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August 24. 2022

Dear Valued Supplier:



Westlake has officially changed its name to Westlake Corporation, renecting our more diversified business portfolio stemming from recent acquisitions and growth over the past several years. All of Westlake's businesses are now organized under one brand - Westlake - and two reporting segments: Housi11g & Infrastructure Products a,nd Performance & Essential Materials

As part of this reorganization, we are changing several legal entity names (see complete list below). These new legal entity names do not change our ongoing business relationship or existing contracts and service agreements, and we will not reissue any existing purchase orders or contracts that we have already sent to you. Similarly, the address to send invoices to remains the same.

To ensure that there are no issues please update your systems with the appropriate new legal, entity name(s) listed in the table below.

We are in the process of updating our forms and documents, including purchase orders, to reflect the new Westlake legal entity names. Yau should begin seeing these updated documents starting in October 2022.

## LEGAL ENTITY NAME CHANGES

Below is a list of Westlake legal entity names that have change d or will change effective September 30, 2022.

| Current Legal Entity Name     | New Legal Entity Name  |
|-------------------------------|--|
| Westlake Chemical Corporation | Westlake Corporation   |
| Axiall, LLC                   | Westlake Chemicals & Vinyls LLC  |
| Axiall Canada, Inc.           | Westlake Chemical Canada Inc./Produits chimiques<br>Westlake Canada Inc. |
| Axiall Corporation            | Westlake Chlor-Vinyls Corporation  |
| Axiall Holdco, Inc.           | Westlake Eagle Holdco Inc.   |
| Axiall Taiwan Ltd.            | Taiwan Westlake Management Consulting Ltd.                               |
| Eagle Natrium IIC             | Westlake Natrium LLC   |
| Eagle US 2 LLC                | Westlake US 2 LLC  |





KENTUCKYSTATETREASURER DIVISION FOR AIR QUALITY 200 FAIR OAKS LANE 1st FL FRANKFORT, KY 40601

# Westlake

## WESTLAKE FACILITY LEGAL ENTITY NAMES

Below is a list af Westlake facilities impacted by the change in legal entity names, their current legal entity name and the new legal entity name they will operate under effective September 30, 2022.

| Facility Name                 | Current Legal Entity Names | New Legal Entity Name   |
|-------------------------------|----------------------------|---|
| Aberdeen, MS (PVC)            | Axiall, LLC                | Westlake Chemici31s & Vinyls LLC  |
| Beauharnois, QC               | Axjall Canada Inc.         | Westlake Chemical Canada<br>Inc./Produits chimiques Westlake<br>Canada Inc. |
| Lake Charles, LA (North Site) | Axiall, LLC                | Westlake Chemicals & Vinyls LLC   |
| Lake Charles, LA (South Site) | Eagle US 2 LLC             | Westlake US 2 LLC   |
| Longview, WA                  | Eagle US 2 LLC             | Westlake US 2 LLC   |
| Monroeville, PA               | Eagle US 2 LLC             | Westlake US 2 LLC   |
| Natrium (Proctor, WV)         | Eagle Natrium, LLC         | Westlake Natrium LLC  |
| Plaquemine. LA                | Axialf, LLC                | Westlake Chemicals & Vinyls LLC   |

## WESTLAKE CONTACTS

If you have questions related to the change in legal entity names, please contact the appropriate department listed below.

| Department           | Contact                       |
|----------------------|-------------------------------|
| Accounts Payable     | accountsoa @able@westlake.com |
| Procurement          | Local Purchasing Contact      |
| Rail Logistics       | logistics@westlake.com        |
| Marine Logistics     | logisticsra>.westlake.com     |
| Road/Truck Logistics | logistics@westlake.com        |

## QUESTIONS

## Will the tax ID number change?

There will be no change to the Federal Tax.ID number. This is a change in legal entity names only.

2801 Post Oak Blvd Ste 600 Houston. Texas 770561 T +1 713-!}60-91

# Westlake

## Will the provincial tax exemption certificate number be changing?

There will be no change to the Provincial Sales ax exemption number for the provinces.

### Who do I contact for any invoice-related questions?

For questions concerning invoices, contact: API quiries@westlake.com

Thank you fo\_r attention to this matter. We look forward to a continued partnership.

Sincerely,

Jeff Holy Vice President Treasury

Gaul Flowrich

Paul Tourfsh Director Procurement

Brent Robertson

Brent Robertson Director Logistics





www.WestJake.com



October 18, 2022

### Sent via KY Business One Stop Portal

Ms. Hollie Delaney, Chemical Section Permit Support Section, Permit Review Branch Division for Air Quality Kentucky Energy and Environment Cabinet 300 Sower Blvd., 2<sup>nd</sup> Floor Frankfort, KY 40601

# Re: Westlake Chemical OpCo, LP Source ID: 021-157-00080, Agency Interest: 122899 Minor Revision for Permit V-20-022

Dear Ms. Delaney:

Pursuant to 401 KAR 52:020 Section 14, Westlake Chemical OpCo, LP (Westlake), located in Calvert City, Kentucky, is requesting a minor revision to Title V Federal Operating Permit No. V-20-022 for several physical and operational changes in the Ethylene Plant described in the attached Minor Revision Application. The proposed changes meet the requirements of 401 KAR 52:020, Section 14 for Title V Minor Permit Revisions, and all necessary forms and information are attached.

If you have any questions or comments regarding this submittal, please contact Mr. Kevin Sheridan, Senior Regional Manager - HSE, at (270) 395-3362. Thank you for your time and consideration in this submittal.

Sincerely,

WESTLAKE VINYLS, INC.

## ¢

Ivan Birrell, Senior Plant Manager

Attachments

cc: Envr. File Division for Air Quality, Paducah Regional Office, 130 Eagle Nest Dr., Paducah, KY 42003



# Application for Minor Revision to Title V Operating Permit No. V-20-022

**Prepared For** Kentucky Department for Environmental Protection

**On behalf of** Westlake Chemical OpCo, LP - Ethylene Plant



October 2022 Project No. P3098

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# **LIST OF APPENDICES**

- Appendix A: Kentucky DEP Forms
- Appendix B: PSD Analysis
- Appendix C: Emissions Calculations
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# **1 INTRODUCTION**

Pursuant to 401 KAR 52:020 Section 14, Westlake Chemical OpCo, LP (Westlake) submits this application for a minor revision to the Ethylene Plant's Title V operating permit for several physical and operational changes in the Ethylene Plant which impact the 24-hour average and 12-month rolling average maximum firing rates for Furnaces 1, 2, 3, and 7. These changes are unrelated to the Significant Permit Revision for the Prevention of Significant Deterioration (PSD) Project approved in March 2021. Discussed below are a number of key points related to the development of this application.

# **1.1 Facility Information**

The Westlake Chemical OpCo, LP, Source ID 21-157-00080 is located in Marshall County, Kentucky. The Westlake Chemical OpCo Plant is located at 2468 Industrial Parkway, Calvert City, Kentucky. Site maps have been submitted previously and are not submitted with this application.

# **1.2 Purpose of Request**

Westlake is providing this application to the Kentucky Department for Environmental Protection (DEP) for a minor revision to Title V Permit No. V-20-022 for the Ethylene Plant. The facility is proposing to revise the Title V operating permit to authorize several physical and operational changes in the Ethylene Plant as detailed in Section 3. These changes are related to the March 2020 502(b)(10) application for the implementation of the Advanced Process Control (APC) Project which optimized operations in the Ethylene Plant and include a new unrelated project to install piping components which will allow Westlake to utilize purchased and recycled ethane as fuel to the Ethylene Furnaces. Westlake is providing DEP forms, a PSD analysis, updated NOx netting, emissions calculations, and a permit red line.

# 1.3 Federal New Source Review Permitting Applicability

The facility is located in Marshall County which is within an area designated as attainment for ozone and all other criteria pollutants. New construction or physical and/or operational changes are potentially subject to PSD permitting requirements.

Although Westlake Chemical OpCo, LP (the Ethylene Plant), Westlake Vinyls, Inc. (the Vinyls Plant), and Westlake Vinyls, Inc. - PVC Plant (the PVC Plant) have been issued and operate under individual Title V permits, the plants are considered a single stationary source for the purposes of major new source review and Title V permit procedures since the facilities are (1) located on one or more contiguous or adjacent properties, (2) are under common control, and (3) belong to a single major industrial grouping (i.e., SIC Major Group Code 28). Therefore, all three (3) facilities have consistently conducted all permitting activities by evaluating applicable provisions as they may apply to the stationary source as a whole. This project impacts sources at two of the three plants, and emissions increases from both are considered.

The calculated emissions for the proposed changes and the Federal NSR PSD evaluation are summarized in Table 1-1. A more detailed emissions summary is provided in Section 4, and calculation tables are presented in Appendices B and C.

| Pollutant | Project<br>Increases<br>(tpy) | PSD Significance<br>Level<br>(tpy) | Is Netting<br>Required<br>(Yes/No) | Is PSD Review<br>Required?<br>(Yes/No) |
|-----------|-------------------------------|------------------------------------|------------------------------------|--|
| NOx       | 17.42                         | 40                                 | No                                 | No                                     |
| CO        | 15.27                         | 100                                | No                                 | No                                     |
| voe       | 4.87                          | 40                                 | No                                 | No                                     |
| SO2       | 0.27                          | 40                                 | No                                 | No                                     |
| PM        | 9.00                          | 25                                 | No                                 | No                                     |
| PM10      | 9.00                          | 15                                 | No                                 | No                                     |
| PM2.s     | 9.00                          | 10                                 | No                                 | No                                     |

Table 1-1 PSD Applicability Evaluation Summary

As shown in Table 1-1, the proposed changes will not result in emissions increases above the respective PSD significance levels; therefore, PSD review is not required. Additional PSD information is presented in Section 5.

# **1.4 Application Overview**

Key components of this application are organized as follows:

- A description of the process is included in Section 2;
- A description of the project is included in Section 3;
- Emission rate calculation methodology is discussed in Section 4;
- PSD Analysis is discussed in Section 5;
- Appendix A contains completed Kentucky DEP Forms;
- Appendix B contains the PSD Analysis Tables;
- Appendix C contains Emissions Calculations; and,
- Appendix D contains the Permit Red Line.

# **2 PROCESS DESCRIPTION**

The primary function of the Ethylene Plant is to produce high-purity ethylene through thermal cracking of ethane feedstock. The efficiency of this process depends to a great extent on the simultaneous recovery of useful and profitable co-products. These include propylene, mixed C-4's, aromatic gasoline, fuel oil, and fuel gas.

# 2.1 Furnace/Quench Systems

The ethane feedstock, combined with dilution steam, is introduced into high-temperature furnaces. The furnaces may be fired with a mixture of process fuel gas, hydrogen gas, and/or natural gas. Furnace design and operating criteria yield optimum effluent compositions while minimizing pyrolysis coke. Upon leaving the furnace, effluent gas is cooled by means of heat transfer to control and stabilize effluent reactions while generating useful energy in the form of steam. This cooling takes place in a series of transfer line exchangers (TLEs) generating saturated 435-psig steam which is then superheated and used to drive the ethylene refrigeration compressor turbine. The turbine exhaust enters the 180-psig steam system, providing much of the 180-psig steam used in the complex.

Once cooled, the furnace effluent stream enters the quench system. The cracked gas enters the system near the bottom of the quench column. Quench water enters the column to scrub oils, tars and carbon particles from the effluent gases as they travel up the column. The water-saturated overhead vapors flow to the feed gas compressor system.

The heavy hydrocarbons present in the furnace effluent are condensed in the quench column and mix with the circulating water. The net quench water is drawn from the system and flows to a series of separators and accumulators where light distillate, heavy oil, water and oily water mixtures are segregated. The light distillate is routed to the gasoline column feed tank for processing through the gasoline column. The heavy oil is transferred directly to the gasoline column. Oily water mixtures flow from the separators directly to the Ethylene Plant's wastewater pretreatment system for removal of any free oil and benzene.

# 2.2 Feed Gas Compression

The water-saturated hydrocarbon vapors leave the quench column and enter the multi-stage feed gas compressor system. Injection oil is pumped from a storage tank at regimented flow rates into each stage of compression. This material is utilized to prevent the build-up of polymer in the compressor case.

Acid gases generated during the pyrolysis phase are removed to produce high-purity products and co-products. A caustic wash system removes these acid gases between compression stages. Condensed hydrocarbons and spent caustic emulsions from the caustic wash system are transferred to collection tanks for neutralization and then on to the ethylene wastewater pre-treatment unit.

The compressed process gas stream is fed to the distillation area.

# 2.3 Distillation Operations

In the distillation area, the process gas stream enters desiccant dryers. Once dried, the process gas is ready for low temperature processing and separation.

The dried gas stream is pre-cooled in consecutive exchangers before being fed to a series of distillation units including the de-methanizer, de-ethanizer, de-propanizer, propylene column, ethylene column, secondary de-methanizer, de-butanizer column, and gasoline columns. The distillation area also includes acetylene reactors for removing acetylene by reacting it with hydrogen. Separated products from these distillation operations include high-purity ethylene, propylene, mixed C-4's, aromatic gasoline, fuel oil, and process fuel gas. Ethylene is used as a raw material in the Vinyls Plant and process fuel gas is distributed for use as fuel in various combustion units throughout the facility.

# 2.4 Flare

The Ethylene Flare is used to bum hydrocarbon streams from the Ethylene Plant. The Ethylene Flare system consists of several blow-down headers, a main header, knockout drum and a steam assisted flare stack and routinely bums excess plant process gas, vapors from tank car, barge and tank truck loading/unloading operations, transfer line purges, and vents from various tanks in the plant. The blow-down headers combine and flow down the main header to the flare knockout drum. The knockout drum traps any liquids that may be entrained in the flare feed gas before those liquids can reach the flare stack.

# 2.5 Tank Farm

The Ethylene Plant tank farm system consists of four ethylene spheres, four propylene bullets, two C4 spheres, two aromatic gasoline tanks and fuel oil tank. The gasoline and fuel oil tanks are diked with drains flowing to a NPDES-permitted outfall.

# 2.6 Miscellaneous

The ethylene wastewater pre-treatment area treats process wastewater and product tank draw down from the Ethylene Plant. Wastewater pre-treatment units include storage vessels, surge control vessels, and oil/water separators. In addition, stormwater and steam trap condensate collected from the various collection pads and sumps in the process area and tank farm can be treated in this unit. The Ethylene Plant has a dedicated three-sided concrete structure for the water blasting and cleaning of various pieces of equipment. Spills, leaks and cleaning discharges from the pre-treatment and water blasting areas flow from these collection areas back to the ethylene wastewater pre-treatment system. Effluent water from the wastewater pre-treatment area is fed to the Equalization Tank (EQ Tank) in the Energy and Environmental (E&E) Operations area.

The Ethylene Plant operates Cooling Tower #4A to release the heat rejected from the Ethylene Plant and auxiliary operations.

The Ethylene Plant operates the River Vapor Combustion Unit (VCU) to control emissions from the aromatic gasoline and ethylene fuel oil barge loading operations. It is a natural gas fired unit and

typically only operates during times when barges are being loaded. The River VCU is authorized as an alternative control device for the Ethylene wastewater treatment unit at times when the Ethylene Flare is not available.

# **3 PROJECT DESCRIPTION**

The following is a discussion of changes associated with the projects being proposed with this application.

# 3.1 APC Project Changes

In March 2020, Westlake utilized the 502(b)(10) procedures to authorize the implementation of the APC Project to optimize operations in the Ethylene Plant. The APC Project was implemented to allow for additional monitoring and sharing of data across multiple unit key variables which would maximize plant production, increase the yield of main products, minimize energy consumption and optimize furnace combustion. The optimization was projected to allow the Ethylene Plant to realize an incremental increase in ethylene production of approximately 3.5 :MMlb/yr ethylene; however, it was not projected to increase the plant's production capacity of 755 MMlb/yr ethylene nor impact any of the emissions unit's potential to emit (PTE). In March 2020, there were no short term or annual firing rate limits on the existing ethylene furnaces.

At the time of the 502(b)(10) submittal, there was a pending application for an unrelated significant revision to the facility's Title V permit (Plant-Wide Expansion Project) that had been submitted in May 2019 and updated in January 2020. Because the existing ethylene furnaces were considered modified emissions units with the significant revision, when the significant revision was approved and a new permit was issued in March 2021, the existing furnaces were limited to the represented 24-hour and 12-month rolling maximum firing rates. With the implementation of the APC Project, which is unrelated to the Expansion Project, it has been determined that Furnaces 1, 2, and 3 will be able to sustain higher firing rates on a 24-hr average basis and Furnaces 1, 2, 3, and 7 will be able to sustain higher firing rates on a 12-month rolling basis. This application is to authorize the maximum firing rate increases listed in Table 3-1. The facility has remained in compliance with the existing 24-hr average and 12-month rolling firing rate limits following the implementation of the APC Project and issuance of the current permit.

| EPN | Description                  | Current 24-hr<br>average<br>Firing Rate<br>(MMBtu/hr) | Proposed 24-hr<br>average Firing<br>Rate<br>(MMBtu/hr) | Current 12-<br>month Rolling<br>Firing Rate<br>(MMBtu/hr) | Proposed 12-<br>month Rolling<br>Firing Rate<br>(MMBtu/hr) |
|-----|------------------------------|---|--|---|--|
| 305 | Ethylene Cracking Furnace #1 | 184   | 190  | 150   | 170  |
| 306 | Ethylene Cracking Furnace #2 | 184   | 190  | 150   | 170  |
| 307 | Ethylene Cracking Furnace #3 | 184   | 190  | 150   | 170  |
| 311 | Ethylene Cracking Furnace #7 | 105   | 105  | 80  | 90   |

### Table 3-1 Ethylene Furnace Firing Rate Increases

# 3.2 Ethane as a Fuel

This project is for the installation of piping and instrumentation required to route purchased and recycled ethane to the fuel system so that the ethylene furnaces can fire ethane as fuel. Currently, the ethane is only used as raw material in the ethylene furnaces and there is no existing piping to route ethane to the ethylene furnace fuel line. This project is driven by economics as the cost of ethane is projected to be lower than the cost of natural gas in the next few months. While there will be additional valves and connectors installed with this project, ethane is not a VOC; therefore, there are no VOC emission increases from process fugitive components, and no monitoring of these components is required.

There is a theoretical increase in the higher heating value (HHV) of the fuel as a result of using ethane as a fuel. It is likely that the higher HHV will enable higher annual average furnace firing rates, and a theoretical increase in ethylene production. These downstream impacts are included in this application.

Currently, the ethylene furnaces are authorized to fire "Process fuel gas" as the primary fuel, and the permit states "Process fuel gas includes natural gas, ethylene plant fuel gas, hydrogen, propane, ethane, recovered flare gas<sup>1</sup> and mixtures thereof."; therefore, there are no changes required to the permit as a result of this change.

<sup>&</sup>lt;sup>1</sup> Permit V-20-22 does not include the phrase "recovered flare gas"; however, in November 2021, Westlake submitted an application for the installation of a flare gas recovery unit (FGRU) in the Ethylene Plant and in that application submitted a permit red-line to include this authorization.

# 4 EMISSION RATE CALCULATION METHODOLOGY

# 4.1 Ethylene Furnaces 1, 2, 3, and 7

These existing cracking furnaces are fired with natural gas, ethane, recovered flare gas, and process gas. The furnaces are equipped with low NOx burners. The NOx, CO, PM/PM10/PM2.s, and VOC emission factors are based on vendor guarantee. The SO2 emissions are based on the emission factor of 0.6 lb SO2/MMscf from the EPA Compilation of Air Pollutant Emission Factors, AP-42, Section 1.4. Detailed calculations are presented on Table C-1 in Appendix C.

# 5 PSD ANALYSIS

A project is a major modification for a regulated NSR pollutant if it causes two types of emissions increases-a significant emissions increase as defined in 401 KAR 51:001(219), and the federal equivalent 40 CFR 52.21(b)(40) and a significant net emissions increase as defined in 401 KAR 51:001(144) and the federal equivalent 40 CFR 52.21(6)(3) and (b)(23). If the project causes a significant emissions increase, then the project is a major modification only if it also results in a significant net emissions increase. The project is not a major modification if it does not cause a significant emissions increase.

# 5.1 Project PSD Analysis Methodology

All data, emissions calculations, and PSD analysis are presented in detail in Table B-1 in Appendix B.

# 5.1.1 Baseline Actual Emissions (BAE)

Baseline actual emissions for all pollutants and production rates are from March 1, 2018 through February 28, 2020. Baseline emissions are prior to the submittal of the 502(6)(10) in March 2020 and are presented in Table B-1.

# 5.1.2 Projected Future Actual Emissions (PAE)

For the Ethylene Plant sources that are not modified with this project, the PAE emissions, including project-related emissions increases, were calculated based on the baseline emissions at 743.4 MMlb/yr ethylene (average annual production of the baseline period), and projected to 746.9 MMlb/yr ethylene, which is the increase of 3.5 MMlb per year of ethylene as originally predicted in March 2020.

Since Ethylene Furnaces 1, 2, 3, and 7 are considered modified with this application due to the increase in annual average firing rate and ultimately an increase in the furnaces' PTE, the PAE is equal to the furnaces' proposed PTE.

Regulated pollutant PAE and the individual calculation methods for each emission point are presented on Table B-1.

# 5.1.3 Could Have Accommodated Emissions (CHA)

Westlake is not utilizing the concept of "Could Have Accommodated" to exclude certain emissions from the PSD analysis.

## 5.1.4 Net Project Adjusted Emissions Increase

The adjusted increase, including project-related emissions increases, is then calculated by emission point and pollutant by determining the difference between the PAE and the BAE. The adjusted increase considers only the emission points where the difference between the PAE and the BAE is positive. No decreases are considered in this step. Simply, the Net Project Increase is the PAE minus the BAE for each emission point, and each regulated pollutant is presented in Table B-1.

The adjusted increases, without considering any decreases, are less than the PSD significance threshold; therefore, PSD is not triggered for this project. See Table B-1 for this analysis.

# 5.2 NOx Netting

With the May 2019 and January 2020 Plant-Wide Expansion application, a net emissions determination was presented for NOx. The contemporaneous window remains open for that project; therefore, Westlake maintains a log and updates the NOx netting calculations with each new project in the contemporaneous window. Table B-3 in Attachment Bis a listing of all the permitting activities at all three facilities since the last updated NOx netting was submitted in March 2022. This table is a continuation of Table B-3 and does not present Projects 1 through 58. Table B-3 lists the permitting date, project description, each emission point number (EPN) impacted, whether there were NOx increases or decreases emissions attributed to that EPN included in that analysis, and the emission points description. Attached Table B-2 demonstrates that the compilation of projects in the contemporaneous window does not impact the significance of the NOx emissions from the previous PSD project.

# 5.3 Reasonable Possibility Recordkeeping

"Reasonable possibility" is the regulatory concept that a change that doesn't trigger PSD through the actual-to-potential analysis still has the potential to result in a significant emissions increase. If the ratio of the project increases to the NSR significant level for that pollutant equals or exceeds 50 percent, then additional recordkeeping, emissions monitoring, and reporting are required to ensure major NSR is not triggered. In this case, PM10 and PMz.s emissions are identified on Table 1-1 as potentially subject to the recordkeeping, emissions monitoring, and reporting requirements. Pre-change recordkeeping requirements are met utilizing this application. Post-change recordkeeping will be performed, maintained and reported as described in 67 FR No. 251, page 80197 (December 31, 2002).

# **APPENDIX A: KENTUCKY DEP FORMS**

This appendix includes the following forms:

- DEP7007AI Administrative Form; and
- DEP7007N Source Emissions Profile.

| 11/2018             |                    |         |   |                  |                       |                |           |                          | DEP700 |
|---------------------|--------------------|---------|---|------------------|-----------------------|----------------|-----------|--------------------------|--------|
| Division            | for Air O          | uolity  |   | DEP7(            | )07AI                 |                | Ad        | ditional Documentati     | on     |
| DIVISIO             | i ioi Ali Q        | uanty   | Ad  | ministrative     | e Information         |                |           |                          |        |
| 300 S               | ower Bouleva       | ard     |   | Section Al. I: S | ource Information     |                | Additiona | al Documentation attache | d      |
| Frank               | fort. KY 406       | 01      |   | Section A1.2: A  | opplicant Information | -<br>1         |           |                          |        |
| (50                 | )2) 564-3999       |         |   | Section AI.3: C  | Wher Information      | _              |           |                          |        |
|                     |                    |         |   | Section AI.4: T  | ype of Application    |                |           |                          |        |
| L                   |                    |         |   | Section AI.5: C  | Other Required Inform | mation         |           |                          |        |
|                     |                    |         |   | Section Al.6: S  | ignature Block        |                |           |                          |        |
|                     |                    |         | _ 5   | Section AI.7: N  | lotes, Comments, an   | nd Explanation | ns        |                          |        |
|                     |                    |         |   |                  |                       |                |           |                          |        |
| Source Name:        |                    |         |   |                  | Westlake Chemi        | ical OuCo, LP  |           |                          |        |
| KY EIS (AFS) #:     |                    |         | 21-157-00080                                  |                  |                       |                |           |                          |        |
| Permit#:            |                    |         |   |                  | V-20-                 | -022           |           |                          |        |
| Agency Interest (A) | I) ID:             |         |   |                  | 1228                  | 899            |           |                          |        |
| Date:               |                    |         |   |                  | Oct-2                 | -22            |           |                          |        |
| Section Al.1: S     | Source Inf         | ormati  | on  |                  |                       |                |           |                          |        |
| Physical Location   | Street:            |         | 2468 Industrial Parkway                       |                  |                       |                |           |                          |        |
| Address:            | City:<br>Street or |         | Calvert City                                  | County:          | Marshall              |                | Zip Code: | 42029                    |        |
| Mailing Address:    | P.O.Box:           |         | 2468 Industrial Parkway, P.O.B                | 0X /12           |                       |                |           |                          |        |
|                     | City:              |         | Calvert City                                  | State:           | Kentucky              |                | Zip Code: | 42029                    |        |
|                     |                    |         | Standard C                                    | Coordinates fo   | r Source Physical I   | Location       |           |                          |        |
|                     |                    |         |   |                  |                       |                |           |                          |        |
| Longitude:          |                    | 37.0525 | (decimal degrees)                             |                  | Latitude:             | 88.3333        | _         | (decimal degrees)        |        |
| Primary (NAICS) C   | ategory:           | Ма      | nufacturing and Other Basic Inorga<br>f'hem:, | inic             | Primary NAICS #:      | _              | 325199 a  | and 325180               |        |
|                     |                    |         |   |                  |                       |                |           |                          |        |

| Classification (SIC) Cat  | tegory:  | Industrial Orgar                     | nic Chemicals                           | Primary SIC #:                                     | 2869                     |                           |  |
|---|--|--------------------------------------|---|--|--------------------------|---------------------------|--|
| Briefly discuss the type conducted at this site:                        | of business  | Chemical Manufacturing               |   |  |                          |                           |  |
| Description of Area<br>Surrounding<br>Source:                           | Rural Area<br>Urban Area   | Industrial Park<br>X Industrial Area | _ Residential Area<br>_ Commercial Area | Is any part of the source located on federal land? | Yes<br>X No              | Number of 0<br>Employees: |  |
| Approximate distance<br>to nearest residence or<br>commercial property: | Approximate  | ly 1 mile                            | Property<br>Area:                       | 13 acres   | Is this source portable? | Yes X No                  |  |
|   | What other environmental permits or registrations does this source currently hold or need to obtain in Kentucky? |                                      |   |  |                          |                           |  |
| NPDES/KPDES:  | _X_ Currently I  | Hold Need                            | NIA                                     |  |                          |                           |  |
| Solid Waste:  | _ Currently Ho   | old Need                             | NIA                                     |  |                          |                           |  |
| RCRA:   | _X_ Currently 1  | Hold Need                            | NIA                                     |  |                          |                           |  |
| UST:  | _ Currently Ho   | old Need                             | NIA                                     |  |                          |                           |  |
| Type of Regulated   | Mixed Waste  | e Generator                          | X Generator                             | _Recycler  | Other:                   |                           |  |
| Waste Activity:   | _ U.S. Importe   | r of Hazardous Waste                 | _ Transporter                           | _ Treatment/Storage/Disposa                        | I Facility N             | IA                        |  |

| Section AI.2: A <sub>I</sub> | oplicant Inform   | nation            |             |                       |              |       |
|------------------------------|-------------------|-------------------|-------------|-----------------------|--------------|-------|
| Applicant Name:              | Westlake Ving     | yls, Inc.         |             |                       |              |       |
| Tjtle: (if individual)       |                   |                   |             |                       |              |       |
|                              | Street or P.O. B  | 0X:               | 246         | 8 Industrial Parkway, | P.O.Box 712  |       |
| Malling Address:             | City:             | Calvert City      | State:      | KY                    | Zip Code:    | 42029 |
| Email: (if individual)       |                   |                   |             |                       |              |       |
| Phone:                       | (270) 395-415     | 51                |             |                       |              |       |
| ITechnical Contact           |                   |                   |             |                       |              |       |
| Name:                        |                   |                   | Mr.Kevin SI | neridan               |              |       |
| Title:                       | Senior Region     | nal Manager - HSE |             |                       |              |       |
| Mailing Address              | Street or P.O. Bo | X:                | 246         | 8 Industrial Parkway, | P.O. Box 712 |       |
| Maning Address.              | City:             | Calvert City      | State:      | KY                    | Zip Code:    | 42029 |
| Email:                       |                   |                   |             |                       |              |       |
| Phone:                       | (270) 395-336     | 2                 |             |                       |              |       |
| IAir Permit Contact for      | Source            |                   |             |                       |              |       |
| Name:                        |                   |                   | Mr.Kevin Sl | neridan               |              |       |
| Title:                       | Senior Regior     | nal Manager - HSE |             |                       |              |       |
|                              | Street or P.O. Bo | ox:               | 246         | 8 Industrial Parkway, | P.O. Box 712 |       |
| Maining Address:             | City:             | Calvert City      | State:      | KY                    | Zip Code:    | 42029 |
| Email:                       |                   |                   |             |                       |              |       |
| Phone:                       | (270) 395-336     | 2                 |             |                       |              |       |

| <b>Owner sam</b>                 | e as <u>applicant</u>  |   |                      |                   |                             |       |  |
|----------------------------------|--|---|----------------------|-------------------|-----------------------------|-------|--|
| Name:                            | Westlake C   | Chemical Corporation                        |                      |                   |                             |       |  |
| Title:                           |  |   |                      |                   |                             |       |  |
| Mailing Address                  | Street or P.O. Box: 2801 Post  |   |                      |                   | st Oak Boulevard, 6th Floor |       |  |
| aming Address:                   | City:  | Houston                                     | State:               | ТХ                | Zip Code:                   | 77056 |  |
| Email:                           |  |   |                      |                   |                             |       |  |
|                                  |  |   |                      |                   |                             |       |  |
| Phone:                           |  |   |                      |                   |                             |       |  |
| Phone:                           | and officers of the o  | company who have an interest                | in the company of 5% | or more.<br>Posit | ion                         |       |  |
| Phone:                           | and officers of the one of the one of the one of the other other of the other oth | company who have an interest                | in the company of 5% | or more.<br>Posit | ion                         |       |  |
| Phone:<br>names of owners a<br>W | and officers of the<br>Name<br>estlake Chemical (  | company who have an interest<br>Corporation | in the company of 5% | or more.<br>Posit | ion                         |       |  |

| <u>!section AI.4: Type (</u>   | of A <b>P</b> lication   |   |   |   |  |
|--|--|---|---|---|--|
| Current Status:  | X Title V _ Condition  | onal Major _ State-Origi  | n _ General Permit  | _ Registration  | None   |
| <b>Requested Action:</b><br>(check all that apply)   | <ul> <li>Name Change</li> <li>Renewal Permit</li> <li>502(6)(10) Change</li> <li>X Revision</li> <li>Ownership Change</li> </ul> | <ul> <li>Initial Registration</li> <li>Revised Registration</li> <li>Extension Request</li> <li>Off Permit Change</li> <li>Closure</li> </ul> | <ul> <li>Significant Revision</li> <li>X Minor Revision</li> <li>Addition of New Facility</li> <li>Landfill Alternate Compliance Submittal</li> </ul> | <ul> <li>Administrative P</li> <li>Initial Source-wi</li> <li>Portable Plant Re</li> <li>Modification of</li> </ul> | Permit Amendment<br>ide OperatingPermit<br>elocation Notice<br>Existing Facilities |
| Requested Status:  | X Title V _ Condition  | onal Major _ State-Origi  | n _ PSD _ NSR   | _ Other:  |  |
| Is the source requesting a<br>Pollutant:<br>Particulate Matter<br>Volatile Organic Cor<br>Carbon Monoxide<br>Nitrogen Oxides<br>Sulfur Dioxide<br>Lead | <b>a limitation of potentia</b><br>npounds (VOC)   | I emissions?<br>Requested Limit:  | Yes X No Pollutant:Single HAPCombined HAPsAir Toxics (40 CFR 68, SuCarbon DioxideGreenhouse Gases (GHG)Other  | <b>Reque</b><br>ıbpart F)   | ested Limit:   |
| For New Construction<br>Proposed Start Da<br>(MM)  | :<br>ate of Construction:<br>IYYYY)  | 12/2022   | Proposed Operation Start-Up Date: (M  | 1MIYYYY)  | 12/2022  |
| For Modifications:<br>Proposed Start Da<br>(MM)  | ate of Modification:<br>/YYYY)   | 12/2022   | <b>Proposed Operation Start-Up Date:</b> (M   | 1M/YYYY)  | 12/2022  |
| Applicant is seeking co  | verai?e under a permit s   | hield. Yes  | Identify any non-applicabXNosought on a separPage $\therefore$ , ot b   | ole requirements for v<br>rate attachment to th   | which permit shield is e application.  |

# section AI.5 Other Required Information

| Indicate the document   | as attached as part of this application:                  |  |  |
|---|---|--|--|
| _ DEP7007A Indirect Heat Exchangers and Turbines                    | _ DEP7007CC Compliance Certification                      |  |  |
| _ DEP7007B Manufacturing or Processing Operations                   | _ DEP7007DD Insignificant Activities                      |  |  |
| DEP7007C Incinerators and Waste Burners                             | _ DEP7007EE Internal Combustion Engines                   |  |  |
| _DEP7007F Episode Standby Plan                                      | _ DEP7007FF Secondary Aluminum Processing                 |  |  |
| _DEP7007J Volatile Liquid Storage                                   | _ DEP7007GG Control Equipment                             |  |  |
| _ DEP7007K Surface Coating or Printing Operations                   | DEP7007HH Haul Roads                                      |  |  |
| DEP7007L Mineral Processes  | _ Confidentiality Claim                                   |  |  |
| _ DEP7007M Metal Cleaning Degreasers                                | _ Ownership Change Fonn                                   |  |  |
| X DEP7007N Source Emissions Profile                                 | _ Secretary of State Certificate                          |  |  |
| _ DEP7007P Perchloroethylene Dry Cleaning Systems                   | _ Flowcharts or diagrams depicting process                |  |  |
| DEP7007R Emission Offset Credit                                     | _ Digital Line Graphs (DLG) files ofbuldings, roads, etc. |  |  |
| DEP7007S Service Stations   | _Site Map   |  |  |
| _ DEP7007T Metal Plating and Surface Treatment Operations           | _ Map or drawing depicting location of facility           |  |  |
| _ DEP7007V Applicable Requirements and Compliance Activities        | _ Safety Data Sheet (SDS)                                 |  |  |
| _ DEP7007Y Good Engineering Practice and Stack Height Determination | _ Emergency Response Plan                                 |  |  |
| _ DEP7007AA Compliance Schedule for Non-complying Emission Units    | x Other: Emissions Calculations                           |  |  |
| _ DEP7007BB Certified Progress Report                               |   |  |  |

# Section AI.6: Signature Block

I, the undersigned, hereby certify under penalty of law, that I am a responsible official\*, and that I have personally examined, and am familiar with, the information submitted in this document and all its attachments. Based on my inquiry of those individuals with primary responsibility for obtaining the information, I certify that the information is on knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false or incom plete information, including the possibility of fine or imprisonment.

J� I 1′0 *l* z′z..-

**Authorized Signature** 

Date

Ivan Birrell

Senior Plant Manager

**Title of Signatory** 

**Type or Printed Name of Signatory** \*Responsible official as defined by 401 KAR 52:001.

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Page \_6\_ of \_6\_

|          | Di                     | ivision f | or Air Q  | Juality |          |        | DEP7007N                          |                  |                           |  |                   |                      |                                      |                                   |  |                                      |  |  |  |
|----------|------------------------|-----------|-----------|---------|----------|--------|-----------------------------------|------------------|---------------------------|--|-------------------|----------------------|--------------------------------------|-----------------------------------|--|--------------------------------------|--|--|--|
|          |                        |           |           |         |          |        |                                   | Sourc            | e Emissio                 | ns Profile                               |                   |                      |                                      | Additional I                      | Documentation                          |                                      |  |  |  |
|          |                        | 300 Sow   | er Boulev | ard     |          |        |                                   | _ Section        | N.1: Emissio              | on Summary                               |                   |                      |                                      |                                   |  |                                      |  |  |  |
|          |                        | Frankfor  | t, KY 400 | 501     |          |        |                                   | _ Section        | N.2: Stack In             | nformation                               |                   |                      | _ Comple                             | ete DEP700                        | 7AI                                    |                                      |  |  |  |
|          |                        | (502)     | 564-3999  | )       |          |        |                                   | _ Section        | N.3: Fugitive             | e Information                            |                   |                      | -                                    |                                   |  |                                      |  |  |  |
|          |                        |           |           |         |          |        |                                   | _ Section        | N.4: Notes,               | Comments, and                            | l Explanati       | ons                  |                                      |                                   |  |                                      |  |  |  |
| Source N | ame:                   |           |           |         | Westlak  | e Chem | ical QpCo, LP                     |                  |                           |  |                   |                      |                                      |                                   |  |                                      |  |  |  |
| KY EIS ( | (AFS) #:               |           |           | 21-     | 157-000  | 80     |                                   |                  |                           |  |                   |                      |                                      |                                   |  |                                      |  |  |  |
| Permit#: |                        |           |           |         | V-20-022 |        |                                   |                  |                           |  |                   |                      |                                      |                                   |  |                                      |  |  |  |
| Agency I | nterest (AI)           | ) ID:     |           |         | 122899   | )      |                                   |                  |                           |  |                   |                      |                                      |                                   |  |                                      |  |  |  |
| Date:    |                        |           |           |         | October  | 2022   |                                   |                  |                           |  |                   |                      |                                      |                                   |  |                                      |  |  |  |
| IN,I: En | nission S              | ummary    |           |         |          |        |                                   |                  |                           |  |                   |                      |                                      |                                   |  | _                                    |  |  |  |
| Emission | Emission               | Process   | Process   | Control | Control  | Stack  | Maximum<br>Design                 |                  | Uncontrolled<br>Emission  | Emission<br>Factor Source                | Capture           | Control              | Hourly E                             | missions                          | nissions Annual Er                     |                                      |  |  |  |
| Unit#    | Unit Name              | ID        | Name      | Name    | ID<br>ID | ID     | Capacity<br>(SCC<br>U11ilslho11r) | Pollutant        | Factor<br>(lb!SCC U11its) | (cg. AP-42, Stock<br>Test. Mass Balance) | Efficiency<br>(%) | Efficiency<br>("/,,) | Uncontrolled<br>Potential<br>(lb/hr) | Controlled<br>Potential<br>(/Mir) | Uncontrolled<br>Potential<br>(Ions/yr) | Controlled<br>Potential<br>(Ions/yr) |  |  |  |
| 305      | Cracking<br>Furnace #1 |           |           |         |          |        | 0.42                              | NOx              | 16.58                     | Manu. Guar.                              |                   |                      | 7.03                                 | 7.03                              | 27.55                                  | 27.55                                |  |  |  |
|          |                        |           |           |         |          |        |                                   | CO               | 14,34                     | Manu.Guar                                |                   |                      | 6.08                                 | 6,06                              | 23.83                                  | 23 83                                |  |  |  |
|          |                        |           |           |         |          |        |                                   | so,              | 0.60                      | AP-42                                    |                   |                      | 0.11                                 | 0.11                              | 0.44                                   | 0.44                                 |  |  |  |
|          |                        |           |           |         |          |        |                                   |                  | 4.48                      | Manu. Guar.                              |                   |                      | 1.90                                 | 1.90                              | 7.45                                   | 7.45                                 |  |  |  |
|          |                        |           |           |         |          |        |                                   | PM <sub>25</sub> | 448                       | Manu Guar                                |                   |                      | 1.90                                 | 1.90                              | 7.45                                   | 7.45                                 |  |  |  |
|          |                        |           |           |         |          |        |                                   | voe              | 3.36                      | Manu.Guar                                |                   |                      | 1.43                                 | 1.43                              | 5.58                                   | 5.58                                 |  |  |  |
| 306      | Cracking<br>Furnace #2 |           |           |         |          |        | 0.42                              | NOx              | 16.58                     | Manu. Guar.                              |                   |                      | 7.03                                 | 7.03                              | 27.55                                  | 27 55                                |  |  |  |
|          |                        |           |           |         |          |        |                                   | СО               | 14.34                     | Manu Guar                                |                   |                      | 6.06                                 | 6.08                              | 23.83                                  | 23 83                                |  |  |  |
|          |                        |           |           |         |          |        |                                   | so,              | 0.60                      | AP-42                                    |                   |                      | 0,11                                 | 0.11                              | 0.44                                   | 0.44                                 |  |  |  |
|          |                        |           |           |         |          |        |                                   | PM/PM,0          | 4.48                      | Manu.Guar.                               |                   |                      | 1.90                                 | 1.90                              | 7.45                                   | 7.45                                 |  |  |  |

| Emission | Emission               | Process | Process | Control        | Control      | Stack | Maximum Uncontrolled Emission<br>ack Design Emission Factor Source |                     | Emission                 | Capture                                   | Control           | Hourly Emissions    |   | Annual Emissions                     |  |                                      |
|----------|------------------------|---------|---------|----------------|--------------|-------|--|---------------------|--------------------------|---|-------------------|---------------------|---|--------------------------------------|--|--------------------------------------|
| Unit#    | Unit Name              | ID      | Name    | Device<br>Name | Device<br>ID | ID    | Capacity<br>(SCC<br>Units/hour)                                    | Pollutant           | Factor<br>(lb!SCC Unils) | (e.g. AP-42, Stack<br>Test, Mass Balance) | Efficiency<br>(%) | Efficiency<br>("/.) | Uncontrolled<br>Potential<br>( <i>lb/hr</i> ) | Controlled<br>Potential<br>(//,1/,r) | Uncontrolled<br>Potential<br>(Inns/yr) | Controlled<br>Potential<br>(tons/yr) |
|          |                        |         |         |                |              |       |  | PM2s                | 4.48                     | Manu. Guar.                               |                   |                     | 1.90  | 1.90                                 | 7.45                                   | 7.45                                 |
|          |                        |         |         |                |              |       |  | voe                 | 3.36                     | Manu Guar                                 |                   |                     | 1.43  | 1.43                                 | 5 58                                   | 5.58                                 |
| 307      | Cracking<br>Fumace#3   |         |         |                |              |       | 0.42   | NOx                 | 16.58                    | Manu.Guar.                                |                   |                     | 7.03  | 7.03                                 | 27.55                                  | 27.55                                |
|          |                        |         |         |                |              |       |  | CO                  | 14.34                    | Manu. Guar                                |                   |                     | 6 08  | 6.08                                 | 23.83                                  | 2383                                 |
|          |                        |         |         |                |              |       |  | SO2                 | 0,60                     | AP-42                                     |                   |                     | 0.11  | 0 11                                 | 044                                    | 0.44                                 |
|          |                        |         |         |                |              |       |  | PM/PM <sub>10</sub> | 4.48                     | Manu. Guar.                               |                   |                     | 1.90  | 1.90                                 | 7.45                                   | 7.45                                 |
|          |                        |         |         |                |              |       |  | PM2s                | 4.48                     | Manu. Guar.                               |                   |                     | 1.90  | 1.90                                 | 7.45                                   | 7.45                                 |
|          |                        |         |         |                |              |       |  | voe                 | 3.36                     | Manu. Guar                                |                   |                     | 1.43  | 1.43                                 | 5 58                                   | 5.58                                 |
| 311      | Cracking<br>Furnace #7 |         |         |                |              |       | 0.23   | NOx                 | 16.58                    | Manu Guar                                 |                   |                     | 3.89  | 3.89                                 | 14.59                                  | 14.59                                |
|          |                        |         |         |                |              |       |  | CO                  | 1434                     | Manu Guar.                                |                   |                     | 3.36  | 3.36                                 | 12.61                                  | 12.61                                |
|          |                        |         |         |                |              |       |  | SO2                 | 0.60                     | AP-42                                     |                   |                     | 0.06  | 006                                  | 0 23                                   | 0.23                                 |
|          |                        |         |         |                |              |       |  | PM/PM,0             | 4.48                     | Manu. Guar.                               |                   |                     | 1.05  | 1.05                                 | 3.94                                   | 3.94                                 |
|          |                        |         |         |                |              |       |  | PM2s                | 4.48                     | Manu. Guar.                               |                   |                     | 1.05  | 1.05                                 | 3.94                                   | 3,94                                 |
|          |                        |         |         |                |              |       |  | voe                 | 3.36                     | Manu.Guar.                                |                   |                     | 0.79  | 0.79                                 | 2,96                                   | 2.96                                 |

# **APPENDIX B: PSD ANALYSIS**

This appendix includes the following tables:

- Table B-1: Project Net Emissions Increase Determination Table;
- Table B-2: Updated Summary of Creditable Increases and Decreases of NOx; and
- Continuation of Table B-3: Summary of Projects Within the Contemporaneous Window.

#### Table B-1: Project Net Emissions Increase Determination Table Calvert City, Kentucky Ethylene Furnace Firing Rate Increase

| HD.      | Emb alan Unit Dollerintlan                  |        |        | Baselln• Ad | lu.al Emiulons (BA.Iii | lloMl)'olll'j1 |       |       |
|----------|---|--------|--------|-------------|------------------------|----------------|-------|-------|
|          |   | CO     | NO,    | so,         | PM                     | PM1•           | PM,   | VOC   |
| Ethylene |   |        |        |             |                        |                |       |       |
| 305      | Cracking Furnace '1                         | 19.83  | 22.92  | 0.36        | 4.92                   | 4.92           | 4.92  | 4.65  |
| 306      | Crackini,; Furnace #2                       | 19.87  | 22.63  | 0.37        | 4,93                   | 4.93           | 4.93  | 4.65  |
| 307      | Cracking Furnace #3                         | 19.62  | 22.74  | 0.37        | 4.97                   | 4.97           | 4.97  | 4.68  |
| 311      | Cracking Furnace #7                         | 9.91   | 11.85  | 0.19        | 2.50                   | 2.50           | 2.50  | 2.40  |
| 327      | Cracking Furnace #8                         | 13.67  | 29.24  | D.25        | 4.27                   | 4.27           | 4.27  | 6.37  |
| 328      | Cracking Furnace #9                         | 16.52  | 30.45  | 0.23        | 3.61                   | 3.61           | 3.61  | 4.99  |
| 314      | Reactor Regeneration Heater                 | 0.06   | D.06   | 0.00        | 00 <del>,</del> 00     | 0.00           | 0.00  | 0.00  |
| 318      | n-Propanol Tank TK-932                      |        |        | -           |                        |                |       | 0.02  |
| 332B     | Fuel Oil Tank                               | -      | -      |             | -                      | -              | -     | 0.17  |
| 319      | Tank TK-904A (Gasoline)                     |        |        | -           | -                      | -              | -     | 0.13  |
| 320      | Tank TK-904B (Gasoline)                     | -      | -      | -           | -                      |                | -     | 0.13  |
| 321      | Ethylene Flare                              | 52.90  | 9.04   | 2.55        | 0.01                   | 0.01           | O.Dl  | 18.26 |
| 342      | RiverVCU                                    | 0.10   | 0.02   | 0.00        | 0.00                   | 0.00           | 0.00  | 0.08  |
| 316      | Injection Oil Tank (7,500 gal) <sup>5</sup> |        | -      | -           | -                      | -              |       |       |
| 325      | Fuel Oil Loading/ Unloading'                | -      | -      | -           | -                      | -              | -     | -     |
| 331      | Inhibitor Make-up Tank {1,000 gal)'         | -      | -      | -           | -                      | -              | -     |       |
| 337      | Ethrlen,• Stormwater Tank (250.0()0 gal)'   | -      | -      |             | -                      | -              | -     |       |
| 341      | Fuel Stabilizer Totes (300 gal)'            | -      | -      |             |                        | -              | -     | •     |
| 376      | Fuel Oil Additive Tote'                     | •      | -      | •           |                        |                | -     | -     |
|          | Baseline Total                              | 152.46 | 148.96 | 4.31        | 25.20                  | 25.20          | 25.20 | 46.53 |

| Calculation of Production Increases for Projected Future Actual Emissions <sup>2</sup> |                 |
|--|-----------------|
|  | Ethylene, lb/vr |
| Baseline Production (3/2018-2/2020)  | 743,367,174     |
| Projected Future Production  | 746.867.174     |
| PAE Production Increase (%)  | 0.47%           |

#### Table B-1: Project Net Emissions Increase Determination Table Calvert City, Kentucky Ethylene Furnace Firing Rate Increase

| EPI       | Emission Unit Desalplion                  |        | Р      | toJeclcd Futun, AduAI | llmiiL,li,n,i (!'Alli (Co | nll/yurl &Ming Uni. | <b>,</b> |       |
|-----------|---|--------|--------|-----------------------|---------------------------|---------------------|----------|-------|
|           |   |        |        | rotuitlal 101!m       | nll 0Poi"y�.u) Ntw Ⅰ      | Modlli�d Unilll     |          |       |
|           |   | со     | NOA    | so,                   | PM                        | l'Ma                | PM1.,    | voe   |
| l!lbylene |   |        |        |                       |                           |                     |          |       |
| 305       | Cracking Furnace , N                      | 23.83  | 27.55  | 0,44                  | 7.45                      | 7.45                | 7.45     | 5.58  |
| 306       | Crackin!( Furnace #2                      | 23.83  | 27.55  | 0.44                  | 7.45                      | 7.45                | 7.45     | 5.58  |
| 307       | Cracking_Furnace #3                       | 23.83  | 27.55  | 0.44                  | 7.45                      | 7.45                | 7.45     | 5.58  |
| 311       | Cracking Furnace #7                       | 12.61  | 14.59  | 0.23                  | 3.94                      | 3.94                | 3.94     | 2.96  |
| 327       | Cracking Furnace #8                       | 13.73  | 29.38  | 0.25                  | 4.29                      | 4.29                | 4.29     | 6.40  |
| 328       | Cracking Furnace #9                       | 16.60  | 30.59  | 0.23                  | 3.62                      | 3.62                | 3.62     | 5.01  |
| 314       | Reactor ReReneration Heater               | 0.06   | 0.06   | 0.00                  | 0.00                      | 0.00                | 0.00     | 0.00  |
| 318       | n-Propanol Tank TK-932                    | -      |        | -                     | -                         | •                   |          | 0.02  |
| 3328      | Fuel Oil Tank                             |        |        | -                     |                           | ٠                   |          | 0.17  |
| 319       | Tank TK-904A (Gasoline)                   | -      |        |                       |                           |                     |          | 0.13  |
| 320       | Tank TK-904B (Gasoline)                   | -      |        |                       | -                         | -                   |          | 0.13  |
| 321       | Ethylene Ffo,c                            | 53.14  | 9.09   | 2.56                  | 0.01                      | 0.01                | 0.01     | 18.34 |
| J42       | RiverVCU                                  | 0.10   | 0.02   | 0.00                  | 0.00                      | 0.00                | 0.00     | 0.08  |
| 316       | Injection Oil Tank (7,500 gal)            | •      | -      |                       |                           |                     | -        | 0.03  |
| 325       | fuel Oil Loading/ Unloading               |        |        | -                     |                           |                     |          | 0.13  |
| )31       | Inhibitor Make-up Tank (1,000 gal)        | ٠      |        | -                     | -                         |                     |          | 0.00  |
| 337       | Elh; Icnc Stormwater Tank (250,000 b'lll) | -      |        |                       |                           | -                   |          | 1.24  |
| )ti       | fuel Stabilizer Totes (300 gol)           | -      |        |                       | -                         |                     |          | 0.00  |
| 376       | Fuel Oil Additive Tote                    | -      |        |                       |                           |                     |          | 0.00  |
|           | Project Total                             | 167.73 | 166.37 | 4.59                  | 34.21                     | 34.21               | 34.21    | 51.40 |

#### Table B•l: Project Net Emissions Increase Determination Table Calvert City, Kentucky Ethylene Furnace Firing Rate Increase

| EPI       | Emission Unit Description              | Net Project Adjusted Emission Increase [PAE- BAE] |       |             |      |      |           |      |  |  |  |  |  |  |  |
|-----------|--|---|-------|-------------|------|------|-----------|------|--|--|--|--|--|--|--|
|           | and the Kerner                         | со  | NO,   | <b>SO</b> , | PM   | PM10 | $PM_{15}$ | voe  |  |  |  |  |  |  |  |
| 'Elhyl�ne |  |   |       |             |      |      |           |      |  |  |  |  |  |  |  |
| 305       | Cr;icking Furnace ;1                   | 4.00  | 4.63  | 0.07        | 2 53 | 2.53 | 253       | 0.94 |  |  |  |  |  |  |  |
| 306       | Cracking- Furnace ;.2                  | 3.96  | 4.92  | 0.07        | 2.52 | 2.52 | 2.52      | 0.93 |  |  |  |  |  |  |  |
| 307       | Cracking Furnace ;3                    | 4.21  | 4.81  | 0 07        | 2.48 | 2.48 | 2 48      | 091  |  |  |  |  |  |  |  |
| 311       | Cracking Furnace ;7                    | 2.71  | 2.73  | 0.04        | 1.44 | 1.44 | 1.44      | 0.55 |  |  |  |  |  |  |  |
| 327       | Cracking Furnace ;8                    | 006   | 0.14  | 0.00        | 0,02 | 0,02 | 0.02      | 0.D3 |  |  |  |  |  |  |  |
| 328       | Crcking_ Furnace ;9                    | 008   | 014   | 0.00        | 0.02 | 0.D2 | 002       | 0.02 |  |  |  |  |  |  |  |
| 314       | Reactor Rcl,;_encration Heater         | 0.00  | 0.00  | 0.00        | 0.00 | 0.00 | 0.00      | 0.00 |  |  |  |  |  |  |  |
| 318       | n-Propanol Tank TK-932                 |   | -     | -           | -    | -    | -         | 0.00 |  |  |  |  |  |  |  |
| 332B      | Fuel Oil Tank                          | -   | -     | -           | -    | -    | -         | 0.00 |  |  |  |  |  |  |  |
| 319       | Tank TK-Y04A (Gasoline)                | -   | -     | :           | -    |      | -         | 0.00 |  |  |  |  |  |  |  |
| 320       | Tank TK-9048 (Gasoline)                | -   |       |             |      |      |           | 0.00 |  |  |  |  |  |  |  |
| 321       | Ethylene Flare                         | 0.25  | 0,04  | 0 01        | 0.00 | 0.00 | 0.00      | 0,09 |  |  |  |  |  |  |  |
| 342       | Ri\•erVCU                              | 0.00  | 0 00  | 0,00        | 0.00 | 0.00 | 0.00      | 0.00 |  |  |  |  |  |  |  |
| 316       | Injection Oil Tank (7,500 gal)         |   |       |             | -    |      |           | 0.0J |  |  |  |  |  |  |  |
| 325       | Fuel Oil Loading/ Unloading            | -   | -     |             | -    | -    | -         | 0.13 |  |  |  |  |  |  |  |
| 331       | Inhibitor Make-up Tank (1,000 gal)     | -   |       |             |      |      |           | 0.00 |  |  |  |  |  |  |  |
| 337       | Ethylene Stormwater Tank (250,000 gal) | -   |       |             | 1    |      |           | 1.24 |  |  |  |  |  |  |  |
| 341       | Fuel Stabilizer Totes (300 gal)        | -   | -     |             |      | -    | -         | 0.00 |  |  |  |  |  |  |  |
| 376       | Fuel Oil Additive Tote                 | *   | -     |             | -    |      |           | 0.00 |  |  |  |  |  |  |  |
|           | Project Total                          | 15.27   | 17.42 | 0.27        | 9.00 | 9.00 | 9.00      | 4,87 |  |  |  |  |  |  |  |

|                             |        |       | PSD   | Applicab)Hly Determi | nation |        |       |
|-----------------------------|--------|-------|-------|----------------------|--------|--------|-------|
| Summ•'}                     | CO     | NO,   | so,   | PM                   | PM111  | I'M:., | voe   |
| Project Emission Increase   | 15.27  | 17.42 | 0.27  | 9.00                 | 9.00   | 9.00   | 4.87  |
| PSD Significance Level, TPy | 100 00 | 40,00 | 40,00 | 25.00                | 15.00  | 10.00  | 40.0U |
| Trip threshold?             | No     | No    | No    | No                   | No     | No     | No    |

#### NOTES:

(1) B.tsclinc Emissions are the annual J.vcrage emissions for the 24-cJkndar month period of M.irch 1, 2018 through February 28, 2020.

(2) Production JncrcJses for Projected Future J\ctu,il Emissions (PAE) are bilsed on the proposed future production r.ites .is comp.ired to the ilctu.il <mnu.il average production during lhc baseline period (3) PAE are based on lhe emissions during the baseline period and the increases in production rates by process arl!.l. It is c<1lculated b)'

(Baseline Emissions for EPN) • (PAE Percent Production Increase in the Specific Production Arca)= Projected Future Actu.il Emission 🏈

If the unit's calculated PAE exceeds the unit's PTE, then the unit's PTE is the PAE

For Ethylene Furnaces 1, 2, 3, and 7, since the unils are considert!d modified with this project lo increase the annull firing limits, the PAE= PTE (Sec Toble C-1

(4) PSD thresholds obtained from 401 KAR 51:001.

(5) Insignificont octivitfos baseline emissions set to O and PFA set to PTE to be conservative

| EP#     | Emission Unit Description                           | Creditable<br>Increase or<br>Decrease, TPY | Note for<br>Values that<br>Changed |
|---------|---|--|------------------------------------|
| 011     | Boiler #4   | -149.20                                    |                                    |
| 008     | Boiler #1   | -56.10                                     |                                    |
| 009     | Boiler 112  | 32.67                                      |                                    |
| 010     | Boiler #3   | -26.93                                     |                                    |
| 012     | Boiler #5   | -3.24                                      |                                    |
| 013     | Boiler #6   | 32.67                                      |                                    |
| 305     | Cracking Furnace #1                                 | 11.35                                      | 2                                  |
| 306     | Cracking Furnace #2                                 | 10.14                                      | 2                                  |
| 307     | Cracking Furnace #3                                 | 12.76                                      | 2                                  |
| 311     | Cracking Furnace #7                                 | 4.13                                       | 2                                  |
| 327     | Cracking Furnace #8                                 | 9.99                                       |                                    |
| 328     | Cracking Furnace #9                                 | 20.12                                      |                                    |
| 329     | Cracking Furnace #10                                | 6.24                                       | 2                                  |
| 314     | Reactor Regeneration Heater                         | 2.13                                       |                                    |
| 321     | Ethylene Flare                                      | -  |                                    |
| 321A    | New Ethylene Flare                                  | 16.72                                      |                                    |
| 321T    | Temporary Ethylene Flare                            | -  | 2,3                                |
| 2215    | Ethylene Flare (takes the place of 321 which was    |  | 2.2                                |
| 321B    | damaged in Feb 2021)                                | -  | 2, 3                               |
| 342     | RiverVCU  | 0.05                                       |                                    |
| 437     | Catoxid Air Preheater                               | 3.52                                       |                                    |
| 453     | Oxy Thermal Incinerator                             | 2.05                                       |                                    |
| 530     | Primary Incinerator                                 | 15.71                                      |                                    |
| 514     | South Cracking Furnace #13                          | -  | 1                                  |
| 524     | VClFlare  | 1.36                                       | 2                                  |
| 526     | North Cracking Furnace IA                           | -  | 1                                  |
| 527     | North Cracking Furnace 2A                           | -  | 1                                  |
| 534     | EDC Cracking Furnace #3                             | -2.69                                      |                                    |
| 535     | EDC Cracking Furnace #4                             | 12.00                                      |                                    |
| 536     | EDC Cracking Furnace #5                             | 11.68                                      |                                    |
| 15      | Boiler 111  | 10.38                                      |                                    |
| 21      | Rotary Dryer #3                                     | 6.10                                       |                                    |
| 22      | Boiler #2   | 10.54                                      |                                    |
| 33      | Carrier Fluid Bed Dryer                             | 5.51                                       |                                    |
| 024     | Natural Gas Pipeline In-Line Heater                 | 0.31                                       |                                    |
| 080 (2) | PVC Emergency Generator                             | -  | 1                                  |
| 81      | PVC Emergency Generator                             | 0.05                                       | 2                                  |
| 82      | PVC Emergency Generator                             | 0.05                                       | 2                                  |
| 081A    | Replacement of #2 Fire Water Pump Engine with #2A   | -  | 3                                  |
| 081B    | Replacement of #2A Fire Water Pump Engine with 112B | 0.07                                       | 2                                  |
| 082A    | #5 Fire water Pump                                  | - 0.29                                     | 1                                  |
| 004     | Emergency Priewater Pump Generator                  | 0.20                                       |                                    |

#### Table B-2: Summary of Creditable Increases and Decreases of NOx Calvert City, Kentucky Plant Expansion

#### Table B-2: Summary of Creditable Increases and Decreases of NOx Calvert City, Kentucky Plant Expansion

| EP# | Emission Unit Description                   | Creditable<br>Increase or<br>Decrease, TPY | Note for<br>Values that<br>Changed |
|-----|---|--|------------------------------------|
| 085 | Emergency Gen for Sodium Hypochlorite Tower | 0.28                                       |                                    |
| 088 | Portable Diesel Engine                      | 0.52                                       |                                    |
|     | Net NOx Emissions                           | 1.23                                       |                                    |

Notes:

1. The project which originally impacted this EPN and resulted in a creditable increase or decrease is no longer in the contemporaneous window.

2. Project implemented after the original application was submitted.

3. The project was installed and was removed or will be removed prior to the contemporaneous period ending.

#### Continuation of Table B-3: Summary of Projects With.in the Contemporaneous Window Calvert City, Kentucky Ethylene Furnace Firing Rate Increase

| Project<br>Ref No. | Project<br>Implementation<br>Date | Project Description  | EP#      | NOx<br>Emissions? | Emission Unit Description              |
|--------------------|-----------------------------------|--|----------|-------------------|--|
| 59                 | June 2022                         | Salt Laneua)!;e Uodates  | 801      | N                 | None                                   |
| 60                 | July 2022                         | ITwnoot.lf\' Heat Ex.chn.n@ fon the LTC Reactol</td <td>Oil</td> <td>У</td> <td>Boiler:14</td> | Oil      | У                 | Boiler:14                              |
| 61                 | July 2022                         | Administrative Change only - correct ppmw to loomv for certain stack testine:                  | multiple | Ν                 | None                                   |
| 62                 | September 2022                    | Stab heater on the catalvst honn,:,r1  | 011      | у                 | Boilerl4                               |
|                    |                                   |  | 305      | У                 | Cracking Furnace #1                    |
| 1                  |                                   |  | 306      | У                 | Cracking Furnace :t2                   |
|                    |                                   |  | 307      | у                 | Cracking Fumilce #3                    |
| 1                  |                                   |  | 311      | У                 | Crackin  Furnace »7                    |
|                    |                                   |  | 314      | У                 | Reactor RcRcncration Heater            |
| 1                  |                                   |  | 318      | N                 | n-Propanol Tank TK-932                 |
|                    |                                   |  | 332B     | N                 | Fuel Oil Tank                          |
| 1                  |                                   |  | 319      | N                 | Tank TK-904A (Gasoline)                |
| (2)                | 0                                 | Elhylene Furnaces firing rates (APC ilnd ethane as   | 320      | N                 | Tank TK-904B (Gasoline)                |
| 63                 | October 2022                      | fuel)  | 321      | у                 | Ethylene Flare                         |
|                    |                                   |  | 342      | у                 | RiverVCU                               |
|                    |                                   |  | 316      | N                 | Injection Oil Tank (7,500 gal)         |
|                    |                                   |  | 325      | Ν                 | Fuel Oil Loading/ Unloading            |
|                    |                                   |  | 326      | Ν                 | Ethylene Furnace Decoking Pot          |
|                    |                                   |  | 331      | Ν                 | Inhibitor Make-up Tank (1,000 gal)     |
|                    |                                   |  | 337      | N                 | Ethvlene Stormwater Tank (250,000 gal) |
|                    |                                   |  | 341      | N                 | Fuel Stabilizer Totes (300 gal)        |
|                    |                                   |  | 376      | N                 | Fuel Oil Additive Tote                 |
|                    |                                   |  | 813A     | N                 | Sodium Hvoochlorite Tower              |
| 64                 | October 2022                      | Decommissioning the Ahnospheric Scrubber   | 877      | N                 | Atmospheric Scrubber                   |

Notes:

1. Several projects have been implemented since the submission and approval of the PSD project (fitle V Permits V-19--016, V-20-022, and V-15-009 R4) which have

included Boiler #4 as a downstream impacted source. Boiler 114 will not be operational at the end of the contemporaneous window and when Boiler �4 is shut down, the

steam demand will shift to existing Boiler #2 and new Boiler #6. Since Boiler ¢12 and Boiler :6 are already on Table 5 with the Creditable NOx incre.:ise of the individual boiler's NOX PTE, the inclusion of these projects in the contemporaneous window does not affect the NOX netting calculation 2. These units were started up during and will be shut down prior to the end of the contemporaneous window; therefore, the inclusion of these pn>j is the total started up during and will be shut down prior to the end of the contemporaneous window; therefore, the inclusion of these pn>j is the prior total started up during and will be shut down prior to the end of the contemporaneous window; therefore, the inclusion of these pn>j is the prior total started up during and will be shut down prior to the end of the contemporaneous window; therefore, the inclusion of these pn>j is the prior total started up during and will be shut down prior to the end of the contemporaneous window; therefore, the inclusion of these pn>j is the prior total started up during and will be shut down prior to the end of the contemporaneous window; therefore, the inclusion of the end of the end of the contemporaneous window; therefore, the inclusion of the end of the e

contempor. Jneous window does not affect the NOx netting c, 1lrulation.

