumps in a process unit or affected facility (or plant site) leak, the permittee shall comply with the requirements specified in 40 CFR 63.1035(a)(1) and 40 CFR 63.1035(a)(2).
- (1) Pursuant to 40 CFR 63.1035(a)(1), pumps that are in food and medical service or in polymerizing monomer service shall comply with all requirements except for those specified in 40 CFR 63.1035(d)(8).
- (2) Pursuant to 40 CFR 63.1035(a)(2), pumps that are not in food and medical or polymerizing monomer service shall comply with all of the requirements of 40 CFR 63.1035.
- gg. *Exiting the QIP.* Pursuant to 40 CFR 63.1035(b), the permittee shall comply with the requirements of this section until the number of leaking pumps is less than the greater of either 10 percent of the pumps or three pumps, calculated as a 6-month rolling average, in the process unit or affected facility (or plant site). Once the performance level is achieved, the owner or operator shall comply with the requirements in 40 CFR 63.1026.
- hh. *Resumption of QIP.* Pursuant to 40 CFR 63.1035(c), if, in a subsequent monitoring period, the process unit or affected facility (or plant site) has greater than either 10 percent of the

SECTION B - EMISSION POINTS, EMISSIONS UNITS, APPLICABLE REGULATIONS, AND OPERATING CONDITIONS (CONTINUED)

pumps leaking or three pumps leaking (calculated as a 6-month rolling average), the permittee shall resume the quality improvement program starting at performance trials.

- ii. *QIP requirements.* Pursuant to 40 CFR 63.1035(d), the quality improvement program shall meet the requirements specified in 40 CFR 63.1035(d)(1) through 40 CFR 63.1035(d)(8) of this section.
 - (1) Pursuant to 40 CFR 63.1035(d)(1), the permittee shall comply with the requirements in 40 CFR 63.1026.
 - (2) *Data collection.* Pursuant to 40 CFR 63.1035(d)(2), the permittee shall collect the data specified in 40 CFR 63.1035(d)(2)(i) through 40 CFR 63.1035(d)(2)(v) and maintain records for each pump in each process unit or affected facility (or plant site) subject to the quality improvement program. The data may be collected and the records may be maintained on a process unit, affected facility, or plant site basis.
 - (i) Pursuant to 40 CFR 63.1035(d)(2)(i), pump type (e.g., piston, horizontal or vertical centrifugal, gear, bellows); pump manufacturer; seal type and manufacturer; pump design (e.g., external shaft, flanged body); materials of construction; if applicable, barrier fluid or packing material; and year installed.
 - (ii) Pursuant to 40 CFR 63.1035(d)(2)(ii), service characteristics of the stream such as discharge pressure, temperature, flow rate, corrosivity, and annual operating hours.
 - (iii) Pursuant to 40 CFR 63.1035(d)(2)(iii), the maximum instrument readings observed in each monitoring observation before repair, response factor for the stream if appropriate, instrument model number, and date of the observation.
 - (iv) Pursuant to 40 CFR 63.1035(d)(2)(iv), if a leak is detected, the repair methods used and the instrument readings after repair.
 - (v) Pursuant to 40 CFR 63.1035(d)(2)(v), if the data will be analyzed as part of a larger analysis program involving data from other plants or other types of process units or affected facilities, a description of any maintenance or quality assurance programs used in the process unit or affected facility that are intended to improve emission performance.
 - (3) Pursuant to 40 CFR 63.1035(d)(3), the permittee shall continue to collect data on the pumps as long as the process unit or affected facility (or plant site) remains in the quality improvement program.
 - (4) *Pump or pump seal inspection.* Pursuant to 40 CFR 63.1035(d)(4), the permittee shall inspect all pumps or pump seals that exhibited frequent seal failures and were removed from the process unit or affected facility due to leaks. The inspection shall determine the probable cause of the pump seal failure or of the pump leak and shall include recommendations, as appropriate, for design changes or changes in specifications to reduce leak potential.
 - (5) *Data analysis* [40 CFR 63.1035(d)(5)].
 - (i) Pursuant to 40 CFR 63.1035(d)(5)(i), the permittee shall analyze the data collected to comply with the requirements of 40 CFR 63.1035(d)(2) to determine the services, operating or maintenance practices, and pump or pump seal designs or technologies that have poorer than average emission performance and those that have better than average emission performance. The analysis shall determine if specific trouble areas can be identified on the basis of service, operating conditions or maintenance practices, equipment design, or other process-specific factors.

SECTION B - EMISSION POINTS, EMISSIONS UNITS, APPLICABLE REGULATIONS, AND OPERATING CONDITIONS (CONTINUED)

- (ii) Pursuant to 40 CFR 63.1035(d)(5)(ii), the analysis shall also be used to determine if there are superior performing pump or pump seal technologies that are applicable to the service(s), operating conditions, or pump or pump seal designs associated with poorer than average emission performance. A superior performing pump or pump seal technology is one with a leak frequency of less than 10 percent for specific applications in the process unit, affected facility, or plant site. A candidate superior performing pump or pump seal technology is one demonstrated or reported in the available literature or through a group study as having low emission performance and as being capable of achieving less than 10 percent leaking pumps in the process unit or affected facility (or plant site).
- (iii) Pursuant to 40 CFR 63.1035(d)(5)(iii), the analysis shall include consideration of the information specified in 40 CFR 63.1035(d)(5)(iii)(A) through 40 CFR 63.1035(d)(5)(iii)(C) as follows:
 - (A) The data obtained from the inspections of pumps and pump seals removed from the process unit or affected facility due to leaks;
 - (B) Information from the available literature and from the experience of other plant sites that will identify pump designs or technologies and operating conditions associated with low emission performance for specific services; and
 - (C) Information on limitations on the service conditions for the pump seal technology operating conditions as well as information on maintenance procedures to ensure continued low emission performance.
- (iv) Pursuant to 40 CFR 63.1035(d)(5)(iv), the data analysis may be conducted through an inter- or intra-company program (or through some combination of the two approaches) and may be for a single process unit, a plant site, a company, or a group of process units.
- (v) Pursuant to 40 CFR 63.1035(d)(5)(v), the first analysis of the data shall be completed no later than 18 months after the start of the quality improvement program. The first analysis shall be performed using data collected for a minimum of 6 months. An analysis of the data shall be done each year the process unit or affected facility is in the quality improvement program.
- (6) *Trial evaluation program.* Pursuant to 40 CFR 63.1035(d)(6), a trial evaluation program shall be conducted at each plant site for which the data analysis does not identify use of superior performing pump seal technology or pumps that can be applied to the areas identified as having poorer than average performance, except as provided in 40 CFR 63.1035(d)(6)(v). The trial program shall be used to evaluate the feasibility of using in the process unit or affected facility (or plant site) the pump designs or seal technologies, and operating and maintenance practices that have been identified by others as having low emission performance.
 - (i) Pursuant to 40 CFR 63.1035(d)(6)(i), the trial evaluation program shall include on-line trials of pump seal technologies or pump designs and operating and maintenance practices that have been identified in the available literature or in analysis by others as having the ability to perform with leak rates below 10 percent in similar services, as having low probability of failure, or as having no external actuating mechanism in contact with the process fluid. If any of the candidate superior performing pump seal technologies or pumps is not included in the

SECTION B - EMISSION POINTS, EMISSIONS UNITS, APPLICABLE REGULATIONS, AND OPERATING CONDITIONS (CONTINUED)

performance trials, the reasons for rejecting specific technologies from consideration shall be documented as required in 40 CFR 63.1035(e)(3)(ii).

- (ii) Pursuant to 40 CFR 63.1035(d)(6)(ii), the number of pump seal technologies or pumps in the trial evaluation program shall be the lesser of 1 percent or two pumps for programs involving single process units or affected facilities and the lesser of 1 percent or five pumps for programs involving a plant site or groups of process units or affected facilities. The minimum number of pumps or pump seal technologies in a trial program shall be one.
- (iii) Pursuant to 40 CFR 63.1035(d)(6)(iii), the trial evaluation program shall specify and include documentation of the information specified in paragraphs 40 CFR 63.1035(d)(6)(iii)(A) through 40 CFR 63.1035(d)(6)(iii)(D) as follows:
 - (A) The candidate superior performing pump seal designs or technologies to be evaluated, the stages for evaluating the identified candidate pump designs or pump seal technologies, including the time period necessary to test the applicability;
 - (B) The frequency of monitoring or inspection of the equipment;
 - (C) The range of operating conditions over which the component will be evaluated; and
 - (D) Conclusions regarding the emission performance and the appropriate operating conditions and services for the trial pump seal technologies or pumps.
- (iv) Pursuant to 40 CFR 63.1035(d)(6)(iv), the performance trials shall initially be conducted, at least, for a 6-month period beginning not later than 18 months after the start of the quality improvement program. No later than 24 months after the start of the quality improvement program, the owner or operator shall have identified pump seal technologies or pump designs that, combined with appropriate process, operating, and maintenance practices, operate with low emission performance for specific applications in the process unit or affected facility. The permittee shall continue to conduct performance trials as long as no superior performing design or technology has been identified, except as provided in 40 CFR 63.1035(d)(6)(vi). The initial list of superior emission performance pump designs or pump seal technologies shall be amended in the future, as appropriate, as additional information and experience are obtained.
- (v) Pursuant to 40 CFR 63.1035(d)(6)(v), any plant site with fewer than 400 valves and owned by a corporation with fewer than 100 employees shall be exempt from trial evaluations of pump seals or pump designs. Plant sites exempt from the trial evaluations of pumps shall begin the pump seal or pump replacement program at the start of the fourth year of the quality improvement program.
- (vi) Pursuant to 40 CFR 63.1035(d)(6)(vi), if the permittee has conducted performance trials on all alternative superior emission performance technologies suitable for the required applications in the process unit or affected facility may stop conducting performance trials provided that a superior performing design or technology has been demonstrated or there are no technically feasible alternative superior technologies remaining. The permittee shall prepare an engineering evaluation documenting the physical, chemical, or engineering basis for the judgment that the superior emission performance technology is technically infeasible or demonstrating that it would not reduce emissions.

SECTION B - EMISSION POINTS, EMISSIONS UNITS, APPLICABLE REGULATIONS, AND OPERATING CONDITIONS (CONTINUED)

- (7) *Quality assurance program.* Pursuant to 40 CFR 63.1035(d)(7), the permittee shall prepare and implement a pump quality assurance program that details purchasing specifications and maintenance procedures for all pumps and pump seals in the process unit or affected facility. The quality assurance program may establish any number of categories, or classes, of pumps as needed to distinguish among operating conditions and services associated with poorer than average emission performance as well as those associated with better than average emission performance. The quality assurance program shall be developed considering the findings of the data analysis required under 40 CFR 63.1035(d)(5); and, if applicable, the findings of the trial evaluation required in 40 CFR 63.1035(d)(6); and the operating conditions in the process unit or affected facility. The quality assurance program shall be updated each year as long as the process unit or affected facility has the greater of either 10 percent or more leaking pumps or has three leaking pumps.
- (i) Pursuant to 40 CFR 63.1035(d)(7)(i), the quality assurance program shall meet the requirements specified in 40 CFR 63.1035(d)(7)(i)(A) through 40 CFR 63.1035(d)(7)(i)(D) as follows:
- (A) Establish minimum design standards for each category of pumps or pump seal technology. The design standards shall specify known critical parameters such as tolerance, manufacturer, materials of construction, previous usage, or other applicable identified critical parameters;
 - (B) Establish minimum design standards for each category of pumps or pump seal technology. The design standards shall specify known critical parameters such as tolerance, manufacturer, materials of construction, previous usage, or other applicable identified critical parameters;
 - (C) Provide for an audit procedure for quality control of purchased equipment to ensure conformance with purchase specifications. The audit program may be conducted by the permittee, or by a designated representative; and
 - (D) Detail off-line pump maintenance and repair procedures. These procedures shall include provisions to ensure that rebuilt or refurbished pumps and pump seals will meet the design specifications for the pump category and will operate so that emissions are minimized.
- (ii) Pursuant to 40 CFR 63.1035(d)(7)(ii), the quality assurance program shall be established no later than the start of the third year of the quality improvement program for plant sites with 400 or more valves or 100 or more employees; and no later than the start of the fourth year of the quality improvement program for plant sites with less than 400 valves and less than 100 employees.
- (8) *Pump or pump seal replacement.* Pursuant to 40 CFR 63.1035(d)(8), three years after the start of the quality improvement program for plant sites with 400 or more valves or 100 or more employees and at the start of the fourth year of the quality improvement program for plant sites with less than 400 valves and less than 100 employees, the permittee shall replace, as described in 40 CFR 63.1035(d)(8)(i) and 40 CFR 63.1035(d)(8)(ii), the pumps or pump seals that are not superior emission performance technology with pumps or pump seals that have been identified as superior emission performance technology and that comply with the quality assurance standards for the pump category. Superior emission performance technology is that category or design of pumps or pump seals with emission performance that when combined with

SECTION B - EMISSION POINTS, EMISSIONS UNITS, APPLICABLE REGULATIONS, AND OPERATING CONDITIONS (CONTINUED)

- appropriate process, operating, and maintenance practices, will result in less than 10 percent leaking pumps for specific applications in the process unit, affected facility, or plant site. Superior emission performance technology includes material or design changes to the existing pump, pump seal, seal support system, installation of multiple mechanical seals or equivalent, or pump replacement.
- (i) Pursuant to 40 CFR 63.1035(d)(8)(i), pumps or pump seals shall be replaced at the rate of 20 percent per year based on the total number of pumps in light liquid service. The calculated value shall be rounded to the nearest nonzero integer value. The minimum number of pumps or pump seals shall be one. Pump replacement shall continue until all pumps subject to the requirements of 40 CFR 63.1026 are pumps determined to be superior performance technology.
 - (ii) Pursuant to 40 CFR 63.1035(d)(8)(ii), the permittee may delay replacement of pump seals or pumps with superior technology until the next planned process unit or affected facility shutdown, provided the number of pump seals and pumps replaced is equivalent to the 20 percent or greater annual replacement rate.
 - (iii) Pursuant to 40 CFR 63.1035(d)(8)(iii), the pumps shall be maintained as specified in the quality assurance program.
- jj. *QIP recordkeeping.* Pursuant to 40 CFR 63.1035(e), in addition to the records required by 40 CFR 63.1035(d)(2), the permittee shall maintain records for the period of the quality improvement program for the process unit or affected facility as specified in 40 CFR 63.1035(e)(1) through 40 CFR 63.1035(e)(6).
- (1) Pursuant to 40 CFR 63.1035(e)(1), when using a pump quality improvement program as specified in 40 CFR 63.1035, record the information specified in 40 CFR 63.1035(e)(1)(i) through 40 CFR 63.1035(e)(1)(iii) as follows:
 - (i) The rolling average percent leaking pumps.
 - (ii) Documentation of all inspections conducted under the requirements of 40 CFR 63.1035(d)(4), and any recommendations for design or specification changes to reduce leak frequency.
 - (iii) The beginning and ending dates while meeting the requirements of 40 CFR 63.1035(d).
 - (2) Pursuant to 40 CFR 63.1035(e)(2), if a leak is not repaired within 15 calendar days after discovery of the leak, the reason for the delay and the expected date of successful repair.
 - (3) Pursuant to 40 CFR 63.1035(e)(3), records of all analyses required in 40 CFR 63.1035(d). The records will include the information specified in 40 CFR 63.1035(e)(3)(i) through 40 CFR 63.1035(e)(3)(iv) as follows:
 - (i) A list identifying areas associated with poorer than average performance and the associated service characteristics of the stream, the operating conditions and maintenance practices.
 - (ii) The reasons for rejecting specific candidate superior emission performing pump technology from performance trials.
 - (iii) The list of candidate superior emission performing valve or pump technologies, and documentation of the performance trial program items required under 40 CFR 63.1035(d)(6)(iii).

SECTION B - EMISSION POINTS, EMISSIONS UNITS, APPLICABLE REGULATIONS, AND OPERATING CONDITIONS (CONTINUED)

- (iv) The beginning date and duration of performance trials of each candidate superior emission performing technology.
- (4) Pursuant to 40 CFR 63.1035(e)(4), all records documenting the quality assurance program for pumps as specified in 40 CFR 63.1035(d)(7), including records indicating that all pumps replaced or modified during the period of the quality improvement program are in compliance with the quality assurance.
- (5) Pursuant to 40 CFR 63.1035(e)(5), records documenting compliance with the 20 percent or greater annual replacement rate for pumps as specified in 40 CFR 63.1035(d)(8)
- (6) Pursuant to 40 CFR 63.1035(e)(6), information and data to show the corporation has fewer than 100 employees, including employees providing professional and technical contracted services.

5. Specific Recordkeeping Requirements:

- a. *Recordkeeping system.* Pursuant to 40 CFR 63.1038(a), a permittee of more than one regulated source subject to the provisions of this subpart may comply with the recordkeeping requirements for these regulated sources in one recordkeeping system. The recordkeeping system shall identify each record by regulated source and the type of program being implemented (e.g., quarterly monitoring, quality improvement) for each type of equipment. The records required by this subpart are summarized in 40 CFR 63.1038(b) and 40 CFR 63.1038(c).
- b. *General equipment leak records* [40 CFR 63.1038(b)].
 - (1) Pursuant to 40 CFR 63.1038(b)(1), as specified in 40 CFR 63.1022(a) and (b), the permittee shall keep general and specific equipment identification if the equipment is not physically tagged and the permittee is electing to identify the equipment subject to this subpart through written documentation such as a log or other designation.
 - (2) Pursuant to 40 CFR 63.1038(b)(2), the permittee shall keep a written plan as specified in 40 CFR 63.1022 (c)(4) for any equipment that is designated as unsafe- or difficult-to-monitor.
 - (3) Pursuant to 40 CFR 63.1038(b)(3), the permittee shall maintain a record of the identity and an explanation as specified in 40 CFR 63.1022(d)(2) for any equipment that is designated as unsafe-to-repair [40 CFR 63.1038(b)(3)].
 - (4) Pursuant to 40 CFR 63.1038(b)(4), as specified in 40 CFR 63.1022(e), the permittee shall maintain the identity of compressors operating with an instrument reading of less than 500 ppm.
 - (5) Pursuant to 40 CFR 63.1038(b)(5), the permittee shall keep records associated with the determination that equipment is in heavy liquid service as specified in 40 CFR 63.1022(f).
 - (6) Pursuant to 40 CFR 63.1038(b)(6), the permittee shall keep records for leaking equipment as specified in 40 CFR 63.1023(e)(2).
 - (7) Pursuant to 40 CFR 63.1038(b)(7), the permittee shall keep records for leak repair as specified in 40 CFR 63.1024(f) and records for delay of repair as specified in 40 CFR 63.1024(d).

SECTION B - EMISSION POINTS, EMISSIONS UNITS, APPLICABLE REGULATIONS, AND OPERATING CONDITIONS (CONTINUED)*c. Specific equipment leak records [40 CFR 63.1038(c)].*

- (1) Pursuant to 40 CFR 63.1038(c)(1), for valves, the permittee shall maintain the records specified in 40 CFR 63.1038(c)(1)(i) and 40 CFR 63.1038(c)(1)(ii) as follows:
 - (i) The monitoring schedule for each process unit as specified in 40 CFR 63.1025(b)(3)(vi).
 - (ii) The valve subgrouping records specified in 40 CFR 63.1025 (b)(4)(iv), if applicable.
- (2) Pursuant to 40 CFR 63.1038(c)(2), for pumps, the permittee shall maintain the records specified in 40 CFR 63.1038(c)(2)(i) through 40 CFR 63.1038(c)(2)(iii) as follows:
 - (i) Documentation of pump visual inspections as specified in 40 CFR 63.1026(b)(4).
 - (ii) Documentation of dual mechanical seal pump visual inspections as specified in 40 CFR 63.1026(e)(1)(v).
 - (iii) For the criteria as to the presence and frequency of drips for dual mechanical seal pumps, records of the design criteria and explanations and any changes and the reason for the changes, as specified in 40 CFR 63.1026(e)(1)(i).
- (3) Pursuant to 40 CFR 63.1038(c)(3), for connectors, the permittee shall maintain the monitoring schedule for each process unit as specified in 40 CFR 63.1027(b)(3)(v).
- (4) Pursuant to 40 CFR 63.1038(c)(4), for agitators, the permittee shall maintain the following records:
 - (i) Pursuant to 40 CFR 63.1038(c)(4)(i), documentation of agitator seal visual inspections as specified in 40 CFR 63.1028; and
 - (ii) Pursuant to 40 CFR 63.1038(c)(4)(ii), for the criteria as to the presence and frequency of drips for agitators, the permittee shall keep records of the design criteria and explanations and any changes and the reason for the changes, as specified in 40 CFR 63.1028(e)(1)(vi).
- (5) Pursuant to 40 CFR 63.1038(c)(6), for compressors, the permittee shall maintain the records specified in 40 CFR 63.1038(c)(6)(i) and 40 CFR 63.1038(c)(6)(ii) as follows:
 - (i) For criteria as to failure of the seal system and/or the barrier fluid system, record the design criteria and explanations and any changes and the reason for the changes, as specified in 40 CFR 63.1031(d)(2).
 - (ii) For compressors operating under the alternative compressor standard, record the dates and results of each compliance test as specified in 40 CFR 63.1031(f)(2).
- (6) Pursuant to 40 CFR 63.1038(c)(7), for a pump QIP program, the permittee shall maintain the records specified in 40 CFR 63.1038(c)(7)(i) through 40 CFR 63.1038(c)(7)(v) as follows:
 - (i) Individual pump records as specified in 40 CFR 63.1035(d)(2).
 - (ii) Trial evaluation program documentation as specified in 40 CFR 63.1035(d)(6)(iii).
 - (iii) Engineering evaluation documenting the basis for judgement that superior emission performance technology is not applicable as specified in 40 CFR 63.1035(d)(6)(vi).
 - (iv) Quality assurance program documentation as specified in 40 CFR 63.1035(d)(7).
 - (v) QIP records as specified in 40 CFR 63.1035(e).
- (7) Pursuant to 40 CFR 63.1038(c)(9), for process units complying with the enclosed-vented process unit alternative, the permittee shall maintain the records for enclosed-vented process units as specified in 40 CFR 63.1037(b).

SECTION B - EMISSION POINTS, EMISSIONS UNITS, APPLICABLE REGULATIONS, AND OPERATING CONDITIONS (CONTINUED)

- d. Pursuant to 401 KAR 52:020, Section 10, the permittee shall keep records, on a 5 year basis, of all monitoring requirements for units subject to 401 KAR 51:017.
- e. *Ethylene production pressure relief devices records.* Pursuant to 40 CFR 63.1109(i), for each pressure relief device subject to the pressure release management work practice standards in 40 CFR 63.1107(h)(3), the permittee must keep the records specified in 40 CFR 63.1109(i)(1) through (3).
 - (1) Records of the prevention measures implemented as required in 40 CFR 63.1107(h)(3)(ii).
 - (2) Records of the number of releases during each calendar year and the number of those releases for which the root cause was determined to be a force majeure event. Keep these records for the current calendar year and the past five calendar years.
 - (3) For each release to the atmosphere, the permittee must keep the records specified in 40 CFR 63.1109(i)(3)(i) through (iv).
 - (i) The start and end time and date of each pressure release to the atmosphere.
 - (ii) Records of any data, assumptions, and calculations used to estimate of the mass quantity of each organic HAP released during the event.
 - (iii) Records of the root cause analysis and corrective action analysis conducted as required in 40 CFR 63.1107(h)(3)(iii), including an identification of the affected pressure relief device, a statement noting whether the event resulted from the same root cause(s) identified in a previous analysis and either a description of the recommended corrective action(s) or an explanation of why corrective action is not necessary under 40 CFR 63.1107(h)(7)(i).
 - (iv) For any corrective action analysis for which implementation of corrective actions are required in 40 CFR 63.1107(h)(7), a description of the corrective action(s) completed within the first 45 days following the discharge and, for action(s) not already completed, a schedule for implementation, including proposed commencement and completion dates.
- f. Pursuant to 40 CFR 60.486a(e)(8)(v), results of each calibration drift assessment required by 40 CFR 60.485a(b)(2) (i.e., instrument reading for calibration at end of monitoring day and the calculated percent difference from the initial calibration value) shall be recorded in a log that is kept in a readily accessible location.

