Commonwealth of Pennsylvania
Department of Environmental Protection
Southcentral Regional Office
September 21, 2017

Subject: Sunoco Pipeline LP/Blainsport Station/Mariner East
Permit Review Memo
West Cocalico Township, Lancaster County
Permit No. 36-03197

To: William Weaver WRW 9/21/17
Regional Manager
Air Quality Program

Thru: Thomas Hanlon, Chief TJH 9/21/17
East Permitting Section
Air Quality Program

From: Darrell Hartline DH 9/21/17
East Permitting Section
Air Quality Program

Background/Facility Description:

On January 12, 2015, Sunoco Pipeline, LP (SPLP) submitted an application for the initial state-only permit for their Blainsport Station pumping site on the Mariner East Pipeline in West Cocalico Township. The proposed site source inventory is as follows:

Source	Name
101	Pump Station Seal Leaks
103	Maintenance Operations

Emissions Calculations and Control Equipment:

Control C101, Enclosed Flare, controls Source 101, Pump Station Seal Leaks, and Source 103, Maintenance Operations.

A permit application addendum was submitted by SPLP on September 27, 2016 because the emissions associated with the Blainsport Station were recalculated based on:

- Updated equipment information including flare pilot gas flow rate,
- More detailed information regarding maintenance activities,
- As-built Piping and Instrumentation Diagrams (P&IDs),
- Current equipment specific emission factors, and
- A more conservative flare emission estimate utilizing the manufacturer's guaranteed design destruction and removal efficiency of 98%.

Also on December 14, 2016, the Environmental Protection Agency issued minor revisions to AP-42 Section 13.5: Industrial Flares. As a result, the VOC emissions from the flare pilot gas increased by 0.02 tpy.

The revised potential emissions estimates based on the 9/27/16 submission and the 12/14/16 AP-42 change are 0.06 tpy of NOx, 0.24 tpy of CO, 0.76 tpy of VOCs, 0.01 tpy of Methane and 108 tpy of GHGs.

As part of the ongoing review of this permit, the Department has looked further into the issue of aggregation of the facility with other nearby sources owned by SPLP. They provided supplemental information to their aggregation analysis on 2/16/16. The closest facility identified was the Hopeland Road Block Valve located approximately 5.1 miles away. There is no interdependence between operation of the Block Valve and the Blainsport Station. As a result the Department has determined that no emissions need to be aggregated with those of the Blainsport Station. Sunoco also included an aggregation analysis in the 9/27/16 application update. This was identical to the 2/16/16 submission.

Regulatory Analysis:

The facility is not subject to 40 CFR Part 60 Subpart OOOO – Standards of Performance for Crude Oil and Natural Gas Production, Transmission and Distribution since it does not regulate pump stations. The facility is not subject to 40 CFR Part 60 Subpart IIII – Standards of Performance for Stationary Compression Ignition Internal Combustion Engines or 40 CFR Part 60 Subpart JJJJ – Standards of Performance for Stationary Spark Ignition Internal Combustion Engines since the pumps are powered electrically.

RFDs/Permit Condition Details:

The Department processed RFD 3694, on April 7, 2014, for the installation of the Blainsport Station pumping site. The RFD determination exempts the project from plan approval, but required the submission of an operating permit application. Conditions have been added to the operating permit to prohibit visible emissions or flame from the flare, to specify allowable fuel, and to require monitoring of flare operation and maintenance.

This is the initial permit for this facility.

This site is very similar to several other sites currently undergoing parallel permitting in SCRO. Permit conditions for this site have been imposed consistent with those used or expected for the other similar sites.

As part of this permit action, DEP is proposing to formalize its determination that the air emissions expected from the Blainsport Station, including both stack and fugitive emissions are of minor significance with regard to causing air pollution, and will not, on their own merits, prevent or interfere with the attainment or maintenance of an ambient air quality standard. A condition will be placed in the operating permit to this effect. DEP makes this determination because the post-control emissions from the site:

1.) do not meet the criteria for needing an air quality permit and
2.) do not meet the criteria for a de minimis emission increase under 25 Pa. Code Section 127.449.
3.) are much smaller than the emissions from many other legally operating sources in the Commonwealth.
4.) have not been shown to cause any environmental problems during normal operation.

Lancaster County is currently designated as Nonattainment for the 2008 ozone NAAQS. Also, since Lancaster County is located within the Ozone Transport Region, it is treated as moderate nonattainment for emission offset purposes. Although on 4/11/16, EPA determined that Lancaster attained the 2008 ozone NAAQS by the 7/20/15 attainment date, EPA has not yet re-designated it as an attainment area. The current certified 2015 and 2016 design values for Lancaster County meet the 2015 ozone NAAQS. With regard to particulate pollution, Lancaster County is currently designated as attainment for the 2012 annual PM2.5 NAAQS. As a minor source with post-control emissions below air permit thresholds, the Sunoco Blainsport facility is not expected to meaningfully affect local or regional compliance with ambient air quality standards.

The following condition was placed in Section C of the permit, *"The potential fugitive plus stack emissions from this facility, after appropriate control as prescribed in this permit, have been estimated as follows: 0.06 tpy of NOx, 0.24 tpy of CO, 0.76 tpy of VOCs, 0.01 tpy of Methane and 108 tpy of GHGs. The Department has determined these emissions remaining after appropriate control are of minor significance with regard to causing air pollution, and will not prevent or interfere with the attainment or maintenance of an ambient air quality standard."*

Compliance History:

The facility is operating. There are no outstanding Notices of Violations.

Conclusions and Recommendations

The compliance history form was received on January 12, 2015. West Cocalico Township and Lancaster County were notified January 14, 2015. A notice will be published in the PA Bulletin. I recommend that the revised draft Permit No. 36-03197 be released for public comment.

There is no confidential documentation in the original or updated application and supporting materials.

Attachments

cc: Permits/SC Region 36-03197, B3/ Lancaster District

Table of Contents for Attachments to DEP's Sunoco Blainsport Addendum Memo

Item	Description	Page # (top right)
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B	9/27/16 addendum to state-only permit application	4
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Hartline, Darrell

From: Hanlon, Thomas
Sent: Thursday, February 18, 2016 1:53 PM
To: Duke, Alicia
Cc: Hartline, Darrell
Subject: FW: Draft ME RFD Supplemental Aggregation Language
Attachments: 01_HollidaysburgStation(20160215).pdf; 02_MarklesburgStation(20160215).pdf; 03_Mt.UnionStation(20160215).pdf; 04_DoylesburgStation(20160215).pdf; 05_PlainfieldStation(20160215).pdf; 06_MiddletownStation(20160215).pdf; 07_CornwallStation(20160215).pdf; 08_BlainsportStation(20160215).pdf; 09_BeckersvilleStation(20160215).pdf

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From: WERNER, JED A [mailto:JAWERNER@sunocologistics.com]
Sent: Tuesday, February 16, 2016 9:25 AM
To: Hanlon, Thomas
Cc: STYLES, MONICA L
Subject: Draft ME RFD Supplemental Aggregation Language

Tom,

Here is the supplemental information for the nine requested pump stations in South Central Region which PADEP has requested supplemental aggregation language to what was already provided in the original RFD applications.

Please call me when you have a chance to review.

Thank you for your time.

Jed A. Werner
Manager - Environmental Compliance and Projects
525 Fritztown Road
Sinking Spring, PA 19608
p-610-670-3297
c-610-858-0802
f-866-599-4936

Insanity is doing the same thing over and over again and expecting different results – Albert Einstein

[2]

The purpose of this document is to supply supplemental information regarding the aggregation text for the Sunoco Pipeline L.P. (SPLP) Request for Determination (RFD) submittals to the Pennsylvania Department of Environmental Protection (PADEP) South Central Regional Office (SCRO) associated with the Mariner East (ME) Project (the Project).

SPLP understands that Pennsylvania is considered a "moderate" ozone nonattainment area for oxides of nitrogen (NO_x) and volatile organic compounds (VOCs) because Pennsylvania is a jurisdiction in the Ozone Transport Region (Section 184 of the Clean Air Act). Therefore, an aggregation determination under New Source Review (NSR) would be determined on a case-by-case basis using the two-part test that considers whether the air contamination source or combination of sources are located on one or more contiguous or adjacent properties and whether the sources are owned or operated by the same person under common control. This case-by-case single source determination would apply to all sources irrespective of their separate status as "minor" or "major" air contamination sources. PADEP and the Pennsylvania Environmental Hearing Board have made clear that the terms "contiguous" and "adjacent" should be given their plain meaning. To that end, PADEP's guidance document has developed a common sense approach to determine if sources are located on adjacent or contiguous properties and considers sources located within a quarter-mile distance to be considered contiguous or adjacent (PADEP, 2012). Sources greater than a quarter-mile may be considered contiguous or adjacent on a case-by-case basis. Interdependence may be a factor in conducting a single source determination. That said, the plain meaning of the terms "contiguous" and "adjacent," and not interdependence, should be the dispositive factor in determining whether stationary sources are located on contiguous or adjacent properties.

To determine if the under common control test is met, ownership of each of the operations is just one aspect in determining if the facilities are under common control. If a contract for service relationship exists between the two companies and/or if a support/dependency relationship exists, then this would constitute indirect control. United States Environmental Protection Agency (USEPA) has historically interpreted that an evaluation of common control must consider whether the facilities are functionally interrelated or interdependent of each other. As discussed in the Federal Register (USEPA, 2009), USEPA states that "To be 'substantially related,' there should be an apparent interconnection–either technically or economically–between the physical and/or operational changes, or a complementary relationship whereby a change at a plant may exist and operate independently, however its benefit is significantly reduced without the other activity."

BLAINSPORT PUMP STATION

In determining whether the Blainsport Pump Station's emissions should be aggregated with any another sources for the purpose of evaluating the applicability of the nonattainment NSR and Title V programs, initially one facility was identified: the Hopelane Road Block Valve. Per the PADEP SCRO's request, SPLP reviewed the area within 5.0 miles of the Plainfield Station; no additional facilities for aggregation consideration were found during this review.

Hopelane Road Block Valve

With this supplemental aggregation discussion, the distance between the Blainsport Pump Station and the Hopelane Road Block Valve is being updated to approximately 5.1 miles rather than the 4.8 miles presented in the Request for Determination (RFD) and referenced in the State Only Operating Permit (SOOP) application. This updated distance is based upon finalized Process Flow Diagrams (PFDs) mile markers for the pipeline. The distance of approximately 5.1 miles exceeds the ¼ mile rule of thumb in the PADEP guidance document (PADEP, 2012) and the 5.0 mile evaluation requested by the PADEP SCRO. However, it is being evaluated because it is the closet location owned by SPLP to the Blainsport Pump Station.

Furthermore, aggregation would not be appropriate because the two sites should not otherwise be considered "adjacent" or "contiguous" due to the lack of any interdependence between the Hopelane Road Block Valve and the Blainsport Pump Station. The Hopelane Road Block Valve is an independently operated valve for isolating a section of pipeline for safety, environmental, or maintenance purposes, whereas the purpose of the Blainsport Pump Station is to maintain pipeline system pressure during the transportation of natural gas liquids (NGLs). Neither location is dependent upon the other to properly function. In fact, both locations could fully function even if the other is nonfunctional.

In short, the Blainsport Pump Station's emissions should not be aggregated with those from the Hopelane Road Block Valve because the two locations are not interdependent of each other and are not in close proximity of each other, and therefore are neither "contiguous" nor "adjacent" for the purposes of aggregating air emissions.

REFERENCES:

Pennsylvania Department of Environmental Protection (PADEP), 2012. Guidance for Performing Single Stationary Source Determinations for Oil and Gas Industries. Document No.: 270-0810-006, October 6, 2012.

United States Environmental Protection Agency (USEPA), 2009. Title 40 Code of Federal Regulations Parts 51 and 52, Prevention of Significant Deterioration (PSD) and Nonattainment New Source Review (NSR): Aggregation and Project Netting. Federal Register Volume 74, No. 10, January 15, 2009, pages 2376-2383.

State-Only Operating Permit (SOOP) Addendum

Mariner East Project

Sunoco Pipeline L.P.

Blainsport Station

Lancaster County, PA

September 2016

Sunoco Logistics

TETRA TECH

Sunoco Logistics

September 27, 2016

FedEx: 7773 3942 7657

Mr. William Weaver
Program Manager
Pennsylvania Department of Environmental Protection
Bureau of Air Quality
Southcentral Regional Office
909 Elmerton Avenue
Harrisburg, Pennsylvania 17110

Subject: Addendum

RE: Pending State Only Operating Permit (SOOP) 36-03197
Facility ID: 789355
Sunoco Pipeline L.P. (SPLP) Blainsport Station
West Cocalico Township, Lancaster County, Pennsylvania
Tetra Tech, Inc. Project No. 112IC05958

Dear Mr. Weaver:

SPLP is submitting this Addendum to the subject facility SOOP application. Triplicate hardcopies of this letter and the impacted SOOP attachments are enclosed (one original and two copies).

There is no change in the status of Blainsport Station and the physical operation remains as represented in the January 2015 SOOP Application. This addendum is being submitted because the emissions associated with the Blainsport Station have been recalculated based on:

- Updated equipment information including flare pilot gas flow rate,
- More detailed information regarding maintenance activities,
- As-built Piping and Instrumentation Diagrams (P&IDs),
- Current equipment specific emission factors, and
- A more conservative flare emission estimate utilizing the manufacturer's guaranteed design destruction and removal efficiency (DRE) of 98%.

As part of the review of existing equipment and potential station modifications, the DRE associated with a 10 million British thermal unit per hour (MMBtu/hr) flare was evaluated. The manufacturer (John Zink) shop testing and a field stack study conducted at a similar SPLP facility on an identical flare demonstrates the capability of the 10 MMBtu/hr to achieve a DRE of 99.99 percent (%) for these size units as presented in Tables 1 and 2, respectively. However, we do not presently have sufficient data or operating history to determine that a 99.99% DRE can be achieved for the operational life of the flare. We do however anticipate that the more conservative 98% DRE that is the manufacturer's minimum rated performance can be achieved and likely exceeded for the operational life of the flare when the manufacturer's recommended maintenance schedule is followed. See John Zink's Recommended Maintenance Form for Production Flare (Attachment A).

Furthermore, the potential for changing one or more flares present at this or other aboveground facilities serving the same pipeline system to larger units is being considered. Although the larger units may be capable of achieving a 99.99% DRE or better over the operational life of the flare, SPLP does not have stack study data or historic operational data to support the 99.99% DRE for those flares.

Table 1. John Zink's October 23 through 25, 2013 Stack Emission Study Summary Results

Parameter	Average Result	Data Source
VOC Destruction Efficiency	99.993%	0 – 30 – 0 Load Data
VOC Destruction Efficiency	99.999%	30 – 70 – 30 Load Data
VOC Destruction Efficiency	99.999%	70 – 100 – 70 Load Data
VOC Destruction Efficiency	99.999%	90 – 00 Load Data
John Zink Stack Emissions Study, EPA 40 CFR Part 60 Subpart OOOO for the ZTOF025X15PF Unit. Tulsa R&D Facility. Tulsa, Oklahoma. October 23 through 25, 2013		

Table 2. Sunoco April 26, 2016 Stack Study Summary Results

Parameter	Average Result	Fuel Source
Destruction and Removal Efficiency	99.996%	Propane and Ethane
Blue Mountain Environmental Management Corporation Volatile Organic Compound Destruction and Removal Efficiency Study Test Report. John Zink Flare System. SPLP Twin Oaks Station. Aston, Pennsylvania, Delaware County. April 26, 2016.		

SPLP also evaluated the manufacturer's DRE design guarantee, which was a 98% DRE. Based upon the presently available data SPLP determined that it is appropriate and conservative to utilize the manufacturer's design guarantee DRE of 98%. SPLP also believes that by installing, operating, and maintaining all enclosed flares in accordance with the manufacturer's (John Zink's) guidance, a minimum 98% DRE can be anticipated for the operational life of the enclosed flares. Again, based on our operations and testing, we believe that a DRE in excess of 99% is likely for the life of the unit, but have chosen the more conservative number for our calculations.