# **APPENDIX C: EMISSIONS CALCULATIONS**

This appendix includes the following table:

• Table C-1: Criteria Pollutant Emissions from Ethylene Cracking Furnaces.

#### Table C-1: Criteria Pollutant Emjssions from ELhylene Cracking Furnaces Westlake Chemical OpCo, LP Calvert City, Kentucky Ethylene Furnace Firing Rate Increase

|     |                     |                           | Annual                 | NO       | Factors             |    | N0:i,:. Er   | nissions | PM/PM <sub>1</sub> 0 | /PM�_,;Factors   |  |                      |   | PM/PM <sub>1</sub> JPM | Emissions          |                  | CO F    | actors   | CO En  | nissions   |
|-----|---------------------|---------------------------|------------------------|----------|---------------------|----|--------------|----------|----------------------|------------------|--|----------------------|---|------------------------|--------------------|------------------|---------|----------|--------|------------|
| EPN | EPN DescriptionL    | Max Hourly<br>Firing Rate | Average Firing<br>Rate | Ar       | nnual <sup>10</sup> |    | Prop         | osed     | An                   | nual             |  | Hourly_<br>Allowable | - | Hau<br>Allowable       | rh·'''<br>Proposed | Annual           | An      | nual     | Prop   | osed       |
|     |                     | MMBtufhr'                 | MMBtu/hrb              | lb/MMscf | lb/MMBtu            |    | lb/hr'' TPY' |          | lb/MMsd              | lb/MMsd lb/MMBtu |  | lb/MMBtu             |   | lb/hr lb/hr'           |                    | TPY <sup>9</sup> | lb/MMsd | lb/MMBtu | lb/hr' | TPY'       |
| 305 | Cracking Furnace #1 | 190 00                    | 170.00                 | 166      | 0,0370              | 8  | 7,D3         | 27.55    | 4.5                  | 0.0100 I:        |  | 0.10                 |   | 17.00                  | 1.90               | 7.45             | 143     | 0 0320   | 6 08   | 2,.1 H.,.1 |
| 306 | Cracking Furnace #2 | 190.00                    | 170.00                 | 166      | 0,0370              | '  | 7,()3        | 2755     | 4.5                  | 0,0100           |  | 0,10                 |   | 1700                   | 1.90               | 7.45             | 143     | 0.0320   | 6.06   | 23.83      |
| 307 | Cracking Furnace :J | 190.00                    | 170.00                 | 166      | 0,0370              | 1  | 7.D3         | 27 55    | 45                   | 00100            |  | 010                  |   | 17.00                  | 190                | 7.45             | 143     | 0.0320   | 6JJ6   | 23.83      |
| 311 | Cracking Furnace #7 | 105JJO                    | 90.00                  | 166      | 0,0370              |    | 389          | 1459     | 45                   | 00100 !          |  | [) 10                |   | 9 00                   | 105                | 3.94             | 143     | 0.0320   | 336    | 12.61      |
|     |                     |                           |                        |          |                     | Τ. |              |          |                      |                  |  |                      |   |                        |                    |                  |         |          | •      |            |

|     |                        |                          | Annual         | Annual VOC |            |   | VOC Emissions |      | S0 <sub>2</sub> Factors |          |   |           |   | S0 <sub>2</sub> Em | emissions          |                  |  |
|-----|------------------------|--------------------------|----------------|------------|------------|---|---------------|------|-------------------------|----------|---|-----------|---|--------------------|--------------------|------------------|--|
|     | 1                      | Max Hourly               | Average Firing |            |            |   | _             |      |                         |          |   | Hourly    | / | f-to               | u.rly'             |                  |  |
| EPN | EPN EPN Description    | Firing Rate<br>MMBtulbr' | Rate           | Annual     |            |   | Prop          | osed | I                       | Annual   |   | Allowable |   | Allowable          | Proposed           | Annual           |  |
|     |                        | WIWIDtulli               | MMBtulhr'      | lb/MMsd    | l lb/MMBtu |   | lb/hr"        | Try' | lb/MMscf                | lb/MMBtu |   | lb/MMBtu  |   | lb/hr              | Jb/hr <sup>8</sup> | TPY <sup>9</sup> |  |
| 305 | Cracking Furnace #1    | 190.00                   | 170.00         | 3.36       | 0.0075     |   | 1,43          | 558  | 0,60                    | 00059    | ) | 0.80      | ' | 136,00             | 011                | 0.44             |  |
| 306 | Cracking Furnace #2    | 190.00                   | 170,00         | 336        | 0.0075     |   | 1.43          | 5.58 | 0.60                    | 0.00059  | 1 | 0,60      | ' | 136,00             | 0.11               | 0.44             |  |
| 307 | Cracking Furnace #3    | 190.00                   | 170.00         | 3.36       | 0.0075     | Ι | 1.43          | 5.58 | 0.60                    | 0.00059  | 1 | 0.60      | ' | 136.00             | 0.11               | 0.44             |  |
| 311 | !Cracking !'urn.ice #7 | 105 OU                   | 90.00          | 3.'16      | 0d0075     |   | 0 79          | 2,96 | 060                     | 0,00059  | 1 | 0.60      | ' | 72 00              | 0 06               | 0.23             |  |

Notes:

1 Process gas hJs an estimated HHV of 448 Btu/scf

2. Vendor Specification or Manufacturer's Guarantee.

3. Source AP-42 (7/98), Sec. 1.4502 Emission Factor for Combustion converted, 0.6 lb @1Mcf / 1020 Btu/sd-0.00059 lb/MMBh.l. Emission factor asst1mes 100% sulfur conversion to 502.

4. As per 401 KAR 59:015 Section S(1){b), for sources with total heat input capacity totaling 250 MMBtu/hr or more for all affected facilities at the source, an affected facility subject to this administrative regulation shall not c.iuse emissions of gilseS that contain sulfur dioxide in e,

of 0.60 lb/MMBtu.

5. This is the maximum £iring rate, averaged over a 24-hour period

6\_This is the propoSC'd. annual a, crJge firing rate, averaged over a 12-month rolling period.

7 As per 401 KAR 59:015 Section 4(1)(b), for sources with total heat input c-apacity totaling 250 MMB tuflu or more for all affectt.-d facilities at the source, an affected facility subject lo this administrative regulation shall not cause cmh: sions of particulate matter in excess of 010

8. Houri}' emissions: Firing Rate <MMBtu/hr> • Hourly emission factor <]b/MMBtu>:::: lb pollutant/ hr

Sample Calculation, NOx: 190 MMBtu/hr • 0,037 lb/MMBh.J = 7.03 lb/hr

9. Annual emissions: Firing Rate </>

Sample Calculation, NOx: 170 MMBtu/hr • 8760 hr/yr/ 2000 lb/ton,.. 0 037 lb/MMBtu = 2755 TPY

10, All Furnact.-s ha\'e Low Nox Burners,
# **APPENDIX D: PERMIT RED LINE**

#### 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: Primary Fuel: Date of construction: Control Device: <u>-140--170</u> mmBtu/hr each Process fuel gas \* 1963, rebuilt 2013 Low NOx burners (LNB)

#### EU# 005D (EPN 311)

Rating: Fuel: Date of construction: Control Device: One (1) Cracking Furnace (#7) <u>&G--90 mmBtu/hr</u> Process fuel gas\* 1967, rebuilt 2014 Low NOx burners (LNB)

| $\Delta C = 0 = 0 = 0$ |
|------------------------|
|------------------------|

| Rating:               |
|-----------------------|
| Fuel:                 |
| Date of construction: |
| Control Device:       |

127 mmBtu/hr each Process fuel gas \* 1976, modified 2014 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 December 2024  |
| Control Devices:      | Low NOx burners (LNB) and Selective Catalytic Reduction (SCR) |
|                       |   |

' Process fuel gas 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, PM2.s, VOC and CO2e, 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 to 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)(00), 40 C.F.R. 63.1100 to 63.1114 (Subpart YY), National Emission Standards for Hazardous Air Pollutants for Source Categories: Generic Maximum Achievable Control Technology Standards.

#### 1. **OperatingLimitations:**

- 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): <u>+84--190</u> 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#00SA-C (EPN 305-307): <u>-I--W---170 mrnBtu/hr</u> each.
  - (2) ForEU#005D (EPN 311): <u>&G-90 mmBtu/hr.</u>
  - (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 PM2.s 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 CO2e) emissions:
  - (1) Utilizing clean, gaseous fuel;
  - (2) Good heater design, including insulation and minimization of potential for air infiltration;



July 14, 2023

#### Sent via KY Business One Stop Portal

Ms. Hollie Delaney, Chemical Section Permit Support Section, Permit Review Branch Division for Air Quality Kentucky Energy and Environment Cabinet 300 Sower Blvd., 2<sup>nd</sup> Floor Frankfort, KY 40601

#### Re: Westlake Chemical OpCo, LP Source ID: 021-157-00080, Agency Interest: 122899 Minor Revision for Permit V-20-022 Rl- Non-Confidential Version

Dear Ms. Delaney:

Pursuant to 401 KAR 52:020 Section 14, on June 28, 2023, Westlake Chemical OpCo, LP (Westlake), located in Calvert City, Kentucky, submitted an application for a Minor Revision of the Ethylene Plant's Title V operating permit to incorporate the requirements of 40 CFR 63 Subpart YY (EMACT) which was published on July 6, 2020 and are effective July 6, 2023. That application had a confidential and a non-confidential submittal, which were submitted under separate cover. On July 12, KDAQ sent an email requiring that the confidential versions of the documents be identical to the public versions of the documents, and vice-versa, except that the information being deemed as confidential be redacted (marked out) on the public versions. This submittal is the non-confidential version of the Minor Revision requested.

If you have any questions or comments regarding this submittal, please contact Mr. Kevin Sheridan, Senior Regional Manager - HSE, at (270) 395-3362. Thank you for your time and consideration in this submittal.

Sincerely,

Westlake Vinyls, Inc.

Ŷ

Ivan Birrell Senior Plant Manager

Attachments

Box 712] [Calvert City. KY 42029] IT (270 395 3362]





June 28, 2023

#### Sent via KY Business One Stop Portal

Ms. Hollie Delaney, Chemical Section Permit Support Section, Permit Review Branch Division for Air Quality Kentucky Energy and Environment Cabinet 300 Sower Blvd., 2<sup>nd</sup> Floor Frankfort, KY 40601

#### Re: Westlake Chemical OpCo, LP Source ID: 021-157-00080, Agency Interest: 122899 Minor Revision for Permit V-20-022 RI-Non-Confidential Version

Dear Ms. Delaney:

Pursuant to 401 KAR 52:020 Section 14, Westlake Chemical OpCo, LP (Westlake), located in Calvert City, Kentucky, is requesting a Minor Revision of the Ethylene Plant's Title V operating permit to incorporate the requirements of 40 CFR 63 Subpart YY (EMACT) which was published on July 6, 2020 and are effective July 6, 2023. There are several other physical and operational changes in the Ethylene Plant detailed in the attached Minor Revision Application. The proposed changes meet the requirements of 401 KAR 52:020, Section 14 for Title V Minor Permit Revisions, and all necessary forms and information are attached. Confidential information is submitted under separate cover.

If you have any questions or comments regarding this submittal, please contact Mr. Kevin Sheridan, Senior Regional Manager - HSE, at (270) 395-3362. Thank you for your time and consideration in this submittal.

Sincerely,

Westlake Vinyls, Inc.

Usiel

Ivan Birrell Senior Plant Manager

Attachments

cc: Envr. File Division for Air Quality, Paducah Regional Office, 130 Eagle Nest Dr., Paducah, KY 4200 [2468 Industrial Parkway, P.O. Box 712] [Calvert City, KY 42029] IT [270 395 3362]

#### www.Westlake.com



# Application for Minor Revision to Title V Operating Permit No. V-20-022 R1

**Prepared For** Kentucky Department for Environmental Protection

**On behalf of** Westlake Chemical OpCo, LP – Ethylene Plant



**NON-CONFIDENTIAL VERSION** 

June 2023 Project No. P3303

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# **1 INTRODUCTION**

Pursuant to 401 KAR 52:020 Section 14, Westlake Chemical OpCo, LP (Westlake) submits this application for a minor revision of the Ethylene Plant's Title V operating permit to incorporate the requirements of 40 CFR 63 Subpart YY (EMACT) which was published on July 6, 2020 and which is effective July 6, 2023. There are several other physical and operational changes in the Ethylene Plant detailed in Section 3. This minor revision is unrelated to the Significant Permit Revision for the Prevention of Significant Deterioration (PSD) Project approved in March 2021. Discussed below are a number of key points related to the development of this application.

## 1.1 Facility Information

The Westlake Chemical OpCo, LP, Source ID 21-157-00080 is located in Marshall County, Kentucky. The Westlake Chemical OpCo Plant is located at 2468 Industrial Parkway, Calvert City, Kentucky. Site maps have been submitted previously and are not submitted with this application.

## 1.2 Purpose of Request

Westlake is providing this application to the Kentucky Department for Environmental Protection (DEP) for a minor revision to Title V Permit No. V-20-022 R1 for the Ethylene Plant. The facility is proposing to revise the Title V operating permit to incorporate the requirements of 40 CFR 63 Subpart YY and several other physical and operational changes in the Ethylene Plant as detailed in Section 3. Westlake is providing DEP forms and a permit red line. In this case, there are blue-line revisions submitted in October 2022 to increase the firing rate from four (4) furnaces, and the red-line revisions are new with this application.

# 1.3 Federal New Source Review Permitting Applicability

The facility is located in Marshall County which is within an area designated as attainment for ozone and all other criteria pollutants. New construction or physical and/or operational changes are potentially subject to PSD permitting requirements.

Although Westlake Chemical OpCo, LP (the Ethylene Plant), Westlake Vinyls, Inc. (the Vinyls Plant), and Westlake Vinyls, Inc. – PVC Plant (the PVC Plant) have been issued and operate under individual Title V permits, the plants are considered a single stationary source for the purposes of major new source review and Title V permit procedures since the facilities are (1) located on one or more contiguous or adjacent properties, (2) are under common control, and (3) belong to a single major industrial grouping (i.e., SIC Major Group Code 28). Therefore, all three (3) facilities have consistently conducted all permitting activities by evaluating applicable provisions as they may apply to the stationary source as a whole.

The calculated increase in emissions and the Federal NSR PSD evaluation are summarized in Table 1-1. A more detailed emissions summary is provided in Section 4, and calculation tables are presented in Appendix B.

| Pollutant       | Project<br>Increases | PSD Significance<br>Level | Is Netting<br>Required <sup>1</sup> | Is PSD Review<br>Required? |
|-----------------|----------------------|---------------------------|-------------------------------------|----------------------------|
|                 | (tpy)                | (tpy)                     | (Yes/No)                            | (Yes/No)                   |
| NOx             | 0.01                 | 40                        | No                                  | No                         |
| СО              | 0.07                 | 100                       | No                                  | No                         |
| VOC             | 7.11                 | 40                        | No                                  | No                         |
| SO <sub>2</sub> | < 0.01               | 40                        | No                                  | No                         |
| PM              | < 0.01               | 25                        | No                                  | No                         |
| PM10            | < 0.01               | 15                        | No                                  | No                         |
| PM2.5           | <0.01                | 10                        | No                                  | No                         |

Table 1-1 PSD Applicability Evaluation Summary

Note:

1. Netting is not required for this project; however, there is an open contemporaneous window related to a previous PSD project. The last NOx netting table was submitted on March 23, 2023, and demonstrated net NOx emissions of -13.41 tons. Since the NOx in this application is assigned to a source that was installed with the PSD project (EPN 321A) and is already in the netting table at its PTE, there is no impact on the NOx netting. This project will be listed on subsequent netting tables submitted, with zero impacts to the netted NOx.

As shown in Table 1-1, the proposed changes will not result in emissions increases above the respective PSD significance levels; therefore, PSD review is not required.

# 1.4 Application Overview

Key components of this application are organized as follows:

- A description of the process is included in Section 2;
- A description of the project is included in Section 3;
- Emission rate calculation methodology is discussed in Section 4;
- Appendix A contains completed Kentucky DEP Forms;
- Appendix B contains Emissions Calculations; and,
- Appendix C contains the Permit Red Line.

# 2 **PROCESS DESCRIPTION**

The primary function of the Ethylene Plant is to produce high-purity ethylene through thermal cracking of ethane feedstock. The efficiency of this process depends to a great extent on the simultaneous recovery of useful and profitable co-products. These include propylene, mixed C-4's, aromatic gasoline, fuel oil, and fuel gas.

## 2.1 Furnace/Quench Systems

The ethane feedstock, combined with dilution steam, is introduced into high-temperature furnaces. The furnaces may be fired with a mixture of plant fuel gas, hydrogen gas, and/or natural gas. Furnace design and operating criteria yield optimum effluent compositions while minimizing pyrolysis coke. Upon leaving the furnace, effluent gas is cooled by means of heat transfer to control and stabilize effluent reactions while generating useful energy in the form of steam. This cooling takes place in a series of transfer line exchangers (TLEs) generating saturated 435-psig steam which is then superheated and used to drive the ethylene refrigeration compressor turbine. The turbine exhaust enters the 180-psig steam system, providing much of the 180-psig steam used in the complex.

Once cooled, the furnace effluent stream enters the quench system. The cracked gas enters the system near the bottom of the quench column. Quench water enters the column to scrub oils, tars and carbon particles from the effluent gases as they travel up the column. The water-saturated overhead vapors flow to the feed gas compressor system.

The heavy hydrocarbons present in the furnace effluent are condensed in the quench column and mix with the circulating water. The net quench water is drawn from the system and flows to a series of separators and accumulators where light distillate, heavy oil, water and oily water mixtures are segregated. The light distillate is routed to the gasoline column feed tank for processing through the gasoline column. The heavy oil is transferred directly to the gasoline column. Oily water mixtures flow from the separators directly to the Ethylene Plant's wastewater pretreatment system for removal of any free oil and benzene.

## 2.2 Feed Gas Compression

The water-saturated hydrocarbon vapors leave the quench column and enter the multi-stage feed gas compressor system. Injection oil is pumped from a storage tank at regimented flow rates into each stage of compression. This material is utilized to prevent the build-up of polymer in the compressor case.

Acid gases generated during the pyrolysis phase are removed to produce high-purity products and co-products. A caustic wash system removes these acid gases between compression stages. Condensed hydrocarbons and spent caustic emulsions from the caustic wash system are transferred to collection tanks for neutralization and then on to the ethylene wastewater pre-treatment unit.

The compressed process gas stream is fed to the distillation area.

# 2.3 Distillation Operations

In the distillation area, the process gas stream enters desiccant dryers. Once dried, the process gas is ready for low temperature processing and separation.

The dried gas stream is pre-cooled in consecutive exchangers before being fed to a series of distillation units including the de-methanizer, de-ethanizer, de-propanizer, propylene column, ethylene column, secondary de-methanizer, de-butanizer column, and gasoline columns. The distillation area also includes acetylene reactors for removing acetylene by reacting it with hydrogen. Separated products from these distillation operations include high-purity ethylene, propylene, mixed C-4's, aromatic gasoline, fuel oil, and process fuel gas. Ethylene is used as a raw material in the Vinyls Plant and process fuel gas is distributed for use as fuel in various combustion units throughout the facility.

## 2.4 Flare

The Ethylene Flare is used to burn hydrocarbon streams from the Ethylene Plant. The Ethylene Flare system consists of several blow-down headers, a main header, knockout drum and a steam assisted flare stack and routinely burns excess plant process gas, vapors from tank car, barge and tank truck loading/unloading operations, transfer line purges, and vents from various tanks in the plant. The blow-down headers combine and flow down the main header to the flare knockout drum. The knockout drum traps any liquids that may be entrained in the flare feed gas before those liquids can reach the flare stack.

# 2.5 Tank Farm

The Ethylene Plant tank farm system consists of four ethylene spheres, four propylene bullets, two C4 spheres, two aromatic gasoline tanks and a fuel oil tank. The gasoline and fuel oil tanks are diked with drains flowing to a KPDES-permitted outfall.

## 2.6 Miscellaneous

The ethylene wastewater pre-treatment area treats process wastewater and product tank draw down from the Ethylene Plant. Wastewater pre-treatment units include storage vessels, surge control vessels, and oil/water separators. In addition, stormwater and steam trap condensate collected from the various collection pads and sumps in the process area and tank farm can be treated in this unit. The Ethylene Plant has a dedicated three-sided concrete structure for the water blasting and cleaning of various pieces of equipment. Spills, leaks and cleaning discharges from the pre-treatment and water blasting areas flow from these collection areas back to the ethylene wastewater pre-treatment system. Effluent water from the wastewater pre-treatment area is fed to the Equalization Tank (EQ Tank) in the Energy and Environmental (E&E) Operations area.

The Ethylene Plant operates Cooling Tower #4A to release the heat rejected from the Ethylene Plant and auxiliary operations.

The Ethylene Plant operates the River Vapor Combustion Unit (VCU) to control emissions from the aromatic gasoline and ethylene fuel oil barge loading operations. It is a natural gas fired unit and

typically only operates during times when barges are being loaded. The River VCU is authorized as an alternative control device for the Ethylene wastewater treatment unit at times when the Ethylene Flare is not available.

# **3 PROJECT DESCRIPTION**

The following is a discussion of changes associated with this application. Note that none of these changes are a result of a new physical or operational change at the facility. These changes are either reflecting the startup of previously authorized equipment, or incorporation of new requirements of 40 CFR 63 Subpart YY.

# 3.1 Flare (EPN 321A) Startup

The Ethylene Flare (EPN 321A) authorized with the PSD project was started up on May 23, 2023. The permit red line in Appendix C eliminates the old flare (EPN 321), the temporary flare (EPN 321B), and eliminates the allowance to operate two (2) flares for startup and shakedown. Additional flare changes related to the EMACT are detailed in Section 3.4.4.

## 3.2 Decoke Pot (EPN 326A) Startup

The Decoke Pot (EPN 326A) authorized with the PSD project was started up on December 11, 2021. The permit red line in Appendix C eliminates all requirements relating to Decoke Pot (EPN 326) and updates the Operating Limitations related to operating parameters established by the performance test. Additional decoke pot changes related to the EMACT are detailed in Section 3.3.1.

# 3.3 Fuel Oil Tank (EPN 332BR) Startup

The Fuel Oil Tank (EPN 332BR) authorized with the PSD project was started up on December 11, 2020. The permit red line in Appendix C updates the Date of Construction for this tank.

### 3.4 EMACT Changes

#### 3.4.1 Decoke Pot (EPN 326A)

The permit red line in Appendix C eliminates the startup, shutdown, and malfunction plan (SSMP) allowance.

#### 3.4.2 n-Propanol Tank (EPN 318)

Westlake is proposing to move the n-Propanol Tank (EPN 318) from Section B to Section C (Insignificant Activities) because the n-Propanol Tank is not subject to any EMACT requirements or other federal requirements. The tank is 3,000 gallons and meets all the criteria to be permitted as an insignificant activity.

#### 3.4.3 Gasoline Storage Tanks (EPNs 319 and 320)

Westlake is incorporating the EMACT Operating Limitations and Recordkeeping Requirements as they relate to emptying and degassing storage vessels subject to the EMACT. These two (2) storage tanks are the only tanks subject to EMACT at the facility.

#### 3.4.4 Ethylene Flare (EPN 321A)

Westlake is incorporating the EMACT / MACT CC Operating Limitations, Emissions Limitation, Monitoring Requirements, Recordkeeping Requirements, and Reporting Requirements for the flare provisions.

#### 3.4.5 Equipment Leak Fugitives in MACT YY Service (EPN FUG-ETH-YY)

Westlake is updating the pressure relief requirements consistent with EMACT and updating the permit to reflect the overlap provisions of 40 CFR 60 Subpart VVa. Several typographical errors were also corrected.

#### 3.4.6 No. 4A Cooling Water Tower (EPN 364A)

The EMACT refers to 40 CFR 63 Subpart XX for heat exchanger systems. The updates to the Operating Limitations, Monitoring Requirements, Recordkeeping Requirements, and Reporting Requirements were red-lined accordingly. The previous cooling tower monitoring has been replaced with the provisions commonly called the Modified El Paso Method.

#### 3.4.7 EMACT Maintenance Vent Provisions (EPN 379)

40 CFR 63.1103(e)(5) reads "an owner or operator may designate an ethylene process vent as a maintenance vent if 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." Maintenance activities involving opening equipment to the atmosphere (line breaks) occur regularly throughout the entire plant. A maintenance vent occurs when a line is opened to the atmosphere that is routed to an enclosed system during normal operations. These activities are normally performed by isolating smaller pieces of equipment as opposed to shutting an entire unit down, and many of these activities involve at least one "Maintenance vent" as described above.

Examples of equipment associated with these activities include, but are not limited to:

- 1. Vessels
- 2. Columns
- 3. Heat Exchangers
- 4. Pumps
- 5. Compressors
- 6. Piping
- 7. Filter housings

The rule has Operating Limitations, Emissions Limitations, Monitoring Requirements, Recordkeeping Requirements, and Reporting Requirements associated with maintenance vents. Westlake has created a new emissions point, EPN 379, to authorize these activities and is incorporating the applicable provisions and authorizing the associated emissions from maintenance vent openings.

#### 3.4.8 Non-EMACT Equipment Openings (EPN 380)

Maintenance activities involving opening equipment to the atmosphere occur regularly throughout the entire plant. The activities that are included in this section are similar to the EMACT

maintenance vents; however, they do not contain the HAPs to be subject to the EMACT. These activities are normally performed by isolating smaller pieces of equipment as opposed to shutting an entire unit down, and many these activities involve at least one line break with VOC emissions to the atmosphere. While emissions from these activities have occurred historically, they have never been required to be included in any air permitting action at the facility. Since the PTE from each activity is less than 0.5 TPY of combined HAPs, less than 5 TPY of all non-hazardous regulated air pollutants, does not involve the incineration of medical waste, and is not subject to any federally-enforceable requirements other than generally applicable requirements, these opening activities are considered Insignificant Activities as per 401 KAR 52:020 Section 6. Although not required, emissions estimates are provided in Appendix B.

# 4 EMISSION RATE CALCULATION METHODOLOGY

## 4.1 Gasoline Storage Tank Degassing (EPNs 319 and 320)

Floating roof tanks operate under normal conditions until the roof lands on its support legs allowing additional emissions to be released to the atmosphere. A floating roof tank inspection proceeds through four distinct stages of generating emissions.

- When a roof is landed, the heel is evacuated from the tank until the tank is "drain-dry." During this activity, the contents inside the tank generate emissions via idle, or breathing losses. These idle losses can be estimated using AP-42 Chapter 7 and are presented in Table B-3 in Appendix B.
- 2. After the tank is empty, the inside of the tank under the landed roof is assumed to be a saturated vapor environment and cleaning and degassing procedures commence. The tank will be degassed to the Ethylene Flare or another control device until 10% LEL is achieved. The degassing emissions from the control device are presented in Table B-4 in Appendix B.
- 3. After degassing and prior to entry, the facility may open the tank and force ventilation. The atmospheric emissions from the tank opening activities are presented in Table B-4 in Appendix B.
- 4. After the tank has been cleaned, degassed, and proper maintenance performed, the final step in the tank maintenance process is refilling the tank until the roof is floated. The refilling losses can be estimated using AP-42 Chapter 7 and are presented in Table B-3 in Appendix B.

## 4.2 EMACT Maintenance Vent Provisions (EPN 379)

Westlake has inventoried vessels, heat exchangers, pumps, compressors, and piping in the Ethylene Plant to determined what equipment opening activities would be subject to the maintenance vent provisions of 40 CFR 63.1103(e)(5).

#### 4.2.1 Vessels

Using the vessel diameter and height, the volume of vapor space in each vessel was calculated. If the originating material was liquid, an initial liquid residual was also calculated assuming 0.0004 inches of clingage remain on the vessel walls. If the vessel is a column, an additional 25% vapor space is added for the vapor space in the supporting equipment such as condensers, reboilers, piping and pumps. If the vessel is not a column, an additional 10% vapor space is assumed for piping and pumps. Using the knowledge of the material in the vessel, the amount of VOC residual, in pounds, is calculated. If the calculated residual in the vessel is greater than 50 lbs, then the material in the vessel will be sent to a control device until the LEL is less than 10%. If the calculated residual in the vessel may be opened to atmosphere.

The NOx, CO, and SO<sub>2</sub> emissions from flaring equipment clearing activities are calculated based on flare emission factors from AP-42, and the VOC emissions are based on 98% DRE. There are no PM emissions from flaring VOC in equipment clearings. VOC emissions from opening the equipment to

the atmosphere are calculated either based on the 10% LEL for equipment requiring control, or saturated vapor space for equipment not requiring control. These emissions are detailed on Table B-5 in Appendix B, which is included in the confidential submittal concurrent with this application.

#### 4.2.2 Large Heat Exchangers

Large heater exchangers are assumed to contain greater than 50 lb VOC and the material in the vessel will be sent to a control device until the LEL is less than 10%. The NOx, CO, and SO<sub>2</sub> emissions from the flare are calculated based on emission factors from AP-42, and the VOC emissions are based on 98% DRE. VOC emissions from opening the equipment to the atmosphere are calculated either based on the 10% LEL for equipment requiring control, or saturated vapor space for equipment not requiring control. These emissions are detailed on Table B-5 in Appendix B, which is included in the confidential submittal concurrent with this application.

### 4.2.3 Equipment Containing Less than 50 lb VOC

The opening of small heat exchangers, pumps, compressors, and piping will contain less than 50 lb VOC after the free liquid is drained as shown in Table B-6 in Appendix B.

# 4.3 Non-EMACT Equipment Openings (Insignificant Activity 380)

Although not required, Westlake has inventoried vessels, heat exchangers, pumps, compressors, and piping in the Ethylene Plant and is detailing emissions from equipment openings that are not subject to the EMACT maintenance vent provisions. These are being authorized as an insignificant activity under 401 KAR 52.020 Section 6. A DEP-7007DD Form is being submitted in Appendix A to support this.

#### 4.3.1 Vessels

Using the vessel diameter and height, the volume of vapor space in each vessel was calculated. If the originating material was liquid, an initial liquid residual was also calculated assuming 0.0004 inches of clingage remain on the vessel walls. If the vessel is a column, an additional 25% vapor space is added for the vapor space in the supporting equipment such as condensers, reboilers, piping and pumps. If the vessel is not a column, an additional 10% vapor space is assumed for piping and pumps. Using the knowledge of the material in the vessel, the amount of VOC residual, in pounds, is calculated. Emissions from the vessel are based on the assumption that it will be opened to atmosphere. These emissions are detailed on Table B-5 in Appendix B, which is included in the confidential submittal concurrent with this application.

### 4.3.2 Large Heat Exchangers

VOC emissions from opening large heat exchangers to the atmosphere are calculated based on the assumption that between 100-110 lb of material remains in the vapor space or as clingage after the free liquid has been removed. These emissions are detailed on Table B-5 in Appendix B, which is included in the confidential submittal concurrent with this application.

### 4.3.3 Equipment Containing Less than 50 lb VOC

The opening of small heat exchangers, pumps, compressors, and piping will contain less than 50 lb VOC after the free liquid is drained as shown in Table B-6 in Appendix B.

# **APPENDIX A: KENTUCKY DEP FORMS**

This appendix includes the following forms:

- DEP7007AI Administrative Form;
- DEP7007N Source Emissions Profile; and,
- DEP7007DD Insignificant Emissions.

| Division for Air Quality                          |                                 | ality                      | DEP7007AI   |             |                       | A            | Additional Documentation   |  |  |
|---|---------------------------------|----------------------------|---|-------------|-----------------------|--------------|----------------------------|--|--|
| Division  |                                 | Janty                      | Admir   | istrative   |                       |              |                            |  |  |
| 300 Sower Boulevard                               |                                 | rd                         | Section AI.1: Source Information  |             |                       |              | nal Documentation attached |  |  |
| Frankfort, KY 40601<br>(502) 564-3999             |                                 | )1                         | Secti   | on AI.2: Aj |                       |              |                            |  |  |
|   |                                 |                            | Secti   | on AI.3: O  |                       |              |                            |  |  |
|   |                                 |                            | Section AI.4: Type of Application   |             |                       |              |                            |  |  |
|   |                                 |                            | Secti   | on AI.5: Ot | ther Required Informa | tion         |                            |  |  |
|   |                                 |                            | Secti   | on AI.6: Si | gnature Block         |              |                            |  |  |
|   |                                 |                            | Secti   | on AI.7: No | otes, Comments, and I | Explanations |                            |  |  |
|   |                                 |                            |   |             |                       |              |                            |  |  |
| Source Name:                                      |                                 |                            | Westlake Chemical OpCo, LP  |             |                       |              |                            |  |  |
| KY EIS (AFS) #: 21-157-00080                      |                                 |                            |   |             |                       |              |                            |  |  |
| Permit #: V-20-022 R1                             |                                 |                            |   |             |                       |              |                            |  |  |
| Agency Interest (AI                               | Agency Interest (AI) ID: 122899 |                            |   |             |                       |              |                            |  |  |
| Date:   |                                 |                            |   |             | June-23               | 3            |                            |  |  |
| Section AI.1: S                                   | ource Inf                       | ormation                   |   |             |                       |              |                            |  |  |
| Physical Location                                 | Street:                         | 2468                       | Industrial Parkway  |             |                       |              |                            |  |  |
| Address:  | City:<br>Street or              | Calve                      | rt City   | County:     | Marshall              | Zip Code:    | 42029                      |  |  |
| Mailing Address:                                  | P.O. Box:                       | 2468                       | Industrial Parkway, P.O. Box 712  |             |                       |              |                            |  |  |
|   | City:                           | Calve                      | rt City   | State:      | Kentucky              | Zip Code:    | 42029                      |  |  |
| Standard Coordinates for Source Physical Location |                                 |                            |   |             |                       |              |                            |  |  |
| Longitude:  |                                 | 37.0525                    | (decimal degrees)   |             | Latitude:             | 88.3333      | (decimal degrees)          |  |  |
| Primary (NAICS) Ca                                | itegory:                        | All Oth<br>Manufactu<br>Cł | er Basic Organic Chemical<br>Iring and Other Basic Inorganic<br>nemical Manufacturing | -           | Primary NAICS #:      | 325199       | and 325180                 |  |  |

| Classification (SIC) Category: Industrial Organic  |                          |  | ic Chemicals                        | Primary SIC #:  | 2869                     |                           |  |
|--|--------------------------|--|-------------------------------------|---|--------------------------|---------------------------|--|
| Briefly discuss the type conducted at this site:   | of business              | Chemical Manufacturing                 |                                     |   |                          |                           |  |
| Description of Area<br>Surrounding<br>Source:  | Rural Area<br>Urban Area | Industrial Park<br>_X_ Industrial Area | Residential Area<br>Commercial Area | Is any part of the source<br>located on federal land? | Yes<br>_X_ No            | Number of<br>Employees: 0 |  |
| Approximate distance<br>to nearest residence or<br>commercial property:  | Approximatel             | y 1 mile                               | Property<br>Area:1                  | 3 acres   | Is this source portable? | Yes _X_No                 |  |
| What other environmental permits or registrations does this source currently hold or need to obtain in Kentucky? |                          |  |                                     |   |                          |                           |  |
| NPDES/KPDES:   | _X_Currently H           | Iold Need                              | N/A                                 |   |                          |                           |  |
| Solid Waste:   | Currently Ho             | ldNeed                                 | N/A                                 |   |                          |                           |  |
| RCRA:  | _X_Currently H           | loldNeed                               | N/A                                 |   |                          |                           |  |
| UST:   | Currently Ho             | ldNeed                                 | N/A                                 |   |                          |                           |  |
| Type of Regulated  | Mixed Waste              | Generator                              | _X_Generator                        | Recycler  | Other:                   | _                         |  |
| Waste Activity:  | U.S. Importer            | of Hazardous Waste                     | Transporter                         | Treatment/Storage/Disposal                            | Facility N/              | A                         |  |

| Section AI.2: Ap       | plicant Info        | ormation              |                                       |                                       |           |       |  |
|------------------------|---------------------|-----------------------|---------------------------------------|---------------------------------------|-----------|-------|--|
| Applicant Name:        | Westlake            | Vinyls, Inc.          |                                       |                                       |           |       |  |
| Title: (if individual) |                     |                       |                                       |                                       |           |       |  |
| <b>N.F.</b> (1)        | Street or P.O.      | Box:                  | 2468                                  | 2468 Industrial Parkway, P.O. Box 712 |           |       |  |
| Malling Address:       | City:               | Calvert City          | State: KY                             |                                       | Zip Code: | 42029 |  |
| Email: (if individual) |                     |                       |                                       |                                       |           |       |  |
| Phone:                 | (270) 395           | -4151                 |                                       |                                       |           |       |  |
| Technical Contact      |                     |                       |                                       |                                       |           |       |  |
| Name:                  |                     |                       | Mr. Kevin Sl                          | neridan                               |           |       |  |
| Title:                 | Senior Re           | gional Manager - HSE  |                                       |                                       |           |       |  |
| Mailing Addrosse       | Street or P.O. Box: |                       | 246                                   |                                       |           |       |  |
| Mannig Autress.        | City:               | Calvert City          | State:                                | KY                                    | Zip Code: | 42029 |  |
| Email:                 |                     |                       |                                       |                                       |           |       |  |
| Phone:                 | (270) 395           | -3362                 |                                       |                                       |           |       |  |
| Air Permit Contact for | Source              |                       |                                       |                                       |           |       |  |
| Name:                  |                     |                       | Mr. Kevin Sl                          | neridan                               |           |       |  |
| Title:                 | Senior Re           | egional Manager - HSE |                                       |                                       |           |       |  |
| Mailing Address:       | Street or P.O.      | . Box:                | 2468 Industrial Parkway, P.O. Box 712 |                                       |           |       |  |
| Manning Autoress.      | City:               | Calvert City          | State:                                | KY                                    | Zip Code: | 42029 |  |
| Email:                 |                     |                       |                                       |                                       |           |       |  |
| Phone:                 | (270) 395           | -3362                 |                                       |                                       |           |       |  |

| _ Owner sam         | e as applicant   |  |                          |                  |           |       |
|---------------------|--|--|--------------------------|------------------|-----------|-------|
| Name:               | Westlake Che   | mical Corporation                      |                          |                  |           |       |
| Title:              |  |  |                          |                  |           |       |
| Street or P.O. Box: |  | 2801 Post Oak Boulevard, 6th Floor     |                          |                  |           |       |
| Maning Address:     | City:  | Houston                                | State:                   | ТΧ               | Zip Code: | 77056 |
| Email:              |  |  |                          |                  |           |       |
| Phone:              |  |  |                          |                  |           |       |
|                     |  |  |                          |                  |           |       |
| names of owners     | and officers of the co   | mpany who have an interes              | t in the company of 5% o | or more.         |           |       |
| t names of owners   | and officers of the co<br>Name                                     | mpany who have an interes              | t in the company of 5% o | or more.<br>Posi | tion      |       |
| t names of owners   | and officers of the co<br>Name<br><sup>7</sup> estlake Chemical Co | mpany who have an interes<br>rporation | t in the company of 5% o | or more.<br>Posi | tion      |       |

| Section AI.4: Type of Application   |                               |                                |              |                                    |                                    |           |  |
|---|-------------------------------|--------------------------------|--------------|------------------------------------|------------------------------------|-----------|--|
| Current Status:   | _X_ Title V Condition         | onal Major                     | State-Origin |                                    | General Permit                     | Registrat | ionNone  |
|   | Name Change<br>Renewal Permit | Initial Regist<br>Revised Regi | tration      | Significan<br>_X Minor R           | t Revision<br>evision              | Adminis   | strative Permit Amendment<br>purce-wide Operating Permit |
| <b>Requested Action:</b><br>(check all that apply)  | 502(b)(10) Change             | Extension Request              |              | Addition                           | of New Facility                    | Portable  | Plant Relocation Notice                                  |
|   | Revision                      | Off Permit C                   | Change       | Landfill A                         | Iternate Compliance Submittal      | Modific   | ation of Existing Facilities                             |
|   | Ownership Change              | Closure                        |              |                                    |                                    |           |  |
| Requested Status:   | _X_Title VCondition           | onal Major                     | State-Origin | PSI                                | NSR                                | Other:    |  |
| Is the source requesting a limitation of potential emissions?YesX_No  |                               |                                |              |                                    |                                    |           |  |
| Pollutant:  |                               | <b>Requested Lim</b>           | it:          |                                    | Pollutant:                         |           | Requested Limit:   |
| Particulate Matter  |                               |                                |              | _                                  | Single HAP                         |           |  |
| Volatile Organic Co   | ompounds (VOC)                |                                |              | _                                  | Combined HAPs                      |           |  |
| Carbon Monoxide   |                               |                                |              | _                                  | Air Toxics (40 CFR 68, Su          | bpart F)  |  |
| Nitrogen Oxides   |                               |                                |              | _                                  | Carbon Dioxide                     |           |  |
| Sulfur Dioxide  |                               |                                |              | _                                  | Greenhouse Gases (GHG)             |           |  |
| Lead  |                               |                                |              |                                    | Other                              |           |  |
| For New Construction  | n:                            |                                |              |                                    |                                    |           |  |
| <b>Proposed Start Date of Construction:</b><br>(MM/YYYY)  |                               | N                              | I/A          | Proposed                           | <b>Operation Start-Up Date:</b> (M | IM/YYYY)  | N/A  |
| For Modifications:  |                               |                                |              |                                    |                                    |           |  |
| Proposed Start I<br>(MI   | N                             | I/A                            | Proposed     | <b>Operation Start-Up Date:</b> (M | IM/YYYY)                           | N/A       |  |
| Applicant is seeking coverage under a permit shield. Yes X_No sought on a separate attachment to the application. |                               |                                |              |                                    |                                    |           |  |

| Section AI.5 Other Required Information                             |   |  |  |  |  |  |  |
|---|---|--|--|--|--|--|--|
| Indicate the documents attached as part of this application:        |   |  |  |  |  |  |  |
| DEP7007A Indirect Heat Exchangers and Turbines                      | _ DEP7007CC Compliance Certification                      |  |  |  |  |  |  |
| _ DEP7007B Manufacturing or Processing Operations                   | <b>_X_</b> DEP7007DD Insignificant Activities             |  |  |  |  |  |  |
| DEP7007C Incinerators and Waste Burners                             | _ DEP7007EE Internal Combustion Engines                   |  |  |  |  |  |  |
| _ DEP7007F Episode Standby Plan                                     | _ DEP7007FF Secondary Aluminum Processing                 |  |  |  |  |  |  |
| _ DEP7007J Volatile Liquid Storage                                  | _ DEP7007GG Control Equipment                             |  |  |  |  |  |  |
| _ DEP7007K Surface Coating or Printing Operations                   | DEP7007HH Haul Roads                                      |  |  |  |  |  |  |
| DEP7007L Mineral Processes  | _ Confidentiality Claim                                   |  |  |  |  |  |  |
| DEP7007M Metal Cleaning Degreasers                                  | _ Ownership Change Form                                   |  |  |  |  |  |  |
| _X_DEP7007N Source Emissions Profile                                | _ Secretary of State Certificate                          |  |  |  |  |  |  |
| DEP7007P Perchloroethylene Dry Cleaning Systems                     | _ Flowcharts or diagrams depicting process                |  |  |  |  |  |  |
| DEP7007R Emission Offset Credit                                     | _ Digital Line Graphs (DLG) files ofbuldings, roads, etc. |  |  |  |  |  |  |
| DEP7007S Service Stations   | _Site Map   |  |  |  |  |  |  |
| _ DEP7007T Metal Plating and Surface Treatment Operations           | _ Map or drawing depicting location of facility           |  |  |  |  |  |  |
| _ DEP7007V Applicable Requirements and Compliance Activities        | _ Safety Data Sheet (SDS)                                 |  |  |  |  |  |  |
| _ DEP7007Y Good Engineering Practice and Stack Height Determination | _ Emergency Response Plan                                 |  |  |  |  |  |  |
| _ DEP7007AA Compliance Schedule for Non-complying Emission Units    | _x_Other: Emis-11iQUS <u>Calculations</u>                 |  |  |  |  |  |  |
| _ DEP7007BB Certified Progress Report                               |   |  |  |  |  |  |  |
|   |   |  |  |  |  |  |  |
|   |   |  |  |  |  |  |  |
| Section AI.6: Si2nature Block                                       |   |  |  |  |  |  |  |
|   |   |  |  |  |  |  |  |

I, the undersigned, hereby certify under penalty of law, that I am a responsible official\*, and that I have personally examined, and am familiar with, the information submitted in this document and all its attachments. Based on my inquiry of those individuals with primary responsibility for obtaining the information, I certify that the information is on knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false or incomplete information, including the possibility of fine or imprisonment.

|   | e, <b>J</b> z. 'b/ Z3 |
|---|-----------------------|
| Authorized Signature  | Date                  |
| Ivan Birrell  | Senior Plant Mana�er  |
| <b>Type or Printed Name of Signatory</b><br>*Responsible official as defined by 401 KAR 52:001. | Title of Signatory    |
| Responsible official as defined by 401 M (K 52.001.   | 7                     |

11/2018

|                 | Divie                                   | ion for                              | Air Qua                         |         |                 |  |  |           | <b>DEP700</b>            | 7N  |         |         |   |                                    |  |                                      |  |
|-----------------|---|--------------------------------------|---------------------------------|---------|-----------------|--|--|-----------|--------------------------|---|---------|---------|---|------------------------------------|--|--------------------------------------|--|
|                 | DIVIS                                   | 1011 101 2                           | All Qua                         | nty     |                 |  |  | Sourc     | e Emissio                | ns Profile                                |         |         | Additional Documentation                      |                                    |  |                                      |  |
|                 | 300<br>Fra                              | ) Sower E<br>ankfort, K<br>(502) 564 | 3oulevard<br>TY 40601<br>1-3999 | l       |                 |  | Section N.1: Emission Summary Section N.2: Stack Information Section N.3: Fugitive Information |           |                          |   |         |         |   | Complete DEP7007AI                 |  |                                      |  |
|                 |   |                                      |                                 |         |                 | Section N.4: Notes, Comments, and Explanations |  |           |                          |   |         |         |   |                                    |  |                                      |  |
| Source Na       | ame:                                    |                                      |                                 |         | Westlake        | e Chem   | ical OpCo, LP  |           |                          |   |         |         |   |                                    |  |                                      |  |
| KY EIS (        | AFS) #:                                 |                                      |                                 | 21-     | 157-0008        | 30   |  |           |                          |   |         |         |   |                                    |  |                                      |  |
| Permit #:       |   |                                      |                                 |         | <u>V-20-022</u> | <u>R1</u>                                      |  |           |                          |   |         |         |   |                                    |  |                                      |  |
| Agency I        | Agency Interest (AI) ID: 122899         |                                      |                                 |         |                 |  |  |           |                          |   |         |         |   |                                    |  |                                      |  |
| Date: June 2023 |   |                                      |                                 |         |                 |  |  |           |                          |   |         |         |   |                                    |  |                                      |  |
| N.1: En         | nission Summa                           | ary                                  |                                 |         |                 |  |  |           |                          |   |         |         |   |                                    |  |                                      |  |
| Emission        | Emission Unit                           | Process                              | Process                         | Control | Control         | Stack  | Maximum<br>Design  | Dollutont | Uncontrolled<br>Emission | Emission<br>Factor Source                 | Capture | Control | Hourly Emissions Annual Emissions             |                                    |  |                                      |  |
| Unit #          | Name                                    | ID                                   | Name                            | Name    | ID              | ID   | (SCC<br>Units/hour)  | Ponutant  | Factor<br>(lb/SCC Units) | (e.g. AP-42, Stack<br>Test, Mass Balance) | (%)     | (%)     | Uncontrolled<br>Potential<br>( <i>lb/hr</i> ) | Controlled<br>Potential<br>(lb/hr) | Uncontrolled<br>Potential<br>(tons/yr) | Controlled<br>Potential<br>(tons/yr) |  |
| 379             | Maintenance Vents<br>Subject to MACT YY |                                      |                                 |         |                 |  | 1.00   | VOC       | 126.04                   | Eng. Calculations                         |         |         | 126.04  | 126.04                             | 3.46                                   | 3.46                                 |  |
| 319             | Aromatic Gas Tank<br>Maintenance        |                                      |                                 |         |                 |  | 1.00   | VOC       | 89.43                    | AP-42                                     |         |         | 89.43   | 89.43                              | 0.05                                   | 0.05                                 |  |
| 320             | Aromatic Gas Tank<br>Maintenance        |                                      |                                 |         |                 |  | 1.00   | VOC       | 89.43                    | AP-42                                     |         |         | 89.43   | 89.43                              | 0.05                                   | 0.05                                 |  |
|                 |   |                                      |                                 |         |                 |  |  |           |                          |   |         |         |   |                                    |  |                                      |  |
|                 |   |                                      |                                 |         |                 |  |  |           |                          |   |         |         |   |                                    |  |                                      |  |
|                 |   |                                      |                                 |         |                 |  |  |           |                          |   |         |         |   |                                    |  |                                      |  |
|                 |   |                                      |                                 |         |                 |  |  |           |                          |   |         |         |   |                                    |  |                                      |  |
|                 |   |                                      |                                 |         |                 |  |  |           |                          |   |         |         |   |                                    |  |                                      |  |
|                 |   |                                      |                                 |         |                 |  |  |           |                          |   |         |         |   |                                    |  |                                      |  |
|                 |   |                                      |                                 |         |                 |  |  |           |                          |   |         |         |   |                                    |  |                                      |  |

| Section N.3: F  | Section N.3: Fugitive Information       |            |                              |                                 |                 |                |                                |                           |  |  |  |  |
|-----------------|---|------------|------------------------------|---------------------------------|-----------------|----------------|--------------------------------|---------------------------|--|--|--|--|
| UTM Zone:       |   |            |                              |                                 |                 |                |                                |                           |  |  |  |  |
| Emission Unit # | Emission Unit Nome                      |            | Area Physic                  | al Data                         | Area UTM        | Coordinates    | Area Release Data              |                           |  |  |  |  |
| Emission Unit # | Emission Unit Name                      | FIOCESS ID | Length of the X Side<br>(ft) | Length of the Y<br>Side<br>(ft) | Northing<br>(m) | Easting<br>(m) | Release<br>Temperature<br>(°F) | Release<br>Height<br>(ft) |  |  |  |  |
| 379             | Maintenance Vents Subject to<br>MACT YY |            | 439                          | 351                             | 4,101,291       | 381,815        | Ambient                        | 43.07                     |  |  |  |  |
|                 |   |            |                              |                                 |                 |                |                                |                           |  |  |  |  |
|                 |   |            |                              |                                 |                 |                |                                |                           |  |  |  |  |

# Section N.4: Notes, Comments, and Explanations

Hourly emissions from 379 assume that 3 of the largest systems are opened the same hour, which is highly unlikely.

Hourly Emissions from 319 and 320 assume that the uncontrolled refilling occurs in one hour.

| Division for   | · Air Ouality   |                                   | <b>DEP700</b>                               | <b>7DD</b>               |   |  |  |  |  |  |  |
|--|---|-----------------------------------|---|--------------------------|---|--|--|--|--|--|--|
| 300 Sower  | Boulevard   |                                   | Insignificant                               | Activities               |   |  |  |  |  |  |  |
| Frankfort,   | KY 40601  |                                   | _ Section DD.I: Table of Insig              | gnificant Activities     |   |  |  |  |  |  |  |
| (502) 56   | 54-3999   |                                   | _ Section DD.2: Signature Blo               | ock                      |   |  |  |  |  |  |  |
|  |   |                                   | _ Section DD.3: Notes, Comm                 | nents, and Explanations  |   |  |  |  |  |  |  |
| Division for A<br>300 Sower E<br>Frankfort, K<br>(502) 564<br>Source Name:<br>KY EIS (AFS) #:<br>Permit#:<br>Agency Interest A<br>Date:<br>Section DD.I:<br>*Identify each acti<br>Insignificant<br>Activity#<br>380 | -   |                                   |   | Westlake Vinyls, In      | с.  |  |  |  |  |  |  |
| KY EIS (AFS)   | #:  |                                   |   | 21-157-00080             |   |  |  |  |  |  |  |
| Permit#:   | _   |                                   |   | V-20-022 RI              |   |  |  |  |  |  |  |
| Agency Interest  | t (AI) ID:  |                                   |   | 122899                   |   |  |  |  |  |  |  |
| Date:  | D I. Table offnsign   |                                   |   | June-23                  |   |  |  |  |  |  |  |
| section DD.I   | D.I: Table ofInsigni  |                                   | ificant Activities                          |                          |   |  |  |  |  |  |  |
| *Identify each ac  | tivity with a unique  | e Insign                          | nificant Activity number (IA#); for e       | example: 1, 2, 3 etc.    |   |  |  |  |  |  |  |
| Insignificant<br>Activity#   | Description of Ac<br>including Rat<br>Capacity                                    | ctivity<br>ted                    | Serial Number or Other Unique<br>Identifier | Applicable Regulation(s) | Calculated Emissions                          |  |  |  |  |  |  |
| 380  | Equipment Ope<br>Activities in<br>Ethylene Plant<br>Subject to 40 0<br>Subpart YY | ening<br>the<br>t not<br>CFR<br>Y |   | None                     | See Appendix B<br>< 0.5 TPY HAPs<br>< 5TPYVOC |  |  |  |  |  |  |
|  |   |                                   |   |                          |   |  |  |  |  |  |  |
|  |   |                                   |   |                          |   |  |  |  |  |  |  |
|  |   |                                   |   |                          |   |  |  |  |  |  |  |
|  |   |                                   |   |                          |   |  |  |  |  |  |  |

#### Section DD.2: Signature Block

I, THE UNDERSIGNED, HEREBY CERTIFY UNDER PENALTY OF LAW, THAT I AM A RESPONSIBLE OFFICIAL, AND THAT I HAVE PERSONALLY EXAMINED, AND AM FAMILIAR WITH, THE INFORMATION SUBMITTED IN THIS DOCUMENT AND ALL ITS ATTACHMENTS. BASED ON MY INQUIRY OF THOSE INDIVIDUALS WITH PRIMARY RESPONSIBILITY FOR OBTAINING THE INFORMATION, I CERTIFY THAT THE INFORMATION IS ON KNOWLEDGE AND BELIEF, TRUE, ACCURATE, AND COMPLETE. I AM AWARE THAT THERE ARE SIGNIFICANT PENALTIES FOR SUBMITTING FALSE OR INCOMPLETE INFORMATION, INCLUDING THE POSSIBILITY OF FINE OR IMPRISONMENT.

# Wisnell

**Authorized Signature** 

By:

Ivan Birrell

Type/Print Name of Signatory

6/28/23 Date

Senior Plant Manager

Title of Signatory

# **APPENDIX B: EMISSIONS CALCULATIONS**

This appendix includes the following tables:

- Table B-1: PSD Evaluation;
- Table B-2: Summary of VOC Emissions from Aromatic Gas Tank Landing;
- Table B-3: Aromatic Gas Tank Emissions from Idle and Fill Activities;
- Table B-4: Aromatic Gas Tank Emissions from Clearing Activities;
- Table B-5: Emissions from Maintenance Vents from Clearing Vessels, Vessel Systems, and Large Heat Exchangers (Information submitted under Confidential Cover); and
- Table B-6: Emissions from Maintenance Vents from Clearing Other Equipment and System.

# Table B-1: PSD EvaluationWestlake Chemical OpCo, LP / Calvert City, KentuckyIncorporation of EMACT into Title V Permit V-20-022 R1

| EDM  | Astinity (Description   | C-1- T-1-1- | Proj     | ect Related | l Increases, | TPY             |
|------|---|-------------|----------|-------------|--------------|-----------------|
| EFIN | Activity / Description  | Calc Table  | NOx      | CO          | VOC          | SO <sub>2</sub> |
| 319  | Standing Idle, Residual Vapor, Forced Ventilation, and Refilling Emissions for 904A     | B-3, B-4    | -        | -           | 0.05         | -               |
| 320  | Standing Idle, Residual Vapor, Forced Ventilation, and Refilling Emissions for 904B     | B-3, B-4    | -        | -           | 0.05         | -               |
| 321A | Degassing 904A and 904B to Flare or Other Control Device                                | B-4         | 1.36E-03 | 0.01        | 0.03         | 1.20E-05        |
| 321A | Clearing Vessels and Vessel Systems to Flare<br>Clearing Large Heat Exchangers to Flare | B-5         | 0.01     | 0.06        | 0.18         | 1.11E-04        |
| 379  | Opening Vessels to Atmosphere (subject to EMACT)  | B-5         | -        | -           | 0.66         | -               |
| 380  | Opening Vessels to Atmosphere (not subject to EMACT)                                    | B-5         | -        | -           | 1.01         | -               |
| 379  | Opening Large Heat Exchangers to Atmosphere<br>(subject to EMACT)                       | B-5         | -        | -           | 0.03         |                 |
| 380  | Opening Large Heat Exchangers to Atmosphere (not subject to EMACT)                      | B-5         | -        | -           | 1.05         |                 |
| 379  | Opening Other Equipment and Systems (subject to EMACT)                                  | B-6         | -        | -           | 2.77         |                 |
| 380  | Opening Other Equipment and Systems (not subject to EMACT)                              | B-6         | -        | _           | 1.29         |                 |
|      | Emissions Increase  |             | 0.01     | 0.07        | 7.12         | 1.23E-04        |
|      | PSD Threshold   |             | 40.00    | 100.00      | 40.00        | 40.00           |
|      | Further Analysis Required?  |             | NO       | NO          | NO           | NO              |

# Table B-2: Summary of VOC Emissions from Aromatic Gas Tank LandingWestlake Chemical OpCo, LP / Calvert City, KentuckyIncorporation of EMACT into Title V Permit V-20-022 R1

| Tank No. | Tank Type |           | <b>Total Emission</b>                | s by Activity per E   | vent (lb/event) (1) |              | Total VOC Emissions <sup>(2)</sup> |             |  |
|----------|-----------|-----------|--------------------------------------|-----------------------|---------------------|--------------|------------------------------------|-------------|--|
|          |           | Idle      | Controlled                           | <b>Residual Vapor</b> | Forced              | Uncontrolled | Total Event                        | Total Event |  |
|          |           |           | Degassing Ventilation <sup>(3)</sup> |                       | Refilling           | Emissions    | Emissions                          |             |  |
|          |           | Table B-3 | Table B-4                            | Table B-4             | Table B-4           | Table B-3    | (lb)                               | (tons)      |  |
| 904A     | IFR       | 2.84      | 25.80                                | 9.49                  |                     | 89.43        | 127.56                             | 0.06        |  |
| 904B     | IFR       | 2.84      | 25.80                                | 9.49                  |                     | 89.43        | 127.56                             | 0.06        |  |

#### Notes:

1. Tank emissions are presented in the order in which they logically occur.

Idle emissions are when the roof is landed, tank is drain-dry emptied, but there is material under the landed roof.

Controlled degassing emissions are from the Ethylene Flare, EPN 321A.

Residual vapor emissions are the emissions from opening the tank up to the atmosphere, post degassing. Tanks are degassed to 10,000 ppmv VOC, or equivalent. Uncontrolled Refilling emissions are when the material is entering the tank, and before the roof is floating and control is claimed.

2. Westlake lands these tank roofs approximately once every 10 years, as required by IFR inspections.

3. Forced Ventilation will occur; however, all residual emissions have been assigned to previous clearing activities.

#### Table B-3: Aromatic Gas Tank Emissions from Idle and Fill Activities Westlake Chemical OpCo, LP / Calvert City, Kentucky Incorporation of EMACT into Title V Permit V-20-022 R1

| Tank | Product (1,2) | Roof | Tank  | Tank                   | Liquid   | Tank            | Vapor                     | Vapor                  | Days    | Maximum            | Standing        | Standing         | Maximum           | Maximum           | Refilling           | Maximum               | Maximum               |
|------|---------------|------|-------|------------------------|----------|-----------------|---------------------------|------------------------|---------|--------------------|-----------------|------------------|-------------------|-------------------|---------------------|-----------------------|-----------------------|
|      |               | Type | Dia-  | Height                 | Density  | Vapor           | Volume (5)                | Molecular              | Sitting | Potential          | Idle            | Idle             | Filling Rate      | Filling Rate      | Saturation          | Uncontrolled          | Uncontrolled          |
|      |               |      | meter | (3)                    |          | Height (4)      |                           | Weight                 | Idle    | Standing           | Losses (7)      | Losses (7)       |                   |                   | Correction          | Refilling             | Refilling             |
|      |               |      |       |                        |          |                 |                           |                        |         | Losses (6)         |                 |                  |                   |                   | Factor for          | Losses <sup>(9)</sup> | Losses <sup>(9)</sup> |
|      |               |      |       |                        |          |                 |                           |                        |         |                    |                 |                  |                   |                   | Wind <sup>(8)</sup> |                       |                       |
|      |               |      |       |                        |          |                 |                           |                        |         |                    |                 |                  |                   |                   |                     |                       |                       |
|      |               |      | D     | $\mathbf{H}\mathbf{v}$ | WL       | H <sub>vo</sub> | $\mathbf{V}_{\mathbf{V}}$ | $\mathbf{M}\mathbf{v}$ | nd      | L <sub>S,MAX</sub> | L <sub>SL</sub> | L <sub>SLh</sub> | FR <sub>max</sub> | FR <sub>max</sub> | C <sub>sf</sub>     | L <sub>FL</sub>       | $L_{Fh}$              |
|      |               |      | (ft)  | (ft)                   | (lb/gal) | (ft)            | (ft <sup>3</sup> )        | (lb/lb-mole)           | (days)  | (lb/event)         | (lb/event)      | (lb/hr)          | (bbl/hr)          | (ft³/hr)          | (unitless)          | (lb/event)            | (lb/hr)               |
| 904A | Aromatic Gas  | IFR  | 35    | 6.0                    | 7.20     | 5.92            | 5,693                     | 66                     | 1       | 4,318              | 2.84            | 0.12             | 1,500             | 2,415             | 1.00                | 89.43                 | 89.43                 |
| 904B | Aromatic Gas  | IFR  | 35    | 6.0                    | 7.20     | 5.92            | 5,693                     | 66                     | 1       | 4,318              | 2.84            | 0.12             | 1,500             | 2,415             | 1.00                | 89.43                 | 89.43                 |

#### Notes:

1. Tank emissions are estimated using meteorological data for Paducah, KY in July from EPA's AP-42 Table 7.1-7.

2. Vapor Pressure is conservatively calculated at 90oF, and assumed to be constant for all the calculations.

| VP= | 2.34 psi |
|-----|----------|
|-----|----------|

KE = 0.033 AP-42 Chapter 7.1 Eq. 1-12 - Vapor Space Expansion Factor

Ks = 0.577 AP-42 Chapter 7.1 Eq. 1-21 - Vented Vapor Saturation Factor

| Daily Solar Insolation Factor, I, Btu/ft <sup>2</sup> -day          | 1,334        | AP-42 Chapter 7.1 Table 7.1-7  |
|---|--------------|--------------------------------|
| Daily Minimum Ambient Temperature, TAN, °F                          | 48.1         | AP-42 Chapter 7.1 Table 7.1-7  |
| Daily Maximum Ambient Temperature, TAX, °F                          | 67.8         | AP-42 Chapter 7.1 Table 7.1-7  |
| Maximum Temp for Short Term Emissions, °F                           | 90.0         | Local Maximum                  |
| Tank paint solar absorptance factors, $\alpha$ , unitless           | 0.17         | AP-42 Chapter 7.1 Table 7.1-6  |
| Daily Vapor Temperature Range, ∆Tv, °F                              | 18.33        | AP-42 Chapter 7.1 Equation 1-7 |
| Assuming tank will contain a full liquid heel prior to refilling.   | 0.6          | Dimensionless                  |
| 3. Floating roof outages are calculated assuming tanks have a lande | ed roof heig | ht of 6 feet.                  |

4. Conservatively assume one inch of residual liquid is left in tank. 6 ft - 1 inch = 5.92 ft.

5. AP-42 Chapter 7.1, Equation 3-22. Vv = hv \* pi \* D^2 / 4 = 6 ft \* pi \* 35^2 / 4 = 5693 ft^3.

6. AP-42 Chapter 7.1, Equation 3-3. Lsmax = pi \* D^2 / 4 \* h \* Wl \* 7.48 = pi / 4 \* 35^2 \* (1/12) \* 7.2 \* 7.48 = 4318 lb/event.

7. AP-42 Chapter 7.1, Equation 3-7. Lsl = nd \* Ke \* Pva \* Vv / R / Tv \* Mv \* Ks = 1 \* 0.033 \* 2.34 \* 5693 / (10.731 \* (549.67)) \* 0.577 \* 66 = 2.84 lb/event.