6. Specific Reporting Requirements:

- a. *Initial Compliance Status Report.* Pursuant to 40 CFR 63.1039(a), each permittee shall submit an Initial Compliance Status Report according to the procedures in the referencing subpart. The notification shall include the information listed in 40 CFR 63.1039(a)(1) through 40 CFR 63.1039 (a)(3), as applicable.
 - (1) Pursuant to 40 CFR 63.1039(a)(1), the notification shall provide the information listed in 40 CFR 63.1039(a)(1)(i) through 40 CFR 63.1039(a)(1)(iv) for each process unit or affected facility subject to the requirements of this subpart.
 - (i) Pursuant to 40 CFR 63.1039(a)(1)(i), process unit or affected facility identification.
 - (ii) Pursuant to 40 CFR 63.1039(a)(1)(ii), number of each equipment type (e.g., valves, pumps) excluding equipment in vacuum service.

SECTION B - EMISSION POINTS, EMISSIONS UNITS, APPLICABLE REGULATIONS, AND OPERATING CONDITIONS (CONTINUED)

- (iii) Pursuant to 40 CFR 63.1039(a)(1)(iii), method of compliance with the standard (e.g., “monthly leak detection and repair” or “equipped with dual mechanical seals”)
 - (iv) Pursuant to 40 CFR 63.1039(a)(1)(iv), planned schedule for requirements in 40 CFR 63.1025 and 40 CFR 63.1026.
- (2) Pursuant to 40 CFR 63.1039(a)(2), the notification shall provide the information listed in 40 CFR 63.1039(a)(2)(i) and 40 CFR 63.1039(a)(2)(ii) for each process unit or affected facility subject to the requirements of 40 CFR 63.1036(b).
 - (i) Pursuant to 40 CFR 63.1039(a)(2)(i), batch products or product codes subject to the provisions of this subpart, and
 - (ii) Pursuant to 40 CFR 63.1039(a)(2)(ii), planned schedule for pressure testing when equipment is configured for production of products subject to the provisions of this subpart.
- b. *Periodic Reports.* Pursuant to 40 CFR 63.1039(b), the permittee shall report the information specified in 40 CFR 63.1039(b)(1) through 40 CFR 63.1039(b)(8) of this section, as applicable, in the Periodic Report specified in the referencing subpart.
 - (1) Pursuant to 40 CFR 63.1039(b)(1), for the equipment specified in 40 CFR 63.1039(b)(1)(i) through 40 CFR 63.1039(b)(1)(v), report in a summary format by equipment type, the number of components for which leaks were detected and for valves, pumps and connectors show the percent leakers, and the total number of components monitored. Also include the number of leaking components that were not repaired as required by 40 CFR 63.1024, and for valves and connectors, identify the number of components that are determined by 40 CFR 63.1025(c)(3) to be nonreparable.
 - (i) Pursuant to 40 CFR 63.1039(b)(1)(i), valves in gas and vapor service and in light liquid service pursuant to 40 CFR 63.1025(b) and 40 CFR 63.1025(c).
 - (ii) Pursuant to 40 CFR 63.1039(b)(1)(ii), pumps in light liquid service pursuant to 40 CFR 63.1026(b) and 40 CFR 1026(c).
 - (iii) Pursuant to 40 CFR 63.1039(b)(1)(iii), connectors in gas and vapor service and in light liquid service pursuant to 40 CFR 63.1027(b) and 40 CFR 63.1027(c).
 - (iv) Pursuant to 40 CFR 63.1039(b)(1)(iv), agitators in gas and vapor service and in light liquid service pursuant to 40 CFR 63.1028(c).
 - (v) Pursuant to 40 CFR 63.1039(b)(1)(v), compressors pursuant to 40 CFR 63.1031(d).
 - (2) Pursuant to 40 CFR 63.1039(b)(2), where any delay of repair is utilized pursuant to 40 CFR 63.1024(d), report that delay of repair has occurred and report the number of instances of delay of repair.
 - (3) Pursuant to 40 CFR 63.1039(b)(3), if applicable, report the valve subgrouping information specified in 40 CFR 63.1025(b)(4)(iv).
 - (4) Pursuant to 40 CFR 63.1039(b)(4), for compressors pursuant to 40 CFR 63.1031(f) that are to be operated at a leak detection instrument reading of less than 500 ppm, report the results of all monitoring to show compliance conducted within the semiannual reporting period.
 - (5) Pursuant to 40 CFR 63.1039(b)(5), report, if applicable, the initiation of a monthly monitoring program for valves pursuant to 40 CFR 63.1025(b)(3)(i).

SECTION B - EMISSION POINTS, EMISSIONS UNITS, APPLICABLE REGULATIONS, AND OPERATING CONDITIONS (CONTINUED)

- (6) Pursuant to 40 CFR 63.1039(b)(6), report, if applicable, the initiation of a quality improvement program for pumps pursuant to 40 CFR 63.1035.
 - (7) Pursuant to 40 CFR 63.1039(b)(8), report the information listed in 40 CFR 63.1039(a) of this section for the Initial Compliance Status Report for process units or affected facilities with later compliance dates. Report any revisions to items reported in an earlier Initial Compliance Status Report if the method of compliance has changed since the last report.
- c. Pursuant to 40 CFR 63.1110(d), for pressure relief devices subject to the pressure release management work practice standards in 40 CFR 63.1107(h)(3), the permittee of an ethylene production affected source shall also submit the information listed in 40 CFR 63.110(d)(1)(v) in a supplement to the Notification of Compliance Status within 150 days after the first applicable compliance date for pressure relief device monitoring.
- d. Pursuant to 40 CFR 63.1110(d)(v), for pressure relief devices subject to the requirements of 40 CFR 63.1107(h), the Notification of Compliance Status shall include the information specified in 40 CFR 63.1110(d)(1)(v)(A) and (B).
 - (1) A description of the monitoring system to be implemented, including the relief devices and process parameters to be monitored, and a description of the alarms or other methods by which operators will be notified of a pressure release.
 - (2) A description of the prevention measures to be implemented for each affected pressure relief device.
- e. *Ethylene production pressure relief devices reports.* Pursuant to 40 CFR 63.1110(e)(8), for pressure relief devices subject to the requirements of 40 CFR 63.1107(h), Periodic Reports must include the information specified in 40 CFR 63.1110(e)(8)(i) through (iii).
 - (1) For pressure relief devices in organic HAP gas or vapor service, pursuant to 40 CFR 63.1107(h)(1), report any instrument reading of 500 ppm or greater.
 - (2) For pressure relief devices in organic HAP gas or vapor service subject to 40 CFR 63.1107(h)(2), report confirmation that any monitoring required to be done during the reporting period to show compliance was conducted.
 - (3) For pressure relief devices in organic HAP service subject to 40 CFR 63.1107(h)(3), report each pressure release to the atmosphere, including duration of the pressure release and estimate of the mass quantity of each organic HAP released; the results of any root cause analysis and corrective action analysis completed during the reporting period, including the corrective actions implemented during the reporting period; and, if applicable, the implementation schedule for planned corrective actions to be implemented subsequent to the reporting period.
- f. See **Section F**.

SECTION B - EMISSION POINTS, EMISSIONS UNITS, APPLICABLE REGULATIONS, AND OPERATING CONDITIONS (CONTINUED)**EU# 025A (EPN FUG-ETH-VVa) Ethylene Plant Fugitives Subject to 40 CFR 60, Subpart VVa***

*There are no batch processes in this facility

The following is an approximate count of the total pipeline equipment at the ethylene plant subject to 40 CFR 60 Subpart VVa.

Gas Connectors:	29,408	Gas/Vapor Valves:	7,426
Pumps:	29	Compressors:	14
Light Liquid Valves:	872	Light Liquid Connectors:	2,500
		Pressure Relief Valves:	135

EU# 025A (EPN FUG-ETH-VVa) Ethylene Plant Fugitives Subject to 40 CFR 60, Subpart VVa and 401 KAR 51:017*

*There are no batch processes in this facility

The following pipeline equipment are from the 2020 Expansion Project and are subject to 401 KAR 51:017 and 40 CFR 60, Subpart VVa. The pipeline equipment count listed below reflects an accurate count of the equipment as of the date of issuance of permit V-14-022 R2 and reflects the number of each type of equipment subject to Best Available Control Technology (BACT) pursuant to 401 KAR 51:017, Section 8 for VOC and CO₂e.

Gas Connectors:	1,471	Gas/Vapor Valves:	372
Pumps:	0	Compressors:	0
Light Liquid Valves:	44	Light Liquid Connectors:	125
		Pressure Relief Valves:	7

EU# 025B (EPN FUG-ETH) Ethylene Plant Fugitives not in LDAR Program

The following is an approximate count of the total pipeline equipment at the ethylene plant not subject to 40 CFR 60 Subpart VVa or 40 CFR 63, Subpart YY. The equipment listed as not in LDAR program has no requirements.

Flanges/connectors:	763	Gas/Vapor Valves:	213
---------------------	-----	-------------------	-----

EU# 025B (EPN FUG-ETH) Ethylene Plant Fugitives not in LDAR Program and subject to 401 KAR 51:017

The following pipeline equipment are from the 2020 Expansion Project and are not subject to 40 CFR 60, Subpart VVa or 40 CFR 63, Subpart YY. The pipeline equipment count listed below reflects an accurate count of the equipment as of the date of issuance of permit V-14-022 R2 and reflects the number of each type of equipment subject to Best Available Control Technology (BACT) pursuant to 401 KAR 51:017, Section 8 for VOC and CO₂e.

Flanges/connectors:	382	Gas/Vapor Valves:	107
---------------------	-----	-------------------	-----

NOTE - The pipeline equipment count listed above reflects an accurate count of the equipment as of the date of issuance of this permit but is not intended to limit the permittee to the exact numbers specified. The permittee may add or remove pipeline equipment without a permit revision as long as the equipment continues to comply with the applicable requirements listed below, and the changes do not cause a significant increase of emissions or potential to emit.

SECTION B - EMISSION POINTS, EMISSIONS UNITS, APPLICABLE REGULATIONS, AND OPERATING CONDITIONS (CONTINUED)

APPLICABLE REGULATIONS:

401 KAR 51:017, Prevention of Significant Deterioration of Air Quality [VOC and CO₂e]

401 KAR 60:005, Section 2(2)(ccc), 40 C.F.R. 60.480a through 60.489a (Subpart VVa), Standards of Performance for Equipment Leaks of VOC in the Synthetic Organic Chemicals Manufacturing Industry for Which Construction, Reconstruction, or Modification Commenced After November 7, 2006. [EU# 025A (EPN FUG-ETH-VVa) only]

STATE ORIGIN REQUIREMENTS:

401 KAR 63:020, Potentially Hazardous matter or toxic substances.

1. Operating Limitations:

- a. Pursuant to 40 CFR 60.482-1a, the permittee shall demonstrate compliance with the requirements of 40 CFR 60.482-1a through 40 CFR 60.482-10a or 40 CFR 60.480a(e) for all equipment within 180 days of initial startup.
- b. Pursuant to 40 CFR 60.482-1a(c)(1), the permittee may request a determination of equivalence of a means of emission limitation to the requirements of 40 CFR 60.482-2a, 40 CFR 60.482-3a, 40 CFR 60.482-5a, 40 CFR 60.482-6a, 40 CFR 60.482-7a, 40 CFR 60.482-8a, and 40 CFR 60.482-10a as provided in 40 CFR 60.484a.
- c. Pursuant to 40 CFR 60.482-1a(c)(2), if the Administrator makes a determination that a means of emission limitation is at least equivalent to the requirements of 40 CFR 60.482-2a, 40 CFR 60.482-3a, 40 CFR 60.482-5a, 40 CFR 60.482-6a, 40 CFR 60.482-7a, 40 CFR 60.482-8a, or 40 CFR 60.482-10a, the permittee shall comply with the requirements of that determination.
- d. Pursuant to 40 CFR 60.482-1a(d), equipment that is in vacuum service is excluded from the requirements of 40 CFR 60.482-2a through 40 CFR 60.482-10a if it is identified as required in 40 CFR 60.486a(e)(5).
- e. Pursuant to 40 CFR 60.482-1a(e), equipment that the permittee designates as being in VOC service less than 300 hr/yr is excluded from the requirements of 40 CFR 60.482-2a through 40 CFR 60.482-11a if it is identified as required in 40 CFR 60.486a(e)(6) and it meets any of the conditions specified in 40 CFR 60.482-1a(e)(1) through (3).
- f. Pursuant to 40 CFR 60.482-1a(f)(3), the monitoring frequencies specified in 40 CFR 60.482-1a(f)(1) are not requirements for monitoring at specific intervals and can be adjusted to accommodate process operations. The permittee may monitor at any time during the specified monitoring period (e.g., month, quarter, year), provided the monitoring is conducted at a reasonable interval after completion of the last monitoring campaign. Reasonable intervals are defined below:
 - (1) When monitoring is conducted quarterly, monitoring events must be separated by at least 30 calendar days.
 - (2) When monitoring is conducted semiannually (i.e., once every 2 quarters), monitoring events must be separated by at least 60 calendar days.

SECTION B - EMISSION POINTS, EMISSIONS UNITS, APPLICABLE REGULATIONS, AND OPERATING CONDITIONS (CONTINUED)

- (3) When monitoring is conducted in 3 quarters per year, monitoring events must be separated by at least 90 calendar days.
- (4) When monitoring is conducted annually, monitoring events must be separated by at least 120 calendar days.

Pumps in light liquid service:

- g. Pursuant to 40 CFR 60.482-2a(a)(1), each pump in light liquid service shall be monitored monthly to detect leaks by the methods specified in 40 CFR 60.485a(b), except as provided in 40 CFR 60.482-1a(c), (d) and (e). A pump that begins operation in light liquid service after the initial startup date for the process unit must be monitored for the first time within 30 days after the end of its startup period, except for a pump that replaces a leaking pump and except as provided in 40 CFR 60.482-1a(c),(d) and (e).
- h. Pursuant to 40 CFR 60.482-2a(a)(2), each pump in light liquid service shall be checked by visual inspection each calendar week for indications of liquids dripping from the pump seal, except as provided in 40 CFR 60.482-1a(f).
- i. Pursuant to 40 CFR 60.482-2a(b)(1), The instrument reading that defines a leak is specified in paragraphs (b)(1)(i) and (ii) below:
 - (1) 5,000 parts per million (ppm) or greater for pumps handling polymerizing monomers;
 - (2) 2,000 ppm or greater for all other pumps.
- j. Pursuant to 40 CFR 60.482-2a(b)(2), if there are indications of liquids dripping from the pump seal, the permittee shall follow the procedure specified below:
 - (1) Monitor the pump within 5 days as specified in 40 CFR 60.485a(b). A leak is detected if the instrument reading measured during monitoring indicates a leak as specified in 40 CFR 60.482-2a(b)(1). The leak shall be repaired using the procedures in 40 CFR 60.482-2a(c).
 - (2) Designate the visual indications of liquids dripping as a leak, and repair the leak using either the procedures in 40 CFR 60.482-2a(c) or by eliminating the visual indications of liquids dripping.
- k. Pursuant to 40 CFR 60.482-2a(c)(1), when a leak is detected, it shall be repaired as soon as practicable, but not later than 15 calendar days after it is detected, except as provided in 40 CFR 60.482-9a.
- l. Pursuant to 40 CFR 60.482-2a(c)(2), a first attempt at repair shall be made no later than 5 calendar days after each leak is detected. First attempts at repair include, but are not limited to
 - (1) Tightening the packing gland nuts;
 - (2) Ensuring that the seal flush is operating at design pressure and temperature.
- m. Pursuant to 40 CFR 60.482-2a(d), each pump equipped with a dual mechanical seal system that includes a barrier fluid system is exempt from the requirements of 40 CFR 60.482-2a(a), provided the requirements specified in (1) through (6) below, are met.
 - (1) Each dual mechanical seal system is:

SECTION B - EMISSION POINTS, EMISSIONS UNITS, APPLICABLE REGULATIONS, AND OPERATING CONDITIONS (CONTINUED)

- (i) Operated with the barrier fluid at a pressure that is at all times greater than the pump stuffing box pressure; or
 - (ii) Equipped with a barrier fluid degassing reservoir that is routed to a process or fuel gas system or connected by a closed vent system to a control device that complies with the requirements of 40 CFR 60.482-10a; or
 - (iii) Equipped with a system that purges the barrier fluid into a process stream with zero VOC emissions to the atmosphere.
- (2) The barrier fluid system is in heavy liquid service or is not in VOC service.
- (3) Each barrier fluid system is equipped with a sensor that will detect failure of the seal system, the barrier fluid system, or both.
- (4) Each pump is checked by visual inspection, each calendar week, for indications of liquids dripping from the pump seals.

If there are indications of liquids dripping from the pump seal at the time of the weekly inspection, the owner or operator shall follow the procedure specified in either 40 CFR 60.482-2a(d)(4)(ii)(A) or (B) prior to the next required inspection.
- (5) Each sensor as described in 40 CFR 60.482-2a(d)(3) is checked daily or is equipped with an audible alarm.
 - (i) The owner or operator determines, based on design considerations and operating experience, a criterion that indicates failure of the seal system, the barrier fluid system, or both.
 - (ii) If the sensor indicates failure of the seal system, the barrier fluid system, or both, based on the criterion established in 40 CFR 60.482-2a(d)(5)(ii), a leak is detected.
- (6) When a leak is detected pursuant to 40 CFR 60.482-2a(d)(4)(ii)(A), it shall be repaired as specified in 40 CFR 60.482-2a(c).
 - (i) A leak detected pursuant to 40 CFR 60.482-2a(d)(5)(iii) shall be repaired within 15 days of detection by eliminating the conditions that activated the sensor.
 - (ii) A designated leak pursuant to 40 CFR 60.482-2a(d)(4)(ii)(B) shall be repaired within 15 days of detection by eliminating visual indications of liquids dripping.
- n. Pursuant to 40 CFR 60.482-2a(e), any pump that is designated, as described in 40 CFR 60.486a(e)(1) and (2), for no detectable emissions, as indicated by an instrument reading of less than 500 ppm above background, is exempt from the requirements of 40 CFR 60.482-2a(a), (c), and (d) if the pump:
 - (1) Has no externally actuated shaft penetrating the pump housing;
 - (2) Is demonstrated to be operating with no detectable emissions as indicated by an instrument reading of less than 500 ppm above background as measured by the methods specified in 40 CFR 60.485a(c); and
 - (3) Is tested for compliance pursuant to 40 CFR 60.482-2a(e)(2) initially upon designation, annually, and at other times requested by the Administrator.
- o. Pursuant to 40 CFR 60.482-2a(g), any pump that is designated, as described in 40 CFR 60.486a(f)(1), as an unsafe-to-monitor pump is exempt from the monitoring and inspection requirements of 40 CFR 60.482-2a(a) if:
 - (1) The permittee demonstrates that the pump is unsafe-to-monitor because monitoring personnel would be exposed to an immediate danger as a consequence of complying with 40 CFR 60.482-2a(a); and

SECTION B - EMISSION POINTS, EMISSIONS UNITS, APPLICABLE REGULATIONS, AND OPERATING CONDITIONS (CONTINUED)

- (2) The permittee has a written plan that requires monitoring of the pump as frequently as practicable during safe-to-monitor times, but not more frequently than the periodic monitoring schedule otherwise applicable, and repair of the equipment according to the procedures in 40 CFR 60.482-2a(c) if a leak is detected.

Compressors:

- p. Pursuant to 40 CFR 60.482-3a(a), each compressor shall be equipped with a seal system that includes a barrier fluid system and that prevents leakage of VOC to the atmosphere.
- q. Pursuant to 40 CFR 60.482-3a(b), each compressor seal system as required in 40 CFR 60.482-3a(a) shall be:
 - (1) Operated with the barrier fluid at a pressure that is greater than the compressor stuffing box pressure; or
 - (2) Equipped with a barrier fluid system degassing reservoir that is routed to a process or fuel gas system or connected by a closed vent system to a control device that complies with the requirements of 40 CFR 60.482-10a; or
 - (3) Equipped with a system that purges the barrier fluid into a process stream with zero VOC emissions to the atmosphere.
- r. Pursuant to 40 CFR 60.482-3a(c), the barrier fluid system shall be in heavy liquid service or shall not be in VOC service.
- s. Pursuant to 40 CFR 60.482-3a(d), each barrier fluid system as described in 40 CFR 482-3a(a) shall be equipped with a sensor that will detect failure of the seal system, barrier fluid system, or both.
- t. Pursuant to 40 CFR 60.482-3a(e)(1), Each sensor as required shall be checked daily or shall be equipped with an audible alarm.
- u. Pursuant to 40 CFR 60.482-3a(e)(2), the permittee shall determine, based on design considerations and operating experience, a criterion that indicates failure of the seal system, the barrier fluid system, or both.
- v. Pursuant to 40 CFR 60.482-3a(f), If the sensor indicates failure of the seal system, the barrier system, or both based on the criterion determined above, a leak is detected.
- w. Pursuant to 40 CFR 60.482-3a(g)(1), when a leak is detected, it shall be repaired as soon as practicable, but not later than 15 calendar days after it is detected, except as provided in 40 CFR 60.482-9a.
- x. Pursuant to 40 CFR 60.482-3a(g)(2), a first attempt at repair shall be made no later than 5 calendar days after each leak is detected.
- y. Pursuant to 40 CFR 60.482-3a(h), A compressor is exempt from the requirements of 40 CFR 60.482-3a(a) and 40 CFR 60.482-3a(b), if it is equipped with a closed vent system to capture and transport leakage from the compressor drive shaft back to a process or fuel gas

SECTION B - EMISSION POINTS, EMISSIONS UNITS, APPLICABLE REGULATIONS, AND OPERATING CONDITIONS (CONTINUED)

system or to a control device that complies with the requirements of 40 CFR 60.482-10a, except as provided in 40 CFR 60.482-3a(i).

- z. Pursuant to 40 CFR 60.482-3a(i), any compressor that is designated, as described in 40 CFR 60.486a(e)(1) and (2), for no detectable emissions, as indicated by an instrument reading of less than 500 ppm above background, is exempt from the requirements of 40 CFR 60.482-3a(a) through 40 CFR 60.482-3a(h) above if the compressor:
 - (1) Is demonstrated to be operating with no detectable emissions, as indicated by an instrument reading of less than 500 ppm above background, as measured by the methods specified in 40 CFR 60.485a(c); and
 - (2) Is tested for compliance with the reading above initially upon designation, annually, and at other times requested by the Administrator.

Valves in gas/vapor service and in light liquid service:

- aa. Pursuant to 40 CFR 60.482-7a(a)(1), each valve shall be monitored monthly to detect leaks by the methods specified in 40 CFR 60.485a(b) and shall comply with 40 CFR 60.482-7a(b) through (e), except as provided in 40 CFR 60.482-7a(f),(g), and (h), 40 CFR 60.482-1a(c) and (f), and 40 CFR 60.483-1a and 40 CFR 60.483-2a.
- bb. Pursuant to 40 CFR 60.482-7a(a)(2), a valve that begins operation in gas/vapor service or light liquid service after the initial startup date for the process unit must be monitored according to 40 CFR 60.482-7a(a)(2) except for a valve that replaces a leaking valve and except as provided in 40 CFR 60.482-7a(f),(g) and 40 CFR 60.482-1a(c), and 40 CFR 60.483-1a and 40 CFR 60.483-2a:
 - (1) Monitor the valve as in 40 CFR 60.482-7a(a)(1). The valve must be monitored for the first time within 30 days after the end of its startup period to ensure proper installation.
 - (2) If the existing valves in the process unit are monitored in accordance with 40 CFR 60.483-1a or 40 CFR 60.483-2a, count the new valve as leaking when calculating the percentage of valves leaking as described in 40 CFR 60.483-2a(b)(5). If less than 2.0 percent of the valves are leaking for that process unit, the valve must be monitored for the first time during the next scheduled monitoring event for existing valves in the process unit or within 90 days, whichever comes first.
- cc. Pursuant to 40 CFR 60.482-7a(b), if an instrument reading of 500 ppm or greater is measured, a leak is detected.
- dd. Pursuant to 40 CFR 60.482-7a(c)(1)(i), any valve for which a leak is not detected for 2 successive months may be monitored the first month of every quarter, beginning with the next quarter, until a leak is detected.
- ee. Pursuant to 40 CFR 60.482-7a(c)(1)(ii), as an alternative to monitoring all of the valves in the first month of a quarter, the permittee may elect to subdivide the process unit into two or three subgroups of valves and monitor each subgroup in a different month during the quarter, provided each subgroup is monitored every 3 months. The permittee must keep records of the valves assigned to each subgroup.