Consequently, SPLP has updated the flare emission estimate to reflect the design DRE of 98% for Blainsport enclosed flare and plans to incorporate the design based DRE in future submittals. This change in DRE results in a very minor increase in the emissions calculations.

SPLP is replacing the following SOOP attachments with the enclosures of this letter as described in the bulleted list below. Modifications to the following only include those items impacted by this update.

- A revised State-Only Permit Application Form is enclosed and the following sections have been modified:
  - Section 1.1 – Application Type
  - Section 1.2 – Plant Information
  - Section 2.1 – Potential Emission Estimates for the Site
  - Section 3 – Site Inventory
  - Section 7 – General Source Information Subsections 7.1, 7.2, and 7.4
  - Section 8 – Control Device Information Subsections 8.1 and 8.2
- A revised Appendix B, Attachment 1 – Emission Calculations is enclosed.
  - Note that the worst-case emission rate per pollutant per product was utilized. The updated emission rates were estimated based on applying the physical properties of the products (i.e., heating value, gas density, etc.) that would result in the highest potential-to-emit estimates.
  - Additionally, note that fugitive pump seal emissions are included in overall facility fugitive emissions and are not considered a separate line item.
- A revised Appendix B, Attachment 2 – Aggregation Language is enclosed.

Additionally, per PADEP SCRO's request, SPLP has reviewed SOOP SECTION E language in regards to the current monitoring system for the pilot flame and other Pennsylvania SPLP SOOP SECTION E language. The current SPLP flare monitoring systems consist of a signal from the pilot flame detection device that is transmitted to the Supervisory Control and Data Acquisition (SCADA) system. In the event of a pilot flame malfunction, the flare auto re-ignition will be initiated. Although pilot flame failure information

is manually logged, it is not collected in the SCADA system historian. Therefore, for consistency with the PADEP SCRO issued SOOPs for Marklesburg, Hollidaysburg, and Plainfield Stations and to reflect the current system operations, SPLP is suggesting the following language for SECTION E. Source Groups Restrictions. IV. RECORDKEEPING REQUIREMENTS:

> #004 [25 Pa. Code §127.441]: "When the enclosed flare is not operational, the permittee shall record the downtime and associated emissions."
>
> #005 [25 Pa. Code §127.441]: "The permittee shall maintain detailed records of all maintenance performed on the enclosed flare. The permittee shall retain these records for a minimum of five (5) years and shall make them available to the department upon its request."

Please contact Jed Werner at 610-670-3297 or by email (jawerner@sunocologistics.com) if you have any questions.

Sincerely,

Matthew L. Gordon
Principal Engineer

MLG:vjp

cc: Project file 112IC05958 (electronic)
Jed Werner, SPLP (email)
Christopher Embry, SPLP (email)
Megan Allison, Tetra Tech (email)

MLG:vjp
Attachments: SOOP Addendum for SPLP Blainsport Station
Attachment A
John Zink's Recommended Maintenance Form for Production Flare

Enclosures: SOOP Addendum for SPLP Blainsport Station

State Only Operating Permit Form 2700-PM-AQ0013

Appendix B:
Potential-to-Emit Emission (PTE) Calculations
Aggregation Analysis

Attachment A

John Zinc Recommended Flare Maintenance Schedule

SYSTEM COMPONENT	INTERVAL	DATE	INITIALS	COMMENTS
General				
Confirm all covers are secure.	monthly			
Inspect enclosures for moisture.	monthly			
Confirm no gas or liquid leaks exist.	monthly			
Confirm all threaded connections are tight.	annually			
Replace all thermocouples.	annually			
Calibrate instruments and flow meter.	annually			
Flare				
Record flame arrester differential pressure.	monthly			
Inspect exterior paint.	monthly			
Conduct recommended System Testing.	quarterly			
Inspect internal insulation.	quarterly			
Inspect foundation and anchor bolts.	annually			
Clean sight port, flare tip, and flame arrester.	annually			
Conduct emissions performance test.	annually			
Pilot				
Record pilot gas pressure.	monthly			
Inspect mixer for debris or moisture.	monthly			
Clean mixer and orifice.	quarterly			
Clean solenoid.	annually			
Replace electrode.	annually			

Enclosures

State Only Permit Application Form

2700-PM-AQ0013

2700-PM-AQ0013 Rev. 8/2009

pennsylvania
DEPARTMENT OF ENVIRONMENTAL PROTECTION

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION
BUREAU OF AIR QUALITY

STATE-ONLY PERMIT APPLICATION

FOR OFFICIAL USE ONLY
State-Only OP Number: _____
Reviewed by: _____
Date: _____
Comments: _____

Section 1 - General Information

1.1 Application Type

Type of permit for which application is made: (Check one)

☐ Initial
☐ Renewal Operating Permit No. _____
☒ Application Revision

1.2 Plant Information

Federal Tax ID: 23-3102656 Firm Name: Sunoco Pipeline L.P.

Plant Code: _____ Plant Name: Blainsport Station

NAICS Code: 493190 SIC Code: 4619

Description of NAICS Code: Primarily engaged in operating warehousing and storage facilities (except general merchandise, refrigerated, and farm product warehousing and storage).

Description of SIC Code: Pipelines, Not Elsewhere Classified

County: Lancaster Municipality West Cocalico Township

Latitude: 40.282742 Longitude: -76.140514

Horizontal Reference Datum: NAD 1983 Horizontal Collection Method: NTDEP Reference Point: CNTAR

1.3 Contact Information

Name: Matthew Gordon Title: Principal Engineer

Address: 525 Fritztown Road
Sinking Spring, PA 19608

Telephone Number: (610) 670-3284

Email Address: mlgordon@sunocologistics.com

1.4 Certification of Truth, Accuracy and Completeness

Note: This certification must be signed by a responsible official. Applications without a signed certification will be returned as incomplete.

I certify under penalty of law that, based on information and belief formed after reasonable inquiry, the statements and information contained in this application are true, accurate, and complete.

(Signed) _____ Date: 9/21/2016

Name (Typed): Matthew Gordon Title: Principal Engineer

Section 2 - Site Information

2.1 Potential Emission Estimates for the Site

Provide the estimated potential emission for the site BEFORE and AFTER utilizing the proposed restriction(s) and/or limitation(s).

Pollutant or CAS No.	Potential Emission BEFORE taking Limitations (TPY)	Potential Emission AFTER taking Limitations (TPY)
CO2e	0	107.60
CO2	0	107.00
N2O	0	<0.01
CH4	0	0.01
CO	0	0.24
Total VOCs	24.45	0.74
NOx	0	0.06
Total HAPs	0	<0.01
SOx	0	<0.01

*** Provide all supporting calculation methods as an attachment at the end of this application.**

2.2 Facility Type

Is this facility a Synthetic Minor Facility? Yes ☐ No ☒

If yes, go to Section 2.3, "Synthetic Minor Facility".

If no, go to Section 3, "Site Inventory".

IMPORTANT: Note that all Synthetic Minor Facilities must be able to meet the proposed restriction(s) and/or limitation(s) immediately upon the submission of this application. By signing the Certification of Compliance in Section 13 of this application, the facility for which a Synthetic Minor Status is proposed will be deemed a Synthetic Minor Facility according to the restriction(s) and/or limitation(s) proposed upon receipt of the application by the Department, unless the Department determines that the facility is unable to meet the Synthetic Minor requirements at a later date.

2.3 Synthetic Minor Facility Information (to be completed by all facilities seeking Synthetic Minor Status)

Synthetic Minor Status for this facility can be taken at the: Source Level ☐ AND/OR Site Level ☐

If limitation(s) and/or restriction(s) can be taken at the site level (for all sources within this facility), complete the following questions, otherwise please go on to Section 3, "Site Inventory".

Synthetic Minor Status for the Entire Site is achievable through the following restrictions: (Please check all that apply and describe in detail what is/are proposed):

☐	Hours of Operation	
☐	Production/Throughput Rate	
☐	Type of Fuel	
☐	Fuel Usage	
☐	Control Devices	
☐	Emissions Limitiations	
☐	Other	

Describe how the elected restriction(s) will allow the facility to become a Synthetic Minor

Note: If Section 2.3 is completed and there are no additional restrictions proposed at the source level, the applicant can omit Subsections 5, 6, and 7 in Sections 5, 6, and 7 for all sources in this permit application.

2.4 Compliance Method for the Site (for Synthetic Minor Facilities only)

Complete this section only if limitation(s) and/or restriction(s) were proposed in Section 2.3.

a. Explain how you would demonstrate compliance with the restriction(s) and/or limitation(s) listed in Section 2.3:

b. Describe what is to be reported in the compliance report:

c. Reporting start date:

d. Indicate the frequency for submitting compliance report as explained above:

Section 3 - Site Inventory

List all air pollution sources, control equipment, emission points and fuel material locations at this site. Duplicate this page as necessary. For renewals, only list sources not included in current permit.

Unit ID No.	Company Designation	Unit Type
101	*John Zink Enclosed Flare*	*4' by 30' Enclosed ZTOF Production Flare*
102	*Fugitive Emissions*	*various leaks from sealed surfaces*
103	*Maintenance Operating Scenarios*	*pipeline*

Section 4 - Source Group (Optional)

4.1 Source Group Definition

This section applies to new State-Only Operating Permit applications only.

Define groups of source(s) that are subject to one or more applicable requirements that apply to all source(s) in the group.

Group No.	Source ID (for source(s) in this group)

4.2 Applicable Requirements for Source Groups

For renewals, only list group level requirements not included in the current State-Only Operating Permit. If there are no changes, check the box to the right.

☐ No changes from current State-Only Operating Permit.

Describe and cite all applicable requirements pertaining to all source groups.

Note: A Method of Compliance Worksheet (Addendum 1) must be completed for each requirement listed.

Group Number	Citation Number	Citation Limitation	Limitation Used

Section 5 - Combustion Operational Inventory

(Complete this section for each combustion source in this site. Duplicate this section as needed).

For renewals, review and correct any pre-printed information and add additional sections for any new combustion unit listed in Section 3 of this application.

5.1 General Source Information

a. Unit ID No.: _____ b. Company Designation: _____

c. Plan Approval or Operating Permit Number: _____

d. Manufacturer: _____ e. Model Number: _____

f. Source Description: _____

g. Rated Heat Input/Thruput: _____ h. Installation Date: _____

i. Exhaust Temperature: _____ Units: _____ j. Exhaust % Moisture: _____ k. Exhaust Flow Volume: _____ SCFM

5.2 Exhaust System Components

Explain how the exhaust components are configured:

From Unit	Unit Description	To Unit	Unit Description	Percent Flow

5.3 Source Classification Code (SCC) Listing for Standard Operation

Fuel/Material	Associated SCC	Max Throughput Rate	Firing Sequence

5.4 Maximum Fuel Physical Characteristics

If taking limitations on Fuel Physical Characteristics, see instructions.

SCC/Fuel Burned	FML*	% Sulfer	% Ash	BTU Content (Units)

*FML = Fuel Material Loction

5.5 Limitations on Source Operation (optional)

Maximum amount of hours of source operation per year: _____

☐	Hours of Operation	
☐	Production Throughput Rate	
☐	Type of Fuel	
☐	Fuel Usage	
☐	Control Devices	
☐	Emissions Limitations	
☐	Other	

Describe how the elected restriction(s) will allow the facility to become a Synthetic Minor?

5.6 Compliance Method for this source (for Synthetic Minor Sources only)

Complete this section only if limitation(s) and/or restriction(s) were proposed in Section 5.5.

a. Explain how you would demonstrate compliance with the restriction(s) and/or limitation(s):

b. Describe what is to be reported in the compliance report:

c. Reporting start date: _____

d. Indicate the frequency for submitting compliance report as explained above: _____

5.7 Source Potential to Emit (for Synthetic Minor Sources only)

Give Potential Emission estimate for all air pollutants emitted at this source. Calculations for the Potential Emissions Estimate here should have included the restriction(s) and/or proposed in Section 5.5, if applicable.

Pollutant or CAS Number	Fuel/SCC	Emissions/Activity Allowable per Unit	Calc. Method	Max. Capacity	Total Hours	Emission in TPY

5.8 Source Applicable Requirements

Describe and cite all applicable requirements pertaining to this source.

Note: A Method of Compliance Worksheet (Addendum 1) must be completed for each requirement listed.

For renewals, only list group level requirements not included in the current State Only Operating Permit. If there are no changes, check the box to the right.

☐ No changes from current State Only Operating Permit.

Fuel/SCC	Citation Number	Citation Limitation	Limitation Used

Section 6 - Incinerator Operational Inventory

(Complete this section for each incinerator at this site. Duplicate this section as needed).

For renewals, review and correct any pre-printed information and add additional sections for any new incinerator listed in Section 3 of this application.

6.1 General Source Information

a. Unit ID: _____ b. Company Designation: _____

c. Plan Approval or Operating Permit Number: _____

d. Manufacturer: _____ e. Model Number: _____

f. Source Description: _____

g. Rated Heat Input/Thruput: _____ h. Installation Date: _____

i. Exhaust Temperature: _____ Units: _____ j. Exhaust % Moisture: _____ k. Exhaust Flow Volume: _____ SCFM

l. Inc. Capacity: _____ Lbs/Hr m. Primary Burner Heat Input: Units:

n. Exhaust % CO_2: _____ o. Secondary Burner Heat Input: _____ Units: _____

p. Incinerator Class: _____

q. Waste Type: _____ r. Waste BTU/lb: _____

6.2 Exhaust System Components

Explain how the exhaust components are configured:

From Unit	Unit Description	To Unit	Unit Description	Percent Flow

6.3 Source Classification Code (SCC) Listing for Standard Operation

Fuel/Material	Associated SCC	Max. Throughput Rate	Firing Sequence

6.4 Maximum Fuel Physical Characteristics

If taking limitations on Fuel Physical Characteristics, see instructions.

SCC/Fuel Burned	FML*	% Sulfur	% Ash	BTU Content (Units)

*FML = Fuel Material Location

6.5 Limitations on Source Operation (optional) (for Synthetic Minor Sources only)

Maximum amount of hours of source operation per year: _____

☐	Hours of Operation	
☐	Production Throughput Rate	
☐	Type of Fuel	
☐	Fuel Usage	
☐	Control Devices	
☐	Emissions Limitations	
☐	Other	

Describe how the elected restriction(s) will allow the facility to become a Synthetic Minor?

6.6 Compliance Method for this source (for Synthetic Minor Sources only)

Complete this section only if limitation(s) and/or restriction(s) were proposed in Section 6.5.

a. Explain how you would demonstrate compliance with the restriction(s) and/or limitation(s):

b. Describe what is to be reported in the compliance report:

c. Reporting start date: _____

d. Indicate the frequency for submitting compliance report as explained above: _____

6.7 Source Potential to Emit (for Synthetic Minor Sources only)

Give Potential Emission estimate for all air pollutants emitted at this source. Calculations for the Potential Emissions Estimate here should have included the restriction(s) and/or limitation(s) proposed in Section 6.5, if applicable.

Pollutant or CAS Number	Fuel/SCC	Emissions/Activity Allowable per Unit	Calc. Method	Max. Capacity	Total Hours	Emission in TPY

6.8 Source Applicable Requirements

Describe and cite all applicable requirements pertaining to this source.

Note: A Method of Compliance Worksheet (Addendum 1) must be completed for each requirement listed.

For renewals, only list group level requirements not included in the current State Only Operating Permit. If there are no changes, check the box to the right.

☐ No changes from current State Only Operating Permit.

Fuel/SCC	Citation Number	Citation Limitation	Limitation Used

Section 7 – Process Operational Inventory

(Complete this section for each process at this site. Duplicate this section as needed).

For renewals, review and correct any pre-printed information and add additional sections for any new incinerator listed in Section 3 of this application.