2.84 lb / event / 24 hours = 0.12 lb/hr.

8. AP-42 Chapter 7.1 Page 7.1-45 In that the landed floating roof in an internal or domed external floating roof tank is shielded from wind by the fixed roof, the value of Csf is taken as 1.0.

9. AP-42 Chapter 7.1, Equation 3-18. Lfl = (Pva \* Vv / R / Tv) \* Mv \* Cfs \* S = 2.34 \* 5693 / (10.731 \* (549.67)) \* 66 \* 1 \* 0.6 = 89.43 lb/event.

#### Table B-4: Aromatic Gas Tank Emissions from Clearing Activities Westlake Chemical OpCo, LP / Calvert City, Kentucky Incorporation of EMACT into Title V Permit V-20-022 R1

|          | Tank Data |               |          |           |              |          |                    |              | Tank Area    |                       | Liquid Film                              |              |              |  |  |
|----------|-----------|---------------|----------|-----------|--------------|----------|--------------------|--------------|--------------|-----------------------|--|--------------|--------------|--|--|
| Tank No. | Tank Type | Tank Material | Liquid   | Vapor     | Leg/Tank     | Diameter | Volume             | Interior     | Interior     | Liquid                | Liquid                                   | Total Liquid | Total Liquid |  |  |
|          |           |               | Density  | Molecular | Height       |          | Under Roof         | Surface Area | Surface Area | Volume on the         | Volume on                                | Volume       | Mass (4)     |  |  |
|          |           |               |          | Weight    | (See Table B |          |                    | of Vessel    | Walls of     | Bottom <sup>(3)</sup> | $Vessel  Walls^{\scriptscriptstyle (3)}$ |              |              |  |  |
|          |           |               |          |           | 2b)          |          |                    | Bottom (1)   | Vessel (2)   |                       |  |              |              |  |  |
|          |           |               |          |           |              |          |                    |              |              |                       |  |              |              |  |  |
|          |           |               | (lb/gal) | (lb/lb-   | (ft)         | (ft)     | (ft <sup>3</sup> ) | (ft²)        | (ft²)        | (ft³)                 | (ft³)                                    | (ft³)        | (lb)         |  |  |
|          |           |               |          | mole)     |              |          |                    |              |              |                       |  |              |              |  |  |
| 904A     | IFR       | Aromatic Gas  | 7.20     | 66.0      | 6.00         | 35       | 5,773              | 962          | 660          | 20.04                 | 1.1                                      | 21.14        | 1,138.78     |  |  |
| 904B     | IFR       | Aromatic Gas  | 7.20     | 66.0      | 6.00         | 35       | 5,773              | 962          | 660          | 20.04                 | 1.1                                      | 21.14        | 1,138.78     |  |  |

#### Notes:

1. Interior Surface Area of Vessel Bottom = Pi \* D<sup>2</sup> / 4

2. Interior Surface Area of Vessel Sides = Pi \* D \* L

3. Tank degassing emissions assume that the internal surfaces of tanks that store materials with TVP greater than 0.5 psia are covered in a liquid film that will evaporate during cleaning to contribute to emissions.

| Walls | 20  | mil (or 1/1000 inch) |
|-------|-----|----------------------|
| Floor | 250 | mil (or 1/1000 inch) |

Liquid Clingage (ft3), Clingage Width \* Interior Surface Area of Vessel Sides/Bottom (ft2) / 12,000 mil/ft 4. Total Liquid Clingage Mass (lb), Liquid clingage volume (ft3) \* Density (lb/gal) \* 7.4805 gal/ft3

#### Table B-4: Aromatic Gas Tank Emissions from Clearing Activities Westlake Chemical OpCo, LP / Calvert City, Kentucky Incorporation of EMACT into Title V Permit V-20-022 R1

| Tank No. | Saturate                | ed Vapor |                          | Degas to        | Flare Emissions          | Calculation(6)           |                         |                            | Residual Vapor Emissions (11) |              |              |
|----------|-------------------------|----------|--------------------------|-----------------|--------------------------|--------------------------|-------------------------|----------------------------|-------------------------------|--------------|--------------|
|          | Moles of Total Vapor in |          | Hydrocarbon Flow         | Hydrocarbon     | Flare VOC <sup>(8)</sup> | Flare NOx <sup>(9)</sup> | Flare CO <sup>(9)</sup> | Flare SO <sub>2</sub> (10) | VOC Partial                   | Vapor        | Total VOC at |
|          | Saturated               | Tank     | <b>To Control Device</b> | Flow To Control |                          |                          |                         |                            | Pressure at                   | Molecular    | 10,000 ppmvd |
|          | Vapor in                |          | During Degas (6)         | Device During   |                          |                          |                         |                            | 10,000 ppmvd                  | Weight       |              |
|          | Tank <sup>(5)</sup>     |          |                          | Degas (2)       |                          |                          |                         |                            |                               |              |              |
|          |                         |          |                          |                 |                          |                          |                         |                            |                               |              |              |
|          | (lb-mole)               | (lb)     | (lb)                     | (MMBtu)         | (lb)                     | (lb)                     | (lb)                    | (lb)                       | (psia)                        | (lb/lb-mole) | (lb)         |
|          |                         |          |                          |                 |                          |                          |                         |                            |                               |              |              |
| 904A     | 2.29                    | 151.16   | 1,289.94                 | 19.94           | 25.80                    | 1.36                     | 6.91                    | 0.01                       | 0.147                         | 66.0         | 9.49         |
| 904B     | 2.29                    | 151.16   | 1,289.94                 | 19.94           | 25.80                    | 1.36                     | 6.91                    | 0.01                       | 0.147                         | 66.0         | 9.49         |

#### Notes

5. The moles of vapor remaining in the tanks are calculated at a maximum temperature of 90oF.

VP = 2.34 psi Temp = 90.0 F

6. Tanks are controlled to the flare with a 98% destruction efficiency.

7. The flow to control device is based on the total vapor mass remaining in the tank and the remaining liquid film volatilizing throughout the degassing period and 15458 Btu / lb for Aromatic Gas.

Sample calculation: 1138.78 + 151.16 = 1289.94 lbs \* 15458 Btu/lb / 1,000,000 Btu/MMBtu = 19.94 MMBtu.

8. Amount of VOC emissions from the flare assuming DRE of 98%

Sample Calculation: 1289.94 lbs \* (1-0.98) = 25.8 lbs

9. NOx and CO emissions from the flare from the combustion

Sample Calculation: 19.94 MMBtu \* 0.068 lb NOx/MMBtu = 1.36 lb NOx

Sample Calculation: 19.94 MMBtu \* 0.3465 lb CO/MMBtu = 6.91 lb CO

10. Consistent with the PTE calculations for EPN 321A, SO2 Emission Factors from AP-42 Chapter 1.3, Table 1.4-2. PM is assumed zero for smokeless operation.

11. Residual vapor emissions are the emissions released from the tank after controlled degassing down to 10,000 ppmv VOC. Hourly emissions are based on 90F. Emissions/event are calculated using the July average ambient temperature for Paducah, KY from AP-42 Chapter 7.1, Table 7.1-7.

# **Trade Secret/Confidential Business Information**

Table B-5: Emissions from Maintenance Vents from Clearing Vessels, Vessel Systems, and Large Heat Exchangers Westlake Chemical OpCo, LP / Calvert City, Kentucky Incorporation of EMACT into Title V Permit V-20-022 R1
## Table B-6: Emissions from Maintenance Vents from Clearing Other Equipment and Systems Westlake Chemical OpCo, LP / Calvert City, Kentucky Incorporation of EMACT into Title V Permit V-20-022 R1

| Maintenance Activity <sup>(1)</sup>                        | Phase <sup>(2)</sup> | EMACT<br>Applicable <sup>(3)</sup> | VOC remaining<br>in Equipment, lb<br>(4) | Events/<br>Year <sup>(5)</sup> | EMACT<br>VOC, TPY <sup>(6)</sup><br>EPN 379 | Non-EMACT<br>VOC, TPY <sup>(6)</sup><br>EPN 380 |
|--|----------------------|------------------------------------|--|--------------------------------|---|---|
| Replacement of analyzer filters/screens                    | V/L                  | Both                               | 0.05                                     | 70                             | 8.75E-04                                    | 8.75E-04  |
| Replacement of process filters/screens                     | V/L                  | Both                               | 0.2                                      | 2000                           | 0.10  | 0.10  |
| Calibration/maintenance of process instrumentation         | V/L                  | Both                               | 0.1                                      | 1000                           | 0.03  | 0.03  |
| Valve and Piping maintenance/replacement                   | V                    | No                                 | 2  | 100                            | -   | 0.10  |
| Pumps, Valve and Piping maintenance/replacement            | L                    | No                                 | 2  | 200                            | -   | 0.20  |
| Valve and Piping maintenance/replacement                   | V                    | Yes                                | 2  | 100                            | 0.10  | -   |
| Pumps, Valve and Piping maintenance/replacement            | L                    | Yes                                | 2  | 200                            | 0.20  | -   |
| Small/Medium Heat Exchanger Cleanings, Maintenance, Repair | V                    | No                                 | 35                                       | 25                             | -   | 0.44  |
| Small/Medium Heat Exchanger Cleanings, Maintenance, Repair | L                    | No                                 | 35                                       | 10                             | -   | 0.18  |
| Small/Medium Heat Exchanger Cleanings, Maintenance, Repair | V                    | Yes                                | 35                                       | 129                            | 2.26  | -   |
| Small/Medium Heat Exchanger Cleanings, Maintenance, Repair | L                    | Yes                                | 35                                       | 5                              | 0.09  | _   |
| Compressor maintenance                                     | V                    | No                                 | 10                                       | 50                             | -   | 0.25  |
|  |                      |                                    | Total I                                  | Emissions                      | 2.77  | 1.29  |

## Notes:

1. As per 40 CFR 63.1103(e)(5), maintenance vents are vents that are only used as a result of startup, shutdown, maintenance, or inspection of equipment where equipment is emptied, degressurized, degassed, or placed into service. These categories describe activities where equipment is opened meeting the definition of maintenance vents, and have to meet the maintenance vent provisions. To the extent practical, all equipment will be drained prior to opening.

2. Whether the original material in the maintenance vent is liquid or vapor.

3. Whether the material in the equipment being opened is subject to the maintenance vent provisions. Only a small part of the Ethylene Plant is subject to these provisions. Activities with single vent emissions less than 50 lb are allowed to occur with recordkeeping requirements.

4. Westlake has developed charts which detail equipment size and calculate the residual VOC in the equipment. The VOC listed is an for a typical opening; however, maintenance will consult the charts to ensure the equipment contains less than 50 lb VOC or meets the other EMACT maintenance vent provisions 5. Assumption based on historical plant operations. Not a limit.

6. VOC remaining in equipment \* number of activities per year / 2000 lb/ton

**APPENDIX C: PERMIT RED LINE** 

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| Permit         | Permit Type        | Log or<br>Activity# | Complete<br>Date | Issuance<br>Date | Summary of<br>Action   |
| V-20-022       | Minor<br>Revision  | APE20200002         | 5/22/2020        | 3/7/2021         | De-Ethanizer Bottoms<br>Processing, Replacement of<br>EPN 332B, Addition of<br>EPN 332C/D  |
|                | Renewal            | APE20200003         | 10/16/2020       |                  | Title V Renewal  |
|                | Admin<br>Amendment | APE20220001         | 3/14/2022        | 1/23/2023        | Listed reqs. for EPN 329<br>only, asked for testing of<br>CO <sub>2</sub> rather than CO <sub>2</sub> e at<br>EPN 326A, incorporated<br>502(b)(10) Change from<br>Jan. 17, 2017.                                 |
| V-20-022<br>R1 | Minor<br>Revision  | APE20220002         | 6/7/2022         |                  | Installation of Flare Gas<br>Recovery System to route<br>excess flare gas to existing<br>combustion devices.<br>Updates to FUG-ETH-VVa<br>fugitive components,<br>addition of FUG-ETH-YY<br>fugitive components. |
|                | Admin<br>Amendment | APE20220003         | 3/14/2022        |                  | Removal of EPNs 332C,<br>332D, 373, and<br>Insignificant Activity EPN<br>326   |

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Permit Number: V-20-022 R1

## **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.

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## 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:               | 150-170 mmBtu/hr each | <br>Commented [1]: Blue Line Firing Rates were submitted |
|-----------------------|-----------------------|--|
| Primary Fuel:         | Process fuel gas *    | in an October 2022 Minor Revision Application.           |
| Date of construction: | 1963, rebuilt 2013    |  |
| Control Device:       | Low NOx burners (LNB) |  |

| EU# 005D (EPN 311)    | One (1) Cracking Furnace (#7) |
|-----------------------|-------------------------------|
| Rating:               | <del>80</del> 90 mmBtu/hr     |
| Fuel:                 | Process fuel gas*             |
| Date of construction: | 1967, rebuilt 2014            |
| Control Device:       | Low NOx burners (LNB)         |

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

| 201 00011 2 (11101) 010 | ) 1 ( o ( 1) o u u u u u u u u u u u u u u u u u u            |
|-------------------------|---|
| 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 December 2024  |
| 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,  $PM_{10}$ ,  $PM_{2.5}$ , VOC and CO<sub>2</sub>e, 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)(00), 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): 184 190 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): 150 170 mmBtu/hr each.
  - (2) For EU#005D (EPN 311): 80 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), PM<sub>10</sub>, and PM<sub>2.5</sub> 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<sub>2</sub>e) 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, PM<sub>10</sub>, PM<sub>2.5</sub> and GHG (as CO<sub>2</sub>e) 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.
- 1. 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 CO<sub>2</sub> 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 CO<sub>2</sub> 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. <u>Emission Limitations:</u>

- 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/mmscf
  - (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 PM<sub>10</sub>;
  - (4) 0.007 lb/mmBtu and 4.6 tons per year on a 12-month rolling basis of PM2.5;
  - (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<sub>2</sub>e (Based on Equation 5 from 40 CFR 98.33(a)(3)(iii) for CO<sub>2</sub> and 40 CFR 98 Subpart C Table 2, Fuel Gas for CH<sub>4</sub> and N<sub>2</sub>O).

### **Compliance Demonstration Method:**

- 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** <u>Requirements</u>.
- e. Pursuant to 401 KAR 52:020, Section 10, emissions of NOx from EU# 006C (EPN 329) shall not exceed 0.0095 lb/mmBtu and NH<sub>3</sub> (ammonia slip) shall not exceed 10 ppmvd at 3% O<sub>2</sub>.

## **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<sub>x</sub> 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% O<sub>2</sub>.
- (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/PM<sub>10</sub> (filterable

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

and condensable)/PM<sub>2.5</sub> (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<sub>x</sub> on EU# 006C (EPN 329). The permittee shall measure the NO<sub>x</sub> 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<sub>X</sub> and oxygen (O<sub>2</sub>) 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).

## 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.
- 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, PM<sub>10</sub>, PM<sub>2.5</sub> and CO<sub>2</sub>e 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<sub>2</sub>e 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.

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

- c. As an alternative, compliance with CO<sub>2</sub>e 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 O<sub>2</sub> (or CO<sub>2</sub>) 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<sub>x</sub> 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 NOx while maintaining ammonia slip below 10 ppmvd at 3% O<sub>2</sub>, 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.
    - (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 CO<sub>2</sub> 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 CO<sub>2</sub> concentration values beginning before the expected end of the air-in decoke time, the criterion used to begin the CO<sub>2</sub> 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 CO<sub>2</sub> concentration and any

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

decoke completion assurance procedures used to confirm all coke has been removed prior to stopping air addition that occurs after the CO<sub>2</sub> 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.
  - (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. See Section F.

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

#### (EPN 326A)

Control:

**Ethylene Decoking Pot Proposed**-Date of Construction: January 2023 December 2021 Integrated Cyclone and scrubber

## APPLICABLE REGULATIONS:

401 KAR 51:017, Prevention of Significant Deterioration of Air Quality. (For PM, PM10, PM2.5, CO, and CO<sub>2</sub>e).

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.a.Pursuant to 401 KAR 51:017, Section 8, for EPN 326A, the hours of operation shall not exceed 1500 hours per year.
- c.b.Pursuant to 401 KAR 52:020, Section 10, the existing decoking pot (EPN 326) shall not be operated upon startup of EPN 326A.

### **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:

Where:

- 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 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/hr
    - E = rate of particulate emissions in lb(s)/hr, andP = 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.

Commented [2]: Update section to reflect that the permitted Decoking Pot was operational 12/2021

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

#### **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.
- 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<sub>2</sub>e 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<sub>2</sub>e emissions. The plan shall be incorporated into the plant standard operating procedures (SOP) and shall be made available for the Division's inspection. The permittee shall implement a startup, shutdown and malfunction plan as defined in 40 CFR 63, Subpart YY 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:
  - 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 PM<sub>10</sub>;
  - (3) 2.40 lb/hr on a 24-hour average and 1.79 tons per year on a 12-month rolling basis of PM<sub>2.5</sub>; 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/PM<sub>10</sub>/PM<sub>2.5</sub> lb/hr limits, the permittee shall operate and maintain the associated control device in accordance with the manufacturer's recommendations.

Commented [3]: Update as per EMACT

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

- (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.

## 3. <u>Testing Requirements:</u>

- 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 CO<sub>2</sub> 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.

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

- e. Pursuant to 401 KAR 52:020, Section 10, the permittee shall calculate and keep records of the emissions of each pollutant PM,  $PM_{10}$ ,  $PM_{2.5}$ , CO and CO<sub>2</sub>e from EPN 326A on a monthly basis as well as a 12-month rolling total.
- f. See Section F.
- 6. <u>Specific Reporting Requirements:</u> See Section F.

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## 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   |
| EU# RRH (EPN 314)<br>Rating:                                   | Reactor Regeneration Heater<br>5.28 mmBtu/hr                              |
| EU# RRH (EPN 314)<br>Rating:<br>Fuel:                          | Reactor Regeneration Heater<br>5.28 mmBtu/hr<br>Process fuel gas*         |
| EU# RRH (EPN 314)<br>Rating:<br>Fuel:<br>Date of construction: | Reactor Regeneration Heater<br>5.28 mmBtu/hr<br>Process fuel gas*<br>2005 |

\* 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)(iiii), 40 C.F.R. 63.7480 through 63.7575, Tables 1 through 13 (Subpart DDDDD), National Emission Standards for Hazardous Air Pollutants for Major Sources: Industrial, Commercial, and Institutional Boilers and Process Heaters.

### 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)(iiii).

## 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. <u>Testing Requirements:</u>

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. <u>Specific Reporting Requirements:</u> See Section F.

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

EU# 021 (EPN 318) n-Propanol Tank (TK-932)

Type of Tank: Fixed Roof

Date of construction: 1963

Maximum Capacity: 3,000 gallons (11.36 m<sup>3</sup>)

Maximum true vapor pressure of total organic HAP: 5.13 kilopascals (kPa) (0.7434 psia)

## **APPLICABLE REGULATIONS:**

401 KAR 63:002, Section 2(4)(00), 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:

Pursuant to 40 CFR 63.1103(e)(3) and Table 7, item (a)(1)(i) of 40 CFR 63, Subpart YY, the permittee with 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  $\geq$ 3.4 kilopascals but <76.6 kilopascals; and the capacity of the vessel is  $\geq$ 4 cubic meters but <95 cubic meters, the permittee shall:

(1) Fill the vessel through a submerged pipe; or

(2) Comply with the requirements for storage vessels with capacities  $\geq$ 95 cubic meters.

## **Compliance Demonstration Method:**

Refer to Section F.9 for compliance reporting.

## 2. <u>Emission Limitations</u>:

--- None

3. <u>Testing Requirements</u>:

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:

- 5. <u>Specific Recordkeeping Requirements</u>: <u>None</u>
- 6. <u>Specific Reporting Requirements</u>: See Section F

**Commented [4]:** Moved from Section B to Section C to reflect that the n-Propanol tank is not subject to EMACT requirements and is an insignificant activity.

# 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:                       | August 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)(00), 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

1

- 2. <u>Emission Limitations</u>: None
- 3. <u>Testing Requirements:</u> Pursuant to 401 KAR 50:045, Section 1, testing shall be conducted at such times as may be requested by the Cabinet.
- 4. <u>Specific Monitoring Requirements</u>: None
- 5. <u>Specific Recordkeeping Requirements</u>: None
- 6. <u>Specific Reporting Requirements</u>: See Section F

**Commented [5]:** Updated to reflect actual installation date

## 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 RoofMaximum Capacity:259,308 gallons (981.6 m³)Date of construction:1963Maximum 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 m <sup>3</sup> ) |
| Date of construction:   | 1963                                    |
| Maximum true vapor pres | ssure: 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)(00), 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  $\geq$ 3.4 kilopascals but <76.6 kilopascals; and the capacity of the vessel is  $\geq$  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).
    - (A) Comply with the requirements of 40 CFR 63, Subpart WW; or
    - (B) 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
    - (C) 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
    - (D) 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) the permittee must comply with 40 CFR 63.1103 (e)(10)(i) through (iii) 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 LEL using process instrumentation or portable measurement devices and follow procedures for calibration and maintenance according to manufacturer's specifications.
  - (1) <u>Remove liquids from the storage vessel as much as practicable</u>
  - (2) <u>Comply with one of the following:</u>
    - A. 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).
    - B. 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).
    - A.C. 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:

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

### 2. Emission Limitations:

None

### 3. <u>Testing Requirements:</u>

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 paragraph 40 CFR 63.1063(a).

Commented [6]: Update as per EMACT

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

Any of the 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.
- d.e.Pursuant to 40 CFR 63.1103(e)(10)(iii) maintain records necessary to demonstrate compliance with the requirements in 40 CFR 63.1108(a)(4)(ii) including, if appropriate,

Commented [7]: Update as per EMACT

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

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. See Section F.

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

| <del>EU# 007 (EPN 321)</del> | Ethylene Flare                                   |
|------------------------------|--|
| Type:                        | John Zink, continuously operated, steam assisted |
| Auxiliary Fuel:              | Process Fuel Gas and/or Natural Gas              |
| Maximum Rating:              | 5,750 mmBtu/hr                                   |
| Date of Construction:        | 1991 (new flare tip in 2011)                     |

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 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)(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.

401 KAR 63:002, Section 2(4)(00), 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.

#### 1. Operating Limitations:

- a. Pursuant to 401 KAR 52:020, Section 10,
  - (1) EU# 007 (EPN 321) shall not be operated beyond 180 days after startup of EU# 007A (EPN 321A).
  - (2) Upon startup of EU# 007A (EPN 321A), the combined operating rate of EU# 007 (EPN 321) and EU# 007A (EPN 321A) shall not exceed 56.1 mmBtu/hr on a 30 day rolling average.

#### **Compliance Demonstration Method:**

(1) For compliance with **1. Operating Limitations** a.(1), see **6. Specific Reporting Requirements** e. **Commented [8]:** Remove section since EPN 321A has been started up and this EPN has been removed.

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

- (2) For compliance with 1. Operating Limitations a.(2), see 5. Specific Recordkeeping Requirements e.
- 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 when vents are being sent to 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/sem) (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 40 CFR 63.982(a) and 40 CFR 63.987(a), the permittee shall meet the performance requirements in 40 CFR 63.11(b) and 40 CFR 60.18(c).

### **Compliance Demonstration Method:**

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

e. Pursuant to 40 CFR 63.1102(c), the permittee must be in compliance with the requirements listed in 40 CFR 63.1102(c)(1) through (13) upon initial startup or July 6, 2023, whichever is later.

### Compliance Demonstration Method: Refer to Section D 6.

### 2. <u>Emission Limitations:</u>

- a. Pursuant to 401 KAR 63:015, Section 3, visible emissions from the either flare shall not exceed twenty (20) percent opacity for more than three (3) minutes in any one (1) day.
- b. Pursuant to 40 CFR 63.1103(e)(3) and Table 7, item (d)(1)(i) through (ii) of 40 CFR 63, Subpart YY, the permittee of an ethylene process vent as defined in 40 CFR 63.1103(e)(2) and if the process vent is at an existing source and the vent stream has a flow rate ≥0.011 semm and a total organic HAP concentration ≥50 parts per million by volume on a dry basis; or the process vent is at a new source and the vent stream has a flow rate ≥0.008 semm and a total organic HAP concentration ≥30 parts per million by volume on a dry basis; or the process vent is at a new source and the vent stream has a flow rate ≥0.008 semm and a total organic HAP concentration ≥30 parts per million by volume on a dry basis, shall:
  - (1) Except as specified in Table 7, item (d)(1)(ii) of 40 CFR 63, Subpart YY, 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% oxygen; whichever is less stringent, by venting emissions through a closed vent system to any combination of control devices and meet the requirements specified in 40 CFR 63.982(b) and (c)(2).
  - (2) Beginning no later than the compliance dates specified in 40 CFR 63.1102(e), comply with the maintenance vent requirements specified in 40 CFR 63.1103(e)(5) and either item (d)(1)(ii)(A) or (B) of Table 7 to 40 CFR 63, Subpart YY.
## SECTION B - EMISSION POINTS, EMISSIONS UNITS, APPLICABLE REGULATIONS, AND OPERATING CONDITIONS (CONTINUED)

- (A) 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); or
- (B) 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 any combination of non-flare control devices and meet the requirements specified in 40 CFR 63.982(c)(2) and 40 CFR 63.1103(c)(9).
- e. Pursuant to 40 CFR 63.11(b)(4), the flare shall be operated with no visible emissions, except for periods not to exceed a total of 5 minutes during any 2 consecutive hours.

#### **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) Closed vent system and flare: Pursuant to 40 CFR 63.982(b), owners or operators that vent emissions through a closed vent system to a flare shall meet the requirements in 40 CFR 63.983 for closed vent systems. 40 CFR 63.987 for flares; 40 CFR 63.997 (a), (b), and (c) for provisions regarding flare compliance assessments; the monitoring, recordkeeping, and reporting requirements of 40 CFR 63.998 and 40 CFR 63.999. No other provisions of 40 CFR 63, Subpart SS apply to emissions vented through a closed vent system to a flare.

#### 3. <u>Testing Requirements:</u>

Pursuant to 401 KAR 52:020, Section 10, to ensure continuous compliance, with 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 within 5 years of the previous test approved by the Division.

#### 4. <u>Specific Monitoring Requirements:</u>

- a. Pursuant to 40 CFR 63.987(c), the permittee shall install, calibrate, maintain, and operate a device (including but not limited to a thermocouple, ultra violet beam sensor, or infrared sensor) capable of continuously detecting the presence of a pilot flame. This shall be in accordance to manufacturer's specifications or other written procedures that provide adequate assurance that the equipment would reasonably be expected to monitor accurately.
- b. Pursuant to 40 CFR 63.981, continuous record means documentation, either in hard copy or computer readable form, of data values measured at least once every 15 minutes and recorded at the frequency specified in 40 CFR 63.998(b).

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

#### 5. Specific Recordkeeping Requirements:

- a. The permittee shall keep an up to date, readily accessible record of the following data and, pursuant to 40 CFR 63.998(a)(1)(i), this data shall be included in the flare compliance assessment report as specified in 40 CFR 63.999(a)(2)(iii)(A).
  - (1) Pursuant to 40 CFR 63.998(a)(1)(i)(A), flare design (i.e., steam-assisted, air-assisted, or non-assisted);
  - (2) Pursuant to 40 CFR 63.998(a)(1)(i)(B), all visible emission readings, heat content determinations, flow rate measurements, and exit velocity determinations made during the flare compliance assessment; and
  - (3) Pursuant to 40 CFR 63.998(a)(1)(i)(C), all periods during the flare compliance assessment when all pilot flames are absent or, if only the flare flame is monitored, all periods when the flare flame is absent.
- b. Pursuant to 401 KAR 52:020, Section 10, the permittee shall maintain records of routine and non-routine maintenance activities performed at the flare.
- c. Pursuant to 40 CFR 63.998(a)(1)(ii and iii), the permittee shall keep the following records up to date and readily accessible:
  - (1) Pursuant to 40 CFR 63.998(a)(1)(ii), hourly records of whether the monitor was continuously operating and whether the pilot flame was continuously present during each hour.
  - (2) Pursuant to 40 CFR 63.998(a)(1)(iii), records of the times and duration of all periods during which the pilot flame is absent or the monitor is not operating for each operating day determined according to the procedures specified in 40 CFR 63.999(c)(3).
- d. Pursuant to 401 KAR 52:020, Section 10, the permittee shall keep records of the daily average individual and combined operating rates (in mmBtu/hr) of EU# 007 (EPN 321) and EU# 007A (EPN 321A) and calculate a 30-day rolling average. See Section F.

6. Specific Reporting Requirements:

- a. Pursuant to 40 CFR 63.999(a)(1)(i), the permittee shall notify the Administrator of the intention to conduct a performance test or flare compliance assessment at least 30 days before such a compliance demonstration is scheduled to allow the Administrator the opportunity to have an observer present. If after 30 days notice for such an initially scheduled compliance demonstration, there is a delay (due to operational problems, etc.) in conducting the scheduled compliance demonstration affected facility shall notify the Administrator as soon as possible of any delay in the original demonstration date. The owner or operator shall provide at least 7 days prior notice of the rescheduled date of the compliance demonstration or arrange a rescheduled date with the Administrator by mutual agreement.
- b. Pursuant to 40 CFR 63.999(a)(1)(iv), any application to substitute a prior performance test or compliance assessment for an initial performance test or compliance assessment, as allowed by 40 CFR 63.997(b)(1), shall be submitted no later than 90 days before the performance test or compliance test is required. The application for substitution shall include information demonstrating that the prior performance test or compliance

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

assessment was conducted using the same methods specified in 40 CFR 63.997(e) or 40 CFR 63.987(b)(3), as applicable. The application shall also include information demonstrating that no process changes have been made since the test, or that the results of the performance test or compliance assessment reliably demonstrate compliance despite process changes.

- e. Performance test and flare compliance assessment report submittal and content requirements. Pursuant to 40 CFR 63.999(a)(2), performance test and flare compliance assessment reports shall be submitted as specified in 40 CFR 63.999(a)(2)(i) through 40 CFR 60.999(a)(2)(iii) as follows:
  - (1) For performance tests or flare compliance assessments, the Notification of Compliance Status or performance test and flare compliance assessment report shall include one complete test report as specified in 40 CFR 63.999(a)(2)(ii) for each test method used for a particular kind of emission point and other applicable information specified in 40 CFR 63.999(a)(2)(iii). For additional tests performed for the same kind of emission point using the same method, the results and any other information required in applicable sections of this subpart shall be submitted, but a complete test report is not required.
  - (2) A complete test report shall include a brief process description, sampling site description, description of sampling and analysis procedures and any modifications to standard procedures, quality assurance procedures, record of operating conditions during the test, record of preparation of standards, record of calibrations, raw data sheets for field sampling, raw data sheets for field and laboratory analyses, documentation of calculations, and any other information required by the test method.
  - (3) The performance test or flare compliance assessment report shall also include the information specified in 40 CFR 63.999(a)(2)(iii)(A) through (C) below, as applicable.
     (i) For flare compliance assessments, the permittee shall submit the records specified in 40 CFR 63.998(a)(1)(i).

#### d. Periodic reports. [40 CFR 63.999(c)]

- (1) Pursuant to 40 CFR 63.999(c)(1), periodic reports shall include the reporting period dates, the total source operating time for the reporting period, and, as applicable, all information specified in this section and in the referencing subpart, including reports of periods when monitored parameters are outside their established ranges.
- (2) Pursuant to 40 CFR 63.999(c)(2), for closed vent systems subject to the requirements of 40 CFR 63.983, the permittee shall submit as part of the periodic report the information specified in 40 CFR 63.999(c)(2)(i) through (iii), as follows, as applicable. (i) The information recorded in 40 CFR 63.998(d)(1)(iii)(B) through (E);
  - (ii) Reports of the times of all periods recorded under 40 CFR 63.998(d)(1)(ii)(A) when the vent stream is diverted from the control device through a bypass line; and
  - (iii) Reports of all times recorded under 40 CFR 63.998(d)(1)(ii)(B) when maintenance is performed in car sealed valves, when the seal is broken, when the bypass line valve position is changed, or the key for a lock and key type configuration has been checked out.

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

(3) Pursuant to 40 CFR 63.999(c)(3), for flares subject to this subpart, report all periods when all pilot flames were absent or the flare flame was absent as recorded in 40 CFR 63.998(a)(1)(i)(C).

e. See Section F.

7. <u>Specific Control Equipment Operating Conditions:</u> Pursuant to 401 KAR 52:020, Section 10, the permittee shall comply with 40 CFR 60.18(c)-(f).

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

| EU# 007A (EPN 321A)   | New-Ethylene Flare                               |
|-----------------------|--|
| Туре:                 | John Zink, continuously operated, steam assisted |
| Auxiliary Fuel:       | Process Fuel Gas and/or Natural Gas              |
| Maximum Rating:       | 5,979 mmBtu/hr                                   |
| Date of Construction: | Proposed July 2024May 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, PM<sub>10</sub>, PM<sub>2.5</sub>, VOC and CO<sub>2</sub>e)

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 as referenced by Subpart YY, for flares), National Emission Standards for Hazardous Air Pollutants From Petroleum Refineries

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

401 KAR 63:002, Section 2(4)(00), 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.

1. **Operating Limitations:** 

 a. –Pursuant to 401 KAR 52:020, Section 10, (1) EU# 007 (EPN 321) shall not be operated beyond 180 days after startup of EU# 007A (EPN 321A). **Commented [9]:** Update Section to reflect EPN 321A started up in May 2023 and to included provisions from the EMACT

**Commented [10]:** This is an overlap provision and is eliminated with the permanent shutdown of EPN 321.

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

(2) Upon startup of EU# 007A (EPN 321A), the combined operating rate of EU# 007 (EPN 321) and EU# 007A (EPN 321A) shall not exceed 56.1 mmBtu/hr on a 30 day rolling average.

**Commented [10]:** This is an overlap provision and is eliminated with the permanent shutdown of EPN 321.

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

#### **Compliance Demonstration Method:**

- (1) For compliance with **1. Operating Limitations** a.(1), see **6. Specific Reporting** Requirements d.
- (2) For compliance with **1. Operating Limitations** a.(2), see **5. Specific Recordkeeping Requirements** e.
- b-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, PM<sub>10</sub>, PM<sub>2.5</sub> and GHG (as CO<sub>2</sub>e) emissions.
- e-<u>b.</u>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. As referenced by 40 CFR 63.1103(e)(4), Ppursuant to 40 CFR 63.670(b) permittee shall operate the flare with a pilot flame present 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 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 as specified in 40 CFR 63.670(g).
- d.—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).
- e. <u>d.</u>
- f. Pursuant to 40 CFR 63.982(a) and 40 CFR 63.987(a), the permittee shall meet the performance requirements in 40 CFR 63.11(b) and 40 CFR 60.18(c).
- g. e. 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.
- h. <u>f.</u> 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.

i.g. Pursuant to 40 CFR 63.1103(e)(4), upon startup of EU# 007A, if a steam assisted, airassisted, 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 of 40 CFR 63, Subpart YY, 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)

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

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, Subpart YY.

- j- Pursuant to 40 CFR 63.1103(e)(4)(i), The permittee may elect to comply with the alternative means of emissions limitation requirements specified in of 40 CFR 63.670(r) of Subpart CC in lieu of the requirements in 40 CFR 63.670(d) through (f) of Subpart CC, as applicable. However, instead of complying with 40 CFR 63.670(r)(3) of Subpart CC, the permittee must submit the alternative means of emissions limitation request following the requirements in 40 CFR 63.1113.
- 1. As referenced by 40 CFR 63.1103(e)(4), Ppursuant to 40 CFR 63.670(o), the permittee that has the potential to operate above its smokeless capacity under any circumstance shall comply with the provisions in 63.670(o)(1) through (7).
- 1.2.\_\_\_Pursuant to 40 CFR 63.1103(e)(4)(ii), instead of complying with 40 CFR 63.670(o)(2)(i) of Subpart CC, the permittee must develop and implement the flare management plan no later than July 6, 2023.

Pursuant to 40 CFR 63.1103(e)(4)(iii), instead of complying with 40 CFR 63.670(o)(2)(iii) of Subpart CC, 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 via the Compliance and Emissions Data Reporting Interface (CEDRI), which can be accessed through the EPA's Central Data Exchange (CDX) (https://edx.epa.gov/). If the permittee claims some of the information in the flare management plan is confidential business information (CBI), submit a version with the CBI omitted via CEDRI. A complete plan, including information claimed to be CBI and clearly marked as CBI, must be mailed to the following address: U.S. Environmental Protection Agency, Office of Air Quality Planning and Standards, Sector Policies and Programs Administrator, U.S. EPA Mailroom (E143 01), Attention: Ethylene Production Sector Lead, 109 T.W. Alexander Drive, Research Triangle Park, NC 27711.

3. Pursuant to <u>40 CFR 63.1103(e)(4)(iii)</u>, instead of complying with 40 CFR <u>63.670(o)(2)(iii)</u> of Subpart CC, 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 via the Compliance and Emissions Data Reporting Interface (CEDRI), which can be accessed through the EPA's Central Data Exchange (CDX) (https://cdx.epa.gov/). If the permittee claims some of the information in the flare management plan is confidential business information (CBI), submit a version with the CBI omitted via CEDRI. A complete plan, including information claimed to be CBI and clearly marked as CBI, must be mailed to the following address: U.S. Environmental Protection Agency, Office of Air Quality Planning and Standards, Sector Policies and Programs Administrator, U.S. EPA Mailroom (E143-01), Attention: Ethylene Production Sector Lead, 109 T.W. Alexander Drive, Research Triangle Park, NC 27711-40 CFR 63.1103(e)(4)(iv);

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

Section 40 CFR 63.670(o)(3)(ii) of Subpart CC and all references to 40 CFR 63.670(o)(3)(ii) of Subpart CC do not apply. Instead, the permittee must comply with the maximum flare tip velocity operating limit at all times.

- 2.4. Pursuant to 40 CFR 63.1103(e)(4)(iv), Section 40 CFR 63.670(o)(3)(ii) of Subpart CC and all references to 40 CFR 63.670(o)(3)(ii) of Subpart CC do not apply. Instead, the permittee must comply with the maximum flare tip velocity operating limit at all times.
- m. Pursuant to 40 CFR 63.1103(e)(4)(v), substitute "ethylene production unit" for each occurrence of "petroleum refinery."

#### <del>1.</del>

- n. i. Pursuant to 40 CFR 63.1103(e)(4)(vi), each occurrence of "refinery" does not apply.
- n. Pursuant to 40 CFR 63.1103(e)(4)(vii), except as specified in 40 CFR 63.1103(e)(4)(vii)(G), if a 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, Subpart YY, then the permittee must comply with the requirements specified in 40 CFR 63.1103(e)(4)(vii)(A) through (F).
- j.\_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) listed below.
  - 1. The permittee must meet the requirements in 63.671(e)(2). The permittee may augment the minimum list of calibration gas components found in 63.671(e)(2) with compounds found during a pre-survey or known to be in the gas through process knowledge.
  - 2. Calibration gas cylinders must be certified to an accuracy of 2 percent and traceable to National Institute of Standards and Technology (NIST) standards.
  - 3. 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.
  - 4. The permittee may use the response factor for n-pentane to quantify any unknown components detected with a higher molecular weight than n-pentane.
  - 5. The permittee must perform an initial calibration to identify mass fragment overlap and response factors for the target compounds.
  - 6. 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

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

subpart CC, for the process mass spectrometer. The permittee may use the alternative sampling line temperature allowed under Net Heating Value by Gas Chromatograph in Table 13 to 40 CFR 63 subpart CC.

7. 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)

<u>k.</u> 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 NHVmeasured 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:

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

Where:

<u>NHV</u>measured = Average instrument response (Btu/scf)

<u>NHVa = Certified cylinder gas value (Btu/scf)</u>

- Pursuant to 40 CFR 63.1103(e)(4)(x), instead of complying with 40 CFR 63.670(p) of subpart CC, the permittee must keep the flare monitoring records specified in 40 CFR 63.1109(e).
- m. Pursuant to 40 CFR 63.1103(e)(4)(xi), instead of complying with 40 CFR 63.670(q) of subpart CC, the permittee must comply with the reporting requirements specified in 40 CFR 63.1110(d) and (e)(4).
- n. 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."
- <u>o.</u> Pursuant to 40 CFR 63.1103(e)(4)(xii), 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 NHVcz 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.

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

- p. As referenced by 40 CFR 63.1103(e)(4), Ppursuant to 40 CFR 63.670(d) the permittee shall comply with either 40 CFR 63.670(d)(1) or 40 CFR 63.670(d)(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.
  - (1) Except as provided in paragraph 40 CFR 63.670(d)(2), the actual flare tip velocity (Vtip) must be less than 60 feet per second. The permittee shall monitor Vtip using the procedures specified in paragraphs 40 CFR 63.670(i) and 40 CFR 63.670(k).
  - (2) Vtip must be less than 400 feet per second and also less than the maximum allowed flare tip velocity (Vmax) as calculated according to the following equation. The permittee shall monitor Vtip using the procedures specified in 40 CFR 63.670(i) and 40 CFR 63.670(k) and monitor gas composition and determine NHVvg using the procedures specified in 40 CFR 63.670(j) and 40 CFR 63.670(l).

$$-Log_{10}(V_{sum}) = \frac{NHV_{sg} + 1,212}{850}$$

Where:

 Vmax = Maximum allowed flare tip velocity, ft/sec.

 NHVvg = Net heating value of flare vent gas, as determined by paragraph 40 CFR

 63.670(k)(4), Btu/scf.

 1.212 = Constant.

 850 = Constant.

#### Compliance Demonstration Method: Refer to 4. Specific Monitoring Requirements

 Θ-q.As referenced by 40 CFR 63.1103(e)(4), Ppursuant to 40 CFR 63.670(e) the permittee shall operate the flare to maintain the net heating value of flare combustion zone gas (NHV<sub>cz</sub>) at or above 270 British thermal units per standard cubic feet (Btu/scf) 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<sub>cz</sub> as specified in 40 CFR 63.670(m).

#### 2. <u>Emission Limitations:</u>

- 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.

b.e. As referenced by 40 CFR 63.1103(e)(4), Ppursuant to 40 CFR 63.670(c) 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

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

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).

#### **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) Closed vent system and flare: Pursuant to 40 CFR 63.982(b), owners or operators that vent emissions through a closed vent system to a flare shall meet the requirements in 40 CFR 63.983 for closed vent systems. 40 CFR 63.987 for flares; 40 CFR 63.997 (a), (b), and (c) for provisions regarding flare compliance assessments; the monitoring, recordkeeping, and reporting requirements of 40 CFR 63.998 and 40 CFR 63.999. No other provisions of 40 CFR 63, Subpart SS apply to emissions vented through a closed vent system to a flare.
- (2) Closed vent system and flare: Pursuant to 40 CFR 63.1103(e) Table 7(d)(1)(ii), for ethylene process vents routed to a flare, reduce emissions of organic HAP by 98 weightpercent; 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 § 63.983 and paragraphs (e)(4) and (9) of this section.

#### 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.
- <u>As referenced by 40 CFR 63.1103(e)(4)</u>, <u>Ppursuant to 40 CFR 63.670(h) 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. The initial visible emissions demonstration should be conducted the first time regulated materials are routed to the flare.</u>
   <u>Pursuant to 401 KAR 52:020</u>, <u>Section 10</u>, to ensure continuous compliance, with 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 within 5 years of the previous test approved by the Division.
  - b. Pursuant to 40 CFR 63.1103(c)(4)(xiv), in lieu of meeting the requirements in 40 CFR 63.670 and 40 CFR 63.671, the permittee may submit a request to the Administrator for approval of an alternative test method in accordance with 40 CFR 63.7(f). The alternative test method must be able to demonstrate on an ongoing basis at least once every 15-minutes that the flare meets 96.5% combustion efficiency and provide a description of the alternative test method. The alternative test method request may also include a request to use the alternative test method in lieu of the pilot or flare flame monitoring requirements of 40 CFR 63.670(g).

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

#### 4. Specific Monitoring Requirements:

a. <u>Pursuant to 40 CFR 63.987(c)</u>, the permittee shall install, calibrate, maintain, and operate a device (including but not limited to a thermocouple, ultra violet beam sensor, or infrared sensor) capable of continuously detecting the presence of a pilot flame. This shall be in accordance to manufacturer's specifications or other written procedures that provide adequate assurance that the equipment would reasonably be expected to monitor accurately.

Pursuant to 40 CFR 63.981, continuous record means documentation, either in hard copy or computer readable form, of data values measured at least once every 15 minutes and recorded at the frequency specified in 40 CFR 63.998(b).

- a. As referenced by 40 CFR 63.1103(e)(4), Ppursuant to 40 CFR 63.670(g) 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. As referenced by 40 CFR 63.1103(e)(4), Ppursuant to 40 CFR 63.670(h) visible emissions observations must be conducted using one of the methods listed below. 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) 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.
  - 2. Pursuant to 40 CFR 63.670(h)(2) 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. As referenced by 40 CFR 63.1103(e)(4), Ppursuant to 40 CFR 63.670(i) 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,

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

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 (1) through (6).

- 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.

$$Q_{vot} = \frac{Q_{mass} \times 385.3}{MWt}$$

Where:

<u>Qvol = Volumetric flow rate, standard cubic feet per second.</u>

<u>Qmass = Mass flow rate, pounds per second.</u>

<u>385.3 = Conversion factor, standard cubic feet per pound-mole.</u>

<u>MWt = Molecular weight of the gas at the flow monitoring location, pounds per pound-mole.</u>

- 3. Mass flow monitors may be used for determining volumetric flow rate of assist air or assist steam. Use equation in paragraph 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 pounds per pound-mole. For flare vent gas, molecular weight must be determined using compositional analysis as specified in 40 CFR 63.670(j).
- 5. <u>Continuously monitoring fan speed or power and using fan curves is an acceptable</u> <u>method for continuously monitoring assist air flow rates.</u>
- 6. For perimeter assist air intentionally entrained in lower and/or upper steam, the monitored steam flow rate and the maximum design air to steam volumetric flow ratio of the entrainment system may be used to determine the assist air flow rate.
- d. As referenced by 40 CFR 63.1103(e)(4), Ppursuant to 40 CFR 63.670(j) 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 40 CFR 63.670(j)(2), to assess compliance with the operating limits in 40 CFR 63.670(e) and, if applicable, 40 CFR 63.670(d) and 40 CFR 63.670(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

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

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.

- Except as provided in 40 CFR 63.670(j)(5) and 40 CFR 63.670(j)(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 40 CFR 63.670(j)(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 40 CFR 63.670(j)(6), the permittee shall install, operate, calibrate, and maintain a calorimeter capable of continuously measuring, calculating, and recording NHVvg 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.
- 6. Direct compositional or net heating value monitoring is not required for gas streams that have been demonstrated to have consistent composition (or a fixed minimum net heating value) according to the methods in paragraphs (j)(6)(i) through (iii) of this section.
- e. As referenced by 40 CFR 63.1103(e)(4), Ppursuant to 40 CFR 63.670(k) the permittee shall determine Vtip on a 15-minute block average basis according to the following requirements.
  - 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.
  - 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 owners or operators may elect to calculate the cumulative flow

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

- 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 Vtip shall be calculated using the following equation. Q.,

$$V_{tip} = \frac{2cum}{Area \times 900}$$

Where:

••

<u>Vtip = Flare tip velocity, feet per second.</u>

Qcum = Cumulative volumetric flow over 15-minute block average period, standard cubic feet.

<u>Area = Unobstructed area of the flare tip, square feet.</u>

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

- 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 Vmax using the equation in 40 CFR 63.670 (d)(2) in order to compare Vtip to Vmax on a 15-minute block average basis.
- As referenced by 40 CFR 63.1103(e)(4), Ppursuant to 40 CFR 63.670(1) the permittee shall determine the net heating value of the flare vent gas (NHVyg) 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.

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

Where:  $\underline{NHV_{vg}} = Net heating value of flare vent gas, Btu/scf.$ i = Individual component in flare vent gas.  $\underline{n = Number of components}$  in flare vent gas.

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

 $x_i = \text{Concentration of component i in flare vent gas, volume fraction.}$   $\text{NHV}_i = \text{Net heating value of component i according to table 12 of MACT CC,}$  $\text{Btu/scf. If the component is not specified in table 12 of this subpart, the heats of combustion may be determined using any published values where the net enthalpy per mole of offgas is based on combustion at 25 °C and 1 atmosphere (or constant pressure) with offgas water in the gaseous state, but the standard temperature for determining the volume corresponding to one mole of vent gas is 20 °C.$ 

- (2) <u>If direct net heating value monitoring data are collected as provided in 40 CFR 63.670(j)(3) but a hydrogen concentration monitor is not used, the owner or operator shall use the direct output of the monitoring system(s) (in Btu/scf) to determine the NHV<sub>vg</sub> for the sample.</u>
- (3) <u>If direct net heating value monitoring data are collected as provided in 40 CFR</u> <u>63.670(j)(3) and hydrogen concentration monitoring data are collected as</u> <u>provided in 40 CFR 63.670(j)(4)</u>, the permittee shall use the following equation to <u>determine NHV.g for each sample measured via the net heating value monitoring</u> <del>system.</del>

 $\frac{NHV_{vg} = NHV_{measured} + 938x_{H2}}{1}$ 

Where:

NHVwe = Net heating value of flare vent gas, Btu/scf.NHVNHVmeasured = Net heating value of flare vent gas stream as measured by thecontinuous net heating value monitoring system, Btu/scf. $x_{H2}$  = Concentration of hydrogen in flare vent gas at the time the sample was inputinto the net heating value monitoring system, volume fraction.938 = Net correction for the measured heating value of hydrogen (1,212 - 274),Btu/sef.

- (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 owner or operator may elect to determine the 15-minute block average NHVvg 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). The permittee may choose to comply using the calculation methods in 40 CFR 63.670(l)(5)(i) for some flares at the ethylene production unit and comply using the calculation methods in 40 CFR 63.670(l)(5)(ii) for some flares at the ethylene production unit and comply using the calculation methods in 40 CFR 63.670(l)(5)(ii) for other flares. However, 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 owner or operator must notify the Administrator 30 days in advance of such a change.

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

(i) *Feed-forward calculation method.* When calculating NHV<sub>vg</sub> for a specific 15minute 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 steams. 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) *Direct calculation method*. When calculating NHV<sub>vg</sub> 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 starts, use the results from the first sample collected during an event for the first 15-minute block associated with that event.
- g. As referenced by 40 CFR 63.1103(e)(4), Ppursuant to 40 CFR 63.670(m) the permittee shall determine the net heating value of the combustion zone gas (NHVcz) as specified in 40 CFR 63.670(m)(1) or (2), as applicable.
  - Except as specified in 40 CFR 63.670(m)(2), determine the 15-minute block average NHV<sub>cz</sub> based on the 15-minute block average vent gas and assist gas flow rates using the following equation.

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

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

Where:

<u>NHV<sub>cz</sub> = Net heating value of combustion zone gas, Btu/scf.</u>

 $NHV_{vg}$  = 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. Owners or operators of flares that use the feed-forward calculation methodology in 40 CFR 63.670(1)(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<sub>cz</sub> using the following equation.

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

Where:

NHV<sub>cz</sub> = Net heating value of combustion zone gas, Btu/scf.

NHV<sub>vg</sub> = 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.  $Q_{NG2}$  = 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.*,  $Q_{NG1} = Q_{NG2}$ .

 $\underline{NHV}_{NG} = Net$  heating value of flare supplemental gas for the 15-minute block period determined according to the requirements in 40 CFR 63.670(j)(5), 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.

#### See 5. Specific Recordkeeping Requirements.

- <u>h.</u> As referenced by 40 CFR 63.1103(e)(4), Ppursuant to 40 CFR 63.671(a), for each CPMS installed to comply with applicable provisions in 40 CFR 63.670, the owner or operator 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 this subpart.

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

- 2. The owner or operator 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 owner or operator shall operate all CPMS and collect data continuously at all times when regulated emissions are routed to the flare.
- 5. The owner or operator shall operate, maintain, and calibrate each CPMS according to the CPMS monitoring plan specified in paragraph (b) of this section.
- 6. For each CPMS except for CPMS installed for pilot flame monitoring, the owner or operator shall comply with the out-of-control procedures described in paragraph (c) of this section.
- 7. The owner or operator shall reduce data from a CPMS as specified in paragraph (d) of this section.
- 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. As referenced by 40 CFR 63.1103(e)(4), Ppursuant to 40 CFR 63.671(b), 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 owner or operator 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 paragraphs (b)(3)(i) through (vii) of this section.
    (i) Manufacturer and model number for all monitoring equipment components installed to comply with applicable provisions in § 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 paragraph (a)(1) of this section.
    (iv) Placement of the CPMS readout, or other indication of parameter values,

indicating how the location meets the requirements of paragraph (a)(2) of this section. (v) Span of the CPMS. The span of the CPMS sensor and analyzer must encompass the full range of all expected values.

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

- (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 paragraphs (b)(4)(i) through (iii) of this section.
- (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 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 paragraph (e) of this section are determined.
- 5. Routine quality control and assurance procedures, including descriptions of the procedures listed in paragraphs (b)(5)(i) through (vi) of this section 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.
(iii) Daily checks for indications that the system is responding. If the CPMS system includes an internal system check, the owner or operator may use the results to verify the system is responding, as long as the system provides an alarm to the owner or operator or the owner or operator 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. As referenced by 40 CFR 63.1103(e)(4), Ppursuant to 40 CFR 63.671(c), for each CPMS installed to comply with applicable provisions in 40 CFR 63.670 except for CPMS installed for pilot flame monitoring, the owner or operator shall comply with the out-ofcontrol 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 highlevel calibration drift exceeds two times the accuracy requirement of table 13 of this subpart.
  - 2. When the CPMS is out of control, the owner or operator shall take the necessary corrective action and repeat all necessary tests that indicate the system is out of control. The owner or operator 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

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

indicates an exceedance of the performance requirements established in this section 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 owner or operator 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 paragraph (d)(3) of this section.

- k. As referenced by 40 CFR 63.1103(e)(4), Ppursuant to 40 CFR 63.671(d), 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 owner or operator 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 15minute block averages.
  - 3. Periods when the CPMS is out of control must not be included in the 15-minute block averages.

#### <u>Compliance Demonstration Method:</u> <u>See 5. Specific Recordkeeping Requirements.</u>

#### 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 CO<sub>2</sub>e) 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.
- Pursuant to 401 KAR 52:020, Section 10, the permittee shall keep records of the daily average individual and combined operating rates (in mmBtu/hr) of EU# 007 (EPN 321) and EU# 007A (EPN 321A) and calculate a 30 day rolling average. See Section F.
- d.c.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

**Commented [11]:** This is an overlap provision and is eliminated with the permanent shutdown of EPN 321.

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

CFR 63.1109(e)(1) through (15) in lieu of the information required in 40 CFR 63.998(a)(1) of Subpart SS.

e.a. Pursuant to 40 CFR 63.1103(e)(4)(xi) and 40 CFR 63.1110(d).=

- (1) Contents. 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(c)(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.
  - (ii)(i) 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)(i) 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) of subpart CC, as applicable; and all periods during the empliance determination when the pilot flame or flare flame is absent.
- (2)(1) Due Date. 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 carlier. 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.
- f.—Pursuant to 40 CFR 63.1103(e)(4)(xi) and 40 CFR 63.1110(e), the permittee shall submit a Periodic Report as follows: (1)\_Except as specified in 40 CFR 63.1110(e)(4) through (8), Periodic Reports shall include
  - (1) Except as 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

**Commented** [12]: This is a reporting requirement; therefore, moved it to the Reporting Section

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

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(c)(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) of subpart CC as applicable.
  - (iv) For flaring events meeting the criteria in 40 CFR 63.670(o)(3) of subpart CC 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.

#### 6. Specific Reporting Requirements:

a. Pursuant to 40 CFR 63.999(a)(1)(i), the permittee shall notify the Administrator of the intention to conduct a performance test or flare compliance assessment at least 30 days before such a compliance demonstration is scheduled to allow the Administrator the opportunity to have an observer present. If after 30 days notice for such an initially scheduled compliance demonstration, there is a delay (due to operational problems, etc.) in conducting the scheduled compliance demonstration as soon as possible of any delay in the original demonstration date. The owner or operator shall provide at least 7 days prior notice of the rescheduled date of the compliance demonstration or arrange a rescheduled date with the Administrator by mutual agreement.

b. Pursuant to 40 CFR 63.999(a)(1)(iv), any application to substitute a prior performance test or compliance assessment for an initial performance test or compliance assessment, as allowed by 40 CFR 63.997(b)(1), shall be submitted no later than 90 days before the performance test or compliance test is required. The application for substitution shall include information demonstrating that the prior performance test or compliance **Commented** [13]: This is a reporting requirement; therefore, moved it to the Reporting Section

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

assessment was conducted using the same methods specified in 40 CFR 63.997(e) or 40 CFR 63.987(b)(3), as applicable. The application shall also include information demonstrating that no process changes have been made since the test, or that the results of the performance test or compliance assessment reliably demonstrate compliance despite process changes.

- e. Performance test and flare compliance assessment report submittal and content requirements. Pursuant to 40 CFR 63.999(a)(2), performance test and flare compliance assessment reports shall be submitted as specified in 40 CFR 63.999(a)(2)(i) through 40 CFR 60.999(a)(2)(iii) as follows:
  - (1) For performance tests or flare compliance assessments, the Notification of Compliance Status or performance test and flare compliance assessment report shall include one complete test report as specified in 40 CFR 63.999(a)(2)(ii) for each test method used for a particular kind of emission point and other applicable information specified in 40 CFR 63.999(a)(2)(iii). For additional tests performed for the same kind of emission point using the same method, the results and any other information required in applicable sections of this subpart shall be submitted, but a complete test report is not required.
  - (2) A complete test report shall include a brief process description, sampling site description, description of sampling and analysis procedures and any modifications to standard procedures, quality assurance procedures, record of operating conditions during the test, record of preparation of standards, record of calibrations, raw data sheets for field sampling, raw data sheets for field and laboratory analyses, documentation of calculations, and any other information required by the test method.
  - (3) The performance test or flare compliance assessment report shall also include the information specified in 40 CFR 63.999(a)(2)(iii)(A) through (C) below, as applicable.
     (i) For flare compliance assessments, the permittee shall submit the records specified in 40 CFR 63.998(a)(1)(i).
- d.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) Ethylene production flare reports. For each flare subject to the requirements in 63.1103(e)(4), the Periodic Report shall include the items specified in paragraphs 40 CFR 63.1110(e)(4)(i) through (vi) in lieu of the information required in 63.999(c)(3) of subpart SS.
  - i. Records as specified in 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 63.1109(e)(2)(iv) for each period of 2 consecutive hours during which visible emissions exceeded a total of 5 minutes.
  - <u>iii.</u> The periods specified in 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 63.670(k) through (n) of subpart CC as applicable.

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

- iv. For flaring events meeting the criteria in 63.670(o)(3) of subpart CC and 63.1103(e)(4)(iv):
  - 1. The start and stop time and date of the flaring event.
  - 2. The length of time that emissions were visible from the flare during the event.
  - 3. 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) and 40 CFR 63.1110(d).
  - (1) Contents. 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.
    - (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) of subpart CC, as applicable; and all periods during the compliance determination when the pilot flame or flare flame is absent.
  - (2) Due Date. 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 63.1110(d)(1), for flares subject to the requirements of § 63.1103(e)(4), the owner or operator of an ethylene production affected source shall also submit the information listed in 63.1110(d)(1)(iv) of this section in a supplement to the Notification of Compliance Status within 150 days after the first applicable compliance date for flare monitoring.
- e. See Section F.
- 7. Specific Control Equipment Operating Conditions:

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

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

8. <u>Alternate Operating Scenarios:</u>

Pursuant to 51:017, Section 8, as an alternative to installing a new elevated flare, the permittee shall install a new ground flare that will meet all the applicable requirements in 401 KAR 51:017 listed above, and the requirements in 40 CFR 60.18 and 40 CFR 63.11.

## 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 |

<u>NOTE</u> - 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 CO2e]

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)(00), 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  $\geq$ 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 of this part, 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 63.1030(d) (pressure relief devices in gas and vapor service), 40 CFR 63.1031(e) (compressors), or 40 CFR 63.1037(a) (alternative means of emission limitation for enclosed-vented process units).
  - (3) Pressure relief devices. Pursuant to 40 CFR 63.1022(b)(3), identify the pressure relief devices equipped with rupture disks, under the provisions of 40 CFR 63.1030(c).

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

- (4)(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.
- (5)(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 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 63.1028(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.

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

- (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 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.

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

#### 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 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 replacing the bonnet bolts.
- 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 Pursuant to 40 CFR 63.1024(d)(1) through Pursuant to 40 CFR 63.1024(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

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

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
- (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)(i).
    - (i) Pursuant to 40 CFR 63.1024(f)(4)(ii), the permittee may develop a written procedure that identifies the conditions that justify a delay of repair. The written procedures may be included as part of the startup, shutdown, and malfunction plan, as required by the referencing subpart for the source, or may be part of a separate document that is maintained at the plant site. 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.

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

#### Sampling connection systems standards

- 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.
- 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 steams 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**.

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

- 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<sub>2</sub>e 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.
  - (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;

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

- (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.
- (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. Pressuresensing 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 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 pressuresensing device.

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

- 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;
  - (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 63.1107(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 <u>dise\_disk\_is</u> 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, 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).
  - (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).

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

- (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 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 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), equipment that must be controlled according to 40 CFR part 63 subpart YY and 40 CFR Part 60 subpart VVa of 40 CFR part 60 is required only to comply with the equipment leak requirements 40 CFR part 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 subpart VVa of 40 CFR part 60. 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 6. Specific Reporting Requirements c.

2. Emission Limitations:

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See 1. Operating Limitations.

#### 3. <u>Testing Requirements:</u>

Pursuant to 40 CFR 63.1100(g)(4)(i), after the compliance dates specified in 40 CFR 63.1102, equipment that must be controlled according to 40 CFR 63, Subpart YY and 40 CFR 60, Subpart VV, or 40 CFR 61, Subpart J or 40 CFR 61, Subpart V is required only to comply with the equipment leak requirements of 40 CFR 63 Subpart YY.

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 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 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.

#### 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).

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

- (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)(v), pressure relief devices in gas and vapor service shall be monitored pursuant to 40 CFR 63.1030(c).
- (vi)(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).
  - (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.
- (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 CFR63.1025(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 63.1030(b) (pressure relief devices) or 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)(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.

### 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)(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.
- 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 this part 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 values.
- $V_L$  = 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 two monitoring frequencies, the percent leaking valves shall be the arithmetic average of 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

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

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.
- 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.
- 1. 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).

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

(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.
  - (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 this part 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.

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

- (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:

- $% P_L =$  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.

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

- 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 63.1024 of this part 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 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

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

specified in 40 CFR 63.1027(b)(3)(i) through 40 CFR 63.1027(b)(3)(ii), 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)(ii) 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 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.
    - (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 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.

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

#### Pressure relief devices in gas and vapor service standards

aa. Compliance standard. Pursuant to 40 CFR 63.1030(b), except during pressure releases as provided for in 40 CFR 63.1030(c), or as otherwise specified in 40 CFR 63.1036, 40 CFR 63.1037, or 40 CFR 63.1030(d) and 40 CFR 63.1030(e), each pressure relief device in gas and vapor service shall be operated with an instrument reading of less than 500 ppm as measured by the method specified in 40 CFR 63.1023(b) and, as applicable, 40 CFR 63.1023(c).

- bb. Pressure relief requirements [40 CFR 63.1030(c)].
  - (1) Pursuant to 40 CFR 63.1030(c)(1), after each pressure release, the pressure relief device shall be returned to a condition indicated by an instrument reading of less than 500 ppm, as soon as practical, but no later than 5 calendar days after each pressure release, except as provided in 40 CFR 63.1024(d).
  - (2) Pursuant to 40 CFR 63.1030(c)(2), the pressure relief device shall be monitored no later than five calendar days after the pressure to confirm the condition indicated by 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).
  - (3) Pursuant to 40 CFR 63.1030(c)(3), the permittee shall record the dates and results of the monitoring required by 40 CFR 63.1030(c)(2) following a pressure release including the background level measured and the maximum instrument reading measured during the monitoring.

#### **Compressor standards**

- ec.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).
  - 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 (except during periods of startup, shutdown, or malfunction); 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.
- dd.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.

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

ee.cc. Failure criterion and leak detection. [40 CFR 63.10301031(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.
- (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.

### ff.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.
- **gg.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

- hh.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).
  - 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.
- ii-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,

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

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.

- jj-hh. <u>Resumption of QIP</u>. 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 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.
- kk-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

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

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.

- (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 online 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 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.

- (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

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

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 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.
- **H**-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).
- (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).

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

- (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).
- 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)(5), for pressure relief devices in gas and vapor or light liquid service, the permittee shall keep records of the dates and results of monitoring following a pressure release, as specified in 40 CFR 63.1030(c)(3).
  - (6)(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).
  - (7)(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).

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

- (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).
- (8)(7) Pursuant to 40 CFR 63.1038(c)(9), for process units complying with the enclosedvented process unit alternative, the permittee shall maintain the records for enclosedvented process units as specified in 40 CFR 63.1037(b).
- 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 63.1100(g)(4)(iii) the requirement at 40 CFR 60.486a(e)(8)(v) to record the instrument reading for each scale used applies. 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) must be recorded.