SECTION B - EMISSION POINTS, EMISSIONS UNITS, APPLICABLE REGULATIONS, AND OPERATING CONDITIONS (CONTINUED)

- ff. Pursuant to 40 CFR 60.482-7a(c)(2), if a leak is detected, the valve shall be monitored monthly until a leak is not detected for 2 successive months.
- gg. Pursuant to 40 CFR 60.482-7a(d)(1), when a leak is detected, it shall be repaired as soon as practicable, but no later than 15 calendar days after the leak is detected, except as provided in 60.482-9a.
- hh. Pursuant to 40 CFR 60.482-7a(d)(2), a first attempt at repair shall be made no later than 5 calendar days after each leak is detected.
- ii. Pursuant to 40 CFR 60.482-7a(e), first attempts at repair include, but are not limited to, the following best practices where practicable:
 - (1) Tightening of bonnet bolts;
 - (2) Replacement of bonnet bolts;
 - (3) Tightening of packing gland nuts;
 - (4) Injection of lubricant into lubricated packing.
- jj. Pursuant to 40 CFR 60.482-7a(f), any valve that is designated, as described in 40 CFR 60.486a(e)(2), for no detectable emissions, as indicated by an instrument reading of less than 500 ppm above background, is exempt from the requirements of 40 CFR 60.482-7a(a) if the valve:
 - (1) Has no external actuating mechanism in contact with the process fluid,
 - (2) Is operated with emissions less than 500 ppm above background as determined by the method specified in 40 CFR 60.485a(c), and
 - (3) Is tested for compliance with 40 CFR 60.482-7a(f)(2) initially upon designation, annually, and at other times requested by the Administrator.
- kk. Pursuant to 40 CFR 60.482-7a(g), any valve that is designated, as described in 40 CFR 60.486a(f)(1), as an unsafe-to-monitor valve is exempt from the requirements of 40 CFR 60.482-7a(a) if:
 - (1) The permittee demonstrates that the valve is unsafe to monitor because monitoring personnel would be exposed to an immediate danger as a consequence of complying with 40 CFR 60.482-7a(a), and
 - (2) The permittee adheres to a written plan that requires monitoring of the valve as frequently as practicable during safe-to-monitor times.
- ll. Pursuant to 40 CFR 60.482-7a(h), any valve that is designated, as described in 40 CFR 60.486a(f)(2), as a difficult-to-monitor valve is exempt from the requirements of 40 CFR 60.482-7a(a) if:
 - (1) The permittee demonstrates that the valve cannot be monitored without elevating the monitoring personnel more than 2 meters above a support surface.
 - (2) The process unit within which the valve is located either:
 - (i) Becomes an affected facility through 40 CFR 60.14 or 40 CFR 60.15 and was constructed on or before January 5, 1981; or
 - (ii) Has less than 3.0 percent of its total number of valves designated as difficult-to-monitor by the permittee.

SECTION B - EMISSION POINTS, EMISSIONS UNITS, APPLICABLE REGULATIONS, AND OPERATING CONDITIONS (CONTINUED)

- (3) The permittee follows a written plan that requires monitoring of the valve at least once per calendar year.

Connectors in gas/vapor service or light liquid service:

- mm. Pursuant to 40 CFR 60.482-11a(a), if all connectors in the process unit have been monitored for leaks prior to the compliance date, no initial monitoring is required provided either no process changes have been made since the monitoring or the permittee can determine that the results of the monitoring, with or without adjustments, reliably demonstrate compliance despite process changes. If required to monitor because of a process change, the permittee is required to monitor only those connectors involved in the process change.
- nn. Pursuant to 40 CFR 60.482-11a(b), except as allowed in 40 CFR 60.482-1a(c), 40 CFR 60.482-10a, or as specified in 40 CFR 60.482-11a(e), the permittee shall monitor all connectors in gas and vapor and light liquid service as specified below:
- (1) The connectors shall be monitored to detect leaks by the method specified in 40 CFR 60.485a(b) and, as applicable, 40 CFR 60.485a(c).
 - (2) If an instrument reading greater than or equal to 500 ppm is measured, a leak is detected.
 - (3) The permittee shall perform monitoring as specified in (i) through (iii) below, and shall comply with the requirements of (iv) and (v) below. The required period in which monitoring must be conducted shall be determined from (i) through (iii) below, using the monitoring results from the preceding monitoring period. The percent leaking connectors shall be calculated as specified in 40 CFR 60.482-11a(c).
 - (i) If the percent leaking connectors in the process unit was greater than or equal to 0.5 percent, then monitor within 12 months (1 year).
 - (ii) If the percent leaking connectors in the process unit was greater than or equal to 0.25 percent but less than 0.5 percent, then monitor within 4 years. The permittee may comply with the requirements of 40 CFR 60.482-11a(b) by monitoring at least 40 percent of the connectors within 2 years of the start of the monitoring period, provided all connectors have been monitored by the end of the 4-year monitoring period.
 - (iii) If the percent leaking connectors in the process unit was less than 0.25 percent, then monitor as provided in (A) and (B) or (C) below, as appropriate:
 - (A) The permittee shall monitor at least 50 percent of the connectors within 4 years of the start of the monitoring period.
 - (B) If the percent of leaking connectors calculated from the monitoring results in (A) above, is greater than or equal to 0.35 percent of the monitored connectors, the permittee shall monitor as soon as practical, but within the next 6 months, all connectors that have not yet been monitored during the monitoring period. At the conclusion of monitoring, a new monitoring period shall be started pursuant to 40 CFR 60.482-11a(b)(3), based on the percent of leaking connectors within the total monitored connectors.

SECTION B - EMISSION POINTS, EMISSIONS UNITS, APPLICABLE REGULATIONS, AND OPERATING CONDITIONS (CONTINUED)

- (C) If the percent of leaking connectors calculated from the monitoring results in (A) above, is less than 0.35 percent of the monitored connectors, the permittee shall monitor all connectors that have not yet been monitored within 8 years of the start of the monitoring period.
- (iv) If, during the monitoring conducted pursuant to 40 CFR 60.482-11a(b)(3)(i) through 40 CFR 60.482-11a(b)(3)(iii), a connector is found to be leaking, it shall be re-monitored once within 90 days after repair to confirm that it is not leaking.
- (v) The permittee shall keep a record of the start date and end date of each monitoring period under this section for each process unit.
- oo. Pursuant to 40 CFR 60.482-11a(c), for use in determining the monitoring frequency, as specified in 40 CFR 60.482-11a(a) and 40 CFR 60.482-11a(b)(3), the percent leaking connectors as used in 40 CFR 60.482-11a(a) and 40 CFR 60.482-11a(b)(3), shall be calculated by using the following equation:
- $$\%C_L = C_L/C_t \times 100$$
- Where:
- $\%C_L$ = Percent of leaking connectors as determined through periodic monitoring required in a. and b.(3)(i) through (iii) above.
- C_L = Number of connectors measured at 500 ppm or greater, by the method specified in 60.485a(b).
- C_t = Total number of monitored connectors in the process unit or affected facility.
- pp. Pursuant to 40 CFR 60.482-11a(d), when a leak is detected pursuant to 40 CFR 60.482-11a(a) and 40 CFR 60.482-11a(b), it shall be repaired as soon as practicable, but not later than 15 calendar days after it is detected, except as provided in 40 CFR 60.482-9a. A first attempt at repair as defined in this subpart shall be made no later than 5 calendar days after the leak is detected.
- qq. Pursuant to 40 CFR 60.482-11a(e), any connector that is designated, as described in 40 CFR 60.486a(f)(1), as an unsafe-to-monitor connector is exempt from the requirements of 40 CFR 60.482-11a(a) and 40 CFR 60.482-11a(b), if:
- (1) The permittee demonstrates that the connector is unsafe-to-monitor because monitoring personnel would be exposed to an immediate danger as a consequence of complying with a. and b. above; and
 - (2) The permittee has a written plan that requires monitoring of the connector as frequently as practicable during safe-to-monitor times but not more frequently than the periodic monitoring schedule otherwise applicable, and repair of the equipment according to the procedures in 40 CFR 60.482-11a(d), if a leak is detected.
- rr. Pursuant to 40 CFR 60.482-11a(f)(1), *Inaccessible, ceramic, or ceramic-lined connectors*: any connector that is inaccessible or that is ceramic or ceramic-lined (e.g., porcelain, glass, or glass-lined), is exempt from the monitoring requirements of 40 CFR 60.482-11a(a) and 40 CFR 60.482-11a(b), from the leak repair requirements of 40 CFR 60.482-11a(d) and from the recordkeeping and reporting requirements of 40 CFR 63.1038 and 40 CFR 63.1039. An inaccessible connector is one that meets any of the provisions specified below:

SECTION B - EMISSION POINTS, EMISSIONS UNITS, APPLICABLE REGULATIONS, AND OPERATING CONDITIONS (CONTINUED)

- (1) Buried;
 - (2) Insulated in a manner that prevents access to the connector by a monitor probe;
 - (3) Obstructed by equipment or piping that prevents access to the connector by a monitor probe;
 - (4) Unable to be reached from a wheeled scissor-lift or hydraulic-type scaffold that would allow access to connectors up to 7.6 meters (25 feet) above the ground;
 - (5) Inaccessible because it would require elevating the monitoring personnel more than 2 meters (7 feet) above a permanent support surface or would require the erection of scaffold; or
 - (6) Not able to be accessed at any time in a safe manner to perform monitoring. Unsafe access includes, but is not limited to, the use of a wheeled scissor-lift on unstable or uneven terrain, the use of a motorized man-lift basket in areas where an ignition potential exists, or access would require near proximity to hazards such as electrical lines, or would risk damage to equipment.
- ss. Pursuant to 40 CFR 60.482-11a(f)(2), if any inaccessible, ceramic, or ceramic-lined connector is observed by visual, audible, olfactory, or other means to be leaking, the visual, audible, olfactory, or other indications of a leak to the atmosphere shall be eliminated as soon as practical.
- tt. Pursuant to 40 CFR 60.482-11a(g), except for instrumentation systems and inaccessible, ceramic, or ceramic-lined connectors meeting the provisions of 40 CFR 60.482-11a(f), identify the connectors subject to the requirements of this subpart. Connectors need not be individually identified if all connectors in a designated area or length of pipe subject to the provisions of this subpart are identified as a group, and the number of connectors subject is indicated.

Pressure relief devices in gas/vapor service:

- uu. Pursuant to 40 CFR 60.482-4a(a), except during pressure releases, each pressure relief device in gas/vapor service shall be operated with no detectable emissions, as indicated by an instrument reading of less than 500 ppm above background, as determined by the methods specified in 40 CFR 60.485a(c).
- vv. Pursuant to 40 CFR 60.482-4a(b), after each pressure release, the pressure relief device shall be returned to a condition of no detectable emissions, as indicated by an instrument reading of less than 500 ppm above background, as soon as practicable, but no later than 5 calendar days after the pressure release, except as provided in 40 CFR 60.482-9a. No later than 5 calendar days after the pressure release, the pressure relief device shall be monitored to confirm the conditions of no detectable emissions, as indicated by an instrument reading of less than 500 ppm above background, by the methods specified in 40 CFR 60.485a(c).
- ww. Pursuant to 40 CFR 60.482-4a(d), Any pressure relief device that is equipped with a rupture disk upstream of the pressure relief device is exempt from the requirements of paragraphs 40 CFR 60.482-4a (a) and 40 CFR 60.482-4a(b), provided the permittee complies with the requirements in 40 CFR 60.482-4a(d)(2).

SECTION B - EMISSION POINTS, EMISSIONS UNITS, APPLICABLE REGULATIONS, AND OPERATING CONDITIONS (CONTINUED)

After each pressure release, a new rupture disk shall be installed upstream of the pressure relief device as soon as practicable, but no later than 5 calendar days after each pressure release, except as provided in 40 CFR 60.482-9a.

Compliance Demonstration Method:

Pursuant to 40 CFR 60.482-1a(b), compliance with the requirements in 40 CFR 60, Subpart VVa shall be demonstrated by the review of records and reports, review of performance test results, and inspection using the methods and procedures specified in 40 CFR 60.485a; **3. Testing Requirements.** and **5. Specific Recordkeeping Requirements** a. and b.

- xx. For the pipeline equipment constructed, reconstructed or modified after November 7, 2006 in less than 5% HAP service, the permittee shall comply with the requirements of 40 CFR 60, Subpart VVa.
- yy. Pursuant to 401 KAR 51:017, Section 8, the following control technology, equipment and method are required to meet Best Available Control Technology (BACT) demonstration for Volatile Organic Compounds (VOC) emissions:
 - (1) The permittee shall keep records of the count of fugitive components added which are subject to 401 KAR 51:017 and identify and label them as subject to 401 KAR 51:017 using the procedures of 40 CFR 60, Subpart VVa.
 - (2) For units subject to 40 CFR 60, Subpart VVa, the permittee shall implement the requirements from 40 CFR 60, Subpart VVa (LDAR) and the requirements in the following **Compliance Demonstration Method**.
 - (3) For units not subject to 40 CFR 60, Subpart VVa, but subject to 401 KAR 51:017, the permittee shall comply with the requirements of 40 CFR 60, Subpart VVa and the requirements in the following **Compliance Demonstration Method**.
 - (4) For pumps subject to 401 KAR 51:017, the permittee shall install leak-less pumps with dual mechanical seals or with a barrier fluid to reduce leaks. If a leak-less pump is not feasible, the permittee shall submit justification as to its technical infeasibility.
- zz. Pursuant to 401 KAR 51:017, Section 8, the following control technology, equipment and method are required to meet Best Available Control Technology (BACT) demonstration for Greenhouse Gases (as CO₂e) emissions:
 - (1) The permittee shall keep records of the count of fugitive components added which are subject to 401 KAR 51:017 and identify and label them as subject to 401 KAR 51:017 using the procedures of 40 CFR 60, Subpart VVa.
 - (2) For units subject to 40 CFR 60, Subpart VVa, (if any) the permittee shall implement the requirements from 40 CFR 60, Subpart VVa (LDAR) and the requirements in the following **Compliance Demonstration Method**.
 - (3) For units not subject to 40 CFR 60, Subpart VVa, but subject to 401 KAR 51:017, the permittee shall comply with the requirements of 40 CFR 60, Subpart VVa and the requirements in the following **Compliance Demonstration Method**.

SECTION B - EMISSION POINTS, EMISSIONS UNITS, APPLICABLE REGULATIONS, AND OPERATING CONDITIONS (CONTINUED)

Compliance Demonstration Method:

Pursuant to 401 KAR 51:017, for continuous compliance with **1. Operating Limitations** yy. and zz., the permittee shall comply with the following requirements for a leak as defined as a reading of 500 ppmv:

- (1) Construction of new and reworked piping, valves, pump systems, and compressor systems shall conform to applicable American National Standards Institute (ANSI), American Petroleum Institute (API), American Society of Mechanical Engineers (ASME), or equivalent codes.
- (2) New and reworked underground process pipelines shall contain no buried valves such that fugitive emission monitoring is rendered impractical. New and reworked buried connectors shall be welded.
- (3) To the extent that good engineering practice will permit, new and reworked valves and piping connections shall be so located to be reasonably accessible for leak-checking during plant operation. Difficult-to-monitor and unsafe-to-monitor valves, as defined by 40 CFR 60, Subpart VVa, shall be identified in a list to be made available upon request. The difficult-to-monitor and unsafe-to-monitor valves may be identified by one or more of the methods described in 40 CFR 60.486a(f)(1). If an unsafe to monitor component is not considered safe to monitor within a calendar year, then it shall be monitored as soon as possible during safe to monitor times. A difficult to monitor component for which quarterly monitoring is specified may instead be monitored annually.
- (4) New and reworked piping connections shall be welded or flanged. Screwed connections are permissible only on piping smaller than two-inch diameter. Gas or hydraulic testing of the new and reworked piping connections at no less than operating pressure shall be performed prior to returning the components to service or they shall be monitored for leaks using an approved gas analyzer within 15 days of the components being returned to service. Adjustments shall be made as necessary to obtain leak-free performance. Connectors shall be inspected by visual, audible, and/or olfactory means at least weekly by operating personnel walk-through.
- (5) Each open-ended valve or line shall be equipped with an appropriately sized cap, blind flange, plug, or a second valve to seal the line. Except during sampling, both valves shall be closed. If the isolation of equipment for hot work or the removal of a component for repair or replacement results in an open ended line or valve, it is exempt from the requirement to install a cap, blind flange, plug, or second valve for 72 hours. If the repair or replacement is not completed within 72 hours, the permit holder must complete either of the following actions within that time period;
 - (i) A cap, blind flange, plug, or second valve must be installed on the line or valve; or
 - (ii) The open-ended valve or line shall be monitored once for leaks above background for a plant or unit turnaround lasting up to 45 days with an approved gas analyzer and the results recorded. For all other situations, the open-ended valve or line shall be monitored once by the end of the 72 hours period following the creation of the open ended line and monthly thereafter with an approved gas analyzer and the results recorded. For turnarounds and all other situations, leaks are indicated by readings of 500 ppmv and must be repaired within 24 hours or a cap, blind flange, plug, or second valve must be installed on the line or valve.

SECTION B - EMISSION POINTS, EMISSIONS UNITS, APPLICABLE REGULATIONS, AND OPERATING CONDITIONS (CONTINUED)

- (6) Accessible valves shall be monitored by leak checking for fugitive emissions at least quarterly using an approved gas analyzer. Sealless/leak-less valves (including, but not limited to, welded bonnet bellows and diaphragm valves) and relief valves equipped with a rupture disc upstream or venting to a control device are not required to be monitored. If a relief valve is equipped with rupture disc, a pressure-sensing device shall be installed between the relief valve and rupture disc to monitor disc integrity.
 - (i) A check of the reading of the pressure-sensing device to verify disc integrity shall be performed at least quarterly and recorded in the unit log or equivalent.
 - (ii) Pressure-sensing devices that are continuously monitored with alarms are exempt from recordkeeping requirements specified in this paragraph. All leaking discs shall be replaced at the earliest opportunity but no later than the next process shutdown.
 - (iii) A gas analyzer shall conform to requirements listed in Method 21 of 40 CFR 60, appendix A. The gas analyzer shall be calibrated with methane. In addition, the response factor of the instrument for a specific VOC of interest shall be determined and meet the requirements of Section 8 of Method 21. If a mixture of VOCs is being monitored, the response factor shall be calculated for the average composition of the process fluid. A calculated average is not required when all of the compounds in the mixture have a response factor less than 10 using methane. If a response factor less than 10 cannot be achieved using methane, then the instrument may be calibrated with one of the VOC to be measured or any other VOC so long as the instrument has a response factor of less than 10 for each of the VOC to be measured.
 - (iv) Replacements for leaking components shall be re-monitored within 15 days of being placed back into VOC service.
- (7) All pump and compressor seals shall be monitored with an approved gas analyzer at least quarterly or be equipped with a shaft sealing system that prevents or detects emissions of VOC from the seal. Seal systems designed and operated to prevent emissions or seals equipped with an automatic seal failure detection and alarm system need not be monitored. These seal systems may include (but are not limited to) dual pump seals with barrier fluid at higher pressure than process pressure, seals degassing to vent control systems kept in good working order, or seals equipped with an automatic seal failure detection and alarm system. Submerged pumps or sealless pumps (including, but not limited to, diaphragm, canned, or magnetic-driven pumps) may be used to satisfy the requirements of this condition and need not be monitored.
- (8) Damaged or leaking valves, connectors, pump seals, and compressor seals found to be emitting VOC in excess of 500 parts per million by volume (ppmv) or found by visual inspection to be leaking (e.g., dripping process fluids) shall be tagged and replaced or repaired. A first attempt to repair the leak must be made within 5 days and a record of the attempt shall be maintained.
- (9) A leaking component shall be repaired as soon as practicable, but no later than 15 days after the leak is found. If the repair of a component would require a unit shutdown that would create more emissions than the repair would eliminate, the repair may be delayed until the next scheduled shutdown. All leaking components which cannot be repaired until a scheduled shutdown shall be identified for such

SECTION B - EMISSION POINTS, EMISSIONS UNITS, APPLICABLE REGULATIONS, AND OPERATING CONDITIONS (CONTINUED)

repair by tagging within 15 days of the detection of the leak. A listing of all components that qualify for delay of repair shall be maintained on a delay of repair list. The cumulative daily emissions from all components on the delay of repair list shall be estimated by multiplying by 24 the mass emission rate for each component calculated in accordance with the methods in the EPA correlation approach in Section 2.3.3 alone or in combination with the mass emission sampling approach in Chapter 4 of the EPA guidance document *Protocol for Equipment Leak Emission Estimates* (EPA-453/R-95-017, November 1995). The calculations of the cumulative daily emissions from all components on the delay of repair list shall be updated within ten days of when the latest leaking component is added to the delay of repair list. When the cumulative daily emission rate of all components on the delay of repair list times the number of days until the next scheduled unit shutdown is equal to or exceeds the total emissions from a unit shutdown, the Division shall be notified and may require early unit shutdown or other appropriate action based on the number and severity of tagged leaks awaiting shutdown. This notification shall be made within 15 days of making this determination.

- (10) Records of repairs shall include date of repairs, repair results, justification for delay of repairs, and corrective actions taken for all components. Records of instrument monitoring shall indicate dates and times, test methods, and instrument readings. The instrument monitoring record shall include the time that monitoring took place for no less than 95% of the instrument readings recorded. Records of physical inspections shall be noted in the permittee's log or equivalent.
- (11) In addition to the weekly physical inspection required by **Compliance Demonstration Method** (1)(iv), all connectors in gas/vapor and light liquid service shall be monitored annually with an approved gas analyzer in accordance with **Compliance Demonstration Method** (1)(vi) through (ix).
- (12) New relief valves are required to vent to a control device for any potential releases and as a result, any fugitive emissions are reduced. Exceptions may be made if venting relief valves to control will result in a safety concern, but this does not exempt the company from controls such as equipping the valve with a rupture disk and pressure-sensing device.

aaa. Pursuant to 401 KAR 52:020, Section 10, the permittee shall use the following control efficiencies while calculating potential emissions from each fugitive component that is subject to the requirements in **1. Operating Limitations** yy. and zz.:

- (1) 97% for valves in gas/vapor and light liquid service;
- (2) 0% for valves in heavy liquid service;
- (3) 85% for pumps in light liquid service;
- (4) 0% for pumps in heavy liquid service;
- (5) 75% for connectors in gas/vapor and light liquid service;
- (6) 85% for all compressors; and
- (7) 97% for relief valves in gas/vapor service.

2. Emission Limitations:

- a. See **1. Operating Limitations**.

SECTION B - EMISSION POINTS, EMISSIONS UNITS, APPLICABLE REGULATIONS, AND OPERATING CONDITIONS (CONTINUED)

- b. Pursuant to 401 KAR 63:020, Section 3, persons responsible for a source from which hazardous matter or toxic substances may be emitted shall provide the utmost care and consideration, in the handling of these materials, to the potentially harmful effects of the emissions resulting from such activities. The permittee shall not allow any affected facility to emit potentially hazardous matter or toxic substances in such quantities or duration as to be harmful to the health and welfare of humans, animals and plants. Evaluation of such facilities as to adequacy of controls and/or procedures and emission potential will be made on an individual basis by the cabinet.

Compliance Demonstration Method:

Based upon the emission rates of toxics and hazardous air pollutants determined by the Division using the information provided in the application and supplemental information submitted by the source, the Division determines the affected facility to be in compliance with 401 KAR 63:020.