7.1 General Source Information

a. Unit ID: 101 b. Company Designation: John Zink - Enclosed Flare

c. Plan Approval or Operating Permit Number: S101

d. Manufacturer: John Zink Company LLC e. Model Number: ZTOF04X30PF

f. Source Description: Enclosed Flare

g. Rated Heat Input/Thruput: 10,000.000 BTU/Hour - Max h. Installation Date: TBD - Tenative August 2014

i. Exhaust Temperature: 1,660 Units: °F j. Exhaust % Moisture: 6.1 k. Exhaust Flow Volume: 4,848 SCFM

7.2 Exhaust System Components

Explain how the exhaust components are configured:

From Unit	Unit Description	To Unit	Unit Description	Percent Flow
101	Standard Operation Scenario	CD101	John Zink - Enclosed Flare	
102	Fugitive Emissions	atmosphere		
103	Maintenance Operating Scenario	CD101	John Zink - Enclosed Flare	

7.3 Source Classification Code (SCC) Listing for Standard Operation

Fuel/Material	Associated SCC	Max. Throughput Rate	Firing Sequence

7.4 Maximum Fuel Physical Characteristics

If taking limitations on Fuel Physical Characteristics, see instructions.

SCC/Fuel Burned	FML*	% Sulfur	% Ash	BTU Content (Units)

*FML = Fuel Material Location

7.5 Limitations on Source Operation (optional) (for Synthetic Minor Sources only)

Maximum amount of hours of source operation per year: _____

☐	Hours of Operation	
☐	Production Throughput Rate	
☐	Type of Fuel	
☐	Fuel Usage	
☐	Control Devices	
☐	Emissions Limitations	
☐	Other	

Describe how the elected restriction(s) will allow the facility to become a Synthetic Minor?

7.6 Compliance Method for this source (for Synthetic Minor Sources only)

Complete this section only if limitation(s) and/or restriction(s) were proposed in Section 7.6.

a. Explain how you would demonstrate compliance with the restriction(s) and/or limitation(s):

b. Describe what is to be reported in the compliance report:

c. Reporting start date: _____

d. Indicate the frequency for submitting compliance report as explained above: _____

7.7 Source Potential to Emit (for Synthetic Minor Sources only)

Give Potential Emission estimate for all air pollutants emitted at this source. Calculations for the Potential Emissions Estimate here should have included the restriction(s) and/or limitation(s) proposed in Section 7.5, if applicable.

Pollutant or CAS Number	Fuel/SCC	Emissions/Activity Allowable per Unit	Calc. Method	Max. Capacity	Total Hours	Emission in TPY

7.8 Source Applicable Requirements

Describe and cite all applicable requirements pertaining to this source.

Note: A Method of Compliance Worksheet (Addendum 1) must be completed for each requirement listed.

For renewals, only list group level requirements not included in the current State Only Operating Permit. If there are no changes, check the box to the right.

☐ No changes from current State Only Operating Permit.

Fuel/SCC	Citation Number	Citation Limitation	Limitation Used

Section 8 – Control Device Information (duplicate this section as needed)

For renewals, review and correct any pre-printed information and add additional sections for any new control device listed in Section 3 of this application.

8.1 General Control Device Information

a. Unit ID: CD101 b. Company Designation: John Zink Company - Enclosed Flare

c. Used by Sources: Mariner East Pipeline

d. Type: Enclosed Flare

e. Pressure Drop in H_2O: ~ 10 psig at max flow rate f. Capture Efficiency: 98.0

g. Scrubber Flow Rate (GPM): Not Applicable

h. Manufacturer: John Zink Company LLC i. Model Number: ZTOF04X30PF

j. Installation Date: TBD - Tenatively August 2014

8.2 Control Device Efficiencies for this Control Device:

Pollutant Name	CAS Number	Estimated Control Efficiency	Basis for Efficiency Estimate
Natural Gas Liquids (NGLs)	64741-48-6	98.0	Performance criteria of the Emission Control Device was assessed as provided by the manufacturer data

Section 9 – Stack/Flue Information (duplicate this section as needed)

For renewals, review and correct any pre-printed information and add additional sections for any new stack/flue listed in Section 3 of this application.

9.1 General Stack/Vent Information

a. Unit ID: S101 b. Company Designation: John Zink Company LLC Enclosed Flare

c. Discharge Type: Enclosed Flare

d. Diameter (ft): 4 Height (ft): 30 Base Elevation (ft): 4

e. Exhaust Temperature: 1,660 F Exhaust % Moisture: 6.1 Exhaust Velocity: 27.3 ft/sec

f. Exhaust Volume: 20,583 ACFM Exhaust Volume: 4,848 SCFM

g. Distance to Nearest Property Line (ft): ~ 112 feet

h. Weather Cap?: ☒ Yes ☐ No

i. Used by Sources:

j. Latitude: 40.282742 Longitude: -76.140514
Horizontal Reference Datum: NAD 1983 Horizontal Collection Method: NTDEP Reference Point: CNTAR

---

a. Unit ID: b. Company Designation:

c. Discharge Type:

d. Diameter (ft): Height (ft): Base Elevation (ft):

e. Exhaust Temperature: Exhaust % Moisture: Exhaust Velocity:

f. Exhaust Volume: ACFM Exhaust Volume: SCFM

g. Distance to Nearest Property Line (ft):

h. Weather Cap?: ☐ Yes ☐ No

i. Used by Sources:

j. Latitude: Longitude:
Horizontal Reference Datum: Horizontal Collection Method: Reference Point:

Section 10 – Fuel Material Location (FML) Information (Optional)

For renewals, review and correct any pre-printed information and add additional sections for any new FML listed in Section 3 of this application.

10.1 Fuel Material Location Information

a. FML ID Number: _____ b. Name: _____

c. Capacity: _____ Units: _____ d. Fuel: _____

e. Maximum Fuel Characteristics: If fuel is coal, what is the moisture content? _____

% Ash: % Sulfur: BTU Content: Units:

f. Used by Source:

_____

a. FML ID Number: _____ b. Name: _____

c. Capacity: _____ Units: _____ d. Fuel: _____

e. Maximum Fuel Characteristics: If fuel is coal, what is the moisture content? _____

% Ash: _____ % Sulfur: _____ BTU Content: _____ Units: _____

f. Used by Source:

_____

a. FML ID Number: _____ b. Name: _____

c. Capacity: _____ Units: _____ d. Fuel: _____

e. Maximum Fuel Characteristics: If fuel is coal, what is the moisture content? _____

% Ash: _____ % Sulfur: _____ BTU Content: _____ Units: _____

f. Used by Source:

_____

Section 11 – Alternative Operating Scenario (optional)

(Duplicate this section for each source participated in this alternative scenarios)

11.1 General Information

a. Alternative Operating Scenario Name or ID No.: _____

b. Source ID No.: _____ c. Source Name: _____

d. Source Type (check one): ☐ Combustion ☐ Incinerator ☐ Process

e. Give a brief description of this alternative scenario stating how it is different from the standard operation:

11.2 Operational Flexibility Request

Check all that apply.

☐ Alternative exhaust system component configuration.
If this box is checked, complete Sections 11.3 and 11.7

☐ Alternative type of fuel replacing or in addition to an existing fuel in standard operation.
If this box is checked, complete Sections 11.4 and/or 11.5 and 11.7

☐ Alternative process method replacing or in addition to a process SCC existing in standard operation.
If this box is checked, complete Sections 11.6 and 11.7

☐ Alternative lower limitations.

11.3 Exhaust System Components

Specify the complete exhaust system component configuration for this alternative operating scenario.

From Component Type	From Component Number	To Component Type	To Component Number	Percent Flow	Begin Date	End Date

11.4 Source Classification Code (SCC) Listing for Alternative Operation

Give a complete listing of all fuels burned, products produced by a process or waste incinerated for this alternative operating scenario.

Fuel	Associated SCC	Max. Throughput Rate	Firing Sequence

11.5 Alternative Fuel Physical Characteristics

Give a complete listing of all fuels physical characteristics for this alternative operating scenario.

SCC/Fuel Burned	FML	% Sulfur	% Ash	BTU Content (Units)

11.6 Alternative Process/Product Description

a. Briefly describe the change(s) in raw materials and/or process methods used in this operating scenario, if applicable:

b. Provide and briefly describe the process SCC associated with this alternative operating scenario:

Process SCC:		SCC Description:	

c. Alternative Product(s):

11.7 Source Potential to Emit

Give Potential Emission estimate for all air pollutants emitted at this source for this operating scenario.

Pollutant or CAS Number	Fuel	Emissions/Activity Allowable per Unit	Calc. Method	Max. Capacity	Total Hours	Emission in TPY

Section 12 – Compliance Plan for the Facility

		Yes	No
12.1	Will your facility be in compliance with all applicable requirements at the time of permit issuance and continue to comply with these requirements during the permit duration?	☒	☐
12.2	Will your facility be in compliance with all applicable requirements presently scheduled to take effect during the term of the permit?	☒	☐
12.3	Will these requirements be met by the regulatory required dates?	☒	☐

If you checked "NO" in part 12.1, 12.2 or 12.3, answer the following questions:

12.4 Identify applicable requirement(s) for which compliance is not or will not be achieved:

Source ID Number	Citation Number

12.4.1 Briefly describe how compliance with this/these applicable requirement(s) will be achieved:

12.4.2. Provide a detailed schedule of compliance for the non-complying sources or activities identified in this section of the application. Include an enforceable sequence of corrective actions with milestone and projected compliance dates.

Date	Action/Milestone

12.4.3. Indicate the submittal frequency for the progress report(s): _____

12.4.4. Starting date for the submittal of the progress report(s): _____

Section 13 – Certification of Compliance for Synthetic Minor Source

In order for this Synthetic Minor facility to avoid the State-Only Operating Permit requirements, the applicant must agree to be bound by the emissions limitation(s) and/or restriction(s) contained in this application. In addition, the applicant must agree that these emission limitation(s) are enforceable by the Department, the Environmental Protection Agency and the citizens.

13.1 Schedule for Compliance Certification Submission

a. Frequency of submittal: _____

b. Beginning date: _____

13.2 Certification of Compliance (for Synthetic Minor Facility only)

I certify under the penalty of 18 Pa. CS 4904 (b) (2) that the sources covered by this application will comply with the emission limitations and other requirements contained in this application and all previously issued plan approvals and operating permits. I further certify that, based on information and belief formed after reasonable inquiry, the statements and information in this application are true, accurate, and complete.

(Signed) _____ Date _____

Name (Typed) _____

Title: _____

Appendix B

Potential-to-Emit (PTE) Emission Calculations

CLIENT: Sunoco Pipeline L.P. (SPLP)		JOB NUMBER: 112IC05958.20	
SUBJECT: Blainsport Station -- Existing Equipment Overall Project Summary Table			
BASED ON: Emission Calculation Workbooks		DRAWING NUMBER: Not Applicable	
BY: VJPlachy	CHECKED BY: AMO'Bradovich		DATE: 8/11/2016

Objective: Summarize the controlled maximum hourly and annual emission rates.

1. **PRE-CONTROL EMISSION ESTIMATES***

Emissions Source	Pre-Control Maximum Hourly Emission Rate [pounds per hour (lb/hr)]									
	NO_x	CO	VOC	$PM/PM_{10}/PM_{2.5}$	SO_x	HAPs	CO_2	CH_4	N_2O	CO_2e
Control Device (Flare):	0.004	0.02	608.62	N/C	0.0002	0.00004	7.67	0.001	0.0001	7.70
Fugitives:	N/C	N/C	0.03	N/C	N/C	N/C	N/C	N/C	N/C	N/C
TOTAL MAXIMUM HOURLY:	<0.01	0.02	608.65	N/C	<0.01	<0.01	7.67	<0.01	<0.01	7.70

Emissions Source	Pre-Control Annual Average Emission Rate [tons per year (tpy)]									
	NO_x	CO	VOC	$PM/PM_{10}/PM_{2.5}$	SO_x	HAPs	CO_2	CH_4	N_2O	CO_2e
Control Device (Flare):	0.02	0.08	24.33	N/C	0.001	0.0002	33.60	0.002	0.0002	33.70
Fugitives:	N/C	N/C	0.12	N/C	N/C	N/C	N/C	N/C	N/C	N/C
TOTAL ANNUAL AVERAGE:	0.02	0.08	24.45	N/C	<0.01	<0.01	33.60	<0.01	<0.01	33.70

2. **POST-CONTROL EMISSION ESTIMATES**

Emission Source	Post-Controlled Maximum Hourly Emission Rate (lb/hr)									
	NO_x	CO	VOC	$PM/PM_{10}/PM_{2.5}$	SO_x	HAPs	CO_2 butane	CH_4	N_2O	CO_2e
Control Device (Flare):	0.88	4.02	12.22	N/C	0.04	0.00004	1,852	0.13	0.01	1,862
Fugitives:	N/C	N/C	0.03	N/C	N/C	N/C	N/C	N/C	N/C	N/C
TOTAL MAXIMUM HOURLY:	0.88	4.02	12.25	N/C	0.04	<0.01	1,852	0.13	0.01	1,862

Emission Source	Post-Controlled Annual Average Emission Rate (tpy)									
	NO_x	CO	VOC	$PM/PM_{10}/PM_{2.5}$	SO_x	HAPs	CO_2 butane	CH_4	N_2O	CO_2e
Control Device (Flare):	0.06	0.24	0.62	N/C	0.002	0.0002	107.00	0.01	0.001	107.60
Fugitives:	N/C	N/C	0.12	N/C	N/C	N/C	N/C	N/C	N/C	N/C
TOTAL ANNUAL AVERAGE:	0.06	0.24	0.74	N/C	<0.01	<0.01	107.00	0.01	<0.01	107.60

NOTE:

The emission estimate workbooks employ the "precision as displayed" option in Excel®; therefore, only the displayed significant figure are applied in the calculations. The minor impacts may occurred to emission estimates by utilizing this Excel® function/option.

*The Pre-Control Emission Estimates assume that the pilot gas is continuously supplied and combusted.

Terminology/Acronyms

CH_4 = methane
CO = carbon monoxide
CO_2e = carbon dioxide equivalent
HAP = hazardous air pollutant
N/C = Not Calculated because it is not a pollutant associated with the source
N_2O = nitrogen dioxide
NOx = oxides of nitrogen
PM = particulate matter
$PM_{2.5}$ = particles with an aerodynamic diameter less than or equal to 2.5 micrometers
PM_{10} = particles with an aerodynamic diameter less than or equal to 10 micrometers
SO_x = oxides of sulfur
VOC = volatile organic compound

CLIENT: Sunoco Pipeline L.P. (SPLP)		JOB NUMBER: 112IC05958.20	
SUBJECT: Blainsport Station -- Existing Equipment Flare Summary Table			
BASED ON: Emission Calculation Workbooks		DRAWING NUMBER: Not Applicable	
BY: VJPlachy	CHECKED BY: AMO'Bradovich		DATE: 8/10/2016

Objective: Present the Maximum Short Term and Annual Emission Rates for the Updated emission estimates .