### 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

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

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.
  - (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 nonrepairable.
    - (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 pressure relief devices in gas and vapor service pursuant to 40 CFR 63.1030(b) and 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).
- (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. Notification of Compliance Status. Pursuant to 40 CFR 63.1110(d)(1)(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.
- d. Pursuant to 40 CFR 63.1110(d)(1), for pressure relief devices subject to the pressure release management work practice standards in § 63.1107(h)(3), the owner or operator of an ethylene production affected source shall also submit the information listed in paragraph (d)(1)(v) of this section in a supplement to the Notification of Compliance Status within 150 days after the first applicable compliance date for pressure relief device monitoring.
- e.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).
  - 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,

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

if applicable, the implementation schedule for planned corrective actions to be implemented subsequent to the reporting period.

d.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 CO<sub>2</sub>e.

| 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 CO<sub>2</sub>e.

Flanges/connectors: 382

Gas/Vapor Valves: 107

<u>NOTE</u> - 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 paragraph 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.
- 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:

- (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.
- II. 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-tomonitor 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:

- %CL = 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 paragraph 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 CO<sub>2</sub>e) 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:

- 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 leakchecking 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 calibrating 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 nodetectable-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. H<sub>2</sub>O 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. H<sub>2</sub>O 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.

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# 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:

<u>NOTE</u> - 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)(00), 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 gastight 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)(3) 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)(4) Pursuant to 40 CFR 61.349(d), an owner or operator shall demonstrate compliance of each flare in accordance with paragraph 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, TK192B, 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 ( $150 \times 106$  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 ( $150 \times 106$  BTU/hr), the owner or operator shall maintain continuous records of 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.

 Specific Control Equipment Operating Conditions: See <u>EU# 007 and</u> EU# 007A Ethylene Flare and new Ethylene Flare requirements.

### 8. <u>Alternate Operating Scenarios:</u>

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.

**Commented [17]:** Updated to reflect startup of EPN 321A

## 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. <u>Testing Requirements:</u>

- a. Pursuant to 40 CFR 63.565(1), 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 65.565(l) and records of their actual throughputs by commodity, for five (5) years.

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

- 6. <u>Specific Reporting Requirements:</u> See Section F.
- 7. <u>Specific Control Equipment Operating Conditions:</u> None
- 8. <u>Alternate Operating Scenarios:</u>

At times during plant shutdowns and EU# 007 or EU# 007A (Ethylene Flare-and new 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.

Commented [18]: Updated to reflect startup of 321A

## 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/hrControl: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)(00), 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), the permittee shall comply with the leak detection and repair requirements of 40 CFR 63.1085 and 63.1086, for heat exchange systems meeting the requirements specified in 40 CFR 63.1084 (a), (b), or (e):
  - 1. The permittee's 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 permittee's heat exchange system contains an intervening cooling fluid, containing less than 5 percent by weight of total HAP listed in Table 1 to this subpart, 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 this section, discharge does not include emptying for maintenance purposes.

**Commented [19]:** Cooling tower section update as per EMACT

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

- The once-through heat exchange system is subject to a National Pollution Discharge Elimination System (NPDES) permit with an allowable discharge limit of 1 part per million by volume (ppmv) or less above influent concentration, or 10 percent or less above influent concentration, whichever is greater.
- —The permittee's once-through heat exchange system is subject to a NPDES permit that meets all of the conditions in 40 CFR 63.1084(d)(1) through (4).
- 3. The permittee's 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 in subpart XX.
- d. Pursuant to 40 CFR 63.1087(c), if a leak is detected using the methods described in 63.1086(e), you 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 remonitoring at the monitoring location where the leak was identified according to the method specified in 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
    - Isolating, bypassing, or otherwise removing the leaking heat exchanger from service until it is otherwise repaired.
- e. Pursuant to 40 CFR 63.1088(d) you 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). You 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 you 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 you 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 you may delay the repair for a maximum of 120 calendar days. You must demonstrate that the necessary equipment, parts, or personnel were not available. If, during subsequent monitoring, the delay of repair

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

action level is exceeded, then you 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 or, for heat exchange systems with a recirculation rate of 10,000 gallons per minute or less, the delay of repair action level is a total hydrocarbon mass emissions rate (as methane) or 1.8 kg/hr. The delay of repair action level is assessed as described in 40 CFR 63.1088(d)(3)(i) or (ii), as applicable.
  - For once-through heat exchange systems for which the inlet water feed is monitored as described in 40 CFR 63.1086(e)(2)(ii), the delay of repair action level is exceeded if the difference in the measurement value of the sample taken from a location specified in 40 CFR 63.1086(e)(2)(i) and the measurement value of the corresponding sample taken from the location specified in 40 CFR 63.1086(e)(2)(ii) equals or exceeds the delay of repair action level.
  - 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.
- c. Pursuant to 40 CFR 63.1085(b), if a leak is detected, it is to be repaired according to 40 CFR 63.1087 unless the repair is delayed according to 40 CFR 63.1088.

### **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:
  - (i) For process weight rates of 0.50 ton/hour or less: E = 2.58
  - (ii) For process weight rates > 0.5 ton/hour up to 30.0 tons/hour:  $E = 4.10*P^{0.67}$ (iii) 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.

Commented [21]: This is not applicable to Westlake

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

### 4. Specific Monitoring Requirements:

- a. \_Pursuant to 40 CFR 63.1086(e) the permittee must perform monitoring to identify leaks of total strippable hydrocarbons from each heat exchange system subject to the requirements of this subpart as follows:
  - 1. For each closed loop recirculating heat exchange system, you must collect and analyze a sample from the location(s) described below.
    - <u>i.</u> 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 group of heat exchangers within a heat exchange system is covered by the selected monitoring location(s).

For each once-through heat exchange system, you must collect and analyze a sample from the location(s) described in 40 CFR 63.1086(e)(2)(i). You may also elect to collect and analyze an additional sample from the location(s) described in 40 CFR 63.1086(e)(2)(ii) as follows.

- -Selected heat exchanger exit line(s), so that each heat exchanger orgroup of heat exchangers within a heat exchange system is covered by the selected monitoring location(s). The selected monitoring location may be at a point where discharges from multiple heat exchange systems are combined provided that the combined cooling water flow rate at the monitoring location does not exceed 165,000 gallons per minute.
- -The inlet water feed line for a once-through heat exchange system priorto any heat exchanger. If multiple heat exchange systems use the same water feed (*i.e.*, inlet water from the same primary water source), you may monitor at one representative location and use the monitoring results for that sampling location for all heat exchange systems that use that same water feed.
- 2. Pursuant to 40 CFR 63.1086(e)(3) 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.
  - i.<u>You must convert the total strippable hydrocarbon concentration (in</u> <u>ppmv as methane) to a total hydrocarbon mass emissions rate (as</u> <u>methane) using the calculations in Section 7.0 of "Air Stripping Method</u> (Modified El Paso Method) for Determination of Volatile Organic <u>Compound Emissions from Water Sources" (incorporated by reference</u> <u>see § 63.14).</u>
- 3. Pursuant to 40 CFR 63.1086(e)(4)(i) for a heat exchange system at an existing source, 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

**Commented [23]:** This is not applicable to Westlake

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

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 you 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. Pursuant to 40 CFR 63.1086(e)(5) leak is defined in either of the following requirements, as applicable.
  - For once-through heat exchange systems for which the inlet water feed is monitored as described in 40 CFR 63.1086 (e)(2)(ii), a leak is detected if the difference in the measurement value of the sample taken from a location specified in 40 CFR 63.1086(e)(2)(i) and the measurement value of the corresponding sample taken from the location specified in 40 CFR 63.1086(e)(2)(ii) equals or exceeds the leak action level.
  - 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.
- b. Pursuant to 40 CFR 63.1087(d) 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).

, the permittee must monitor for leaks to cooling water by monitoring each heat exchange system according to the requirements of 40 CFR 63.1086(a), and monitoring each heat exchanger according to the requirements of 40 CFR 63.1086(b).

*Heat exchange system.* Pursuant to 40 CFR 63.1086(a), monitor cooling water in each heat exchange system for the HAP listed in Table 1 to 40 CFR 63, Subpart XX (either total or speciated) or other representative substances (e.g., total organic carbon or volatile organic compounds (VOC)) that indicate the presence of a leak according to the requirements in paragraphs (a)(1) through (5) of this section:

The permittee must define the equipment that comprises each heat exchange system. For the purposes of implementing paragraph (a) of this section, a heat exchange system may consist of an entire heat exchange system or any combinations of heat exchangers such that, based on the rate of cooling water at the entrance and exit to each heat exchange system and the sensitivity of the test method being used, a leak of 3.06 kg/hr or greater of the HAP in Table 1 of 40 CFR 63, Subpart XX would be detected. For example, if the chosen test has a sensitivity of 1 ppmv for total HAP, then the permittee must define the heat exchange system so that the cooling water flow rate is 51,031 liters per minute or less so that a leak of 3.06 kg/hr can be detected.

Commented [24]: This is not applicable to Westlake

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

Monitoring periods. For existing sources, monitor cooling water as specified in paragraph (a)(2)(i) of 40 CFR 63.1086. Monitor heat exchange systems at new sources according to the specifications in paragraph (a)(2)(ii) of 40 CFR 63.1086.

Monitor monthly for 6 months, both initially and following completion of a leak repair. Then monitor as provided in either paragraph (a)(2)(i)(A) or (a)(2)(i)(B) of 40 CFR 63.1086, as appropriate.

If no leaks are detected by monitoring monthly for a 6-month period, monitor quarterly thereafter until a leak is detected.

If a leak is detected, monitor monthly until the leak has been repaired. Upon completion of repair, monitor according to the specifications in paragraph (a)(2)(i) of 40 CFR 63.1086.-

Monitor weekly for 6 months, both initially and following completion of a leak repair. Then monitor as provided in paragraph (a)(2)(ii)(A) or (B) of 40 CFR 63.1086, as appropriate.

If no leaks are detected by monitoring weekly for a 6-month period, monitor monthly thereafter until a leak is detected.

If a leak is detected, monitor weekly until the leak has been repaired. Upon completion of the repair, monitor according to the specifications in paragraph (a)(2)(ii) of 40 CFR 63.1086.

Determine the concentration of the monitored substance in the heat exchange system cooling water using any method listed in 40 CFR Part 136. Use the same method for both entrance and exit samples. The permittee may validate 40 CFR Part 136 methods for the HAP listed in Table 1 40 CFR 63, Subpart XX, according to the procedures in appendix D to 40 CFR 63.1086. Alternative methods may be used upon approval by the Administrator.

Take a minimum of three sets of samples at each entrance and exit.

Calculate the average entrance and exit concentrations, correcting for the addition of make-up water and evaporative losses, if applicable. Using a one-sided statistical procedure at the 0.05 level of significance, if the exit mean concentration is at least 10 percent greater than the entrance mean of the HAP (total or speciated) in Table 1 to 40 CFR 63, Subpart XX, or other representative substance, and the leak is at least 3.06 kg/hr, you have detected a leak.

*Individual heat exchangers.* Pursuant to 40 CFR 63.1086(b), monitor the cooling water at the entrance and exit of each heat exchanger for the HAP in Table 1 to 40 CFR 63, Subpart XX (either total or speciated) or other representative substances (e.g., total organic carbon or VOC) that indicate the presence of a leak in a heat exchanger according to the requirements in paragraphs (b)(1) through (4) of 40 CFR 63.1086.

Monitoring periods. For existing sources, monitor cooling water as specified in paragraph (b)(1)(i) of 40 CFR 63.1086. Monitor each heat exchanger at new sources according to the specifications in paragraph (b)(1)(ii) of 40 CFR 63.1086.

Monitor monthly for 6 months, both initially and following completion of a leak repair. Then monitor as provided in paragraph (b)(1)(i)(A) or (b)(1)(i)(B) of 40 CFR 63.1086, as appropriate.

If no leaks are detected by monitoring monthly for a 6 month period, monitor quarterly thereafter until a leak is detected.

If a leak is detected, monitor monthly until the leak has been repaired. Upon completion of repair, monitor according to the specifications in paragraph (b)(1)(i) of 40 CFR 63.1086.-

Monitor weekly for 6 months, both initially and following completion of a leak repair. Then monitor as provided in paragraph (b)(1)(ii)(A) or (B) of 40 CFR 63.1086, as appropriate.
# SECTION B - EMISSION POINTS, EMISSIONS UNITS, APPLICABLE REGULATIONS, AND OPERATING CONDITIONS (CONTINUED)

If no leaks are detected by monitoring weekly for a 6 month period, monitor monthly thereafter until a leak is detected.

If a leak is detected, monitor weekly until the leak has been repaired. Upon completion of the repair, monitor according to the specifications in paragraph (b)(1)(ii) of 40 CFR 63.1086.

Determine the concentration of the monitored substance in the cooling water using any method listed in 40 CFR Part 136, as long as the method is sensitive to concentrations as low as 10 ppmv. Use the same method for both entrance and exit samples. Validation of 40 CFR Part 136 methods for the HAP listed in Table 1 to 40 CFR 63, Subpart XX may be determined according to the provisions of Appendix D of 40 CFR Part 63. Alternative methods may be used upon approval by the Administrator.

Take a minimum of three sets of samples at each heat exchanger entrance and exit. Calculate the average entrance and exit concentrations, correcting for the addition of make-up water and evaporative losses, if applicable. Using a one-sided statistical procedure at the 0.05 level of significance, if the exit mean concentration is at least 1 ppmw or 10 percent greater than the entrance mean, whichever is greater, then a leak has been detected [40 CFR 63.1086(a) and (b)].

- **a.**<u>c.</u> Pursuant to 401 KAR 52:020, Section 10, the permittee shall monitor the hours of operation of the cooling tower on a weekly basis.
- **b.d.** 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 paragraphs 40 CFR 63.1089(a) through (ed), according to the requirements of 40 CFR 63.1109(c).

- <u>a.</u> Pursuant to 40 CFR 63.1089(a), monitoring data required by 40 CFR 63.1086 that indicate a leak, the date the leak was detected, or, if applicable, the basis for determining there is no leak.
- b. Pursuant to 40 CFR 63.1089(b), the dates of efforts to repair leaks.
- e. Pursuant to 40 CFR 63.1089(c), the method or procedures used to confirm repair of a leakand the date the repair was confirmed.

Pursuant to 40 CFR 63.1089(d), documentation of delay of repair as specified in 40 CFR 63.1088.

- a. Pursuant to 40 CFR 63.1089(d) the permittee must keep documentation of delay of repair as specified in 40 CFR 63.1089 (d)(1) through (4) and listed below.
  - 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.

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

- 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 below:
  - i. If you comply with the total strippable hydrocarbon concentration leak action level, as specified in 40 CFR 63.1086(e)(4), you 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 you determine 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.
  - <u>ii</u>. 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 63.1089(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 the of the current monitoring event.
  - i-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 remonitoring to verify the leak was repaired and ending at the time of the remonitoring event that verified that the leak was repaired.
- d. Pursuant to 40 CFR 63.1089(e), if there is validation of 40 CFR part 136 method for the HAP listed in Table 1 to 40 CFR 63, Subpart XX according to the procedures in appendix D to 40 CFR Part 63, then the permittee must keep a record of the test data and calculations used in the validation.

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

- e.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.
- f.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.
- g.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:

$$E_{PM} = C_{w} \times \frac{60 \text{ min}}{\text{hour}} \times H_{M} \times \frac{8.34 \text{ pound water}}{\text{gallon}} \times \text{TDS} \times \frac{\text{DL}}{100}$$

Where:

- $E_{PM} = PM$  emission rate from the cooling tower during the month (pounds per month)
- Cw = Water circulation rate in (gallons per minute)
- HM = 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)
- h.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:

- Pursuant to 40 CFR 63.1090(f) periodic reports must include the information specified below.
  - a. 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.
  - b. 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.
  - c. 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 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.
  - d. 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).
  - e. 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

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

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.

- a. 40 CFR 63.1090, if repair is delayed for the heat exchange system, the permittee must report the delay of repair in the semiannual report required by 40 CFR 63.1110(e). If the leak remains unrepaired, the permittee must continue to report the delay of repair in semiannual reports until the leak has been repaired. The permittee must include the information in 40 CFR 63.1090(a) through (e) in the semiannual report.
- b. Pursuant to 40 CFR 63.1090(a), the fact that a leak was detected, and the date that the leak was detected.
- c. Pursuant to 40 CFR 63.1090(b), whether or not the leak has been repaired.
- d. Pursuant to 40 CFR 63.1090(c), the reasons for delay of repair. If the repair is delayed as provided in 40 CFR 63.1088(b), documentation of emissions estimates.
- e. -Pursuant to 40 CFR 63.1090(d), if a leak remains unrepaired, the expected date of repair.
- f.—Pursuant to 40 CFR 63.1090(e), if a leak is repaired, the date the leak was successfully repaired.

g.f. See Section F.

#### EU# 0XX (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)(00), 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.

#### **<u>1. Operating Limitations:</u>**

- 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 subpart SS, until one of the following conditions, as applicable, is met.
  - 1. The vapor in the equipment served by the maintenance vent has a lower explosive limit (LEL) of less than 10 percent.
  - 2. If there is no ability to measure the LEL 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 LEL 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.
  - 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 LEL 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 be determined from equipment design specifications. Equipment contents may be determined using process knowledge.

#### <u>Compliance Demonstration Method:</u> <u>See 5. Specific Recordkeeping Requirements.</u>

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**Commented [25]:** New EPN with new EMACT requirements.

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2. Emissions Limitations:

None.

3. Testing Requirements:

None.

4. Specific Monitoring Requirements:

None.

#### **<u>5.</u>** Specific Recordkeeping Requirements:

As per 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).

- a. 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,
- b. If complying with the requirements of 40 CFR 63.1103(e)(5)(i)(A) and the LEL at the time of the vessel opening exceeds 10 percent, records that identify the maintenance vent, the process units or equipment associated with the maintenance vent, the date of maintenance vent opening, and the LEL at the time of the vessel opening.
- c. 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 LEL at the time of the active purging was initiated exceeds 10 percent, 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 LEL of the vapors in the equipment when active purging was initiated.
- d. 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 estimate the total quantity of VOC in the equipment at the time the maintenance vent was opened to the atmosphere.
- e. 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 LEL 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 this reporting requirement, owners or operators
 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 LEL was 10 percent or greater, also include the LEL of the vapors at the time active purging was initiated.
- <u>4. An estimate of the mass of organic HAP released during the entire atmospheric venting event.</u>
- b. See Section F.

**Generally Applicable** 

#### 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.

| <b>EPN</b> | Description   | <u>Generally Applicable</u><br>Regulation |   |
|------------|---|---|---|
|            | WESTLAKE ETHYLENE PLANT                                   | negunation                                |   |
| 316        | Injection Oil Tank (7,500 gallons)                        | None                                      | -   |
| 318        | n-Propanol Tank (3,000 gallons)                           | None                                      | <b>Commented</b> [26]: Moved the n-Propanol tank because it |
| 325        | Fuel Oil Loading/ Unloading                               | None                                      | is not subject to EMACT or any other federal rules.         |
| 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                                      |   |
| 261        | Turbinol/Lube Oil Tote Tanks                              | Nona                                      |   |
| 301        | < 500 gallons   | None                                      | _   |
| 365        | Antifoulant Chemical Tank (1,000 gallons)                 | None                                      | _   |
| 360        | Inhibitor Tote Tanks                                      | None                                      |   |
| 507        | < 500 gallons   | None                                      | _   |
| 372        | Miscellaneous Treatment Chemical Tanks and Vendor-        | None                                      |   |
| 312        | Supplied Totes < 500 gallons                              | None                                      | _   |
| 374        | Cooling Tower #4 – Chemical Treatment Tank B              | None                                      |   |
| 574        | 1,000 gallons   | Ttolle                                    | _   |
| 375        | Miscellaneous Additive and Treatment – Chemical Bag       | None                                      |   |
| 575        | Dumping   | Ttolle                                    | _   |
| 376        | Miscellaneous Treatment Chemical Tanks and Vendor-        | None                                      |   |
| 570        | Supplied Totes < 500 gallons                              | Ttolle                                    | _   |
| 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<br>YY | None                                      | Commented [27]: New Insignificant Activity                  |

# 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.
- Nitrogen Dioxide, Particulate Matter (PM/PM<sub>10</sub>/PM<sub>2.5</sub>), 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:

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**

| (EPN 305-307) |
|---------------|
| (EPN 311)     |
| (EPN 327-328) |
| (EPN 329)     |
| (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:

$$\frac{\text{mmBtu}}{\text{hr}} = \text{NG}_{\text{Use}} \bigoplus_{hr} \bigotimes \times 23,900 \bigoplus_{lb} \bigoplus_{lb} \bigotimes_{10}^{6} \text{Btu}$$

$$\frac{\text{mmBtu}}{\text{lb}} = \text{NG}_{\text{Use}} \bigoplus_{hr} \bigotimes \times 23,900 \bigoplus_{lb} \bigoplus_{lb} \bigotimes_{10}^{6} \text{Btu}$$

$$\frac{\text{mmBtu}}{\text{hr}} \bigoplus_{lb} \bigoplus$$

(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 consumption of natural gas, hydrogen gas, and process fuel gas (PFG) (including natural

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

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:

 $\begin{array}{c} \begin{array}{c} \begin{array}{c} mmBtu \\ NG_{Firing Rate} \end{array} & \begin{array}{c} lb \\ \hline month \end{array} & \begin{array}{c} mmBtu \\ = NG_{Use} \end{array} & \begin{array}{c} mmbt \\ \hline month \end{array} & \begin{array}{c} \times 23,900 \end{array} & \begin{array}{c} \hline \bullet \\ \hline b \end{array} & \begin{array}{c} 1 \\ \hline b \end{array} & \begin{array}{c} 1 \\ \hline b \end{array} & \begin{array}{c} mmBtu \\ \hline b \end{array} & \begin{array}{c} lb \\ \hline \bullet \end{array} & \begin{array}{c} 1 \\ \hline b \end{array} & \begin{array}{c} mmBtu \\ \hline b \end{array} & \begin{array}{c} 1 \\ \hline b \end{array} & \begin{array}{c} mmBtu \\ \hline b \end{array} & \begin{array}{c} 1 \\ \hline b \end{array} & \begin{array}{c} mmBtu \\ \hline b \end{array} & \begin{array}{c} 1 \\ \hline b \end{array} & \begin{array}{c} mmBtu \\ \hline c \end{array} & \begin{array}{c} 1 \\ \hline b \end{array} & \begin{array}{c} mmBtu \\ \hline c \end{array} & \begin{array}{c} 1 \\ \hline c \end{array} & \begin{array}{c} mmBtu \\ \hline c \end{array} & \begin{array}{c} mmBtu \\ \hline c \end{array} & \begin{array}{c} lb \end{array} & \begin{array}{c} mmBtu \\ \hline c \end{array} & \begin{array}{c} 1 \\ \hline c \end{array} & \begin{array}{c} mmBtu \\ \hline c \end{array} & \begin{array}{c} lb \end{array} & \begin{array}{c} mmBtu \\ \hline c \end{array} & \begin{array}{c} mmBtu \\ \hline c \end{array} & \begin{array}{c} lb \end{array} & \begin{array}{c} mmBtu \\ \hline c \end{array} & \begin{array}{c} mmBtu \\ \hline c \end{array} & \begin{array}{c} lb \end{array} & \begin{array}{c} mmBtu \\ \hline c \end{array} & \begin{array}{c} mmBtu \\ \hline c \end{array} & \begin{array}{c} mmBtu \end{array} & \begin{array}{c} mmBtu \\ \hline c \end{array} & \begin{array}{c} mmBtu \end{array} & \begin{array}{c} mmBtu \\ \hline c \end{array} & \begin{array}{c} mmBtu \end{array} & \begin{array}{c} mmBtu \\ \hline c \end{array} & \begin{array}{c} mmBtu \end{array} & \begin{array}{c} mmBtu \end{array} & \begin{array}{c} mmBtu \\ \hline c \end{array} & \begin{array}{c} mmBtu \end{array} & \begin{array}{c}$ 

Actual Monthly Firing Rate  $\bigtriangledown$  month  $\diamondsuit = \diamondsuit \diamondsuit NG_{\text{Firing Rate}} + H_2_{\text{Firing Rate}} + PFG_{\text{Firing Rate}}$ 

#### 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: See Section F.

6. 40 CFR 63, Subpart YY requirements

Pursuant to 40 CFR 63.1102(c), the permittee must be in compliance with the requirements listed in 40 CFR 63.1102(c)(1) through (13) upon initial startup or July 6, 2023, whichever is later. All ethylene production affected sources that commenced construction or reconstruction after October 9, 2019, must be in compliance with the requirements listed in 40 CFR 63.1102(c)(1) through (13) upon initial startup, or July 6, 2020 (should be 2023), whichever is later. (1) Overlap requirements specified in 40 CFR 63.1100(g)(4)(iii) and (7), if applicable.

- $\frac{(1)}{(2)} \qquad \text{The storage vessel requirements specified in paragraphs (b)(1)(iii) and (7), if applicable, (2) The storage vessel requirements specified in paragraphs (b)(1)(iii) and (C)(1)(ii) of (7). The storage vessel requirements specified in paragraphs (b)(1)(iii) and (C)(1)(ii) of (7). The storage vessel requirements specified in paragraphs (b)(1)(iii) and (C)(1)(iii) of (7). The storage vessel requirements specified in paragraphs (b)(1)(iii) and (C)(1)(iii) of (7). The storage vessel requirements specified in paragraphs (b)(1)(iii) and (C)(1)(iii) of (7). The storage vessel requirements (C)(1)(ii) of (7). The storage vessel requirement (C)(1)(ii) of (7). Th$
- Table 7 to 40 CFR 63.1103(e), and the degassing requirements specified in 40 CFR-63.1103(e)(10).
- (3) The ethylene process vent requirements specified in paragraph (d)(1)(ii) of Table 7 to 40— CFR 63.1103(e).
- (4) The transfer rack requirements specified in 40 CFR 63.1105(a)(5).
- (5) The equipment requirements specified in paragraph (f)(1)(ii) of Table 7 to 40 CFR-63.1103(e) and 40 CFR 63.1107(h).
- (6)(1) The bypass line requirements specified in paragraph (i) of Table 7 to 40 CFR 63.1103(e), and 40 CFR 63.1103(e)(6)
- (7) The decoking requirements for ethylene cracking furnaces specified in paragraph (j) of-Table 7 to 40 CFR 63.1103(e), and 40 CFR 63.1103(e)(7) and (8).

| 1 | <b>Commented [28]:</b> Already incorporated in FUG-YY and 321A  |
|---|---|
| / | Formatted: Indent: Left: 0.5", No bullets or numbering  |
| / | Commented [29]: Subpart WW already in the permit  |
|   | <b>Commented [30]:</b> This is for storage vessels with TVP >76.6 kPa. Westlake does not have any storage tanks with TVP >76.6 kPa.<br>Aromatic Gas maximum TVP is 12.13 kPa. |
| / | <b>Commented [31]:</b> Degassing incorporated into EPNs 319 and 320.  |
| / | <b>Commented [32]:</b> Wrote in maintenance vent requirements in EPN 379 of Section B.  |
| - | <b>Commented [33]:</b> Westlake does not have any EMACT applicable transfer racks   |
| - | <b>Commented [34]:</b> Written in the MACT YY Fugitives section   |
|   | <b>Commented [35]:</b> There are no bypass lines identified by the unit.  |
| _ | <b>Commented [36]:</b> Already incorporated in 326A   |

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

(8) The flare requirements specified in 40 CFR 63.1103(e)(4).

(9) The maintenance vent requirements specified in 40 CFR 63.1103(e)(\$).

(10) The requirements specified in 40 CFR 63.1103(e)(9).-

(11) The requirements in 40 CFR 63.1108(a)(4)(i), (b)(1)(ii), (b)(2), and (b)(4)(ii)(B).-

(12) The recordkeeping requirements specified in 40 CFR 63.1109(e) through (i).

(13) The reporting requirements specified in 40 CFR 63.1110(a)(10), (d)(1)(iv) and (e)(4) through (8).

Commented [37]: Incorporated in EPN 321A

Commented [38]: Incorporated in new EU in Section B

**Commented [39]:** SSM provisions go away. This is not needed in a permit

Commented [40]: SSM – goes away

**Commented [41]:** I think this is meant to be flare recordkeeping, but the citation is flawed. It's captured in EPN 321A Red line

Commented [42]: Already incorporated in EPN 321A

Commented [43]: Incorporated into FUG-YY

**Commented [44]:** 63:1110(e)(4) incorporated into EPN 321A

63:1110(e)(5) incorporated into EPN 379

63:1110(e)(6) We don't know if we have bypasses yet

63:1110(e)(7) incorporated into EPN 326A

63:1110(e)(8) incorporated into EPN FUG-YY

### 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.].
- 1. 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.].
- 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:

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Permit Number: V-20-022 R1

#### **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 332C) and (EPN 332D) in accordance with the terms and conditions of permit V-20-022.

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, V-20-022, 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 or V-20-022, 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, V-20-022, 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, V-20-022, 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, V-20-022, 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

#### **SECTION G - GENERAL PROVISIONS (CONTINUED)**

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, V-20-022, and V-20-022 R1.

- f. Terms and conditions in permit V-14-022 R2, V-20-022, 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. <u>Testing Requirements</u>
  - 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.

#### **SECTION G - GENERAL PROVISIONS (CONTINUED)**

#### 7. Emergency Provisions

- a. Pursuant to 401 KAR 52:020, Section 24(1), an emergency shall constitute an affirmative defense to an action brought for the noncompliance with the technology-based emission limitations if the permittee demonstrates through properly signed contemporaneous operating logs or relevant evidence that:
  - (1) An emergency occurred and the permittee can identify the cause of the emergency;
  - (2) The permitted facility was at the time being properly operated;
  - (3) During an emergency, the permittee took all reasonable steps to minimize levels of emissions that exceeded the emissions standards or other requirements in the permit; and
  - (4) Pursuant to 401 KAR 52:020, 401 KAR 50:055, and KRS 224.1-400, the permittee notified the Division as promptly as possible and submitted written notice of the emergency to the Division when emission limitations were exceeded due to an emergency. The notice shall include a description of the emergency, steps taken to mitigate emissions, and corrective actions taken.
  - (5) This requirement does not relieve the source of other local, state or federal notification requirements.
- 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.

#### **SECTION G - GENERAL PROVISIONS (CONTINUED)**

- 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*.
- 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.

Permit Number: V-20-022

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## SECTION H - ALTERNATE OPERATING SCENARIOS

None

## SECTION I - COMPLIANCE SCHEDULE

None

# Westlake

October 12, 2023

#### Sent via KY Business One Stop Portal

Ms. Hollie Delaney, Chemical Section Permit Support Section, Permit Review Branch Division for Air Quality Kentucky Energy and Environment Cabinet 300 Sower Blvd., 2<sup>nd</sup> Floor Frankfort, KY 40601

### Re: Westlake Chemical OpCo, LP Source ID: 021-157-00080, Agency Interest: 122899 Significant Revision for Permit V-20-022 Rl

Dear Ms. Delaney:

Pursuant to 401 KAR 52:020 Section 16, Westlake Chemical OpCo, LP (Westlake), located in Calvert City, Kentucky, is requesting a Significant Revision to Title V Federal Operating Permit No. V-20-022 Rl to incorporate requirements specified in the recently issued Consent Decree, Civil No. 2:22-cv-0157-JDC-KK. Pursuant to Paragraph 50, "Permits to Ensure Survival of Consent Decree Limits and Standards after Termination of Consent Decree", Westlake is required to submit a permit application to incorporate specified paragraphs into the Title V operating permits on or before October 26, 2023. The proposed changes meet the requirements of 401 KAR 52:020, Section 16 for Title V Significant Permit Revisions, and all necessary forms and information are attached.

If you have any questions or comments regarding this submittal, please contact Mr. Kevin Sheridan, Senior Regional Manager - HSE, at (270) 395-3362. Thank you for your time and consideration in this submittal.

Sincerely,

Westlake Chemical OpCo LP

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Ivan Birrell Senior Plant Manager

Attachments

cc: Envr. File Division for Air Quality, Paducah Regional Office, 130 Eagle Nest Dr., Paducah, KY 42003

#### www.Westlake.com



# Application for Significant Revision to Title V Operating Permit No. V-20-022 R1

## **Prepared For**

Kentucky Department for Environmental Protection

**On behalf of** Westlake Chemical OpCo, LP – Ethylene Plant



October 2023

Project No. P2477

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## LIST OF APPENDICES

Appendix A: Kentucky DEP Forms Appendix B: Copy of Consent Decree

# **1 INTRODUCTION**

Pursuant to 401 KAR 52:020 Section 16, Westlake Chemical OpCo, LP (Westlake) submits this application for a significant revision of the Ethylene Plant's Title V operating permit. Discussed below are several key points related to the development of this application. This significant revision is unrelated to the Significant Permit Revision for the Prevention of Significant Deterioration (PSD) Project approved in March 2021.

## 1.1 Facility Information

The Westlake Chemical OpCo, LP, Source ID 21-157-00080 is located in Marshall County, Kentucky. The Westlake Chemical OpCo Plant is located at 2468 Industrial Parkway, Calvert City, Kentucky. Google Earth images were submitted previously and are not submitted with this application. Additional administrative information is provided on Form DEP7007AI included in Appendix A.

## 1.2 Purpose of Request

Westlake is providing this application to the Kentucky Department for Environmental Protection (DEP) for a significant revision to Title V Permit No. V-20-022 R1 for the Ethylene Plant. The facility is requesting a Significant Revision to incorporate requirements specified in the recently issued Consent Decree, Civil No. 2:22-cv-0157-JDC-KK. Pursuant to Paragraph 50, "Permits to Ensure Survival of Consent Decree Limits and Standards after Termination of Consent Decree", Westlake is required to submit a permit application to incorporate specified paragraphs into the Title V operating permits on or before October 26, 2023. The proposed changes meet the requirements of 401 KAR 52:020, Section 16 for Title V Significant Permit Revisions. Details are included in Section 2.

## 1.3 Federal New Source Review Permitting Applicability

The facility is located in Marshall County which is within an area designated as attainment for ozone and all other criteria pollutants. New construction or physical and/or operational changes are potentially subject to PSD permitting requirements; however, since there are no physical or operational changes with this application, these requirements are not applicable.

## 1.4 Application Overview

Key components of this application are organized as follows:

- A description of the proposed changes are included in Section 2;
- Appendix A contains completed Kentucky DEP Forms; and
- Appendix B contains a copy of the Consent Decree.

# 2 INCORPORATE CONSENT DECREE REQUIREMENTS

Westlake is requesting a Significant Revision to incorporate requirements specified in the recently issued Consent Decree, Civil No. 2:22-cv-0157-JDC-KK. Pursuant to Paragraph 50, "Permits to Ensure Survival of Consent Decree Limits and Standards after Termination of Consent Decree", Westlake is required to submit a permit application to incorporate specified paragraphs into the Title V operating permits on or before October 26, 2023. The proposed changes meet the requirements of 401 KAR 52:020, Section 16 for Title V Significant Permit Revisions, and all necessary forms and information are attached. A copy of the Consent Decree is included in Appendix B for reference.

Table 2-1 is a comprehensive list of the Consent Decree requirements to be incorporated into a Title V permit and details the applicability to the Calvert City Plant, the Ethylene Plant, or the equipment in the Ethylene Plant. The requirements listed in Table 2-1 are verbatim from the Consent Decree and Westlake requests that they be incorporated verbatim, except as required to convert from a Consent Decree to a permit (e.g. replacing "Applicable Defendant" with "Permittee" and replacing "Covered Flare" with specific flare information). Specifically, this revision is incorporating:

- The requirements for the Ethylene Flare (EPN 321A), which is a steam assisted flare;
- The Flare Gas Recovery Operational and Recordkeeping Requirements; and
- The Fenceline Monitoring Requirements.

| Paragraph | Requirement <sup>2</sup>   | Applicability <sup>3</sup>  |
|-----------|--|-----------------------------|
| 20a       | Vent Gas, Assist Steam, and Assist Air Monitoring Systems.   | Applicable to Ethylene      |
|           | a. The permittee must install, operate, calibrate, and maintain a monitoring system capable of continuously measuring, calculating, and recording              | Flare, EPN 321A             |
|           | the volumetric flow rate of Vent Gas in the header or headers feeding the Ethylene Flare (EPN 321A). 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 rates of all gas streams that contribute to the Vent Gas are determined.            |                             |
|           | Flow must be calculated in scfm.   |                             |
| 20b       | b. The permittee must install, operate, calibrate, and maintain a monitoring system capable of continuously measuring, calculating, and recording              | Applicable to Ethylene      |
|           | the volumetric flow rate of Assist Steam used at the Ethylene Flare (EPN 321A). This system must also be able to continuously analyze the pressure             | Flare, EPN 321A             |
|           | and temperature of Assist Steam at a representative point of steam flow measurement. Flow must be calculated in scfm.  |                             |
| 20c       | c. For each Covered Air-Assisted Flare, the Applicable Defendant must install, operate, calibrate, and maintain a monitoring system capable of                 | None - Westlake does not    |
|           | continuously measuring, calculating, and recording the volumetric flow rate of Assist Air used with each Covered Air- Assisted Flare. If Premix                | have any air assist flares. |
|           | Assist Air and Perimeter Assist Air are both used, the Applicable Defendant must install, operate, calibrate, and maintain a monitoring system                 |                             |
|           | capable of separately continuously measuring, calculating, and recording the volumetric flow rate of Premix Assist Air and Perimeter Assist Air                |                             |
|           | used with that Flare. Continuously monitoring fan speed or power and using fan curves is an acceptable method for continuously monitoring Assist               |                             |
|           | Air flow rates.  |                             |
| 20d       | d. Each flow rate monitoring system must be able to correct for the temperature and pressure of the system and output parameters in Standard                   | Applicable to Ethylene      |
|           | Conditions.  | Flare, EPN 321A             |
| 20e       | e. In lieu of a monitoring system that directly measures volumetric flow rate, the permittee may choose from the following additional options for              | Applicable to Ethylene      |
|           | monitoring any gas stream:   | Flare, EPN 321A             |
|           | (1) Mass flow monitors may be used for determining the volumetric flow rate of Assist Steam provided that the permittee converts the mass flow                 |                             |
|           | rates to volumetric flow rates pursuant to the methodology in Step 2 of Appendix 1.24;   |                             |
|           | (2) Mass flow monitors may be used for determining the volumetric flow rate of Vent Gas, provided the permittee determines the molecular weight                |                             |
|           | of such Vent Gas using compositional analysis data collected pursuant to the monitoring method specified in Paragraph 24.a <sup>4</sup> and provided that the  |                             |
|           | permittee converts the mass flow rates to volumetric flow rates pursuant to the methodology in Step 2 of Appendix 1.24; and                                    |                             |
|           | (3) Continuous pressure/temperature monitoring system(s) and appropriate engineering calculations may be used in lieu of a continuous volumetric               |                             |
|           | flow monitoring system provided the molecular weight of the gas is known and provided the permittee comply with the methodology in Step 2 of                   |                             |
|           | Appendix 1.2 <sup>4</sup> for calculating volumetric flow rates. For Vent Gas, the permittee must determine molecular weight using compositional analysis data |                             |
|           | collected pursuant to the monitoring method specified in Paragraph 24.a4.  |                             |
| 21        | Assist Steam Control Equipment. The permittee must install and commence operation of equipment, including, as necessary, main and trim control                 | Applicable to Ethylene      |
|           | valves and piping that enables the permittee to control Assist Steam flow to the Ethylene Flare (EPN 321A) in a manner sufficient to ensure                    | Flare, EPN 321A             |
|           | compliance   |                             |
| 22        | Assist Air Control Equipment. The Applicable Defendant must install and commence operation of equipment, including a Variable Speed Motor on                   | None - Westlake does not    |
|           | each Covered Air-Assisted Flare, that enables the Applicable Defendant to control Assist Air flow to each Covered Air-Assisted Flare in a manner               | have any air assist flares. |
|           | sufficient to ensure compliance with this Decree.  |                             |
| 23        | Video Camera. The permittee must install and commence operation of a video camera that is capable of recording, in digital format, the flame of and            | Applicable to Ethylene      |
|           | any Smoke Emissions from the Ethylene Flare (EPN 321A).  | Flare, EPN 321A             |

| Paragraph <sup>1</sup> | Requirement <sup>2</sup>  | Applicability <sup>3</sup> |
|------------------------|---|----------------------------|
| 24                     | Vent Gas Compositional Monitoring or Direct Monitoring of Net Heating Value of Vent Gas. The permittee must either determine the concentration          | Applicable to Ethylene     |
|                        | of individual components in the Vent Gas or directly monitor the Net Heating Value of the Vent Gas (NHVvg) in compliance with one of the                | Flare, EPN 321A            |
|                        | methods specified in this Paragraph. The permittee may elect to use different monitoring methods (of the methods provided in this Paragraph) 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:   |                            |
|                        | a. 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   |                            |
|                        | b. Install, operate, calibrate, and maintain a calorimeter capable of continuously measuring (i.e., at least once every 15 minutes), calculating, and   |                            |
|                        | recording the NHVvg at Standard Conditions. If an 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.  |                            |
|                        | c. If the permittee elects the method in Paragraph 24.b4, 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 NHVvg      |                            |
|                        | 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.  |                            |
|                        | d. 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.  |                            |

| Paragraph | Requirement <sup>2</sup>   | Applicability <sup>3</sup> |
|-----------|--|----------------------------|
| 26        | Instrumentation and Monitoring Systems: Specifications, Calibration, Quality Control, and Maintenance.   | Applicable to Ethylene     |
|           | a. The instrumentation and monitoring systems identified in Paragraphs 20 <sup>4</sup> and 24 <sup>4</sup> must:   | Flare, EPN 321A            |
|           | (1) Meet or exceed all applicable minimum accuracy, calibration and quality control requirements specified in Table 13 of 40 C.F.R. Part 63, Subpart                                   |                            |
|           | CC;  |                            |
|           | (2) 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;   |                            |
|           | (3) Be capable of measuring the appropriate parameter over the range of values expected for that measurement location; and   |                            |
|           | (4) Have an associated data recording system with a resolution that is equal to or better than the required instrumentation/system accuracy.   |                            |
|           | b. The permittee must operate, maintain, and calibrate each instrument and monitoring system identified in Paragraphs 204 and 244 according to a                                       |                            |
|           | monitoring plan that contains the information listed in 40 C.F.R. § 63.671(b)(1)-(5). However, if an permittee is determining NHVvg using a process                                    |                            |
|           | mass spectrometer, the permittee may use the methods established for determining NHVvg 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 (attached as Appendix 1.74) in lieu of complying with 40 C.F.R. § 63.671(b)(1)-(5)'s   |                            |
|           | requirements for determining NHVvg using gas chromatographs.   |                            |
|           | c. All gas chromatograph systems permitted by Paragraph 24.a4 must also meet the requirements of 40 C.F.R. § 63.671(e)(1)-(3) (Additional  |                            |
|           | Requirements for Gas Chromatographs) regardless of whether the gas chromatographs are complying with 40 C.F.R. § 63.671(e)(1)-(3) or the   |                            |
|           | methods outlined in Appendix 1.74.   |                            |
|           | d. For each instrumentation and monitoring system required by Paragraphs 20 <sup>4</sup> and 24 <sup>4</sup> (or installed pursuant to Paragraph 25 <sup>4</sup> ), the permittee must |                            |
|           | comply with the out-of-control procedures described in 40 C.F.R. § 63.671(c)(1) and (2), and with the data reduction requirements specified in 40                                      |                            |
|           | C.F.R. § 6+C103.671(d)(1) through (3).   |                            |
|           | e. The language in 40 C.F.R. § 63.671 or Table 13 of 40 C.F.R. Part 63, Subpart CC, or in any regulatory provision cross-referenced in 40 C.F.R. §                                     |                            |
|           | 63.671 or Table 13 of 40 C.F.R. Part 63, Subpart CC, that limits the applicability of these regulatory requirements to periods when "regulated   |                            |
|           | material" (as defined in 40 C.F.R. § 63.641) is routed to a Flare is not applicable for purposes of this Consent Decree. In addition, for purposes of this                             |                            |
|           | Decree, the language in 40 C.F.R. § 63.671 or Table 13 of 40 C.F.R. Part 63, Subpart CC, or in any regulatory provision cross-referenced in 40 C.F.R. §                                |                            |
|           | 63.671 or Table 13 of 40 C.F.R. Part 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 Paragraphs 20 and 24.   |                            |
|           | f. The Applicable Defendant may elect to utilize exceptions set forth in 40 C.F.R. § 63.1103(e)(4)(i)-(ix) when complying with this Paragraph.   |                            |

| Paragraph | Requirement <sup>2</sup>  |  |  | Applicability <sup>3</sup>                |
|-----------|---|--|--|---|
| 27        | Instrumentation and Monitoring Systems: Recording and Averaging Times. The instrumentation and monitoring systems identified in Paragraphs 20 <sup>4</sup> and 23 <sup>4</sup> -25 <sup>4</sup> must be able to produce and record data measurements and calculations for each parameter at the following time intervals:   |  |  |   |
|           | Instrumentation and Monitoring System   | Recording and Averaging Times  |  |   |
|           | Vent Gas, Assist Steam Flow Monitoring Systems, Assist<br>Air Flow Monitoring Systems and (if installed) Pilot Gas<br>Flow  | Measure continuously and record 15-minute block averages   |  |   |
|           | Vent Gas Compositional Monitoring (if using the methodology in Paragraph 24.a)  | Measure no less than once every 15-minutes and record that value   |  |   |
|           | Vent Gas Net Heating Value Analyzer (if using the methodology in Paragraph 24.b)  | 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<br>Assist Steam, Assist Air, and if installed Pilot Gas) and the<br>in no case shall the flow monitors or the Vent Gas Net Hea<br>period. The measurement results are then averaged and re<br>Nothing in this Paragraph is intended to prohibit the perm<br>in this table provided that the recording and averaging tim<br>conditions. | s often as the manufacturer's stated design capabilities of<br>Vent Gas Net Heating Value Analyzers during each fifte<br>ting Value Analyzers make less than one measurement in<br>corded to represent each fifteen (15) minute block period<br>ittee from setting up process control logic that uses differ<br>es in this table are available and used for determining co | the flow monitors (for Vent Gas,<br>een (15) minute block period, but<br>n each fifteen (15) minute block<br>rent averaging times from those<br>mpliance with these permit |   |
| 28        | Instrumentation and Monitoring Systems: Operation. The<br>Paragraphs 20 <sup>4</sup> and 23 <sup>4</sup> - 24 <sup>4</sup> and collect data on a continuou<br>is associated with is In Operation and Capable of Receiving<br>specified in sub- Paragraphs 45.a–d <sup>4</sup> .   | permittee must operate each of the instruments and mon<br>is basis at all times when the Ethylene Flare that the instr<br>g Sweep, Supplemental, and/or Waste Gas, except for per  | itoring systems required by<br>ument and/or monitoring system<br>iods of instrument downtime   | Applicable to Ethylene<br>Flare, EPN 321A |

| Paragraph <sup>1</sup> | Requirement <sup>2</sup>  | Applicability <sup>3</sup> |
|------------------------|---|----------------------------|
| 29                     | When the water seal is installed on the Ethylene Flare (EPN 321A), if all of the following conditions are met, then the Ethylene Flare (EPN 321A) is                                | Applicable to Ethylene     |
|                        | not receiving Potentially Recoverable Gas flow:   | Flare, EPN 321A            |
|                        | a. For the water seal drum associated with the Ethylene Flare (EPN 321A), the pressure difference between the inlet pressure and the outlet pressure                                | At the time of this        |
|                        | 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                                  | application, EPN 321A      |
|                        | drum;   | does not have a water      |
|                        | b. For the water seal drum associated with the Ethylene Flare (EPN 321A), the water level in the drum is: (i) at the level of the weir or (ii) if the water                         | seal; however, in February |
|                        | level in the drum is measured, the measurement indicates that the water seal is present; and  | 2022, Westlake submitted   |
|                        | c. Downstream of the seal drum, there is no flow of Supplemental Gas directed to the Ethylene Flare (EPN 321A).   | a permit application to    |
|                        |   | install Flare Gas Recovery |
|                        |   | (FGR) in the Ethylene      |
|                        |   | Plant. Construction of     |
|                        |   | FGR is underway, and       |
|                        |   | when it is complete, EPN   |
|                        |   | 321A will have a water     |
|                        |   | seal.                      |
| 39a                    | FGRS: Operation and Availability Requirements.  | Operational requirement    |
|                        | a. General. No later than March 31, 2024, the permittee must operate each FGRS in a manner to minimize Waste Gas to the Ethylene Flare (EPN   | for the FGR System, with   |
|                        | 321A) while ensuring safe chemical plant operations. The permittee also must operate each FGRS consistent with good engineering and   | no applicable EPN.         |
|                        | maintenance practices and in accordance with its design and the manufacturer's specifications.  |                            |
|                        | Nothing in this Paragraph 394 will require the permittee to recover any Waste Gas stream that is not a Potentially Recoverable Gas stream.  |                            |
| 39b                    | b. Requirements Related to Hydrogen Rich Gas Mixture Flows to the Lake Charles Petro 2 Unit. The Lake Charles Petro 2 Unit generates a hydrogen                                     | None - this is specific to |
|                        | rich gas mixture which is used internally, sent to an offsite third party, and/or will be sent to the Petro 2 Flare via piping that bypasses the FGRS as                            | the Lake Charles facility  |
|                        | described in Appendix 1.9. In limited circumstances involving the shutdown, startup or Malfunction and isolation of the methanator, the hydrogen                                    |                            |
|                        | rich gas mixture can also be sent to the Petro 2 Flare header prior to recovery by the FGRS. By no later than the Lake Charles Petro 2 Unit's FGRS                                  |                            |
|                        | operational date as set forth in Appendix 1.1, the Applicable Defendant must not route any of the hydrogen rich gas mixture to the Petro 2 flare                                    |                            |
|                        | header prior to recovery by the FGRS, except for periods when the methanator is isolated due to startup, shutdown or Malfunction and the  |                            |
|                        | hydrogen rich gas mixture must be routed through the Petro 2 Flare header prior to recovery by the FGRS. The hours in which the hydrogen rich gas                                   |                            |
|                        | mixture is routed through the Petro 2 Flare header prior to recovery by the FGRS due to methanator startup, shutdown or Malfunction and isolation                                   |                            |
|                        | shall be no more than 60 hours in any calendar year.  |                            |
| 39c                    | c. FGRS Compressor Availability. No later than March 31, 2024, the FGRS must be Available for Operation or in operation for 98% of the time, as                                     | Operational requirement    |
|                        | calculated according to Paragraph 39.g <sup>4</sup> (Averaging Periods). The periods provided for in Paragraphs 39.d <sup>4</sup> (Maintenance of FGRS) and 39.e <sup>4</sup> (Shut | for the FGR System, with   |
|                        | Down) below may be included in the amount of time that the FGRS is Available for Operation or in operation when determining compliance with   | no applicable EPN.         |
|                        | these requirements.   |                            |

| Table 2-1: Table of Consent Decree Requirements to be Incorporated in the Ethylene Plant Title V Per | mit |
|--|-----|
|  |     |

| Paragraph <sup>1</sup> | Requirement <sup>2</sup>  | Applicability <sup>3</sup>  |
|------------------------|---|---|
| 39d                    | d. Maintenance of FGRS. 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 Ethylene Flare (EPN 321A). 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.   | Operational requirement<br>for the FGR System, with<br>no applicable EPN. |
| 39e                    | e. Shut Down. 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 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 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). In the reports due under Section VIII <sup>4</sup> (Reporting Requirements) of this Decree, the permittee must describe each outage that occurred under the conditions in this sub-Paragraph, including the date, duration, cause(s), corrective action, and the status of the implementation of corrective action. | Operational requirement<br>for the FGR System, with<br>no applicable EPN. |
| 39f                    | f. Alternative FGRS. The Applicable Defendant may submit a request to the EPA for approval of an alternative FGRS that is not explicitly referenced<br>in Appendix 1.8 or in this Section in order to ensure compliance with availability requirements, provided that the proposed alternative FGRS<br>provides equivalent or better Waste Gas recovery capacity than the FGRS required by Appendix 1.8.  | N/A No Alternative was<br>requested                                       |
| 39g                    | g. Averaging Periods. 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 Paragraph 39.c <sup>4</sup> , 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 touch that could not have been prevented through neuronal the Potentially Recoverable Gas was generated during and were in anticipation of or caused by flows that could not have been prevented through reasonable and the potentially Recoverable Gas was generated during and were in anticipation of or caused by a natural disaster, act of war or terrorism, or External Utility Loss.                                      | Applicable Requirement<br>with no EPN                                     |
| 40a                    | General Emission Standards Applicable to the Ethylene Flare (EPN 321A). The permittee must comply with the requirements set forth in this<br>Paragraph at the Ethylene Flare (EPN 321A) at all times when the Ethylene Flare (EPN 321A), (or a temporary or permanent Portable Flare), is In<br>Operation.<br>a. Operation during Emissions Venting. The permittee must operate the Ethylene Flare (EPN 321A) at all times when emissions may be vented to it.  | Applicable to Ethylene<br>Flare, EPN 321A                                 |

| Table 2-1: Table of Consent Decree | Requirements to be Incorp | orated in the Ethylene Pl | ant Title V Permit |
|------------------------------------|---------------------------|---------------------------|--------------------|
|                                    |                           |                           |                    |

| Paragraph        | Requirement <sup>2</sup>  | Applicability <sup>3</sup>  |
|------------------|---|---|
| Paragraph<br>40b | Requirement <sup>2</sup><br>b. No Visible Emissions. The permittee must specify the smokeless design capacity of the Ethylene Flare and operate with no Visible Emissions,<br>except for periods not to exceed a total of 5 minutes during any 2 consecutive hours, when the Ethylene Flare is In Operation and the Vent Gas flow<br>is less than the smokeless design capacity of the Ethylene Flare (EPN 321A). Visible Emissions may be determined by a person trained pursuant to<br>Method 22 or documented by a video camera. The permittee must monitor for Visible Emissions from the Ethylene Flare (EPN 321A) while it is In<br>Operation as specified below in sub-Paragraphs 40.b(1) <sup>4</sup> or (2) <sup>4</sup> . An initial Visible Emissions demonstration must be conducted using an observation<br>period of 2 hours using Method 22 at 40 C.F.R. Part 60, Appendix A–7. A previously conducted Method 22 Visible Emissions observation is<br>sufficient to meet the initial Visible Emissions demonstration requirement if the most recent Method 22 Visible Emissions observation was<br>conducted after October 26, 2019. Subsequent Visible Emissions observations must be conducted using either method listed in sub-Paragraphs<br>40.b(1) <sup>4</sup> or (2) <sup>4</sup> . The permittee must record and report any instances where Visible Emissions are observed for more than 5 minutes during any 2<br>consecutive hours as specified in 40 C.F.R. § 63.655(g)(11)(ii).<br>(1) At least once per day, the permittee must conduct Visible Emissions observations using an observation period of 5 minutes using Method 22 at 40<br>C.F.R. Part (0, Appendix A, 7) Is the permittee must conduct Visible Emissions observations using an observation period of 5 minutes using Method 22 at 40<br>C.F.R. Part (0, Appendix A, 7) Is the permittee must conduct Visible Emissions observations using an observation period of 5 minutes using Method 22 at 40<br>C.F.R. Part (0, Appendix A, 7) Is the permittee must conduct Visible Emissions observations using an observation period of 5 minutes using Method 22 at 40 | Applicability <sup>3</sup><br>Applicable to Ethylene<br>Flare, EPN 321A |
|                  | <ul> <li>C.F.R. Part 60, Appendix A–7. If at any time a Defendant 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 C.F.R. 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 C.F.R. Part 60, Appendix A–7 must be extended to 2 hours or until 5 minutes of Visible Emissions are observed.</li> <li>(2) 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</li> </ul>   |   |
| 40c              | c. Pilot Flame Presence. The permittee must operate the Ethylene Flare (EPN 321A) 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.   | Applicable to Ethylene<br>Flare, EPN 321A                               |
| 40d              | d. Monitoring According to Applicable Provisions. The permittee must comply with all applicable Subparts of 40 C.F.R. Parts 60, 61, or 63 that state how the Ethylene Flare (EPN 321A) must be monitored.   | Applicable to Ethylene<br>Flare, EPN 321A                               |
| 40e              | e. Good Air Pollution Control Practices. At all times, including during periods of startup, shutdown, and/or Malfunction, the permittee must<br>implement good air pollution control practices to minimize emissions from the Ethylene Flare (EPN 321A). Nothing in this sub-Paragraph requires<br>the permittee to install or maintain Flare monitoring equipment in addition to or different from the equipment required by this permit.  | Applicable to Ethylene<br>Flare, EPN 321A                               |
| 41               | <ul> <li>41. Flare Tip Velocity or Vtip. The permittee must operate the Ethylene Flare (EPN 321A) in compliance with either sub-Paragraph 41.a<sup>4</sup>. or 41.b<sup>4</sup>.</li> <li>below, provided that the appropriate monitoring systems are in place, whenever the Vent Gas flow rate is less than the smokeless design capacity of the Ethylene Flare (EPN 321A).</li> <li>a. The actual Flare Tip Velocity (Vtip) must be less than 60 feet per second. The permittee must monitor Vtip using the procedures specified in Appendix 1.2<sup>4</sup>; or</li> <li>b. Vtip must be less than 400 feet per second and also less than the maximum allowed Flare Tip Velocity (Vmax) as calculated according to Equation 11 in Appendix 1.2<sup>4</sup>. The permittee must monitor Vtip using the procedures specified in Appendix 1.2<sup>4</sup>. The permittee must monitor Vtip and gas composition and must determine NHVvg using the procedures specified in Appendix 1.2<sup>4</sup>. The Unobstructed Cross Sectional Area of the Flare Tip must be calculated consistent with Appendix 1.3<sup>4</sup>.</li> </ul>  | Applicable to Ethylene<br>Flare, EPN 321A                               |
| 43               | Operation According to Design. The permittee must operate and maintain the Ethylene Flare (EPN 321A) in accordance with its design and the requirements of this permit.   | Applicable to Ethylene<br>Flare, EPN 321A                               |

| Paragraph <sup>1</sup> | Requirement <sup>2</sup>  | Applicability <sup>3</sup>                              |
|------------------------|---|---|
| 44b                    | Net Heating Value Standards. The permittee must comply with the following Net Heating Value standards, except as provided in Paragraph 45 <sup>4</sup><br>(Standard During Instrument Downtime).<br>b. Net Heating Value of Combustion Zone Gas (NHVcz). Any time the Ethylene Flare (EPN 321A) is In Operation, the permittee must operate that<br>Flare so as to maintain the NHVcz at or above 270 BTU/scf determined on a 15-minute block period basis when Waste Gas is routed to the Ethylene<br>Flare (EPN 321A) for at least 15 minutes. The permittee must monitor and calculate NHVcz at the Ethylene Flare (EPN 321A) in accordance with   | Applicable to Ethylene<br>Flare, EPN 321A               |
|                        | Appendix 1.24.  |   |
| 44c                    | c. Dilution Operating Limits for Covered Flares with Perimeter Assist Air (NHVdil). By no later than the applicable compliance dates set forth in<br>Appendix 1.1, while each Covered Flare that is actively receiving Perimeter Assist Air is In Operation, the Applicable Defendant must maintain the<br>Net Heating Value Dilution Parameter (NHVdil) at or above 22 BTU/square foot determined on a 15-minute block period basis when Waste Gas is<br>routed to the Covered Flare for at least 15 minutes. The Applicable Defendant must monitor and calculate NHVdil at each Covered Flare that is<br>actively receiving Perimeter Assist Air in accordance with Appendix 1.2.   | None - Westlake does not<br>have any air assist flares. |
| 44d                    | d. Net Heating Value of Vent Gas (NHVvg) for the Vinyls Flare. By no later than the applicable compliance date set forth in Appendix 1.1, the<br>Applicable Defendant must operate the Vinyls Flare with an NHVvg of greater than or equal to 200 BTU/scf determined on a 15-minute block period<br>basis when Waste Gas is routed to the Vinyls Flare for at least 15 minutes. The Applicable Defendant must monitor and calculate NHVvg at the<br>Vinyls Flare in accordance with Appendix 1.2.   | N/A, the Vinyls Flare is in a different permit          |
| 45                     | 98% Combustion Efficiency. The permittee must operate the Ethylene Flare (321A) with a minimum of a 98% Combustion Efficiency at all times<br>when Waste Gas is routed to the Ethylene Flare (321A) for at least 15 minutes. To demonstrate continuous compliance with the 98% Combustion<br>Efficiency, the permittee must operate the Ethylene Flare (321A) in compliance with the applicable requirements in Paragraph 44.b <sup>4</sup> and c <sup>4</sup> .  | Applicable to Ethylene<br>Flare, EPN 321A               |
| 46                     | Standard During Instrument Downtime. If one or more of the following conditions (collectively referred to as "Instrument Downtime") is present<br>and renders the permittee incapable of operating the Ethylene Flare (EPN 321A) in accordance with the applicable NHV standards in Paragraph 444,<br>the permittee must operate the Ethylene Flare (EPN 321A) in accordance with good air pollution control practices so as to minimize emissions and<br>ensure good Combustion Efficiency at the Ethylene Flare (EPN 321A):<br>a. Malfunction of an instrument needed to meet the requirement(s);<br>b. Repairs following the Malfunction of an instrument needed to meet the requirement(s);<br>c. Recommended scheduled maintenance of an instrument in accordance with the manufacturer's recommended schedule, for an instrument needed<br>to meet the requirement(s); and/or<br>d. Quality Assurance/Quality Control activities on an instrument needed to meet the requirement(s). Instrument Downtime must be calculated in<br>accordance with 40 C.F.R. § 60.13(h)(2).<br>In no event shall Instrument Downtime exceed 5% of the time in each Semi-Annual Period that the Ethylene Flare (EPN 321A) affected by the<br>Instrument Downtime is In Operation. For purposes of calculating the 5%, the time used for NHV Analyzer, mass spectrometer, or gas<br>chromatograph calibration and validation activities may be excluded. Nothing in this Paragraph is intended to prevent an permittee from asserting<br>Force Majeure as provided in Section X as the cause of any period of Instrument Downtime. | Applicable to Ethylene<br>Flare, EPN 321A               |
| 47a(1-6)               | Recordkeeping: Timing and Substance. The permittee must comply with the following recordkeeping requirements:<br>a. The permittee must calculate and record each of the following parameters for the Vinyls Flare:<br>(1) 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<br>accordance with any calculation requirements of Paragraphs 20 <sup>4</sup> , 26 <sup>4</sup> and Step 2 of Appendix 1.2 <sup>4</sup> );<br>(4) NHVvg (in BTU/scf) (in 15-minute block averages in accordance with Step 1 of Appendix 1.2 <sup>4</sup> );   | Applicable to Ethylene<br>Flare, EPN 321A               |
| Paragraph1 | Requirement <sup>2</sup>  | Applicability <sup>3</sup>  |
|------------|---|-----------------------------|
| 47a(7)     | (7) For the Vinyls Flare, the Applicable Defendant shall only calculate and record the NHVvg (in BTU/scf) (in 15-minute block averages in                                 | N/A, the Vinyls Flare is in |
|            | accordance with Step 1 of Appendix 1.2).  | a different permit          |
| 47b        | b. Instrument Downtime. The permittee must record the duration of all periods of Instrument Downtime for the Ethylene Flare (EPN 321A) that                               | Applicable to Ethylene      |
|            | exceed 5% of the time in a Semi-Annual Period that the Ethylene Flare (EPN 321A) is In Operation. The permittee must record which instrument(s)                           | Flare, EPN 321A, but the    |
|            | experienced the downtime by Flare, an explanation of the cause(s) of the deviation, and a description of the corrective action(s) that the permittee                      | air assist items are not    |
|            | took.   | applicable.                 |
| 47c        | c. By no later than March 31, 2024, the permittee must record the dates and times of any periods that the permittee deviates from the standards in                        | Applicable Requirement      |
|            | Paragraph 39.c4 (FGRS Compressor Availability). For all of the events described in this sub-Paragraph, the permittee must also record the duration                        | with no EPN                 |
|            | of the deviation, an explanation of the cause(s) of the deviation, and a description of the corrective action(s) that the permittee took.                                 |                             |
| 47d        | d. Any time that the permittee deviates from the emissions standards in Paragraphs 44 <sup>4</sup> - 45 <sup>4</sup> at the Ethylene Flare (EPN 321A), the permittee must | Applicable to Ethylene      |
|            | 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                   | Flare, EPN 321A             |
|            | took.   |                             |
| 48         | Maintain and operate a Fenceline Monitoring Mitigation Project in accordance with Appendix 2.14.  | Westlake is incorporating   |
|            |   | FLM requirements in V-      |
|            |   | 20-022 R1 with no EPN       |

#### Table 2-1: Table of Consent Decree Requirements to be Incorporated in the Ethylene Plant Title V Permit

Notes:

1. Reference paragraph from the Consent Decree.

2. Exact text from the Consent Decree, regardless of applicability to the Calvert City Plant.

3. Details regarding which EPN the text is applicable to and applicability details. Not all requirements are applicable to an EPN.