3. Testing Requirements:

- a. Pursuant to 40 CFR 60.480a(e)(ii)(2), owners or operators may choose to comply with the provisions of 40 CFR 63, Subpart H, to satisfy the requirements of 40 CFR 60.482-1a through 60.487a for an affected facility. When choosing to comply with 40 CFR 63, Subpart H, the requirements of 40 CFR 60.485a(d), (e) and (f) and 40 CFR 60.486a(i) and (j) still apply. The components subject to 40 CFR 60, Subpart VVa leak detection and repair (LDAR) program shall comply with the test methods and procedures described in 40 CFR 60.485a.
- b. Pursuant to 40 CFR 60.485a(b)(1), Method 21 shall be used to determine the presence of leaking sources. The instrument shall be calibrated before use each day of its use by the procedures specified in Method 21. The following calibration gases shall be used:
 - (1) Zero air (less than 10 ppm of hydrocarbon in air); and
 - (2) A mixture of methane or n-hexane and air at a concentration no more than 2,000 ppm greater than the leak definition concentration of the equipment monitored. If the monitoring instrument's design allows for multiple calibration scales, then the lower scale shall be calibrated with a calibration gas that is no higher than 2,000 ppm above the concentration specified as a leak, and the highest scale shall be calibrated with a calibration gas that is approximately equal to 10,000 ppm. If only one scale on an instrument will be used during monitoring, the permittee need not calibrate the scales that will not be used during that day's monitoring.
- c. Pursuant to 40 CFR 60.485a(b)(2), a calibration drift assessment shall be performed, at a minimum, at the end of each monitoring day. Check the instrument using the same calibration gas(es) that were used to calibrate the instrument before use. Follow the procedures specified in Method 21 of appendix A-7 of 40 CFR 60, Subpart VVa, Section 10.1, except do not adjust the meter readout to correspond to the calibration gas value. Record the instrument reading for each scale used as specified in 40 CFR 60.486a(e)(7). Calculate the average algebraic difference between the three meter readings and the most recent calibration value. Divide this algebraic difference by the initial calibration value and multiply by 100 to express the calibration drift as a percentage. If any calibration drift

SECTION B - EMISSION POINTS, EMISSIONS UNITS, APPLICABLE REGULATIONS, AND OPERATING CONDITIONS (CONTINUED)

assessment shows a negative drift of more than 10 percent from the initial calibration value, then all equipment monitored since the last calibration with instrument readings below the appropriate leak definition and above the leak definition multiplied by (100 minus the percent of negative drift/divided by 100) must be re-monitored. If any calibration drift assessment shows a positive drift of more than 10 percent from the initial calibration value, then, at the permittee's discretion, all equipment since the last calibration with instrument readings above the appropriate leak definition and below the leak definition multiplied by (100 plus the percent of positive drift/divided by 100) may be re-monitored.

- d. Pursuant to 40 CFR 60.485a(c), the permittee shall determine compliance with the no-detectable-emission standards in 40 CFR 60.482-2a(e), 40 CFR 60.482-3a(i), 40 CFR 60.482-4a, 40 CFR 60.482-7a(f), and 40 CFR 60.482-10a(e) as follows:
 - (1) The requirements of 40 CFR 60.485a(b) shall apply.
 - (2) Method 21 of appendix A-7 of 40 CFR 60, Subpart VVa shall be used to determine the background level. All potential leak interfaces shall be traversed as close to the interface as possible. The arithmetic difference between the maximum concentration indicated by the instrument and the background level is compared with 500 ppm for determining compliance.
- e. Pursuant to 40 CFR 60.485a(d), the permittee shall test each piece of equipment unless he demonstrates that a process unit is not in VOC service, i.e., that the VOC content would never be reasonably expected to exceed 10 percent by weight. For purposes of this demonstration, the following methods and procedures shall be used:
 - (1) Procedures that conform to the general methods in ASTM E260-73, 91, or 96, E168-67, 77, or 92, E169-63, 77, or 93 (incorporated by reference—see 60.17) shall be used to determine the percent VOC content in the process fluid that is contained in or contacts a piece of equipment.
 - (2) Organic compounds that are considered by the Administrator to have negligible photochemical reactivity may be excluded from the total quantity of organic compounds in determining the VOC content of the process fluid.
 - (3) Engineering judgment may be used to estimate the VOC content, if a piece of equipment had not been shown previously to be in service. If the Administrator disagrees with the judgment, (1) and (2) above, shall be used to resolve the disagreement.
- f. The permittee shall demonstrate that a piece of equipment is in light liquid service by showing that all the following conditions apply:
 - (1) The vapor pressure of one or more of the organic components is greater than 0.3 kPa at 20 °C (1.2 in. H₂O at 68 °F). Standard reference texts or ASTM D2879-83, 96, or 97 (incorporated by reference—see 40 CFR 60.17) shall be used to determine the vapor pressures.
 - (2) The total concentration of the pure organic components having a vapor pressure greater than 0.3 kPa at 20 °C (1.2 in. H₂O at 68 °F) is equal to or greater than 20 percent by weight.
 - (3) The fluid is a liquid at operating conditions.

SECTION B - EMISSION POINTS, EMISSIONS UNITS, APPLICABLE REGULATIONS, AND OPERATING CONDITIONS (CONTINUED)

4. Specific Monitoring Requirements:

- a. Refer to **2. Emission Limitations** and **3. Testing Requirements**.
- b. Components, except connectors, which have been identified as subject to 40 CFR 60, Subpart VVa will be monitored quarterly pursuant to 401 KAR 52:020, Section 10.
- c. Connectors which have been identified as subject to 40 CFR 60, Subpart VVa will be monitored annually pursuant to 401 KAR 52:020, Section 10.

5. Specific Recordkeeping Requirements:

- a. Pursuant to 40 CFR 60.486a(a)(2), the permittee that operates more than one affected facility may comply with the recordkeeping requirements for these facilities in one recordkeeping system if the system identifies each record by each facility.
- b. Pursuant to 40 CFR 60.486a(a)(3), the permittee shall record the information specified below, for each monitoring event required by 40 CFR 60.482-2a, 40 CFR 60.482-3a, 40 CFR 60.482-7a, 40 CFR 60.482-8a, 40 CFR 60.482-11a, and 40 CFR 60.483-2a:
 - (1) Monitoring instrument identification.
 - (2) Operator identification.
 - (3) Equipment identification.
 - (4) Date of monitoring.
 - (5) Instrument reading.
- c. Pursuant to 40 CFR 60.486a(b), when each leak is detected as specified in 40 CFR 60.482-2a, 40 CFR 60.482-3a, 40 CFR 60.482-7a, 40 CFR 60.482-8a, 40 CFR 60.482-11a, and 40 CFR 60.483-2a, the following requirements apply:
 - (1) A weatherproof and readily visible identification, marked with the equipment identification number, shall be attached to the leaking equipment.
 - (2) The identification on a valve may be removed after it has been monitored for 2 successive months as specified in 40 CFR 60.482-7a(c) and no leak has been detected during those 2 months.
 - (3) The identification on a connector may be removed after it has been monitored as specified in 40 CFR 60.482-11a(b)(3)(iv) and no leak has been detected during that monitoring.
 - (4) The identification on equipment, except on a valve or connector, may be removed after it has been repaired.
- d. Pursuant to 40 CFR 60.486a(c), when each leak is detected as specified in 40 CFR 60.482-2a, 40 CFR 60.482-3a, 40 CFR 60.482-7a, 40 CFR 60.482-8a, 40 CFR 60.482-11a, and 40 CFR 60.483-2a, the following information shall be recorded in a log and shall be kept for 2 years in a readily accessible location:
 - (1) The instrument and operator identification numbers and the equipment identification number, except when indications of liquids dripping from a pump are designated as a leak.
 - (2) The date the leak was detected and the dates of each attempt to repair the leak.
 - (3) Repair methods applied in each attempt to repair the leak.

SECTION B - EMISSION POINTS, EMISSIONS UNITS, APPLICABLE REGULATIONS, AND OPERATING CONDITIONS (CONTINUED)

- (4) Maximum instrument reading measured by Method 21 of appendix A-7 of 40 CFR 60, Subpart VVa at the time the leak is successfully repaired or determined to be nonrepairable, except when a pump is repaired by eliminating indications of liquids dripping.
 - (5) "Repair delayed" and the reason for the delay if a leak is not repaired within 15 calendar days after discovery of the leak.
 - (6) The signature of the operator (or designate) whose decision it was that repair could not be effected without a process shutdown.
 - (7) The expected date of successful repair of the leak if a leak is not repaired within 15 days.
 - (8) Dates of process unit shutdowns that occur while the equipment is unrepaired.
 - (9) The date of successful repair of the leak.
- e. Pursuant to 40 CFR 60.486a(e), the following information pertaining to all equipment subject to the requirements in 40 CFR 60.482-1a to 40 CFR 60.482-11a shall be recorded in a log that is kept in a readily accessible location:
- (1) A list of identification numbers for equipment subject to 40 CFR 60, Subpart VVa.
 - (2) A list of identification numbers for equipment that are designated for no detectable emissions under the provisions of 40 CFR 60.482-2a(e), 40 CFR 60.482-3a(i), and 40 CFR 60.482-7a(f).

The designation of equipment as subject to the requirements of 40 CFR 60.482-2a(e), 40 CFR 60.482-3a(i), or 40 CFR 60.482-7a(f) shall be signed by the permittee. Alternatively, the permittee may establish a mechanism with the Administrator that satisfies this requirement.
 - (3) The dates of each compliance test as required in 40 CFR 60.482-2a(e), 40 CFR 60.482-3a(i), 40 CFR 60.482-4a, and 40 CFR 60.482-7a(f), the background level measured during each compliance test and. The maximum instrument reading measured at the equipment during each compliance test.
 - (4) A list of identification numbers for equipment in vacuum service.
 - (5) A list of identification numbers for equipment that the permittee designates as operating in VOC service less than 300 hr/yr in accordance with 40 CFR 60.482-1a(e), a description of the conditions under which the equipment is in VOC service, and rationale supporting the designation that it is in VOC service less than 300 hr/yr.
 - (6) The date and results of the weekly visual inspection for indications of liquids dripping from pumps in light liquid service.
 - (7) Records of the information specified in (i) through (vi) below, for monitoring instrument calibrations conducted according to sections 8.1.2 and 10 of Method 21 of appendix A-7 and 40 CFR 60.485a(b).
 - (i) Date of calibration and initials of operator performing the calibration.
 - (ii) Calibration gas cylinder identification, certification date, and certified concentration.
 - (iii) Instrument scale(s) used.
 - (iv) A description of any corrective action taken if the meter readout could not be adjusted to correspond to the calibration gas value in accordance with section 10.1 of Method 21 of appendix A-7.

SECTION B - EMISSION POINTS, EMISSIONS UNITS, APPLICABLE REGULATIONS, AND OPERATING CONDITIONS (CONTINUED)

- (v) Results of each calibration drift assessment required by 40 CFR 60.485a(b)(2) (i.e., instrument reading for calibration at end of monitoring day and the calculated percent difference from the initial calibration value).
 - (vi) If the permittee makes their own calibration gas, a description of the procedure used.
- (8) The connector monitoring schedule for each process unit as specified in 40 CFR 60.482-11a(b)(3)(v).
- f. Pursuant to 40 CFR 60.486a(f), the following information pertaining to all valves subject to the requirements of 40 CFR 60.482-7a(g) and (h), all pumps subject to the requirements of 40 CFR 60.482-2a(g), and all connectors subject to the requirements of 40 CFR 60.482-11a(e) shall be recorded in a log that is kept in a readily accessible location:
 - (1) A list of identification numbers for valves, pumps, and connectors that are designated as unsafe-to-monitor, an explanation for each valve, pump, or connector stating why the valve, pump, or connector is unsafe-to-monitor, and the plan for monitoring each valve, pump, or connector.
 - (2) A list of identification numbers for valves that are designated as difficult-to-monitor, an explanation for each valve stating why the valve is difficult-to-monitor, and the schedule for monitoring each valve.
- g. Pursuant to 40 CFR 60.486a(g), the following information shall be recorded for valves complying with 40 CFR 60.483-2a:
 - (1) A schedule of monitoring.
 - (2) The percent of valves found leaking during each monitoring period.
- h. Pursuant to 40 CFR 60.486a(h), the following information shall be recorded in a log that is kept in a readily accessible location:
 - (1) Design criterion required in 40 CFR 60.482-2a(d)(5) and 40 CFR 60.482-3a(e)(2) and explanation of the design criterion; and
 - (2) Any changes to this criterion and the reasons for the changes.
- i. Pursuant to 40 CFR 60.486a(i), the following information shall be recorded in a log that is kept in a readily accessible location for use in determining exemptions as provided in 40 CFR 60.480a(d):
 - (1) An analysis demonstrating the design capacity of the affected facility,
 - (2) A statement listing the feed or raw materials and products from the affected facilities and an analysis demonstrating whether these chemicals are heavy liquids or beverage alcohol, and
 - (3) An analysis demonstrating that equipment is not in VOC service.
- j. Pursuant to 40 CFR 60.486a(j), information and data used to demonstrate that a piece of equipment is not in VOC service shall be recorded in a log that is kept in a readily accessible location.
- k. Pursuant to 40 CFR 60.486a(k), the provisions of 40 CFR 60.7(b) and (d) do not apply to affected facilities subject to 40 CFR 60, Subpart VVa.

SECTION B - EMISSION POINTS, EMISSIONS UNITS, APPLICABLE REGULATIONS, AND OPERATING CONDITIONS (CONTINUED)

1. Pursuant to 401 KAR 52:020, Section 10, the permittee shall keep records, on a 5 year basis, of all monitoring requirements for units subject to 401 KAR 51:017.

6. Specific Reporting Requirements:

- a. Pursuant to 40 CFR 60.487a(a), the permittee shall submit semiannual reports to the Administrator.
- b. Pursuant to 40 CFR 60.487a(b), the initial semiannual report to the Administrator shall include the following information:
 - (1) Process unit identification.
 - (2) Number of valves subject to the requirements of 40 CFR 60.482-7a, excluding those valves designated for no detectable emissions under the provisions of 40 CFR 60.482-7a(f).
 - (3) Number of pumps subject to the requirements of 40 CFR 60.482-2a, excluding those pumps designated for no detectable emissions under the provisions of 40 CFR 60.482-2a(e) and those pumps complying with 40 CFR 60.482-2a(f).
 - (4) Number of connectors subject to the requirements of 40 CFR 60.482-11a.
- c. Pursuant to 40 CFR 60.487a(c), all semiannual reports to the Administrator shall include the following information, summarized from the information in 40 CFR 60.486a:
 - (1) Process unit identification.
 - (2) For each month during the semiannual reporting period,
 - (i) Number of valves for which leaks were detected as described in 40 CFR 60.482-7a(b) or 40 CFR 60.483-2a,
 - (ii) Number of valves for which leaks were not repaired as required in 40 CFR 60.482-7a(d)(1),
 - (iii) Number of pumps for which leaks were detected as described in 40 CFR 60.482-2a(b), 40 CFR (d)(4)(ii)(A) or (B), or (d)(5)(iii),
 - (iv) Number of pumps for which leaks were not repaired as required in 40 CFR 60.482-2a(c)(1) and (d)(6),
 - (v) Number of connectors for which leaks were detected as described in 40 CFR 60.482-11a(b),
 - (vi) Number of connectors for which leaks were not repaired as required in 40 CFR 60.482-11a(d), and
 - (vii) The facts that explain each delay of repair and, where appropriate, why a process unit shutdown was technically infeasible.
 - (3) Dates of process unit shutdowns which occurred within the semiannual reporting period.
 - (4) Revisions to items reported according to 40 CFR 60.487a(b), if changes have occurred since the initial report or subsequent revisions to the initial report.
- d. Pursuant to 40 CFR 60.487a(d), a permittee electing to comply with the provisions of 40 CFR 60.483-1a or 40 CFR 60.483-2a shall notify the Administrator of the alternative standard selected 90 days before implementing either of the provisions.

SECTION B - EMISSION POINTS, EMISSIONS UNITS, APPLICABLE REGULATIONS, AND OPERATING CONDITIONS (CONTINUED)

- e. Pursuant to 40 CFR 60.487a(e), the permittee shall report the results of all performance tests in accordance with 60.8.
- f. See **Section F**.

SECTION B - EMISSION POINTS, EMISSIONS UNITS, APPLICABLE REGULATIONS, AND OPERATING CONDITIONS (CONTINUED)**(EPN ET-1) Ethylene Wastewater Pre-treatment Plant**

Description - The wastewater pre-treatment plant receives and treats wastewater from various processes within the Ethylene Plant in order to remove benzene from the wastewater prior to discharge to the facility-wide secondary wastewater treatment plant. Vents from this system are controlled by either #8 & #9 furnaces (EPN# 327 & 328) or by the Ethylene Flare. The wastewater pre-treatment plant consists of approximately 562 valves, 17 relief valves, 2164 flanges and 25 pumps (Emissions from the fugitive components are reported under EU# 025, EPN FUG-ETH-YY) and the following tanks:

NOTE - The pipeline equipment count listed above reflects an accurate count of the equipment as of the date of issuance of this permit but is not intended to limit the permittee to the exact numbers specified. The permittee may add or remove pipeline equipment without a permit revision as long as the equipment continues to comply with the applicable requirements listed below and the changes do not result in significant increase in potential to emit (PTE).

TK-191 Equalization Tank (14,000 gals.)
TK-192A CPI Oil/Water Separator (11,800 gals.)
TK-192B CPI Oil/Water Separator (11,800 gals.)
TK-194A ISF Unit (3,100 gals.)
TK-194B ISF Unit (3,100 gals.)
TK-194C ISF Unit (3,100 gals.)
TK-195 Recovered Oil Tank (4,000 gals.)
TK-196 Oil Transfer Tank (2,000 gals.)
TK-198A Caustic Neutralization Tank (7,000 gals.)
TK-198B Caustic Neutralization Tank (7,000 gals.)
TK-201 Knockout Tank (1,000 gals.)
TK-202 Slop Oil Tank (1,000 gals.)
TK-211 Contaminated Water Collection Tank (650 gals.)
Construction commenced: 1992.

(EPN FF-1) Ethylene Plant-wide Uncontrolled Benzene Emissions

Description – (FF-1) includes various waste streams in the facility that are uncontrolled for benzene emissions from the Ethylene Stormwater System and water going to the Secondary Wastewater treatment after being treated in the Ethylene Wastewater Pre-Treatment Plant consists of the following fugitive components:

EU# 025C (EPN FF-1)

Light Liquid Flanges/connectors: 649

Light Liquid Valves: 177

APPLICABLE REGULATIONS:

401 KAR 59:095, New oil-effluent water separators. (EPN ET-1 only)

401 KAR 57:002, Section 1(2), 40 CFR 61, Subpart FF, National emission standard for benzene waste operations.

SECTION B - EMISSION POINTS, EMISSIONS UNITS, APPLICABLE REGULATIONS, AND OPERATING CONDITIONS (CONTINUED)

401 KAR 63:002, Section 2(4)(nn), 40 C.F.R. 63.1080 through 63.1097, Tables 1 and 2 (Subpart XX), National Emission Standards for Ethylene Manufacturing Process Units: Heat Exchange Systems and Waste Operations.

401 KAR 63:002, Section 2(4)(oo), 40 C.F.R. 63.1100 through 63.1114 (Subpart YY), National Emission Standards for Hazardous Air Pollutants for Source Categories: Generic Maximum Achievable Control Technology Standards.

1. Operating Limitations:

- a. Pursuant to 40 CFR 63.1103(e)(3) and Table 7, item (g)(1) of 40 CFR 63, Subpart YY, the permittee shall comply with the waste stream requirements of 40 CFR 63, Subpart XX.
- b. Pursuant to 40 CFR 63.1091, the permittee shall comply with 40 CFR 61, Subpart FF, National Emission Standards for Benzene Operations.
- c. For TK-191, TK-195, TK-196, TK-198A, TK-198B, TK-201, TK-202, and TK-211:
 - (1) Pursuant to 40 CFR 61.343(a)(1), the permittee shall install, operate, and maintain a fixed-roof and closed-vent system that routes all organic vapors vented from the tank to the control device.
 - (2) Pursuant to 40 CFR 61.343(a)(1)(i)(B), each opening shall be maintained in a closed, sealed position (e.g., covered by a lid that is gasketed and latched) at all times that waste is in the tank except when it is necessary to use the opening for waste sampling or removal, or for equipment inspection, maintenance, or repair.
 - (3) Pursuant to 40 CFR 61.343(d), except as provided in 40 CFR 61.350, when a broken seal or gasket or other problem is identified, or when detectable emissions are measured, first efforts at repair shall be made as soon as practicable, but not later than 45 calendar days after identification.
- d. For TK-192A, TK-192B, TK-194A, TK-194B, and TK-194C:
 - (1) Pursuant to 40 CFR 61.347(a)(1), the permittee shall install, operate, and maintain a fixed-roof and closed-vent system that routes all organic vapors vented from the oil-water separator to the control device.
 - (2) Pursuant to 40 CFR 61.347(a)(1)(i)(B), each opening shall be maintained in a closed, sealed position (e.g., covered by a lid that is gasketed and latched) at all times that waste is in the oil-water separator except when it is necessary to use the opening for waste sampling or removal, or for equipment inspection, maintenance, or repair.
 - (3) Pursuant to 40 CFR 61.347(c), except as provided in 40 CFR 61.350, when a broken seal or gasket or other problem is identified, or when detectable emissions are measured, first efforts at repair shall be made as soon as practicable, but not later than 15 calendar days after identification.
- e. Pursuant to 40 CFR 61.340(d), any gaseous stream from any of the waste management/treatment units that is routed to a fuel gas system (as defined in 40 CFR 61.341) is exempt from 40 CFR 61, Subpart FF. No testing, monitoring, recordkeeping, or reporting is required under 40 CFR 61, Subpart FF for any gaseous stream from a waste

SECTION B - EMISSION POINTS, EMISSIONS UNITS, APPLICABLE REGULATIONS, AND OPERATING CONDITIONS (CONTINUED)

management unit, treatment process, or wastewater treatment unit routed to a fuel gas system.

- f. Pursuant to 40 CFR 61.348(e) except as specified in 40 CFR 61.348(e)(3), if the treatment process or wastewater treatment system unit has any openings (e.g., access doors, hatches, etc.), all such openings shall be sealed (e.g., gasketed, latched, etc.) and kept closed at all times when waste is being treated, except during inspection and maintenance.
 - (1) Each seal, access door, and all other openings shall be checked by visual inspections initially and quarterly thereafter to ensure that no cracks or gaps occur and that openings are closed and gasketed properly.
 - (2) Except as provided in 40 CFR 61.350, when a broken seal or gasket or other problem is identified, first efforts at repair shall be made as soon as practicable, but not later than 15 calendar days after identification.
 - (3) If the cover and closed-vent system operate such that the treatment process and wastewater treatment system unit are maintained at a pressure less than atmospheric pressure, the owner or operator may operate the system with an opening that is not sealed and kept closed at all times if the following conditions are met:
 - (i) The purpose of the opening is to provide dilution air to reduce the explosion hazard;
 - (ii) The opening is designed to operate with no detectable emissions as indicated by an instrument reading of less than 500 ppmv above background, as determined initially and thereafter at least once per year by the methods specified in 40 CFR 61.355(h); and
 - (iii) The pressure is monitored continuously to ensure that the pressure in the treatment process and wastewater treatment system unit remain below atmospheric pressure.
- g. Pursuant to 40 CFR 61.349(a), for each closed-vent system and control device used to comply with standards in accordance with 40 CFR 61.343 through 61.348 of 40 CFR 61, Subpart FF, the owner or operator shall properly design, install, operate, and maintain the closed-vent system and control device in accordance with the following requirements:
 - (1) Pursuant to 40 CFR 61.349(a)(1)(ii), vent systems that contain any bypass line that could divert the vent stream away from a control device used to comply with the provisions 40 CFR 61, Subpart FF shall install, maintain, and operate according to the manufacturer's specifications a flow indicator that provides a record of vent stream flow away from the control device at least once every 15 minutes, except as provided in 40 CFR 61.349(a)(1)(ii)(B).
 - (2) Pursuant to 40 CFR 61.349(a)(1)(iii), all gauging and sampling devices shall be gas-tight except when gauging or sampling is taking place.
 - (3) Pursuant to 40 CFR 61.349(a)(1)(iv), for each closed-vent system complying with 40 CFR 61.349(a), one or more devices which vent directly to the atmosphere may be used on the closed-vent system provided each device remains in a closed, sealed position during normal operations except when the device needs to open to prevent physical damage or permanent deformation of the closed-vent system resulting from malfunction of the unit in accordance with good engineering and safety practices for handling flammable, explosive, or other hazardous materials.
 - (4) Pursuant to 40 CFR 61.349(a)(2), the control device shall be designed and operated in accordance with one the following conditions:

SECTION B - EMISSION POINTS, EMISSIONS UNITS, APPLICABLE REGULATIONS, AND OPERATING CONDITIONS (CONTINUED)

- (i) Pursuant to 40 CFR 61.349(a)(2)(i), an enclosed combustion device (e.g., a vapor incinerator, boiler, or process heater) shall meet one of the following conditions:
 - (A) Reduce the organic emissions vented to it by 95 weight percent or greater;
 - (B) Achieve a total organic compound concentration of 20 ppmv (as the sum of the concentrations for individual compounds using Method 18) on a dry basis corrected to 3 percent oxygen; or
 - (C) Provide a minimum residence time of 0.5 seconds at a minimum temperature of 760 °C (1,400 °F). If a boiler or process heater issued as the control device, then the vent stream shall be introduced into the flame zone of the boiler or process heater.
- (ii) Pursuant to 40 CFR 61.349(a)(2)(iii), a flare shall comply with the requirements of 40 CFR 60.18.
- (iii) Pursuant to 40 CFR 61.349(a)(2)(iv), a control device other than those described in 40 CFR 61.349 (a)(2)(i) through (iii) may be used provided that the following conditions are met:
 - (A) The device shall recover or control the organic emissions vented to it with an efficiency of 95 weight percent or greater, or shall recover or control the benzene emissions vented to it with an efficiency of 98 weight percent or greater.
 - (B) The permittee shall develop test data and design information that documents the control device will achieve an emission control efficiency of either 95 percent or greater for organic compounds or 98 percent or greater for benzene.
 - (C) The permittee shall identify:
 - a. The critical operating parameters that affect the emission control performance of the device;
 - b. The range of values of these operating parameters that ensure the emission control efficiency specified in 40 CFR 61.349(a)(2)(iv)(A) is maintained during operation of the device; and
 - c. How these operating parameters will be monitored to ensure the proper operation and maintenance of the device.
- (5) Pursuant to 40 CFR 61.349(b), each closed-vent system and control device used to comply with 40 CFR 61, Subpart FF shall be operated at all times when waste is placed in the waste management unit vented to the control device except when maintenance or repair of the waste management unit cannot be completed without a shutdown of the control device.
 - (i) Pursuant to 40 CFR 61.349(g), except as provided in 40 CFR 61.350, if visible defects are observed during an inspection, or if other problems are identified, or if detectable emissions are measured, a first effort to repair the closed-vent system and control device shall be made as soon as practicable but no later than 5 calendar days after detection. Repair shall be completed no later than 15 calendar days after the emissions are detected or the visible defect is observed.