PRE-CONTROL EMISSION ESTIMATES*

Emission Scenario	Pre-Controlled Maximum Hourly Emission Rate (lb/hr)									
	NO_x	CO	VOC	$PM/PM_{10}/PM_{2.5}$	SO_x	HAPs	CO_2 butane	CH_4	N_2O	CO_2e
Standard Operating Scenario	3.76E-03	1.72E-02	4.62E+00	N/C	1.53E-04	4.16E-05	7.67E+00	5.54E-04	5.54E-05	7.70E+00
Maintenance Operations Scenario	N/C	N/C	6.04E+02	N/C	N/C	N/C	N/C	N/C	N/C	N/C
TOTAL MAXIMUM HOURLY:	0.004	0.02	608.62	N/C	0.0002	0.00004	7.67	0.001	0.0001	7.70

Emission Scenario	Pre-Controlled Annual Emission Rate (tpy)									
	NO_x	CO	VOC	$PM/PM_{10}/PM_{2.5}$	SO_x	HAPs	CO_2 butane	CH_4	N_2O	CO_2e
Standard Operating Scenario	1.65E-02	7.53E-02	2.02E+01	N/C	6.70E-04	1.82E-04	3.36E+01	2.43E-03	2.43E-04	3.37E+01
Maintenance Operations Scenario	N/C	N/C	4.13E+00	N/C	N/C	N/C	N/C	N/C	N/C	N/C
TOTAL ANNUAL AVERAGE:	0.02	0.08	24.33	N/C	0.001	0.0002	33.60	0.002	0.0002	33.70

POST-CONTROL EMISSION ESTIMATES

Emission Scenario	Post-Controlled Maximum Hourly Emission Rate (lb/hr)									
	NO_x	CO	VOC	$PM/PM_{10}/PM_{2.5}$	SO_x	HAPs	CO_2 butane	CH_4	N_2O	CO_2e
Standard Operating Scenario	1.04E-02	4.74E-02	1.24E-01	N/C	4.28E-04	4.16E-05	2.16E+01	1.53E-03	1.53E-04	2.17E+01
Maintenance Operations Scenario	8.70E-01	3.97E+00	1.21E+01	N/C	4.00E-02	N/C	1.83E+03	1.30E-01	1.00E-02	1.84E+03
TOTAL MAXIMUM HOURLY:	0.88	4.02	12.22	N/C	0.04	0.00004	1,852	0.13	0.01	1,862

Emission Scenario	Post-Controlled Annual Emission Rate (tpy)									
	NO_x	CO	VOC	$PM/PM_{10}/PM_{2.5}$	SO_x	HAPs	CO_2 butane	CH_4	N_2O	CO_2e
Standard Operating Scenario	4.55E-02	2.07E-01	5.41E-01	N/C	1.87E-03	1.82E-04	9.45E+01	6.69E-03	6.69E-04	9.50E+01
Maintenance Operations Scenario	1.00E-02	3.00E-02	8.00E-02	N/C	2.00E-04	N/C	1.25E+01	1.00E-03	1.00E-04	1.26E+01
TOTAL ANNUAL AVERAGE:	0.06	0.24	0.62	N/C	0.002	0.0002	107.00	0.01	0.001	107.60

NOTES:

*The Pre-Control Emission Estimates assume that the pilot gas is continuously supplied and combusted.

N/C = not calculated

CLIENT	Sunoco Pipeline L.P. (SPLP)	JOB NUMBER	112IC05958.20 [39]
SUBJECT	Blainsport Station -- Existing Equipment Enclosed Flare Emission Calculations: Standard Operating Scenario Emission Sources		
BASED ON	SPLP Equipment Data / Specifications	DRAWING NUMBER	Not Applicable

BY	CHECKED BY		DATE
VJPlachy	AMO'Bradovich		8/10/2016

Objective: Develop example calculations: Maximum Hourly, Maximum Daily, and Annual Average Emission Rates for the proposed Standard Operating Scenario Emission Streams.

Inputs and Assumptions:

1. Potential stream products to the enclosed flare consistent of butane, propane, and/or ethane.
2. Sources of standard operating scenario emission sources to the enclosed flare that were evaluated included: chromatographs (GC), relief valves (RV), and booster, injection, and feed pump seals (Pump).
3. Maintenance intermittent emission sources to the enclosed flare that were evaluated include: gas releases from filter cleaning, prover maintenance, pigging events, and miscellaneous maintenance activities. Maintenance activity emission estimates will be presented in another calculation sheet.
4. Stream physical properties that result in the highest potential emission rates have been used.
5. Hourly flow to flare from Standard Operating Scenario Emission Streams:

RV ($FR_{RV\text{-}scf/hr}$):	0.00	scf/hr	→	0 scf/yr	No RVs to flare for this station
GC ($FR_{GC\text{-}scf/hr}$):	0.00	scf/hr	→	0 scf/yr	No GCs to flare for this station.
Booster Pumps ($FR_{BostPmp\text{-}scf/hr}$)	30.00	scf/hr	→	262,800 scf/yr	
Injection Pumps ($FR_{InjPmp\text{-}scf/hr}$)	0.00	scf/hr	→	0 scf/yr	No Injection Pump Seals to flare for this station.
Feed Pumps ($FR_{FeedPmp\text{-}scf/hr}$)	0.00	scf/hr	→	0 scf/yr	No Feed Pump Seals to flare for this station.
Pump ($FR_{total\text{-}scf/hr}$):	30.00	scf/hr	→	262,800 scf/yr	

6. Because the enclosed flare is considered to be 100% smokeless, particulate matter (PM) emissions are assumed to be negligible.
7. The flare's destruction and removal efficiency (DRE) for VOCs and HAPs only: 98 percent (%)
   The flare does not reduce/control NO_X, CO, SO_X, CO, CH_4, N_2O, or CO_2e emissions, that is, pre-control emissions equal post-control emissions.
8. Flare Emission Factors (EFs)

NO_x	CO	VOC	$PM/PM_{10}/PM_{2.5}$	SO_x	HAPs	CO_2		CH_4	N_2O
						butane	propane		
(lb/MMBtu)				(ppmw)		(kg/MMBtu)			
0.068	0.310	0.570	0	30	TBD	64.77	62.87	0.003	0.0006

PROPERTIES, AND ABBREVIATIONS / ACRONYMS "Standard Inputs" WORKSHEET TAB.

CLIENT	Sunoco Pipeline L.P. (SPLP)	JOB NUMBER	112IC05958.20 [40]
SUBJECT	Blainsport Station -- Existing Equipment Enclosed Flare Emission Calculations: Standard Operating Scenario Emission Sources		
BASED ON	SPLP Equipment Data / Specifications	DRAWING NUMBER	Not Applicable

BY	CHECKED BY		DATE
VJPlachy	AMO'Bradovich		8/10/2016

Inputs and Assumptions (Continued):

9. Oxides of Sulfur (SO_X) emissions are:
   Based on the sulfur content of the stream.
   Assume SO_X as SO_2.
   Assumes that all the all fuel sulfur converts to SO_2.
10. CO_2e Global Warming Potential EFs (EF_{GWP})

CO_2	CH_4	N_2O
1	25	298

CO_2e emission estimates use the following carbon equivalence factors: 25 for CH_4, and 298 for N_2O from 40 CFR Part 98, Subpart A, Table A-1.

11. Maximum emission stream flow rates are achieved when assuming a stream composition of 100 weight percent (wt%) butane.
12. HAPs are generated from propane burned as pilot gas and are contained in the LPG stream.
13. LPG HAP content ($HAPs_{wt\%}$): 0 wt%
14. Operating service factor (OSF), that is, percent of the year the unit is operating: 100 %

Calculations:

STANDARD OPERATING SCENARIO EMISSION SOURCES

1. Calculate the SO_X Emission Factor (EF) in pounds per standard cubic feet (lb/scf) for butane.

$EF_{SOx(lb/scf)}$ = [(mole of the gas stream)] * [(concentration of sulfur in gas stream)] * [(molar ratio of SO_2 to S)]

= [(lb of gas stream) * (MW gas stream]
* [(concentration of sulfur in gas stream)] * [(molar ratio of SO_2 to S)]

= [(volume of gas stream as butane) * (MW butane)]
* [(concentration of sulfur ppmw) / ($CF_{ppmw-wt\%}$) / ($CF_{wt\%-DecEqui}$)] * [(MW SO_2) / (MW S)]

= [($CF_{lb\_mol-scf}$) * (MW_{butane})] * [(SO_{2-ppmw}) / ($CF_{ppmw-wt\%}$) / ($CF_{wt\%-DecEqui}$)] * [(MW SO_2) / (MW S)]

$$= \frac{1 \text{ lb-mol}}{379.5 \text{ scf}} \left| \frac{58.12 \text{ lb butane}}{1 \text{ lb-mole}} \right| \frac{30 \text{ ppmw S}}{\text{gas stream (butane)}} \left| \frac{1 \text{ \%}}{10{,}000 \text{ ppmw}} \right| \frac{1 \text{ DecEq}}{100 \text{ \%}} \left| \frac{64.07 \text{ lb } SO_2\text{/lb-mol}}{32.07 \text{ lb S/lb-mol}} \right.$$

= 9.18E-06 lb SO_2/cf of the gas stream = 9.18E-06 lb SO_X/cf of the gas stream

2. Calculate the total standard operating scenario flow to the flare in scf/hr ($Flow_{Std-scf/hr}$).

$Flow_{Std-scf/hr}$ = [∑ Standard Operating Scenario Flow Rates to the Flare]

= (Flow from the GCs) + (Flow from RVs) + (Flow from Pumps)

= 0.00 + 0.00 + 30.00 scf/hr = 30.00 scf/hr standard operating scenario flow

CLIENT Sunoco Pipeline L.P. (SPLP)		JOB NUMBER 112IC05958.20	[41]
SUBJECT Blainsport Station -- Existing Equipment Enclosed Flare Emission Calculations: Standard Operating Scenario Emission Sources			
BASED ON SPLP Equipment Data / Specifications		DRAWING NUMBER Not Applicable	
BY VJPlachy	CHECKED BY AMO'Bradovich		DATE 8/10/2016

Calculations (Continued):

STANDARD OPERATING SCENARIO EMISSION SOURCES

3. Calculate the flow rate (FR) from the standard operating scenario sources to the flare in MMBtu/hr.
   For the RVs as an example:

$Flow_{Std\text{-}MMBtu/hr} = (FR_{Std\text{-}scf/hr}) * (HHV_{Butane}) / (CF_{Btu\text{-}MMBtu})$

$$= \frac{30.00\ \text{scf}}{\text{hr}} \left| \frac{3{,}244\ \text{Btu}}{1\ \text{scf}} \right| \frac{1\ \text{MMBtu}}{1\text{E+}06\ \text{Btu}} = 9.73\text{E-}02\ \text{MMBtu}_{Std}/\text{hr}$$

4. Convert emission factor from kg/MMBtu to lb/MMBtu.
   Using butane CO_2 as and example:

$EF_{CO2(lb/MMBtu)} = [EF_{CO2(kg/MMBtu)}] / (CF_{kg\text{-}lb})$

$$= \frac{64.77\ \text{kg}}{\text{MMBtu}} \left| \frac{1\ \text{lb}}{0.4536\ \text{kg}} \right| = 142.79\ \text{lb } CO_2/\text{MMBtu}$$

EF										EF_{GWP}		
NO_x	CO	VOC	$PM/PM_{10}/PM_{2.5}$	SO_x	HAPs	CO_2 butane	CO_2 propane	CH_4	N_2O	CO_2	CH_4	N_2O
(lb/MMBtu)				(lb/scf)	(lb/MMBtu)					N/A		
0.068	0.310	0.57	N/A	9.18E-06	N/A	142.79	138.60	0.01	0.001	1	25	298

NOTE:
Because the EF for butane CO_2 is greater than the EF for propane CO_2, the butane CO_2 emission factor will be applied to estimate the maximum hourly, maximum daily, and annual average emission rates.

STANDARD OPERATING SCENARIO EMISSION SOURCES: Pre-control Emission Estimate

5. Calculate the VOC flow rate from the standard operating scenario sources before controls ($F\text{-}pre_{VOC}$) in lb/hr.
   a. For the GCs, the RVs, the Booster pumps, the Injection pumps, and the Feed Pumps.

$F\text{-}pre_{VOC\text{-}lb/hr} = (Flow_{Std\text{-}scf/hr}) / (CF_{scf\text{-}lb\text{-}mol}) * (MW_{butane})$

$$= 30.00\ \frac{\text{scf}}{\text{hr}} \left\| \frac{1\ \text{lb-mol}}{379.5\ \text{scf}} \right\| \frac{58.12\ \text{lb}}{1\ \text{lb-mole}} = 4.59\ \text{lb/hr}$$

6. Calculate the EF for HAPs in pounds per scf (lb/scf).

$EF_{HAPs(lb/scf)} = (HAPs_{wt\%}) / (CF_{wt\%\text{-}DecEqui}) * (MW_{butane}) / (CF_{scf\text{-}lb/mol})$

$$= \frac{0\ \text{wt\%}}{100\ \text{wt\%}} \left| \frac{1\ \text{DecEq}}{\text{lb-mol}} \right| \frac{58.12\ \text{lb}}{379.5\ \text{scf}} \left| \frac{1\ \text{lb-mol}}{} \right| = 0\ \text{lb HAPs/scf}$$

CLIENT	Sunoco Pipeline L.P. (SPLP)	JOB NUMBER	112IC05958.20 [42]
SUBJECT	Blainsport Station -- Existing Equipment Enclosed Flare Emission Calculations: Standard Operating Scenario Emission Sources		
BASED ON	SPLP Equipment Data / Specifications	DRAWING NUMBER	Not Applicable

BY	CHECKED BY		DATE
VJPlachy	AMO'Bradovich		8/10/2016

STANDARD OPERATING SCENARIO EMISSION SOURCES: Pre-control Emission Estimate (Continued):

7. Calculate HAPs the flow rate from the standard operating scenario sources before controls ($ER\text{-}pre_{HAPS}$) in lb/hr.

$ER\text{-}pre_{HAPs\text{-}lb/hr} = (Flow_{Std\text{-}scf/hr}) * (ER_{HAPs\text{-}lb/scf})$

$= [(FR_{GC\text{-}scf/hr}) + (FR_{RV\text{-}scf/hr}) + (FR_{Pump\text{-}scf/hr})] * (ER_{HAPs\text{-}lb/scf})$

$= \left\| 30.00 \frac{\cancel{scf}}{hr} \right\| \frac{0 \text{ lb}}{1 \cancel{scf}} \| = 0.00E+00$ lb HAPs/hr

Pre-Control Maximum Hourly Emission Rate (ER) (lb/hr)									
NO_x	CO	VOC	$PM/PM_{10}/PM_{2.5}$	SO_x	HAPs	CO_2 butane	CH_4	N_2O	CO_2e
N/C	N/C	4.59E+00	N/C	N/C	N/C	N/C	N/C	N/C	N/C

Pre-Control Annual Average ER (tpy)									
NO_x	CO	VOC	$PM/PM_{10}/PM_{2.5}$	SO_x	HAPs	CO_2 butane	CH_4	N_2O	CO_2e
N/C	N/C	2.01E+01	N/C	N/C	N/C	N/C	N/C	N/C	N/C

POST CONTROLS

STANDARD OPERAING SCENARIO EMISSION SOURCES: Post-control Emission Estimate

8. Calculate the Maximum Hourly emission rate for SO_X $ER_{MaxHrlySOx}$.

$ER_{MaxHrlySOx} = (Flow_{Std\text{-}scf/hr}) * (EF_{NOx})$

$= \left| 30.00 \frac{\cancel{scf}}{hr} \right| 9.18E-06 \frac{lb}{\cancel{scf}} | = 2.75E-04$ lb SO_X /hr

9. Calculate the pre-control Annual Average emission rate for the remaining pollutants in tons per year (tpy).

Using NO_X as an example:

$ER\text{-}pre_{AnnAvgNOx} = (ER_{MaxHrlyNOx}) * (CF_{hours\text{-}year}) * (OSF) / (CF_{\%\text{-}DecEq}) / (CF_{lb\text{-}tons})$

$= \left| \frac{6.62E-03 \cancel{lb}}{1 \cancel{hr}} \right| \frac{8,760 \cancel{hr}}{1 \text{ year}} \left| 100 \cancel{\%} \right| \frac{1 \cancel{DecEq}}{100 \cancel{\%}} \left| \frac{1 \text{ ton}}{2,000 \cancel{lb}} \right| = 2.90E-02$ tpy of NO_X

10. Calculate the maximum hourly emission rate $ER_{MaxHrly}$.

Using NO_X as an example:

$ER_{MaxHrlyNOx} = (EF_{NOx}) * (Flow_{Std\text{-}MMBtuhr})$

$= \left| \frac{0.068 \text{ lb}}{\cancel{MMBtu}} \right| \frac{9.73E-02 \cancel{MMBtu}}{hr} | = 6.62E-03$ lb NO_X /hr

11. Calculate the maximum hourly emission rate for CO_2e based on CO_2, CH_4, and N_2O emission rates.

$ER_{MaxHrlyCO2e} = \sum\{[(CO_{2\_lb/hr}) * (EF_{CO2\_GWP})] + [(CH_{4\_lb/hr}) * (EF_{CH4\_GWP})] + [(N_2O_{lb/hr}) * (EF_{N2O\_GWP})]\}$