4. References which need updating with incorporation into the permit.

# **APPENDIX A: KENTUCKY DEP FORMS**

This appendix includes the following forms:

• DEP7007AI – Administrative Form.

| Division for Air Quality  |                    | uality                    |  | DEP7007AI   |                       | A            | Additional Documentation   |  |
|---------------------------|--------------------|---------------------------|--|-------------|-----------------------|--------------|----------------------------|--|
| DIVISION                  |                    | uanty                     | Admir  | nistrative  | Information           |              |                            |  |
| 300 Sower Boulevard       |                    | rd                        | Secti  | on AI.1: So | ource Information     | Additio      | nal Documentation attached |  |
| Frank                     | fort, KY 4060      | )1                        | Secti  | on AI.2: A  | pplicant Information  |              |                            |  |
| (502) 564-3999            |                    |                           | Secti  | on AI.3: O  | wner Information      |              |                            |  |
|                           |                    |                           | Secti  | on AI.4: Ty | ype of Application    |              |                            |  |
|                           |                    |                           | Secti  | on AI.5: Of | ther Required Informa | ation        |                            |  |
|                           |                    |                           | Secti  | on AI.6: Si | gnature Block         |              |                            |  |
|                           |                    |                           | Secti  | on AI.7: No | otes, Comments, and I | Explanations |                            |  |
|                           |                    |                           |  |             |                       |              |                            |  |
| Source Name:              |                    |                           |  |             | Westlake Chemica      | l OpCo, LP   |                            |  |
| KY EIS (AFS) #:           |                    |                           | 21-157-00080   |             |                       |              |                            |  |
| Permit #:                 |                    |                           | V-20-022 R1  |             |                       |              |                            |  |
| Agency Interest (AI)      | ) <b>ID:</b>       |                           |  |             | 122899                |              |                            |  |
| Date:                     |                    |                           |  |             | Oct-23                |              |                            |  |
| Section AI.1: S           | ource Inf          | ormation                  |  |             |                       |              |                            |  |
| Physical Location         | Street:            | 2468                      | Industrial Parkway   |             |                       |              |                            |  |
| Address:                  | City:<br>Street or | Calve                     | ert City   | County:     | Marshall              | Zip Code:    | 42029                      |  |
| Mailing Address:          | P.O. Box:          | 2468                      | Industrial Parkway, P.O. Box 712   | 2           |                       |              |                            |  |
|                           | City:              | Calve                     | ert City   | State:      | Kentucky              | Zip Code:    | 42029                      |  |
|                           |                    |                           | Standard Coor  | dinates for | Source Physical Loc   | ation        |                            |  |
|                           |                    | 25.0525                   |  |             |                       | 00 2222      |                            |  |
| Longitude:                |                    | 37.0525                   | (decimal degrees)  |             | Latitude:             | 88.3333      | (decimal degrees)          |  |
| Primary (NAICS) Category: |                    | All Ott<br>Manufactu<br>C | ter Basic Organic Chemical<br>uring and Other Basic Inorganic<br>hemical Manufacturing |             | Primary NAICS #:      | 325199       | and 325180                 |  |

| Classification (SIC) Ca   | tegory:                  | Industrial Orgar                       | ic Chemicals                        | Primary SIC #:  | 2869                     |                           |
|---|--------------------------|--|-------------------------------------|---|--------------------------|---------------------------|
| Briefly discuss the type conducted at this site:                        | of business              | Chemical Manufacturing                 |                                     |   |                          |                           |
| Description of Area<br>Surrounding<br>Source:                           | Rural Area<br>Urban Area | Industrial Park<br>_X_ Industrial Area | Residential Area<br>Commercial Area | Is any part of the source<br>located on federal land? | Yes<br>_X_ No            | Number of<br>Employees: 0 |
| Approximate distance<br>to nearest residence or<br>commercial property: | Approximatel             | y 1 mile                               | Property<br>Area:1                  | 3 acres   | Is this source portable? | Yes _X_No                 |
|   | What othe                | er environmental permi                 | s or registrations do               | es this source currently hold                         | or need to obtain in Ken | tucky?                    |
| NPDES/KPDES:  | _X_Currently H           | Iold Need                              | N/A                                 |   |                          |                           |
| Solid Waste:  | Currently Ho             | ldNeed                                 | N/A                                 |   |                          |                           |
| RCRA:   | _X_Currently H           | loldNeed                               | N/A                                 |   |                          |                           |
| UST:  | Currently Ho             | ldNeed                                 | N/A                                 |   |                          |                           |
| Type of Regulated   | Mixed Waste              | Generator                              | _X_Generator                        | Recycler  | Other:                   | _                         |
| Waste Activity:   | U.S. Importer            | of Hazardous Waste                     | Transporter                         | Treatment/Storage/Disposal                            | Facility N/              | A                         |

| Section AI.2: Ap                            | plicant Info   | rmation              |                                       |                       |              |       |  |
|---|----------------|----------------------|---------------------------------------|-----------------------|--------------|-------|--|
| Applicant Name:                             | Westlake V     | /inyls, Inc.         |                                       |                       |              |       |  |
| Title: (if individual)                      |                |                      |                                       |                       |              |       |  |
| <b>N</b> <i>T</i> - <sup>11</sup> A - I - I | Street or P.O. | Box:                 | 2468                                  | Industrial Parkway,   | P.O. Box 712 |       |  |
| Mailing Address:                            | City:          | Calvert City         | State:                                | KY                    | Zip Code:    | 42029 |  |
| Email: (if individual)                      |                |                      |                                       |                       |              |       |  |
| Phone:                                      | (270) 395-     | 4151                 |                                       |                       |              |       |  |
| Technical Contact                           |                |                      |                                       |                       |              |       |  |
| Name:                                       |                |                      | Mr. Kevin Sl                          | neridan               |              |       |  |
| Title:                                      | Senior Re      | gional Manager - HSE |                                       |                       |              |       |  |
| Mailing Addross:                            | Street or P.O. | Box:                 | 2468 Industrial Parkway, P.O. Box 712 |                       |              |       |  |
| Mannig Audress.                             | City:          | Calvert City         | State:                                | KY                    | Zip Code:    | 42029 |  |
| Email:                                      |                |                      |                                       |                       |              |       |  |
| Phone:                                      | (270) 395-     | 3362                 |                                       |                       |              |       |  |
| Air Permit Contact for                      | Source         |                      |                                       |                       |              |       |  |
| Name:                                       |                |                      | Mr. Kevin Sl                          | neridan               |              |       |  |
| Title:                                      | Senior Re      | gional Manager - HSE |                                       |                       |              |       |  |
| Mailing Address:                            | Street or P.O. | Box:                 | 246                                   | 8 Industrial Parkway, | P.O. Box 712 |       |  |
| Maining Autoress.                           | City:          | Calvert City         | State:                                | KY                    | Zip Code:    | 42029 |  |
| Email:                                      |                |                      |                                       |                       |              |       |  |
| Phone:                                      | (270) 395-     | 3362                 |                                       |                       |              |       |  |

| _Owner san                               | e as applicant                                     |  |                           |                     |               |       |
|--|--|--|---------------------------|---------------------|---------------|-------|
| Name:                                    | Westlake C   | chemical Corporation                       |                           |                     |               |       |
| Title:                                   |  |  |                           |                     |               |       |
| Mailing Addrogge                         | Street or P.O. I                                   | Box:                                       | 28                        | 01 Post Oak Bouleva | rd, 6th Floor |       |
| Maning Address:                          | City:  | Houston                                    | State:                    | ТХ                  | Zip Code:     | 77056 |
|  |  |  |                           |                     |               |       |
| Email:                                   |  |  |                           |                     |               |       |
| Email:<br>Phone:                         |  |  |                           |                     |               |       |
| Email:<br>Phone:                         | and officers of the                                | company who have an interes                | t in the company of 5% of | or more.            |               |       |
| Email:<br>Phone:                         | and officers of the<br>Name                        | company who have an interes                | t in the company of 5% o  | or more.<br>Posi    | tion          |       |
| Email:<br>Phone:<br>names of owners<br>V | and officers of the<br>Name<br>Vestlake Chemical ( | company who have an interes<br>Corporation | t in the company of 5% o  | or more.<br>Posi    | tion          |       |

| Section AI.4: Type  | e of Application   |   |   |   |  |   |   |
|---|--|---|---|---|--|---|---|
| Current Status:   | _X_ Title V Condition  | onal Major  | State-Origin                                  |   | General Permit   | Registrati                                    | onNone  |
| <b>Requested Action:</b><br>(check all that apply)  | <ul> <li>Name Change</li> <li>Renewal Permit</li> <li>502(b)(10) Change</li> <li>Revision</li> <li>Ownership Change</li> </ul> | Initial Reg<br>Revised Re<br>Extension<br>Off Permit<br>Closure | istration<br>egistration<br>Request<br>Change | _X_ Significa<br>Minor Rev<br>Addition o<br>Landfill Al | nt Revision<br>ision<br>f New Facility<br>ternate Compliance Submittal | Adminis<br>Initial So<br>Portable<br>Modifica | trative Permit Amendment<br>urce-wide Operating Permit<br>Plant Relocation Notice<br>ttion of Existing Facilities |
| Requested Status:   | _X_ Title V Condition  | onal Major  | State-Origin                                  | PSD   | NSR  | Other:  |   |
| Is the source requesting<br>Pollutant:  | g a limitation of potentia   | l emissions?<br>Requested Li                                    | mit:  | Yes   | _X_No Pollutant:   |   | Requested Limit:  |
| Particulate Matter  |  |   |   | _   | Single HAP   |   | -   |
| Volatile Organic Compounds (VOC)  |  |   |   | -   | Combined HAPs  |   |   |
| Carbon Monoxide   |  |   |   | _   | Air Toxics (40 CFR 68, Su  | ubpart F)                                     |   |
| Nitrogen Oxides   |  |   |   | _   | Carbon Dioxide   |   |   |
| Sulfur Dioxide  |  |   |   | _   | Greenhouse Gases (GHG)   |   |   |
| Lead  |  |   |   |   | Other  |   |   |
| For New Construction Proposed Start   | ion:<br>Date of Construction:<br>IM/YYYY)  |   | N/A   | Proposed  | <b>Operation Start-Up Date:</b> ( <i>N</i>                             | MM/YYYY)                                      | N/A   |
| For Modifications:  |  |   |   |   |  |   |   |
| <b>Proposed Start</b><br>(M   | Date of Modification:<br><i>M/YYYY</i> )   |   | N/A   | Proposed  | <b>Operation Start-Up Date:</b> ( <i>N</i>                             | MM/YYYY)                                      | N/A   |
| Applicant is seeking coverage under a permit shield.       Yes       X_No       sought on a separate attachment to the application. |  |   |   |   |  |   |   |

# Section AI.5 Other Required Information

| Indicate the documents attached as part of this application:        |   |  |  |  |
|---|---|--|--|--|
| _ DEP7007A Indirect Heat Exchangers and Turbines                    | _ DEP7007CC Compliance Certification                      |  |  |  |
| _ DEP7007B Manufacturing or Processing Operations                   | _ DEP7007DD Insignificant Activities                      |  |  |  |
| DEP7007C Incinerators and Waste Burners                             | _ DEP7007EE Internal Combustion Engines                   |  |  |  |
| _ DEP7007F Episode Standby Plan                                     | _ DEP7007FF Secondary Aluminum Processing                 |  |  |  |
| _DEP7007J Volatile Liquid Storage                                   | _ DEP7007GG Control Equipment                             |  |  |  |
| _ DEP7007K Surface Coating or Printing Operations                   | DEP7007HH Haul Roads                                      |  |  |  |
| DEP7007L Mineral Processes  | _ Confidentiality Claim                                   |  |  |  |
| _ DEP7007M Metal Cleaning Degreasers                                | _ Ownership Change Form                                   |  |  |  |
| DEP7007N Source Emissions Profile                                   | _ Secretary of State Certificate                          |  |  |  |
| _ DEP7007P Perchloroethylene Dry Cleaning Systems                   | _ Flowcharts or diagrams depicting process                |  |  |  |
| DEP7007R Emission Offset Credit                                     | _ Digital Line Graphs (DLG) files ofbuldings, roads, etc. |  |  |  |
| DEP7007S Service Stations   | _Site Map   |  |  |  |
| _ DEP7007T Metal Plating and Surface Treatment Operations           | _ Map or drawing depicting location of facility           |  |  |  |
| _ DEP7007V Applicable Requirements and Compliance Activities        | _ Safety Data Sheet (SDS)                                 |  |  |  |
| _ DEP7007Y Good Engineering Practice and Stack Height Determination | _ Emergency Response Plan                                 |  |  |  |
| _ DEP7007AA Compliance Schedule for Non-complying Emission Units    | Other:  |  |  |  |
| _ DEP7007BB Certified Progress Report                               |   |  |  |  |
|   |   |  |  |  |

# Section AI.6: Signature Block

I, the undersigned, hereby certify under penalty of law, that I am a responsible official\*, and that I have personally examined, and am familiar with, the information submitted in this document and all its attachments. Based on my inquiry of those individuals with primary responsibility for obtaining the information, I certify that the information is on knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false or incomplete information, including the possibility of fine or imprisonment.

| •   | /0 -(223             |
|---|----------------------|
| Authorized Signature  | Date                 |
| Ivan Birrell  | Senior Plant Manager |
| Type or Printed Name of Signatory                                   | Title of Signatory   |
| *Responsible official as defined by 401 KAR 52.001. Page _6_ of _6_ |                      |

**APPENDIX B: COPY OF CONSENT DECREE** 

## IN THE UNITED STATES DISTRICT COURT FOR THE WESTERN DISTRICT OF LOUISIANA LAKES CHARLES DIVISION

| UNITED STATES OF AMERICA,     | ) |
|-------------------------------|---|
| THE COMMONWEALTH OF KENTUCKY  | ) |
| DEPARTMENT FOR ENVIRONMENTAL  | ) |
| PROTECTION, AND THE LOUISIANA | ) |
| DEPARTMENT OF ENVIRONMENTAL   | ) |
| QUALITY,                      | ) |
|                               | ) |
| Plaintiffs,                   | ) |
|                               | ) |
| V.                            | ) |
|                               | ) |
| WESTLAKE CHEMICAL OPCO LP,    | ) |
| WESTLAKE PETROCHEMICALS LLC,  | ) |
| WESTLAKE POLYMERS LLC,        | ) |
| WESTLAKE STYRENE LLC, and     | ) |
| WESTLAKE VINYLS, INC.,        | ) |
|                               | ) |
| Defendants.                   | ) |
|                               | ) |

Civil Action No. 2:22-cv-01577-JDC-KK

Judge James D. Cain, Jr.

Magistrate Judge Kathleen Kay

## **CONSENT DECREE**

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| NUMBER | DESCRIPTION  |
|--------|--|
| 2.1    | Scope of Work for the Fenceline Monitoring Project |

WHEREAS, concurrently with the lodging of this Consent Decree, Plaintiffs, the United States of America ("United States"), on behalf of the United States Environmental Protection Agency ("EPA"), the Commonwealth of Kentucky Department for Environmental Protection ("KDEP"), and the Louisiana Department of Environmental Quality ("LDEQ"), have filed a Complaint (the "Complaint") in this action seeking injunctive relief and civil penalties from the Defendants, Westlake Chemical OpCo LP, Westlake Petrochemicals LLC, Westlake Polymers LLC, Westlake Styrene LLC, and Westlake Vinyls, Inc., for alleged violations of the Clean Air Act (the "CAA"), 42 U.S.C. §§ 7401 *et seq.*, with respect to emissions of volatile organic compounds ("VOCs"), hazardous air pollutants ("HAPs"), and other pollutants at the Defendants' chemical manufacturing plants located in or near Calvert City, Kentucky (the "Calvert City Plant") and Lake Charles, Louisiana (the "Lake Charles Plants");

WHEREAS, Co-Plaintiff the LDEQ also seeks injunctive relief and civil penalties from Defendants at the Lake Charles Plants for alleged violations of the Louisiana Environmental Quality Act ("LEQA"), La. R.S. 30:2001 *et seq.*;

WHEREAS, Co-Plaintiff the KDEP also seeks injunctive relief and civil penalties from Defendants at the Calvert City Plant for alleged violations of the Kentucky Revised Statutes ("KRS") Chapter 224 and the regulations promulgated pursuant thereto;

WHEREAS, Defendants own and/or operate the Calvert City Plant and the Lake Charles Plants (collectively, the "Covered Plants"), including the Air-Assisted, Steam-Assisted, and Unassisted industrial Flares used at those plants to control emissions of air pollutants generated by the manufacturing processes;

WHEREAS, the Complaint alleges that these failures violated one or more of the

following federal CAA requirements, as well as of one or more of the following Kentucky and/or

Louisiana state air pollution requirements:

- a. The Prevention of Significant Deterioration ("PSD") requirements found in 42 U.S.C. § 7475 and 40 C.F.R. §§ 52.21(a)(2)(iii) and 52.21(i) – 52.21 (r)(5);
- b. The Non-Attainment New Source Review ("NNSR") requirements found in 42 U.S.C. §§ 7502(c)(5), 7503(a)-(c) and 40 C.F.R. Part 51, Appendix S, Part IV, Conditions 1-4;
- c. The New Source Performance Standards ("NSPS") promulgated at 40 C.F.R. Part 60, Subpart A, pursuant to Section 111 of the CAA, 42 U.S.C. § 7411;
- d. The National Emission Standards for Hazardous Air Pollutants ("NESHAPs") promulgated at 40 C.F.R. Part 61, Subpart A, 40 C.F.R. Part 63, Subpart A, and pursuant to Section 112 of the CAA, 42 U.S.C. § 7412;
- e. The Title V requirements of the CAA found at 42 U.S.C. §§ 7661a(a), 7661b(c), 7661c(a); and 40 C.F.R. §§ 70.1(b), 70.5(a) and (b), 70.6(a) and (c), and 70.7(b);
- f. The federally enforceable Kentucky and Louisiana state implementation plan ("SIP") provisions that incorporate, adopt, and/or implement the federal requirements listed in a–e;
- g. Additional federally enforceable Kentucky and Louisiana SIP regulations; and
- h. The portions of the Title V Permits for the Calvert City and Lake Charles Plants that adopt, incorporate, or implement the provisions cited in a–g.

WHEREAS, Defendants have commenced implementation of corrective measures at the

Covered Plants to resolve the violations described above, and will continue these actions;

WHEREAS, by entering into this Consent Decree, Defendants are committing to undertake further projects at the Covered Plants intended to: (i) assure compliance with the requirements of the CAA and the requirements of Kentucky's and Louisiana's air pollution

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control laws that were allegedly violated at the Covered Plants, (ii) reduce emissions of air pollutants from the Covered Plants, and (iii) protect public health, welfare, and the environment;

WHEREAS, as more specifically described in Paragraph 39.b and Appendix 1.9, Defendants have implemented a project that routes hydrogen-rich gas streams from the Petro 1 Flare and Petro 2 Flare at the Lake Charles Petro Plant to an on-site hydrogen recovery plant, and have agreed to implement a project to route hydrogen-rich gas streams around the flare gas recovery system ("FGRS");

WHEREAS, as more specifically described in Section V (Compliance Requirements), Defendants have agreed to install and operate monitoring equipment and control technology at the eight Flares covered by this Consent Decree ("Covered Flares") that will ensure proper Combustion Efficiency at the Covered Flares;

WHEREAS, as more specifically described in Section V (Compliance Requirements), Defendants have agreed to install and operate a FGRS at the Calvert City Plant and at the Lake Charles Petro Plant for the purposes of reducing and recovering Waste Gas;

WHEREAS, as more specifically described in Section V (Compliance Requirements) and Appendix 2.1., Defendants have agreed to fenceline monitoring projects at the Lake Charles Petro Plant and the Calvert City Plant;

WHEREAS, Defendants estimate that implementing the Consent Decree's compliance requirements will cost approximately \$110 million;

WHEREAS, Defendants estimate that the fenceline monitoring projects required pursuant to Section V.F of this Decree will cost up to \$500,000;

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WHEREAS, between January 18, 2018, and full implementation of the Consent Decree's compliance requirements, the EPA estimates that emissions from the Covered Flares will be reduced by approximately the following amounts (in tons per year or "TPY"):

| Pollutant                | Amount in TPY<br>(2018 – through implementation) |
|--------------------------|--|
| VOCs                     | 2,258  |
| HAPs                     | 65   |
| Green House Gas ("CO2e") | 50,733   |
| Nitrogen Oxides ("NOx")  | 14   |

WHEREAS, implementing the Consent Decree's compliance requirements will also reduce emissions of carbon monoxide ("CO") from the Covered Flares;

WHEREAS, the United States, the KDEP, and the LDEQ anticipate that the specific and comprehensive compliance measures set forth in this Consent Decree, which are subject to a reasonable timetable for implementation, will result in the cessation of the violations alleged in the Complaint and those resolved through Section XIII (Effect of Settlement);

WHEREAS, the Defendants deny they have violated or continue to violate any of the statutory and regulatory requirements set forth in the preceding "whereas" clauses and deny any liability to the United States, to the KDEP for the Calvert City Plant, and to the LDEQ for the Lake Charles Plants arising out of the occurrences alleged in the Complaint; and

WHEREAS, the Parties recognize, and the Court by entering this Consent Decree finds, that this Consent Decree has been negotiated by the Parties in good faith and will avoid litigation between the Parties and that this Consent Decree is fair, reasonable, and in the public interest.

NOW, THEREFORE, before the taking of any testimony, without the adjudication or admission of any issue of fact or law except as provided in Section I, and with the consent of the Parties, IT IS HEREBY ADJUDGED, ORDERED, AND DECREED as follows:

#### I. JURISDICTION AND VENUE

1. This Court has jurisdiction over the subject matter of this action, pursuant to 28 U.S.C. §§ 1331, 1345, and 1355, and Section 113(b) of the CAA, 42 U.S.C. § 7413(b). This Court has personal jurisdiction over Westlake Chemical OpCo LP, Westlake Petrochemicals LLC, Westlake Polymers LLC, and Westlake Styrene LLC because they are located and do business within the jurisdictional boundaries for the United States District Court for the Western District of Louisiana, as established under 28 U.S.C. § 98. This Court has supplemental jurisdiction over the state law claims asserted by the KDEP and the LDEQ pursuant to 28 U.S.C. § 1367. Venue lies in this District pursuant to Section 113(b) of the CAA, 42 U.S.C. § 7413(b), and 28 U.S.C. §§ 1391(b) and (c) and 1395(a), because it is the judicial district in which Westlake Chemical OpCo LP, Westlake Petrochemicals LLC, Westlake Polymers LLC, and Westlake Styrene LLC are located, are doing business, and in which a substantial part of the alleged violations occurred. For purposes of this Consent Decree, Defendants consent to: a) this Court's subject matter jurisdiction over this Consent Decree and any action to enforce this Consent Decree; b) this Court's personal jurisdiction over them; and c) venue in this judicial district.

2. For purposes of this Consent Decree, the Defendants agree that the claims alleged in the Complaint are all claims upon which relief may be granted pursuant to the CAA and/or pursuant to Kentucky or Louisiana state law.

3. Notice of the commencement of this action has been given to the KDEP and the LDEQ in accordance with Section 113(b) of the CAA, 42 U.S.C. § 7413(b).

## II. APPLICABILITY

4. The obligations of this Consent Decree apply to and are binding upon the United States, the KDEP, the LDEQ and upon the Defendants and any successors, assigns, or other entities or persons otherwise bound by law.

5. At least 60 Days before a transfer of the ownership or operation of any of the Covered Plants or Covered Flares, the Applicable Defendant(s) must provide a copy of this Consent Decree to the proposed transferee(s). At least 30 Days before any such transfer, the Applicable Defendant(s) must provide written notice of the prospective transfer to the EPA and the United States, in accordance with Section XVI (Notices). For transfers of the Lake Charles Plant(s) or of the Covered Flares located at those plants, at least 30 Days before such transfer, the Applicable Defendant(s) must also provide written notice of the prospective transfer to the LDEQ in accordance with Section XVI (Notices). For transfers of the Calvert City Plant or of the Covered Flares located at that plant, at least 30 Days before such transfer, the Applicable Defendant must also provide written notice of the prospective transfer to the KDEP in accordance with Section XVI (Notices). Any attempt to transfer ownership or operation of any of the Covered Plants or Covered Flares without complying with this Paragraph constitutes a violation of this Decree.

6. If an Applicable Defendant intends to request that the United States agree to a transferee's assumption of any obligations of the Consent Decree, the Applicable Defendant(s) must condition the transfer of the Covered Plant(s) or Covered Flare(s) upon the transferee's written agreement to execute a modification to the Consent Decree that makes the terms and

conditions of the Consent Decree applicable to, binding upon, and enforceable against the transferee.

7. As soon as possible before the transfer, the Applicable Defendant(s) must: (i) notify the United States, the KDEP for the Calvert City Plant, and the LDEQ for the Lake Charles Plants of the proposed transfer and of the specific Consent Decree provisions that the Applicable Defendant(s) propose the transferee assume; (ii) certify that the transferee is contractually bound to assume the ongoing compliance requirements and obligations of this Consent Decree; and (iii) require the transferee to submit to the United States both a certification that the transferee has the financial and technical ability to assume the ongoing compliance requirements and obligations of this Consent Decree is contractually bound to assume the ongoing compliance requirements and obligations of this Consent Decree and a certification that the transferee is contractually bound to assume the ongoing compliance requirements and obligations of this Consent Decree.

8. After submitting to the United States, the KDEP (for the Calvert City Plant), and the LDEQ (for the Lake Charles Plants), the notice and certification required by the previous Paragraph, either: (i) the United States will notify the Applicable Defendant that the United States does not agree to modify the Consent Decree to make the transferee responsible for complying with the terms and conditions of the Consent Decree; or (ii) the United States, the Applicable Defendant, and the transferee must file with the Court a joint motion requesting the Court approve a modification substituting the transferee for the Applicable Defendant as the defendant responsible for complying with the terms and conditions of the Consent Decree that the Applicable Defendant intends the transferee to assume.

9. If an Applicable Defendant does not secure the agreement of the United States to a joint motion to modify the Consent Decree within a reasonable period of time, then the

Applicable Defendant(s) and the transferee may file, without the agreement of the United States, a motion requesting the Court to approve a modification substituting the transferee for the Applicable Defendant(s) as the defendant responsible for complying with the terms and conditions of the Consent Decree that the transferee intends to assume. The United States may file an opposition to the motion. The motion to modify must be granted unless the Applicable Defendant(s) and the transferee: (i) fail to show that the transferee has the financial and technical ability to assume the ongoing compliance requirements and obligations of the Consent Decree; (ii) fail to show that the modification language effectively transfers the ongoing compliance requirements and obligations to the transferee; or (iii) the Court finds other good cause for denying the motion.

10. The Applicable Defendant(s) must provide a copy of this Consent Decree to all officers whose duties might reasonably include compliance with any provision of this Decree. For all employees whose duties might reasonably include compliance with any provision of this Decree, as well as for any contractor or agent retained to perform work required under this Consent Decree, the Applicable Defendant(s) must provide a copy of the portions of this Consent Decree that are applicable to the employee's duties or to the contractor or agent's work. The Applicable Defendant(s) must condition any such contract upon performance of the work in conformity with the terms of this Consent Decree.

11. In any action to enforce this Consent Decree, the Applicable Defendant(s) must not raise as a defense the failure by any of its officers, directors, employees, agents, or contractors to take any actions necessary to comply with the provisions of this Consent Decree.

## **III. DEFINITIONS**

12. Terms used in this Consent Decree that are defined in the CAA or in federal or

state regulations promulgated pursuant to the CAA will have the meanings assigned to them in the

CAA or such regulations, unless otherwise provided in this Decree. Whenever the terms set forth

below are used in this Consent Decree, the following definitions apply:

- a. "Applicable Defendant" means
  - (1) with respect to the Co-Products Flare, Westlake Chemical OpCo LP and Westlake Styrene LLC;
  - (2) with respect to the Petro 1 Flare and Petro 2 Flare, Westlake Chemical OpCo LP;
  - (3) with respect to the Poly 1 Flare and Poly 2 Flare, Westlake Polymers LLC;
  - (4) with respect to the Styrene Flare, Westlake Styrene LLC;
  - (5) with respect to the Poly 3 LP Flare, Westlake Petrochemicals LLC;
  - (6) with respect to the Ethylene Flare, Westlake Chemical OpCo LP; and
  - (7) with respect to the Vinyls Flare, Westlake Vinyls, Inc.
- b. "Ambient Air" means that portion of the atmosphere, external to buildings, to which persons have access.
- c. "Assist Air" means all air 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 Air includes Premix Assist Air and Perimeter Assist Air. Assist Air does not include Ambient Air. Flares that use Assist Air are referred to in this Consent Decree as "Air-Assisted Flares."
- d. "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.
- e. "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 sub-

Paragraphs 39.d (Maintenance of FGRS) and 39.e (Shut Down) may be included in the amount of time that the Compressors are Available for Operation.

- f. "Baseload Waste Gas Flow Rate" means, for a particular Covered Flare, the daily average flow rate, in scfd, to the Flare, excluding all flows during periods of startup, shutdown, and Malfunction. The flow rate data period that must be used to determine Baseload Waste Gas Flow Rate is set forth in sub-Paragraph 30.a(2).
- g. "BTU/scf" means British Thermal Unit per standard cubic foot.
- h. "Calvert City Plant" means the petrochemical manufacturing plant owned and operated by Westlake Vinyls, Inc. and Westlake Chemical OpCo LP, located at 2468 Industrial Parkway, Calvert City, Kentucky 42029.
- i. "Calvert City Flares" means the Steam-Assisted Ethylene Flare and the Unassisted Vinyls Flare at the Calvert City Plant.
- j. "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.
- k. "Combustion Efficiency" or "CE" means a Flare's efficiency in converting the organic carbon compounds found in Vent Gas to carbon dioxide. Combustion Efficiency must be determined in accordance with the NHV<sub>cz</sub> calculations in Appendix 1.2.
- 1. "Combustion Zone" means the area of the Flare flame where the Combustion Zone Gas combines for combustion.
- m. "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.
- n. "Complaint" means the complaint filed by the United States, the KDEP, and the LDEQ in this action.
- o. "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.
- p. "Consent Decree" or "Decree" means this Consent Decree, including any and all appendices attached hereto.
- q. "Covered Air-Assisted Flares" means each of the following Flares, as well as any Air-Assisted Portable Flare in use at a Covered Plant:

- the Poly 3 LP Flare located at the Lake Charles Petro Plant at the Poly 3 Unit; and
- the Co-Products Flare located at the Lake Charles Petro Plant at the Co-Products Unit.
- r. "Covered Plant" or "Covered Plants" means each of the following plants:
  - the Calvert City Plant, and
  - the Lake Charles Plants.
- s. "Covered Flare" or "Covered Flares" means each of the following Flares, as well as any Newly Installed Covered Flare or Portable Flare in use at a Covered Plant, provided however that once a Covered Flare is permanently taken out of service after the Effective Date and that change is reported in the subsequent Semi-Annual Report, that Flare is no longer a Covered Flare:
  - the Calvert City Flares, and
  - the Lake Charles Flares.
- t. "Covered Steam-Assisted Flares" means Flares:
  - At the Lake Charles Plants, the Petro 1, Petro 2, Poly 1 and 2, and Styrene Flares;
  - At the Calvert City Plant, the Ethylene Flare; and
  - Any Steam-Assisted Portable Flare in use at a Covered Plant.
- u. "Date of Lodging" means the date this Consent Decree is filed for lodging with the Clerk of the Court for the United States District Court for the Western District of Louisiana.
- v. "Day" means a calendar day unless expressly stated to be a business day. In computing any period of time for a compliance deadline under this Consent Decree (*e.g.*, a deadline for installing a FGRS or submitting a Waste Gas Minimization Plan ("WGMP"), where the last day would fall on a Saturday, Sunday, or federal holiday, the period will run until the close of business of the next business day.
- w. "Defendants" means Westlake Chemical OpCo LP, Westlake Petrochemicals LLC, Westlake Polymers LLC, Westlake Styrene LLC, and Westlake Vinyls, Inc.
- x. "Design Capacity" means, with respect to a FGRS, the capacity, in mscf per Day, of the installed flare gas recovery Compressor, excluding the capacity of any installed Duplicate Spare Compressor or warehouse spare Compressor.
- y. "Duplicate Spare Compressor" means, with respect to a Flare Gas Recovery System, an installed Compressor, designed to be identical or functionally equivalent

to the other Compressor of the FGRS. In order to qualify as a "Duplicate Spare Compressor," the Compressor must be functionally interchangeable with the other FGRS Compressor such that the Design Capacity of the FGRS is Available for Operation while the other Compressor of the FGRS is out of service.

- z. "Effective Date" shall have the definition provided in Section XVII.
- aa. "EPA" means the United States Environmental Protection Agency and any of its successor departments or agencies.
- bb. "External Utility Loss" means a loss in the supply of electrical power or other third-party utility to a Covered Plant that is caused by events occurring outside the boundaries of a Covered Plant, excluding utility losses due to an interruptible utility service agreement.
- cc. "First Updated Waste Gas Minimization Plan" or "First Updated WGMP" means the document submitted pursuant to Paragraph 31 as the first update to the Initial WGMP.
- dd. "Flare" means a combustion device lacking an enclosed combustion chamber that uses an uncontrolled volume of Ambient Air to burn gases.
- ee. "Flare Gas Recovery System" or "FGRS" means a system of one or more Compressors, piping, and associated water seal, rupture disk, or similar device used to divert gas from a Flare and direct the gas to a fuel gas system, to a combustion device other than the Flare, or to a product, co-product, by-product, or raw material recovery system.
- ff. "Flare Tip Velocity" or "V<sub>tip</sub>" means the velocity of gases exiting the Flare tip as defined in Paragraph 41.
- gg. "Initial Waste Gas Minimization Plan" or "Initial WGMP" means the document submitted pursuant to Paragraph 30.
- hh. "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.
- ii. "KDEP" means the Kentucky Department for Environmental Protection and any of its successor departments or agencies.
- jj. "KSCFH" or "kscfh" means thousand standard cubic feet per hour.

- Kk. "Lake Charles Petro Plant" means the petrochemical manufacturing plant (including the Co-Products Unit, Petro 1 Unit, Petro 2 Unit, Poly 3 Unit, and Styrene Unit) owned and operated by Westlake Chemical OpCo LP, Westlake Petrochemicals LLC, and Westlake Styrene LLC and located at 900 Highway 108, Sulfur, Louisiana 70665.
- ll. "Lake Charles Plants" means, collectively, the Lake Charles Poly Plant and the Lake Charles Petro Plant.
- mm. "Lake Charles Poly Plant" means the petrochemical manufacturing plant (including the Poly 1 Unit and Poly 2 Unit) owned and operated by Westlake Polymers LLC and located at 3525 Cities Service Hwy, Sulphur, Louisiana, 70665.
- nn. "Lake Charles Flares" mean, collectively:
  - (1) the following four Steam-Assisted Flares:
    - Petro 1 Flare, located at the Lake Charles Petro Plant at the Petro 1 Unit;
    - Petro 2 Flare located at the Lake Charles Petro Plant at the Petro 2 Unit;
    - Poly 1 & 2 Flare, located at the Lake Charles Poly Plant at the Poly 1 and Poly 2 Units; and
    - Styrene Flare, located at the Lake Charles Petro Plant at the Styrene Unit; and
  - (2) the following two Air-Assisted Flares:
    - Poly 3 LP Flare, located at the Lake Charles Petro Plant at the Poly 3 Unit; and
    - Co-Products Flare, located at the Lake Charles Petro Plant at the Co-Products Unit.
- oo. "LDEQ" means the Louisiana Department of Environmental Quality and any of its successor departments or agencies.
- pp. "Malfunction" means, as specified in 40 C.F.R. § 60.2, "any sudden, infrequent, and not reasonably preventable failure of air pollution control equipment, process equipment, or a process to operate in a normal or usual manner. Failures that are caused in part by poor maintenance or careless operation are not Malfunctions." In any dispute under this Consent Decree involving this definition, the Applicable Defendant has the burden of proving all of the following:

- (1) The excess emissions were caused by a sudden, unavoidable breakdown of technology, beyond the control of the owner or operator;
- (2) The excess emissions: (a) did not stem from any activity or event that could have been foreseen and avoided, or planned for, and (b) could not have been avoided by better operation and maintenance practices;
- (3) To the maximum extent practicable the air pollution control equipment or processes were maintained and operated in a manner consistent with good practice for minimizing emissions;
- (4) Repairs were made in an expeditious fashion when the operator knew or should have known that applicable emission limitations were being exceeded. Off-shift labor and overtime must have been used, to the extent practicable, to ensure that such repairs were made as expeditiously as practicable;
- (5) The amount and duration of the excess emissions (including any bypass) were minimized to the maximum extent practicable during periods of such emissions;
- (6) All possible steps were taken to minimize the impact of the excess emissions on ambient air quality;
- (7) All emission monitoring systems were kept in operation if at all possible;
- (8) The owner or operator's actions during the period of excess emissions were documented by properly signed, contemporaneous operating logs, or other relevant evidence;
- (9) The excess emissions were not part of a recurring pattern indicative of inadequate design, operation, or maintenance; and
- (10) The owner or operator properly and promptly notified the appropriate regulatory authority.
- qq. "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.
- rr. "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.

- ss. "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.
- tt. "Net Heating Value of Combustion Zone Gas" or "NHV<sub>cz</sub>" means the Net Heating Value, in BTU/scf, of the Combustion Zone Gas in a Flare. NHV<sub>cz</sub> must be calculated in accordance with Step 3 of Appendix 1.2.
- uu. "Net Heating Value Dilution Parameter" or "NHV<sub>dil</sub>" means the Net Heating Value, in BTU/ft<sup>2</sup>, of the dilution zone gas in a Flare. NHV<sub>dil</sub> must be calculated in accordance with Step 4 of Appendix 1.2.
- vv. "Net Heating Value of Vent Gas" or "NHV<sub>vg</sub>" means the Net Heating Value, in BTU/scf, of the Vent Gas directed to a Flare. NHV<sub>vg</sub> must be calculated in accordance with Step 1 of Appendix 1.2.
- ww. "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 an existing Covered Flare (existing as of the Effective Date), and commences operation at a Covered Plant after the Effective Date.
- xx. "New Source Review" or "NSR" means the PSD and NNSR provisions in Part C and D of Subchapter I of the Clean Air Act, 42 U.S.C. §§ 7470-7492, 7501-7515, the Minor NSR provisions in 42 U.S.C. § 7410(a), applicable federal regulations implementing such provisions of the CAA, and the corresponding provisions of the federally enforceable SIPs for the State of Kentucky and the State of Louisiana.
- yy. "Paragraph" means a portion of this Decree identified by an arabic numeral.
- zz. "Parties" means the United States, the KDEP, the LDEQ, and the Defendants.
- aaa. "Perimeter Assist Air" means the portion of Assist Air introduced at the perimeter of the Flare tip or above the Flare tip. Perimeter Assist Air includes air intentionally entrained in lower and upper steam. Perimeter Assist Air includes all Assist Air except Premix Assist Air.
- bbb. "Pilot Gas" means gas introduced into a Flare tip that provides a flame to ignite the Vent Gas.

- ccc. "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.
- ddd. "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:
  - (1) At the Lake Charles Petro 2 Flare: Feed Saturator, Wastewater Stripper, Process Water Stripper, Dilution Steam Generator, DOX Media, and Wastewater Steam Stripper Feed/Effluent Exchanger, Depropanizer Column, Debutanizer Column, Caustic Column, Cracked Gas Compressor, Quench System; and
  - (2) At the Calvert City Ethylene Flare: 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.

- eee. "Premix Assist Air" means the portion of Assist Air that is introduced to the Vent Gas, whether injected or induced, before the Flare tip. Premix Assist Air also includes any air intentionally entrained in center steam.
- fff. "Prevention Measure" means an instrument, device, piece of equipment, system, process change, physical change to process equipment, procedure, or program to minimize or eliminate flaring.
- ggg. "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. For a Flare with no water seal, the function of Purge Gas is performed by Sweep Gas, and therefore, by definition, such a Flare has no Purge Gas.
- hhh. "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.
- iii. "Reportable Flaring Incident" means when Waste Gas equal to or greater than 500,000 scf is flared within a 24-hour period at any Covered Plant. For purposes of

calculating whether the triggering level of Waste Gas flow has been met the following flows may be excluded: i) the pro-rated Baseload Waste Gas Flow Rate (pro-rated on the basis of the duration of the Reportable Flaring Incident); (ii) if a Covered Plant has instrumentation capable of calculating the volumetric flow rate of hydrogen, nitrogen, oxygen, carbon monoxide, carbon dioxide, and/or water (steam) in the Waste Gas, the contribution of all measured flows of any of these elements/compounds may be excluded. A flaring event or events that have the same root cause(s) that last(s) more than 24 hours will be considered a single Reportable Flaring Incident. When flaring occurs at more than one Covered Flare, the volume of non-excluded Waste Gas flow at each Covered Flare must be added together unless the root cause(s) of the flaring at each Covered Flare is (are) not related to each other.

- jjj. "SCFD" or "scfd" means standard cubic feet per Day.
- kkk. "SCFH" or "scfh" means standard cubic feet per hour.
- Ill. "SCFM" or "scfm" means standard cubic feet per minute.
- mmm. "Section" means a portion of this Decree identified by a roman numeral.
- nnn. "Smoke Emissions" shall have the definition set forth in Section 3.5 of Method 22 of 40 C.F.R. Part 60, Appendix A ("Method 22"). For purposes of this Consent Decree, Smoke Emissions may be either documented by a video camera or determined by an observer knowledgeable with respect to the general procedures for determining the presence of Smoke Emissions per Method 22.
- ooo. "Standard Conditions" means a temperature of 68 degrees Fahrenheit and a pressure of 1 atmosphere. Unless otherwise expressly set forth in this Consent Decree or an Appendix, Standard Conditions apply.
- ppp. "Steam-Assisted Flare" means a Flare that uses steam piped to a Flare tip to assist in combustion.
- qqq. "Supplemental Gas" means all gas introduced to a Flare in order to improve the combustible characteristics of the Combustion Zone Gas.
- rrr. "Sweep Gas" means:
  - For a Flare with an FGRS: Gas intentionally introduced into a Flare header system to prevent oxygen buildup in the Flare header. Sweep Gas in these Flares is introduced prior to and recovered by the FGRS; and
  - (2) <u>For a Flare without an FGRS:</u> Gas intentionally introduced into a Flare header system to maintain a constant flow of gas through the

Flare header and out the Flare tip in order to prevent oxygen building in the Flare header and to prevent infiltration (backflow) into the Flare tip.

- sss. "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.
- ttt. "Turnaround" means a complete shutdown of any emission unit to: (1) perform necessary cleaning, repairs and other maintenance; (2) perform required tests and internal inspections; and/or (3) install any modifications or additions, or make preparations necessary for a future modification or addition.
- uuu. "Unassisted Flare" means a Flare that does not use Assist Steam or Assist Air.
- vvv. "United States" means the United States of America, acting on behalf of the EPA.
- www. "Unobstructed Cross Sectional Area of the Flare Tip" or "A<sub>tip-unob</sub>" 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 in Appendix 1.3 together with the equations for calculating the A<sub>tip-unob</sub> of these four types.
- xxx. "Variable Speed Drive" means a piece of equipment that regulates the speed and rotational force, or torque output, of an electric motor and that outputs a variable frequency to a motor to allow it to operate at variable speeds between the motor's minimum and maximum speed.
- yyy. "Variable Speed Motor" means a motor that operates at continuously variable speeds between a minimum and maximum as regulated by a Variable Speed Drive.
- zzz. "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.
- aaaa. "Visible Emissions" means five minutes or more of Smoke Emissions during any two consecutive hours.
- bbbb. "VOC" or "Volatile Organic Compounds" shall have the definition set forth in 40 C.F.R. § 51.100(s).
- cccc. "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. Depending upon the instrumentation that monitors Waste Gas, certain compounds (hydrogen, nitrogen, oxygen, carbon dioxide, carbon monoxide, and/or water (steam)) that are directed to a Flare for the purpose of disposing of these compounds may be excluded from calculations relating to Waste Gas flow. The circumstances in which such exclusions are permitted are specifically identified in Section V (Compliance Requirements). Appendix 1.4 to this Consent Decree depicts the meaning of "Waste Gas," together with its relation to other gases associated with Flares.

## IV. CIVIL PENALTY

13. By no later than 30 Days after the Effective Date, the Defendants, jointly and

severally, must pay the following amounts as a civil penalty:

- a. \$562,500 to the United States,
- b. \$62,500 to the KDEP, and
- c. \$375,000 to the LDEQ.

14. The Defendants must pay the civil penalty due to the United States by FedWire Electronic Funds Transfer (EFT) to the U.S. Department of Justice account, in accordance with instructions provided to the Defendants by the Financial Litigation Unit ("FLU") of the United States Attorney's Office for the Western District of Louisiana after the Effective Date. The payment instructions provided by the FLU will include a Consolidated Debt Collection System ("CDCS") number, which the Defendants must use to identify all payments required to be made in accordance with this Consent Decree. The FLU will provide the payment instructions to:

William Anamosa 2801 Post Oak Boulevard, Suite 1600 Houston, Texas 77056 713-963-1561 wanamosa@westlake.com

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on behalf of the Defendants. The Defendants may change the individual to receive payment instructions on its behalf by providing written notice of such change to the United States and the EPA in accordance with Section XVI (Notices).

15. At the time of payment, the Defendants must send notice that payment has been made: (i) to the United States via email and regular mail in accordance with Section XVI and (ii) to the EPA via email at cinwd\_acctsreceivable@epa.gov and regular mail at: EPA Cincinnati Finance Office, 26 W. Martin Luther King Drive, Cincinnati, Ohio 45268. This notice must state that the payment is for the civil penalty owed pursuant to the Consent Decree in *United States, et al. v. Westlake Chemicals OpCo LP, et al.* and must reference the civil action number, CDCS Number, and DOJ case number 90-5-2-1-11287.

16. The Defendants must not deduct any penalties paid under this Decree pursuant to this Section or Section IX (Stipulated Penalties) in calculating their federal, state, or local income tax.

#### 17. Payments to the KDEP and the LDEQ

a. The Defendants must pay the civil penalty due to the KDEP by a cashier's check, certified check, or money order (with the notation "Westlake Flare Combustion Consent Decree" on the instrument of payment) made payable to "Kentucky State Treasurer" and mailed to Director, Division of Enforcement, 300 Sower Boulevard, Frankfort, Kentucky 40601.

b. The Defendants must pay the civil penalty due to the LDEQ by EFT in accordance with instructions to be provided to Defendants by the LDEQ or check made payable to the Louisiana Department of Environmental Quality, referencing this Civil Action, and mailed to: Accountant Administrator, Financial Services Division, LDEQ, P.O. Box 4303, Baton Rouge,

Louisiana 70821-4303. At the time of payment, Westlake shall send notice that payment has been made to LDEQ in accordance with Section XVI (Notices).

## V. COMPLIANCE REQUIREMENTS

#### A. <u>Instrumentation and Monitoring Systems</u>

18. <u>Flare Data and Initial Monitoring Systems Report</u>. For each Covered Flare, by the applicable compliance dates set forth in Appendix 1.1, the Applicable Defendant must submit a report, consistent with the requirements in Appendix 1.5, to the EPA that includes the following:

a. The information, diagrams, and drawings specified in Paragraphs 1–7 of Appendix 1.5;

b. A detailed description of each instrument and piece of monitoring equipment, including the specific model and manufacturer, that the Applicable Defendant has installed or will install in compliance with Paragraphs 20–25 of this Consent Decree (Paragraphs 8–9 of Appendix 1.5); and

c. A narrative description of the monitoring methods and calculations that the Applicable Defendant will use to comply with the requirements of Paragraph 44 (Paragraph 10 of Appendix 1.5).

19. Installation and Operation of Monitoring and Control Systems.

a. By no later than the applicable compliance dates set forth in Appendix 1.1, the Applicable Defendant must install and commence operation of the instrumentation, controls, and monitoring systems set forth in Paragraphs 20–24 at each Covered Flare, except for the Vinyls Flare (which must instead install and commence operation of a Vent Gas flow meter pursuant to Paragraph 20.a and a calorimeter pursuant to Paragraph 24.b), Newly Installed Covered Flares, and Portable Flares.

b. By no later than the date that any Newly Installed Covered Flare or Portable Flare is In Operation and Capable of Receiving Waste, Supplemental, and/or Sweep Gas at a Covered Plant, the Applicable Defendant must complete installation (or have in place) and commence operation of the instrumentation, controls, and monitoring systems set forth in Paragraphs 20–24. The Applicable Defendant must operate the instrumentation, controls, and monitoring systems for each Newly Installed Covered Flare and Portable Flare in accordance with Paragraphs 20–24.

#### 20. Vent Gas, Assist Steam, and Assist Air Monitoring Systems.

a. For each Covered Flare, the Applicable Defendant 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 rates of all gas streams that contribute to the Vent Gas are determined. Flow must be calculated in scfm.

b. For each Covered Steam-Assisted Flare, the Applicable Defendant 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.

c. For each Covered Air-Assisted Flare, the Applicable Defendant must install, operate, calibrate, and maintain a monitoring system capable of continuously measuring,

calculating, and recording the volumetric flow rate of Assist Air used with each Covered Air-Assisted Flare. If Premix Assist Air and Perimeter Assist Air are both used, the Applicable Defendant must install, operate, calibrate, and maintain a monitoring system capable of separately continuously measuring, calculating, and recording the volumetric flow rate of Premix Assist Air and Perimeter Assist Air used with that Flare. Continuously monitoring fan speed or power and using fan curves is an acceptable method for continuously monitoring Assist Air flow rates.

d. Each flow rate monitoring system must be able to correct for the

temperature and pressure of the system and output parameters in Standard Conditions.

e. In lieu of a monitoring system that directly measures volumetric flow rate,

the Applicable Defendant may choose from the following additional options for monitoring any gas stream:

- (1) Mass flow monitors may be used for determining the volumetric flow rate of Assist Steam provided that the Applicable Defendant converts the mass flow rates to volumetric flow rates pursuant to the methodology in Step 2 of Appendix 1.2;
- (2) Mass flow monitors may be used for determining the volumetric flow rate of Vent Gas, provided the Applicable Defendant determines the molecular weight of such Vent Gas using compositional analysis data collected pursuant to the monitoring method specified in Paragraph 24.a and provided that the Applicable Defendant converts the mass flow rates to volumetric flow rates pursuant to the methodology in Step 2 of Appendix 1.2; and
- Continuous pressure/temperature monitoring system(s) and appropriate engineering calculations may be used in lieu of a continuous volumetric flow monitoring system provided the molecular weight of the gas is known and provided the Applicable Defendant comply with the methodology in Step 2 of Appendix 1.2 for calculating volumetric flow rates. For Vent Gas, the Applicable Defendant must determine molecular weight using

compositional analysis data collected pursuant to the monitoring method specified in Paragraph 24.a.

21. <u>Assist Steam Control Equipment</u>. The Applicable Defendant must install and commence operation of equipment, including, as necessary, main and trim control valves and piping that enables the Applicable Defendant to control Assist Steam flow to each Covered Steam-Assisted Flare in a manner sufficient to ensure compliance with this Decree.

22. <u>Assist Air Control Equipment</u>. The Applicable Defendant must install and commence operation of equipment, including a Variable Speed Motor on each Covered Air-Assisted Flare, that enables the Applicable Defendant to control Assist Air flow to each Covered Air-Assisted Flare in a manner sufficient to ensure compliance with this Decree.

23. <u>Video Camera</u>. The Applicable Defendant 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 each Covered Flare except the Vinyls Flare.

24. <u>Vent Gas Compositional Monitoring or Direct Monitoring of Net Heating Value</u> of Vent Gas. For each Covered Flare, the Applicable Defendant must either determine the concentration of individual components in the Vent Gas or directly monitor the Net Heating Value of the Vent Gas (NHV<sub>vg</sub>) in compliance with one of the methods specified in this Paragraph. The Applicable Defendant may elect to use different monitoring methods (of the methods provided in this Paragraph) 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 Applicable Defendant must:

a. 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
b. Install, operate, calibrate, and maintain a calorimeter capable of continuously measuring (*i.e.*, at least once every 15 minutes), calculating, and recording the NHV<sub>vg</sub> at Standard Conditions. If an Applicable Defendant elects this method, the Applicable Defendant 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.

c. If the Applicable Defendant elects the method in Paragraph 24.b, and the Net Heating Value of the Vent Gas exceeds the upper calibrated span of the calorimeter on the Covered Flare, then the Applicable Defendant 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.

d. 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.

25. <u>Instrumentation and Monitoring Systems: Optional Equipment for any Covered</u> <u>Flare</u>. To continuously measure and calculate flow of all Pilot Gas to a Covered Flare in scfm

and pounds per hour, the Applicable Defendant, at its option, may either: a) install (if not already installed) an instrument; or b) use a restriction orifice and pressure measurements. The Applicable Defendant may use the data generated by this instrument or restriction orifice as part of the calculation of the Net Heating Value of the Combustion Zone Gas.

26. <u>Instrumentation and Monitoring Systems: Specifications, Calibration, Quality</u> <u>Control, and Maintenance</u>.

a. The instrumentation and monitoring systems identified in Paragraphs 20

and 24 must:

- (1) Meet or exceed all applicable minimum accuracy, calibration and quality control requirements specified in Table 13 of 40 C.F.R. Part 63, Subpart CC;
- (2) 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 Applicable Defendant;
- (3) Be capable of measuring the appropriate parameter over the range of values expected for that measurement location; and
- (4) Have an associated data recording system with a resolution that is equal to or better than the required instrumentation/system accuracy.
- b. The Applicable Defendant must operate, maintain, and calibrate each

instrument and monitoring system identified in Paragraphs 20 and 24 according to a monitoring plan that contains the information listed in 40 C.F.R. § 63.671(b)(1)-(5). However, if an Applicable Defendant is determining NHV<sub>vg</sub> using a process mass spectrometer, the Applicable Defendant may use the methods established for determining NHV<sub>vg</sub> 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 (attached as Appendix 1.7) in lieu of complying with 40 C.F.R. § 63.671(b)(1)-(5)'s requirements for determining NHV<sub>vg</sub> using gas chromatographs.

c. All gas chromatograph systems permitted by Paragraph 24.a must also meet the requirements of 40 C.F.R. § 63.671(e)(1)-(3) (Additional Requirements for Gas Chromatographs) regardless of whether the gas chromatographs are complying with 40 C.F.R. § 63.671(e)(1)-(3) or the methods outlined in Appendix 1.7.

d. For each instrumentation and monitoring system required by Paragraphs 20 and 24 (or installed pursuant to Paragraph 25), the Applicable Defendant must comply with the out-of-control procedures described in 40 C.F.R. § 63.671(c)(1) and (2), and with the data reduction requirements specified in 40 C.F.R. § 63.671(d)(1) through (3).

e. The language in 40 C.F.R. § 63.671 or Table 13 of 40 C.F.R. Part 63, Subpart CC, or in any regulatory provision cross-referenced in 40 C.F.R. § 63.671 or Table 13 of 40 C.F.R. Part 63, Subpart CC, that limits the applicability of these regulatory requirements to periods when "regulated material" (as defined in 40 C.F.R. § 63.641) is routed to a Flare is not applicable for purposes of this Consent Decree. In addition, for purposes of this Decree, the language in 40 C.F.R. § 63.671 or Table 13 of 40 C.F.R. Part 63, Subpart CC, or in any regulatory provision cross-referenced in 40 C.F.R. § 63.671 or Table 13 of 40 C.F.R. Part 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 Paragraphs 20 and 24.

f. The Applicable Defendant may elect to utilize exceptions set forth in 40C.F.R. § 63.1103(e)(4)(i)-(ix) when complying with this Paragraph.

27. <u>Instrumentation and Monitoring Systems: Recording and Averaging Times</u>. The instrumentation and monitoring systems identified in Paragraphs 20 and 23-25 must be able to

produce and record data measurements and calculations for each parameter at the following time intervals:

| Instrumentation and Monitoring System  | <b>Recording and Averaging Times</b>                             |
|--|--|
| Vent Gas, Assist Steam Flow Monitoring Systems,<br>Assist Air Flow Monitoring Systems and (if<br>installed) Pilot Gas Flow | Measure continuously and record<br>15-minute block averages      |
| Vent Gas Compositional Monitoring (if using the methodology in Paragraph 24.a)   | Measure no less than once every 15-minutes and record that value |
| Vent Gas Net Heating Value Analyzer (if using the methodology in Paragraph 24.b)   | 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 this Paragraph is intended to prohibit the Applicable Defendant 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 with this Consent Decree.

28. <u>Instrumentation and Monitoring Systems: Operation</u>. The Applicable Defendant must operate each of the instruments and monitoring systems required by Paragraphs 20 and 23-24 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 sub-Paragraphs 45.a–d.

## B. <u>Determining Whether a Covered Flare that has a Water Seal is Not</u> <u>Receiving Potentially Recoverable Gas Flow</u>

29. 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:

a. 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;

b. 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

c. Downstream of the seal drum, there is no flow of Supplemental Gas directed to the Covered Flare.

## C. <u>Waste Gas Minimization</u>

30. <u>Initial Waste Gas Minimization Plan ("Initial WGMP")</u>. By no later than the applicable compliance dates set forth in Appendix 1.1, for each Covered Flare except for the Vinyls Flare, the Applicable Defendant must submit to the EPA an Initial Waste Gas Minimization Plan that discusses and evaluates flaring Prevention Measures on both a plant-wide and Flare-specific basis. The Initial WGMP must include but not be limited to:

a. <u>Waste Gas Characterization and Mapping</u>. The Applicable Defendant must

characterize the Waste Gas being disposed of at each Covered Flare except for the Vinyls Flare, and determine its source as follows:

- (1)Volumetric (in scfm) and mass (in pounds) flow rate. The Applicable Defendant must identify the volumetric flow of Waste Gas, in scfm on a 30-Day rolling average, and the mass flow rate, in pounds per hour on a 30-Day rolling average, vented to each Covered Flare except for the Vinyls Flare, for the one-year period of time ending 180 Days before the submission of the Initial WGMP. To the extent that, for any particular Covered Flare, the Applicable Defendant has instrumentation capable of measuring and/or calculating the volumetric and mass flow rate of hydrogen, nitrogen, oxygen, carbon monoxide, carbon dioxide, and/or water (steam) in the Waste Gas, the Applicable Defendant may calculate the volumetric and mass flow of: (i) all Waste Gas flows excluding hydrogen, nitrogen, oxygen, carbon monoxide, carbon dioxide, and/or water (steam); and (ii) hydrogen, nitrogen, oxygen, carbon monoxide, carbon dioxide, and/or water (steam) flows in the Waste Gas. The Applicable Defendant may use either an engineering evaluation or measurements from monitoring or a combination to determine flow rate. In determining flow rate, except as provided in the next sentence, flows during all periods must be included (including but not limited to normal operations and periods of startup, shutdown, Malfunction, process upsets, relief valve leakages, utility losses due to an interruptible utility service agreement, and emergencies arising from events within the boundaries of the Covered Plants). Flows that could not be prevented through reasonable planning and are in anticipation of or caused by a natural disaster, act of war or terrorism, or External Utility Loss are the only flows that may be excluded from the calculation of flow rate. The Applicable Defendant must provide the date, time, and nature of the event that results in the exclusion of any flows from the calculation.
- (2) <u>Baseload Waste Gas Flow Rates</u>. The Applicable Defendant must use flow rate data for the one-year period of time starting 180 Days before the submission of the Initial WGMP to determine the Baseload Waste Gas Flow Rate, in scfd, to each Covered Flare except for the Vinyls Flare.
- (3) <u>Identification of Constituent Gases</u>. The Applicable Defendant must use best efforts to identify the constituent gases within each Covered Flare's (except for the Vinyls Flare) Waste Gas and the

percentage contribution of each such constituent during baseload conditions. The Applicable Defendant may use either an engineering evaluation or measurements from monitoring or a combination to determine Waste Gas constituents.

(4) <u>Waste Gas Mapping</u>. Using instrumentation, isotopic tracing, and/or engineering calculations, the Applicable Defendant must identify and estimate the flow from each process unit header (sometimes referred to as a "subheader") to the main header(s) servicing each Covered Flare except for the Vinyls Flare. Using that information and all other available information, the Applicable Defendant must complete an identification of each Waste Gas tie-in to the main header(s) and process unit header(s), as applicable, consistent with Appendix 1.6. Temporary connections to the main header(s) of a Covered Flare and/or process unit header(s) are not required to be included in the mapping.

b. <u>Reductions Previously Realized</u>. The Applicable Defendant must describe the equipment, processes and procedures installed or implemented to reduce flaring between the Effective Date and 60 Days prior to the submission of the Initial WGMP. The description must specify the date of installation or implementation and the amount of reductions (in both flow and mass of pollutants) realized.

c. <u>Planned Reductions</u>. The Applicable Defendant must describe any equipment, processes, or procedures that the Applicable Defendant plans to install or implement to eliminate or reduce flaring from the Covered Flares except for the Vinyls Flare. The description must specify a schedule for expeditiously installing and commencing operation of any equipment, process, or procedures the Applicable Defendant plans to install, add, or implement to minimize flaring. The description must also include a projection of the amount of reductions to be realized. After submitting the Initial WGMP, the Applicable Defendant may revise the installation and operation dates provided the Applicable Defendant: i) does so in writing to the EPA before the First Updated Waste Gas Minimization Plan is due, and ii) provides a reasonable explanation for the revised date. In formulating this plan, the Applicable

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Defendant must review and evaluate the results of the Waste Gas mapping required by sub-Paragraph 30.a(4). Any schedule revision accompanied by a reasonable explanation and made before the First Updated Waste Gas Minimization Plan is due shall be considered part of the Initial Waste Gas Minimization Plan.

d. <u>Taking a Covered Flare Permanently Out of Service and Converting a Flare</u> to an Unassisted Flare. The Applicable Defendant must identify any Covered Flare it intends to permanently take out of service or to convert to an Unassisted Flare, including the date for completing the decommissioning or the conversion to an Unassisted Flare. Taking a Covered Flare "permanently out of service" means physically removing piping in the Flare header or physically isolating the piping with a welded blind so as to eliminate direct piping to the Covered Flare and surrendering any permit to operate such Covered Flare. Converting a Covered Flare to an Unassisted Flare means physically removing piping used to provide Assist Steam or Assist Air or physically isolating such piping with a welded blind so as to eliminate direct piping of Assist Steam or Assist Air to the Covered Flare.

e. <u>Prevention Measures</u>. The Applicable Defendant must describe and evaluate all Prevention Measures, including a schedule for expeditiously implementing and commencing operation of all Prevention Measures, that will address the following:

- (1) Flaring that has occurred or may reasonably be expected to occur during planned maintenance activities, including startup and shutdown. The evaluation must include a review of flaring that has occurred during these activities in the three years prior to the applicable compliance date set forth in Appendix 1.1 and must consider the feasibility of performing these activities without flaring; and
- (2) Flaring caused by the recurrent failure of air pollution control equipment, process equipment, or a process to operate in a normal or usual manner. The evaluation must consider the adequacy of existing maintenance schedules and protocols for such equipment.

A failure is "recurrent" if it occurs more than twice during any five-year period as a result of the same cause.

31. <u>First Updated Waste Gas Minimization Plan</u>. By no later than the applicable compliance dates set forth in Appendix 1.1, except for the Vinyls Flare, the Applicable Defendant must submit to the EPA a First Updated WGMP that updates, if and as necessary based on any changes, the information, diagrams, and drawings required in the Flare Data and Monitoring Systems and Protocol Report required by Paragraph 18 and the information required in sub-Paragraphs 30.a–e for the 12-month period after the period covered by the Initial Waste Gas Minimization Plans. The First Updated WGMP must also include:

a. <u>Updated Waste Gas Mapping</u>. The Applicable Defendant must update the Waste Gas mapping from each process unit header (sometimes referred to as a "subheader") to the main header(s) servicing each Covered Flare, except for the Vinyls Flare, if more information relevant to Waste Gas Mapping becomes available. The Applicable Defendant must use this updated mapping to plan any reductions in Waste Gas flow;

b. <u>Reductions Based on Root Cause Analysis</u>. The Applicable Defendant must review all of the root cause analysis reports submitted under Paragraph 35 to determine if reductions in addition to the reductions achieved through any required corrective action under Paragraph 36 can be realized; and

c. <u>Revised Schedule</u>. To the extent the Applicable Defendant proposes to extend any schedule set forth in the Initial WGMP or subsequent WGMP, the Applicable Defendant may do so only with good cause, the determination of which is subject to Section XI (Dispute Resolution).

32. Subsequent Updates to Waste Gas Minimization Plan. On an annual basis after submitting the First Updated WGMP and continuing until the Applicable Defendant has achieved compliance with all provisions of this Section V (Compliance Requirements) applicable to its Covered Plant other than the requirements of this Paragraph, the Applicable Defendant must submit an updated WGMP for a Covered Plant as part of the Semi-Annual Report required by Section VIII (Reporting Requirements) if, at that Covered Plant, the Applicable Defendant: a) commences operation of a Newly Installed Covered Flare or permanently removes a Covered Flare from service, b) connects a new Waste Gas stream to a Covered Flare, c) intentionally modifies the Baseload Waste Gas Flow Rate to a Covered Flare, d) installs additional FGRS, or e) changes the design of a Covered Flare (including, but not limited to, converting a Covered Flare to an Unassisted Flare). Each update must update, if and as necessary, the information required in sub-Paragraphs 30.a.(1) - 30.a.(3) and sub-Paragraphs 31.a and 31.b, as applicable. To the extent the Applicable Defendant proposes to extend any schedule set forth in a previous WGMP (excepting schedule changes made to the Initial Waste Gas Minimization Plan prior to the First Updated Waste Gas Minimization Plan as described in Paragraph 30.c) for any of the Covered Plants, the Applicable Defendant may do so only with good cause, the determination of which is subject to Section XI (Dispute Resolution).