Compliance Demonstration Method:

- (1) Pursuant to 40 CFR 61.349(c), the permittee shall demonstrate that each control device, except for a flare, achieves the appropriate conditions specified in 40 CFR 61.349 (a)(2) by using one of the following methods:

SECTION B - EMISSION POINTS, EMISSIONS UNITS, APPLICABLE REGULATIONS, AND OPERATING CONDITIONS (CONTINUED)

- (i) Engineering calculations in accordance with requirements specified in 40 CFR 61.356(f); or
 - (ii) Performance tests conducted using the test methods and procedures that meet the requirements specified in 40 CFR 61.355.
- (2) Pursuant to 40 CFR 61.349(d), an owner or operator shall demonstrate compliance of each flare in accordance with 40 CFR 61.349(a)(2)(iii).

2. Emission Limitations:

- a. Pursuant to 40 CFR 61.342(b), the permittee of a facility at which the total annual benzene quantity from facility waste is equal to or greater than 10 Mg/yr (11 ton/yr) as determined in 40 CFR 61.342(a) shall be in compliance with the requirements of 40 CFR 61.342(c) through (h).
- b. Pursuant to 40 CFR 61.342(e), as an alternative to the requirements specified in paragraphs 40 CFR 61.342(c) and (d), an owner or operator of a facility at which the total annual benzene quantity from facility waste is equal to or greater than 10 Mg/yr (11 ton/yr) as determined in 40 CFR 61.342(a) may elect to manage and treat the facility waste as follows:
 - (1) The owner or operator shall manage and treat facility waste with a flow-weighted annual average water content of less than 10 percent in accordance with the requirements of in 40 CFR 61.342(c)(1). [40 CFR 61.342(e)(1)]
 - (i) Remove or destroy the benzene contained in the waste using a treatment process or wastewater treatment system that complies with the standards specified in 40 CFR 61.348.
 - (A) 40 CFR 61.348(a)(3) - The intentional or unintentional reduction in the benzene concentration of a waste stream by dilution of the waste stream with other wastes or materials is not allowed.
 - (B) 40 CFR 61.348(a)(4) - The permittee may aggregate or mix together individual waste streams to create a combined waste stream for the purpose of facilitating treatment of waste to comply with the requirements of 40 CFR 61.348(a)(1) except as provided in 40 CFR 61.348(a)(5).
 - (ii) Comply with the standards specified in 40 CFR 61.343 through 61.347 for each waste management unit that receives or manages the waste stream prior to and during treatment of the waste stream in accordance with 40 CFR 61.342(c)(1)(i).
 - (iii) Each waste management unit used to manage or treat waste streams that will be recycled to a process shall comply with the standards specified in 40 CFR 61.343 through 61.347. Once the waste stream is recycled to a process, including to a tank used for the storage of production process feed, product, or product intermediates, unless this tank is used primarily for the storage of wastes, the material is no longer subject to 40 CFR 61.342(c).
 - (2) The permittee shall manage and treat facility waste [(including remediation and process unit turnaround waste) with a flow-weighted annual average water content of 10 percent or greater, on a volume basis as total water, and each waste stream that is mixed with water or wastes at any time such that the resulting mixture has an annual water content greater than 10 percent] so that the benzene quantity for the wastes must be equal to or less than 6.0 Mg/yr (6.6 ton/yr) as determined in 40 CFR 61.355(k).

SECTION B - EMISSION POINTS, EMISSIONS UNITS, APPLICABLE REGULATIONS, AND OPERATING CONDITIONS (CONTINUED)

- c. For TK-192 A&B and TK-194 A, B, and C: Pursuant to 401 KAR 59:095, Section 3, each of these vessels shall be equipped with a closed vent system and a control device. All gauging and sampling devices shall be gas-tight except when gauging and sampling are performed.

Compliance Demonstration Method:

- (1) Pursuant to 40 CFR 61.342(g), compliance with 40 CFR 61, Subpart FF will be determined by review of the facility records and results from tests and inspections using the methods and procedures specified in 40 CFR 61.355.
- (2) For TK-192A, TK-192B, TK-194A, TK-194B, and TK-194C: Pursuant to 40 CFR 61.347(b), the permittee shall conduct visual inspection of each roof, seal, access door, and all other openings initially and quarterly thereafter. Pursuant to 40 CFR 61.347(c), when a broken seal or gasket or other problem is identified, or when detectable emissions are measured, first efforts at repair shall be made within 15 days after identification.
- (3) Pursuant to 40 CFR 61.355(k)(4), the benzene in waste entering an enhanced biodegradation unit, as defined in 40 CFR 61.348(b)(2)(ii)(B), shall not be included in the determination of benzene quantity, determined in 40 CFR 61.355(k)(6), if the following conditions are met:
 - (i) The benzene concentration for each waste stream entering the enhanced biodegradation unit is less than 10 ppmw on a flow-weighted annual average basis, and
 - (ii) All prior waste management units managing the waste comply with 40 CFR 61.343, 40 CFR 61.344, 40 CFR 61.345, 40 CFR 61.346, 40 CFR 61.347 and 40 CFR 61.348(a).
- (4) Refer to EU#028 (EPN EE-5) Activated Sludge Biotreatment System/Secondary Wastewater Treatment System in the Westlake Vinyls, Inc. – Vinyls Plant permit V-19-016 for emission limitations.

3. Testing Requirements:

- a. Pursuant to 40 CFR 61.343(a)(1)(i)(A) standards for tanks and 40 CFR 61.347(a)(1)(i)(A) standards for oil/water separators, the cover and all openings (e.g., access hatches, sampling ports, and gauge wells) shall be designed to operate with no detectable emissions as indicated by an instrument reading of less than 500 ppmv above background, as determined initially and thereafter at least once per year by the methods specified in 40 CFR 61.355(h).
- b. Pursuant to 40 CFR 61.355(h), the permittee shall test equipment for compliance with no detectable emissions as required in 40 CFR 61.343 through 61.347, and 40 CFR 61.349 in accordance with the following requirements:
 - (1) Monitoring shall comply with Method 21 from appendix A of 40 CFR part 60.
 - (2) The detection instrument shall meet the performance criteria of Method 21.
 - (3) The instrument shall be calibrated before use on each day of its use by the procedures specified in Method 21.
 - (4) Calibration gases shall be:
 - (i) Zero air (less than 10 ppm of hydrocarbon in air); and
 - (ii) A mixture of methane or n-hexane and air at a concentration of approximately, but less than, 10,000 ppm methane or n-hexane.
 - (5) The background level shall be determined as set forth in Method 21.

SECTION B - EMISSION POINTS, EMISSIONS UNITS, APPLICABLE REGULATIONS, AND OPERATING CONDITIONS (CONTINUED)

- (6) The instrument probe shall be traversed around all potential leak interfaces as close as possible to the interface as described in Method 21.
- (7) The arithmetic difference between the maximum concentration indicated by the instrument and the background level is compared to 500 ppm for determining compliance.

4. Specific Monitoring Requirements:

- a. Pursuant to 40 CFR 61.354(a), except for a treatment process or waste stream complying with 40 CFR 61.348(d), the permittee shall monitor each treatment process or wastewater treatment system unit to ensure the unit is properly operated and maintained by one of the following monitoring procedures:
 - (1) Measure the benzene concentration of the waste stream exiting the treatment process complying with 40 CFR 61.348(a)(1)(i) at least once per month by collecting and analyzing one or more samples using the procedures specified in 40 CFR 61.355(c)(3).
 - (2) Install, calibrate, operate, and maintain according to manufacturer's specifications equipment to continuously monitor and record a process parameter (or parameters) for the treatment process or wastewater treatment system unit that indicates proper system operation. The permittee shall inspect at least once each operating day the data recorded by the monitoring equipment (e.g., temperature monitor or flow indicator) to ensure that the unit is operating properly.
- b. For TK-191, TK-195, TK-196, TK-198A, TK-198B, TK-201, TK-202, TK-211, TK-192A, TK-192B, TK-194A, TK-194B, and TK-194C: Pursuant to 40 CFR 61.343(c) and 40 CFR 61.347(c), each fixed-roof, seal, access door, and all other openings shall be checked by visual inspection initially and quarterly thereafter to ensure that no cracks or gaps occur and that access doors and other openings are closed and gasketed properly.
- c. Pursuant to 40 CFR 61.349(a)(1)(i), the permittee shall properly design, install, operate, and maintain the closed-vent system and control device to operate with no detectable emissions as indicated by an instrument reading of less than 500 ppmv above background, as determined initially and thereafter at least once per year by the methods specified in 40 CFR 61.355(h).
- d. Pursuant to 40 CFR 61.349(f), each closed-vent system and control device shall be visually inspected initially and quarterly thereafter. The visual inspection shall include inspection of ductwork and piping and connections to covers and control devices for evidence of visible defects such as holes in ductwork or piping and loose connections.
- e. Pursuant to 40 CFR 61.354(c), the permittee shall install, calibrate, maintain, and operate according to the manufacturer's specifications a device to continuously monitor the control device operation as specified in the following paragraphs, unless alternative monitoring procedures or requirements are approved for that facility by the Administrator. The permittee shall inspect at least once each operating day the data recorded by the monitoring equipment (e.g., temperature monitor or flow indicator) to ensure that the control device is operating properly.

SECTION B - EMISSION POINTS, EMISSIONS UNITS, APPLICABLE REGULATIONS, AND OPERATING CONDITIONS (CONTINUED)

- (1) Pursuant to 40 CFR 61.354(c)(3), for a flare, a monitoring device in accordance with 40 CFR 60.18(f)(2) equipped with a continuous recorder.
 - (2) Pursuant to 40 CFR 61.354(c)(9), for a control device subject to the requirements of 40 CFR 61.349(a)(2)(iv), devices to monitor the parameters as specified in 40 CFR 61.349(a)(2)(iv)(C).
- f. Pursuant to 40 CFR 61.354(b)(2), for each enhanced biodegradation unit that is the first exempt waste management unit in a treatment train, measure the benzene concentration of each waste stream entering the unit at least once per month by collecting and analyzing one or more samples using the procedures specified in 40 CFR 61.355(c)(3).

5. Specific Recordkeeping Requirements:

- a. Pursuant to 40 CFR 61.356(b), the permittee shall maintain records that identify each waste stream at the facility subject to 40 CFR 61, Subpart FF, and indicate whether or not the waste stream is controlled for benzene emissions in accordance with 40 CFR 61, Subpart FF. In addition the permittee shall maintain the following records:
 - (1) For each waste stream not controlled for benzene emissions in accordance with 40 CFR 61, Subpart FF, the records shall include all test results, measurements, calculations, and other documentation used to determine the following information for the waste stream: waste stream identification, water content, whether or not the waste stream is a process wastewater stream, annual waste quantity, range of benzene concentrations, annual average flow-weighted benzene concentration, and annual benzene quantity.
 - (2) For each waste stream exempt from 40 CFR 61.342(c)(1) in accordance with 40 CFR 61.342(c)(3), the records shall include:
 - (i) All measurements, calculations, and other documentation used to determine that the continuous flow of process wastewater is less than 0.02 liters (0.005 gallons) per minute or the annual waste quantity of process wastewater is less than 10 Mg/yr (11 ton/yr) in accordance with 40 CFR 61.342(c)(3)(i), or
 - (ii) All measurements, calculations, and other documentation used to determine that the sum of the total annual benzene quantity in all exempt waste streams does not exceed 2.0 Mg/yr (2.2 ton/yr) in accordance with 40 CFR 61.342(c)(3)(ii).
 - (3) For each facility where process wastewater streams are controlled for benzene emissions in accordance with 40 CFR 61.342(d), the records shall include for each treated process wastewater stream all measurements, calculations, and other documentation used to determine the annual benzene quantity in the process wastewater stream exiting the treatment process.
 - (4) For each facility where waste streams are controlled for benzene emissions in accordance with 40 CFR 61.342(e), the records shall include for each waste stream all measurements, including the locations of the measurements, calculations, and other documentation used to determine that the total benzene quantity does not exceed 6.0 Mg/yr (6.6 ton/yr).
 - (5) For each facility where the annual waste quantity for process unit turnaround waste is determined in accordance with 40 CFR 61.355(b)(5), the records shall include all test results, measurements, calculations, and other documentation used to determine the following information: identification of each process unit at the facility that undergoes turnarounds, the date of the most recent turnaround for each process unit, identification

SECTION B - EMISSION POINTS, EMISSIONS UNITS, APPLICABLE REGULATIONS, AND OPERATING CONDITIONS (CONTINUED)

- of each process unit turnaround waste, the water content of each process unit turnaround waste, the annual waste quantity determined in accordance with 40 CFR 61.355(b)(5), the range of benzene concentrations in the waste, the annual average flow-weighted benzene concentration of the waste, and the annual benzene quantity calculated in accordance with 40 CFR 61.355(a)(1)(iii).
- (6) For each facility where wastewater streams are controlled for benzene emissions in accordance with 40 CFR 61.348(b)(2), the records shall include all measurements, calculations, and other documentation used to determine the annual benzene content of the waste streams and the total annual benzene quantity contained in all waste streams managed or treated in exempt waste management units.
- b. Pursuant to 40 CFR 61.356(d) the permittee shall maintain engineering design documentation for all control equipment that is installed on the waste management unit. The documentation shall be retained for the life of the control equipment. If a control device is used, then the permittee shall maintain the control device records required by 40 CFR 61.356(f).
- c. Pursuant to 40 CFR 61.356(e), the permittee shall maintain the following records. The documentation shall be retained for the life of the unit.
- (1) A statement signed and dated by the permittee certifying that the unit is designed to operate at the documented performance level when the waste stream entering the unit is at the highest waste stream flow rate and benzene content expected to occur.
 - (2) If engineering calculations are used to determine treatment process or wastewater treatment system unit performance, then the permittee shall maintain the complete design analysis for the unit. The design analysis shall include for example the following information: Design specifications, drawings, schematics, piping and instrumentation diagrams, and other documentation necessary to demonstrate the unit performance.
 - (3) If performance tests are used to determine treatment process or wastewater treatment system unit performance, then the permittee shall maintain all test information necessary to demonstrate the unit performance.
 - (i) A description of the unit including the following information: type of treatment process; manufacturer name and model number; and for each waste stream entering and exiting the unit, the waste stream type (e.g., process wastewater, sludge, slurry, etc.), and the design flow rate and benzene content.
 - (ii) Documentation describing the test protocol and the means by which sampling variability and analytical variability were accounted for in the determination of the unit performance. The description of the test protocol shall include the following information: sampling locations, sampling method, sampling frequency, and analytical procedures used for sample analysis.
 - (iii) Records of unit operating conditions during each test run including all key process parameters.
 - (iv) All test results.
 - (4) If a control device is used, then the permittee shall maintain the control device records required by 40 CFR 61.356(f).

SECTION B - EMISSION POINTS, EMISSIONS UNITS, APPLICABLE REGULATIONS, AND OPERATING CONDITIONS (CONTINUED)

- d. Pursuant to 40 CFR 61.356(f), the permittee shall maintain the records of the closed-vent system and control device as specified in 40 CFR 61.356(f)(1) through (3) as applicable. The documentation shall be retained for the life of the control device.
- e. Pursuant to 40 CFR 61.356(g), the permittee shall maintain a record for each visual inspection required by 40 CFR 61.343 through 40 CFR 61.347 that identifies a problem (such as a broken seal, gap or other problem) which could result in benzene emissions. The record shall include the date of the inspection, waste management unit and control equipment location where the problem is identified, a description of the problem, a description of the corrective action taken, and the date the corrective action was completed.
- f. Pursuant to 40 CFR 61.356(h), the permittee shall maintain a record for each test of no detectable emissions required by 40 CFR 61.343 through 40 CFR 61.347 and 40 CFR 61.349. The record shall include the following information: date the test is performed, background level measured during test, and maximum concentration indicated by the instrument reading measured for each potential leak interface. If detectable emissions are measured at a leak interface, then the record shall also include the waste management unit, control equipment, and leak interface location where detectable emissions were measured, a description of the problem, a description of the corrective action taken, and the date the corrective action was completed.
- g. Pursuant to 40 CFR 61.356(i), for each treatment process and wastewater treatment system unit operated to comply with 40 CFR 61.348, the permittee shall maintain documentation that includes the following information regarding the unit operation:
 - (1) Dates of startup and shutdown of the unit.
 - (2) If measurements of waste stream benzene concentration are performed in accordance with 40 CFR 61.354(a)(1), the permittee shall maintain records that include date each test is performed and all test results.
 - (3) If a process parameter is continuously monitored in accordance with 40 CFR 61.354(a)(2), the permittee shall maintain records that include a description of the operating parameter (or parameters) to be monitored to ensure that the unit will be operated in conformance with these standards and the unit's design specifications, and an explanation of the criteria used for selection of that parameter (or parameters). This documentation shall be kept for the life of the unit.
 - (4) If measurements of waste stream benzene concentration are performed in accordance with 40 CFR 61.354(b), the permittee shall maintain records that include the date each test is performed and all test results.
 - (5) Periods when the unit is not operated as designed.
- h. Pursuant to 40 CFR 61.356(j), For each control device, the permittee shall maintain documentation that includes the following information regarding the control device operation:
 - (1) Dates of startup and shutdown of the closed-vent system and control device.
 - (2) A description of the operating parameter (or parameters) to be monitored to ensure that the control device will be operated in conformance with these standards and the control device's design specifications and an explanation of the criteria used for selection of

SECTION B - EMISSION POINTS, EMISSIONS UNITS, APPLICABLE REGULATIONS, AND OPERATING CONDITIONS (CONTINUED)

- that parameter (or parameters). This documentation shall be kept for the life of the control device.
- (3) Periods when the closed-vent system and control device are not operated as designed including all periods and the duration when:
 - (i) Any valve car-seal or closure mechanism required under 40 CFR 61.349(a)(1)(ii) is broken or the by-pass line valve position has changed.
 - (ii) The flow monitoring devices required under 40 CFR 61.349(a)(1)(ii) indicate that vapors are not routed to the control device as required.
 - (4) If a boiler or process heater is used, then the permittee shall maintain records of each occurrence when there is a change in the location at which the vent stream is introduced into the flame zone as required by 40 CFR 61.349(a)(2)(i)(C). For a boiler or process heater having a design heat input capacity less than 44 MW (150×10^6 BTU/hr), the owner or operator shall maintain continuous records of the temperature of the gas stream in the combustion zone of the boiler or process heater and records of all 3-hour periods of operation during which the average temperature of the gas stream in the combustion zone is more than 28 °C (50 °F) below the design combustion zone temperature. For a boiler or process heater having a design heat input capacity greater than or equal to 44 MW (150×10^6 BTU/hr), the owner or operator shall maintain continuous records of the parameter(s) monitored in accordance with the requirements of 40 CFR 61.354(c)(5).
 - (5) If a flare is used, then the owner or operator shall maintain continuous records of the flare pilot flame monitoring and records of all periods during which the pilot flame is absent.
 - (6) If an alternative operational or process parameter is monitored for a control device, as allowed in 40 CFR 61.354(e), then the permittee shall maintain records of the continuously monitored parameter, including periods when the device is not operated as designed.

6. Specific Reporting Requirements:

- a. Pursuant to 40 CFR 61.357(d)(5), If the permittee elects to comply with the alternative requirements of 40 CFR 61.342(e), then the report required by 40 CFR 61.357(d)(2) shall include a table presenting the following information for each waste stream:
 - (1) For each waste stream identified as not being controlled for benzene emissions in accordance with the requirements 40 CFR 61, Subpart FF; the table shall report the following information for the waste stream as determined at the point of waste generation: annual waste quantity, range of benzene concentrations, annual average flow-weighted benzene concentration, and annual benzene quantity.
 - (2) For each waste stream identified as being controlled for benzene emissions in accordance with the requirements of 40 CFR 61, Subpart FF; the table shall report the following information for the waste stream as determined at the applicable location described in 40 CFR 61.355(k)(2): Annual waste quantity, range of benzene concentrations, annual average flow-weighted benzene concentration, and annual benzene quantity.

SECTION B - EMISSION POINTS, EMISSIONS UNITS, APPLICABLE REGULATIONS, AND OPERATING CONDITIONS (CONTINUED)

- b. Pursuant to 40 CFR 61.357(d)(6), the permittee shall submit quarterly a certification that all of the inspections have been carried out as required by 40 CFR 61.343 and 40 CFR 61.347.
- c. Pursuant to 40 CFR 61.357(d)(7), the permittee shall submit a report quarterly that includes:
 - (1) If a treatment process or wastewater treatment system unit is monitored in accordance with 40 CFR 61.354(a)(1), then each period of operation during which the concentration of benzene in the monitored waste stream exiting the unit is equal to or greater than 10 ppmw.
 - (2) If a treatment process or wastewater treatment system unit is monitored in accordance with 40 CFR 61.354(a)(2), then each 3-hour period of operation during which the average value of the monitored parameter is outside the range of acceptable values or during which the unit is not operating as designed.
 - (3) If a treatment process or wastewater treatment system unit is monitored in accordance with 40 CFR 61.354 (b), then each period of operation during which the flow-weighted annual average concentration of benzene in the monitored waste stream entering the unit is equal to or greater than 10 ppmw and/or the total annual benzene quantity is equal to or greater than 1.0 Mg/yr.
 - (4) For a control device monitored in accordance with 40 CFR 61.354(c), each period of operation monitored during which any of the following conditions occur, as applicable to the control device:
 - (i) Each 3-hour period of operation during which the average temperature of the gas stream in the combustion zone of a thermal vapor incinerator, as measured by the temperature monitoring device, is more than 28°C below the design combustion zone temperature.
 - (ii) Each 3-hour period of operation during which the average temperature of the gas stream immediately before the catalyst bed of a catalytic vapor incinerator, as measured by the temperature monitoring device, is more than 28°C below the design gas stream temperature, and any 3-hour period during which the average temperature difference across the catalyst bed (i.e., the difference between the temperatures of the gas stream immediately before and after the catalyst bed), as measured by the temperature monitoring device, is less than 80 percent of the design temperature difference.
 - (iii) Each 3-hour period of operation during which the average temperature of the gas stream in the combustion zone of a boiler or process heater having a design heat input capacity less than 44 MW, as measured by the temperature monitoring device, is more than 28°C below the design combustion zone temperature.
 - (iv) Each 3-hour period of operation during which the temperature of the condenser exhaust vent stream is more than 6°C (11 °F) above the design average exhaust vent stream temperature, or the temperature of the coolant fluid exiting the condenser is more than 6°C above the design average coolant fluid temperature at the condenser outlet.
 - (v) Each period in which the pilot flame of a flare is absent.