$= \left\| 1.39E+01 \frac{lb}{hr} \right\| 1 \left\| + \right\| 9.73E-04 \frac{lb}{hr} \left\| 25 \right\| + \left\| 9.73E-05 \frac{lb}{hr} \right\| 298 \left\| = 1.40E+01 \right.$ lb/hr

CLIENT Sunoco Pipeline L.P. (SPLP)		JOB NUMBER 112IC05958.20 [43]	
SUBJECT Blainsport Station -- Existing Equipment Enclosed Flare Emission Calculations: Standard Operating Scenario Emission Sources			
BASED ON SPLP Equipment Data / Specifications		DRAWING NUMBER Not Applicable	
BY VJPlachy	CHECKED BY AMO'Bradovich		DATE 8/10/2016

POST CONTROLS

STANDARD OPERAING SCENARIO EMISSION SOURCES: Post-control Emission Estimate (Continued)

12. Calculate the maximum hourly VOC flow rate (FR) from the standard operating scenario sources in lb/hr.

$Flow_{VOC\text{-}lb/hr} = (Flow_{Std\text{-}scf/hr}) / (CF_{scf\text{-}lb\text{-}mol}) * (MW_{butane}) * [1 - (DRE / CF_{\%\text{-}DecEq})]$

$= \left| 30.00 \frac{scf}{hr} \right| \left| \frac{1\ lb\text{-}mol}{379.5\ scf} \right| \left| \frac{58.12\ lb}{lb\text{-}mole} \right| 1 - \left| 98\ \% \right| \left| \frac{1\ DecEq}{100\ \%} \right| = 9.19E\text{-}02$ lb VOC/hr

13. Calculate the maximum hourly HAPs flow rate (FR) from the standard operating scenario sources in lb/hr.

$Flow_{HAPs\text{-}lb/hr} = (Flow_{Std\text{-}scf/hr}) * (EF_{HAPs(lb/scf)}) * [1 - (DRE / CF_{\%\text{-}DecEq})]$

$= \left| \frac{30.00\ scf}{hr} \right| \left| \frac{0\ lb}{1\ scf} \right| 1 - \left| 98\ \% \right| \left| \frac{1\ DecEq}{100\ \%} \right| = 0.00E+00$ lb HAPs/hr

14. Calculate CO_2 the flow rate (FR) from the standard operating scenario sources in lb/hr.

$Flow_{CO2\_lb/hr} = (Flow_{Std\_MMBtu/hr}) * (EF_{CO2\_lb/MMBtu})$

$= \left| \frac{9.73E\text{-}02\ lb}{MMBtu} \right| \left| \frac{142.79\ MMBtu}{} \right| = 1.39E+01$ lb CO_2/hr

Post Control Maximum Short Term Hourly Emission Rate (lb/hr)									
NO_x	CO	VOC	$PM/PM_{10}/PM_{2.5}$	SO_x	HAPs	CO_2 butane	CH_4	N_2O	CO_2e
6.62E-03	3.02E-02	9.19E-02	N/C	2.75E-04	N/C	1.39E+01	9.73E-04	9.73E-05	1.40E+01

15. Calculate the daily maximum emission rate $ER_{MaxDaily}$.

Using NO_X as an example:

$ER_{MaxDailyNOx} = (ER_{MaxStTmNOx}) * (CF_{hours\text{-}day})$

$= \left| \frac{6.62E\text{-}03\ lb}{1\ hr} \right| \left| \frac{24\ hr}{1\ day} \right| = 1.59E\text{-}01$ lb NO_X /day

Post Maximum Daily Emission Rate (lb/day)									
NO_x	CO	VOC	$PM/PM_{10}/PM_{2.5}$	SO_x	HAPs	CO_2 butane	CH_4	N_2O	CO_2e
1.59E-01	7.25E-01	2.21E+00	N/C	6.60E-03	N/C	3.34E+02	2.34E-02	2.34E-03	3.36E+02

16. Calculate the annual average emission rate for the remaining pollutants in tons per year (tpy).

Using NO_X as an example:

$ER_{AnnNOx} = (ER_{MaxShtTmNOx}) * (CF_{hours\text{-}year}) * (OSF) / (CF_{\%\text{-}DecEq}) / (CF_{lb\text{-}tons})$

$= \left| \frac{6.62E\text{-}03\ lb}{1\ hr} \right| \left| \frac{8{,}760\ hr}{1\ year} \right| 100\ \% \left| \frac{1\ DecEq}{100\ \%} \right| \left| \frac{1\ ton}{2{,}000\ lb} \right| = 2.90E\text{-}02$ NO_X tpy

Annual Emission Rate (tpy)									
NO_x	CO	VOC	$PM/PM_{10}/PM_{2.5}$	SO_x	HAPs	CO_2 butane	CH_4	N_2O	CO_2e
2.90E-02	1.32E-01	4.03E-01	N/C	1.20E-03	N/C	6.09E+01	4.26E-03	4.26E-04	6.13E+01

CLIENT Sunoco Pipeline L.P. (SPLP)		JOB NUMBER 112IC05958.20	[44]
SUBJECT Blainsport Station -- Existing Equipment Standard Operating Scenario Sources: Total Flow from Booster Pump Seals			
BASED ON SPLP provided equipment volume/specification for the maximum anticipated standard operating scenario		DRAWING NUMBER Not Applicable	
BY VJPlachy	CHECKED BY AMO'Bradovich		DATE 8/10/2016

Objective: Calculate the volume from the booster pumps that are sent to the enclosed flare.

Inputs and Assumptions:

1. The pump seal leaks will be captured and sent to the flare header as the volatile organic compound (VOC) and hazardous air pollutant (HAP) control device.
2. Worst case scenario is for the station to be at a sea level elevation. 0 ft
   Pressure at atmosphere: 1.00 atm
   Source for conversion: http://www.engineeringtoolbox.com/air-altitude-pressure-d_462.html
   Pressure at release point ($P_{act\text{-}release\text{-}atm}$) = Pressure at atmospheric = 1.00 atm
3. Operating service factor (OSF), that is, percent of the year the unit is operating: 100.00 %
4. Equipment Quantities:
   Booster Pumps (N_{BP}): 1
5. Equipment Volume:
6. Pump Seal Leak Rates:

Booster Pumps Inlet (LR_{BPin}):	0	grams per hour (g/hr) @ 60°	14.7	psi	1.00	atm
	30	acf/hr @ 60°F				
Booster Pumps Outlet (LR_{BPout}):	0	g/hr @ 60°F	0	psi	0.00	atm
	0	acf/hr @ 60°F				

   Source: Total pump seal leak rates provided by the Manufacturer (Flowserve):
7. The ideal gas law applies:
   $PV = nR_{specific}T$
8. System temperature: 60 degrees Fahrenheit (°F) = 520.67 degrees Rankine (°R)
9. Average release temperature: 60 °F = 520.67 °R
10. Propane physical properties result in the greatest release volumes, therefore, propane will be used to calculate the gas release volumes from the equipment.
11. Propane physical properties:.

Density at pipe pressure (ρ_{pipe}):	33.74	pounds per cubic feet (lb/ft^3) at 40°F and 1,480 psig
Density at atmospheric conditions ($\rho_{released}$):	0.12	pounds per standard cubic feet (lb/scf) at 60°F and 1 atm
Density at Booster Pump Inlet (ρ_{BPin}):	0.12	lb/ft^3 at 60°F at 1 atm
Density at Booster Pump Outlet (ρ_{BPout}):	0.00	lb/ft^3

   Source:
   a. The density of propane at atmospheric conditions taken from the National Institute of Standards and Technology website of isothermal properties for propane.
      http://webbook.nist.gov/cgi/fluid.cgi?ID=C74986&TUnit=F&PUnit=atm&DUnit=lbm%2Fft3&HUnit=Btu%2Flbm&WUnit=ft%2Fs&VisUnit=cP&STUnit=lb%2Fft&Type=IsoTherm&RefState=DEF&Action=Page
   b. The higher heating value (HHV) of Butane based on 40 CFR Part 98 Subpart C, Table C-1:
12. There are no hazardous air pollutants in butane, propane, or ethane.
13. Flare designed capacity (C_{flare}): 10 MMBtu/hr

CLIENT Sunoco Pipeline L.P. (SPLP)		JOB NUMBER 112IC05958.20 [45]	
SUBJECT Blainsport Station -- Existing Equipment Standard Operating Scenario Sources: Total Flow from Booster Pump Seals			
BASED ON SPLP provided equipment volume/specification for the maximum anticipated standard operating scenario		DRAWING NUMBER Not Applicable	
BY VJPlachy	CHECKED BY AMO'Bradovich		DATE 8/10/2016

Calculations:

2. Calculate the leakage rate per pump seal in acf/hr at atmospheric pressure (LR_{atm}).

$$\frac{P_1V_1}{P_2V_2} = \frac{n_1RT_1}{n_1RT_2} \quad ; \quad \text{Where } n_1 = n_2 \text{ and } T_1 = T_2 \quad ; \quad \frac{P_1V_1}{P_2V_2} = 1$$

$$P_1V_1 = P_2V_2 \quad \text{==»} \quad V_2 = P_1V_1 / P_2$$

$$(LR_{atmBPin\text{-}scf/hr}) = (P_{BPin} / CF_{psi\text{-}atm} * LR_{BPin\text{-}acf/hr}) / P_{atm}$$

$$= \frac{14.7\ \text{psi}}{14.7\ \text{psi}} \cdot \frac{1\ \text{atm}}{1} \cdot \frac{30\ \text{acf}}{\text{hr}} \cdot \frac{1}{1.00\ \text{atm}} = 30\ \text{scf/hr}$$

Pump Seal	Pressure (psig)	Leakage Rate (acf/hr)	Leakage Rate (scf/hr)
Booster Inlet	14.7	30	30
Booster Outlet	0	0	0

3. Calculate the total pump leakage rate in acf/hr ($LR_{total\text{-}scf/hr}$).

$$LR_{totalBP\text{-}scf/hr} = \sum(LR_{atmBPin\text{-}scf/hr} + LR_{atmBPout\text{-}scf/hr}) * (N_{BP}) * (OSF) / (CF_{\%\text{-}DecEq})$$

$$= \frac{30\ \text{scf}}{\text{hr}} + \frac{0.00\ \text{scf}}{\text{hr}} \cdot \frac{1\ \text{pumps}}{} \cdot \frac{100.00\ \%}{} \cdot \frac{1\ \text{DecEq}}{100\ \%}$$

$$= 30\ \text{scf/hr}$$

4. Calculate the total pump leakage rate in scf/yr ($LR_{total\text{-}scf/yr}$)

$$LR_{totalBP\text{-}scf/yr} = (LR_{totalBP\text{-}scf/hr}) * (CF_{hr\text{-}yr}) * (OSF) / (CF_{\%\text{-}DecEq})$$

$$= \frac{30\ \text{scf}}{\text{hr}} \cdot \frac{8{,}760\ \text{hrs}}{1\ \text{yr}} \cdot \frac{100.00\ \%}{} \cdot \frac{1\ \text{DecEq}}{100\ \%} = 262{,}800\ \text{scf/yr}$$

CLIENT Sunoco Pipeline L.P. (SPLP)		JOB NUMBER 112IC05958.20	[46]
SUBJECT Blainsport Station -- Existing Equipment Standard Operating Scenario Sources: Total Flow from Pilot Gas for the Enclosed Flare			
BASED ON SPLP Equipment Data / Specifications		DRAWING NUMBER Not Applicable	
BY VJPlachy	CHECKED BY AMO'Bradovich		DATE 9/1/2016

Objective: Develop example calculations for: Maximum Hourly, Maximum Daily, and Annual Average Emission Rate for the proposed Enclosed Flare Propane Pilot Gas.

Inputs and Assumptions:

1. Pilot gas composition: 100.00 weight percent (wt%) propane
2. Pilot gas flow rate are based on the flare design specifications.
   flow rate ($FR_{Btu/hr}$): 50,000 British thermal units per hour (Btu/hr)
   flow rate ($FR_{scf/hr}$): 22 standard cubic feet per hour (scf/hr)
   Flow rate source: manufacturer's data.
3. higher heating value (HHV_{butane}): 3,244 British thermal units per standard cubic feet (Btu/scf)
4. Operating service factor (OF), that is, percent of the year the unit is operating: 100.00 %
5. The flare's destruction and removal efficiency (DRE) has been applied to the pilot gas VOC emissions:
   98.0 percent (%)
6. Because the enclosed flare is considered to be 100% smokeless, particulate matter (PM) emissions are assumed to be negligible.
7. HAPs are not generated from propane burned as pilot gas and are contained in the LPG stream. However, for a conservative estimate, HAPs associated with natural gas combustion have been included for the pilot gas.
8. Flare Emission Factors (EFs)

NO_x	CO	VOC	$PM/PM_{10}/PM_{2.5}$	SO_x	HAPs	CO_2		CH_4	N_2O
						butane	propane		
(lb/MMBtu)				(ppmw)	(lb/MMscf)	(kg/MMBtu)			
0.068	0.310	0.570	0	30	1.89	64.77	62.87	0.003	0.0006

INFORMATION REGARDING THE SOURCE OF INPUTS FOR THIS THIS TABLE ARE PRESENTED IN THE CONVERSION FACTORS, PHYSICAL PROPERTIES, AND ABBREVIATIONS / ACRONYMS WORKSHEET.

9. Oxides of Sulfur (SO_X) emissions are:
   Based on the sulfur content of the stream.
   Assumes SO_X as SO_2.
   Assumes that all the all fuel sulfur converts to SO_2.
10. CO_2e Global Warming Potential EFs (EF_{GWP})

CO_2	CH_4	N_2O
1	25	298

CO_2e emission estimates use the following carbon equivalence factors: 25 for CH_4, and 298 for N_2O from 40 CFR Part 98, Subpart A, Table A-1.

11. There are no hazardous air pollutants in propane. However, for a conservative estimate the pilot gas was assumed to have the same HAPs as natural gas, that is, AP-42, Section 1.4, Tables 1.4-3 (EFs for Speciated Organic Compounds from Natural Gas Combustion) and 1.4-4 (ER for metals from Natural Gas Combustion) applies.