33. <u>Waste Gas Minimization Plan: Implementation</u>. By no later than the dates specified in a WGMP, the Applicable Defendant must implement the actions described therein.

34. <u>Enforceability of WGMPs</u>. The terms of each WGMP (including Initial, First Updated, and Subsequently Updated WGMPs) submitted under this Consent Decree are specifically enforceable.

## 35. Root Cause Analysis for Reportable Flaring Incidents.

a. <u>Internal Reporting and Recordkeeping</u>. Commencing no later than the

applicable compliance dates set forth in Appendix 1.1, except as provided in Paragraph 37, the Applicable Defendant 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 Applicable Defendant 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;
- (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;
- (3) The steps, if any, the Applicable Defendant 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;
- (4) A detailed analysis that sets forth the root cause and all contributing causes of the Reportable Flaring Incident, to the extent determinable;
- (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 eliminated based on cost. Possible design, operation, and maintenance changes must be evaluated. If the Applicable Defendant concludes that corrective action(s) is (are) required under Paragraph 36, 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 Applicable Defendant concludes that corrective action is not required under Paragraph 36, the report must explain the basis for that conclusion; and

- (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 this Paragraph will be completed.
- b. Submitting Summary of Internal Flaring Incident Reports. In each

Semi-Annual Report due under Section VIII (Reporting Requirements), the Applicable Defendant 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:

- (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 Applicable Defendant in the number of Reportable Flaring Incidents, the root causes, or the types of corrective action(s).

36. <u>Corrective Action Implementation</u>. 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.

37. In lieu of preparing a new report under Paragraph 35 and analyzing and implementing corrective action under Paragraph 36 for a Reportable Flaring Incident that has as

its root cause the same root cause as a previously reported Reportable Flaring Incident, the Applicable Defendant may cross-reference and use the prior report and analysis when preparing the report required by Paragraph 35.

#### D. Flare Gas Recovery Systems for Covered Plants

38. <u>FGRS Capacity and Start Up</u>. The Applicable Defendant must complete installation and commence operation of the respective FGRS(s) for the Covered Flares as described in Appendix 1.8 and by the deadlines set forth in Appendix 1.1.

#### 39. FGRS: Operation and Availability Requirements.

a. <u>General</u>. No later than the applicable compliance dates set forth in Appendix 1.1, the Applicable Defendant must operate each FGRS in a manner to minimize Waste Gas to the applicable Covered Flare(s) while ensuring safe chemical plant operations. The Applicable Defendant 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 Paragraph 39 will require the Applicable Defendant to recover any Waste Gas stream that is not a Potentially Recoverable Gas stream.

b. <u>Requirements Related to Hydrogen Rich Gas Mixture Flows to the Lake</u>

<u>Charles Petro 2 Unit</u>. The Lake Charles Petro 2 Unit generates a hydrogen rich gas mixture which is used internally, sent to an offsite third party, and/or will be sent to the Petro 2 Flare via piping that bypasses the FGRS as described in Appendix 1.9. In limited circumstances involving the shutdown, startup or Malfunction and isolation of the methanator, the hydrogen rich gas mixture can also be sent to the Petro 2 Flare header prior to recovery by the FGRS. By no later than the Lake Charles Petro 2 Unit's FGRS operational date as set forth in Appendix 1.1, the Applicable Defendant must not route any of the hydrogen rich gas mixture to the Petro 2 flare

header prior to recovery by the FGRS, except for periods when the methanator is isolated due to startup, shutdown or Malfunction and the hydrogen rich gas mixture must be routed through the Petro 2 Flare header prior to recovery by the FGRS. The hours in which the hydrogen rich gas mixture is routed through the Petro 2 Flare header prior to recovery by the FGRS due to methanator startup, shutdown or Malfunction and isolation shall be no more than 60 hours in any calendar year.

c. <u>FGRS Compressor Availability</u>. By no later than the applicable compliance dates set forth in Appendix 1.1, each FGRS must be Available for Operation or in operation for 98% of the time, as calculated according to Paragraph 39.g (Averaging Periods). The periods provided for in Paragraphs 39.d (Maintenance of FGRS) and 39.e (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 this Paragraph.

d. <u>Maintenance of FGRS</u>. 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 Applicable Defendant 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 Applicable Defendant must use best efforts to minimize the generation of Waste Gas during such periods.

e. <u>Shut Down</u>. 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 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 Applicable Defendant 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). In the reports due under Section VIII (Reporting Requirements) of this Decree, the Applicable Defendant must describe each outage that occurred under the conditions in this sub-Paragraph, including the date, duration, cause(s), corrective action, and the status of the implementation of corrective action.

f. <u>Alternative FGRS</u>. The Applicable Defendant may submit a request to the EPA for approval of an alternative FGRS that is not explicitly referenced in Appendix 1.8 or in this Section in order to ensure compliance with availability requirements, provided that the proposed alternative FGRS provides equivalent or better Waste Gas recovery capacity than the FGRS required by Appendix 1.8.

g. <u>Averaging Periods</u>. 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 Paragraph 39.c, 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.

## E. <u>Flare Combustion Efficiency</u>

40. <u>General Emission Standards Applicable to Covered Flares</u>. By no later than the applicable compliance dates set forth in Appendix 1.1, the Applicable Defendant must comply with the requirements set forth in this Paragraph at each Covered Flare at all times when that Covered Flare, including a Portable Flare, is In Operation.

a. <u>Operation during Emissions Venting</u>. The Applicable Defendant must operate each Covered Flare at all times when emissions may be vented to it.

b. <u>No Visible Emissions</u>. The Applicable Defendant must specify the smokeless design capacity of each 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. For purposes of this Consent Decree, Visible Emissions may be determined by a person trained pursuant to Method 22 or documented by a video camera. The Applicable Defendant must monitor for Visible Emissions from each Covered Flare while it is In Operation as specified below in sub-Paragraphs 40.b(1) or (2). An initial Visible Emissions demonstration must be conducted using an observation period of 2 hours using Method 22 at 40 C.F.R. Part 60, Appendix A–7. A previously conducted Method 22 Visible Emissions observation is sufficient to meet the initial Visible Emissions demonstration requirement if the most recent Method 22 Visible Emissions observation was conducted within three years prior to the Effective Date. Subsequent Visible Emissions observations must be conducted using either method listed in sub-Paragraphs 40.b(1) or (2). The Applicable Defendant 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 C.F.R. § 63.655(g)(11)(ii).

- (1) At least once per day, the Applicable Defendant must conduct Visible Emissions observations using an observation period of 5 minutes using Method 22 at 40 C.F.R. Part 60, Appendix A–7. If at any time a Defendant sees Visible Emissions, even if the minimum required daily Visible Emissions monitoring has already been performed, the Applicable Defendant must immediately begin an observation period of 5 minutes using Method 22 at 40 C.F.R. 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 C.F.R. Part 60, Appendix A–7 must be extended to 2 hours or until 5 minutes of Visible Emissions are observed.
- (2) Alternatively, the Applicable Defendant 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 Applicable Defendant 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.
- c. <u>Pilot Flame Presence</u>. The Applicable Defendant must operate each

Covered Flare with a pilot flame present at all times. The Applicable Defendant 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.

d. <u>Monitoring According to Applicable Provisions</u>. The Applicable Defendant must comply with all applicable Subparts of 40 C.F.R. Parts 60, 61, or 63 that state how a particular Covered Flare must be monitored.

e. <u>Good Air Pollution Control Practices</u>. At all times, including during periods of startup, shutdown, and/or Malfunction, the Applicable Defendant must implement good air pollution control practices to minimize emissions from each Covered Flare; provided however that the Applicable Defendant is not in violation of this requirement for any practice that this Decree requires the Applicable Defendant to implement after the Effective Date for the period between the Effective Date and the compliance requirements. Nothing in this sub-Paragraph requires the Applicable Defendant to install or maintain Flare monitoring equipment in addition to or different from the equipment required by this Consent Decree

41. <u>Flare Tip Velocity or Vtip</u>. By no later than the applicable compliance dates set forth in Appendix 1.1, the Applicable Defendant must operate each Covered Flare in compliance with either sub-Paragraph 41.a. or 41.b. below, 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.

a. The actual Flare Tip Velocity  $(V_{tip})$  must be less than 60 feet per second. The Applicable Defendant must monitor  $V_{tip}$  using the procedures specified in Appendix 1.2; or

b.  $V_{tip}$  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 11 in Appendix 1.2. The Applicable Defendant must monitor  $V_{tip}$  and gas composition and must determine NHV<sub>vg</sub> using the procedures specified in Appendix 1.2. The Unobstructed Cross Sectional Area of the Flare Tip must be calculated consistent with Appendix 1.3.

42. <u>Revisions to 40 C.F.R. §§ 60.18(b)–(f) and/or 63.11(b)</u>. From the Effective Date until termination of this Consent Decree, if revisions are made to 40 C.F.R. §§ 60.18(b)–(f) and/or 63.11(b) that become final and effective, but inconsistent with any of the requirements in Paragraphs 40.a–d, 41, or 44.a, the Applicable Defendants must comply with the final, effective regulations and any requirements in Paragraphs 40.a–d, 41, or 44.a, that are not inconsistent with these final, effective regulations. As used in this Paragraph, "inconsistent" means that compliance with both provisions is not possible, or the EPA determines by regulation or applicable Alternative Means of Emissions Limitation (AMEL) that compliance with the 270 NHV<sub>cz</sub> requirement can be used in lieu of the 300 NHV<sub>vg</sub> requirement.

43. <u>Operation According to Design</u>. By no later than the applicable dates set forth in Appendix 1.1, the Applicable Defendant must operate and maintain each Covered Flare in accordance with its design and the requirements of this Consent Decree.

44. <u>Net Heating Value Standards</u>. The Applicable Defendant must comply with the following Net Heating Value standards, except as provided in Paragraph 45 (Standard During Instrument Downtime).

a. <u>Net Heating Value of Vent Gas (NHV<sub>vg</sub>)</u>. By no later than the applicable compliance dates set forth in Appendix 1.1 and continuing until the earlier of: (i) termination of this Consent Decree; or (ii) the requirements in 40 C.F.R. §§ 60.18(c)(3)(ii) and 63.11(b)(6)(ii)related to the NHV<sub>vg</sub> are modified (whether in those regulations, in any NESHAP/NSPS regulation, or by applicable AMEL), with the exception of the Vinyls Flare, the Applicable Defendant must operate each Covered Flare with an NHV<sub>vg</sub> of greater than or equal to 300 BTU/scf determined on a 15-minute block period basis when Waste Gas is routed to the Covered

Flare for at least 15 minutes. The Applicable Defendant must monitor and calculate  $NHV_{vg}$  at each Covered Flare in accordance with Appendix 1.2.

b. <u>Net Heating Value of Combustion Zone Gas (NHV<sub>cz</sub>)</u>. By no later than the applicable compliance dates set forth in Appendix 1.1, with the exception of the Vinyls Flare, at any time that a Covered Flare is In Operation, the Applicable Defendant must operate that Flare so as to maintain the NHV<sub>cz</sub> at or above 270 BTU/scf determined on a 15-minute block period basis when Waste Gas is routed to the Covered Flare for at least 15 minutes. The Applicable Defendant must monitor and calculate NHV<sub>cz</sub> at each Covered Flare in accordance with Appendix 1.2.

c. <u>Dilution Operating Limits for Covered Flares with Perimeter Assist Air</u> (NHV<sub>dil</sub>). By no later than the applicable compliance dates set forth in Appendix 1.1, while each Covered Flare that is actively receiving Perimeter Assist Air is In Operation, the Applicable Defendant must maintain the Net Heating Value Dilution Parameter (NHV<sub>dil</sub>) at or above 22 BTU/square foot determined on a 15-minute block period basis when Waste Gas is routed to the Covered Flare for at least 15 minutes. The Applicable Defendant must monitor and calculate NHV<sub>dil</sub> at each Covered Flare that is actively receiving Perimeter Assist Air in accordance with Appendix 1.2.

d. <u>Net Heating Value of Vent Gas (NHV<sub>vg</sub>) for the Vinyls Flare.</u> By no later than the applicable compliance date set forth in Appendix 1.1, the Applicable Defendant must operate the Vinyls Flare with an NHV<sub>vg</sub> of greater than or equal to 200 BTU/scf determined on a 15-minute block period basis when Waste Gas is routed to the Vinyls Flare for at least 15 minutes. The Applicable Defendant must monitor and calculate NHV<sub>vg</sub> at the Vinyls Flare in accordance with Appendix 1.2.

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45. <u>98% Combustion Efficiency</u>. By no later than the applicable compliance dates set forth in Appendix 1.1, the Applicable Defendant must operate each Covered Flare with a minimum of a 98% Combustion Efficiency at all times when Waste Gas is routed to the Covered Flare for at least 15 minutes. To demonstrate continuous compliance with the 98% Combustion Efficiency, the Applicable Defendant must operate each Covered Flare in compliance with the applicable requirements in Paragraph 44 (*i.e.*, 44.b for Steam-Assisted Flares, 44.b and c for Air-Assisted Flares, and 44.d for the Vinyls Flare).

46. <u>Standard During Instrument Downtime</u>. If one or more of the following conditions (collectively referred to as "Instrument Downtime") is present and renders the Applicable Defendant incapable of operating a Covered Flare in accordance with the applicable NHV standards in Paragraph 44, the Applicable Defendant must operate that Covered Flare in accordance with good air pollution control practices so as to minimize emissions and ensure good Combustion Efficiency at that Covered Flare:

a. Malfunction of an instrument needed to meet the requirement(s);

b. Repairs following the Malfunction of an instrument needed to meet the requirement(s);

c. 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

d. Quality Assurance/Quality Control activities on an instrument needed to meet the requirement(s). Instrument Downtime must be calculated in accordance with 40 C.F.R.
 § 60.13(h)(2).

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. Nothing in this Paragraph is intended to prevent an Applicable Defendant from asserting Force Majeure as provided in Section X as the cause of any period of Instrument Downtime.

47. <u>Recordkeeping: Timing and Substance</u>. The Applicable Defendant must comply with the following recordkeeping requirements:

a. By no later than the applicable compliance dates set forth in Appendix 1.1, for each Covered Flare except the Vinyls Flare, the Applicable Defendant must calculate and record each of the following parameters:

- (1) 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 Paragraphs 20, 26 and Step 2 of Appendix 1.2);
- (2) Assist Steam volumetric flow rate (in scfm) (in 15-minute block averages and in accordance with any calculation requirements of Paragraphs 20, 26 and Step 2 of Appendix 1.2);
- (3) Assist Air volumetric flow rate (in scfm) (in 15-minute block averages and in accordance with any calculation requirements of Paragraphs 20, 26 and Step 2 of Appendix 1.2);
- (4) NHV<sub>vg</sub> (in BTU/scf) (in 15-minute block averages in accordance with Step 1 of Appendix 1.2);
- (5) NHV<sub>cz</sub> (in BTU/scf) (in 15-minute block averages in accordance with Step 3 of Appendix 1.2);
- (6) NHV<sub>dil</sub> (in BTU/scf) (in 15-minute block averages in accordance with Step 4 of Appendix 1.2); and

(7) For the Vinyls Flare, the Applicable Defendant shall only calculate and record the  $NHV_{vg}$  (in BTU/scf) (in 15-minute block averages in accordance with Step 1 of Appendix 1.2).

b. <u>Instrument Downtime</u>. By no later than the applicable compliance dates set forth in Appendix 1.1, for each Covered Flare, the Applicable Defendant must record the duration of all periods of Instrument Downtime for each Covered Flare that exceed 5% of the time in a Semi-Annual Period that the Covered Flare is In Operation. The Applicable Defendant 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 Applicable Defendant took.

c. By no later than the applicable compliance dates set forth in Appendix 1.1, the Applicable Defendant must record the dates and times of any periods that the Applicable Defendant deviates from the standards in Paragraph 39.c (FGRS Compressor Availability). For all of the events described in this sub-Paragraph, the Applicable Defendant 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 Applicable Defendant took.

d. By no later than the applicable compliance dates set forth in Appendix 1.1, at any time that the Applicable Defendant deviates from the emissions standards in Paragraphs 44 - 45 at any Covered Flare, the Applicable Defendant 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 Applicable Defendant took.

## F. <u>Fenceline Monitoring Project Requirements</u>

48. The Applicable Defendants must maintain and operate at the Calvert City Plant and the Lake Charles Petro Plant a Fenceline Monitoring Mitigation Project in accordance with Appendix 2.1.

#### VI. PERMITS

49. <u>Permits Needed for Compliance Obligations</u>. The Applicable Defendants must obtain all required federal, state, and local permits necessary for performing any compliance obligation under this Consent Decree including, without limitation, permits for the construction of pollution control technology and the installation of equipment at each Covered Plant. The Applicable Defendant may seek relief under the provisions of Section X (Force Majeure) for any delay in performing any such obligation resulting from a failure to obtain, or a delay in obtaining, any permit or approval required to fulfill such obligation, provided that the Applicable Defendant has submitted timely and complete applications and has taken all other actions necessary to obtain all such permits or approvals.

50. <u>Permits to Ensure Survival of Consent Decree Limits and Standards after</u> Termination of Consent Decree.

a. <u>For the Calvert City Plant</u>. By no later than one year after the Effective Date or one year after the applicable compliance dates set forth in Appendix 1.1, whichever is later, the Applicable Defendant must complete and submit to the KDEP's consolidated preconstruction and Title V CAA permitting program appropriate applications to incorporate the requirements listed in sub-Paragraph 50.c, as applicable, into a federally enforceable Major/Title V permit for the Calvert City Plant, such that the requirements listed in sub-Paragraph 50.c: (i) become and remain "applicable requirements" as that term is defined in 40 C.F.R. § 70.2; and (ii) survive the termination of this Consent Decree.

b. <u>For the Lake Charles Plants</u>. By no later than one year after the Effective Date or one year after the applicable compliance dates set forth in Appendix 1.1 for the compliance requirements listed in Paragraph 50.c, whichever is later, the Applicable Defendant must complete and submit to the LDEQ's consolidated preconstruction and Title V CAA permitting program appropriate applications to incorporate the requirements listed in sub-Paragraph 50.c, as applicable, into a federally enforceable Title V permit for the Lake Charles Plants, such that the requirements listed in sub-Paragraph 50.c: (i) become and remain "applicable requirements" as that term is defined in 40 C.F.R. § 70.2; and (ii) survive the termination of this Consent Decree.

c. The following requirements of the Consent Decree shall survive termination: Paragraphs 20–24 (Instrumentation and Monitoring Systems), Paragraphs 26–28 (Specifications, Calibration, Quality Control, and Maintenance / Recording and Averaging Times / Operation), Paragraph 29 (Determining whether Flare has Potentially Recoverable Gas), Paragraph 39 (FGRS: Operation and Availability Requirements), Paragraphs 40–41 (Flaring Efficiency Standards), Paragraph 43 (Operation According to Design), Paragraph 44.b-c (NHV<sub>cz</sub> and NHV<sub>dil</sub> standards), Paragraph 44.d (NHV<sub>vg</sub> standard for the Vinyls Flare), Paragraph 45 (98% CE), Paragraph 45 (Standard During Instrument Downtime), Paragraph 47 (Recordkeeping), and Paragraph 48/Appendix 2.1 (Fenceline Monitoring Project). Nothing in this Paragraph shall prohibit an Applicable Defendant from seeking to incorporate Paragraph 25 (Optional Equipment) in a permit that survives termination of this Decree.

51. The permit applications and process of incorporating the requirements of this Consent Decree into Title V permits shall be in accordance with applicable state or local Title V rules, including applicable administrative amendment provisions of such rules. The Parties agree

that the incorporation may be by "amendment" under 40 C.F.R. § 70.7(d) and analogous state Title V rules, where allowed by state law.

52. Following submission of the complete permit applications, the Applicable Defendants must cooperate with the KDEP and the LDEQ by promptly submitting all available information that either the KDEP or the LDEQ seeks following its receipt of the permit materials.

## VII. <u>EMISSION CREDIT GENERATION</u>

# 53. <u>Prohibitions</u>.

a. <u>Definition</u>. "CD Emissions Reductions" means any NOx, VOC, PM,

PM<sub>TOTAL</sub>, PM<sub>10</sub>, PM<sub>2.5</sub>, HAP, or CO emissions reductions that result from any projects conducted or controls used to comply with this Consent Decree.

b. An Applicable Defendant must not use, apply for, obtain, trade, sell,

generate or use CD Emissions Reductions:

- (1) As netting reductions,
- (2) As emissions offsets, or
- (3) For the purpose of determining whether a project would result in a significant emissions increase or significant net emissions increase in any major or minor NSR permit or permit proceeding, or for the purpose of obtaining offsets in any non-attainment NSR permit or permit proceeding. Baseline actual emissions during any 24-month period selected by the Applicable Defendant must be adjusted downward to exclude any portion of the baseline emissions that would have been eliminated as CD Emissions Reductions (including the Waste Gas Minimization requirements of Section V.C) had the Applicable Defendants been complying with this Consent Decree during that 24-month period.
- 54. <u>Outside the Scope of the Prohibition</u>. Nothing in this Section is intended to

prohibit the Applicable Defendant from using or generating:

a. Emission reductions, netting credits, or emission offsets from process units at a Covered Plant that are not subject to an emission limitation pursuant to this Consent Decree;

b. CD Emissions Reductions for a Covered Plant's compliance with any rules or regulations designed to address regional haze or the non-attainment status of any area (excluding NSR rules, but including, for example, Reasonably Available Control Technology rules) that apply to a Covered Plant; provided, however, that the Applicable Defendant must not trade or sell any CD Emissions Reductions; and

c. CD Emission Reductions for purposes of the KDEP or the LDEQ's toxics modeling programs.

#### VIII. REPORTING REQUIREMENTS

55. <u>Semi-Annual Reports</u>. By no later than February 28th and August 31st of each year after the Effective Date, until termination of this Decree pursuant to Section XX, the Applicable Defendant must submit a "Semi-Annual Report" to the EPA, to the KDEP for the Calvert City Plant, and to the LDEQ for the Lake Charles Plants, except that the first Semi-Annual Report shall be due 60 Days after the first full half year after the Effective Date of this 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):

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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;

b. 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;

c. A description of the status of any permit applications, including a summary of all permitting activity, pertaining to compliance with this Consent Decree;

d. A copy of any reports that were submitted only to the KDEP or the LDEQ and that pertain to compliance with this Consent Decree;

e. Any WGMPs or updated WGMPs for the Covered Plants as required by

Paragraphs 30-32;

f. Any summary of internal flaring incident reports as required by Paragraphs

35-36;

g. A summary of the following, per Covered Flare per Semi-Annual Period (hours shall be rounded to the nearest tenth):

- The total number of hours of Instrument Downtime claimed pursuant to Paragraph 45, 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;
- (2) If the total number of hours of Instrument Downtime claimed pursuant to Paragraph 45 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;

- (3) 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 requirements of Paragraphs 43-44 were not applicable because the only gas or gases being vented were Pilot Gas or Purge Gas;
- (4) <u>Exceedances of Emissions Standards</u>.
  - (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 Paragraphs 44-45; 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 Paragraph 45, the report shall so note;
  - (b) If the exceedance of the emissions standards in Paragraphs 44-45 was not due to one of the exceptions in Paragraph 45 (Standard During Instrument Downtime), or if the exceedance was due to one or more of the exceptions in Paragraph 45 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;
  - (5) <u>Compliance with Compressor Availability Requirements</u>. Sufficient information to document compliance with the FGRS Compressor availability requirements of sub-Paragraph 39.c. For any period of non-compliance, the Applicable Defendant must identify the date, cause, and corrective action taken; and
  - (6) Compliance with the Limitation on Hours During Which the Hydrogen Rich Gas Mixture is Routed Through the Petro 2 Flare Header Prior To Recovery by the FGRS. Sufficient information to document compliance with the limitation on the hydrogen rich gas mixture being routed through the Petro 2 Flare header prior to recovery by the FGRS, as set forth in Paragraph 39.b. The Applicable Defendant must state the number of minutes per calendar year that the hydrogen rich gas mixture was routed through the Petro 2 Flare header prior to recovery by the FGRS,

the date(s), start and stop times of gas flow, the volume of gas involved, and the cause for routing the hydrogen rich gas mixture through the Petro 2 Flare header prior to recovery by the FGRS. For any period of non-compliance (exceedance of the number of hours allowed), the Applicable Defendant must identify the date, cause, and corrective action taken.

h. Any additional matters that the Applicable Defendant believes

should be brought to the attention of the EPA, the KDEP, or the LDEQ.

56. <u>Fenceline Monitoring Project Reports</u>. The Applicable Defendant must submit

Fenceline Monitoring Project Reports for the Calvert City Plant and the Lake Charles Petro Plant

as part of each Semi-Annual Report. The Fenceline Monitoring Project Reports must contain the

following information:

a. 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

C 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 Appendix 2.1, Section 3.g), and the 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

b. A detailed description of the findings of any root cause analysis and corrective action(s) undertaken pursuant to Paragraph 3.g of Appendix 2.1, 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 Applicable

Defendant may submit and discuss additional data collected by it or by third parties in the

reports required pursuant to Paragraph 3.h of Appendix 2.1 and/or this Paragraph. If the

Applicable Defendant concludes that an exceedance of the Action Level described in Paragraph

3.f of Appendix 2.1 of this Consent Decree was caused by an offsite source(s), that conclusion

does not relieve the Applicable Defendant of its obligation to perform the Root Cause investigation described in Paragraph 3.g of Appendix 2.1.

57. <u>Annual Emissions Data</u>. In the Semi-Annual report that is submitted by February 28 of each year, the Applicable Defendant must provide, for each Covered Flare, for the prior calendar year, the amount of emissions of the following compounds (in tons per year): VOCs, HAPs, CO<sub>2</sub>, methane, and ethane.

58. Each Semi-Annual report must also include a description of any non-compliance with the requirements of this Consent Decree not otherwise identified in Paragraph 55 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 Applicable Defendant must so state in the report. The Applicable Defendant 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 Applicable Defendant becomes aware of the cause of the violation. Nothing in this Paragraph or the following Paragraph relieves the Applicable Defendant of its obligation to provide the notice required by Section X (Force Majeure).

59. All reports required under this Section must be submitted to the persons and in the manner designated in Section XVI (Notices).

60. Each report submitted by an Applicable Defendant under this Section must be signed by an official of the Covered Plant and include the following certification:

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.

61. The reporting requirements of this Consent Decree do not relieve the Applicable Defendant 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.

62. Any information provided pursuant to this Consent Decree may be used by the United States, the KDEP, and the LDEQ in any proceeding to enforce the provisions of this Consent Decree and as otherwise permitted by law.

### IX. STIPULATED PENALTIES

63. Except where the stipulated penalties reference "Defendants," in which case all Defendants are jointly and severally liable for stipulated penalties, an Applicable Defendant is liable to the United States, to the KDEP for the Calvert City Plant, and to the LDEQ for the Lake Charles Plants, for violations of this Consent Decree as specified below, unless excused under Section X (Force Majeure). A violation includes failing to perform any obligation required by the terms of this Decree, including any work plan or schedule approved under this Decree, according to all applicable requirements of this Decree and within the specified time schedules established by or approved under this Decree.

64. <u>Late Payment of Civil Penalty</u>. If the Defendants fail to pay the civil penalty required to be paid under Section IV (Civil Penalty) when due, the Defendants must pay a stipulated penalty of \$2,500 per Day for each Day that the payment is late.

65. <u>Failure to Meet Compliance Requirements</u>. For the following violations of Section V (Compliance Requirements):

| Violation   | Stipulated Penalty  |   |
|---|---|---|
| 65.a. <u>Violations of Paragraph 18.</u> Failure to<br>timely submit a Flare Data and Monitoring<br>Systems and Protocol Report in accordance with<br>the requirements of Paragraph 18.   | Period of Delay or<br><u>Noncompliance</u><br>Days 1–30<br>Days 31–60<br>Days 61 and later  | Penalty per Day per<br><u>Violation</u><br>\$300<br>\$400<br>\$500  |
| 65.b. <u>Violations of Paragraph 19-24</u> . Failure to<br>install the equipment and monitoring systems in<br>accordance with Paragraphs 19–24 by the<br>compliance date and to maintain them in<br>accordance with the respective, applicable<br>technical specifications in those Paragraphs and<br>Paragraphs 26–28 (except for the QA/QC<br>requirements referenced in sub-Paragraph 26.a,<br>which are covered in sub-Paragraph 65.c below).   | Period of Delay or<br>Noncompliance,<br>per monitoring system/<br>instrument<br><u>control instrument</u><br>Days 1–30<br>Days 31–60<br>Days 61 and later | Penalty per Day<br>per monitoring<br><u>system/control</u><br>\$750<br>\$1,250<br>\$2,000 or an amount<br>equal to 1.2 times<br>the economic<br>benefit of delayed<br>compliance,<br>whichever is greater |
| 65.c. <u>Violations of the QA/QC requirements in</u><br><u>Paragraphs 26.a</u> . Failure to perform the QA/QC<br>requirements in accordance with Paragraph 26.a.  | <u>Violation of a</u> :<br>Daily requirement<br>Quarterly requirement<br>Annual requirement   | Penalty per Violation<br>\$100<br>\$200 per Day late<br>\$500 per Day late  |
| 65.d. <u>Violations of Paragraph 28</u> . Except for 5% of the time per Semi-Annual Period, failure to operate each monitoring system required by Paragraphs 20-22 and 24 in accordance with Paragraph 28; provided however, that the Applicable Defendants will not be liable for a stipulated penalty for violation of Paragraph 28 if, during the period of downtime, the only gas(es) being sent to the Covered Flare in question is/are Purge Gas and/or Pilot Gas. For any monitoring system that serves a dual purpose, this stipulated penalty applies per instrument only. | Per monitoring system/<br>control instrument,<br>number of hours per<br><u>Semi-Annual Period</u><br>0.25–100.0<br>100.25–200.0<br>Over 200.0             | Penalty per hour<br>per monitoring system/<br><u>control instrument</u><br>\$250<br>\$500<br>\$1,000  |

| 65.e. <u>Violations of Paragraph 30, 31, or 32.</u><br>Failure to timely submit a WGMP in accordance<br>with the requirements of the applicable<br>Paragraph.  | Period of Delay or<br><u>Noncompliance</u><br>Days 1–30<br>Days 31–60<br>Days 61 and later     | Penalty per Day per<br>Violation<br>\$500<br>\$750<br>\$1,000               |
|--|--|---|
| 65.f. <u>Violations of Paragraph 35</u> . Failure to<br>timely develop a root cause flaring investigation<br>report in accordance with the requirements in<br>sub-Paragraph 35.a; or failure to keep it as an<br>internal record; or failure to timely submit a<br>summary of the flaring incident reports in<br>accordance with the requirements in sub-<br>Paragraph 35.b. | Period of Delay or<br><u>Noncompliance</u><br>Days 1 – 30<br>Days 31 – 60<br>Days 61 and later | Penalty per Day per <u>Violation</u><br>\$800<br>\$1,600<br>\$3,000         |
| 65.g. <u>Violations of Paragraph 36</u> . Failure to complete any corrective action in accordance with the requirements of Paragraph 36.   | Period of Delay or<br><u>Noncompliance</u><br>Days 1 – 30<br>Days 31 – 60<br>Days 61 and later | Penalty per Day per<br><u>Violation</u><br>\$ 1,000<br>\$ 2,000<br>\$ 5,000 |

|  | Period of Delay or<br>Noncompliance,<br><u>per FGRS</u>   | Penalty per Day per<br>FGRS  |
|--|---|--|
| 65.h. <u>Violations of Paragraph 38 and Appendix</u><br><u>1.1</u> . For failing to timely install any FGRS listed<br>in Appendix 1.8 in accordance with the<br>requirements of Paragraph 38 and Appendix 1.1.   | Days 1–30<br>Days 31–60<br>Days 61 and later  | <ul> <li>\$ 1,250</li> <li>\$ 3,000</li> <li>\$ 5,000 or an amount equal to 1.2 times the economic benefit of delayed compliance, whichever is greater</li> </ul>        |
| 65.i. <u>Violations of Paragraph 39.b</u> . For failing to<br>comply with the 60 hour per calendar year limit<br>that the hydrogen rich gas mixture is routed to the<br>Petro 2 Flare header prior to recovery by the<br>FGRS in accordance with Paragraph 39.b. | Hours over 60<br>Hours 1–100<br>Hours 101–200<br>Hours over 200<br>For purposes of calculating<br>noncompliance, all minute<br>added together to determin   | Penalty per hour<br>\$100<br>\$200<br>\$300<br>g the number of hours of<br>es of violation shall be<br>he the total.   |
| 65.j. <u>Violations of Paragraph 39.c</u> . For each failure to have the FGRS Compressor Available for Operation in accordance with Paragraph 39.c.  | Per FGRS, \$750 per hour<br>the allowed percentage in<br>period that a Compressor<br>for Operation is not Availa<br>provided however, that sti<br>apply for any hour in whic<br>unavailability did not resu | or fraction thereof over<br>a rolling 8,760-hour<br>required to be Available<br>able for Operation;<br>pulated penalties will not<br>ch a Compressor's<br>lt in flaring. |

| 65.k. <u>Violations of Paragraphs 44.b, 44.d, and</u><br><u>45</u> . For each Covered Flare, each failure to<br>operate a Covered Flare in accordance with the<br>Net Heating Value of Vent Gas (for the Vinyls<br>Flare only) in Paragraph 44.d, the Net Heating<br>Value of Combustion Zone Gas in Paragraph<br>44.b, or the Standard During Instrument<br>Downtime in Paragraph 45. | On a per Covered Flare<br>Basis, Hours per<br>Semi-Annual<br>Period in Noncompliance  | Penalty per Hour,<br>per Covered Flare |
|--|---|--|
|  | Hours 0.25–100.0<br>Hours 100.25–200.0<br>Hours over 200.0  | \$50<br>\$100<br>\$300                 |
|  | For purposes of calculating the number of hours of noncompliance with the $NHV_{vg}$ or $NHV_{cz}$ standard, all 15-minute periods of violation shall be added together to determine the total. |  |
| 65.1. <u>Violations of Paragraph 47</u> . Failure to record any information required to be recorded pursuant to Paragraph 47.  | \$100 per Day   |  |
| 65.m. <u>Violations of Paragraph 48 (Fenceline</u><br><u>Monitoring Project Requirements)</u> . For each   | Period of Delay or<br>Noncompliance   | Penalty per Day                        |
| failure to operate the Fenceline Monitoring<br>System in accordance with any requirement of<br>Paragraph 48 or Appendix 2.1.   | Days 1–30<br>Days 31–60<br>Days 61 and later  | \$500<br>\$1,500<br>\$3,000            |

# 66. <u>Failure to Meet Reporting Requirements</u>. For each failure to submit a Semi-

Annual Report in accordance with the requirements of Section VIII:

| Period of D<br>per Semi-A | Delay or Noncompliance | Penalty per Day<br>per Semi-Annual Report |
|---------------------------|------------------------|---|
| Days                      | 1–30                   | \$300                                     |
| Days                      | 31–60                  | \$1,000                                   |
| Days                      | 61 and later           | \$2,000                                   |

# 67. <u>Incorporation of Consent Decree Requirements into Federally Enforceable</u>

<u>Permits</u>. For each failure to timely submit an application or site-specific SIP revision request to incorporate Consent Decree requirements required by Paragraph 50 to the KDEP or the LDEQ:

| Period of | Delay or Non-Compliance | Penalty per Violation per Day |
|-----------|-------------------------|-------------------------------|
| Days      | 1–30                    | \$500                         |
| Days | 31–60        | \$1,500 |
|------|--------------|---------|
| Day  | 61 and later | \$3,000 |

68. Stipulated penalties under this Section begin to accrue on the Day after performance is due or on the Day a violation occurs, whichever is applicable, and, except as provided in Paragraph 71, will continue to accrue until performance is satisfactorily completed or until the violation ceases. Stipulated penalties will accrue simultaneously for separate violations of this Consent Decree.

69. The United States, the KDEP (for violations arising from the Calvert City Plant), or the LDEQ (for violations arising from the Lake Charles Plants), or both the United States and the KDEP or the LDEQ, may seek stipulated penalties under this Section by sending a joint written demand to the Applicable Defendant, or by either sovereign sending a written demand to the Applicable Defendant, or by either sovereign sending a written demand to the Applicable Defendant, or by either sovereign sending a written demand to the Applicable Defendant, or by either sovereign sending a written demand to the Applicable Defendant, or by either sovereign sending a written demand to the Applicable Defendant, with a copy simultaneously sent to the other Plaintiff. Either sovereign may waive stipulated penalties or reduce the amount of stipulated penalties it seeks, in the unreviewable exercise of its discretion and in accordance with this Paragraph.

70. The Applicable Defendant must pay stipulated penalties to the United States, to the KDEP for violations arising from the Calvert City Plant, and to the LDEQ for violations arising from the Lake Charles Plants, within 60 Days of receiving a written demand unless the demand is disputed through compliance with the requirements of the Dispute Resolution provisions in Section XI of this Consent Decree. The KDEP may only demand stipulated penalties arising from violations at the Calvert City Plant. The LDEQ may only demand stipulated penalties arising from violations at the Calvert City Plant. The LDEQ may only demand stipulated penalties arising from violations at the Calvert City Plant. For stipulated penalties arising from violations at the Calvert City Plant, the Applicable Defendant must pay 50 percent of the total stipulated penalty amount due to the United States and 50 percent to the KDEP. For stipulated penalties arising from violations at the Lake Charles Plants, the Applicable Defendant

must pay 50 percent of the total stipulated penalty amount due to the United States and 50 percent to the LDEQ. Where only one sovereign demands stipulated penalties for violations arising at any of the Covered Plants subject to this Consent Decree, and the other sovereign does not join in the demand within 30 Days of receiving the demand, or timely joins in the demand but subsequently elects to waive or reduce some or all stipulated penalties for that violation, the Applicable Defendant must pay the full stipulated penalty due for the violation to the sovereign making the demand less any amount paid to the other sovereign.

71. By no later than 60 Days after receiving a demand for stipulated penalties, the Applicable Defendant may dispute liability for any or all stipulated penalties demanded by invoking the dispute resolution procedures of Section XI of this Decree (Dispute Resolution). In the event of a dispute over stipulated penalties, stipulated penalties shall not accrue commencing on the later of either: (i) the date that, during dispute resolution under Section XI, the Plaintiff and the Applicable Defendant agree upon; or (ii) the date that the Applicable Defendant files a motion with the Court under Paragraph 85; provided however, that in order for stipulated penalties to cease accruing pursuant to either (i) or (ii), the Applicable Defendant must place the disputed amount in an interest-bearing commercial escrow account, the administrative costs of which are to be borne by the Applicable Defendant, and are not subject to deduction from any amount(s) owed to the United States, the KDEP, or the LDEQ. The interest rate must be determined in accordance with 28 U.S.C. § 1961. If the dispute is resolved in the Applicable Defendant's favor, the escrowed amount plus accrued interest will be returned to the Applicable Defendant; otherwise, the United States, the KDEP for the Calvert City Plant, and the LDEQ for the Lake Charles Plants will be entitled to the amount determined by the Court to be due, plus interest that has accrued on such amount in the escrow account.

72. The Applicable Defendant must pay stipulated penalties owing to the United States in the manner set forth and with the confirmation notices required by Paragraph 14, except that the transmittal letter must state that the payment is for stipulated penalties and must state for which violation(s) the penalties are being paid. The Applicable Defendant must pay stipulated penalties owing to the KDEP and the LDEQ in the manner set forth and with the confirmation notices required by Paragraph 17, except that the transmittal letter must state that the payment is for stipulated penalties and must state for which violation(s) the penalties are being paid.

73. If the Applicable Defendant fails to pay stipulated penalties according to the terms of this Consent Decree, the Applicable Defendant is liable for interest on such penalties, as provided for in 28 U.S.C. § 1961, accruing as of the date payment became due. Nothing in this Paragraph must be construed to limit the United States, the KDEP, or the LDEQ from seeking any remedy otherwise provided by law for the Applicable Defendant's failure to pay any stipulated penalties.

74. The payment of penalties and interest, if any, do not alter in any way the Applicable Defendant's obligation to complete the performance of the requirements of this Consent Decree.

75. <u>Non-Exclusivity of Remedy</u>. Stipulated penalties are not the United States', the KDEP's (for the Calvert City Plant), or the LDEQ's (for the Lake Charles Plants) exclusive remedy for violations of this Consent Decree. Subject to the provisions of Section XIII (Effect of Settlement/Reservation of Rights), the United States, the KDEP (for the Calvert City Plant) and the LDEQ (for the Lake Charles Plants) expressly reserve the right to seek any other relief they deem appropriate for the Applicable Defendant's violation of this Decree or applicable law, including but not limited to an action against any Applicable Defendant for statutory penalties,

additional injunctive relief, mitigation or offset measures, and/or contempt. However, the amount of any statutory penalty assessed for a violation of this Consent Decree must be reduced by an amount equal to the amount of any stipulated penalty assessed and paid pursuant to this Consent Decree.

## X. FORCE MAJEURE

76. "Force Majeure," for purposes of this Consent Decree, is defined as any event beyond the control of an Applicable Defendant, of any entity controlled by an Applicable Defendant, or of an Applicable Defendant's contractors, which delays or prevents the performance of any obligation under this Consent Decree despite an Applicable Defendant's best efforts to fulfill the obligation. The requirement that an Applicable Defendant exercises "best efforts to fulfill the obligation" includes using best efforts to anticipate any potential Force Majeure event and best efforts to address the effects of any potential Force Majeure event: (a) as it is occurring, and (b) following the potential Force Majeure, such that the delay and any adverse effects of the delay are minimized. "Force Majeure" does not include an Applicable Defendant's financial inability to perform any obligation under this Consent Decree.

77. If any event occurs or has occurred that may delay the performance of any obligation under this Consent Decree, whether or not caused by a Force Majeure event, an Applicable Defendant must provide notice to the EPA, the KDEP (for the Calvert City Plant), and the LDEQ (for the Lake Charles Plants) in accordance with Section XVI no later than fifteen (15) Days after the date the Applicable Defendant first knew, or by the exercise of due diligence should have known, that the event might cause a delay. This notice must specifically reference this Paragraph of the Consent Decree and must provide an explanation and description of the reasons for the delay; the anticipated duration of the delay; all actions taken or to be taken to

prevent or minimize the delay; a schedule for implementing any measures to be taken to prevent or mitigate the delay or the effect of the delay; the Applicable Defendant's rationale for attributing such delay to a Force Majeure event if it intends to assert such a claim; and a statement as to whether, in the opinion of the Applicable Defendant, such event may cause or contribute to an endangerment to public health, welfare or the environment. The Applicable Defendant must include with any notice all available documentation supporting the claim that the delay was attributable to a Force Majeure. Failure to comply with the above requirements will preclude the Applicable Defendant from asserting any claim of Force Majeure for that event for the period of time of such failure to comply, and for any additional delay caused by such failure. The Applicable Defendant will be deemed to know of any circumstance of which the Applicable Defendant, any entity controlled by the Applicable Defendant, or the Applicable Defendant's contractors knew or should have known.

78. If the EPA, after a reasonable opportunity for review and comment by the KDEP (for the Calvert City Plant) or the LDEQ (for the Lake Charles Plants), agrees that the delay or anticipated delay is attributable to a Force Majeure event, the time for performance of the obligations under this Consent Decree that are affected by the Force Majeure event will be extended by the EPA, after a reasonable opportunity for review and comment by the KDEP (for the Calvert City Plant) or the LDEQ (for the Lake Charles Plants), for such time as is necessary to complete those obligations. An extension of the time for performance of the obligations affected by the Force Majeure event will not, by itself, extend the time for performance of any other obligation. The EPA will notify the Applicable Defendant in writing of the length of the extension, if any, for performing the obligations affected by the Force Majeure event.

79. If the EPA, after a reasonable opportunity for review and comment by the KDEP (for the Calvert City Plant) or the LDEQ (for the Lake Charles Plants), does not agree that the delay or anticipated delay has been or will be caused by a Force Majeure event, the EPA will notify the Applicable Defendant in writing of its decision.

80. If an Applicable Defendant elects to invoke the dispute resolution procedures set forth in Section XI (Dispute Resolution), it must do so no later than 45 Days after receiving the EPA's notice of decision. In any such dispute resolution proceeding, the Applicable Defendant has the burden of demonstrating by a preponderance of the evidence that the delay or anticipated delay has been or will be caused by a Force Majeure event, that the duration of the delay or the extension sought was or will be warranted under the circumstances, that best efforts were exercised to avoid and mitigate the effects of the delay, and that the Applicable Defendant complied with the requirements of Paragraphs 76 and 77. If the Applicable Defendant carries this burden, the delay at issue will be deemed to not be a violation by the Applicable Defendant of the affected obligation of this Consent Decree identified to the EPA and the Court.

#### XI. DISPUTE RESOLUTION

81. Unless otherwise expressly provided for in this Consent Decree, the dispute resolution procedures of this Section are the exclusive mechanism to resolve disputes arising under or with respect to this Consent Decree.

82. <u>Informal Dispute Resolution</u>. Any dispute subject to Dispute Resolution under this Consent Decree will first be the subject of informal negotiations. The dispute will be considered to have arisen when an Applicable Defendant sends the United States, the KDEP for the Calvert City Plant, and the LDEQ for the Lake Charles Plants, a written Notice of Dispute. Such Notice of Dispute must clearly state the matter in dispute. The period of informal

negotiations must not exceed 60 Days from the date the dispute arises, unless that period is modified by written agreement. If the Parties cannot resolve a dispute by informal negotiations, then the position advanced by the United States and the KDEP (for the Calvert City Plant), and the United States and the LDEQ (for the Lake Charles Plants), will be considered binding unless, within 45 Days after the conclusion of the informal negotiation period, the Applicable Defendant invokes formal dispute resolution procedures as set forth below.

83. <u>Formal Dispute Resolution</u>. An Applicable Defendant must invoke formal dispute resolution procedures, within the time period provided in the preceding Paragraph, by serving on the United States, the KDEP for the Calvert City Plant, and the LDEQ for the Lake Charles Plants a written Statement of Position regarding the matter in dispute. The Statement of Position must include, but need not be limited to, any factual data, analysis, or opinion supporting the Applicable Defendant's position and any supporting documentation relied upon by the Applicable Defendant.

84. The United States, after consultation with the KDEP for the Calvert City Plant, and the LDEQ for the Lake Charles Plants, must serve its Statement of Position within 45 Days of receiving an Applicable Defendant's Statement of Position. The United States' Statement of Position shall include, but need not be limited to, any factual data, analysis, or opinion supporting that position and any supporting documentation relied upon by the United States. The United States' Statement of Position will be binding on the Applicable Defendant, unless the Applicable Defendant files a motion for judicial review of the dispute in accordance with the following Paragraph.

85. An Applicable Defendant may seek judicial review of the dispute by filing with the Court and serving on the United States, the KDEP for disputes about the Calvert City Plant,

and on the LDEQ for disputes about the Lake Charles Plants, in accordance with Section XVI (Notices), a motion requesting judicial resolution of the dispute. The motion must be filed within 45 Days of receiving the United States' Statement of Position pursuant to the preceding Paragraph. The motion must contain a written statement of the Applicable Defendant's position on the matter in dispute, including any supporting factual data, analysis, opinion, or documentation, and must set forth the relief requested and any schedule within which the dispute must be resolved for orderly implementation of the Consent Decree.

86. The United States shall respond to the Applicable Defendant's motion within the time period allowed by the Local Rules of this Court. The Applicable Defendant may file a reply memorandum, to the extent permitted by the Local Rules.

87. <u>Standard of Review</u>. In a formal dispute resolution proceeding under this Section, the Applicable Defendant bears the burden of demonstrating that its position complies with this Consent Decree and the Clean Air Act, and that it is entitled to relief under applicable principles of law. The United States reserves the right to argue that its position is reviewable only on the administrative record and must be upheld unless arbitrary and capricious or otherwise not in accordance with law, and the Applicable Defendant reserves the right to argue to the contrary.

88. The invocation of dispute resolution procedures under this Section will not, by itself, extend, postpone, or affect in any way any obligation of the Applicable Defendant under this Consent Decree, unless and until final resolution of the dispute so provides. Stipulated penalties with respect to the disputed matter will continue to accrue from the first Day of noncompliance, but payment will be stayed pending resolution of the dispute as provided in Paragraph 71. If the Applicable Defendant does not prevail on the disputed issue, stipulated penalties will be assessed and paid as provided in Section IX (Stipulated Penalties).

## XII. INFORMATION COLLECTION AND RETENTION

89. The United States, the KDEP (for the Calvert City Plant), and the LDEQ (for the Lake Charles Plants) and their representatives, including attorneys, contractors, and consultants, have the right of entry into any plant covered by this Consent Decree, at all reasonable times, upon presentation of credentials, to:

a. Monitor the progress of activities required under this Consent Decree;

b. Verify any data or information submitted to the United States, the KDEP, or the LDEQ in accordance with the terms of this Consent Decree;

c. Obtain samples and, upon request, splits of any samples taken by the Applicable Defendant or their representatives, contractors, or consultants;

d. Obtain documentary evidence, including photographs and similar data; and

e. Assess the Applicable Defendant's compliance with this Consent Decree.

90. Upon request, the Applicable Defendant must provide the EPA, the KDEP, the LDEQ or their authorized representatives, splits of any samples taken by the Applicable Defendant. Upon request, the EPA, the KDEP, or the LDEQ must provide the Applicable Defendant splits of any samples taken by the EPA, the KDEP, or the LDEQ.

91. Notwithstanding Section XX (Termination), and except for data recorded by any video camera required pursuant to Paragraph 23, until three years after the termination of this Consent Decree, the Applicable Defendant must retain, and must instruct its contractors and agents to preserve, all non-identical copies of all documents, records, or other information (including documents, records, or other information in electronic form) in their contractors' or agents' possession or control, or that come into their or their contractors' or agents' possession or control, or that come into their or their contractors' or agents' possession or control, and that relates to Applicable Defendant's performance of its obligations under this

Consent Decree. This information-retention requirement applies regardless of any contrary corporate or institutional policies or procedures. At any time during this information-retention period, upon request by the United States the Applicable Defendant must provide copies of any documents, records, or other information required to be maintained under this Paragraph. The Applicable Defendant must retain the data recorded by the video cameras required pursuant to Paragraph 23 for one year from the date of recording.

92. The Applicable Defendant must notify the United States at least 90 Days before the destruction of any documents, records, or other information subject to the requirements of the preceding Paragraph ("Discard Notice"). Within 90 days after the date of the Discard Notice, the United States may provide the Applicable Defendant with a written request for production that: (a) identifies specific documents, records, or other information and/or (b) provides a general description of categories of documents, records, or other information, and the Applicable Defendant shall produce the requested documents, records, or information to the United States. The Applicable Defendant may destroy any documents, records, or other information not requested for production by the United States at any time after 90 Days from the date of the Discard Notice.

93. The Applicable Defendant may assert that certain documents, records, or other information are privileged under the attorney-client privilege or any other privilege recognized by federal law. If the Applicable Defendant asserts such a privilege, it must provide the following: (a) the title of the document, record, or information; (b) the date of the document, record, or information; (c) the name and title of each author of the document, record, or information; (d) the name and title of each addressee and recipient; (e) a description of the subject of the document, record, or information; and (f) the privilege asserted by the Applicable

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Defendant. However, no documents, records, or other information created or generated pursuant to the requirements of this Consent Decree may be withheld on grounds of privilege.

94. Except for emissions data, the Applicable Defendant may also assert that information required to be provided under this Section is protected as Confidential Business Information ("CBI") under 40 C.F.R. Part 2. As to any information that the Applicable Defendant seek to protect as CBI, the Applicable Defendant must follow the procedures set forth in 40 C.F.R. Part 2. To assert that records, data or other information required to be submitted to the LDEQ is entitled to be protected as confidential, the Lake Charles Plants shall follow the law and procedures as set forth in the applicable provisions of La. R.S. 30:2030; La. R.S. 2074.D; and LAC 33:I.Chapter 5. To assert that records, data, or other information required to be submitted to the KDEP is entitled to be protected as confidential, the Applicable Defendant shall follow the law and procedures as set forth in the applicable provisions of K.R.S. 224.10-210.

95. This Consent Decree in no way limits or affects any right of entry and inspection, or any right to obtain information, held by the United States, the KDEP, or the LDEQ pursuant to applicable federal or state laws, regulations, or permits, nor does it limit or affect any duty or obligation of the Applicable Defendant to maintain documents, records, or other information imposed by applicable federal or state laws, regulations, or permits.

## XIII. EFFECT OF SETTLEMENT/RESERVATION OF RIGHTS

96. <u>Definitions</u>. For purposes of this Section XIII, the following definitions apply:

a. "BTU/scf Flared Gas Requirements" shall mean the requirements found in the following regulations:

- (1) 40 C.F.R. 60.18(c)(3)(ii);
- (2) 40 C.F.R. \$ 63.11(b)(6)(ii); and

- (3) The provisions of 40 C.F.R. Part 60, 61, and 63 that require compliance with 40 C.F.R. § 60.18(c)(3)(ii) (for example 40 C.F.R. § 61.349(a)(2)(iii)) or 40 C.F.R. § 63.11(b)(6)(ii) (for example 40 C.F.R. § 63.113(a)(1)(i)) and are applicable requirements in a federally enforceable permit for a Covered Plant as of the Effective Date.
- b. "General Flare Requirements" shall mean the requirements found in the

following regulations:

- (1) 40 C.F.R. \$ 60.18(c)(1) and 40 C.F.R. \$ 63.11(b)(4) (both relate to a prohibition on visible emissions);
- (2) 40 C.F.R. § 60.18(c)(2) and 40 C.F.R. § 63.11(b)(5) (both relate to flame presence);
- (3) 40 C.F.R. § 60.18(c)(4) and 40 C.F.R. § 63.11(b)(7) (both relate to exit velocity requirements for Steam-Assisted Flares);
- (4) 40 C.F.R. § 60.18(c)(5) and 40 C.F.R. § 63.11(b)(8) (both relate to exit velocity requirements for Air-Assisted Flares); and
- (5) 40 C.F.R. § 60.18(e) and 40 C.F.R. § 63.11(b)(3) (both relate to operation during emissions venting).
- c. "Good Air Pollution Control Practice Requirements" shall mean the

requirements found in the following regulations:

- (1) 40 C.F.R. \$ 60.11(d);
- (2) 40 C.F.R. § 61.12(c); and
- (3) 40 C.F.R. 63.6(e)(1)(i).
- d. "Post-Lodging Compliance Dates" shall mean any dates in Section V

(Compliance Requirements) after the Date of Lodging.

e. "PSD/NNSR Requirements" shall mean the Prevention of Significant

Deterioration and Non-Attainment New Source Review requirements found in the following:

(1) 42 U.S.C. § 7475;

- (2) 40 C.F.R. §§ 52.21(a)(2)(iii) and 52.21(j)–52.21(r)(5);
- (3) 42 U.S.C. §§ 7502(c)(5) and 7503(a)–(c);
- (4) 40 C.F.R. Part 51, Appendix S, Part IV, Conditions 1–4;
- (5) Any applicable, federally enforceable state or local regulation that implements, adopts, or incorporates the federal provisions cited in sub-Paragraphs 96.e(1)–(4); and
- (6) Any applicable Title V permit requirement that implements, adopts, or incorporates the federal provisions or federally enforceable state provisions cited in sub-Paragraphs 96.e(1)–(4).
- f. "Requirements Related to Monitoring, Operation, and Maintenance

According to Flare Design" shall mean the requirements found in the following regulations:

- (1) 40 C.F.R. 60.18(d);
- (2) 40 C.F.R. § 63.11(b)(1); and
- (3) The provisions of 40 C.F.R. Part 60, 61, and 63 that require compliance with 40 C.F.R. § 60.18(d) (for example 40 C.F.R. § 61.349(a)(2)(iii)) or 40 C.F.R. § 63.11(b)(1) (for example 40 C.F.R. § 63.113(a)(1)(i)) and are applicable requirements in a federally enforceable permit for a Covered Plant as of the Effective Date.

97. Entry of this Consent Decree resolves the civil claims of the United States, the KDEP, and the LDEQ for the violations alleged in the Complaint filed in this action and occurring through the Date of Lodging, and as noted below.

#### 98. Resolution of Claims for Violating PSD/NNSR Requirements at the Covered

<u>Flares</u>. With respect to emissions of VOCs, NOx, and CO from the Covered Flares (except for the Vinyls Flare), entry of this Consent Decree resolves the civil claims of the United States, the KDEP, and the LDEQ against the Defendants for violations of the PSD/NNSR Requirements resulting from construction or modification from the date of the pre-Lodging construction or modification through the compliance dates with Paragraph 38 or 44.b, whichever is later as set forth in Appendix 1.1, for each Covered Flare. This Paragraph does not apply to and does not resolve any violations for the Vinyls Flare or for Newly Installed Covered Flares.

99. <u>Resolution of Pre-Lodging Claims at the Covered Flares for Failing to Comply</u> with (a) <u>BTU/scf Flared Gas Requirements and (b) General Flare Requirements</u>. With respect to emissions of VOCs and HAPs from the Covered Flares, entry of this Consent Decree resolves the civil claims of the United States, the KDEP, and the LDEQ against the Defendants for violations of the following requirements from the date those claims accrued until the Date of Lodging: a) BTU/scf Flared Gas Requirements; and b) General Flare Requirements.

100. <u>Resolution of Claims for Failing to Comply with (a) Requirements Related to</u> <u>Good Air Pollution Control Practices, and (b) Requirements Related to Monitoring, Operation,</u> <u>and Maintenance According to Flare Design for all Covered Flares</u>. With respect to emissions of VOCs and HAPs from the Covered Flares, entry of this Consent Decree resolves the civil claims of the United States, the KDEP, and the LDEQ against the Defendants for violations of Requirements Related to Good Air Pollution Control Practices, and Monitoring, Operation, and Maintenance According to Flare Design, but only to the extent that the claims are based on the Defendants' use of too much steam or air in relation to Vent Gas flow. The resolution in this Paragraph extends through the compliance dates with Paragraph 44.b (or Paragraph 44.d for the Vinyls Flare) as set forth in Appendix 1.1 for each Covered Flare. This Paragraph does not apply to and does not resolve any violations for Newly Installed Covered Flares.

101. <u>Resolution of Title V Violations</u>. Entry of this Consent Decree resolves the civil claims of the United States, the KDEP, and the LDEQ against the Defendants for the violations of Sections 502(a), 503(c), and 504(a) of the CAA, 42 U.S.C. §§ 7661a(a), 7661b(c), 7661c(a),

and of 40 C.F.R. §§ 70.1(b), 70.5(a) and (b), 70.6(a) and (c), and 70.7(b), that are based upon the violations resolved by Paragraphs 98–100 for the time frames set forth in those Paragraphs.

102. <u>Reservation of Rights — Resolution of Liability in Paragraphs 98 and 100-101</u> <u>can be Rendered Void</u>. Notwithstanding the resolution of liability in Paragraphs 98 and 100-101, for the period of time between the Date of Lodging and the post-lodging dates specified in Paragraphs 98 and 100-101, those resolutions of liability will be rendered void if an Applicable Defendant materially fails to comply with any of the obligations and requirements of Section V (Compliance Requirements) and Section VII (Emission Credit Generation). To the extent that a material failure involves a particular Covered Plant, the resolution of liability will be rendered void only with respect to claims involving that particular Covered Plant. The resolutions of liability in Paragraphs 98 and 100-101 will not be rendered void if the Applicable Defendant, as expeditiously as practicable, remedies such material failure and pays all stipulated penalties due as a result of such material failure.

103. The United States, the KDEP (for the Calvert City Plant), and the LDEQ (for the Lake Charles Plants) reserve all legal and equitable remedies available to enforce the provisions of this Consent Decree. This Consent Decree will not be construed to limit the rights of the United States, the KDEP (for the Calvert City Plant), or the LDEQ (for the Lake Charles Plants) to obtain penalties or injunctive relief under the CAA, or implementing regulations, or under other federal or state laws, regulations, or permit conditions, except as specified in Paragraphs 98-101. The United States, the KDEP (for the Calvert City Plant) and the LDEQ (for the Lake Charles Plants) further reserve all legal and equitable remedies to address any imminent and substantial endangerment to the public health or welfare or the environment arising at, or posed

by, the Covered Plants, whether related to the violations addressed in this Consent Decree or otherwise.

104. In any subsequent administrative or judicial proceeding initiated by the United States, the KDEP (for the Calvert City Plants), or the LDEQ (for the Lake Charles Plants) for injunctive relief, civil penalties, other appropriate relief relating to a Covered Plant or an Applicable Defendant's violations, the Applicable Defendant must not assert, and may not maintain, any defense or claim based upon the principles of waiver, res judicata, collateral estoppel, issue preclusion, claim preclusion, claim-splitting, or other defenses based upon any contention that the claims raised by the United States, the KDEP, or the LDEQ in the subsequent proceeding were or should have been brought in the instant case, except with respect to claims that have been specifically resolved pursuant to Paragraphs 98-101.

105. This Consent Decree is not a permit, or a modification of any permit, under any federal, state, or local laws or regulations. The Defendants are responsible for maintaining compliance with all applicable federal, state, and local laws, regulations, and permits; and the Defendants' compliance with this Consent Decree is no defense to any action commenced pursuant to any such laws, regulations, or permits, except as set forth herein. The United States, the KDEP, and the LDEQ do not, by their consent to the entry of this Consent Decree, warrant or aver in any manner that the Defendants' compliance with any aspect of this Consent Decree will result in compliance with provisions of the CAA, 42 U.S.C. § 7401 *et seq.* or with any other provisions of federal, state, or local laws, regulations, or permits.

106. This Consent Decree does not limit or affect the rights of the Defendants or of the United States, the KDEP, or the LDEQ against any third parties, not party to this Consent

Decree, nor does it limit the rights of third parties, not party to this Consent Decree, against the Defendants, except as otherwise provided by law.

107. This Consent Decree must not be construed to create rights in, or grant any cause of action to, any third party not party to this Consent Decree.

## XIV. COSTS

108. The Parties must bear their own costs of this action, including attorneys' fees, except that the United States, the KDEP, and the LDEQ are entitled to collect the costs (including attorneys' fees) incurred in any action necessary to collect any portion of the civil penalty or any stipulated penalties due but not paid by an Applicable Defendant.

## XV. 26 U.S.C. § 162(f)(2)(A)(ii) IDENTIFICATION

109. For purposes of the identification requirement of Section 162(f)(2)(A)(ii) of the Internal Revenue Code, 26 U.S.C. § 162(f)(2)(A)(ii), performance of Section II (Applicability), Paragraph 10, Section V (Compliance Requirements), Paragraphs 18-33 and 35-48; Section VI (Permits), Paragraphs 49-50; Section VIII (Reporting Requirements), Paragraphs 55-60; Section XII (Information Collection and Retention), Paragraphs 89-90; and related Appendices 1.1-1.9 and 2.1 is restitution or required to come into compliance with law.

#### XVI. NOTICES

110. Unless otherwise specified in this Decree, whenever notifications, submissions, or communications are required by this Consent Decree, they must be made electronically as described below, unless such notifications, submissions, or communications are unable to be uploaded to the CDX electronic system (in the case of the EPA) or transmitted by email (in the case of any other party). For all notifications, submissions, or communications to the EPA, Defendants must register for the CDX electronic system and upload such notifications,

submissions, or communications at https://cdx.epa.gov\_home.asp. Any notifications,

submissions, or communications that cannot be uploaded or electronically transmitted via email

shall be provided in writing to the addresses below:

| As to the United States by email: | eescdcopy.enrd@usdoj.gov  |
|-----------------------------------|---------------------------|
|                                   | Re: DJ No. 90-5-2-1-11287 |

As to the United States by mail:

EES Case Management Unit Environment and Natural Resources Division U.S. Department of Justice P.O. Box 7611 Washington, D.C. 20044-7611 **Re: DJ No. 90-5-2-1-11287** 

| As to the United States Attorney<br>for the Western<br>District of Louisiana |   |  |  |  |
|--|---|--|--|--|
| <u>by mail</u> :   | United States Attorney<br>Western District of Louisiana<br>Assistant United States Attorney<br>300 Fennin Street Suite 3201 |  |  |  |
|  | Shreveport, LA 71101-3068   |  |  |  |
|  | and as to the EPA as set forth below:   |  |  |  |
| As to the EPA by email:  | parrish.robert@epa.gov  |  |  |  |
|  | foley.patrick@epa.gov   |  |  |  |
|  | reed.wendell@epa.gov  |  |  |  |
|  | thompson.steve@epa.gov  |  |  |  |
| As to the EPA by mail:   | Director, Air Enforcement Division  |  |  |  |
|  | Office of Civil Enforcement   |  |  |  |
|  | U.S. Environmental Protection Agency  |  |  |  |
|  | Mail Code 2242-A  |  |  |  |
|  | Regular Mail: 1200 Pennsylvania Ave, N.W.   |  |  |  |
|  | Ariel Rios Building South   |  |  |  |
|  | Room 1119   |  |  |  |
|  | Washington, DC 20460-0001   |  |  |  |
|  | Express Mail: Use same address but use 20004 as the zip code  |  |  |  |
|  |   |  |  |  |

| As to the KDEP by email:       | melissa.duff@ky.gov  |
|--------------------------------|--|
| As to the KDEP by mail:        | Director, Division for Air Quality<br>Energy and Environment Cabinet<br>300 Sower Boulevard<br>Frankfort, Kentucky 40601   |
| As to the LDEQ by email:       | angela.marse@la.gov<br>dwana.king@la.gov<br>brandon.williams@la.gov  |
| As to the LDEQ by mail:        | Angela Marse<br>Administrator, Enforcement Division<br>Office of Environmental Compliance<br>Louisiana Department of Environmental Quality<br>P.O. Box 4312<br>Baton Rouge, Louisiana 70821-4312 |
| and                            |  |
|                                | Brandon Williams<br>Dwana King<br>P.O. Box 4302<br>Attorney, Legal Affairs<br>Louisiana Department of Environmental Quality<br>Baton Rouge, Louisiana 70821-4302                                 |
| As to the Defendants by email: | lstone@westlake.com<br>rmoring@westlake.com  |
| As to the Defendants by mail:  | Lloyd Stone, Director Corporate HSE<br>Rebecca H. Moring, Senior Counsel<br>2801 Post Oak Boulevard, Suite 600<br>Houston, Texas 77056   |

111. Any Party may, by written notice to the other Parties, change its designated notice recipient or notice address provided above.