SECTION B - EMISSION POINTS, EMISSIONS UNITS, APPLICABLE REGULATIONS, AND OPERATING CONDITIONS (CONTINUED)

- (vi) Each occurrence when there is a change in the location at which the vent stream is introduced into the flame zone of a boiler or process heater as required by 40 CFR 61.349(a)(2)(i)(C).
- (vii) Each 3-hour period of operation during which the parameters monitored are outside the range of values specified in 40 CFR 61.349(a)(2)(iv)(C), or any other periods specified by the Administrator for a control device subject to the requirements of 40 CFR 61.349(a)(2)(iv).
- (5) For a cover and closed-vent system monitored in accordance with 40 CFR 61.354(g), the permittee shall submit a report quarterly to the Administrator that identifies any period in which the pressure in the waste management unit is equal to or greater than atmospheric pressure.
- d. Pursuant to 40 CFR 61.357(d)(8), the permittee shall submit annually a report that summarizes all inspections required by 40 CFR 61.343 and 61.347 during which detectable emissions are measured or a problem that could result in benzene emissions is identified.
- e. See **Section F**.

7. Specific Control Equipment Operating Conditions:

See EU# 007A Ethylene Flare requirements.

8. Alternate Operating Scenarios:

At times during plant shutdowns and when Ethylene Flare is not available, the River VCU (EPN 342) may be used as an alternative control device for (EPN ET-1) the Ethylene WWT Pre-treatment Unit.

SECTION B - EMISSION POINTS, EMISSIONS UNITS, APPLICABLE REGULATIONS, AND OPERATING CONDITIONS (CONTINUED)**EU# 008 (EPN 342)****River VCU (ET-23)**

Rated Capacity:

18.0 mmBtu/hr, process fuel gas-fired

Construction:

1989

Description - The John Zink Model GV-ZTOF Hydrocarbon Vapor Combustion Unit burns the vent streams from the aromatic gasoline and ethylene fuel oil barge loading operations. It is a natural gas fired unit with a rated capacity burner of 18 mmBtu/hr. At times during plant shutdowns and when Ethylene Flare is not available, the River VCU (EPN 342) may be used as an alternative control device for (EPN ET-1) the Ethylene WWT Pre-treatment Unit.

APPLICABLE REGULATIONS:

401 KAR 50:012, General Application, applies to the River VCU.

401 KAR 63:002, Section 2(4)(q), 40 C.F.R. 63.560 through 63.568 (Subpart Y), National Emission Standards for Marine Tank Vessel Loading Operations.

1. Operating Limitations:

Pursuant to 401 KAR 50:012, Section 1(c)(2), in the absence of a standard specified in these administrative regulations, all major air contaminant sources shall as a minimum apply control procedures that are reasonable, available, and practical.

Compliance Demonstration Method:

The River VCU should operate whenever aromatic gas or fuel oil is being loaded into barges at the river. Refer to **3. Testing Requirements** and **5. Specific Recordkeeping Requirements**.

2. Emission Limitations:

None

3. Testing Requirements:

- a. Pursuant to 40 CFR 63.565(l), the permittee shall calculate an annual estimate of HAP emissions, excluding commodities exempted by 40 CFR 63.560(d), from marine tank vessel loading operations. Emission estimates and emission factors shall be based on test data, or if test data is not available, shall be based on measurement or estimating techniques generally accepted in industry practice for operating conditions at the source.
- b. 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:

Pursuant to 401 KAR 52:020, Section 10, the permittee shall monitor the actual throughputs by commodity.

5. Specific Recordkeeping Requirements:

Pursuant to 40 CFR 63.567(j)(4), the permittee of marine tank vessel loading operations specified in 40 CFR 63.560(a)(3) shall retain records of the emissions estimates determined in 40 CFR 63.565(l) and records of their actual throughputs by commodity, for five (5) years.

SECTION B - EMISSION POINTS, EMISSIONS UNITS, APPLICABLE REGULATIONS, AND OPERATING CONDITIONS (CONTINUED)

6. Specific Reporting Requirements:

See Section F.

7. Specific Control Equipment Operating Conditions:

None

8. Alternate Operating Scenarios:

At times during plant shutdowns and EU# 007A (Ethylene Flare) is not available, the River VCU (EPN 342) may be used as an alternative control device for (EPN ET-1) the Ethylene WWT Pre-treatment Unit.

SECTION B - EMISSION POINTS, EMISSIONS UNITS, APPLICABLE REGULATIONS, AND OPERATING CONDITIONS (CONTINUED)

EU# 023 (EPN 364A) No. 4A Cooling Water Tower (Non-contact cooling tower)
Date of Construction: 1963 (Upgraded in 2017)
Maximum Processing Rate: 1.125 mmGal/hr
Control: Mist eliminator, 0.001% drift loss

APPLICABLE REGULATIONS:

401 KAR 61:020, Existing process operations.

401 KAR 63:002, Section 2(4)(nn), 40 C.F.R. 63.1080 through 63.1097, Tables 1 and 2 (Subpart XX), National Emission Standards for Ethylene Manufacturing Process Units: Heat Exchange Systems and Waste Operations.

401 KAR 63:002, Section 2(4)(oo), 40 C.F.R. 63.1100 through 63.1114 (Subpart YY), National Emission Standards for Hazardous Air Pollutants for Source Categories: Generic Maximum Achievable Control Technology Standards.

PRECLUDED REGULATIONS:

401 KAR 63:002, Section 2(4)(j), 40 C.F.R. 63.400 through 63.407, Table 1 (Subpart Q), National Emission Standards for Hazardous Air Pollutants for Industrial Process Cooling Towers

1. Operating Limitations:

- a. Pursuant to 401 KAR 52:020, Section 10, to preclude 40 CFR 63, Subpart Q, the permittee of an industrial process cooling tower (IPCT) shall not use chromium-based water treatment chemicals in any affected IPCT.

Compliance Demonstration Method:

See 5. Specific Recordkeeping Requirements i.

- b. Pursuant to 40 CFR 63.1103(e)(3) and Table 7, item (h) of 40 CFR 63, Subpart YY, the heat exchanger shall comply with the heat exchanger system requirements of 40 CFR 63, Subpart XX.
- c. Pursuant to 40 CFR 63.1084(f), beginning no later than the compliance dates specified in 40 CFR 63.1081(a), a heat exchange system is no longer exempt from the requirements in 40 CFR 63.1085 and 40 CFR 63.1086 if it meets the criteria in 40 CFR 63.1084 (c) or (d); instead, a heat exchange system is exempt from the requirements in 40 CFR 63.1085 and 40 CFR 63.1086 if it meets any one of the criteria in 40 CFR 63.1084(a), (b), or (e).
 - (1) The heat exchange system operates with the minimum pressure on the cooling water side at least 35 kilopascals greater than the maximum pressure on the process side.
 - (2) The heat exchange system contains an intervening cooling fluid, containing less than 5 percent by weight of total HAP listed in Table 1 to 40 CFR 63, Subpart XX, between the process and the cooling water. This intervening fluid must serve to isolate the cooling water from the process fluid and must not be sent through a cooling tower or discharged. For purposes of 40 CFR 63.1084, discharge does not include emptying for maintenance purposes.

SECTION B - EMISSION POINTS, EMISSIONS UNITS, APPLICABLE REGULATIONS, AND OPERATING CONDITIONS (CONTINUED)

- (3) The recirculating or once-through heat exchange system cools process fluids that contain less than 5 percent by weight of total HAP listed in Table 1 to 40 CFR 63, Subpart XX.
- d. Pursuant to 40 CFR 63.1085(f), beginning no later than the compliance dates specified in 40 CFR 63.1081(a), the requirements specified in 40 CFR 63.1087(a) and 40 CFR (b) and 40 CFR 63.1088(a) through (c), no longer apply; instead, if the permittee detects a leak, then the permittee must repair it according to 40 CFR 63.1087(c) and (d), unless repair is delayed according to 40 CFR 63.1088(d).
- e. Pursuant to 40 CFR 63.1087(c), beginning no later than the compliance dates specified in 40 CFR 63.1081(a), if a leak is detected using the methods described in 40 CFR 63.1086(e), the permittee must repair the leak to reduce the concentration or mass emissions rate to below the applicable leak action level as soon as practicable, but no later than 45 days after identifying the leak, except as specified in 40 CFR 63.1088(d). Repair must include re-monitoring at the monitoring location where the leak was identified according to the method specified in 40 CFR 63.1086(e)(3) to verify that the total strippable hydrocarbon concentration or total hydrocarbon mass emissions rate is below the applicable leak action level. Repair may also include performing the additional monitoring in 40 CFR 63.1087(d) to verify that the total strippable hydrocarbon concentration is below the applicable leak action level. Actions that can be taken to achieve repair include but are not limited to:
- (1) Physical modifications to the leaking heat exchanger, such as welding the leak or replacing a tube;
 - (2) Blocking the leaking tube within the heat exchanger;
 - (3) Changing the pressure so that water flows into the process fluid;
 - (4) Replacing the heat exchanger or heat exchanger bundle; or
 - (5) Isolating, bypassing, or otherwise removing the leaking heat exchanger from service until it is otherwise repaired.
- f. Pursuant to 40 CFR 63.1088(d), beginning no later than the compliance dates specified in 40 CFR 63.1081(a), the permittee may delay repair when one of the conditions in 40 CFR 63.1088(d)(1) or (2) is met and the leak is less than the delay of repair action level specified in 40 CFR 63.1088(d)(3). The permittee must determine if a delay of repair is necessary as soon as practicable, but no later than 45 days after first identifying the leak.
- (1) If the repair is technically infeasible without a shutdown and the total strippable hydrocarbon concentration or total hydrocarbon mass emissions rate is initially and remains less than the delay of repair action level for all monitoring periods during the delay of repair, then the permittee may delay repair until the next scheduled shutdown of the heat exchange system. If, during subsequent monitoring, the delay of repair action level is exceeded, then the permittee must repair the leak within 30 days of the monitoring event in which the leak was equal to or exceeded the delay of repair action level.
 - (2) If the necessary equipment, parts, or personnel are not available and the total strippable hydrocarbon concentration or total hydrocarbon mass emissions rate is initially and remains less than the delay of repair action level for all monitoring periods during the delay of repair, then the permittee may delay the repair for a maximum of 120 calendar

SECTION B - EMISSION POINTS, EMISSIONS UNITS, APPLICABLE REGULATIONS, AND OPERATING CONDITIONS (CONTINUED)

days. The permittee must demonstrate that the necessary equipment, parts, or personnel were not available. If, during subsequent monitoring, the delay of repair action level is exceeded, then the permittee must repair the leak within 30 days of the monitoring event in which the leak was equal to or exceeded the delay of repair action level.

(3) The delay of repair action level is a total strippable hydrocarbon concentration (as methane) in the stripping gas of 62 ppmv. The delay of repair action level is assessed as described in 40 CFR 66.1088(d)(3)(i) or (ii), as applicable.

(i) For all other heat exchange systems, the delay of repair action level is exceeded if a measurement value of the sample taken from a location specified in 40 CFR 63.1086(e)(1)(i) and (ii) or 40 CFR 63.1086(e)(2)(i) equals or exceeds the delay of repair action level.

Compliance Demonstration Method:

For compliance, refer to **Section F.9** for compliance reporting.

2. Emission Limitations:

a. Pursuant to 401 KAR 61:020, Section 3(1)(a), no person shall cause, suffer, allow or permit any continuous emission into the open air from a control device or stack associated with any affected facility which is equal to or greater than forty (40) percent opacity.

b. Pursuant to 401 KAR 61:020, Section 3(2)(a), The permittee shall not cause, suffer, allow or permit the emission into the open air of particulate matter from any affected facility which is in excess of the quantity specified in 401 KAR 61:020, Appendix A:

(1) For process weight rates of 0.50 ton/hour or less: $E = 2.58$

(2) For process weight rates > 0.5 ton/hour up to 30.0 tons/hour: $E = 4.10 * P^{0.67}$

(3) For process weight rates > 30.00 tons/hour: $E = 55.0 * P^{0.11} - 40$

Compliance Demonstration Method:

The permittee is assumed to be in compliance with **2. Emission Limitations** a. and b. based on the information provided in the application.

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. Pursuant to 40 CFR 63.1085(e), beginning no later than the compliance dates specified in 40 CFR 63.1081(a), the requirements specified in 40 CFR 63.1086(a) through (d) no longer apply; instead, the permittee must monitor the cooling water for the presence of total strippable hydrocarbons that indicate a leak according to 40 CFR 63.1086(e).

b. Pursuant to 40 CFR 63.1086(e), beginning no later than the compliance dates specified in 40 CFR 63.1081(a), the permittee must perform monitoring to identify leaks of total strippable hydrocarbons from each heat exchange system subject to the requirements of 40 CFR 63, Subpart XX according to the procedures in 40 CFR 63.1086(e)(1) through (5).

SECTION B - EMISSION POINTS, EMISSIONS UNITS, APPLICABLE REGULATIONS, AND OPERATING CONDITIONS (CONTINUED)

- (1) For each closed loop recirculating heat exchange system, the permittee must collect and analyze a sample from the location(s) described in either 40 CFR 63.1086(e)(1)(i) or (ii).
 - (i) Each cooling tower return line or any representative riser within the cooling tower prior to exposure to air for each heat exchange system.
 - (ii) Selected heat exchanger exit line(s), so that each heat exchanger or group of heat exchangers within a heat exchange system is covered by the selected monitoring location(s).
 - (2) If the permittee complies with the total strippable hydrocarbon concentration leak action level as specified in 40 CFR 63.1086(e)(4), the permittee must comply with the requirements in 40 CFR 63.1086(e)(3)(i).
 - (i) The permittee must determine the total strippable hydrocarbon concentration (in parts per million by volume (ppmv) as methane) at each monitoring location using the "Air Stripping Method (Modified El Paso Method) for Determination of Volatile Organic Compound Emissions from Water Sources" (incorporated by reference, see 40 CFR 63.14) using a flame ionization detector analyzer for on-site determination as described in Section 6.1 of the Modified El Paso Method.
 - (3) For each heat exchange system, the permittee must comply with the applicable monitoring frequency and leak action level, as defined in 40 CFR 63.1086(e)(4)(i) through (iii).
 - (i) For each heat exchange system that is part of an ethylene production affected source that commenced construction or reconstruction on or before December 6, 2000, the permittee must monitor quarterly using a leak action level defined as a total strippable hydrocarbon concentration (as methane) in the stripping gas of 6.2 ppmv or, for heat exchange systems with a recirculation rate of 10,000 gallons per minute or less, the permittee may monitor quarterly using a leak action level defined as a total hydrocarbon mass emissions rate from the heat exchange system (as methane) of 0.18 kg/hr. If a leak is detected as specified in 40 CFR 63.1086(e)(5), then the permittee must monitor monthly until the leak has been repaired according to the requirements in 40 CFR 63.1087(c) or (d). Once the leak has been repaired according to the requirements in 40 CFR 63.1087(c) or (d), quarterly monitoring for the heat exchange system may resume.
 - (4) A leak is defined as described in 40 CFR 63.1086(e)(5)(i) or (ii), as applicable.
 - (i) For all other heat exchange systems, a leak is detected if a measurement value of the sample taken from a location specified in 40 CFR 63.1086(e)(1)(i), (ii), or (e)(2)(i) equals or exceeds the leak action level.
- c. Pursuant to 40 CFR 63.1087(d), beginning no later than the compliance dates specified in 40 CFR 63.1081(a), if the permittee detects a leak when monitoring a cooling tower return line according to 40 CFR 63.1086(e)(1)(i), the permittee may conduct additional monitoring of each heat exchanger or group of heat exchangers associated with the heat exchange system for which the leak was detected, as provided in 40 CFR 63.1086(e)(1)(ii). If no leaks are detected when monitoring according to the requirements of 40 CFR 63.1086(e)(1)(ii), the heat exchange system is considered to have met the repair requirements through re-monitoring of the heat exchange system, as provided in 40 CFR 63.1087(c).

SECTION B - EMISSION POINTS, EMISSIONS UNITS, APPLICABLE REGULATIONS, AND OPERATING CONDITIONS (CONTINUED)

- d. Pursuant to 401 KAR 52:020, Section 10, the permittee shall monitor the hours of operation of the cooling tower on a weekly basis.
- e. Pursuant to 401 KAR 52:020, Section 10, the permittee shall monitor the total dissolved solids concentration or conductivity in cooling water of the cooling tower on a weekly basis.

5. Specific Recordkeeping Requirements:

The permittee shall keep the records in 40 CFR 63.1089(d), according to the requirements of 40 CFR 63.1109(c).

- a. Pursuant to 40 CFR 63.1089(d), beginning no later than the compliance dates specified in 40 CFR 63.1081(a), the requirement to keep documentation of delay of repair as specified in 40 CFR 63.1088(a) through (c) no longer applies; instead, the permittee must keep documentation of delay of repair as specified in 40 CFR 63.1189(d)(1) through (4).
 - (1) The reason(s) for delaying repair.
 - (2) A schedule for completing the repair as soon as practical.
 - (3) The date and concentration or mass emissions rate of the leak as first identified and the results of all subsequent monitoring events during the delay of repair.
 - (4) An estimate of the potential total hydrocarbon emissions from the leaking heat exchange system or heat exchanger for each required delay of repair monitoring interval following the applicable procedures in 40 CFR 63.1189(d)(4)(i) through (iii).
 - (i) If the permittee complies with the total strippable hydrocarbon concentration leak action level, as specified in 40 CFR 63.1086(e)(4), the permittee must calculate the mass emissions rate by complying with the requirements of 40 CFR 63.1086(e)(3)(ii) or by determining the mass flow rate of the cooling water at the monitoring location where the leak was detected. If the monitoring location is an individual cooling tower riser, determine the total cooling water mass flow rate to the cooling tower. Cooling water mass flow rates may be determined using direct measurement, pump curves, heat balance calculations, or other engineering methods. If the permittee determines the mass flow rate of the cooling water, calculate the mass emissions rate by converting the stripping gas leak concentration (in ppmv as methane) to an equivalent liquid concentration, in parts per million by weight (ppmw), using equation 7-1 from "Air Stripping Method (Modified El Paso Method) for Determination of Volatile Organic Compound Emissions from Water Sources" (incorporated by reference—see 40 CFR 63.14) and multiply the equivalent liquid concentration by the mass flow rate of the cooling water.
 - (ii) For delay of repair monitoring intervals prior to repair of the leak, calculate the potential total hydrocarbon emissions for the leaking heat exchange system or heat exchanger for the monitoring interval by multiplying the mass emissions rate, determined in 40 CFR 63.1086(e)(3)(ii) or 40 CFR 63.1189(d)(4)(i), by the duration of the delay of repair monitoring interval. The duration of the delay of repair monitoring interval is the time period starting at midnight on the day of the previous monitoring event or at midnight on the day the repair would have been completed if the repair had not been delayed, whichever is later, and ending at midnight of the day of the current monitoring event.

SECTION B - EMISSION POINTS, EMISSIONS UNITS, APPLICABLE REGULATIONS, AND OPERATING CONDITIONS (CONTINUED)

- (iii) For delay of repair monitoring intervals ending with a repaired leak, calculate the potential total hydrocarbon emissions for the leaking heat exchange system or heat exchanger for the final delay of repair monitoring interval by multiplying the duration of the final delay of repair monitoring interval by the mass emissions rate determined for the last monitoring event prior to the re-monitoring event used to verify the leak was repaired. The duration of the final delay of repair monitoring interval is the time period starting at midnight of the day of the last monitoring event prior to re-monitoring to verify the leak was repaired and ending at the time of the re-monitoring event that verified that the leak was repaired.
- b. Pursuant to 401 KAR 52:020, Section 10, the permittee shall maintain records of the hours of operation of the cooling tower and the total dissolved solids concentration or conductivity on a weekly basis.
 - c. Pursuant to 401 KAR 52:020, Section 10, all routine and non-routine maintenance activities performed on the corresponding control device shall be recorded.
 - d. Pursuant to 401 KAR 52:020, Section 10, the permittee shall calculate and maintain monthly records of PM emissions based on the following equation:

$$E_{PM} = C_w \times \frac{60 \text{ min}}{\text{hour}} \times H_M \times \frac{8.34 \text{ pound water}}{\text{gallon}} \times TDS \times \frac{DL}{100}$$

Where:

E_{PM} = PM emission rate from the cooling tower during the month (pounds per month)
 C_w = Water circulation rate in (gallons per minute)
 H_M = Hours of operation during the month (hours per month)
 DL = Drift loss from the mist eliminator (percent)
 TDS = Monthly average total dissolved solids in the cooling water (ppmw)

- e. Pursuant to 401 KAR 52:020, Section 10, to preclude 40 CFR 63, Subpart Q, for EPN 364A, the permittee shall maintain records to demonstrate that chromium-based water treatment chemicals are not used.

6. Specific Reporting Requirements:

- a. Pursuant to 40 CFR 63.1090(f), for heat exchange systems subject to 40 CFR 63.1085(e) and (f), Periodic Reports must include the information specified in 40 CFR 63.1090(f)(1) through (5), in lieu of the information specified in 40 CFR 63.1090(a) through (e).
 - (1) The number of heat exchange systems at the plant site subject to the monitoring requirements in 40 CFR 63.1085(e) and (f) during the reporting period.
 - (2) The number of heat exchange systems subject to the monitoring requirements in 40 CFR 63.1085(e) and (f) at the plant site found to be leaking during the reporting period.
 - (3) For each monitoring location where the total strippable hydrocarbon concentration or total hydrocarbon mass emissions rate was determined to be equal to or greater than the applicable leak definitions specified in 40 CFR 63.1086(e)(5) during the reporting period, identification of the monitoring location (e.g., unique monitoring location or

SECTION B - EMISSION POINTS, EMISSIONS UNITS, APPLICABLE REGULATIONS, AND OPERATING CONDITIONS (CONTINUED)

- heat exchange system ID number), the measured total strippable hydrocarbon concentration or total hydrocarbon mass emissions rate, the date the leak was first identified, and, if applicable, the date the source of the leak was identified;
- (4) For leaks that were repaired during the reporting period (including delayed repairs), identification of the monitoring location associated with the repaired leak, the total strippable hydrocarbon concentration or total hydrocarbon mass emissions rate measured during re-monitoring to verify repair, and the re-monitoring date (i.e., the effective date of repair); and
 - (5) For each delayed repair, identification of the monitoring location associated with the leak for which repair is delayed, the date when the delay of repair began, the date the repair is expected to be completed (if the leak is not repaired during the reporting period), the total strippable hydrocarbon concentration or total hydrocarbon mass emissions rate and date of each monitoring event conducted on the delayed repair during the reporting period, and an estimate of the potential total hydrocarbon emissions over the reporting period associated with the delayed repair.

b. See **Section F**.

SECTION B - EMISSION POINTS, EMISSIONS UNITS, APPLICABLE REGULATIONS, AND OPERATING CONDITIONS (CONTINUED)

EU# 379 (EPN 379) EMACT Applicable Maintenance Vents

This is applicable to a vent designated as a maintenance vent because the vent is only used as a result of startup, shutdown, maintenance, or inspection of equipment where equipment is emptied, depressurized, degassed, or placed into service.

APPLICABLE REGULATIONS:

401 KAR 63:002, Section 2(4)(oo), 40 C.F.R. 63.1100 through 63.1114 (Subpart YY), National Emission Standards for Hazardous Air Pollutants for Source Categories: Generic Maximum Achievable Control Technology Standards.

1. Operating Limitations:

- a. Pursuant to 40 CFR 63.1103(e)(5)(i), prior to venting to the atmosphere, remove process liquids from the equipment as much as practical and depressurize the equipment to either: a flare meeting the requirements specified in 40 CFR 63.1103(e)(4), or a non-flare control device meeting the requirements specified in 40 CFR 63.982(c)(2) of 40 CFR 63, Subpart SS, until one of the following conditions, as applicable, is met.
 - (1) The concentration of the vapor in the equipment served by the maintenance vent is less than 10 percent of its lower explosive limit (LEL).
 - (2) If there is no ability to measure the concentration of the vapor in the equipment based on the design of the equipment, the pressure in the equipment served by the maintenance vent is reduced to 5 pounds per square inch gauge (psig) or less. Upon opening the maintenance vent, active purging of the equipment cannot be used until the concentration of the vapors in the maintenance vent (or inside the equipment if the maintenance is a hatch or similar type of opening) is less than 10 percent of its LEL.
 - (3) The equipment served by the maintenance vent contains less than 50 pounds of total volatile organic compounds (VOC).
 - (4) If, after applying best practices to isolate and purge equipment served by a maintenance vent, none of the applicable criterion in 40 CFR 63.1103(e)(5)(i)(A) through (C) can be met prior to installing or removing a blind flange or similar equipment blind, then the pressure in the equipment served by the maintenance vent must be reduced to 2 psig or less before installing or removing the equipment blind. During installation or removal of the equipment blind, active purging of the equipment may be used provided the equipment pressure at the location where purge gas is introduced remains at 2 psig or less.
- b. Pursuant to 40 CFR 63.1103(e)(5)(ii), except for maintenance vents complying with the alternative in 40 CFR 63.1103(e)(5)(i)(C), the permittee must determine the concentration of the vapor or, if applicable, equipment pressure using process instrumentation or portable measurement devices and follow procedures for calibration and maintenance according to manufacturer's specifications.
- c. Pursuant to 40 CFR 63.1103(e)(5)(iii), for maintenance vents complying with the alternative in 40 CFR 63.1103(e)(5)(i)(C), the permittee must determine mass of VOC in the equipment served by the maintenance vent based on the equipment size and contents after considering any contents drained or purged from the equipment. Equipment size may

SECTION B - EMISSION POINTS, EMISSIONS UNITS, APPLICABLE REGULATIONS, AND OPERATING CONDITIONS (CONTINUED)

be determined from equipment design specifications. Equipment contents may be determined using process knowledge.