    AP-42 Chapter 1.4; Table 1.4-2; footnote a: To convert from lb/10^6 scf to lb/MMBtu, divide by 1,020. The emission factors in this table may be converted to other natural gas heating values by multiplying the given emission factor by the ratio of specified heating values to this average heating value.

    https://www3.epa.gov/ttn/chief/ap42/ch01/final/c01s04.pdf

CLIENT	Sunoco Pipeline L.P. (SPLP)	JOB NUMBER	112IC05958.20 [47]
SUBJECT	Blainsport Station -- Existing Equipment Standard Operating Scenario Sources: Total Flow from Pilot Gas for the Enclosed Flare		
BASED ON	SPLP Equipment Data / Specifications	DRAWING NUMBER	Not Applicable

BY	CHECKED BY		DATE
VJPlachy	AMO'Bradovich		9/1/2016

Calculations:

PILOT GAS EMISSIONS

1. Calculate the pilot gas flow rate in Btu/hr at 22 scf/hr.

$ER_{bt/hr} = (FR_{scf/hr}) * (HHV_{Propane\text{-}MMBtu/scf})$

$$= \frac{22\ \cancel{scf}}{hr} \left| \frac{2{,}516\ Btu}{\cancel{scf}} \right. = 55{,}352\ Btu/hr$$ estimated based on manufacturer's flow rate in scf/hr

2. Calculate the SO_X emission factor in pounds per standard cubic feet (lb/scf).

$EF_{SOx(lb/scf)} = (EF_{SOx\text{-}ppmw}) / (CF_{ppm\text{-}\%}) / (CF_{\%\text{-}DecEq}) / (CF_{scf\text{-}lb\_mol}) * (MW_{propane}) * [(\text{molar ratio of } SO_2 \text{ to S})]$

$$= \frac{30\ \cancel{ppmw}}{1E{+}04\ \cancel{ppmw}} \left| \frac{1\ \cancel{\%}}{100\ \cancel{\%}} \right| \frac{1\ \cancel{DecEq}}{379.5\ scf} \left| \frac{1\ \cancel{lb\text{-}mol}}{\cancel{lb\text{-}mol}} \right| \frac{44.10\ \cancel{lb}}{32.07\ \cancel{lb\ S/lb\text{-}mol}} \left| \frac{64.07\ lb\ SO_2/\cancel{lb\text{-}mol}}{} \right.$$

$= 6.96E\text{-}06$ lb SO_2/propane scf **=** $6.96E\text{-}06$ lb SO_X/propane scf

3. Convert emission factor from kg/MMBtu to lb/MMBtu.

Using propane CO_2 as an example:

$EF_{CO2(lb/MMBtu)} = [EF_{CO2(kg/MMBtu)}] / (CF_{kg\text{-}lb})$

$$= \frac{62.87\ \cancel{kg}}{MMBtu} \left| \frac{1\ lb}{0.4536\ \cancel{kg}} \right. = 138.60\ lb\ CO_2/MMBtu$$

EF									EF_{GWP}		
NO_x	CO	VOC	$PM/PM_{10}/PM_{2.5}$	SO_x	HAPs	CO_2 propane	CH_4	N_2O	CO_2	CH_4	N_2O
(lb/MMBtu)				(lb/scf)	(lb/MMscf)	(lb/MMBtu)			N/A		
0.068	0.310	0.570	0	6.96E-06	1.89	138.60	0.01	0.001	1	25	298

4. Calculate the maximum hourly emission rate $ER_{MaxShtTm}$.

Using NO_X as an example:

$ER_{MaxHrlyNOx} = (EF_{NOx}) * (Flow_{Btu/hr}) / (CF_{Btu\text{-}MMBtu})$

$$= \frac{0.068\ lb}{\cancel{MMBtu}} \left| \frac{55{,}352\ \cancel{Btu}}{hr} \right| \frac{1\ \cancel{MMBtu}}{1E{+}06\ \cancel{Btu}} = 3.76E\text{-}03\ lb\ NO_X/hr$$

5. Estimate the pilot gas flow rate and compared to the design value in scf/hr

$ER_{scf/hr} = (FR_{Btu/hr}) / (HHV_{MMBtu/scf})$

$$= \frac{55{,}352\ \cancel{Btu}}{hr} \left| \frac{scf}{3{,}244\ \cancel{Btu}} \right. = 17.1 \text{ pilot gas flow scf/hr}$$

The design flow rate of 22 scf/hr is greater than the estimated value. Therefore, the design flow rate of 22 scf/hr is presented in the application of Table 1-1 and used in the emission when scf is applied.

CLIENT Sunoco Pipeline L.P. (SPLP)		JOB NUMBER 112IC05958.20	[48]
SUBJECT Blainsport Station -- Existing Equipment Standard Operating Scenario Sources: Total Flow from Pilot Gas for the Enclosed Flare			
BASED ON SPLP Equipment Data / Specifications		DRAWING NUMBER Not Applicable	
BY VJPlachy	CHECKED BY AMO'Bradovich		DATE 9/1/2016

Calculations (Continued):

PILOT GAS EMISSIONS

6. Calculate the maximum hourly emission rate for SO_X $ER_{MaxHrlySOx}$.

$ER_{MaxHrlySOx} = (EF_{SOx}) * (FR_{Btu/hr}) / (HHV_{propane})$

$$= \left| \frac{6.96E\text{-}06 \text{ lb}}{\cancel{\text{scf}}} \right| \left| \frac{55{,}352 \ \cancel{\text{Btu}}}{\text{hr}} \right| \left| \frac{\cancel{\text{scf}}}{2{,}516 \ \cancel{\text{Btu}}} \right| = 1.53E\text{-}04 \text{ lb/hr}$$

7. Calculate the maximum hourly emission rate based on the heat rate of the pilot gas for HAPs $ER_{MaxHrlyHAPs}$.

$ER_{MaxHrlyHAPs} = (FR_{scf/hr}) * (EF_{HAPs}) / (CF_{scf\text{-}MMscf})$

$$= \left| \frac{22 \ \cancel{\text{scf}}}{\text{hr}} \right| \left| \frac{1.89 \text{ lb}}{\cancel{\text{MMscf}}} \right| \left| \frac{1 \ \cancel{\text{MMscf}}}{1E{+}06 \ \cancel{\text{scf}}} \right| = 4.16E\text{-}05 \text{ lb HAPs /hr}$$

8. Calculate the maximum hourly emission rate for the other pollutants

Using CO as an example:

$ER_{MaxHrlyCO} = (FR_{Btu/hr}) * (EF_{CO}) / (CF_{Btu\text{-}MMBtu})$

$$= \left| \frac{55{,}352 \ \cancel{\text{Btu}}}{\text{hr}} \right| \left| \frac{0.31 \text{ lb}}{\cancel{\text{MMBtu}}} \right| \left| \frac{1 \ \cancel{\text{MMBtu}}}{1E{+}06 \ \cancel{\text{Btu}}} \right| = 1.72E\text{-}02 \text{ lb CO /hr}$$

9. Calculate the maximum hourly emission rate for CO_2e based on CO_2, CH_4, and N_2O emission rates.

$ER_{MaxHrlyCO2e} = \sum\{[(CO_{2\_lb/hr}) * (EF_{CO2\_GWP})] + [(CH_{4\_lb/hr}) * (EF_{CH4\_GWP})] + [(N_2O_{\_lb/hr}) * (EF_{N2O\_GWP})]\}$

$$= \left\| 7.67E{+}00 \ \frac{\text{lb}}{\text{hr}} \right\| 1 \left\| + \right\| 5.54E\text{-}04 \ \frac{\text{lb}}{\text{hr}} \left\| 25 \right\| + \left\| 5.54E\text{-}05 \ \frac{\text{lb}}{\text{hr}} \right\| 298 \left\| = 7.70E{+}00 \text{ lb/hr} \right.$$

Maximum Hourly Emission Rate (lb/hr)								
NO_x	CO	VOC	SO_x	HAPs	CO_2 propane	CH_4	N_2O	CO_2e
3.76E-03	1.72E-02	3.16E-02	1.53E-04	4.16E-05	7.67E+00	5.54E-04	5.54E-05	7.70E+00

CLIENT Sunoco Pipeline L.P. (SPLP)		JOB NUMBER 112IC05958.20	[49]
SUBJECT Blainsport Station -- Existing Equipment Standard Operating Scenario Sources: Total Flow from Pilot Gas for the Enclosed Flare			
BASED ON SPLP Equipment Data / Specifications		DRAWING NUMBER Not Applicable	
BY VJPlachy	CHECKED BY AMO'Bradovich		DATE 9/1/2016

Calculations (Continued):

PILOT GAS EMISSIONS

10. Calculate the daily maximum emission rate $ER_{MaxDaily}$.

Using NO_X as an example:

$ER_{MaxDaily} = (ER_{MaxHrlyNOx}) / (CF_{hours\text{-}day})$

$$= \frac{3.76E\text{-}03 \text{ lb}}{1 \text{ hr}} \left| \frac{24 \text{ hr}}{1 \text{ day}} \right. = 9.02E\text{-}02 \text{ lb } NO_X \text{/day}$$

Maximum Daily Emission Rate (lb/day)								
NO_x	CO	VOC	SO_x	HAPs	CO_2 propane	CH_4	N_2O	CO_2e
9.02E-02	4.13E-01	7.58E-01	3.67E-03	9.98E-04	1.84E+02	1.33E-02	1.33E-03	1.85E+02

11. Calculate the annual average emission rate for ER_{AnnAvg}.

Using NO_X as an example:

$ER_{AnnAvgNOx} = (ER_{MaxHrlyNOx}) * (CF_{hours\text{-}year}) * (OSF) / (CF_{\%\text{-}DecEq}) / (CF_{lb\text{-}ton})$

$$= \frac{3.76E\text{-}03 \text{ lb}}{\text{hr}} \left| \frac{8{,}760 \text{ hr}}{1 \text{ yr}} \right. \left| \frac{100 \text{ \%}}{100 \text{ \%}} \right. \left| \frac{1 \text{ DecEq}}{2{,}000 \text{ lb}} \right. \left| \frac{1 \text{ t}}{} \right. = 1.65E\text{-}02 \text{ tpy } NO_X$$

Annual Emission Rate (tpy)								
NO_x	CO	VOC	SO_x	HAPs	CO_2 propane	CH_4	N_2O	CO_2e
1.65E-02	7.53E-02	1.38E-01	6.70E-04	1.82E-04	3.36E+01	2.43E-03	2.43E-04	3.37E+01

CLIENT	Sunoco Pipeline L.P. (SPLP)	JOB NUMBER	112IC05958.20	[50]
SUBJECT	Blainsport Station -- Existing Equipment Enclosed Flare Emission Calculations: Maintenance Operations Scenario Emissions Sources			
BASED ON	SPLP provided equipment volume/specification for the maximum anticipated maintenance operation scenarios	DRAWING NUMBER	Not Applicable	
BY	VJPlachy	CHECKED BY	AMO'Bradovich	DATE 8/10/2016

Objective: Develop example calculations for: Maximum Hourly, Maximum Daily, and Annual Average Emission Rate for the proposed Maintenance Activities.

Inputs and Assumptions:

1. Potential stream products to the enclosed flare consistent of butane, propane, and/or ethane.
2. Maintenance intermittent emission sources to the enclosed flare that were evaluated include: gas releases from filter cleaning, prover maintenance, pigging events, and miscellaneous maintenance activities.
3. The number of filter changes, prover maintenances, and pigging events has been developed to include miscellaneous maintenance activities.
4. Stream physical properties that result in the maximum potential emission rates have been used.
5. Example calculations for total annual volumes from filter changes, prover maintenances, and pigging events are presented in a separate example calculation sheet.
6. The flare's destruction and removal efficiency (DRE) for VOCs and HAPs only: 98.0 percent (%)
   The flare does not reduce/control NO_X, CO, SO_X, CO, CH_4, N_2O, or CO_2e emissions, that is, pre-control emissions equal post-control emissions.
7. Pilot gas is propane and is calculated in a separate workbook (Example calculations; Enclosed Flare Emission Calculations; Pilot Gas Emission Source).
8. Total annual flow to flare from:

Filter (F) ($FR_{F\text{-}scf/yr}$):	53,880	standard cubic feet per year (scf/yr)	
Prover (F) ($FR_{Prover\text{-}scf/yr}$):	0	scf/yr	N/A to this station.
Pigging (F) ($FR_{pigging\text{-}scf/yr}$):	0	scf/yr	N/A to this station.
Total Maximum Annual Flow rate (FR_{MaxAnn}):	53,880	scf/yr	

Flare designed capacity (C_{flare}):	10	MMBtu/hr
Maximum Pilot Gas Hourly Flow rate ($FR_{MaxHrlyPilot}$):	55,352	British thermal units per hour (Btu/hr)

Flow rate conversions to the units below are presented in the Example Calculations for Enclosed Flare Emission Calculations: Total Maintenance.

Maintenance activity emission estimates are presented in another calculation sheet.

9. Because the enclosed flare is considered to be 100% smokeless, particulate matter (PM) emissions are assumed to be negligible.
10. Maximum emission stream flow rates are achieved when assuming a stream composition 100 wt% butane
11. Flared Emission Factors (EFs)

NO_x	CO	VOC	$PM/PM_{10}/PM_{2.5}$	SO_x	HAPs	CO_2 butane	CO_2 propane	CH_4	N_2O
(lb/MMBtu)				(ppmw)	(lb/MMBtu	(kg/MMBtu)			
0.068	0.310	0.570	0	30	1.89	64.77	62.87	0.003	0.0006

NOTES FOR THIS TABLE ARE PRESENTED IN THE CONVERSION FACTORS, PHYSICAL PROPERTIES, AND ABBREVIATIONS / ACRONYMS WORKSHEET.

CLIENT Sunoco Pipeline L.P. (SPLP)		JOB NUMBER 112IC05958.20	[51]
SUBJECT Blainsport Station -- Existing Equipment Enclosed Flare Emission Calculations: Maintenance Operations Scenario Emissions Sources			
BASED ON SPLP provided equipment volume/specification for the maximum anticipated maintenance operation scenarios		DRAWING NUMBER Not Applicable	
BY VJPlachy	CHECKED BY AMO'Bradovich		DATE 8/10/2016

Inputs and Assumptions (Continued):

12. HAPs are generated from propane burned as pilot gas and are contained in the LPG stream.
13. LPG HAP content ($HAPs_{wt\%}$): 0 wt%
14. Oxides of Sulfur (SO_X) emissions are:
    Based on the sulfur content of the stream.
    Assume SO_X as SO_2.
    Assumes that all the all fuel sulfur converts to SO_2.
15. CO_2e Global Warming Potential EFs (EF_{GWP})

CO_2	CH_4	N_2O
1	25	298

CO_2e emission estimates use the following carbon equivalence factors: 25 for CH_4, and 298 for N_2O from 40 CFR Part 98, Subpart A, Table A-1.

Calculations:

MAINTENANCE ACTIVITIES EMISSION SOURCES

1. Calculate the maximum hourly flow to the flare for maintenance activities (scf/hr)

$Flow_{scf/hr} = [(FR_{Flare\text{-}MMBtu/hr}) / (HHV_{Propane}) * (CF_{Btu\text{-}MMBtu})] - (Flow_{Std\text{-}scf/hr})$

$$= \left\| \frac{10 \ \text{MMBtu}}{\text{hr}} \middle| \frac{\text{scf}}{2{,}516 \ \text{Btu}} \middle| \frac{1\text{E+06} \ \text{Btu}}{1 \ \text{MMBtu}} \right\| - \left| \frac{30.00 \ \text{scf}}{\text{hr}} \right| = 3{,}945 \ \text{scf/hr}$$

2. Calculate the SO_X emission factor in pounds per standard cubic feet (lb/scf).

$EF_{SOx(lb/scf)}$ = [(mole of the gas stream)] * [(concentration of sulfur in gas stream)] * [(molar ratio of SO_2 to S)]

= [(lb of gas stream) * (MW gas stream]
* [(concentration of sulfur in gas stream)] * [(molar ratio of SO_2 to S)]

= [(volume of gas stream as butane) * (MW_{butane})]
* [(concentration of sulfur ppmw) / ($CF_{ppmw\text{-}wt\%}$) / ($CF_{wt\%\text{-}DecEqui}$)] * [(MW SO_2) / (MW S)]

= [($CF_{lb\_mol\text{-}scf}$) * (MW_{butane})] * [($SO_{2\text{-}ppmw}$) / ($CF_{ppmw\text{-}wt\%}$) / ($CF_{wt\%\text{-}DecEqui}$)] * [(MW SO_2) / (MW S)]

$$= \left\| \frac{1 \ \text{lb-mol}}{379.5 \ \text{scf}} \middle| \frac{58.12 \ \text{lb butane}}{\text{lb-mol}} \middle| \frac{30 \ \text{ppmw S}}{\text{gas stream}} \middle| \frac{1 \ \text{wt\%}}{10000 \ \text{ppmw}} \middle| \frac{1 \ \text{DecEq}}{100 \ \text{wt\%}} \middle| \frac{64.07 \ \text{lb } SO_2\text{/lb-mol}}{32.07 \ \text{lb S/lb-mol}} \right\|$$

= 9.18E-06 lb SO_2/scf of the gas stream = 9.18E-06 lb SO_X/scf of the gas stream

CLIENT Sunoco Pipeline L.P. (SPLP)		JOB NUMBER 112IC05958.20 [52]	
SUBJECT Blainsport Station -- Existing Equipment Enclosed Flare Emission Calculations: Maintenance Operations Scenario Emissions Sources			
BASED ON SPLP provided equipment volume/specification for the maximum anticipated maintenance operation scenarios		DRAWING NUMBER Not Applicable	
BY VJPlachy	CHECKED BY AMO'Bradovich		DATE 8/10/2016

Calculations:

MAINTENANCE ACTIVITIES EMISSION SOURCES

3. Convert emission factor from kg/MMBtu to lb/MMBtu.

Using butane CO_2 as an example:

$EF_{CO2(lb/MMBtu)} = [EF_{CO2(kg/MMBtu)}] / (CF_{kg-lb})$

$$= \left| \frac{64.77 \ \text{kg}}{\text{MMBtu}} \right| \left| \frac{1 \ \text{lb}}{0.4536 \ \text{kg}} \right| = 142.79 \ \text{lb } CO_2/\text{MMBtu}$$

EF										EF_{GWP}		
						CO_2						
NO_x	CO	VOC	$PM/PM_{10}/PM_{2.5}$	SO_x	HAPs	butane	propane	CH_4	N_2O	CO_2	CH_4	N_2O
(lb/MMBtu)				(lb/scf)	(lb/MMBtu)					N/A		
0.068	0.310	N/C	N/C	9.18E-06	TBD	142.79	138.6	0.01	0.001	1	25	298

NOTE:

Because the EF for butane CO_2 is greater than the EF for propane CO_2, the butane CO_2 emission factor will be applied to estimate the maximum short term, maximum daily, and annual average emission rates.