112. Notices submitted pursuant to this Section will be deemed submitted upon mailing, unless otherwise provided in this Consent Decree or by mutual agreement of the Parties in writing.

## XVII. EFFECTIVE DATE

113. The Effective Date of this Consent Decree is the date upon which this Consent Decree is entered by the Court or a motion to enter the Consent Decree is granted, whichever occurs first, as recorded on the Court's docket.

#### XVIII. RETENTION OF JURISDICTION

114. The Court retains jurisdiction over this case until termination of this Consent Decree, for the purpose of: a) resolving disputes arising under this Decree pursuant to Section XI, b) entering orders modifying this Decree pursuant to Section XIX, and c) effectuating or enforcing compliance with the terms of this Decree.

#### XIX. MODIFICATION

115. Except as otherwise allowed in Paragraphs 14 and 110 (notice recipients and addresses), the terms of this Consent Decree, including any attached appendices, may be modified only by a subsequent written agreement signed by all the Parties. Where the modification constitutes a material change to this Decree, it will be effective only upon approval by the Court.

116. Any disputes concerning modification of this Decree must be resolved pursuant to Section XI (Dispute Resolution), provided, however, that, instead of the burden of proof provided by Paragraph 87, the Party seeking the modification bears the burden of demonstrating that it is entitled to the requested modification in accordance with Federal Rule of Civil Procedure 60(b).

## XX. TERMINATION

117. Before seeking termination of the entire Consent Decree or the set of

requirements applicable to one of the Covered Plants, an Applicable Defendant must:

- a. Pay the civil penalty and any accrued stipulated penalties as required by this Consent Decree;
- b. Satisfactorily comply with all provisions of Section V (Compliance Requirements) applicable to the Covered Plant that is subject to the termination request;
- c. Operate for at least one year in satisfactory compliance with the limitations and standards set forth in Paragraphs 39.c (availability of FGRS compressors), 44 (NHV and NHV<sub>dil</sub> standards), and 45 (98% Combustion Efficiency) for all of the Covered Flares at the Covered Plant that is subject to the termination request;
- d. Apply for and receive a federally enforceable permit for the Calvert City Plant issued pursuant to the KDEP's consolidated preconstruction and Title V CAA permitting program, which incorporates the requirements set forth set forth in Paragraph 50.c. The cited basis for the incorporated requirements in the KDEP's consolidated permit cannot be this Consent Decree and will be the minor NSR authority to issue new limits; and
- e. Apply for and receive a federally enforceable permit for the Lake Charles Plants issued pursuant to the LDEQ's consolidated preconstruction and Title V CAA permitting program, which incorporates the requirements set forth in Paragraph 50.c. The cited basis for the incorporated requirements in the LDEQ's consolidated permit cannot be this Consent Decree and will be the minor NSR authority to issue new limits.

118. After the Applicable Defendant(s) believes that it has satisfied the conditions for

termination set forth in the preceding Paragraph for either the entire Consent Decree or for one of

the Covered Plants, the Applicable Defendant(s) may submit a request for termination to the

United States, the KDEP (for the Calvert City Plant), and the LDEQ (for the Lake Charles

Plants) by certifying such compliance in accordance with the certification language in

Paragraph 60 ("Request for Termination"). In the Request for Termination, the Applicable

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Defendant(s) must demonstrate that it has satisfied the conditions for termination set forth in the preceding Paragraph, as well as submit all necessary supporting documentation.

119. Following receipt by the United States, the KDEP for the Calvert City Plant, and by the LDEQ for the Lake Charles Plants, of the Applicable Defendants' Request for Termination, the Parties will confer informally concerning the request. If the United States, after consultation with the KDEP for the Calvert City Plant, and after consultation with the LDEQ for the Lake Charles Plants, agrees that the Decree may be terminated, the Parties will submit, for the Court's approval, a joint stipulation terminating the Decree.

120. If the United States, after consultation with the KDEP for the Calvert City Plant, and after consultation with the LDEQ for the Lake Charles Plants, does not agree that the Decree may be terminated, or if the Applicable Defendant(s) does not receive a written response from the United States with 90 Days of the Applicable Defendant's submission of the Request for Termination, the Applicable Defendant(s) may invoke Dispute Resolution under Section XI.

#### XXI. PUBLIC PARTICIPATION

121. This Consent Decree shall be lodged with the Court for a period of not less than 30 Days for public notice and comment in accordance with 28 C.F.R. § 50.7. The United States reserves the right to withdraw or withhold its consent if the comments regarding the Consent Decree disclose facts or considerations indicating that the Consent Decree is inappropriate, improper, or inadequate. The Defendants consent to entry of this Consent Decree without further notice and agree not to withdraw from or oppose entry of this Consent Decree by the Court or to challenge any provision of the Decree, unless the United States has notified the Defendants, the KDEP, and the LDEQ in writing that it no longer supports entry of the Decree.

#### 122. KDEP and LDEQ Public Notice.

a. The Parties agree and acknowledge that final approval by the LDEQ and entry of this Consent Decree are subject to the requirements of La. R.S. 30:2050.7, which provides for: (a) public notice of this Consent Decree in the newspaper of general circulation and the official journal of the parish in which the Lake Charles Plants are located, (b) an opportunity for public comment for a period of not less than forty-five Days and consideration of any comments received, and (c) concurrence by the State Attorney General. The LDEQ reserves the right to withdraw or withhold consent if the comments regarding this Decree disclose facts or considerations that indicate that this Decree is inappropriate, improper, or inadequate.

b. The Parties agree and acknowledge that final approval by the KDEP and entry of this Consent Decree are subject to the requirements of KRS 224.10-120, KRS 224.10-100(1), and KRS 224.10-100(25), which provide for: public notice of this Consent Decree in the newspaper of general circulation and the official journal of the county in which the Calvert City Plant is located, and an opportunity for public comment for a period of not less than 30 Days and consideration of any comments received. The KDEP reserves the right to withdraw or withhold consent if the comments regarding this Decree disclose facts or considerations that indicate that this Decree is inappropriate, improper, or inadequate.

## XXII. SIGNATORIES/SERVICE

123. Each undersigned representative of the Defendants, the KDEP, the LDEQ, and the Assistant Attorney General for the Environment and Natural Resources Division of the Department of Justice certifies that he or she is fully authorized to enter into the terms and conditions of this Consent Decree and to execute and legally bind the Party or Parties he or she represents to this document.

124. This Consent Decree may be signed in counterparts, and its validity cannot be challenged on that basis. The Defendants agree to accept service of process by mail with respect to all matters arising under or relating to this Consent Decree and to waive the formal service requirements set forth in Rules 4 and 5 of the Federal Rules of Civil Procedure and any applicable Local Rules of this Court including, but not limited to, service of a summons.

## XXIII. INTEGRATION

125. This Consent Decree constitutes the final, complete, and exclusive agreement and understanding among the Parties with respect to the settlement embodied in the Decree and supersedes all prior agreements and understandings, whether oral or written, concerning the settlement embodied herein. Other than deliverables that are subsequently submitted and approved pursuant to this Decree, the Parties acknowledge that there are no representations, agreements, or understandings relating to the settlement other than those expressly contained in this Consent Decree.

#### XXIV. FINAL JUDGMENT

126. Upon approval and entry of this Consent Decree by the Court, this Consent Decree constitutes a final judgment of the Court as to the United States, the KDEP, the LDEQ, and the Defendants.

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# **APPENDICES**

127. The Appendices listed in the Tables of Appendices are attached to and part of this Consent Decree.

Dated and entered this <u>26th</u> Day of October , 2022

UNHTED STATES DISTRICT JUDGE WESTERN DISTRICT OF LOUISIANA

Subject to the notice and comment provisions of 28 C.F.R. § 50.7, THE UNDERSIGNED PARTIES enter into this Consent Decree entered in the matter of the *United States et al. v. Westlake Chemical OpCo LP et al.* (W.D. La.).

# FOR THE UNITED STATES OF AMERICA:

TODD KIM Assistant Attorney General Environment and Natural Resources Division U.S. Department of Justice

Attorney-In-Charge:

Thomas P. Carroll

THOMAS P. CARROLL District of Columbia Bar No. 388593 Assistant Section Chief Environmental Enforcement Section Environment and Natural Resources Division U.S. Department of Justice P.O. Box 7611 Washington, DC 20044-7611 202-514-4051 (Phone) 202-616-6584 (Fax) Thomas.Carroll@usdoj.gov

BRANDON B. BROWN United States Attorney Western District of Louisiana

Local Co-counsel:

DESIREE C. WILLIAMS (#30978) Assistant United States Attorney 800 Lafayette Street, Suite 2200 Lafayette, Louisiana 70501 Telephone: (337) 262-6618 Facsimile: (337) 262-6682 Email: desiree.williams@usdoj.gov Subject to the notice and comment provisions of 28 C.F.R. § 50.7, THE UNDERSIGNED PARTIES enter into this Consent Decree entered in the matter of the *United States et al. v. Westlake Chemical OpCo LP et al.* (W.D. La.).

# FOR THE UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

LAWRENCE STARFIELD Digitally signed by LAWRENCE STARFIELD Date: 2022.05.06 18:04:26 -04'00'

LAWRENCE E. STARFIELD Acting Assistant Administrator Office of Enforcement and Compliance Assurance U.S. Environmental Protection Agency 1200 Pennsylvania Avenue Washington, D.C. 20460

ROSEMARIE A. KELLEY Director, Office of Civil Enforcement U.S. Environmental Protection Agency 1200 Pennsylvania Ave., N.W. Washington, D.C. 20460

MARY E. GREENE Director, Air Enforcement Division Office of Civil Enforcement U.S. Environmental Protection Agency 1200 Pennsylvania Ave., N.W. Washington, D.C. 20460

ROBERT PARRISH

Attorney Advisor, Air Enforcement Division Office of Civil Enforcement U.S. Environmental Protection Agency 1200 Pennsylvania Ave., N.W. Washington, D.C. 20460 Subject to the notice and comment provisions of 28 C.F.R. § 50.7, THE UNDERSIGNED PARTIES enter into this Consent Decree entered in the matter of the *United States et al. v. Westlake Chemical OpCo LP et al.* (W.D. La.).

# FOR THE UNITED STATES ENVIRONMENTAL PROTECTION AGENCY, REGION 6

(heryl ) Seagn Digitally signed by CHERYL SEAGER Date: 2022.05.17 10:53:58 -05'00'

CHERYL SEAGER Director - Compliance Assurance Enforcement Division U.S. Environmental Protection Agency, Region 6 1445 Ross Ave. Dallas, TX 75202-2733 Subject to the notice and comment provisions of La. R.S. 30 § 2050.7 and 28 C.F.R. § 50.7, THE UNDERSIGNED PARTIES enter into this Consent Decree entered in the matter of the *United States et al. v. Westlake Chemical OpCo LP et al.* (W.D. La.).

FOR THE LOUISIANA DEPARTMENT OF ENVIRO NTAL QUALITY

/4u. hUC�Alll,!G�E:....JW--�'.'s......

Assistant Secretary Office of Environmental Compliance Louisiana Department of Environmental Quality P.O. Box 4312 Baton Rouge, Louisiana 70821-4312



(La. Bar# 20590)Office of the Secretary, Legal Affairs DivisionLouisiana Department of Environmental QualityP.O. Box 4302Baton Rouge, Louisiana 70821-4302

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Subject to the notice and comment provisions of KRS 224.10-120, KRS 224.10-100(1), and KRS 224.10-100(25) and 28 C.F.R. § 50.7, THE UNDERSIGNED PARTIES enter into this Consent Decree entered in the matter of the *United States et al.* v. *Westlake Chemical OpCo LP et al.* (W.D. La.).

# FOR THE KENTUCKY DEPARTMENT FOR ENVIRONMENTAL PROTECTION

CHRIS P E Z K, General Counsel (Ky. Bar# 82179). Department for Environmental Protection Office of Legal Services Commonwealth of Kentucky Energy and Environment Cabinet 300 Sower Boulevard Frankfort, Kentucky 40601

THE UNDERSIGNED PARTIES enter into this Consent Decree entered in the matter of the *United States et al. v. Westlake Chemical OpCo LP et al.* (W.D. La.).

FOR WESTLAKE CHEMICAL OPCO LP, WESTLAKE PETROCHEMICALS LLC, WESTLAKE POLYMERS LLC, WESTLAKE STYRENE LLC, AND WESTLAKE VINYLS, INC.

-DocuSigned by: andrew kenner -C5FAB59AB5F8438...

ANDREW KENNER Sr. Vice President Operations Westlake Chemical Corporation 2801 Post Oak Blvd., Suite 600 Houston, Texas 77056



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# APPENDICESTO CONSENT DECREE

| Appendix 1.1 Compliance Schedule             |  |  |  |   |                        |  |                       |  |                    |
|--|--|--|--|---|------------------------|--|-----------------------|--|--------------------|
| Flare*                                       | Flare Data<br>and<br>Monitoring<br>Systems<br>Protocol<br>Report | Installation & Operation<br>of Monitoring &<br>Control Systems | Initial Waste Gas<br>Minimization Plan | First Updated<br>Waste Gas<br>Minimization Plan | Root Cause<br>Analysis | Flare Gas<br>Recovery<br>(FGR)<br>Installation<br>&<br>Commence<br>Operation | General<br>Provisions | Net Heating Value of<br>Combustion Zone/<br>Net Heating Value of<br>Vent Gas/Net Heating<br>Value Oil  | Record-<br>keeping |
| А  | В  | С  | D                                      | E   | F                      | G  | н                     | I  | J                  |
| Re-ferenced Paragraphs of the Consent Decree |  |  |  |   |                        |  |                       |  |                    |
|  | 18   | 19   | 30                                     | 31  | 35                     | 38   | 40-41,43              | 44.a-b (for all Covered<br>Flares, except the<br>Vinyls Flare); 44.a-c<br>(for the Poly 3 HP and<br>Co-Products); 44.d<br>(for the Vinyls Flare) | 47                 |
| Calvert City,<br>Ethylene Flare              | ED<br>+ 365<br>Days  | ED   | ED<br>+ 365 Days                       | ED<br>+ 730 Days                                | ED<br>+ 365 Days       | 3/31/24  | ED                    | ED   | ED                 |
| Calvert City,<br>Vinyls Flare                | ED<br>+ 365 Days   | ED for callorimeter;<br>12/31/23 for Vent Gas<br>Flow Meter    | NA                                     | NA  | NA                     | NA   | ED                    | ED (44.d on lly)   | ED                 |
| Lake Charles, Co-<br>Products                | ED<br>+ 365 Days   | 12/31/21   | ED<br>+ 365 Days                       | ED<br>+ 730 Days                                | ED<br>+ 365 Days       | NA   | ED                    | 3/31/22  | ED                 |
| Lake Charles,<br>Petro 1                     | ED<br>+ 365 Days   | ED   | ED<br>+ 365 Days                       | ED<br>+ 730 Days                                | ED<br>+ 365 Days       | NA   | ED                    | ED   | ED                 |
| Lake Charles,<br>Petro 2                     | ED<br>+ 365 Days   | 12/31/21   | ED<br>+ 365 Days                       | ED<br>+ 730 Days                                | ED<br>+ 365 Days       | 12/31/23   | ED                    | 3/31/22  | ED                 |

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APPENDICES TO CONSENT DECREE

# **APPENDIX 1.2**

Calculating Combustion Efficiency, Net Heating Value of the Combustion Zone Gas (Nhv<sub>cz</sub>), the Net Heating Value Dilution Parameter (Nhv<sub>dil</sub>), and Flare Tip Velocity

# APPENDIX 1.2

All abbreviations, constants, and variables are defined in the Key on Page 8 of this Appendix.

Combustion Efficiency Equation:

 $CE = [CO_2]/([CO_2] + [CO] + [OC])$ where:

 $[CO_2]$  = Concentration in volume percent or ppm-meters of carbon dioxide in the combusted gas immediately above the Combustion Zone

[CO] = Concentration in volume percent or ppm-meters of carbon monoxide in the combusted gas immediately above the Combustion Zone

[OC] = Concentration in volume percent or ppm-meters of the sum of all organic carbon compounds in the combusted gas immediately above the Combustion Zone, counting each carbon molecule separately where the concentration of each individual compound is multiplied by the number of carbon atoms it contains before summing (e.g., 0.1 volume percent ethane shall count as 0.2 percent OC because ethane has two carbon atoms)

For purposes of using the *CE* equation, the unit of measurement for CO<sub>2</sub>, CO, and OC must be the same; that is, if "volume percent" is used for one compound, it must be used for all compounds. "Volume percent" cannot be used for one or more compounds and "ppm-meters" for the remainder.

# Step 1: Determine the Net Heating Value of the Vent Gas (NHVvg)

The Company shall determine the Net Heating Value of the Vent Gas (NHV<sub>vg</sub>) based on composition monitoring data on a 15-minute block average basis according to the following requirements. If the Company 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<sub>vg</sub> 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.

# Step 1a: Equation or Output to be Used to Determine NHV<sub>vg</sub> at a Measurement Location

For any gas stream for which the Company complies with Paragraph 24 by collecting compositional analysis data in accordance with the method set forth in 24.a: Equation 1 shall be used to determine the  $NHV_{vg}$  of a specific sample by summing the Net Heating Value for each

# APPENDIX 1.2

individual component by individual component volume fractions. Individual component Net Heating Values are listed in Table 1 of this Appendix.

$$NHV_{vg} = L(x_i - NHV_i)$$

$$Equation 1$$

$$i=1$$

For any gas stream for which the Company complies with Paragraph 24 by collecting direct Net Heating Value monitoring data in accordance with the method set forth in 21.b 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<sub>vg</sub> for the sample.

For any gas stream for which the Company complies with Paragraph 24 by collecting direct Net Heating Value monitoring data in accordance with the method set forth in 21.b and for which a Hydrogen Concentration Monitor is also used: Equation 2 shall be used to determine the NHV<sub>vg</sub> for each sample measured via the Net Heating Value monitoring system. Where hydrogen concentration data is collected, Equation 2 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 this Consent Decree, a Net Heating Value of 1,212 Btu/scf may be used (1,212 - 274 = 938 BTU/scf).

$$NHV_{vg} = NHV_{measured} + 938x_{H2}$$
 Equation 2

## Step 1b: Calculation Method to be Used in Applying Equation/Output to Determine NHVyg

For any Covered Flare for which the Company complies with Paragraph 24 by using a continuous monitoring system in accordance with the method set forth in 24.a or 24.b: The Company 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 Company need not elect to use the same methodology at all Covered Flares with a continuous monitoring system; however, for each such Covered Flare, the Company 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 Company intends to change the calculation method that applies to a Covered Flare, the Company must notify the EPA 30 days in advance of such a change.

**Feed-Forward Calculation Method.** When calculating  $NHV_{vg}$  for a specific 15-minute block:

- 1. 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.
- 2. 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.
3. 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 determine compliance during the 15-minute block period from 12:45 AM to 1:00 AM.

# **Direct Calculation Method.** When calculating $NHV_{vg}$ for a specific 15-minute block:

- 1. 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.
- 2. For all other cases, use the arithmetic average of all NHV<sub>vg</sub> 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.

## Step 2: Determine Volumetric Flow Rates of Gas Streams

The Company 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.

**For any gas streams for which the Company complies with Paragraph 20 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.

For Vent Gas, Assist Steam, or Premix Assist Air gas streams for which the Company complies with Paragraph 20 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  $^{\circ}$ C (68  $^{\circ}$ F) and a pressure of 1 atmosphere). Equation 3 uses the molecular weight of the gas stream as an input to the equation; therefore, if the Company elects to use a mass flow monitor to determine volumetric flow rate of Vent Gas, the Company must collect compositional analysis data for such Vent Gas in accordance with the method set forth in

Paragraph 24.a. 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 3 shall then be used to calculate the average volumetric flow rate of that gas stream for the 15-minute block period.

$$Q_{vol} = \frac{Q_{mass} * 385.3}{MWt}$$
 Equation 3

For gas streams for which the molecular weight of the gas is known and for which the Company complies with Paragraph 20 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 Paragraph 24.a.

#### Step 3: Calculate the Net Heating Value of the Combustion Zone Gas (NHVcz)

For any Covered Flare at which: 1) the Feed-Forward Calculation Method is used; 2) gas composition or Net Heating Value monitoring is performed in a location representative of the cumulative vent gas stream; and 3) Supplemental Gas flow additions to the flare are directly monitored: Equation 4 shall be used to determine the 15-minute block average NHV<sub>cz</sub> based on the 15-minute block average vent gas, supplemental gas, and assist gas flow rates.

$$NHV_{CZ} = \frac{(Q_{vg} - Q_{NG2} + Q_{NG1}) * NHV_{vg} + (Q_{NG2} - Q_{NG1}) * NHV_{NG}}{Q_{vg} + Q_s + Q_{a,premix}} Equation 4$$

For the first 15-minute block period of an event,  $Q_{NG1}$  shall use the volumetric flow value for the current 15-minute block period (i.e.  $Q_{NG1} = Q_{NG2}$ ). *NHV<sub>NG</sub>* shall be determined using one of the following methods: 1) direct compositional or Net Heating Value monitoring of the natural gas stream in accordance with Step 1; or 2) for purchased ("pipeline quality") natural gas streams, the Company may elect to either: a) use annual or more frequent grab sampling at any one representative location; or b) assume a Net Heating Value of 920 BTU/scf.

**For all other Covered Flares:** Equation 5 shall be used to determine the 15-minute block average  $NHV_{cz}$  based on the 15-minute block average vent gas and assist gas flow rates. For periods when there is no Assist Steam flow or Premix Assist Air flow,  $NHV_{cz} = NHV_{vg}$ .

$$NHV_{CZ} = \frac{Q_{vg} * NHV_{vg}}{Q_{vg} + Q_s + Q_{a,premix}}$$
 Equation 5

### Step 4: Calculate the Net Heating Value Dilution Parameter (NHVdil)

For any Covered Flare at which: 1) the Feed-Forward Calculation Method is used; 2) gas composition or Net Heating Value monitoring is performed in a location representative of the cumulative vent gas stream; and 3) Supplemental Gas flow additions to the flare are directly monitored: Equation 6 shall be used to determine the 15-minute block average NHV<sub>dil</sub> only during periods when Perimeter Assist Air is used. For 15-minute block periods when there is no cumulative volumetric flow of Perimeter Assist Air, the 15- minute block average NHV<sub>dil</sub> parameter does not need to be calculated.

 $NHV_{dil} = \frac{\left[(Q_{vg} - Q_{NG2} + Q_{NG1})^* NHV_{vg} + (Q_{NG2} - Q_{NG1})^* NHV_{NG}\right]^* Diam}{(Q_{vg} + Q_s + Q_{a,premix} + Q_{a,premixer})}$ Equation 6

For the first 15-minute block period of an event,  $Q_{NG1}$  shall use the volumetric flow value for the current 15-minute block period (i.e.  $Q_{NG1} = Q_{NG2}$ ). *NHV<sub>NG</sub>* shall be determined using one of the following methods: 1) direct compositional or Net Heating Value monitoring of the natural gas stream in accordance with Step 1; or 2) for purchased ("pipeline quality") natural gas streams, the Company may elect to either: a) use annual or more frequent grab sampling at any one representative location; or b) assume a Net Heating Value of 920 BTU/scf.

For all other Covered Flares: Equation 7 shall be used to determine the 15-minute block average  $NHV_{dil}$  based on the 15-minute block average vent gas and Perimeter Assist Air flow rates, only during periods when Perimeter Assist Air is used. For 15-minute block periods when there is no cumulative volumetric flow of Perimeter Assist Air, the 15-minute block average  $NHV_{dil}$  parameter does not need to be calculated.

$$NHV_{dil} = \frac{Q_{vg} * Diam * NHV_{vg}}{(Q_{vg} + Q_s + Q_{a,premix} + Q_{a,perimeter})}$$
Equation 7

## Step 5: Ensure that during flare operation, NHVcz 2 270 BTU/scf

The flare must be operated to ensure that  $NHV_{cz}$  is equal to or above 270 BTU/scf, as determined for each 15-minute block period when Supplemental, Sweep, and/or Waste Gas is routed to a Covered Flare for at least 15-minutes. Equation 8 shows this relationship.

NHV<sub>cz</sub> 2: 270 BTU/scf Equation 8

## Step 6: Ensure that during flare operation, NHV<sub>dil</sub> 2 22 BTU/ft<sup>2</sup>

A flare actively receiving Perimeter Assist Air must be operated to ensure that  $NHV_{dil}$  is equal to or above 22 BTU/ft<sup>2</sup>, as determined for each 15-minute block period when Supplemental, Sweep, and/or Waste Gas is routed to a Covered Flare for at least 15-minutes. Equation 9 shows this relationship.

NHV<sub>dil</sub> 2: 22 BTU/ft<sup>2</sup>

**Equation 9** 

### **Calculation Method for Determining Compliance with Vtip Operating Limits.**

The Company shall determine Vtip on a 15-minute Block Average basis according to the following requirements:

(a) Defendants shall use design and engineering principles and the guidance in Appendix 1.3 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 Vent Gas does not exit through them.

(b) Defendants 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 Paragraph 20 according to the requirements in Step 2 above.

(c) The 15-minute Block Average Vtip shall be calculated using Equation 10.

$$Vtip = \frac{Q_{Cum}}{Area * 900} \qquad Equation \qquad 10$$

(d) If Defendants choose to comply with Paragraph 41.a. Defendants shall also determine the NHVvg using Step 1 above and calculate Vmax using Equation 11 in order to compare Vtip to Vmax on a 15-minute Block Average basis.

$$log_{10}(V_{max}) = \frac{NHV_{va} + 1,212}{850}$$
 Equation 11

### 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 (H2) Area = The unobstructed cross sectional area of the flare tip is the total tip area that vent as 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. Diam = Effective diameter of the unobstructed area of the flare tip for flare vent gas flow, ft. Determine the diameter as  $Diam = 2 * \sqrt{Area - + rr}$ *i* = *individual component in Vent Gas (unitless) MWt* = molecular weight of the gas at the flow monitoring location (lb/lb-mol) *n* = number of components in Vent Gas (unitless) NHV<sub>CZ</sub> = Net Heating Value of Combustion Zone Gas (BTU/scf)  $NHV_i$  = Net Heating Value of component i according to Table 1 of this Appendix (BTU/scf) NHV<sub>measured</sub> = Net Heating Value of Vent Gas stream as measured by monitoring system (BTU/scf)  $NHV_{NG}$  = Net Heating Value of Supplemental Gas to flare during the 15 - minute block period (BTU/scf)  $NHV_{vg}$  = Net Heating Value of Vent Gas (BTU/scf)  $Q_{a,perimeter}$  = cumulative vol flow of perimeter assist air during the 15 - minute block period (scf)  $Q_{a,premix}$  = cumulative vol flow of premix assist air during the 15 – minute block period (scf) *Qcum = cumulative volumetric flow over 15-minute block average period (scf)*  $Q_{mass} = massflow rate (pounds per second)$  $Q_{NG1}$  = cumulative vol flow of Supplemental Gas to flare during previous 15 - minute block period (scf)  $Q_{NG2}$  = cumulative vol flow of Supplemental Gas to flare during the 15 - minute block period (scf)  $Q_s$  = cumulative vol flow of Total Steam during the 15 - minute block period (scf)  $Q_{va}$  = cumulative vol flow of Vent Gas during the 15 - minute block period (scf) *Q<sub>vol</sub>* = volumetric flow rate (scf per second) *Vmax = Maximum allowed flare tip velocity (feet per second) Vtip = Flare tip velocity (feet per second)*  $x_i$  = concentration of component *i* in Vent Gas (vol fraction)  $x_{H2}$  = concentration of H2 in Vent Gas at time sample was input into NHV monitoring system (vol fraction)

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APPENDICES TO CONSENT DECREE

# **APPENDIX 1.3**

Calculating the Unobstructed Cross Sectional Area of Various Types of Flare Tips

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|---|--|--|--|
| Туре Ш  | Туре <u>Т</u>  |  |  |
| LD.M<br>Stability Tabs<br>Modules   | I.D.T  |  |  |
| Pilot   | Pilot  |  |  |
| $A_{tip-unob} = N_M * (+ (I.DM)^2/4 - X_T * A_{ST})$ Where: A_{transmitted} = Upobstructed Cross Sectional Area   | $A_{tip-unob} = Tr(I.DT)^{2/4}$ Where: Atinumb = Unobstructed Cross    |  |  |
| of Flare Tip<br>I.D. <sub>M</sub> = Inside Diameter of One Tip Module<br>$N_M$ = Number of Modules<br>$X_T$ = Number of Stability Tabs per Module<br>$A_{ST}$ = Area of a Stability Tab | Sectional Area of Flare Tip  |  |  |
| Example: I.D. <sub>M</sub> = 17 inches<br>$N_M = 6$ $X_T = 3$<br>$A_{ST} = 3$ Sq. inches  | Example: I.D. <sub>T</sub> = 41.5 inches                               |  |  |
| $A_{tip-unob} = 6 * (rr*(17)^2/4 - 3 * 3)$<br>$A_{tip-unob} = 1308$ Sq. inches  | $A_{tip-unob} = 4 (41.5)^2/4$ $A_{tip-unob} = 1353 \text{ Sq. inches}$ |  |  |

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# **APPENDIX 1.4**

**Depiction of Gases Associated with Steam-Assisted Flares** 

# Case 2:22-DEPICTION OF GASES ASSOCIATED 499 WITH STEAM-ASSISTED FLARES



and Total Steam."

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# **APPENDIX 1.5**

Outline of Requirements for the Flare Data and Initial Monitoring Systems Report

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### OUTLINE OF REOUIREMENTS FOR THE FLARE DATA AND INITIAL MONITORING SYSTEMS REPORT

- 1. Facility-Wide
  - 1.1 Facility plot plan showing the location of each Flare in relation to the general plant layout
- 2. General Description of Flare
  - 2.1 Ground or elevated
  - 2.2 Type of assist system
  - 2.3 Simple or integrated (*e.g.*, sequential, staged)
  - 2.4 Date first installed
  - 2.5 History of any physical changes to the Flare
  - 2.6 Whether the Flare is a Temporary-Use Flare, and if so, the duration and time periods of use
  - 2.7 Flare Gas Recovery System ("FGRS"), if any, and date first installed
- 3. Flare Components: Complete description of each major component of the Flare, except the Flare Gas Recovery System (*see* Paragraph 5), including but not limited to:
  - 3.1 Flare stack (for elevated flares)
  - 3.2 Flare tip
    - 3.2.1 Date installed
    - 3.2.2 Manufacturer
    - 3.2.3 Tip Size
    - 3.2.4 Tip Drawing
    - 3.2.5 Smokeless Design Capacity
  - 3.3 Knockout or surge drum(s) or pot(s), including dimensions and design capacities
  - 3.4 Water seal(s), including dimensions and design parameters
  - 3.5 Flare header(s)
  - 3.6 Sweep Gas system
  - 3.7 Purge gas system
  - 3.8 Pilot gas system
  - 3.9 Supplemental gas system
  - 3.10 Assist system
  - 3.11 Ignition system
- 4. Simplified process diagram(s) showing the configuration of the components listed in Paragraph 3

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- 5. Calvert City and Lake Charles Flare Gas Recovery Systems ("FGRSs")
  - 5.1 Complete description of each major component, including but not limited to:
    - 5.1.1 Compressor(s), including design capacities
    - 5.1.2 Water seal(s), rupture disk, or similar device to divert the flow
  - 5.2 Maximum actual past flow on an scfm basis and the annual average flow in scfm for the five years preceding Date of Lodging
  - 5.3 Simplified schematic showing the FGRSs
  - 5.4 Process Flow Diagram that adds the FGRSs to the PDF(s) in Paragraph 4
- 6. Flare Design Parameters
  - 6.1 Maximum Vent Gas Flow Rate and/or Mass Rate
  - 6.2 Maximum Sweep Gas Flow Rate and/or Mass Rate
  - 6.3 Maximum Purge Gas Flow and/or Mass Rate, if applicable
  - 6.4 Maximum Pilot Gas Flow and/or Mass Rate
  - 6.5 Maximum Supplemental Gas Flow Rate and/or Mass Rate
  - 6.6 If steam-assisted, Minimum Total Steam Rate, including all available information on how that Rate was derived
- 7. Gases Venting to Flare
  - 7.1. Sweep Gas
    - 7.1.1 Type of gas used
    - 7.1.2 Actual set operating flow rate (in scfm)
    - 7.1.3 Average lower heating value expected for each type of gas used
  - 7.2 Purge Gas, if applicable
    - 7.2.1 Type of gas used
    - 7.2.2 Actual set operating flow rate (in scfm)
    - 7.2.3 Average lower heating value expected for each type of gas used
  - 7.3 Pilot Gas
    - 7.3.1 Type of gas used
    - 7.3.2 Actual set operating flow rate (in scfm)
    - 7.3.3 Average lower heating value expected for each type of gas used
  - 7.4 Supplemental Gas
    - 7.4.1 Type of gas used
    - 7.4.2 Average lower heating value expected for each type of gas used
  - 7.5 Steam (if applicable)
    - 7.5.1 Drawing showing points of introduction of Lower, Center, Upper, and any other steam
  - 7.6 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 7.5.1 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)

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- 8. Existing Monitoring Systems
  - 8.1 A brief narrative description, including manufacturer and date of installation, of all existing monitoring systems, including but not limited to:
    - 8.1.1 Waste Gas and/or Vent Gas flow monitoring
    - 8.1.2 Waste Gas and/or Vent Gas heat content analyzer
    - 8.1.3 Sweep Gas flow monitoring
    - 8.1.4 Purge Gas flow monitoring
    - 8.1.5 Supplemental Gas flow monitoring
    - 8.1.6 Steam flow monitoring
    - 8.1.7 Waste Gas or Vent Gas molecular weight analyzer
    - 8.1.8 Gas Chromatograph
    - 8.1.9 Sulfur analyzer(s)
    - 8.1.10 Video camera
    - 8.1.11 Thermocouple
  - 8.2 Drawing(s) showing locations of all existing monitoring systems
- 9. Monitoring Equipment to be Installed to Comply with Consent Decree
- 10. Narrative Description of the Monitoring Methods and Calculations that will be used to comply with the NHV<sub>cz</sub> Requirements in the Consent Decree

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# **APPENDIX 1.6**

Waste Gas Mapping: Level of Detail Needed to Show Main Headers and Process Unit Headers

## WASTE GAS MAPPING: LEVEL OF DETAIL NEEDED TO SHOW MAIN HEADERS AND PROCESS UNIT HEADERS

# Purpose:

Waste Gas Mapping is required in order to identify the source(s) of waste gas entering each Covered Flare. Waste Gas Mapping can be done using instrumentation, isotopic tracing, acoustic monitoring, and/or engineering estimates for all sources entering a flare header (e.g. pump seal purges, sample station purges, compressor seal nitrogen purges, relief valve leakage, and other sources under normal operations). This Appendix outlines what needs to be included as the Waste Gas Mapping section within the Initial Waste Gas Minimization Plan ("Initial WGMP") and, as needed, later updated.

# Waste Gas Mapping Criteria:

For purposes of waste gas mapping, a main header is defined as the last pipe segment prior to the flare knock out drum. Process unit headers are defined as pipes from inside the battery limits of each process unit that connect to the main header. For process unit headers that are greater than or equal to six (6) inches in diameter, flow ("Q") must be identified and quantified if it is technically feasible to do so. In addition, all sources feeding each process unit header must be identified and listed in a table, but not necessarily individually quantified. For process unit headers that are less than six (6) inches in diameter, sources must be identified, but they do not need to be quantified.

# Waste Gas Mapping Submission Requirements:

For each Covered Flare, the following shall be included within the Waste Gas Mapping section of the Initial WGMP:

- 1. A simplified schematic consistent with the example schematic included on the second page of this Appendix.
- 2. A table of all sources connected to each flare main header and process unit header consistent with the Table included on the third page of this Appendix.



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# **APPENDIX 1.7**

February 5, 2018 Letter to Representatives of Extrel CMS, LLC and AMETEK, Energy and Process Division from Steffan M. Johnson, Group Leader, Measurement Technology Group, Office of Air Quality Planning and Standards Case 2:22-cv-01577-JDC-KK Document 5-1 Filed 10/26/22 Page 32 of 46 PageID #: 509

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# **APPENDIX 1.8**

**FGRS for Lake Charles and Calvert City** 

# FGRS Requirements

| Covered<br>Plant | FGRS<br>Type   | Covered<br>Flare(s) | FGRS Operating<br>Design Capacity<br>(thousand<br>scf/hour) | Total No. of<br>Installed<br>Compressors                                       | Capacity of<br>Each<br>Compressor<br>(thousand<br>scf/hour) |
|------------------|----------------|---------------------|---|--|---|
| Calvert<br>City  | Liquid<br>Ring | Ethylene<br>Flare   | 2 62.5  | 1 Compressor<br>system with 1<br>installed<br>Duplicate<br>Spare<br>Compressor | 2 62.5  |
| Lake<br>Charles  | Liquid<br>Ring | Petro 2             | 2 62.5  | 1 Compressor<br>system with 1<br>installed<br>Duplicate<br>Spare<br>Compressor | 2 62.5  |

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# **APPENDIX 1.9**

Lake Charles Petro 2 Unit Hydrogen Rich Gas Mixture Route-Around of the Petro 2 Unit Flare FGRS

# **Existing Operations: Petro 2 Unit Flare**

I. Hydrogen Rich Gas Mixture

The Lake Charles, Louisiana Petro 2 Unit produces approximately 19,535 pounds per hour of a hydrogen rich gas mixture. A portion of this gas mixture is used for internal consumption by the Petro 2 Unit, and a portion is sent to an on-site third-party customer. When the customer shuts down, the excess gas mixture is routed from the hydrogen delivery system to the Petro 2 Unit Flare. During these events, the average flow of the hydrogen rich gas mixture to the Petro 2 Unit Flare is approximately 5,200 pounds per hour with a maximum hourly flow of up to approximately 16,000 pounds per hour, depending on the operating conditions of the site fuel system.

The composition of the hydrogen rich gas mixture is approximately:

Hydrogen = 92.7 mol% Methane = 7.1 mol% Carbon Monoxide = 0.2 mol%

Molecular Weight = 3.08 lb/lb-mole

II. Origin of Hydrogen Rich Gas Mixture

During normal operation, cracked gas from the compressor is routed through a number of heat exchangers to cool and condense the gas/liquids to very low temperatures. Hydrogen is separated from the cracked gas mixture in the last cooling step called the cold box. Hydrocarbon liquids from the Cold Box are routed to the distillation train. A portion of the hydrogen gas is sent to fuel, and the remainder is sent to a third-party customer. In an alternative mode of operation, a portion of the hydrogen gas is sent to fuel, a portion is consumed internally after it has been sent to a methanator for removal of carbon monoxide, and the remainder is sent to a third-party customer. In the present configuration, if venting of excess hydrogen gas is required, the flare tie-in upstream of the methanator is primarily used. A flow diagram is shown below:



## **Proposed Future Design and Petro 2 Unit FGRS**

The hydrogen rich gas mixture, by no later than the operational deadline for the Petro 2 Unit FGRS as set forth in Paragraph 38 of this Consent Decree, must be routed around the FGRS as described and shown in the drawing below.

**Hydrogen Rich Gas Mixture** - During times when the hydrogen rich gas mixture is not consumed for internal use or by the third-party customer, the excess hydrogen rich gas mixture will be routed around the future FGRS. During these times, the excess hydrogen rich gas mixture is not Potentially Recoverable Gas. Piping will be installed and will run from the hydrogen processing system directly to the Petro 2 Unit Flare. This is shown in red on the FGRS flow diagram.

A drawing of the future Petro 2 Unit FGRS is shown below:

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# **APPENDIX 2.1**

Scope of Work for the Fenceline Monitoring Project

### SCOPE OF WORK FOR THE FENCELINE MONITORING PROJECT

- 1. **Applicability.** The requirements of this Fenceline Monitoring Mitigation Project apply to the Covered Plants listed in Paragraph 12.s of this Consent Decree (including the Marine Loading Area at the Lake Charles Plant, but excluding the Polymers Plant at the Lake Charles Plant).
- 2. **Timing and Public Transparency**. No later than 270 Days after the Effective Date, the Applicable Defendant(s) must submit in writing to EPA a report: a) showing the location of all monitors at each Covered Plant that will be utilized to comply with the Monitoring Requirements of Paragraph 3 below; b) providing an active/live/not-password-protected URL to a mockup of the publicly available website to be used to report monitoring data pursuant to this Fenceline Monitoring Mitigation Project; and c) a statement indicating that the website is properly indexed (including, but not limited to the following search terms: "benzene," "fenceline monitoring," and the Plant name and location) with the major search engines (*e.g.*, Google, Bing, Yahoo) to allow the public to easily find the website.

The Fenceline Monitoring System described in Paragraph 3 below must commence collecting data 365 Days after the Effective Date (Effective Date is defined at Section XVII of the Consent Decree).

The Applicable Defendant(s) 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 Paragraph 3.g below (corrective action plans posted to the website may be redacted to protect confidential business information). The Applicable Defendant(s) 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 Paragraph 3.e.(3) below. The Applicable Defendant(s) 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.

#### 3. **Monitoring Requirements**.

a. The Applicable Defendant(s) must commence sampling along the property boundary of each of the Covered Plants. The Applicable Defendant(s) 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 Paragraphs 3.b through 3.g below.

b. The target analyte for the Fenceline Monitoring System is benzene.

c. <u>Siting of monitors.</u> The Applicable Defendant(s) 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 duplicates and blanks, which will be determined pursuant to 40 C.F.R. § 63.658(c)(3).

(1) 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 Covered Plants, 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 this Appendix, 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).

(2) If there are 19 or fewer monitoring locations, the Applicable Defendant(s) 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 Applicable Defendant(s) 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.

(3) The Applicable Defendant(s) 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 this Appendix must have a detection limit that is at least an order of magnitude lower than the benzene action level.

d. <u>Collection of meteorological data.</u> The Applicable Defendant(s) must collect and record meteorological data according to the applicable requirements in Paragraphs 3.d.(1) and 3.e(2) of this Appendix 2.1.

(1) The Applicable Defendant(s) 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 the applicable Covered Plants.

(2) If an on-site meteorological station is used, the Applicable Defendant(s) 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.

e. <u>Sampling Frequency</u>. The Applicable Defendant(s) must use a sampling period and sampling frequency as specified in this Paragraph 3.e.

(1) *Sampling period*. A 14-Day sampling period must be used, unless a shorter sampling period is determined to be necessary under Paragraph 3.g. A sampling period is defined as the period during which a sampling tube is deployed at a specific sampling location with the diffusive sampling end cap in-place. The sampling period does not include the time required to analyze the sample. For the purpose of this sub-Paragraph, 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.

(2) *Base sampling frequency*. Except as provided in Paragraph 3.e.(3), 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.

(3) Alternative sampling frequency for burden reduction. When an individual monitor consistently, as defined in Paragraph 3.e.(3)(i) through (v), yields results at or below 0.9  $\mu$ g/m<sup>3</sup>, the Applicable Defendant(s) may elect to use the applicable minimum sampling frequency specified in Paragraph 3.e.(3)(i) through (v) for that individual monitoring site.

When calculating �c (as defined in Paragraph 3.f) 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.

(i) If every sample at an individual monitoring site is at or below  $0.9 \,\mu\text{g/m}^3$  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.

(ii) If every sample at an individual monitoring site that is monitored at the frequency specified in Paragraph 3.e.(3)(i) is at or below  $0.9 \ \mu g/m^3$  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.

(iii) If every sample at an individual monitoring site that is monitored at the frequency specified in Paragraph 3.e.(3)(ii) is at or below 0.9  $\mu$ g/m<sup>3</sup> 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.

(iv) If every sample at an individual monitoring site that is monitored at the frequency specified in Paragraph 3.e.(3)(iii) is at or below 0.9  $\mu$ g/m<sup>3</sup> 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.

(v) If at any time a sample for an individual monitoring site that is monitored at the frequency specified in Paragraphs 3.e.(3)(i) through (iv) returns a result that is above 0.9  $\mu$ g/m<sup>3</sup>, that sampling site must return to the original sampling requirements of contiguous 14-Day sampling periods with no skip periods for one quarter (six 14-Day sampling periods). If every sample collected during this quarter is at or below 0.9  $\mu$ g/m<sup>3</sup>, the Applicable Defendant(s) may revert back to the reduced monitoring frequency applicable for that individual monitoring site immediately prior to the sample reading exceeding 0.9  $\mu$ g/m<sup>3</sup>. If any sample collected this quarter is above 0.9  $\mu$ g/m<sup>3</sup>, 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 Paragraph 3.e.(3)(i) are met again, *i.e.*, after 52 contiguous 14-Day samples with no results above 0.9  $\mu$ g/m<sup>3</sup>.

f. <u>Action Level</u>. Within 45 Days of completion of each sampling period, the Applicable Defendant(s) must determine whether the results are above or below the action level as follows:

(1) <u>Calculation of the</u> **\diamond** c. The Applicable Defendant(s) must determine the benzene

difference concentration (�c) for each 14-Day sampling period by determining the highest

and lowest sample results for benzene concentrations from the sample pool and calculating

the �c as the difference in these concentrations. The Applicable Defendant(s) must adhere to

the following procedures when one or more samples for the sampling period are below the method detection limit for benzene:

(i) If the lowest detected value of benzene is below detection, the Applicable

Defendant(s) must use zero as the lowest sample result when calculating  $\mathbf{O}$ c.

(ii) If all sample results are below the method detection limit, the Applicable Defendant(s) must use the method detection limit as the highest sample result.

(2) The Applicable Defendant(s) must calculate the annual average �c based on the average

of the 26 most recent 14-Day sampling periods. The Applicable Defendant(s) must update this annual average value after receiving the results of each subsequent 14-Day sampling period (*i.e.*, on a "rolling" basis).

(3) The action level for benzene is 9 micrograms per cubic meter ( $\mu g/m^3$ ) on an annual

average basis. If the annual average c value for benzene is less than or equal to 9 µg/m<sup>3</sup>, the concentration is below the action level. If the annual average c value for benzene is greater

than 9  $\mu$ g/m<sup>3</sup>, the concentration is above the action level, and the Applicable Defendant(s) must conduct a root cause analysis and corrective action in accordance with Paragraph 3.g.

g. Root Cause Analysis and Corrective Action. Within 5 Days of determining that the action

level has been exceeded for any annual average �c and no longer than 50 Days after completion

of the sampling period, the Applicable Defendant(s) must initiate a root cause analysis to determine the cause of such exceedance and to determine appropriate corrective action, such as those described in Paragraphs 3.g.(1) through (4). 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:

(1) Leak inspection using Method 21 of 40 C.F.R. Part 60, Appendix A-7 and repairing any leaks found.

(2) Leak inspection using optical gas imaging and repairing any leaks found.

(3) Visual inspection to determine the cause of the high benzene emissions and implementing repairs to reduce the level of emissions.

(4) 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 Paragraph 3.g , the �c 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  $\mu$ g/m<sup>3</sup> or if all corrective action measures identified require more than 45 Days to implement, the Applicable Defendant(s) must develop a corrective action plan that describes the corrective action(s) completed to date, additional measures that the Applicable Defendant(s) proposes to employ to reduce benzene concentrations in question below the action level, and a schedule for completion of these measures. The Applicable Defendant(s) must submit the corrective action plan to EPA

within 60 Days after receiving the analytical results indicating that the �c value for the 14-Day

sampling period following the completion of the initial corrective action is greater than  $9 \mu g/m^3$  or, if no initial corrective actions were identified, no later than 60 Days following the completion of the corrective action analysis required in Paragraph 3.g.

h. <u>Alternative Test Method</u>. The Applicable Defendant may submit for review and approval pursuant to this Consent Decree a request to use an alternative test method as provided in 40 C.F.R. § 63.658(k).
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|----------------|--------------------|---------------------|------------------|------------------|--|
| V-20-022       | Minor<br>Revision  | APE20200002         | 5/22/2020        | 3/7/2021         | De-Ethanizer Bottoms<br>Processing, Replacement of<br>EPN 332B, Addition of<br>EPN 332C/D  |
|                | Renewal            | APE20200003         | 10/16/2020       |                  | Title V Renewal  |
|                | Admin<br>Amendment | APE20220001         | 3/14/2022        |                  | Listed reqs. for EPN 329<br>only, asked for testing of<br>CO <sub>2</sub> rather than CO <sub>2</sub> e at<br>EPN 326A, incorporated<br>502(b)(10) Change from<br>Jan. 17, 2017.                                 |
| V-20-022<br>R1 | Minor<br>Revision  | APE20220002         | 6/7/2022         | 1/23/2023        | Installation of Flare Gas<br>Recovery System to route<br>excess flare gas to existing<br>combustion devices.<br>Updates to FUG-ETH-VVa<br>fugitive components,<br>addition of FUG-ETH-YY<br>fugitive components. |
|                | Admin<br>Amendment | APE20220003         | 3/14/2022        |                  | Removal of EPNs 332C,<br>332D, 373, and<br>Insignificant Activity EPN<br>326   |

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# **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)

| 150 mmBtu/hr each     |
|-----------------------|
| Process fuel gas *    |
| 1963, rebuilt 2013    |
| Low NOx burners (LNB) |
|                       |

| EU# 005D (EPN 311)    | One (1) Cracking Furnace (#7) |
|-----------------------|-------------------------------|
| Rating:               | 80 mmBtu/hr                   |
| Fuel:                 | Process fuel gas*             |
| Date of construction: | 1967, rebuilt 2014            |
| Control Device:       | Low NOx burners (LNB)         |

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

|                       | (i) I ii o (I) of a ching I and a cos (ii o and iis)          |
|-----------------------|---|
| 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 December 2024  |
| 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, PM<sub>10</sub>, PM<sub>2.5</sub>, VOC and CO<sub>2</sub>e, 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)(00), 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): 184 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): 150 mmBtu/hr each.
  - (2) For EU#005D (EPN 311): 80 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), PM<sub>10</sub>, and PM<sub>2.5</sub> 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<sub>2</sub>e) 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, PM<sub>10</sub>, PM<sub>2.5</sub> and GHG (as CO<sub>2</sub>e) 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.
- 1. 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 CO<sub>2</sub> 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 CO<sub>2</sub> 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:

- 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/mmscf
  - (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 PM<sub>10</sub>;
  - (4) 0.007 lb/mmBtu and 4.6 tons per year on a 12-month rolling basis of PM<sub>2.5</sub>;
  - (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<sub>2</sub>e (Based on Equation 5 from 40 CFR 98.33(a)(3)(iii) for CO<sub>2</sub> and 40 CFR 98 Subpart C Table 2, Fuel Gas for CH<sub>4</sub> and N<sub>2</sub>O).

#### **Compliance Demonstration Method:**

- 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** <u>Requirements</u>.
- e. Pursuant to 401 KAR 52:020, Section 10, emissions of NOx from EU# 006C (EPN 329) shall not exceed 0.0095 lb/mmBtu and NH<sub>3</sub> (ammonia slip) shall not exceed 10 ppmvd at 3% O<sub>2</sub>.

#### **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<sub>X</sub> 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% O<sub>2</sub>.
- (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/PM<sub>10</sub> (filterable

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

and condensable)/PM<sub>2.5</sub> (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<sub>x</sub> on EU# 006C (EPN 329). The permittee shall measure the NO<sub>x</sub> 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<sub>X</sub> and oxygen (O<sub>2</sub>) 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).

### 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.
- 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, PM<sub>10</sub>, PM<sub>2.5</sub> and CO<sub>2</sub>e 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<sub>2</sub>e 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.

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

- c. As an alternative, compliance with CO<sub>2</sub>e 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 O<sub>2</sub> (or CO<sub>2</sub>) 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 NOx 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 NOx while maintaining ammonia slip below 10 ppmvd at 3% O<sub>2</sub>, 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.
    - (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 CO<sub>2</sub> 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 CO<sub>2</sub> concentration values beginning before the expected end of the air-in decoke time, the criterion used to begin the CO<sub>2</sub> 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 CO<sub>2</sub> concentration and any

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

decoke completion assurance procedures used to confirm all coke has been removed prior to stopping air addition that occurs after the CO<sub>2</sub> 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.
  - (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. See Section F.

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

| (EPN 326A)             | Ethylene Decoking Pot           |  |  |
|------------------------|---------------------------------|--|--|
| Proposed Construction: | January 2023                    |  |  |
| Control:               | Integrated Cyclone and scrubber |  |  |

#### **APPLICABLE REGULATIONS:**

401 KAR 51:017, Prevention of Significant Deterioration of Air Quality. (For PM, PM<sub>10</sub>, PM<sub>2.5</sub>, CO, and CO<sub>2</sub>e).

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.
- c. Pursuant to 401 KAR 52:020, Section 10, the existing decoking pot (EPN 326) shall not be operated upon startup of EPN 326A.

#### **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 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/hr
    - Where: E = rate of particulate emissions in lb(s)/hr, andP = 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.

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

#### **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.
- 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<sub>2</sub>e 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<sub>2</sub>e emissions. The plan shall be incorporated into the plant standard operating procedures (SOP) and shall be made available for the Division's inspection. The permittee shall implement a startup, shutdown and malfunction plan as defined in 40 CFR 63, Subpart YY 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:
  - 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 PM<sub>10</sub>;
  - (3) 2.40 lb/hr on a 24-hour average and 1.79 tons per year on a 12-month rolling basis of PM<sub>2.5</sub>; 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/PM<sub>10</sub>/PM<sub>2.5</sub> lb/hr limits, the permittee shall operate and maintain the associated control device in accordance with the manufacturer's recommendations.

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

- (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.

### 3. <u>Testing Requirements:</u>

- 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 CO<sub>2</sub> 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.

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

- e. Pursuant to 401 KAR 52:020, Section 10, the permittee shall calculate and keep records of the emissions of each pollutant PM, PM<sub>10</sub>, PM<sub>2.5</sub>, CO and CO<sub>2</sub>e from EPN 326A on a monthly basis as well as a 12-month rolling total.
- f. See Section F.
- 6. <u>Specific Reporting Requirements:</u> See Section F.

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# 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   |
| EU# RRH (EPN 314)<br>Rating:                                   | Reactor Regeneration Heater<br>5.28 mmBtu/hr                              |
| EU# RRH (EPN 314)<br>Rating:<br>Fuel:                          | Reactor Regeneration Heater<br>5.28 mmBtu/hr<br>Process fuel gas*         |
| EU# RRH (EPN 314)<br>Rating:<br>Fuel:<br>Date of construction: | Reactor Regeneration Heater<br>5.28 mmBtu/hr<br>Process fuel gas*<br>2005 |

\* 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)(iiii), 40 C.F.R. 63.7480 through 63.7575, Tables 1 through 13 (Subpart DDDDD), National Emission Standards for Hazardous Air Pollutants for Major Sources: Industrial, Commercial, and Institutional Boilers and Process Heaters.

#### 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)(iiii).

#### 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. <u>Specific Reporting Requirements:</u> See Section F.

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

EU# 021 (EPN 318)n-Propanol Tank (TK-932)Type of Tank:Fixed RoofDate of construction:1963Maximum Capacity:3,000 gallons (11.36 m³)Maximum true vapor pressure of total organic HAP: 5.13 kilopascals (kPa) (0.7434 psia)

### **APPLICABLE REGULATIONS:**

401 KAR 63:002, Section 2(4)(00), 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:**

Pursuant to 40 CFR 63.1103(e)(3) and Table 7, item (a)(1)(i) of 40 CFR 63, Subpart YY, the permittee with 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  $\geq$ 3.4 kilopascals but <76.6 kilopascals; and the capacity of the vessel is  $\geq$ 4 cubic meters but <95 cubic meters, the permittee shall:

(1) Fill the vessel through a submerged pipe; or

(2) Comply with the requirements for storage vessels with capacities  $\geq$ 95 cubic meters.

### **Compliance Demonstration Method:**

Refer to Section F.9 for compliance reporting.

- 2. <u>Emission Limitations</u>: 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. <u>Specific Monitoring Requirements</u>: None
- 5. <u>Specific Recordkeeping Requirements:</u> None
- 6. <u>Specific Reporting Requirements</u>: 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 RoofMaximum Capacity:96,000 gallons capacityDate of Construction:August 2020True vapor pressure of organic HAP < 3.4kPa</td>

\*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)(00), 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. <u>Emission Limitations</u>: None
- 3. <u>Testing Requirements</u>: Pursuant to 401 KAR 50:045, Section 1, testing shall be conducted at such times as may be requested by the Cabinet.
- 4. <u>Specific Monitoring Requirements</u>: None
- 5. <u>Specific Recordkeeping Requirements</u>: None
- 6. <u>Specific Reporting Requirements</u>: 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 RoofMaximum Capacity:259,308 gallons (981.6 m³)Date of construction:1963Maximum true vapor pressure:12.13 kilopascal

EU# 022 (EPN 320)Gasoline Storage Tank (TK 904B)Type of Tank:Internal Floating RoofMaximum Capacity:259,308 gallons (981.6 m³)Date of construction:1963Maximum 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)(00), 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  $\geq$ 3.4 kilopascals but <76.6 kilopascals; and the capacity of the vessel is  $\geq$  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).
    - (A) Comply with the requirements of 40 CFR 63, Subpart WW; or
    - (B) 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
    - (C) 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
    - (D) 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)

# 2. <u>Emission Limitations:</u>

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 paragraph 40 CFR 63.1063(a). Any of the 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:

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

- (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.

#### 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. See Section F.

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

| EU# 007 (EPN 321)     | Ethylene Flare                                   |
|-----------------------|--|
| Type:                 | John Zink, continuously operated, steam assisted |
| Auxiliary Fuel:       | Process Fuel Gas and/or Natural Gas              |
| Maximum Rating:       | <del>-5,750 mmBtu/hr</del>                       |
| Date of Construction: | <u>1991 (new flare tip in 2011)</u>              |

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 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)(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.

401 KAR 63:002, Section 2(4)(00), 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.

#### 1. Operating Limitations:

- a. Pursuant to 401 KAR 52:020, Section 10,
  - (1)-EU# 007 (EPN 321) shall not be operated beyond 180 days after startup of EU# 007A (EPN 321A).
  - (2) Upon startup of EU# 007A (EPN 321A), the combined operating rate of EU# 007 (EPN 321) and EU# 007A (EPN 321A) shall not exceed 56.1 mmBtu/hr on a 30-day rolling average.

#### **Compliance Demonstration Method:**

(1) For compliance with **1. Operating Limitations** a.(1), see **6. Specific Reporting Requirements** e.

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

- (2) For compliance with 1. Operating Limitations a.(2), see 5. Specific Recordkeeping Requirements e.
- 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 when vents are being sent to flare.
- e. 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/sem) (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 40 CFR 63.982(a) and 40 CFR 63.987(a), the permittee shall meet the performance requirements in 40 CFR 63.11(b) and 40 CFR 60.18(c).

#### **Compliance Demonstration Method:**

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

e. Pursuant to 40 CFR 63.1102(c), the permittee must be in compliance with the requirements listed in 40 CFR 63.1102(c)(1) through (13) upon initial startup or July 6, 2023, whichever is later.

#### Compliance Demonstration Method: Refer to Section D 6.

#### 2. Emission Limitations:

- a. Pursuant to 401 KAR 63:015, Section 3, visible emissions from the either flare shall not exceed twenty (20) percent opacity for more than three (3) minutes in any one (1) day.
- b. Pursuant to 40 CFR 63.1103(e)(3) and Table 7, item (d)(1)(i) through (ii) of 40 CFR 63, Subpart YY, the permittee of an ethylene process vent as defined in 40 CFR 63.1103(e)(2) and if the process vent is at an existing source and the vent stream has a flow rate ≥0.011 semm and a total organic HAP concentration ≥50 parts per million by volume on a dry basis; or the process vent is at a new source and the vent stream has a flow rate ≥0.008 semm and a total organic HAP concentration ≥30 parts per million by volume on a dry basis; or the process vent is at a new source and the vent stream has a flow rate ≥0.008 semm and a total organic HAP concentration ≥30 parts per million by volume on a dry basis, shall:
  - (1) Except as specified in Table 7, item (d)(1)(ii) of 40 CFR 63, Subpart YY, 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% oxygen; whichever is less stringent, by venting emissions through a closed vent system to any combination of control devices and meet the requirements specified in 40 CFR 63.982(b) and (c)(2).
  - (2) Beginning no later than the compliance dates specified in 40 CFR 63.1102(c), comply with the maintenance vent requirements specified in 40 CFR 63.1103(c)(5) and either item (d)(1)(ii)(A) or (B) of Table 7 to 40 CFR 63, Subpart YY.

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

- (A) 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); or
- (B) 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 any combination of non flare control devices and meet the requirements specified in 40 CFR 63.982(c)(2) and 40 CFR 63.1103(e)(9).
- c. Pursuant to 40 CFR 63.11(b)(4), the flare shall be operated with no visible emissions, except for periods not to exceed a total of 5 minutes during any 2 consecutive hours.

#### **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) Closed vent system and flare: Pursuant to 40 CFR 63.982(b), owners or operators that vent emissions through a closed vent system to a flare shall meet the requirements in 40 CFR 63.983 for closed vent systems. 40 CFR 63.987 for flares; 40 CFR 63.997 (a), (b), and (c) for provisions regarding flare compliance assessments; the monitoring, recordkeeping, and reporting requirements of 40 CFR 63.998 and 40 CFR 63.999. No other provisions of 40 CFR 63, Subpart SS apply to emissions vented through a closed vent system to a flare.

#### 3. Testing Requirements:

Pursuant to 401 KAR 52:020, Section 10, to ensure continuous compliance, with 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 within 5 years of the previous test approved by the Division.

#### 4. <u>Specific Monitoring Requirements:</u>

- a. Pursuant to 40 CFR 63.987(c), the permittee shall install, calibrate, maintain, and operate a device (including but not limited to a thermocouple, ultra violet beam sensor, or infrared sensor) capable of continuously detecting the presence of a pilot flame. This shall be in accordance to manufacturer's specifications or other written procedures that provide adequate assurance that the equipment would reasonably be expected to monitor accurately.
- b. Pursuant to 40 CFR 63.981, continuous record means documentation, either in hard copy or computer readable form, of data values measured at least once every 15 minutes and recorded at the frequency specified in 40 CFR 63.998(b).

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

#### 5. Specific Recordkeeping Requirements:

- a. The permittee shall keep an up to date, readily accessible record of the following data and, pursuant to 40 CFR 63.998(a)(1)(i), this data shall be included in the flare compliance assessment report as specified in 40 CFR 63.999(a)(2)(iii)(A).
  - (1) Pursuant to 40 CFR 63.998(a)(1)(i)(A), flare design (i.e., steam assisted, air assisted, or non-assisted):
  - (2) Pursuant to 40 CFR 63.998(a)(1)(i)(B), all visible emission readings, heat content determinations, flow rate measurements, and exit velocity determinations made during the flare compliance assessment; and
  - (3) Pursuant to 40 CFR 63.998(a)(1)(i)(C), all periods during the flare compliance assessment when all pilot flames are absent or, if only the flare flame is monitored, all periods when the flare flame is absent.
- b. Pursuant to 401 KAR 52:020, Section 10, the permittee shall maintain records of routine and non-routine maintenance activities performed at the flare.
- c. Pursuant to 40 CFR 63.998(a)(1)(ii and iii), the permittee shall keep the following records up to date and readily accessible:
  - (1) Pursuant to 40 CFR 63.998(a)(1)(ii), hourly records of whether the monitor was continuously operating and whether the pilot flame was continuously present during each hour.
  - (2) Pursuant to 40 CFR 63.998(a)(1)(iii), records of the times and duration of all periods during which the pilot flame is absent or the monitor is not operating for each operating day determined according to the procedures specified in 40 CFR 63.999(c)(3).
- d. Pursuant to 401 KAR 52:020, Section 10, the permittee shall keep records of the daily average individual and combined operating rates (in mmBtu/hr) of EU# 007 (EPN 321) and EU# 007A (EPN 321A) and calculate a 30-day rolling average. See Section F.

#### 6. Specific Reporting Requirements:

- a. Pursuant to 40 CFR 63.999(a)(1)(i), the permittee shall notify the Administrator of the intention to conduct a performance test or flare compliance assessment at least 30 days before such a compliance demonstration is scheduled to allow the Administrator the opportunity to have an observer present. If after 30 days notice for such an initially scheduled compliance demonstration, there is a delay (due to operational problems, etc.) in conducting the scheduled compliance demonstrator as soon as possible of any delay in the original demonstration date. The owner or operator shall provide at least 7 days prior notice of the rescheduled date of the compliance demonstration or arrange a rescheduled date with the Administrator by mutual agreement.
- b. Pursuant to 40 CFR 63.999(a)(1)(iv), any application to substitute a prior performance test or compliance assessment for an initial performance test or compliance assessment, as allowed by 40 CFR 63.997(b)(1), shall be submitted no later than 90 days before the performance test or compliance test is required. The application for substitution shall include information demonstrating that the prior performance test or compliance

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

assessment was conducted using the same methods specified in 40 CFR 63.997(e) or 40 CFR 63.987(b)(3), as applicable. The application shall also include information demonstrating that no process changes have been made since the test, or that the results of the performance test or compliance assessment reliably demonstrate compliance despite process changes.