Compliance Demonstration Method:

See. 5. Specific Recordkeeping Requirements.

2. Emission Limitations:

None

3. Testing Requirements:

Pursuant to 401 KAR 50:045, Section 1, testing shall be conducted at such times as may be requested by the Cabinet.

4. Specific Monitoring Requirements:

None

5. Specific Recordkeeping Requirements:

a. Pursuant to 40 CFR 63.1109(f), for each maintenance vent opening subject to the requirements in 40 CFR 63.1103(e)(5), the permittee must keep the applicable records specified in 40 CFR 63.1109(f)(1) through (5).

(1) The permittee must maintain standard site procedures used to deinventory equipment for safety purposes (e.g., hot work or vessel entry procedures) to document the procedures used to meet the requirements in 40 CFR 63.1103(e)(5). The current copy of the procedures must be retained and available on-site at all times. Previous versions of the standard site procedures, as applicable, must be retained for 5 years.

(2) If complying with the requirements of 40 CFR 63.1103(e)(5)(i)(A) and the concentration of the vapor at the time of the vessel opening exceeds 10 percent of its LEL, records that identify the maintenance vent, the process units or equipment associated with the maintenance vent, the date of maintenance vent opening, and the concentration of the vapor at the time of the vessel opening.

(3) If complying with the requirements of 40 CFR 63.1103(e)(5)(i)(B) and either the vessel pressure at the time of the vessel opening exceeds 5 psig or the concentration of the vapor at the time of the active purging was initiated exceeds 10 percent of its LEL, records that identify the maintenance vent, the process units or equipment associated with the maintenance vent, the date of maintenance vent opening, the pressure of the vessel or equipment at the time of discharge to the atmosphere and, if applicable, the concentration of the vapors in the equipment when active purging was initiated.

(4) If complying with the requirements of 40 CFR 63.1103(e)(5)(i)(C), records of the estimating procedures used to determine the total quantity of VOC in equipment and the type and size limits of equipment that contain less than 50 pounds of VOC at the time of maintenance vent opening. For each maintenance vent opening of equipment that contains greater than 50 pounds of VOC for which the deinventory procedures specified in 40 CFR 63.1109(f)(1) are not followed or for which the equipment opened exceeds the type and size limits established in the records specified in this paragraph, records that identify the maintenance vent, the process units or equipment associated with the maintenance vent, the date of maintenance vent opening, and records used to

SECTION B - EMISSION POINTS, EMISSIONS UNITS, APPLICABLE REGULATIONS, AND OPERATING CONDITIONS (CONTINUED)

estimate the total quantity of VOC in the equipment at the time the maintenance vent was opened to the atmosphere.

- (5) If complying with the requirements of 40 CFR 63.1103(e)(5)(i)(D), identification of the maintenance vent, the process units or equipment associated with the maintenance vent, records documenting actions taken to comply with other applicable alternatives and why utilization of this alternative was required, the date of maintenance vent opening, the equipment pressure and concentration of the vapors in the equipment at the time of discharge, an indication of whether active purging was performed and the pressure of the equipment during the installation or removal of the blind if active purging was used, the duration the maintenance vent was open during the blind installation or removal process, and records used to estimate the total quantity of VOC in the equipment at the time the maintenance vent was opened to the atmosphere for each applicable maintenance vent opening.

6. Specific Reporting Requirements:

- a. Pursuant to 40 CFR 63.1110(e)(5), for maintenance vents subject to the requirements 40 CFR 63.1103(e)(5), Periodic Reports must include the information specified in 40 CFR 63.1110(e)(5)(i) through (iv) for any release exceeding the applicable limits in 40 CFR 63.1103(e)(5)(i). For the purposes of 40 CFR 63.1110(e)(5), the permittee complying with 40 CFR 63.1103(e)(5)(i)(D) must report each venting event conducted under those provisions and include an explanation for each event as to why utilization of this alternative was required.
- (1) Identification of the maintenance vent and the equipment served by the maintenance vent.
 - (2) The date and time the maintenance vent was opened to the atmosphere.
 - (3) The LEL, vessel pressure, or mass of VOC in the equipment, as applicable, at the start of atmospheric venting. If the 5 psig vessel pressure option in 40 CFR 63.1103(e)(5)(i)(B) was used and active purging was initiated while the concentration of the vapor was 10 percent or greater of its LEL, also include the concentration of the vapors at the time active purging was initiated.
 - (4) An estimate of the mass of organic HAP released during the entire atmospheric venting event.
- b. Refer to **Section F**.

SECTION C - INSIGNIFICANT ACTIVITIES

The following listed activities have been determined to be insignificant activities for this source pursuant to 401 KAR 52:020, Section 6. Although these activities are designated as insignificant the permittee must comply with the applicable regulation. Process and emission control equipment at each insignificant activity subject to an opacity standard shall be inspected monthly and a qualitative visible emissions evaluation made. Results of the inspection, evaluation, and any corrective action shall be recorded in a log.

<u>EPN</u>	<u>Description</u>	<u>Generally Applicable Regulation</u>
WESTLAKE ETHYLENE PLANT		
316	Injection Oil Tank (7,500 gallons)	None
318	n-Propanol Tank (3,000 gallons)	None
325	Fuel Oil Loading/ Unloading	None
331	Inhibitor Make-up Tank (1,000 gallons)	None
337	Ethylene Storm-water Tank (250,000 gallons)	None
341	Fuel Stabilizer Tank (1,000 gallons)	None
350 – 353	Four Ethylene Spheres (215,000 gallons)	None
354 – 357	Four Propylene Bullets (36,000 gallons)	None
358 - 359	Two C4 Spheres (108,000 gallons)	None
361	Turbinol/Lube Oil Tote Tanks < 500 gallons	None
365	Antifoulant Chemical Tank (1,000 gallons)	None
369	Inhibitor Tote Tanks < 500 gallons	None
372	Miscellaneous Treatment Chemical Tanks and Vendor-Supplied Totes < 500 gallons	None
374	Cooling Tower #4 – Chemical Treatment Tank B 1,000 gallons	None
375	Miscellaneous Additive and Treatment – Chemical Bag Dumping	None
376	Miscellaneous Treatment Chemical Tanks and Vendor-Supplied Totes < 500 gallons	None
377	Oxygen Scavenger Tank, 805 gal	None
378	Corrosion Inhibitor (Amine) Tank, 1,000 gal	None
380	Equipment Openings not Subject to 40 CFR 63, Subpart YY	None

SECTION D - SOURCE EMISSION LIMITATIONS AND TESTING REQUIREMENTS

1. As required by Section 1b of the *Cabinet Provisions and Procedures for Issuing Title V Permits* incorporated by reference in 401 KAR 52:020, Section 26; compliance with annual emissions and processing limitations contained in this permit, shall be based on emissions and processing rates for any twelve (12) consecutive months.
2. Nitrogen Dioxide, Particulate Matter (PM/PM₁₀/PM_{2.5}), Sulfur Dioxide, VOC, single and combined HAP emissions, measured by applicable reference methods, or an equivalent or alternative method specified in 40 C.F.R. Chapter I, or by a test method specified in the state implementation plan shall not exceed the respective limitations specified herein.
3. **Source Operating Limitations:**
 - a. Pursuant to 401 KAR 52:020, Section 10, the Maximum Hourly Firing Rate on a 24-hour average basis and Annual Average Firing Rate on a 12-month rolling basis shall not exceed the limits listed in **1. Operating Limitations** in **Section B** for each emission unit listed below:

Emission Units

005A-C	(EPN 305-307)
005D	(EPN 311)
006A-B	(EPN 327-328)
006C	(EPN 329)
RRH	(EPN 314)

Compliance Demonstration Method:

- (1) For compliance with the Maximum Hourly Firing Rate on a 24-hour average basis, for each emission unit listed above, the permittee shall maintain records of the hourly consumption of natural gas, hydrogen gas, and process fuel gas (PFG) (including natural gas, ethylene plant fuel gas, hydrogen, propane, ethane, recovered flare gas, and mixtures thereof) on a pounds per hour basis, as well as the hourly heat content (HC) of the process fuel gas used and its density; and calculate the actual hourly firing rate using the following equations:

$$NG_{\text{Firing Rate}} \left(\frac{\text{mmBtu}}{\text{hr}} \right) = NG_{\text{Use}} \left(\frac{\text{lb}}{\text{hr}} \right) \times 23,900 \left(\frac{\text{Btu}}{\text{lb}} \right) \times \frac{1 \text{ mmBtu}}{10^6 \text{ Btu}}$$

$$H_2_{\text{Firing Rate}} \left(\frac{\text{mmBtu}}{\text{hr}} \right) = H_{2\text{Use}} \left(\frac{\text{lb}}{\text{hr}} \right) \times 56,400 \left(\frac{\text{Btu}}{\text{lb}} \right) \times \frac{1 \text{ mmBtu}}{10^6 \text{ Btu}}$$

$$PFG_{\text{Firing Rate}} \left(\frac{\text{mmBtu}}{\text{hr}} \right) = PFG_{\text{Use}} \left(\frac{\text{lb}}{\text{hr}} \right) \times PFG_{\text{HC Hourly}} \left(\frac{\text{Btu}}{\text{scf}} \right) \times \frac{1}{\rho_{\text{PFG}}} \left(\frac{\text{scf}}{\text{lb}} \right) \times \frac{1 \text{ mmBtu}}{10^6 \text{ Btu}}$$

$$\text{Actual 24-Hourly Firing Rate} \left(\frac{\text{mmBtu}}{24\text{-hr}} \right) = \frac{\sum_{n=1}^{24} (NG_{\text{Firing Rate}} + H_2_{\text{Firing Rate}} + PFG_{\text{Firing Rate}})}{24 \text{ hours}}$$

- (2) For compliance with the Annual Average Firing Rate for each emission unit listed above the permittee shall calculate and maintain records of the monthly and 12-month rolling average firing rate. The actual monthly firing rate shall be based on the monthly

SECTION D - SOURCE EMISSION LIMITATIONS AND TESTING REQUIREMENTS (CONTINUED)

consumption of natural gas, hydrogen gas, and process fuel gas (PFG) (including natural gas, ethylene plant fuel gas, hydrogen, propane, ethane, recovered flare gas, and mixtures thereof), as well as the monthly average heat content (HC) of the process fuel gas and its density; using the following equations:

$$NG_{\text{Firing Rate}} \left(\frac{\text{mmBtu}}{\text{month}} \right) = NG_{\text{Use}} \left(\frac{\text{lb}}{\text{month}} \right) \times 23,900 \left(\frac{\text{Btu}}{\text{lb}} \right) \times \frac{1 \text{ mmBtu}}{10^6 \text{ Btu}}$$

$$H_{2\text{Firing Rate}} \left(\frac{\text{mmBtu}}{\text{month}} \right) = H_{2\text{Use}} \left(\frac{\text{lb}}{\text{month}} \right) \times 56,400 \left(\frac{\text{Btu}}{\text{lb}} \right) \times \frac{1 \text{ mmBtu}}{10^6 \text{ Btu}}$$

$$PFG_{\text{Firing Rate}} \left(\frac{\text{mmBtu}}{\text{month}} \right) = PFG_{\text{Use}} \left(\frac{\text{lb}}{\text{month}} \right) \times PFG \text{ HC}_{\text{Monthly}} \left(\frac{\text{Btu}}{\text{scf}} \right) \times \frac{1}{\rho_{\text{PFG}}} \left(\frac{\text{scf}}{\text{lb}} \right) \times \frac{1 \text{ mmBtu}}{10^6 \text{ Btu}}$$

$$\text{Actual Monthly Firing Rate} \left(\frac{\text{mmBtu}}{\text{month}} \right) = \sum \left(NG_{\text{Firing Rate}} + H_{2\text{Firing Rate}} + PFG_{\text{Firing Rate}} \right)$$

- b. Pursuant to 401 KAR 52:020, Section 10, the permittee shall maintain and operate a Fenceline Monitoring Mitigation Project in accordance with Appendix 2.1. of the Consent Decree 2:22-cv-01577-JDC-KK between United States of America and Westlake Chemical OpCo LP, entered on October 26, 2022, as follows:

The permittee must post to a publicly available website each individual sample result for each monitor, each biweekly annual average concentration difference value (once annual averages are available), and any corrective action plan submitted to EPA pursuant to **3. Source Operating Limitations** b.(1)(vii) (corrective action plans posted to the website may be redacted to protect confidential business information). The permittee must post each individual sample result for each monitor within 30 Days of the end of the biweekly sampling period or within 30 Days of sampling collected pursuant to the “alternative sampling frequency for burden reduction” requirements set forth in **3. Source Operating Limitations** b.(1)(v)(C). The permittee must post each annual average difference value within 45 Days of the sampling period that allows the creation of a new annual average difference value. The data must be presented in a tabular format.

(1) Monitoring Requirements.

- (i) The permittee must commence sampling along the property boundary of Vinyls Plant. The permittee must collect and analyze the samples in accordance with Methods 325A and 325B of Appendix A to 40 C.F.R. Part 63 (Test Methods – Pollutant Measurement Methods From Various Waste Media) (hereafter “Rule Appendix A”), and **3. Source Operating Limitations** b.(1)(ii) through (vii).
- (ii) The target analyte for the Fenceline Monitoring System is benzene.
- (iii) Siting of monitors. The permittee must determine the passive monitor locations comprising each Fenceline Monitoring System in accordance with Section 8.2 of Method 325A of Rule Appendix A, with the exception of the number of

SECTION D - SOURCE EMISSION LIMITATIONS AND TESTING REQUIREMENTS (CONTINUED)

duplicates and blanks, which will be determined pursuant to 40 C.F.R. 63.658(c)(3).

- (A) As it pertains to this Fenceline Monitoring Mitigation Project, “known sources of VOCs,” as used in Section 8.2.1.3 in Method 325A of Rule Appendix A for siting passive monitors, means a wastewater treatment unit, process unit, or any emission source requiring HAP control according to the requirements of any state or federal air permit applicable to the Vinyls Plant, including marine vessel loading operations. For marine loading operations that are located offshore, one passive monitor should be sited on the shoreline adjacent to the dock. For purposes of **3. Source Operating Limitations** b.(1)(iii), an additional monitor is not required if the only emission sources within 50 meters of the monitoring boundary are equipment leak sources satisfying all of the requirements in 40 C.F.R. 63.658(c)(1)(i) through (iv).
- (B) If there are 19 or fewer monitoring locations, the permittee shall collect at least one co-located duplicate sample per sampling period and at least one field blank per sampling period. If there are 20 or more monitoring locations, the permittee shall collect at least two co-located duplicate samples per sampling period and at least one field blank per sampling period, as described in 40 C.F.R. 63.658(c)(3). The co-located duplicates may be collected at any one of the perimeter sampling locations.
- (C) The permittee must follow the procedure in Section 9.6 of Method 325B of Rule Appendix A to determine the detection limit of benzene for each sampler used to collect samples and co-located samples and blanks. Each monitor used to conduct sampling in accordance with **3. Source Operating Limitations** b.(1)(iii)(C) must have a detection limit that is at least an order of magnitude lower than the benzene action level.
- (iv) Collection of meteorological data. The permittee must collect and record meteorological data according to the applicable requirements in **3. Source Operating Limitations** b.(1)(iv)(A) and (B).
 - (A) The permittee must collect and record the average temperature during each sampling period using either an on-site meteorological station in accordance with Section 8.3 of Method 325A of Rule Appendix A or, alternatively, using data from a United States Weather Service (USWS) meteorological station provided the USWS meteorological station is within 40 kilometers (25 miles) of Westlake Vinyls Inc.
 - (B) If an on-site meteorological station is used, the permittee must follow the calibration and standardization procedures for meteorological measurements in EPA-454/B-08-002.
<http://www3.epa.gov/ttnamti1/files/ambient/met/Volume IV Meteorological Measurements.pdf>.
- (v) Sampling Frequency. The permittee must use a sampling period and sampling frequency as follows:
 - (A) *Sampling period.* A 14-Day sampling period must be used, unless a shorter sampling period is determined to be necessary under **3. Source Operating Limitations** b.(1)(vii). A sampling period is defined as the period during which a sampling tube is deployed at a specific sampling location with the

SECTION D - SOURCE EMISSION LIMITATIONS AND TESTING REQUIREMENTS (CONTINUED)

diffusive sampling end cap in-place. The sampling period does not include the time required to analyze the sample. For the purpose of **3. Source Operating Limitations b.(1)(v)**, a 14-Day sampling period may be no shorter than 13 calendar days and no longer than 15 calendar days, but the routine sampling period must be 14 calendar days.

- (B) *Base sampling frequency.* Except as provided in **3. Source Operating Limitations b.(1)(v)(C)**, the frequency of sample collection must be once each contiguous 14-Day sampling period, such that the next 14-Day sampling period begins immediately upon the completion of the previous 14-Day sampling period.
- (C) *Alternative sampling frequency for burden reduction.* When an individual monitor consistently, as defined in **3. Source Operating Limitations b.(1)(v)(C)(I)** through (5), yields results at or below $0.9 \mu\text{g}/\text{m}^3$, the permittee may elect to use the applicable minimum sampling frequency specified in **3. Source Operating Limitations b.(1)(v)(C)(I)** through (5) for that individual monitoring site. When calculating Δc (as defined in **3. Source Operating Limitations b.(1)(vi)**) for the monitoring period when using this alternative for burden reduction, zero must be substituted for the sample result for the monitoring site for any period where a sample is not taken.
- (1) If every sample at an individual monitoring site is at or below $0.9 \mu\text{g}/\text{m}^3$ for 2 years (52 consecutive samples), every other sampling period can be skipped for that individual monitoring site, i.e., sampling can occur approximately once per month.
- (2) If every sample at an individual monitoring site that is monitored at the frequency specified in **3. Source Operating Limitations b.(1)(v)(C)(I)** is at or below $0.9 \mu\text{g}/\text{m}^3$ for 2 years (i.e., 26 consecutive “monthly” samples), five 14-Day sampling periods can be skipped for that individual monitoring site following each period of sampling, i.e., sampling will occur approximately once per quarter.
- (3) If every sample at an individual monitoring site that is monitored at the frequency specified in **3. Source Operating Limitations b.(1)(v)(C)(2)** is at or below $0.9 \mu\text{g}/\text{m}^3$ for 2 years (i.e., 8 consecutive quarterly samples), twelve 14-Day sampling periods can be skipped for that individual monitoring site following each period of sampling, i.e., sampling will occur twice a year.
- (4) If every sample at an individual monitoring site that is monitored at the frequency specified in **3. Source Operating Limitations b.(1)(v)(C)(3)** is at or below $0.9 \mu\text{g}/\text{m}^3$ for an 2 years (i.e., 4 consecutive semi-annual samples), only one sample per year is required for that individual monitoring site. For yearly sampling, samples must occur at least 10 months but no more than 14 months apart.
- (5) If at any time a sample for an individual monitoring site that is monitored at the frequency specified in **3. Source Operating Limitations b.(1)(v)(C)(I)** through (5) returns a result that is above $0.9 \mu\text{g}/\text{m}^3$, that sampling site must return to the original sampling requirements of contiguous 14-Day sampling periods with no skip periods for one quarter

SECTION D - SOURCE EMISSION LIMITATIONS AND TESTING REQUIREMENTS (CONTINUED)

(six 14-Day sampling periods). If every sample collected during this quarter is at or below $0.9 \mu\text{g}/\text{m}^3$, the permittee may revert back to the reduced monitoring frequency applicable for that individual monitoring site immediately prior to the sample reading exceeding $0.9 \mu\text{g}/\text{m}^3$. If any sample collected this quarter is above $0.9 \mu\text{g}/\text{m}^3$, that individual monitoring site must return to the original sampling requirements of contiguous 14-Day sampling periods with no skip periods for a minimum of two years. The burden reduction requirements can be used again for that monitoring site once the requirements of **3. Source Operating Limitations b.(1)(v)(C)(I)** are met again, i.e., after 52 contiguous 14-Day samples with no results above $0.9 \mu\text{g}/\text{m}^3$.

- (vi) **Action Level.** Within 45 Days of completion of each sampling period, the permittee must determine whether the results are above or below the action level as follows:
 - (A) Calculation of the Δc . The permittee must determine the benzene difference concentration (Δc) for each 14-Day sampling period by determining the highest and lowest sample results for benzene concentrations from the sample pool and calculating the Δc as the difference in these concentrations. The permittee must adhere to the following procedures when one or more samples for the sampling period are below the method detection limit for benzene:
 - (1) If the lowest detected value of benzene is below detection, the permittee must use zero as the lowest sample result when calculating Δc .
 - (2) If all sample results are below the method detection limit, the permittee must use the method detection limit as the highest sample result.
 - (B) The permittee must calculate the annual average Δc based on the average of the 26 most recent 14-Day sampling periods. The permittee must update this annual average value after receiving the results of each subsequent 14-Day sampling period (i.e., on a “rolling” basis).
 - (C) The action level for benzene is 9 micrograms per cubic meter ($\mu\text{g}/\text{m}^3$) on an annual average basis. If the annual average Δc value for benzene is less than or equal to $9 \mu\text{g}/\text{m}^3$, the concentration is below the action level. If the annual average Δc value for benzene is greater than $9 \mu\text{g}/\text{m}^3$, the concentration is above the action level, and the permittee must conduct a root cause analysis and corrective action in accordance with **3. Source Operating Limitations b.(1)(vii)**.
- (vii) **Root Cause Analysis and Corrective Action.** Within 5 Days of determining that the action level has been exceeded for any annual average Δc and no longer than 50 Days after completion of the sampling period, the permittee must initiate a root cause analysis to determine the cause of such exceedance and to determine appropriate corrective action, such as those described in **3. Source Operating Limitations b.(1)(vii)(A) through (D)**. The root cause analysis and initial corrective action analysis must be completed and initial corrective actions taken no later than 45 Days after determining there is an exceedance. Root cause analysis and corrective action may include, but are not limited to:
 - (A) Leak inspection using Method 21 of 40 C.F.R. Part 60, Appendix A-7 and repairing any leaks found.

SECTION D - SOURCE EMISSION LIMITATIONS AND TESTING REQUIREMENTS (CONTINUED)

- (B) Leak inspection using optical gas imaging and repairing any leaks found.
- (C) Visual inspection to determine the cause of the high benzene emissions and implementing repairs to reduce the level of emissions.
- (D) Employing progressively more frequent sampling, analysis and meteorology (e.g., using shorter sampling periods for Methods 325A and 325B of Appendix A of 40 C.F.R. Part 63, or using active sampling techniques).

If, after completing the corrective action analysis and corrective actions such as those described in **3. Source Operating Limitations** b.(1)(vii), the Δc value for the next 14-Day sampling period for which the sampling start time begins after the completion of the corrective actions is greater than $9 \mu\text{g}/\text{m}^3$ or if all corrective action measures identified require more than 45 Days to implement, the permittee must develop a corrective action plan that describes the corrective action(s) completed to date, additional measures that the permittee proposes to employ to reduce benzene concentrations in question below the action level, and a schedule for completion of these measures. The permittee must submit the corrective action plan to EPA within 60 Days after receiving the analytical results indicating that the Δc value for the 14-Day sampling period following the completion of the initial corrective action is greater than $9 \mu\text{g}/\text{m}^3$ or, if no initial corrective actions were identified, no later than 60 Days following the completion of the corrective action analysis required in **3. Source Operating Limitations** b.(1)(vii).

- (viii) Alternative Test Method. The permittee may submit for review and approval pursuant to the EPA a request to use an alternative test method as provided in 40 C.F.R. 63.658(k).