MAINTENANCE ACTIVITIES EMISSION SOURCES ANNUAL EMISSION ESTIMATE

Pre-controls

4. Calculate the annual heat input HI_{Annual} in MMBtu/hr

$HI_{MMBtu/yr} = (FR_{MaxAnn}) * (HHV_{Butane}) / (CF_{Btu-MMBtu})$

$$= \left| \frac{53{,}880 \ \text{scf}}{\text{yr}} \right| \left| \frac{3{,}244 \ \text{Btu}}{\text{scf}} \right| \left| \frac{1 \ \text{MMBtu}}{1\text{E+06 Btu}} \right| = 174.79 \ \text{MMBtu/yr}$$

5. Calculate the VOC flow rate (FR) from the pre-control maintenance sources in lb/hr ($Fpre_{VOC-lb/hr}$).

$FRpre_{VOC-lb/hr} = (FR_{MaxHrly-scf/hr}) * (MW_{butane}) / (CF_{scf\_lb-mol}) * (WT\%VOC) / (CF_{\%-DecEq})$

$$= \left| \frac{3{,}945 \ \text{scf}}{\text{hr}} \right| \left| \frac{58.12 \ \text{lb}}{\text{lb-mole}} \right| \left| \frac{1 \ \text{lb-mol}}{379.5 \ \text{scf}} \right| \ 100 \ \text{wt\%} \left| \frac{1 \ \text{DecEq}}{100 \ \%} \right|$$

$= 604.17$ lb VOC /hr

6. Calculate the EF for HAPs in pounds per scf (lb/scf).

$EF_{HAPs(lb/scf)} = (HAPs_{wt\%}) / (CF_{wt\%-DecEqui}) * (MW_{butane}) / (CF_{scf-lb\_mol})$

$$= \left| \frac{0 \ \text{wt\%}}{} \right| \left| \frac{1 \ \text{DecEqu}}{100 \ \text{wt\%}} \right| \left| \frac{58.12 \ \text{lb}}{\text{lb-mol}} \right| \left| \frac{1 \ \text{lb-mol}}{379.5 \ \text{scf}} \right| = 0 \ \text{lb HAPs/scf}$$

CLIENT	Sunoco Pipeline L.P. (SPLP)	JOB NUMBER	112IC05958.20 [53]
SUBJECT	Blainsport Station -- Existing Equipment Enclosed Flare Emission Calculations: Maintenance Operations Scenario Emissions Sources		
BASED ON	SPLP provided equipment volume/specification for the maximum anticipated maintenance operation scenarios	DRAWING NUMBER	Not Applicable
BY	VJPlachy	CHECKED BY	AMO'Bradovich
DATE	8/10/2016		

Calculations (Continued):

MAINTENANCE ACTIVITIES EMISSION SOURCES: Pre-control

7. Calculate HAPs the pre-control flow rate (FR) from the maintenance sources in lb/hr ($Fpre_{HAPs\text{-}lb/hr}$).

$FRpre_{HAPs\text{-}lb/hr} = (FR_{MaxHrly\text{-}scf/hr}) * (EF_{HAPs\text{-}lb/scf})$

$$= \left\| \frac{3{,}945 \ \text{scf}}{\text{hr}} \right\| \left\| \frac{0 \ \text{lb}}{1 \ \text{scf}} \right| = 0.00 \ \text{lb HAPs/hr}$$

Pre-Control Maximum Hourly Emission Rate (lb/hr)									
NO_x	CO	VOC	$PM/PM_{10}/PM_{2.5}$	SO_x	HAPs	CO_2 butane	CH_4	N_2O	CO_2e
N/C	N/C	604.17	N/C	N/C	N/C	N/C	N/C	N/C	N/C

8. Calculate the VOC pre-control annual emission rate from the maintenance sources in tpy.

$Fpre_{VOC(tpy)} = (FR_{MaxAnn}) * (MW_{butane}) / (CF_{scf\text{-}lbmol}) / (CF_{lb\text{-}ton})$

$$= \left| \frac{53{,}880 \ \text{scf}}{\text{yr}} \right| \left| \frac{58.12 \ \text{lb}}{\text{lb-mole}} \right| \left| \frac{1 \ \text{lb-mol}}{379.5 \ \text{scf}} \right| \left| \frac{1 \ \text{ton}}{2{,}000 \ \text{lb}} \right| = 4.13 \ \text{tpy VOC}$$

9. Calculate the HAP pre-control annual emission rate from the maintenance sources in tpy.

$Fpre_{HAP(tpy)} = (Fpre_{VOC(tpy)}) * (HAPs_{wt\%}) / (CF_{\%\text{-}dec.eq.})$

$$= \left| \frac{4.13 \ \text{t}}{\text{yr}} \right| \ 0 \ \text{wt\%} \left| \frac{1 \ \text{DecEq}}{100 \ \%} \right| = 0.00\text{E+}00 \ \text{tpy HAP}$$

Pre-Control Annual Average Emission Rate (tpy)									
NO_x	CO	VOC	$PM/PM_{10}/PM_{2.5}$	SO_x	HAPs	CO_2 butane	CH_4	N_2O	CO_2e
N/C	N/C	4.13	N/C	N/C	N/C	N/C	N/C	N/C	N/C

10. Calculate the maximum hourly emission rate for SO_X $ER_{MaxStTmSOx}$.

$ER_{MaxStTmSOx} = (FR_{MaxHrly}) * (EF_{SOx})$

$$= \left| \frac{3{,}945 \ \text{scf}}{\text{hr}} \right| \left| \frac{9.18\text{E-}06 \ \text{lb}}{\text{scf}} \right| = 3.62\text{E-}02 \ \text{lb } SO_X \text{ /hr}$$

11. Calculate the maximum hourly emission rate for NO_x, CO, CO_2, CH_4, and N_2O $ER_{MaxStTm}$.

Using NO_X as an example:

$ER_{MaxStTmNOx} = (FR_{MaxHrly}) * (EF_{NOx}) * (HHV_{butane}) / (CF_{Btu\text{-}MMBtu})$

$$= \left| \frac{3{,}945 \ \text{scf}}{\text{hr}} \right| \left| \frac{6.80\text{E-}02 \ \text{lb}}{\text{MMBtu}} \right| \left| \frac{3{,}244 \ \text{Btu}}{\text{scf}} \right| \left| \frac{1 \ \text{MMBtu}}{1\text{E+}06 \ \text{Btu}} \right| = 8.70\text{E-}01 \ \text{lb } NO_X \text{ /hr}$$

12. Calculate the maximum hourly emission rate for CO_2e based on CO_2, CH_4, and N_2O emission rates.

$ER_{MaxHrlyCO2e} = \sum\{[(CO_{2\text{-}lb/hr}) * (EF_{CO2\text{-}GWP})] + [(CH_{4\text{-}lb/hr}) * (EF_{CH4\text{-}GWP})] + [(N_2O_{\text{-}lb/hr}) * (EF_{N2O\text{-}GWP})]\}$

$$= \left\| \frac{1.83\text{E+}03 \ \text{lb}}{\text{hr}} \right\| 1 \left\| + \left\| \frac{1.30\text{E-}01 \ \text{lb}}{\text{hr}} \right\| 25 \right\| + \left\| \frac{1.00\text{E-}02 \ \text{lb}}{\text{hr}} \right\| 298 \Big\| =$$

$$= \left\| \frac{1.83\text{E+}03 \ \text{lb}}{\text{hr}} \right\| + \left\| \frac{3.25\text{E+}00 \ \text{lb}}{\text{hr}} \right\| + \left\| \frac{2.98\text{E+}00 \ \text{lb}}{\text{hr}} \right\| = 1.84\text{E+}03 \ \text{lb/hr}$$

CLIENT Sunoco Pipeline L.P. (SPLP)		JOB NUMBER 112IC05958.20	[54]
SUBJECT Blainsport Station -- Existing Equipment Enclosed Flare Emission Calculations: Maintenance Operations Scenario Emissions Sources			
BASED ON SPLP provided equipment volume/specification for the maximum anticipated maintenance operation scenarios		DRAWING NUMBER Not Applicable	
BY VJPlachy	CHECKED BY AMO'Bradovich		DATE 8/10/2016

Calculations (Continued):

MAINTENANCE ACTIVITIES EMISSION SOURCES: Post-control Emission Estimate (Continued)

13. Calculate the annual average emission rate for the CO_2e in tons per year (tpy).

$ER_{MaxStTmCO2e} = \sum\{[(CO_{2\text{-tpy}}) * (EF_{CO2\text{-GWP}})] + [(CH_{4\text{-tpy}}) * (EF_{CH4\text{-GWP}})] + [(N_2O_{\text{-tpy}}) * (EF_{N2O\text{-GWP}})]\}$

$$= \left\| \frac{1.25E{+}01\ t}{yr} \right\| 1 \left\| + \left\| \frac{1.00E{-}03\ t}{yr} \right\| 25 \right\| + \left\| \frac{1.00E{-}04\ t}{yr} \right\| 298 \right\| = 1.26E{+}01\ \text{tpy}$$

14. Calculate the annual emission rate for the remaining pollutants in tons per year (tpy).
Using NO_X as an example:

$ER_{AnnualNOx} = (FR_{MMBtu/yr}) * (EF_{NOx}) / (CF_{lb\text{-}tons})$

$$= \left| \frac{174.79\ \cancel{MMBtu}}{yr} \right| \frac{0.068\ \cancel{lb}}{\cancel{MMBtu}} \left| \frac{1\ t}{2{,}000\ \cancel{lb}} \right| = 5.94E{-}03\ \text{tpy of } NO_X$$

15. Calculate the SO_X emission rate from the maintenance sources in tpy.

$ER_{MaxStTmSOx} = (FR_{MaxAnn}) * (EF_{SOx}) / (CF_{lb\text{-}ton})$

$$= \left| \frac{53{,}880\ \cancel{scf}}{yr} \right| \frac{9.18E{-}06\ \cancel{lb}}{\cancel{scf}} \left| \frac{1\ t}{2{,}000\ \cancel{lb}} \right| = 2.47E{-}04\ \text{tpy } SO_X$$

16. Calculate the post-control VOC and HAPs emission in lb/hr and tpy.
Using short term maximum VOCs as an example:

$Flow\text{-}post_{VOC\text{-}lb/hr} = (Flow_{VOCs\text{-}lb/hr}) * [1 - (DRE / CF_{\%\text{-}DecEq})]$

$$= \left\| \frac{604.17\ lb}{hr} \right\| 1 - \left| 98.0\ \cancel{\%} \right| \frac{1\ \cancel{DecEq}}{100\ \cancel{\%}} \right\| = 12.08\ \text{lb VOCs/hr}$$

Post Control Maximum Hourly Emission Rate (lb/hr)									
NO_x	CO	VOC	$PM/PM_{10}/PM_{2.5}$	SO_x	HAPs	CO_2 butane	CH_4	N_2O	CO_2e
0.87	3.97	12.08	N/C	0.04	N/C	1,827	0.13	0.01	1,840

Post-Control Annual Average Emission Rate (tpy)									
NO_x	CO	VOC	$PM/PM_{10}/PM_{2.5}$	SO_x	HAPs	CO_2 butane	CH_4	N_2O	CO_2e
0.01	0.03	0.08	N/C	0.0002	N/C	12.48	0.001	0.0001	12.60

CLIENT Sunoco Pipeline L.P. (SPLP)		JOB NUMBER 112IC05958.20	[55]
SUBJECT Blainsport Station -- Existing Equipment Maintenance Operations Scenario Sources: Total Flow from Filter			
BASED ON SPLP provided equipment volume/specification for the maximum anticipated maintenance operation scenarios		DRAWING NUMBER Not Applicable	
BY VJPlachy	CHECKED BY AMO'Bradovich		DATE 8/10/2016

Objective: Calculate the filter volume from maintenance activities that are sent to the enclosed flare.

Inputs and Assumptions:

1. Worst case scenario is for the station to be at a sea level elevation. 0 ft
   Pressure at atmosphere: 1.00 atm
   Source for conversion: http://www.engineeringtoolbox.com/air-altitude-pressure-d_462.html
2. Pipe pressure at release point ($P_{pipe\text{-}release}$) = Pressure at atmospheric = 1.00 atm
3. Operating service factor (OSF), that is, percent of the year the unit is operating: 100.00 %
4. Propane physical properties result in the greatest release volumes, therefore, propane will be used to calculate the gas release volumes from the equipment.
5. Propane physical properties:.
   Density at pipe pressure (ρ_{pipe}): 33.74 pounds per cubic feet (lb/ft^3) at 40°F and 1,480 psig
   Density at atmospheric conditions ($\rho_{released}$): 0.12 pounds per standard cubic feet (lb/scf) at 60°F and 1 atm
   NOTES:
   The density of propane at atmospheric conditions taken from the National Institute of Standards and Technology website of isothermal properties for propane.
   http://webbook.nist.gov/cgi/fluid.cgi?ID=C74986&TUnit=F&PUnit=atm&DUnit=lbm%2Fft3&HUnit=Btu%2Flbm&WUnit=ft%2Fs&VisUnit=cP&STUnit=lb%2Fft&Type=IsoTherm&RefState=DEF&Action=Page
6. Filter: Filters ($N_{Filters}$): 1
   Max annual filter changing events (E_{Filter}): 6 event-filter/yr
   Filter ($V_{Filters}$): 31.94 cubic feet (ft^3)
7. The ideal gas law applies:
   $PV = nR_{specific}T$, where n is equivalent the number of moles multiplied by the molecular weight (MW) and divided by density (**ρ**).

Calculations:

1. Calculate the volume of gas released (V_{Filter}) in standard cubic feet (scf) at release temperature and pressure.

$$PV = nR_{specific}T$$

$$\frac{P_1V_1}{P_2V_2} = \frac{[n]RT_1}{[n]RT_2} = \frac{[(\cancel{MW_{lb/lb\text{-}mole}}) / \rho_1)] * (\cancel{R_{specific}}\cancel{T_1})}{[(\cancel{MW_{lb/lb\text{-}mole}}) / \rho_2)] * (\cancel{R_{specific}}\cancel{T_2})} = \frac{(\rho_2)}{(\rho_1)}$$

Solving for the release volume:

$$V_2 = \left\| \frac{\rho_1}{\rho_2} \right\| \left\| \frac{P_1}{P_2} \right\| V_1 \|$$

$$= \left\| \frac{33.74 \ \cancel{lb}}{\cancel{ft^3}} \right| \left| \frac{ft^3}{0.12 \ \cancel{lb}} \right| \left| \frac{1 \ \cancel{atm}}{1 \ \cancel{atm}} \right| \frac{31.94 \ ft^3}{\text{filter-event}} \| = 8{,}980 \ \text{scf/filter-event}$$

2. Calculate the total annual volume released to the flare from filters cleanings in scf/yr ($V_{Filter\text{-}scf/yr}$).

$$V_{Filter\text{-}scf/yr} = (V_{Filter}) * (N_{Filter}) * (E_{Filter}) * (OSF) / (CF_{\%\text{-}DecEq})$$

$$= \left| \frac{8{,}980 \ scf}{\cancel{event\text{-}filter}} \right| \left| \frac{1 \ \cancel{filter}}{} \right| \left| \frac{6 \ \cancel{events}}{yr} \right| 100.00 \ \cancel{\%} \left| \frac{1 \ \cancel{DecEq}}{100 \ \cancel{\%}} \right| = 53{,}880 \ \text{scf/yr}$$

CLIENT	Sunoco Pipeline L.P. (SPLP)	JOB NUMBER	112IC05958.20 [56]
SUBJECT	Blainsport Station -- Existing Equipment Fugitive Emission Estimate		
BASED ON	SPLP Process and Instrumentation Drawings (P&IDs)	DRAWING NUMBER	

BY	CHECKED BY		DATE
VJPlachy	AMO'Bradovich		8/11/2016

Objective: Calculation the Maximum Hourly and Annual Average Emissions associated with fugitive components for the proposed fittings, valves, relief valves, and other miscellaneous component types.