- e. Performance test and flare compliance assessment report submittal and content requirements. Pursuant to 40 CFR 63.999(a)(2), performance test and flare compliance assessment reports shall be submitted as specified in 40 CFR 63.999(a)(2)(i) through 40 CFR 60.999(a)(2)(iii) as follows:
  - (1) For performance tests or flare compliance assessments, the Notification of Compliance Status or performance test and flare compliance assessment report shall include one complete test report as specified in 40 CFR 63.999(a)(2)(ii) for each test method used for a particular kind of emission point and other applicable information specified in 40 CFR 63.999(a)(2)(iii). For additional tests performed for the same kind of emission point using the same method, the results and any other information required in applicable sections of this subpart shall be submitted, but a complete test report is not required.
  - (2) A complete test report shall include a brief process description, sampling site description, description of sampling and analysis procedures and any modifications to standard procedures, quality assurance procedures, record of operating conditions during the test, record of preparation of standards, record of calibrations, raw data sheets for field sampling, raw data sheets for field and laboratory analyses, documentation of calculations, and any other information required by the test method.-
  - (3) The performance test or flare compliance assessment report shall also include the information specified in 40 CFR 63.999(a)(2)(iii)(A) through (C) below, as applicable.
     (i) For flare compliance assessments, the permittee shall submit the records specified in 40 CFR 63.998(a)(1)(i).

# d. Periodic reports. [40 CFR 63.999(c)]

- (1) Pursuant to 40 CFR 63.999(c)(1), periodic reports shall include the reporting period dates, the total source operating time for the reporting period, and, as applicable, all information specified in this section and in the referencing subpart, including reports of periods when monitored parameters are outside their established ranges.
- (2) Pursuant to 40 CFR 63.999(c)(2), for closed vent systems subject to the requirements of 40 CFR 63.983, the permittee shall submit as part of the periodic report the information specified in 40 CFR 63.999(c)(2)(i) through (iii), as follows, as applicable. (i) The information recorded in 40 CFR 63.998(d)(1)(iii)(B) through (E);
  - (ii) Reports of the times of all periods recorded under 40 CFR 63.998(d)(1)(ii)(A) when the vent stream is diverted from the control device through a bypass line; and
  - (iii) Reports of all times recorded under 40 CFR 63.998(d)(1)(ii)(B) when maintenance is performed in car sealed valves, when the seal is broken, when the bypass line valve position is changed, or the key for a lock and key type configuration has been ehecked out.

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

(3) Pursuant to 40 CFR 63.999(c)(3), for flares subject to this subpart, report all periods when all pilot flames were absent or the flare flame was absent as recorded in 40 CFR 63.998(a)(1)(i)(C).

e. See Section F.

7. <u>Specific Control Equipment Operating Conditions:</u> Pursuant to 401 KAR 52:020, Section 10, the permittee shall comply with 40 CFR 60.18(c)-(f).

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

| EU# 007A (EPN 321A)   | New-Ethylene Flare                  |
|-----------------------|-------------------------------------|
| Туре:                 | John Zink, continuously operated    |
| Auxiliary Fuel:       | Process Fuel Gas and/or Natural Gas |
| Maximum Rating:       | 5,979 mmBtu/hr                      |
| Date of Construction: | Proposed July 2024June 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, PM<sub>10</sub>, PM<sub>2.5</sub>, VOC and CO<sub>2</sub>e)

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)(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.

401 KAR 63:002, Section 2(4)(00), 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 Chemical OpCo LP, entered on October 26, 2022.

### 1. **Operating Limitations:**

- a. Pursuant to 401 KAR 52:020, Section 10,
  - (1) EU# 007 (EPN 321) shall not be operated beyond 180 days after startup of EU# 007A (EPN 321A).

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

(2) Upon startup of EU# 007A (EPN 321A), the combined operating rate of EU# 007 (EPN 321) and EU# 007A (EPN 321A) shall not exceed 56.1 mmBtu/hr on a 30-day rolling average.

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

#### **Compliance Demonstration Method:**

- (1) For compliance with **1. Operating Limitations** a.(1), see **6. Specific Reporting Requirements** d.
- (2) For compliance with **1. Operating Limitations** a.(2), see **5. Specific Recordkeeping Requirements** e.
- b. 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, PM<sub>10</sub>, PM<sub>2.5</sub> and GHG (as CO<sub>2</sub>e) emissions.
- c. 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.
- d. 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).
- e. Pursuant to 40 CFR 63.982(a) and 40 CFR 63.987(a), the permittee shall meet the performance requirements in 40 CFR 63.11(b) and 40 CFR 60.18(c).
- f. 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.
- g. 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.

- h. Pursuant to 40 CFR 63.1103(e)(4), upon startup of EU# 007A, 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 of 40 CFR 63, Subpart YY, 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, Subpart YY.
- i. Pursuant to 40 CFR 63.1103(e)(4)(i), The permittee may elect to comply with the alternative means of emissions limitation requirements specified in of 40 CFR 63.670(r) of Subpart CC in lieu of the requirements in 40 CFR 63.670(d) through (f) of Subpart CC, as

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

applicable. However, instead of complying with 40 CFR 63.670(r)(3) of Subpart CC, the permittee must submit the alternative means of emissions limitation request following the requirements in 40 CFR 63.1113.

- j. Pursuant to 40 CFR 63.1103(e)(4)(ii), instead of complying with 40 CFR 63.670(o)(2)(i) of Subpart CC, the permittee must develop and implement the flare management plan no later than July 6, 2023.
- k. Pursuant to 40 CFR 63.1103(e)(4)(iii), instead of complying with 40 CFR 63.670(o)(2)(iii) of Subpart CC, 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 via the Compliance and Emissions Data Reporting Interface (CEDRI), which can be accessed through the EPA's Central Data Exchange (CDX) (https://cdx.epa.gov/). If the permittee claims some of the information in the flare management plan is confidential business information (CBI), submit a version with the CBI omitted via CEDRI. A complete plan, including information claimed to be CBI and clearly marked as CBI, must be mailed to the following address: U.S. Environmental Protection Agency, Office of Air Quality Planning and Standards, Sector Policies and Programs Administrator, U.S. EPA Mailroom (E143-01), Attention: Ethylene Production Sector Lead, 109 T.W. Alexander Drive, Research Triangle Park, NC 27711.
- Pursuant to 40 CFR 63.1103(e)(4)(iv), Section 40 CFR 63.670(o)(3)(ii) of Subpart CC and all references to 40 CFR 63.670(o)(3)(ii) of Subpart CC do not apply. Instead, the permittee must comply with the maximum flare tip velocity operating limit at all times.
- m. Pursuant to 40 CFR 63.1103(e)(4)(v), substitute "ethylene production unit" for each occurrence of "petroleum refinery."
- n. Pursuant to 40 CFR 63.1103(e)(4)(vi), each occurrence of "refinery" does not apply.
- o. Pursuant to 40 CFR 63.1103(e)(4)(vii), except as specified in 40 CFR 63.1103(e)(4)(vii)(G), if a 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, Subpart YY, then the permittee must comply with the requirements specified in 40 CFR 63.1103(e)(4)(vii)(A) through (F).
- p. 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).
- q. <u>Pursuant to 401 KAR 52:020</u>, 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,
## SECTION B - EMISSION POINTS, EMISSIONS UNITS, APPLICABLE REGULATIONS, AND OPERATING CONDITIONS (CONTINUED)

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.]

- (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 x (Maintenance of FGRS) and 1. Operating Limitations y (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 Chemcial 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 12.1.]
- (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 12.0.]
- (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 Title V 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.]
- (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 "NHVcz" means the Net Heating Value, in BTU/scf, of the Combustion Zone Gas in a Flare. NHVcz must be calculated in accordance with 1. Operating Limitations bb. [CD, Paragraph 12.tt.]
- (17) "Net Heating Value of Vent Gas" or "NHVvg" means the Net Heating Value, in Btu/scf, of the Vent Gas directed to a Flare. NHVvg must be calculated in accordance with 1. Operating Limitations bb. [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.]
- (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 "Atip-unob" means the open, unobstructed area of a Flare tip through which Vent Gas passes. 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 bb. depicts the meaning of "Waste Gas," together with its relation to other gases associated with Flares. [CD, Paragraph 12.cccc.]
- r. <u>Pursuant to 401 KAR 52:020, Section 10, the permittee must install and commence</u> 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.]
- s. <u>Pursuant to 401 KAR 52:020</u>, 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.]
- t. 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** c. 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** ff. [CD, Paragraph 28.]

- u. <u>Pursuant to 401 KAR 52:020, Section 10, for each Covered Flare that has a water seal, if</u> <u>all of the following conditions are met, then the Covered Flare is not receiving Potentially</u> <u>Recoverable Gas flow:</u>
  - (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.]
- v. 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 permit will require the permittee to recover any Waste Gas stream that is not a Potentially Recoverable Gas stream. [CD, Paragraph 39.a.]
- w. 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 z. The periods provided for in 1. Operating Limitations x (Maintenance of FGRS) and 1. Operating Limitations y (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 this permit condition. [CD, Paragraph 39.c.]
- x. 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.]
- y. <u>Pursuant to 401 KAR 52:020, Section 10, periods in which the FGRS is shut down</u> (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

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

necessary 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.]

- z. 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 w, 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 all or part of the 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.]
- aa. <u>Pursuant to 401 KAR 52:020, Section 10, the permittee must comply with the following</u> 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** aa.(2)(i) and (ii). Subsequent Visible Emissions observations must be conducted using either method listed in **1. Operating Limitations** aa.(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.]
    - <u>At least once per day, the permittee must conduct Visible Emissions</u>
       <u>observations using an observation period of 5 minutes using Method 22 at</u>
       <u>40 CFR Part 60, Appendix A–7. If at any time the permittee sees Visible</u>
       <u>Emissions, even if the minimum required daily Visible Emissions</u>
       <u>monitoring has already been performed, the permittee must immediately</u>

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

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. [CD, Paragraph 40.b.(1)]

- <u>ii.</u> 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. Nothing in 1. Operating Limitations aa.(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 c. and d. [CD, Paragraph 40.e.]
- bb. <u>Pursuant to 401 KAR 52:020</u>, Section 10, the permittee must operate the Covered Flare in compliance with either **1. Operating Limitations** bb.(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<sub>tip</sub>) must be less than 60 feet per second. The permittee must monitor V<sub>tip</sub> using the procedures specified in **1. Operation** Limitations bb; or [CD, Paragraph 41.a.]
  - (2) V<sub>tip</sub> must be less than 400 feet per second and also less than the maximum allowed Flare Tip Velocity (V<sub>max</sub>) as calculated according to Equation 2 as specified by 1. Operation Limitations bb(3)(iii). The permittee must monitor V<sub>tip</sub> and gas composition and must determine NHV<sub>vg</sub> using the procedures specified in 1. Operation Limitations bb. The Unobstructed Cross Sectional Area of the Flare Tip must be calculated consistent with Figures 1 and 2 of this section. [CD, Paragraph 41.b.]
  - (3) Calculation Method for Determining Compliance with V<sub>tip</sub> Operating Limits. The permittee shall determine V<sub>tip</sub> on a 15-minute Block Average basis according to the following requirements:

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

- 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 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 bb.
- iii. The 15-minute Block Average V<sub>tip</sub> shall be calculated using Equation 1. 0 V<sub>tip</sub>:

$$=\frac{c_{cum}}{Area \times 900}$$

Equation 1

iv. If the permittee chooses to comply with **1. Operating Limitation** bb.(1), the permittee shall also determine the NHV<sub>vg</sub> using **1. Operating Limitation** bb.(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<sub>vg</sub>) 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 NHVvg 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 NHVvg at a **Measurement Location** 

For any gas stream for which the permittee complies with 4. Specific i. Monitoring Requirements d. by collecting compositional analysis data in accordance with the method set forth in 4. Specific Monitoring **Requirements** d.(1): Equation 3 shall be used to determine the NHVvg 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 of this section.

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

Equation 3

| <u>ii.</u>     | For any gas stream for which the permittee complies with <b>4.</b> Specific                         |  |  |  |
|----------------|---|--|--|--|
|                | Monitoring Requirements d by collecting direct Net Heating Value                                    |  |  |  |
|                | monitoring data in accordance with the method set forth in 4. Specific                              |  |  |  |
|                | Monitoring Requirements d.(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 NHVvg for the sample.                                       |  |  |  |
| <u>iii.</u>    | For any gas stream for which the permittee complies with 4. Specific                                |  |  |  |
|                | Monitoring Requirements d by collecting direct Net Heating Value                                    |  |  |  |
|                | monitoring data in accordance with the method set forth in 4. Specific                              |  |  |  |
|                | Monitoring Requirements d.(2) and for which a Hydrogen Concentration                                |  |  |  |
|                | Monitor is also used: Equation 4 shall be used to determine the NHVvg 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 this permit, a Net                       |  |  |  |
|                | <u>Heating Value of 1,212 Btu/scf may be used <math>(1,212 - 274 = 938 \text{ Btu/scf})</math>.</u> |  |  |  |
|                | NHV <sub>vg</sub> =NHV <sub>measured</sub> +938x <sub>H2</sub>                                      |  |  |  |
|                | Equation 4  |  |  |  |
| <u>(6)</u> Ste | ep 1b: Calculation Method to be Used in Applying Equation/Output to                                 |  |  |  |
| De             | etermine NHV <sub>vg</sub>  |  |  |  |
| <u>i.</u>      | For any Covered Flare for which the permittee complies with 4. Specific                             |  |  |  |
|                | Monitoring Requirements d by using a continuous monitoring system in                                |  |  |  |
|                | accordance with the method set forth in <b>4. Specific Monitoring</b>                               |  |  |  |
|                | <b>Requirements</b> d.(1) or (2): The permittee may elect to determine the 15-                      |  |  |  |
|                | minute block average NHV <sub>vg</sub> using either the Feed-Forward Calculation                    |  |  |  |
|                | Method or the Direct Calculation Method (both described below). 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 KDAQ 30                           |  |  |  |
|                | days in advance of such a change.   |  |  |  |
| <u>ii.</u>     | Feed-Forward Calculation Method. When calculating NHV <sub>vg</sub> for a specific                  |  |  |  |
|                | <u>15-minute block:</u>   |  |  |  |
|                | <u>1. Use the results from the first sample collected during an event (for periodic</u>             |  |  |  |
|                | Vent Gas flow events) for the first 15-minute block associated with that event.                     |  |  |  |
|                | <u>2. If the results from the first sample collected during an event (for periodic</u>              |  |  |  |
|                | 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.  |  |  |  |
|                | <u>3. For all other cases, use the results that are available from the most recent</u>              |  |  |  |
|                | 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                          |  |  |  |

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

used to 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 15minute block:
  - 1. 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.
  - 2. 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.

- For any gas streams for which the permittee complies with 4. Specific Monitoring Requirements c. 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 c. 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 d.(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   | e the ave   | rage volumetric flow rate of that gas stream for the 15-minute  |  |  |
|---|---|---|--|--|
| block pe  | eriod.  |   |  |  |
|   |   | $Q_{\rm mass} \times 385.3$                                     |  |  |
|   |   | $Q_{\rm vol}$ – <u>MWt</u>                                      |  |  |
|   |   | Equation 5  |  |  |
| <u>iii. For gas</u>   | streams   | for which the molecular weight of the gas is known and          |  |  |
| <u>for whi</u>  | <u>ch the pe</u>  | ermittee complies with 4. Specific Monitoring                   |  |  |
| <b>Require</b>  | ements c  | . by using continuous pressure/temperature monitoring           |  |  |
| <u>system(</u>  | <u>s): Use a</u>  | ppropriate engineering calculations to determine the average    |  |  |
| volumet   | ric flow  | rate of that gas stream for the 15-minute block period. For     |  |  |
| <u>assist ste</u>   | eam, use  | a molecular weight of 18 pounds per pound-mole. For assist      |  |  |
| <u>air, use</u>   | <u>a molecu</u>   | lar weight of 29 pounds per pound-mole. For Vent Gas,           |  |  |
| molecul   | <u>ar weigh</u>   | t must be determined by collecting compositional analysis data  |  |  |
| for such  | Vent Ga   | s in accordance with the method set forth in <b>4. Specific</b> |  |  |
| Monito  | ring Req  | uirements d.(1).  |  |  |
| (8) Key to the  | Abbrev  | iations:  |  |  |
| <u>385.3</u>  | =   | conversion factor (scf/lb-mol)                                  |  |  |
| <u>850</u>  | =   | Constant  |  |  |
| 900   | =   | Conversion factor, (seconds/15-minute block average)            |  |  |
| 1,212   | =   | Constant for heating value of hydrogen (H <sub>2</sub> )        |  |  |
| Area  |   | The unobstructed cross-sectional area of the flare tip is the   |  |  |
|   | total tip area that vent gas can pass through, ft <sup>2</sup> . This area does not |   |  |  |
| include any stability tabs, stability rings, and upper steam or a |   |   |  |  |
|   | tube  | s because flare vent gas does not exit through them. Use        |  |  |
|   | desig   | and engineering principles to determine the unobstructed        |  |  |
|   | cross   | s-sectional area of the flare tip.                              |  |  |
| 1   | =   | <u>individual component in Vent Gas (unitless)</u>              |  |  |
| MWt   | =   | molecular weight of the gas at the flow monitoring location     |  |  |
|   | <u>(lb/lt</u>   | <u>omol)</u>  |  |  |
| n<br>NUU V  | =   | number of components in Vent Gas (unitless)                     |  |  |
| <u>NHV1</u>   | =   | Net Heating Value of component 1 according to Table 1           |  |  |
|   | belo  | <u>w (Btu/sct)</u>  |  |  |
| <u>NHV measu</u>  | ired=   | Net Heating Value of Vent Gas stream as measured by             |  |  |
|   | mon   | itoring system (Btu/scf)  |  |  |
|   |   | Net Heating value of Vent Gas (Btu/scf)                         |  |  |
| Qcum  | =   | cumulative volumetric flow over 15-minute block average         |  |  |
| 0   |   | mass flow rate (nounds per second)                              |  |  |
| Qmass   |   | volumetric flow rate (sef per second)                           |  |  |
| V   |   | Maximum allowed flare tip velocity (feet per second)            |  |  |
| V max<br>V.:  |   | Flare tip velocity (feet per second)                            |  |  |
| V tip   |   | rate up velocity (leet per second)                              |  |  |
| Xi  |   | concentration of component i in vent Gas (vol fraction)         |  |  |

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

| Component            | Molecular                         | <u>MW</u> i  | <u>CMN</u> <sub>i</sub> | <u>NHV</u> i       | <u>LFL</u> i |
|----------------------|-----------------------------------|--------------|-------------------------|--------------------|--------------|
|                      | <b>Formula</b>                    | (pounds      | (mole                   | <u>(Btu</u>        | (volume      |
|                      |                                   | per          | per                     | <u>per scf)</u>    | <u>%)</u>    |
|                      |                                   | pound-       | <u>mole)</u>            |                    |              |
|                      |                                   | <u>mole)</u> |                         |                    |              |
| Acetylene            | $\underline{C_2H_2}$              | <u>26.04</u> | 2                       | <u>1,404</u>       | <u>2.5</u>   |
| Benzene              | $\underline{C_6H_6}$              | <u>78.11</u> | <u>6</u>                | <u>3,591</u>       | <u>1.3</u>   |
| <u>1,2-Butadiene</u> | $\underline{C_4H_6}$              | <u>54.09</u> | <u>4</u>                | <u>2,794</u>       | <u>2.0</u>   |
| 1,3-Butadiene        | $\underline{C_4H_6}$              | <u>54.09</u> | <u>4</u>                | <u>2,690</u>       | <u>2.0</u>   |
| iso-Butane           | $\underline{C_4H_{10}}$           | <u>58.12</u> | <u>4</u>                | <u>2,957</u>       | <u>1.8</u>   |
| <u>n-Butane</u>      | $\underline{C_4H_{10}}$           | <u>58.12</u> | <u>4</u>                | <u>2,968</u>       | <u>1.8</u>   |
| cis-Butene           | $\underline{C_4H_8}$              | <u>56.11</u> | <u>4</u>                | <u>2,830</u>       | <u>1.6</u>   |
| iso-Butene           | $\underline{C_4H_8}$              | <u>56.11</u> | <u>4</u>                | <u>2,928</u>       | <u>1.8</u>   |
| trans-Butene         | $\underline{C_4H_8}$              | <u>56.11</u> | <u>4</u>                | <u>2,826</u>       | <u>1.7</u>   |
| Carbon Dioxide       | $\underline{CO_2}$                | <u>44.01</u> | <u>1</u>                | <u>0</u>           | $\infty$     |
| Carbon               | CO                                | 28.01        | <u>1</u>                | <u>316</u>         | 12.5         |
| Monoxide             |                                   |              |                         |                    |              |
| Cyclopropane         | $\underline{C_3H_6}$              | <u>42.08</u> | <u>3</u>                | <u>2,185</u>       | <u>2.4</u>   |
| Ethane               | $\underline{C_2H_6}$              | <u>30.07</u> | <u>2</u>                | <u>1,595</u>       | <u>3.0</u>   |
| Ethylene             | $\underline{C_2H_4}$              | <u>28.05</u> | <u>2</u>                | <u>1,477</u>       | <u>2.7</u>   |
| Hydrogen             | $\underline{H}_2$                 | <u>2.02</u>  | <u>0</u>                | 1,212 <sup>A</sup> | <u>4.0</u>   |
| Hydrogen             | H <sub>2</sub> S                  | 34.08        | <u>0</u>                | 587                | 4.0          |
| Sulfide              |                                   |              |                         |                    |              |
| Methane              | $\underline{CH_4}$                | <u>16.04</u> | <u>1</u>                | <u>896</u>         | <u>5.0</u>   |
| Methyl-              | $C_3H_4$                          | 40.06        | <u>3</u>                | 2,088              | <u>1.7</u>   |
| Acetylene            |                                   |              |                         |                    |              |
| Nitrogen             | $\underline{N}_2$                 | <u>28.01</u> | <u>0</u>                | <u>0</u>           | <u>∞</u>     |
| Oxygen               | <u>O2</u>                         | 32.00        | <u>0</u>                | <u>0</u>           | $\infty$     |
| Pentane+ (C5+)       | $\underline{C_5H_{12}}$           | <u>72.15</u> | <u>5</u>                | <u>3,655</u>       | <u>1.4</u>   |
| Propadiene           | $\underline{C_3H_4}$              | <u>40.06</u> | <u>3</u>                | 2,066              | <u>2.16</u>  |
| Propane              | <u>C<sub>3</sub>H<sub>8</sub></u> | <u>44.1</u>  | <u>3</u>                | <u>2,281</u>       | <u>2.1</u>   |
| Propylene            | $\underline{C_3H_6}$              | 42.08        | <u>3</u>                | 2,150              | <u>2.4</u>   |
| Water                | <u>H<sub>2</sub>O</u>             | <u>18.02</u> | <u>0</u>                | <u>0</u>           | $\infty$     |

Table 1. Individual Component Properties:

<sup>A</sup> 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)



cc. <u>Pursuant to 401 KAR 52:020</u>, Section 10, the permittee must operate and maintain the <u>Covered Flare in accordance with its design and the requirements of this permit. [CD, Paragraph 43.]</u>

- dd. <u>Pursuant to 401 KAR 52:020, Section 10, the permittee must comply with the following</u> <u>Net Heating Value standards, except as provided in **1. Operating Limitations** ff. <u>(Standard During Instrument Downtime):</u></u>
  - a. Net Heating Value of Vent Gas (NHVvg). The permittee must operate the Ethylene Flare with an NHVvg 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 NHVvg at the Covered Flare in accordance with **1. Operating Limitations** bb. [CD, Paragraph 44.a.]
  - <u>b.</u> Net Heating Value of Combustion Zone Gas (NHVcz). The permittee must operate the Ethylene Flare so as to maintain the NHVcz 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

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

<u>NHVcz at each Covered Flare in accordance with 1. Operating Limitations bb.</u> [CD, Paragraph 44.b.]

- ee. <u>Pursuant to 401 KAR 52:020, Section 10, the permittee must operate the Ethylene Flare</u> 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** dd.(b). [CD, Paragraph 45.]
- ff. 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 the Ethylene Flare in accordance with the applicable NHV standards in 1. Operating Limitations dd, 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 that Covered Flare [CD, Paragraph 46.]:
  - a. Malfunction of an instrument needed to meet the requirement(s); [CD, Paragraph 46.a.]
  - b. Repairs following the Malfunction of an instrument needed to meet the requirement(s); [CD, Paragraph 46.b.]
  - c. 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.]
  - d. 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** c. through e., **5. Specific Recordkeeping** g. and h.

#### 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.

#### **Compliance Demonstration Method:**

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

- (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) Closed vent system and flare: Pursuant to 40 CFR 63.982(b), owners or operators that vent emissions through a closed vent system to a flare shall meet the requirements in 40 CFR 63.983 for closed vent systems. 40 CFR 63.987 for flares; 40 CFR 63.997 (a), (b), and (c) for provisions regarding flare compliance assessments; the monitoring, recordkeeping, and reporting requirements of 40 CFR 63.998 and 40 CFR 63.999. No other provisions of 40 CFR 63, Subpart SS apply to emissions vented through a closed vent system to a flare.

#### 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.
- b. Pursuant to 401 KAR 52:020, Section 10, to ensure continuous compliance, with 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 within 5 years of the previous test approved by the Division.
- c. Pursuant to 40 CFR 63.1103(e)(4)(xiv), in lieu of meeting the requirements in 40 CFR 63.670 and 40 CFR 63.671, the permittee may submit a request to the Administrator for approval of an alternative test method in accordance with 40 CFR 63.7(f). The alternative test method must be able to demonstrate on an ongoing basis at least once every 15-minutes that the flare meets 96.5% combustion efficiency and provide a description of the alternative recordkeeping and reporting that would be associated with the alternative test method. The alternative test method request may also include a request to use the alternative test method in lieu of the pilot or flare flame monitoring requirements of 40 CFR 63.670(g).

#### 4. Specific Monitoring Requirements:

- a. Pursuant to 40 CFR 63.987(c), the permittee shall install, calibrate, maintain, and operate a device (including but not limited to a thermocouple, ultra-violet beam sensor, or infrared sensor) capable of continuously detecting the presence of a pilot flame. This shall be in accordance to manufacturer's specifications or other written procedures that provide adequate assurance that the equipment would reasonably be expected to monitor accurately.
- b. Pursuant to 40 CFR 63.981, continuous record means documentation, either in hard copy or computer readable form, of data values measured at least once every 15 minutes and recorded at the frequency specified in 40 CFR 63.998(b).

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

1

- (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 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.]
- d. 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<sub>vg</sub>) 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 NHVvg 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 d.(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<sub>vg</sub> at Standard Conditions until the Net Heating Value of the Vent Gas returns to within the

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

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.]

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

- (1) <u>The instrumentation and monitoring systems identified in 4. Specific Monitoring</u> <u>Requirements c. and d. must: [CD, Paragraph 26.a.]</u>
  - 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. <u>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)]</u>
  - iii. <u>Be capable of measuring the appropriate parameter over the range of</u> 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 c. and d. 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<sub>vg</sub> using a process mass spectrometer, the permittee may use the methods established for determining NHV<sub>vg</sub> 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<sub>vg</sub> using gas chromatographs. [CD, Paragraph 26.b.]
- (3) All gas chromatograph systems permitted by 4. Specific Monitoring Requirements d.(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.]

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

- (4) For each instrumentation and monitoring system required by 4. Specific
   Monitoring Requirements c. and d., the permittee must comply with the out-ofcontrol 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 permittee may elect to utilize exceptions set forth in 40 CFR
   63.1103(e)(4)(i)-(ix) when complying with 4. Specific Monitoring Requirements e. [CD, Paragraph 26.f.]
- f. <u>Pursuant to 401 KAR 52:020</u>, Section 10, the permittee must maintain and operate at the Calvert City Plant a Fenceline Monitoring Mitigation Project. [CD, Paragraph 48.]
- g. Refer to Section D for Fenceline Monitoring Mitigation Project 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 CO<sub>2</sub>e) 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 individual and combined operating rates (in mmBtu/hr) of EU# 007 (EPN 321) and 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 40 CFR 63.1103(e)(4)(xi) and 40 CFR 63.1110(d).
  - (1) *Contents.* 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

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

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.
- (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) of subpart CC, as applicable; and all periods during the compliance determination when the pilot flame or flare flame is absent.
- (2) Due Date. 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.
- f. Pursuant to 40 CFR 63.1103(e)(4)(xi) and 40 CFR 63.1110(e), the permittee shall submit a Periodic Report as follows:
  - (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.

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

- (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) of subpart CC as applicable.
- (iv) For flaring events meeting the criteria in 40 CFR 63.670(o)(3) of subpart CC 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.
- g. <u>Pursuant to 401 KAR 52:020</u>, Section 10, the instrumentation and monitoring systems identified in **4. Specific Monitoring Requirements** c. through d. must be able to produce and record data measurements and calculations for each parameter at the following time intervals:

| Instrumentation and Monitoring System   | Recording and Averaging Times                                       |
|---|---|
| Vent Gas, Assist Steam Flow Monitoring<br>Systems, Assist Air Flow Monitoring<br>Systems and (if installed) Pilot Gas Flow      | Measure continuously and<br>record 15-minute block averages         |
| Vent Gas Compositional Monitoring (if<br>using the methodology in <b>4. Specific</b><br>Monitoring Requirements d.(1))          | Measure no less than once every<br>15-minutes and record that value |
| Vent Gas Net Heating Value Analyzer (if<br>using the methodology in <b>4. Specific</b><br><b>Monitoring Requirements</b> d.(2)) | Measure continuously and<br>record 15-minute block averages         |
| Video Camera  | Record at a rate of no less than 4<br>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)

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

minute block period. Nothing in **5. Specific Recordkeeping Requirements** b. 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.]

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

- (1) For the Ethylene Flare, the permittee must calculate and record 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 c, 4. Specific Monitoring Requirements e, and Step 2 1. Operating Limitations bb.)
  - <u>ii.</u> Assist Steam volumetric flow rate (in scfm) (in 15-minute block averages and in accordance with any calculation requirements of 4. Specific Monitoring Requirements c, 4. Specific Monitoring Requirements e, and Step 2 1. Operating Limitations bb.)
  - iii. NHVvg (in BTU/scf) (in 15-minute block averages in accordance with Step 1 1. Operating Limitations bb.).
  - iv. NHVcz (in BTU/scf) (in 15-minute block averages in accordance with Step 3 1. Operating Limitations bb.).
- (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 1. Operating Limitations w. (FGRS Compressor Availability). For all of the events described in this sub-Paragraph, 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.]
- (1) At any time that the permittee deviates from the emissions standards in 1.
  Operating Limitations dd. 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 40 CFR 63.999(a)(1)(i), the permittee shall notify the Administrator of the intention to conduct a performance test or flare compliance assessment at least 30 days before such a compliance demonstration is scheduled to allow the Administrator the opportunity to have an observer present. If after 30 days notice for such an initially scheduled compliance demonstration, there is a delay (due to operational problems, etc.)

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

in conducting the scheduled compliance demonstration, the owner or operator of an affected facility shall notify the Administrator as soon as possible of any delay in the original demonstration date. The owner or operator shall provide at least 7 days prior notice of the rescheduled date of the compliance demonstration or arrange a rescheduled date with the Administrator by mutual agreement.

- b. Pursuant to 40 CFR 63.999(a)(1)(iv), any application to substitute a prior performance test or compliance assessment for an initial performance test or compliance assessment, as allowed by 40 CFR 63.997(b)(1), shall be submitted no later than 90 days before the performance test or compliance test is required. The application for substitution shall include information demonstrating that the prior performance test or compliance assessment was conducted using the same methods specified in 40 CFR 63.997(e) or 40 CFR 63.987(b)(3), as applicable. The application shall also include information demonstrating that no process changes have been made since the test, or that the results of the performance test or compliance assessment reliably demonstrate compliance despite process changes.
- c. Performance test and flare compliance assessment report submittal and content requirements. Pursuant to 40 CFR 63.999(a)(2), performance test and flare compliance assessment reports shall be submitted as specified in 40 CFR 63.999(a)(2)(i) through 40 CFR 60.999(a)(2)(iii) as follows:
  - (1) For performance tests or flare compliance assessments, the Notification of Compliance Status or performance test and flare compliance assessment report shall include one complete test report as specified in 40 CFR 63.999(a)(2)(ii) for each test method used for a particular kind of emission point and other applicable information specified in 40 CFR 63.999(a)(2)(iii). For additional tests performed for the same kind of emission point using the same method, the results and any other information required in applicable sections of this subpart shall be submitted, but a complete test report is not required.
  - (2) A complete test report shall include a brief process description, sampling site description, description of sampling and analysis procedures and any modifications to standard procedures, quality assurance procedures, record of operating conditions during the test, record of preparation of standards, record of calibrations, raw data sheets for field sampling, raw data sheets for field and laboratory analyses, documentation of calculations, and any other information required by the test method.
  - (3) The performance test or flare compliance assessment report shall also include the information specified in 40 CFR 63.999(a)(2)(iii)(A) through (C) below, as applicable.
    (i) For flare compliance assessments, the permittee shall submit the records specified in 40 CFR 63.998(a)(1)(i).
- d. 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.
- e. See Section F.

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

### 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).

### 8. <u>Alternate Operating Scenarios:</u>

Pursuant to 51:017, Section 8, as an alternative to installing a new elevated flare, the permittee shall install a new ground flare that will meet all the applicable requirements in 401 KAR 51:017 listed above, and the requirements in 40 CFR 60.18 and 40 CFR 63.11.

### 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 |

 $\underline{NOTE}$  - 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 CO2e]

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)(00), 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  $\geq$ 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 of this part, 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 63.1030(d) (pressure relief devices in gas and vapor service), 40 CFR 63.1031(e) (compressors), or 40 CFR 63.1037(a) (alternative means of emission limitation for enclosed-vented process units).
  - (3) *Pressure relief devices*. Pursuant to 40 CFR 63.1022(b)(3), identify the pressure relief devices equipped with rupture disks, under the provisions of 40 CFR 63.1030(e).

- (4) 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.
- (5) 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 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 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.

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

#### 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 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 replacing the bonnet bolts, and/or tightening the packing gland nuts.
- 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 Pursuant to 40 CFR 63.1024(d)(1) through Pursuant to 40 CFR 63.1024(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

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

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
- (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)(i).
    - (i) Pursuant to 40 CFR 63.1024(f)(4)(ii), the permittee may develop a written procedure that identifies the conditions that justify a delay of repair. The written procedures may be included as part of the startup, shutdown, and malfunction plan, as required by the referencing subpart for the source, or may be part of a separate document that is maintained at the plant site. 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.

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

#### Sampling connection systems standards

- 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.
- 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 steams 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**.

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

- 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<sub>2</sub>e 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.
  - (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 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. Pressuresensing 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

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

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 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 pressuresensing 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;
  - (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 63.1107(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 disc 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, 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.
## SECTION B - EMISSION POINTS, EMISSIONS UNITS, APPLICABLE REGULATIONS, AND OPERATING CONDITIONS (CONTINUED)

- (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).
  - (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).

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

- (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 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 where the pilot discharge vent continuously releases emissions to the atmosphere when the pressure relief device is actuated".

#### **Compliance Demonstration Method:**

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

#### 2. <u>Emission Limitations:</u>

See 1. Operating Limitations.

#### 3. <u>Testing Requirements:</u>

Pursuant to 40 CFR 63.1100(g)(4)(i), after the compliance dates specified in 40 CFR 63.1102, equipment that must be controlled according to 40 CFR 63, Subpart YY and 40 CFR 60, Subpart VV, or 40 CFR 61, Subpart J or 40 CFR 61, Subpart V is required only to comply with the equipment leak requirements of 40 CFR 63 Subpart YY.

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

#### 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)(v), pressure relief devices in gas and vapor service shall be monitored pursuant to 40 CFR 63.1030(c).
    - (vi) 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).
    - (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

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

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.
- (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 CFR63.1025(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

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

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 63.1030(b) (pressure relief devices) or 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)(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.

#### 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.

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

- (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.
- 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 this part 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:

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

- $% V_L =$  Percent leaking values.
- $$\label{eq:VL} \begin{split} V_L &= \text{Number of valves found leaking, excluding nonrepairable valves, as provided} \\ & \text{in 40 CFR 63.1025(c)(3), and including those valves found leaking pursuant} \\ & \text{to 40 CFR 63.1025(d)(2)(iii)(A) and 40 CFR 63.1025(d)(2)(iii)(B).} \end{split}$$
- $V_T$  = 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 two monitoring frequencies, the percent leaking valves shall be the arithmetic average of 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.
- 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.

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

- (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.
- 1. 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.
  - (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

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

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 this part 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:

- $%P_L$  = 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).
- Ps =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.

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

- 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 63.1024 of this part 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 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

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

specified in 40 CFR 63.1027(b)(3)(i) through 40 CFR 63.1027(b)(3)(ii), 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)(ii) 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 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.

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

- (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.
    - (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.

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

- (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 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.

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

#### Pressure relief devices in gas and vapor service standards

aa. Compliance standard. Pursuant to 40 CFR 63.1030(b), except during pressure releases as provided for in 40 CFR 63.1030(c), or as otherwise specified in 40 CFR 63.1036, 40 CFR 63.1037, or 40 CFR 63.1030(d) and 40 CFR 63.1030(e), each pressure relief device in gas and vapor service shall be operated with an instrument reading of less than 500 ppm as measured by the method specified in 40 CFR 63.1023(b) and, as applicable, 40 CFR 63.1023(c).

#### bb. Pressure relief requirements [40 CFR 63.1030(c)].

- (1) Pursuant to 40 CFR 63.1030(c)(1), after each pressure release, the pressure relief device shall be returned to a condition indicated by an instrument reading of less than 500 ppm, as soon as practical, but no later than 5 calendar days after each pressure release, except as provided in 40 CFR 63.1024(d).
- (2) Pursuant to 40 CFR 63.1030(c)(2), the pressure relief device shall be monitored no later than five calendar days after the pressure to confirm the condition indicated by 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).
- (3) Pursuant to 40 CFR 63.1030(c)(3), the permittee shall record the dates and results of the monitoring required by 40 CFR 63.1030(c)(2) following a pressure release including the background level measured and the maximum instrument reading measured during the monitoring.

#### **Compressor standards**

- cc. *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 (except during periods of startup, shutdown, or malfunction); 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.
- dd. *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.

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

- ee. Failure criterion and leak detection. [40 CFR 63.1030(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.
  - (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.
- ff. 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.
- gg. 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

- hh. *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.
- ii. *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

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

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.

- jj. *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 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.
- kk. *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

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

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.

- (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 online trials of pump seal technologies or pump designs and operating and maintenance practices that have been identified in the available literature or in

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

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 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

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

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.

- (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 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

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

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 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.
- 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.

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

- (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).
- (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).

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

- (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).
- 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)(5), for pressure relief devices in gas and vapor or light liquid service, the permittee shall keep records of the dates and results of monitoring following a pressure release, as specified in 40 CFR 63.1030(c)(3).
  - (6) 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).
  - (7) 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).

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

- (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).
- (8) Pursuant to 40 CFR 63.1038(c)(9), for process units complying with the enclosedvented process unit alternative, the permittee shall maintain the records for enclosedvented process units as specified in 40 CFR 63.1037(b).
- 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.

#### 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 nonrepairable.
    - (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 pressure relief devices in gas and vapor service pursuant to 40 CFR 63.1030(b) and 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. *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.
- d. 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 CO<sub>2</sub>e.

| 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 CO<sub>2</sub>e.

Flanges/connectors: 382

Gas/Vapor Valves: 107

<u>NOTE</u> - 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 paragraph 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.
- 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.
- 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-tomonitor 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:

- %CL = 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).
- Ct = 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 paragraph 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 CO<sub>2</sub>e) 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:

- 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 leakchecking 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.
  - 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 calibrating greater 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 nodetectable-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. H<sub>2</sub>O 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. H<sub>2</sub>O 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.

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## 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:

<u>NOTE</u> - 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

### **<u>APPLICABLE REGULATIONS</u>:**

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)(00), 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 gastight 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 paragraph 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, TK192B, 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 ( $150 \times 106$  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 ( $150 \times 106$  BTU/hr), the owner or operator shall maintain continuous records of 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# 007 and EU# 007A Ethylene Flare and new Ethylene Flare requirements.

#### 8. <u>Alternate Operating Scenarios:</u>

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(1), 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 65.565(l) and records of their actual throughputs by commodity, for five (5) years.

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

- 6. <u>Specific Reporting Requirements:</u> See Section F.
- 7. <u>Specific Control Equipment Operating Conditions:</u> None

### 8. <u>Alternate Operating Scenarios:</u>

At times during plant shutdowns and EU# 007 or EU# 007A (Ethylene Flare and new 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/hrControl: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)(00), 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 63.1085(b), if a leak is detected, it is to be repaired according to 40 CFR 63.1087 unless the repair is delayed according to 40 CFR 63.1088.

### **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:

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

| (i) For process weight rates of 0.50 ton/hour or less:               | E = 2.58                   |
|--|----------------------------|
| (ii) For process weight rates $> 0.5$ ton/hour up to 30.0 tons/hour: | $E = 4.10^* P^{0.67}$      |
| (iii) 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:

Pursuant to 40 CFR 63.1086, the permittee must monitor for leaks to cooling water by monitoring each heat exchange system according to the requirements of 40 CFR 63.1086(a), and monitoring each heat exchanger according to the requirements of 40 CFR 63.1086(b).

- a. *Heat exchange system*. Pursuant to 40 CFR 63.1086(a), monitor cooling water in each heat exchange system for the HAP listed in Table 1 to 40 CFR 63, Subpart XX (either total or speciated) or other representative substances (e.g., total organic carbon or volatile organic compounds (VOC)) that indicate the presence of a leak according to the requirements in paragraphs (a)(1) through (5) of this section:
  - (1) The permittee must define the equipment that comprises each heat exchange system. For the purposes of implementing paragraph (a) of this section, a heat exchange system may consist of an entire heat exchange system or any combinations of heat exchangers such that, based on the rate of cooling water at the entrance and exit to each heat exchange system and the sensitivity of the test method being used, a leak of 3.06 kg/hr or greater of the HAP in Table 1 of 40 CFR 63, Subpart XX would be detected. For example, if the chosen test has a sensitivity of 1 ppmv for total HAP, then the permittee must define the heat exchange system so that the cooling water flow rate is 51,031 liters per minute or less so that a leak of 3.06 kg/hr can be detected.
  - (2) Monitoring periods. For existing sources, monitor cooling water as specified in paragraph (a)(2)(i) of 40 CFR 63.1086. Monitor heat exchange systems at new sources according to the specifications in paragraph (a)(2)(ii) of 40 CFR 63.1086.
    - (i) Monitor monthly for 6 months, both initially and following completion of a leak repair. Then monitor as provided in either paragraph (a)(2)(i)(A) or (a)(2)(i)(B) of 40 CFR 63.1086, as appropriate.
      - (A) If no leaks are detected by monitoring monthly for a 6-month period, monitor quarterly thereafter until a leak is detected.
      - (B) If a leak is detected, monitor monthly until the leak has been repaired. Upon completion of repair, monitor according to the specifications in paragraph (a)(2)(i) of 40 CFR 63.1086.
    - (ii) Monitor weekly for 6 months, both initially and following completion of a leak repair. Then monitor as provided in paragraph (a)(2)(ii)(A) or (B) of 40 CFR 63.1086, as appropriate.
      - (A) If no leaks are detected by monitoring weekly for a 6-month period, monitor monthly thereafter until a leak is detected.

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

- (B) If a leak is detected, monitor weekly until the leak has been repaired. Upon completion of the repair, monitor according to the specifications in paragraph (a)(2)(ii) of 40 CFR 63.1086.
- (3) Determine the concentration of the monitored substance in the heat exchange system cooling water using any method listed in 40 CFR Part 136. Use the same method for both entrance and exit samples. The permittee may validate 40 CFR Part 136 methods for the HAP listed in Table 1 40 CFR 63, Subpart XX, according to the procedures in appendix D to 40 CFR 63.1086. Alternative methods may be used upon approval by the Administrator.
- (4) Take a minimum of three sets of samples at each entrance and exit.
- (5) Calculate the average entrance and exit concentrations, correcting for the addition of make-up water and evaporative losses, if applicable. Using a one-sided statistical procedure at the 0.05 level of significance, if the exit mean concentration is at least 10 percent greater than the entrance mean of the HAP (total or speciated) in Table 1 to 40 CFR 63, Subpart XX, or other representative substance, and the leak is at least 3.06 kg/hr, you have detected a leak.
- b. Individual heat exchangers. Pursuant to 40 CFR 63.1086(b), monitor the cooling water at the entrance and exit of each heat exchanger for the HAP in Table 1 to 40 CFR 63, Subpart XX (either total or speciated) or other representative substances (e.g., total organic carbon or VOC) that indicate the presence of a leak in a heat exchanger according to the requirements in paragraphs (b)(1) through (4) of 40 CFR 63.1086.
  - (1) Monitoring periods. For existing sources, monitor cooling water as specified in paragraph (b)(1)(i) of 40 CFR 63.1086. Monitor each heat exchanger at new sources according to the specifications in paragraph (b)(1)(ii) of 40 CFR 63.1086.
    - (i) Monitor monthly for 6 months, both initially and following completion of a leak repair. Then monitor as provided in paragraph (b)(1)(i)(A) or (b)(1)(i)(B) of 40 CFR 63.1086, as appropriate.
      - (A) If no leaks are detected by monitoring monthly for a 6-month period, monitor quarterly thereafter until a leak is detected.
      - (B) If a leak is detected, monitor monthly until the leak has been repaired. Upon completion of repair, monitor according to the specifications in paragraph (b)(1)(i) of 40 CFR 63.1086.
    - (ii) Monitor weekly for 6 months, both initially and following completion of a leak repair. Then monitor as provided in paragraph (b)(1)(ii)(A) or (B) of 40 CFR 63.1086, as appropriate.
      - (A) If no leaks are detected by monitoring weekly for a 6-month period, monitor monthly thereafter until a leak is detected.
      - (B) If a leak is detected, monitor weekly until the leak has been repaired. Upon completion of the repair, monitor according to the specifications in paragraph (b)(1)(ii) of 40 CFR 63.1086.
  - (2) Determine the concentration of the monitored substance in the cooling water using any method listed in 40 CFR Part 136, as long as the method is sensitive to concentrations as low as 10 ppmv. Use the same method for both entrance and exit samples. Validation of 40 CFR Part 136 methods for the HAP listed in Table 1 to 40 CFR 63, Subpart XX

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

may be determined according to the provisions of Appendix D of 40 CFR Part 63. Alternative methods may be used upon approval by the Administrator.

- (3) Take a minimum of three sets of samples at each heat exchanger entrance and exit.
- (4) Calculate the average entrance and exit concentrations, correcting for the addition of make-up water and evaporative losses, if applicable. Using a one-sided statistical procedure at the 0.05 level of significance, if the exit mean concentration is at least 1 ppmw or 10 percent greater than the entrance mean, whichever is greater, then a leak has been detected [40 CFR 63.1086(a) and (b)].
- c. Pursuant to 401 KAR 52:020, Section 10, the permittee shall monitor the hours of operation of the cooling tower on a weekly basis.
- d. 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 paragraphs 40 CFR 63.1089(a) through (e), according to the requirements of 40 CFR 63.1109(c).

- a. Pursuant to 40 CFR 63.1089(a), monitoring data required by 40 CFR 63.1086 that indicate a leak, the date the leak was detected, or, if applicable, the basis for determining there is no leak.
- b. Pursuant to 40 CFR 63.1089(b), the dates of efforts to repair leaks.
- c. Pursuant to 40 CFR 63.1089(c), the method or procedures used to confirm repair of a leak and the date the repair was confirmed.
- d. Pursuant to 40 CFR 63.1089(d), documentation of delay of repair as specified in 40 CFR 63.1088.
- e. Pursuant to 40 CFR 63.1089(e), if there is validation of 40 CFR part 136 method for the HAP listed in Table 1 to 40 CFR 63, Subpart XX according to the procedures in appendix D to 40 CFR Part 63, then the permittee must keep a record of the test data and calculations used in the validation.
- f. 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.
- g. Pursuant to 401 KAR 52:020, Section 10, all routine and non-routine maintenance activities performed on the corresponding control device shall be recorded.
- h. Pursuant to 401 KAR 52:020, Section 10, the permittee shall calculate and maintain monthly records of PM emissions based on the following equation:

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

 $\underset{E_{PM}=C_{w}}{\underset{\times}{\times}} \times \frac{60 \text{ min}}{\text{hour}} \times H_{M} \times \frac{8.34 \text{ pound water}}{\text{gallon}} \times \text{TDS} \times \frac{\text{DL}}{100}$ 

Where:

- $E_{PM} = PM$  emission rate from the cooling tower during the month (pounds per month)
- Cw = Water circulation rate in (gallons per minute)
- HM = 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)

i. 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, if repair is delayed for the heat exchange system, the permittee must report the delay of repair in the semiannual report required by 40 CFR 63.1110(e). If the leak remains unrepaired, the permittee must continue to report the delay of repair in semiannual reports until the leak has been repaired. The permittee must include the information in 40 CFR 63.1090(a) through (e) in the semiannual report.
  - (1) Pursuant to 40 CFR 63.1090(a), the fact that a leak was detected, and the date that the leak was detected.
  - (2) Pursuant to 40 CFR 63.1090(b), whether or not the leak has been repaired.
  - (3) Pursuant to 40 CFR 63.1090(c), the reasons for delay of repair. If the repair is delayed as provided in 40 CFR 63.1088(b), documentation of emissions estimates.
  - (4) Pursuant to 40 CFR 63.1090(d), if a leak remains unrepaired, the expected date of repair.
  - (5) Pursuant to 40 CFR 63.1090(e), if a leak is repaired, the date the leak was successfully repaired.
- b. See Section F.

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## 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</u><br><u>Regulation</u> |
|------------|--|--|
|            | WESTLAKE ETHYLENE PLANT  |  |
| 316        | Injection Oil Tank (7,500 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<br>< 500 gallons  | None   |
| 365        | Antifoulant Chemical Tank (1,000 gallons)  | None   |
| 369        | Inhibitor Tote Tanks<br>< 500 gallons  | None   |
| 372        | Miscellaneous Treatment Chemical Tanks and Vendor-<br>Supplied Totes < 500 gallons     | None   |
| 374        | Cooling Tower #4 – Chemical Treatment Tank B<br>1,000 gallons                          | None   |
| 375        | Miscellaneous Additive and Treatment – Chemical Bag<br>Dumping                         | None   |
| 376        | 376 Miscellaneous Treatment Chemical Tanks and Vendor-<br>Supplied Totes < 500 gallons |  |
| 377        | Oxygen Scavenger Tank, 805 gal   | None   |
| 378        | Corrosion Inhibitor (Amine) Tank, 1,000 gal  | None   |

## SECTION D - SOURCE EMISSION LIMITATIONS AND TESTING REQUIREMENTS

- 1. As required by Section 1b of the *Cabinet Provisions and Procedures for Issuing Title V Permits* incorporated by reference in 401 KAR 52:020, Section 26; compliance with annual emissions and processing limitations contained in this permit, shall be based on emissions and processing rates for any twelve (12) consecutive months.
- 2. Nitrogen Dioxide, Particulate Matter (PM/PM<sub>10</sub>/PM<sub>2.5</sub>), 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-houraverage 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:

$$\begin{split} & \text{NG}_{\text{Firing Rate}}\left(\frac{\text{mmBtu}}{\text{hr}}\right) = \text{NG}_{\text{Use}}\left(\frac{1}{\text{hr}}\right) \times 23,900\left(\frac{1}{\text{lb}}\right) \times \frac{1 \text{ mmBtu}}{10^{6}\text{Btu}} \\ & \text{H}_{2\text{Firing Rate}}\left(\frac{\text{mmBtu}}{\text{hr}}\right) = \text{H}_{2\text{Use}}\left(\frac{1}{\text{hr}}\right) \times 56,400\left(\frac{1}{\text{lb}}\right) \times \frac{1 \text{ mmBtu}}{10^{6}\text{Btu}} \\ & \text{mmBtu} \qquad \text{lb} \qquad \text{Btu} \quad 1 \quad \text{scf} \quad 1 \end{split}$$

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

Actual 24-Hourly Firing Rate ( $\frac{\text{mmBtu}}{24\text{-hr}}$ ) =  $\frac{\sum_{n=1}^{24} (\text{NG}_{\text{Firing Rate}} + \text{H}_{2\text{Firing Rate}} + \text{PFG}_{\text{Firing Rate}})}{24 \text{ hours}}$ 

(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 **Formatted:** Indent: Left: 0.25", Numbered + Level: 2 + Numbering Style: a, b, c, ... + Start at: 1 + Alignment: Left + Aligned at: 1" + Indent at: 1.25"

## 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:

 $\begin{array}{l} \begin{array}{l} \begin{array}{l} \mbox{MBtu} & \mbox{Ib} \\ \mbox{NG}_{Firing Rate} \left( \frac{mmBtu}{month} \right) = \mbox{NG}_{Use} \left( \frac{lb}{month} \right) \times 23,900 \left( \frac{lb}{lb} \right) \times \frac{1 \mbox{ mmBtu}}{10^6 \mbox{Btu}} \\ \end{array} \\ \begin{array}{l} \begin{array}{l} \mbox{H}_{2_{Firing Rate}} \left( \frac{mmBtu}{month} \right) = \mbox{H}_{2_{Use}} \left( \frac{lb}{month} \right) \times 56,400 \left( \frac{lb}{lb} \right) \times \frac{1 \mbox{ mmBtu}}{10^6 \mbox{Btu}} \\ \end{array} \\ \begin{array}{l} \mbox{PFG}_{Firing Rate} \left( \frac{mmBtu}{month} \right) = \mbox{PFG}_{Use} \left( \frac{lb}{month} \right) \times \mbox{PFG HC}_{Monthly} \left( \frac{Btu}{scf} \right) \times \frac{1 \mbox{ mmBtu}}{\rho_{PFG}} \left( \frac{lb}{lb} \right) \times \frac{1 \mbox{ mmBtu}}{10^6 \mbox{Btu}} \\ \mbox{Actual Monthly Firing Rate} \left( \frac{mmBtu}{month} \right) = \mbox{$\sum$ (NG_{Firing Rate} + \mbox{H}_{2_{Firing Rate}} + \mbox{PFG}_{Firing Rate} \right) \end{array}$ 

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, 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.

 <u>i.</u> The permittee must commence sampling along the property boundary of the Calvert City 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

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

| <u>of t</u>  | he number of duplicates and blanks, which will be determined pursuant          |  |  |
|--|--|--|--|
| <u>to 4</u>  | <u>IU C.F.R. 63.658(c)(3).</u>   |  |  |
|  | (A) As it pertains to this Fenceline Monitoring Mitigation Project,            |  |  |
| "known sources of VOCs," as used in Section 8.2.1.3 in Method        |  |  |  |
|  | <u>325A of Rule Appendix A for siting passive monitors, means a</u>            |  |  |
| 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 Ethylene 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)(111), 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. $63.658(c)(1)(1)$ through (1v).                  |  |  |
|  | (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           |  |  |
| <u>325B of Rule Appendix A to determine the detection limit of</u>   |  |  |  |
|  | 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)(11)(C)                   |  |  |
|  | must have a detection limit that is at least an order of magnitude             |  |  |
| C I  | lower than the benzene action level.   |  |  |
| 0  | lection of meteorological data. The permittee must collect and record          |  |  |
| me   | reorological data according to the applicable requirements in <b>5. Source</b> |  |  |
| <u>Op</u>  | <b>Example 1</b> $(1)$ $(1)$ $(1)$ $(A)$ and $(B)$ .                           |  |  |
|  | (A) The permittee must collect and record the average temperature              |  |  |
|  | during each sampling period using either an on-site meteorological             |  |  |
|  | Amondia A on alternativaly using data from a United States                     |  |  |
|  | 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 Chemical OpCo LP.   |  |  |  |
| (B) If an on-site meteorological station is used, the permittee must |  |  |  |
| 10110W the calibration and standardization procedures for            |  |  |  |
| http://www.3 epa.gov/ttpamti1/files/ambient/met/Volume IV            |  |  |  |
|  | Meteorological Measurements pdf  |  |  |
|  |  |  |  |

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

| 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 dif   | specific sampling location with the diffusive sampling end cap in- |  |  |  |
| place. The sampling period does not include the time required to  |  |  |  |  |
| analyze the sample. For the purpose of <b>3. Source Operating</b>   |  |  |  |  |
| <b>Limitations</b> 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 ca   | llendar days.  |  |  |  |
| (B) Base sampling frequency. Except as p  | rovided in <b>3. Source</b>  |  |  |  |
| <b>Operating Limitations</b> b.(1)(v)(C), the second sec | ne frequency of sample   |  |  |  |
| collection must be once each contiguo   | us 14-Day sampling period,   |  |  |  |
| such that the next 14-Day sampling pe   | eriod begins immediately   |  |  |  |
| upon the completion of the previous 1   | 4-Day sampling period.   |  |  |  |
| (C) Alternative sampling frequency for bu   | rden reduction. When an  |  |  |  |
| individual monitor consistently, as def   | fined in <b>3. Source Operating</b>                                |  |  |  |
| <b>Limitations</b> $b(1)(v)(C)(a)$ through (e   | ), yields results at or below                                      |  |  |  |
| $0.9 \mu \text{g/m}^3$ , the permittee may elect to   | use the applicable minimum   |  |  |  |
| sampling frequency specified in <b>3. So</b>  | urce Operating Limitations   |  |  |  |
| b(1)(v)(C)(1) through (5) for that ind  | ividual monitoring site.   |  |  |  |
| When calculating $\Delta c$ (as defined in <b>3</b> .   | Source Operating   |  |  |  |
| <b>Limitations</b> h (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.   |  |  |  |  |
| a. If every sample at an individua  | l monitoring site is at or   |  |  |  |
| below 0.9 $\mu$ g/m <sup>3</sup> for 2 years (5   | 2 consecutive samples),  |  |  |  |
| every other sampling period ca  | an be skipped for that   |  |  |  |
| individual monitoring site, i.e.  | sampling can occur   |  |  |  |
| approximately once per month  | <u></u>  |  |  |  |
| b. If every sample at an individua  | al monitoring site that is   |  |  |  |
| monitored at the frequency spe  | ecified in <b>3. Source</b>  |  |  |  |
| <b>Operating Limitations</b> b.(1)(   | v(C)(I) is at or below 0.9   |  |  |  |
| $\mu g/m^3$ for 2 years (i.e., 26 cons  | secutive "monthly" samples).                                       |  |  |  |
| five 14-Day sampling periods  | can be skipped for that  |  |  |  |
| individual monitoring site follo  | owing each period of   |  |  |  |
| sampling, i.e., sampling will o   | ccur approximately once per  |  |  |  |
| quarter   | eeur approximator, once por  |  |  |  |
| c If every sample at an individua   | l monitoring site that is  |  |  |  |
| monitored at the frequency sh   | cified in <b>3 Source</b>  |  |  |  |
| Onerating Limitations b (1)(  | (C)(2) is at or below 0.9  |  |  |  |
| $\frac{Operating Limitations 0.(1)}{\log/m^3 \text{ for } 2 \text{ years (i.e., 8 conservations 0.1)}}$   | $\frac{1}{10000000000000000000000000000000000$                     |  |  |  |
| twelve 14-Day sampling perio  | ds can be skipped for that   |  |  |  |
| twerve 14-Day sampning perio  | us can be skipped for that   |  |  |  |

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

 individual monitoring site following each period of sampling, i.e., sampling will occur twice a year.
 d. 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 µg/m<sup>3</sup> for 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.
 e. 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)(1) through (5) returns a result that is above  $0.9 \,\mu\text{g/m}^3$ , that sampling site must return to the original sampling requirements of contiguous 14-Day sampling periods with no skip periods for one quarter (six 14-Day sampling periods). If every sample collected during this quarter is at or below  $0.9 \,\mu\text{g/m}^3$ , 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  $\mu g/m^3$ . If any sample collected this quarter is above 0.9 µg/m3, 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)(*1*) are met again, i.e., after 52 contiguous 14-Day samples with no results above  $0.9 \ \mu g/m^3$ .
- 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:
    - a. If the lowest detected value of benzene is below detection, the permittee must use zero as the lowest sample result when calculating  $\Delta c$ .
    - <u>b.</u> If all sample results are below the method detection limit, the permittee must use the method detection limit as the highest sample result.
# SECTION D - SOURCE EMISSION LIMITATIONS AND TESTING REQUIREMENTS (CONTINUED)

- (B) The permittee must calculate the annual average ∆c 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 ( $\mu$ g/m<sup>3</sup>) on an annual average basis. If the annual average  $\Delta$ c value for benzene is less than or equal to 9  $\mu$ g/m<sup>3</sup>, the concentration is below the action level. If the annual average  $\Delta$ c value for benzene is greater than 9  $\mu$ g/m<sup>3</sup>, 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).
- <u>vii.</u> 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.
  - (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.(e)(vii), the  $\Delta c$  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 µg/m<sup>3</sup> 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  $\Delta c$  value for the 14-

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

Day sampling period following the completion of the initial corrective action is greater than  $9 \mu g/m^3$  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).

<u>i-viii.</u> 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: See Section F.

### 6. 40 CFR 63, Subpart YY requirements

Pursuant to 40 CFR 63.1102(c), the permittee must be in compliance with the requirements listed in 40 CFR 63.1102(c)(1) through (13) upon initial startup or July 6, 2023, whichever is later. All ethylene production affected sources that commenced construction or reconstruction after October 9, 2019, must be in compliance with the requirements listed in 40 CFR 63.1102(c)(1) through (13) upon initial startup, or July 6, 2020, whichever is later.

- (1) Overlap requirements specified in 40 CFR 63.1100(g)(4)(iii) and (7), if applicable.
- (2) The storage vessel requirements specified in paragraphs (b)(1)(iii) and (c)(1)(ii) of Table 7 to 40 CFR 63.1103(e), and the degassing requirements specified in 40 CFR 63.1103(e)(10).
- (3) The ethylene process vent requirements specified in paragraph (d)(1)(ii) of Table 7 to 40 CFR 63.1103(e).
- (4) The transfer rack requirements specified in 40 CFR 63.1105(a)(5).
- (5) The equipment requirements specified in paragraph (f)(1)(ii) of Table 7 to 40 CFR 63.1103(e) and 40 CFR 63.1107(h).
- (6) The bypass line requirements specified in paragraph (i) of Table 7 to 40 CFR 63.1103(e), and 40 CFR 63.1103(e)(6).
- (7) The decoking requirements for ethylene cracking furnaces specified in paragraph (j) of Table 7 to 40 CFR 63.1103(e), and 40 CFR 63.1103(e)(7) and (8).
- (8) The flare requirements specified in 40 CFR 63.1103(e)(4).
- (9) The maintenance vent requirements specified in 40 CFR 63.1103(e)(5).
- (10) The requirements specified in 40 CFR 63.1103(e)(9).
- (11) The requirements in 40 CFR 63.1108(a)(4)(i), (b)(1)(ii), (b)(2), and (b)(4)(ii)(B).
- (12) The recordkeeping requirements specified in 40 CFR 63.1109(e) through (i).
- (13) The reporting requirements specified in 40 CFR 63.1110(a)(10), (d)(1)(iv) and (v), and (e)(4) through (8).

## 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)].

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#### **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.].
- 1. 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.].
- 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.].

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#### **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:

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#### **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 332C) and (EPN 332D) in accordance with the terms and conditions of permit V-20-022.

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, V-20-022, 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 or V-20-022, 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, V-20-022, 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, V-20-022, 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, V-20-022, 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

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#### **SECTION G - GENERAL PROVISIONS (CONTINUED)**

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, V-20-022, and V-20-022 R1.

- f. Terms and conditions in permit V-14-022 R2, V-20-022, 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. <u>Testing Requirements</u>
  - 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.

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### **SECTION G - GENERAL PROVISIONS (CONTINUED)**

#### 7. Emergency Provisions

- a. Pursuant to 401 KAR 52:020, Section 24(1), an emergency shall constitute an affirmative defense to an action brought for the noncompliance with the technology-based emission limitations if the permittee demonstrates through properly signed contemporaneous operating logs or relevant evidence that:
  - (1) An emergency occurred and the permittee can identify the cause of the emergency;
  - (2) The permitted facility was at the time being properly operated;
  - (3) During an emergency, the permittee took all reasonable steps to minimize levels of emissions that exceeded the emissions standards or other requirements in the permit; and
  - (4) Pursuant to 401 KAR 52:020, 401 KAR 50:055, and KRS 224.1-400, the permittee notified the Division as promptly as possible and submitted written notice of the emergency to the Division when emission limitations were exceeded due to an emergency. The notice shall include a description of the emergency, steps taken to mitigate emissions, and corrective actions taken.
  - (5) This requirement does not relieve the source of other local, state or federal notification requirements.
- 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.

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### SECTION G - GENERAL PROVISIONS (CONTINUED)

- 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*.
- 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.

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### SECTION H - ALTERNATE OPERATING SCENARIOS

None

### SECTION I - COMPLIANCE SCHEDULE

None