4. Source Recordkeeping Requirements:

- a. Pursuant to 401 KAR 52:020, Section 10, the permittee shall keep records of the actual Maximum Hourly Firing Rate on a 24-hour average basis and actual Annual Average Firing Rate on a 12-month rolling basis in accordance with **3. Source Emission Limitations**.
- b. Pursuant to 401 KAR 52:020, Section 10, the permittee shall keep records of the tons of ethylene produced at the facility on a monthly and 12-month rolling basis.

5. Source Reporting Requirements:

- a. See **Section F**.
- b. Until the termination of CD 2:22-cv-01577-JDC-KK between United States of America and Westlake Vinyls, Inc. the permittee shall comply **5. Source Reporting Requirements** b. as follows:

The permittee must submit Fenceline Monitoring Project Reports for the Calvert City Plant as part of each Semi-Annual Report. The Fenceline Monitoring Project Reports must contain the following information [CD, Paragraph 56]:

 - (1) In spreadsheet format, the individual sample results for each monitor comprising the Fenceline Monitoring System, each bi-weekly annual average benzene concentration difference value (i.e., the annual average Δc based on the average of the 26 most recent 14-Day sampling periods) once the data from 26 sampling periods are available (determined in accordance with **3. Source Operating Limitations** b.(1)(vii)), and the

SECTION D - SOURCE EMISSION LIMITATIONS AND TESTING REQUIREMENTS (CONTINUED)

- corresponding meteorological data for the relevant monitoring periods. The first two columns of each spreadsheet will list respectively the date and time for each sample taken; and
- (2) A detailed description of the findings of any root cause analysis and corrective action(s) undertaken pursuant to **3. Source Operating Limitations** b.(1)(vii), including the known results of the corrective action(s) and the anticipated emissions reductions (in TPY per pollutant).

For the purpose of determining the cause of an Action Level exceedance, the permittee may submit and discuss additional data collected by it or by third parties in the reports required pursuant to **3. Source Operating Limitations** b.(1)(viii) and/or **5. Source Reporting Requirements** b. If the permittee concludes that an exceedance of the Action Level described in **3. Source Operating Limitations** b.(1)(vi) was caused by an offsite source(s), that conclusion does not relieve the permittee of its obligation to perform the Root Cause investigation described in **3. Source Operating Limitations** b.(1)(vii).

SECTION E - SOURCE CONTROL EQUIPMENT REQUIREMENTS

Pursuant to 401 KAR 50:055, Section 2(5), at all times, including periods of startup, shutdown and malfunction, owners and operators shall, to the extent practicable, maintain and operate any affected facility including associated air pollution control equipment in a manner consistent with good air pollution control practice for minimizing emissions. Determination of whether acceptable operating and maintenance procedures are being used will be based on information available to the Division which may include, but is not limited to, monitoring results, opacity observations, review of operating and maintenance procedures, and inspection of the source.

SECTION F - MONITORING, RECORDKEEPING, AND REPORTING REQUIREMENTS

1. Pursuant to Section 1b-IV-1 of the *Cabinet Provisions and Procedures for Issuing Title V Permits* incorporated by reference in 401 KAR 52:020, Section 26, when continuing compliance is demonstrated by periodic testing or instrumental monitoring, the permittee shall compile records of required monitoring information that include:
 - a. Date, place as defined in this permit, and time of sampling or measurements;
 - b. Analyses performance dates;
 - c. Company or entity that performed analyses;
 - d. Analytical techniques or methods used;
 - e. Analyses results; and
 - f. Operating conditions during time of sampling or measurement.
2. Records of all required monitoring data and support information, including calibrations, maintenance records, and original strip chart recordings, and copies of all reports required by the Division for Air Quality, shall be retained by the permittee for a period of five (5) years and shall be made available for inspection upon request by any duly authorized representative of the Division for Air Quality [Sections 1b-IV-2 and 1a-8 of the *Cabinet Provisions and Procedures for Issuing Title V Permits* incorporated by reference in 401 KAR 52:020, Section 26].
3. In accordance with the requirements of 401 KAR 52:020, Section 3(1)h, the permittee shall allow authorized representatives of the Cabinet to perform the following during reasonable times:
 - a. Enter upon the premises to inspect any facility, equipment (including air pollution control equipment), practice, or operation;
 - b. To access and copy any records required by the permit;
 - c. Sample or monitor, at reasonable times, substances or parameters to assure compliance with the permit or any applicable requirements.Reasonable times are defined as during all hours of operation, during normal office hours; or during an emergency.
4. No person shall obstruct, hamper, or interfere with any Cabinet employee or authorized representative while in the process of carrying out official duties. Refusal of entry or access may constitute grounds for permit revocation and assessment of civil penalties.
5. Summary reports of any monitoring required by this permit shall be submitted to the Regional Office listed on the front of this permit at least every six (6) months during the life of this permit, unless otherwise stated in this permit. For emission units that were still under construction or which had not commenced operation at the end of the 6-month period covered by the report and are subject to monitoring requirements in this permit, the report shall indicate that no monitoring was performed during the previous six months because the emission unit was not in operation [Sections 1b-V-1 of the *Cabinet Provisions and Procedures for Issuing Title V Permits* incorporated by reference in 401 KAR 52:020, Section 26].

SECTION F - MONITORING, RECORDKEEPING, AND REPORTING REQUIREMENTS (CONTINUED)

6. The semi-annual reports are due by January 30th and July 30th of each year. All reports shall be certified by a responsible official pursuant to 401 KAR 52:020, Section 23. If continuous emission and opacity monitors are required by regulation or this permit, data shall be reported in accordance with the requirements of 401 KAR 59:005, General Provisions, Section 3(3). All deviations from permit requirements shall be clearly identified in the reports.
7. In accordance with the provisions of 401 KAR 50:055, Section 1, the owner or operator shall notify the Regional Office listed on the front of this permit concerning startups, shutdowns, or malfunctions as follows:
 - a. When emissions during any planned shutdowns and ensuing startups will exceed the standards, notification shall be made no later than three (3) days before the planned shutdown, or immediately following the decision to shut down, if the shutdown is due to events which could not have been foreseen three (3) days before the shutdown.
 - b. When emissions due to malfunctions, unplanned shutdowns and ensuing startups are or may be in excess of the standards, notification shall be made as promptly as possible by telephone (or other electronic media) and shall be submitted in writing upon request.
8. The permittee shall promptly report deviations from permit requirements, including those attributable to upset conditions as defined in the permit, the probable cause of such deviations, and any corrective actions or preventive measures taken shall be submitted to the Regional Office listed on the front of this permit. Where the underlying applicable requirement contains a definition of prompt or otherwise specifies a time frame for reporting deviations, that definition or time frame shall govern. Where the underlying applicable requirement does not identify a specific time frame for reporting deviations, prompt reporting, as required by Sections 1b-V, 3 and 4 of the *Cabinet Provisions and Procedures for Issuing Title V Permits* incorporated by reference in 401 KAR 52:020, Section 26, shall be defined as follows:
 - a. For emissions of a hazardous air pollutant or a toxic air pollutant (as identified in an applicable regulation) that continue for more than an hour in excess of permit requirements, the report must be made within 24 hours of the occurrence.
 - b. For emissions of any regulated air pollutant, excluding those listed in F.8.a., that continue for more than two hours in excess of permit requirements, the report must be made within 48 hours.
 - c. All deviations from permit requirements, including those previously reported, shall be included in the semiannual report required by F.6.
9. Pursuant to 401 KAR 52:020, Title V permits, Section 21, the permittee shall annually certify compliance with the terms and conditions contained in this permit, by completing and returning a Compliance Certification Form (DEP 7007CC) (or an alternative approved by the regional office) to the Regional Office listed on the front of this permit and the U.S. EPA in accordance with the following requirements:
 - a. Identification of the term or condition;
 - b. Compliance status of each term or condition of the permit;
 - c. Whether compliance was continuous or intermittent;
 - d. The method used for determining the compliance status for the source, currently and over the reporting period.

SECTION F - MONITORING, RECORDKEEPING, AND REPORTING REQUIREMENTS (CONTINUED)

- e. For an emissions unit that was still under construction or which has not commenced operation at the end of the 12-month period covered by the annual compliance certification, the permittee shall indicate that the unit is under construction and that compliance with any applicable requirements will be demonstrated within the timeframes specified in the permit.
- f. The certification shall be submitted by January 30th of each year. Annual compliance certifications shall be sent to the following addresses:

Division for Air Quality
Paducah Regional Office
130 Eagle Nest Drive
Paducah, KY 42003

U.S. EPA Region IV
Air Enforcement Branch
Atlanta Federal Center
61 Forsyth St. SW
Atlanta, GA 30303-8960

- 10. In accordance with 401 KAR 52:020, Section 22, the permittee shall provide the Division with all information necessary to determine its subject emissions within 30 days of the date the Kentucky Emissions Inventory System (KYEIS) emissions survey is mailed to the permittee.

SECTION G - GENERAL PROVISIONS

1. General Compliance Requirements

- a. The permittee shall comply with all conditions of this permit. Noncompliance shall be a violation of 401 KAR 52:020, Section 3(1)(b), and a violation of Federal Statute 42 USC 7401 through 7671q (the Clean Air Act). Noncompliance with this permit is grounds for enforcement action including but not limited to termination, revocation and reissuance, revision or denial of a permit [Section 1a-3 of the *Cabinet Provisions and Procedures for Issuing Title V Permits* incorporated by reference in 401 KAR 52:020, Section 26].
- b. The filing of a request by the permittee for any permit revision, revocation, reissuance, or termination, or of a notification of a planned change or anticipated noncompliance, shall not stay any permit condition [Section 1a-6 of the *Cabinet Provisions and Procedures for Issuing Title V Permits* incorporated by reference in 401 KAR 52:020, Section 26].
- c. This permit may be revised, revoked, reopened and reissued, or terminated for cause in accordance with 401 KAR 52:020, Section 19. The permit will be reopened for cause and revised accordingly under the following circumstances:
 - (1) If additional applicable requirements become applicable to the source and the remaining permit term is three (3) years or longer. In this case, the reopening shall be completed no later than eighteen (18) months after promulgation of the applicable requirement. A reopening shall not be required if compliance with the applicable requirement is not required until after the date on which the permit is due to expire, unless this permit or any of its terms and conditions have been extended pursuant to 401 KAR 52:020, Section 12;
 - (2) The Cabinet or the United States Environmental Protection Agency (U. S. EPA) determines that the permit must be revised or revoked to assure compliance with the applicable requirements;
 - (3) The Cabinet or the U. S. EPA determines that the permit contains a material mistake or that inaccurate statements were made in establishing the emissions standards or other terms or conditions of the permit;
 - (4) New requirements become applicable to a source subject to the Acid Rain Program.

Proceedings to reopen and reissue a permit shall follow the same procedures as apply to initial permit issuance and shall affect only those parts of the permit for which cause to reopen exists. Reopenings shall be made as expeditiously as practicable. Reopenings shall not be initiated before a notice of intent to reopen is provided to the source by the Division, at least thirty (30) days in advance of the date the permit is to be reopened, except that the Division may provide a shorter time period in the case of an emergency.

- d. The permittee shall furnish information upon request of the Cabinet to determine if cause exists for modifying, revoking and reissuing, or terminating the permit; or to determine compliance with the conditions of this permit [Sections 1a- 7 and 8 of the *Cabinet Provisions and Procedures for Issuing Title V Permits* incorporated by reference in 401 KAR 52:020, Section 26].
- e. Emission units described in this permit shall demonstrate compliance with applicable requirements if requested by the Division [401 KAR 52:020, Section 3(1)(c)].

SECTION G - GENERAL PROVISIONS (CONTINUED)

- f. The permittee, upon becoming aware that any relevant facts were omitted or incorrect information was submitted in the permit application, shall promptly submit such supplementary facts or corrected information to the permitting authority [401 KAR 52:020, Section 7(1)].
- g. Any condition or portion of this permit which becomes suspended or is ruled invalid as a result of any legal or other action shall not invalidate any other portion or condition of this permit [Section 1a-14 of the *Cabinet Provisions and Procedures for Issuing Title V Permits* incorporated by reference in 401 KAR 52:020, Section 26].
- h. The permittee shall not use as a defense in an enforcement action the contention that it would have been necessary to halt or reduce the permitted activity in order to maintain compliance [Section 1a-4 of the *Cabinet Provisions and Procedures for Issuing Title V Permits* incorporated by reference in 401 KAR 52:020, Section 26].
- i. All emission limitations and standards contained in this permit shall be enforceable as a practical matter. All emission limitations and standards contained in this permit are enforceable by the U.S. EPA and citizens except for those specifically identified in this permit as state-origin requirements. [Section 1a-15 of the *Cabinet Provisions and Procedures for Issuing Title V Permits* incorporated by reference in 401 KAR 52:020, Section 26].
- j. This permit shall be subject to suspension if the permittee fails to pay all emissions fees within 90 days after the date of notice as specified in 401 KAR 50:038, Section 3(6) [Section 1a-10 of the *Cabinet Provisions and Procedures for Issuing Title V Permits* incorporated by reference in 401 KAR 52:020, Section 26].
- k. Nothing in this permit shall alter or affect the liability of the permittee for any violation of applicable requirements prior to or at the time of permit issuance [401 KAR 52:020, Section 11(3) b.].
- l. This permit does not convey property rights or exclusive privileges [Section 1a-9 of the *Cabinet Provisions and Procedures for Issuing Title V Permits* incorporated by reference in 401 KAR 52:020, Section 26].
- m. Issuance of this permit does not relieve the permittee from the responsibility of obtaining any other permits, licenses, or approvals required by the Cabinet or any other federal, state, or local agency.
- n. Nothing in this permit shall alter or affect the authority of U.S. EPA to obtain information pursuant to Federal Statute 42 USC 7414, Inspections, monitoring, and entry [401 KAR 52:020, Section 11(3) d.].
- o. Nothing in this permit shall alter or affect the authority of U.S. EPA to impose emergency orders pursuant to Federal Statute 42 USC 7603, Emergency orders [401 KAR 52:020, Section 11(3) a.].

SECTION G - GENERAL PROVISIONS (CONTINUED)

- p. This permit consolidates the authority of any previously issued PSD, NSR, or Synthetic Minor source preconstruction permit terms and conditions for various emission units and incorporates all requirements of those existing permits into one single permit for this source.
- q. Pursuant to 401 KAR 52:020, Section 11, a permit shield shall not protect the owner or operator from enforcement actions for violating an applicable requirement prior to or at the time of permit issuance. Compliance with the conditions of this permit shall be considered compliance with:
 - (1) Applicable requirements that are included and specifically identified in this permit; and
 - (2) Non-applicable requirements expressly identified in this permit.

2. Permit Expiration and Reapplication Requirements

- a. This permit shall remain in effect for a fixed term of five (5) years following the original date of issue. Permit expiration shall terminate the source's right to operate unless a timely and complete renewal application has been submitted to the Division at least six (6) months prior to the expiration date of the permit. Upon a timely and complete submittal, the authorization to operate within the terms and conditions of this permit, including any permit shield, shall remain in effect beyond the expiration date, until the renewal permit is issued or denied by the Division [401 KAR 52:020, Section 12].
- b. The authority to operate granted shall cease to apply if the source fails to submit additional information requested by the Division after the completeness determination has been made on any application, by whatever deadline the Division sets [401 KAR 52:020, Section 8(2)].

3. Permit Revisions

- a. A minor permit revision procedure may be used for permit revisions involving the use of economic incentive, marketable permit, emission trading, and other similar approaches, to the extent that these minor permit revision procedures are explicitly provided for in the State Implementation Plan (SIP) or in applicable requirements and meet the relevant requirements of 401 KAR 52:020, Section 14(2).
- b. This permit is not transferable by the permittee. Future owners and operators shall obtain a new permit from the Division for Air Quality. The new permit may be processed as an administrative amendment if no other change in this permit is necessary, and provided that a written agreement containing a specific date for transfer of permit responsibility coverage and liability between the current and new permittee has been submitted to the permitting authority within ten (10) days following the transfer.

4. Construction, Start-Up, and Initial Compliance Demonstration Requirements

Pursuant to a duly submitted application the Kentucky Division for Air Quality hereby authorizes the construction of the equipment described herein:

SECTION G - GENERAL PROVISIONS (CONTINUED)

Emission units EU# 005A-C (EPN 305-307), EU# 005D (EPN 311), EU# 006A-B (EPN 327-328), EU# 006C (EPN 329), (EPN 326A), EU# 007A (EPN 321A), EU# 025 (EPN FUG-ETH-YY), EU# 025A (EPN FUG-ETH-VVa), EU# 025B (EPN FUG-ETH) and (EPN 332BR), in accordance with the terms and conditions of permit V-14-022 R2; and

Emission units (EPN FUG-ETH-YY) in accordance with the terms and conditions of permit V-20-022 R1.

- a. Construction of any process and/or air pollution control equipment authorized by permit V-14-022 R2 or V-20-022 R1 shall be conducted and completed only in compliance with the conditions of the corresponding permit.
- b. Within thirty (30) days following commencement of construction and within fifteen (15) days following start-up and attainment of the maximum production rate specified in the permit application, or within fifteen (15) days following the issuance date of permit V-14-022 R2, as applicable, whichever is later, the permittee shall furnish to the Regional Office listed on the front of this permit in writing, notification of the following:
 - (1) The date when construction commenced.
 - (2) The date of start-up of the affected facilities listed in permit V-14-022 R2, or V-20-022 R1, as applicable.
 - (3) The date when the maximum production rate specified in the permit application was achieved.
- c. Pursuant to 401 KAR 52:020, Section 3(2), unless construction is commenced within eighteen (18) months after permit V-14-022 R2 is issued, or begins but is discontinued for a period of eighteen (18) months or is not completed within a reasonable timeframe then the construction and operating authority granted by permit V-14-022 R2, or V-20-022 R1, as applicable, for those affected facilities for which construction was not completed shall immediately become invalid. Upon written request, the Cabinet may extend these time periods if the source shows good cause.
- d. Pursuant to 401 KAR 50:055, Section 2(1)(a), an owner or operator of any affected facility subject to any standard within the administrative regulations of the Division for Air Quality shall demonstrate compliance with the applicable standard(s) within sixty (60) days after achieving the maximum production rate at which the affected facility will be operated, but not later than 180 days after initial start-up of such facility. Pursuant to 401 KAR 52:020, Section 3(3)(c), sources that have not demonstrated compliance within the timeframes prescribed in 401 KAR 50:055, Section 2(1)(a), shall operate the affected facility only for purposes of demonstrating compliance unless authorized under an approved compliance plan or an order of the cabinet.
- e. Permit V-14-022 R2 and V-20-022 R1 shall allow time for the initial start-up, operation, and compliance demonstration of the affected facilities listed herein. However, within sixty (60) days after achieving the maximum production rate at which the affected facilities will be operated but not later than 180 days after initial start-up of such facilities, the permittee shall conduct a performance demonstration on the affected facilities in accordance with 401 KAR 50:055, General compliance requirements. Testing must also be conducted in accordance with General Provisions G.5 of permit V-14-022 R2 and V-20-022 R1.

SECTION G - GENERAL PROVISIONS (CONTINUED)

- f. Terms and conditions in permit V-14-022 R2 and V-20-022 R1 established pursuant to the construction authority of 401 KAR 51:017 or 401 KAR 51:052 shall not expire.

5. Testing Requirements

- a. Pursuant to 401 KAR 50:045, Section 2, a source required to conduct a performance test shall submit a completed Compliance Test Protocol form, DEP form 6028, or a test protocol a source has developed for submission to other regulatory agencies, in a format approved by the cabinet, to the Division's Frankfort Central Office a minimum of sixty (60) days prior to the scheduled test date. Pursuant to 401 KAR 50:045, Section 7, the Division shall be notified of the actual test date at least thirty (30) days prior to the test.
- b. Pursuant to 401 KAR 50:045, Section 5, in order to demonstrate that a source is capable of complying with a standard at all times, any required performance test shall be conducted under normal conditions that are representative of the source's operations and create the highest rate of emissions. If [When] the maximum production rate represents a source's highest emissions rate and a performance test is conducted at less than the maximum production rate, a source shall be limited to a production rate of no greater than 110 percent of the average production rate during the performance tests. If and when the facility is capable of operation at the rate specified in the application, the source may retest to demonstrate compliance at the new production rate. The Division for Air Quality may waive these requirements on a case-by-case basis if the source demonstrates to the Division's satisfaction that the source is in compliance with all applicable requirements.
- c. Results of performance test(s) required by the permit shall be submitted to the Division by the source or its representative within forty-five days or sooner if required by an applicable standard, after the completion of the fieldwork.

6. Acid Rain Program Requirements

- a. If an applicable requirement of Federal Statute 42 USC 7401 through 7671q (the Clean Air Act) is more stringent than an applicable requirement promulgated pursuant to Federal Statute 42 USC 7651 through 7651o (Title IV of the Act), both provisions shall apply, and both shall be state and federally enforceable.
- b. The permittee shall comply with all applicable requirements and conditions of the Acid Rain Permit and the Phase II permit application (including the Phase II NOx compliance plan and averaging plan, if applicable) incorporated into the Title V permit issued for this source. The source shall also comply with all requirements of any revised or future acid rain permit(s) issued to this source.

7. Emergency Provisions

- a. Pursuant to 401 KAR 52:020, Section 24(1), an emergency shall constitute an affirmative defense to an action brought for the noncompliance with the technology-based emission limitations if the permittee demonstrates through properly signed contemporaneous operating logs or relevant evidence that:

SECTION G - GENERAL PROVISIONS (CONTINUED)

- (1) An emergency occurred and the permittee can identify the cause of the emergency;
 - (2) The permitted facility was at the time being properly operated;
 - (3) During an emergency, the permittee took all reasonable steps to minimize levels of emissions that exceeded the emissions standards or other requirements in the permit; and
 - (4) Pursuant to 401 KAR 52:020, 401 KAR 50:055, and KRS 224.1-400, the permittee notified the Division as promptly as possible and submitted written notice of the emergency to the Division when emission limitations were exceeded due to an emergency. The notice shall include a description of the emergency, steps taken to mitigate emissions, and corrective actions taken.
 - (5) This requirement does not relieve the source of other local, state or federal notification requirements.
- b. Emergency conditions listed in General Condition G.7.a above are in addition to any emergency or upset provision(s) contained in an applicable requirement [401 KAR 52:020, Section 24(3)].
- c. In an enforcement proceeding, the permittee seeking to establish the occurrence of an emergency shall have the burden of proof [401 KAR 52:020, Section 24(2)].

8. Ozone Depleting Substances

- a. The permittee shall comply with the standards for recycling and emissions reduction pursuant to 40 CFR 82, Subpart F, except as provided for Motor Vehicle Air Conditioners (MVACs) in Subpart B:
- (1) Persons opening appliances for maintenance, service, repair, or disposal shall comply with the required practices contained in 40 CFR 82.156.
 - (2) Equipment used during the maintenance, service, repair, or disposal of appliances shall comply with the standards for recycling and recovery equipment contained in 40 CFR 82.158.
 - (3) Persons performing maintenance, service, repair, or disposal of appliances shall be certified by an approved technician certification program pursuant to 40 CFR 82.161.
 - (4) Persons disposing of small appliances, MVACs, and MVAC-like appliances (as defined at 40 CFR 82.152) shall comply with the recordkeeping requirements pursuant to 40 CFR 82.155.
 - (5) Persons owning commercial or industrial process refrigeration equipment shall comply with the leak repair requirements pursuant to 40 CFR 82.156 and 40 CFR 82.157.
 - (6) Owners/operators of appliances normally containing 50 or more pounds of refrigerant shall keep records of refrigerant purchased and added to such appliances pursuant to 40 CFR 82.166.
- b. If the permittee performs service on motor (fleet) vehicle air conditioners containing ozone-depleting substances, the source shall comply with all applicable requirements as specified in 40 CFR 82, Subpart B, *Servicing of Motor Vehicle Air Conditioners*.

SECTION G - GENERAL PROVISIONS (CONTINUED)

9. Risk Management Provisions

- a. The permittee shall comply with all applicable requirements of 401 KAR Chapter 68, Chemical Accident Prevention, which incorporates by reference 40 CFR Part 68, Risk Management Plan provisions. If required, the permittee shall comply with the Risk Management Program and submit a Risk Management Plan to U.S. EPA using the RMP* eSubmit software.
- b. If requested, submit additional relevant information to the Division or the U.S. EPA.

SECTION H - ALTERNATE OPERATING SCENARIOS

None

SECTION I - COMPLIANCE SCHEDULE

None