Inputs and Assumptions:

1. Component counts

Equipment Counts:

Fittings:	204
Valves:	120
Relief Valves:	1
Pump Seals:	1

Other Components:

Coriolis Meter	0
Prover	0
Composite Sampler	0
Instruments	21
Static Mixer	0
Check Valves	2
TOTAL Other Components	23

2. The leak emission factors are taken from the USEPA Protocol for Equipment Leak Emission Estimates, EPA-453/R-95-017, November, 1995, Table 2-3 for light liquid service.
3. Emission Leak Factors:

Fittings:	8.00E-06	kilogram per hour per component (kg/hr-component)
Valves:	4.30E-05	kg/hr-component
Relief Valves:	1.30E-04	kg/hr-component
Pump Seals:	5.40E-04	kg/hr-component
Other Components:	1.30E-04	kg/hr-component

4. Assume the total organic compound emissions are equivalent to total VOCs.
5. The HAP content as a result of the LPG ($WT\%_{HAP}$): 0 wt %
6. The relief valves on any butane, propane, and ethane spheres/tanks that release to the atmosphere are fugitive emitters.
7. Butane, propane, and ethane do not contain any HAPs.
8. Number of atmospheric relief valves on non-HAP spheres/tanks (N_{RVBPS}): 1 Relief Valves
9. The contingency (Cont) for as-built modifications during the construction phase is: 20 %
10. Operating service factor (OSF): 100 %

Calculations:

1. Convert the component leak EFs from kg/hr-component to lb/hr-component ($EF_{lb/hr\text{-}component}$).

Using fittings as an example:

$$EF_{Fittings\_b/hr\text{-}component} = (EF_{kg/hr\text{-}component}) * (CF_{kg\text{-}g}) / (CF_{g\text{-}lb})$$

$$= \frac{8.00E\text{-}06 \ \cancel{kg}}{hr\text{-}component} \left| \frac{1{,}000 \ \cancel{g}}{1 \ \cancel{kg}} \right| \frac{1 \ lb}{453.6 \ \cancel{g}} = 1.76E\text{-}05 \ lb/hr\text{-}component$$

Equipment Type	Leak EF (lb/hr-component)
Fittings	1.76E-05
Valves	9.48E-05
Relief Valves to atm	2.87E-04
Pump Seals	1.19E-03
Other Components	2.87E-04

CLIENT	Sunoco Pipeline L.P. (SPLP)	JOB NUMBER	112IC05958.20 [57]
SUBJECT	Blainsport Station -- Existing Equipment Fugitive Emission Estimate		
BASED ON	SPLP Process and Instrumentation Drawings (P&IDs)	DRAWING NUMBER	

BY	CHECKED BY		DATE
VJPlachy	AMO'Bradovich		8/11/2016

Calculations (Continued):

2. Calculate the VOC Max Hourly ER in lb/hr ($ER_{VOClb/hr}$).

Using fittings as an example:

$ER_{Fittings\text{-}VOClb/hr} = (EF_{lb/hr\text{-}component}) * (EC_{Fittings})$

$= \frac{1.76E\text{-}05 \text{ lb}}{\text{hr-}\sout{\text{component}}} \quad 204 \quad \sout{\text{components}} = 3.59E\text{-}03 \text{ lb VOCs/hr}$

Equipment Type	Leak EF (lb/hr-component)	Equipment Count	VOC Max Hourly (lb/hr)
Fittings	1.76E-05	204	3.59E-03
Valves	9.48E-05	120	1.14E-02
Relief Valves to atm	2.87E-04	1	2.87E-04
Pump Seals	1.19E-03	1	1.19E-03
Other Components	2.87E-04	23	6.60E-03
		TOTAL:	**2.31E-02**

3. Calculate the ER for HAPs in lb/hr ($ER_{RV\text{-}HAPlb/hr}$) for the relief valves to atmosphere (not butane or propane sphere relief valves).

$ER_{RV\text{-}HAPlb/hr} = \{ (EF_{RV\text{-}lb/hr\text{-}component}) * [(EC_{RV}) - (N_{RVBPS})] \} * [(WT\%_{HAP}) / (CF_{\%\text{-}DecEq})]$

$= \frac{2.87E\text{-}04 \text{ lb}}{\text{hr-}\sout{\text{component}}} \quad 1 - 1 \frac{}{\sout{\text{comp}}} * 0 \sout{\text{wt\%}} \frac{1 \sout{\text{DecEq}}}{100 \sout{\text{wt\%}}} = 0.00E+00 \text{ lb HAPs/hr}$

4. Calculate the ER for HAPs in lb/hr ($ER_{HAPlb/hr}$) for the fittings, valves, and other components.

Using fittings as an example:

$ER_{Fittings\text{-}HAPlb/hr} = (ER_{Fittings\text{-}VOClb/hr}) * (WT\%_{HAP}) / (CF_{\%\text{-}DecEq})$

$= \frac{3.59E\text{-}03 \text{ lb}}{\text{hr}} \quad 0 \sout{\%} \frac{1 \sout{\text{DecEq}}}{100 \sout{\text{wt\%}}} = 0.00E+00 \text{ lb HAPs/hr}$

Equipment Type	HAP Max Hourly (lb/hr)
Fittings	N/C
Valves	N/C
Relief Valves to atm	N/C
Pump Seals	N/C
Other Components	N/C
TOTAL:	**N/C**

CLIENT	Sunoco Pipeline L.P. (SPLP)	JOB NUMBER	112IC05958.20 [58]
SUBJECT	Blainsport Station -- Existing Equipment Fugitive Emission Estimate		
BASED ON	SPLP Process and Instrumentation Drawings (P&IDs)	DRAWING NUMBER	

BY	CHECKED BY		DATE
VJPlachy	AMO'Bradovich		8/11/2016

Calculations (Continued):

5. Calculate the Annual ER for VOCs in tpy ($ER_{VOC\text{-}tpy}$).

Using fittings as an example:

$ER_{FittingsVOC\text{-}tpy} = (ER_{FittingsVOC\text{-}lb/hr}) * (CF_{hr\text{-}yr}) * (OSF) / (CF_{\%\text{-}DecEq}) / (CF_{lb\text{-}tons})$

$$= \frac{3.59E\text{-}03 \text{ lb}}{\text{hr}} \times \frac{8{,}760 \text{ hr}}{\text{yr}} \times 100\ \% \times \frac{1 \text{ DecEq}}{100\ \%} \times \frac{1 \text{ t}}{2{,}000 \text{ lb}} = 1.57E\text{-}02 \text{ tpy VOCs}$$

Equipment Type	VOC Max Hourly (lb/hr)	VOC Annual Average
Fittings	3.59E-03	1.57E-02
Valves	1.14E-02	4.99E-02
Relief Valves to atm	2.87E-04	1.26E-03
Pump Seals	1.19E-03	5.21E-03
Other Components	6.60E-03	2.89E-02
TOTAL		**1.01E-01**

6. Calculate the ER for HAPs in tpy ($ER_{RV\text{-}HAPtpy}$) for the relief valve to atmosphere (this is in addition to the butane or propane sphere relief valves).

$ER_{RV\text{-}HAPtpy} = (ER_{RV\text{-}HAPlb/hr}) * (CF_{hr\text{-}yr}) * (OSF) / (CF_{\%\text{-}DecEq}) / (CF_{lb\text{-}ton})$

$$= \frac{0.00E+00 \text{ lb}}{\text{hr}} \times \frac{8{,}760 \text{ hr}}{\text{yr}} \times 100\ \% \times \frac{1 \text{ DecEq}}{100\ \%} \times \frac{1 \text{ t}}{2{,}000 \text{ lb}} = 0.00E+00 \text{ tpy HAPs}$$

7. Calculate the ER for HAPs in tpy (ER_{HAPtpy}) for fittings, valves, and other components.

Using fittings as an example:

$ER_{Fittings\text{-}HAPtpy} = (ER_{Fittings\text{-}VOCtpy}) * (WT\%_{HAP}) / (CF_{\%\text{-}DecEq})$

$$= \frac{1.57E\text{-}02 \text{ ton}}{\text{year}} \times 0\ \text{wt\%} \times \frac{1 \text{ DecEq}}{100\ \%} = 0.00E+00 \text{ tpy HAPs}$$

Equipment Type	HAP Annual (tpy)
Fittings	N/C
Valves	N/C
Relief Valves to atm	N/C
Pump Seals	N/C
Other Components	N/C
TOTAL:	**N/C**

CLIENT	Sunoco Pipeline L.P. (SPLP)	JOB NUMBER	112IC05958.20 [59]
SUBJECT	Blainsport Station -- Existing Equipment Fugitive Emission Estimate		
BASED ON	SPLP Process and Instrumentation Drawings (P&IDs)	DRAWING NUMBER	

BY	CHECKED BY		DATE
VJPlachy	AMO'Bradovich		8/11/2016

Calculations (Continued):

8. Incorporate the contingency into Maximum Hourly and Annual Average VOC fugitives ($TF_{VOCMax\text{-}Ann}$).

Using Maximum Hourly as an example:

$TF_{VOCMaxHrly\text{-}lb/hr} = (ER_{TOTAL\text{-}VOClb/hr}) * [(1) + (Cont\%) / (CF_{\%\text{-}Dec\ Eq})]$

$$= \frac{2.31E\text{-}02\ lb}{hr} \left[1 + \frac{20\ \%}{} \left| \frac{1\ \text{DecEq}}{100\ \%} \right. \right] = 2.77E\text{-}02\ lb\ VOCs/hr$$

VOC Fugitive Emission Rate		
Type	**ER**	**TF_{VOC}**
Max Hourly (lb/hr)	0.02	0.03
Annual Average (tpy)	0.10	0.12

9. Incorporate the contingency into Maximum Hourly and Annual Average total HAP fugitives ($TF_{HAPMaxHrly}$).

Using Maximum Hourly as an example:

$TF_{HAPMaxHrly\text{-}lb/hr} = (ER_{TOTAL\text{-}HAPlb/hr}) * [(1) + (Cont\%) / (CF_{\%\text{-}Dec\ Eq})]$

$$= \frac{0.00E+00\ lb}{hr} \left[1 + \frac{20\ \%}{} \left| \frac{1\ \text{DecEq}}{100\ \%} \right. \right] = 0.00E+00\ lb\ HAPs/hr$$

HAP Fugitive Emission Rate		
Type	**ER**	**TF_{HAP}**
Max Hourly (lb/hr)	N/C	N/C
Annual Average (tpy)	N/C	N/C

CLIENT Sunoco Pipeline L.P. (SPLP)		JOB NUMBER 112IC05958.20	[60]
SUBJECT: Blainsport Station -- Existing Equipment Product Analysis Specification			
BASED ON SPLP Product Analyses		DRAWING NUMBER Not Applicable	
BY VJPlachy	CHECKED BY AMO'Bradovich		DATE 8/10/2016

Objective: Calculations Product Specifications for Butane, Propane, and Liquid Petroleum Gas (LPG) volatile organic compounds (VOCs) and hazardous air pollutants (HAPs).

Inputs and Assumptions:

1. Composition of the Butane and Propane stream analyses are as provided by SPLP.
2. Only the LPG stream will contain hazardous air pollutants (HAPs).
3. VOCs for Butane and Propane Streams are hydrocarbon constituents that contain three or more carbon atoms in their molecular formula, that is, ethane is a not a regulated VOC.
4. Composition of the Butane Stream:
   - propane: 2 mole percent (mol%)
   - i-butane: 44 mol%
   - n-butane: 54 mol%
   - i-pentane: 1 mol%
5. Composition of the Propane Stream:
   - ethane: 2 mol%
   - propane: 95 mol%
   - i-butane: 3.5 mol%
6. Composition of the LPG Stream: LPG is not present at this station.
   - ethane: 0 mol%
   - propane: 0 mol%
   - i-butane: 0 mol%
   - n-butane: 0 mol%
   - i-pentane: 0 mol%
   - n-pentane: 0 mol%
   - n-hexane: 0 mol%
7. Molecular Formula (MF) and Molecular Weight (MW)

Constituent	MF	MW	
ethane:	C_2H_6	30.07	lb per lb-mole (lb/lb mol)
propane:	C_3H_8	44.10	lb/lb mol
i-butane:	iC_4H_{10}	58.12	lb/lb mol
n-butane:	nC_4H_{10}	58.12	lb/lb mol
i-pentane:	iC_5H_{12}	72.15	lb/lb mol
n-pentane:	nC_5H_{12}	72.15	lb/lb mol
n-hexane:	nC_6H_{14}	86.17	lb/lb mol

CLIENT Sunoco Pipeline L.P. (SPLP)		JOB NUMBER 112IC05958.20	[61]
SUBJECT: Blainsport Station -- Existing Equipment Product Analysis Specification			
BASED ON SPLP Product Analyses		DRAWING NUMBER Not Applicable	
BY VJPlachy	CHECKED BY AMO'Bradovich		DATE 8/10/2016

Calculations:

1. Determine the molar mass (MM) of each constituent in butane and propane stream.
   Using the propane in Butane Stream as an example:

$$MM_{propane/Butane} = [(Mol\%_{propane/Butane}) / (CF_{\%\text{-}DecEq})] * (MW_{propane})$$

$$= \frac{2\ \%}{100\ \%} \left| \frac{1\ DecEq}{} \right| \frac{44.10\ lb}{lb\text{-}mol} = 0.88\ lb/lb\text{-}mol$$

Butane Stream			
Component	**Mol%**	**MW (lb/lb-mol)**	**MM (lb/lb-mol)**
propane	2	44.10	0.88
i-butane	44	58.12	25.57
n-butane	54	58.12	31.38
i-pentane	1	72.15	0.72
		TOTAL:	**58.55**

Propane Stream			
Component	**Mol%**	**MW (lb/lb-mol)**	**MM (lb/lb-mol)**
ethane	2	30.07	0.60
propane	95	44.10	41.90
i-butane	3.5	58.12	2.03
		TOTAL:	**44.53**

LPG Stream			
Component	**Mol%**	**MW (lb/lb-mol)**	**MM (lb/lb-mol)**
ethane	0.00	30.07	0.00
propane	0.00	44.1	0.00
i-butane	0.00	58.1	0.00
n-butane	0.00	58.1	0.00
i-pentane	0.00	72.2	0.00
n-pentane	0.00	72.2	0.00
n-hexane	0.00	86.1	0.00
		TOTAL:	**0.00**

2. Calculate the weight percent (Wt%) of each component in butane and propane streams.
   Using the propane in Butane Stream as an example:

$$Wt\%_{propane/Butane} = (MM_{propane/Butane}) / (MM_{total}) * (CF_{DecEq\text{-}\%})$$

$$= \frac{0.88\ lb}{lb\text{-}mol} \left| \frac{lb\text{-}mol}{58.55\ lb} \right| \frac{100\ wt\%}{1\ DecEq} = 1.50\ wt\%$$

Butane Stream		
Component	**MM (lb/lb-mol)**	**Wt%**
propane	0.88	1.50
i-butane	25.57	43.67
n-butane	31.38	53.60
i-pentane	0.72	1.23
TOTAL:	**58.55**	**100.00**

Propane Stream		
Component	**MM (lb/lb-mol)**	**Wt%**
ethane	0.60	1.35
propane	41.90	94.09
i-butane	2.03	4.56
TOTAL:	**44.53**	**100.00**

LPG Stream		
Component	**MM (lb/lb-mol)**	**Wt%**
ethane	0.00	0
propane	0.00	0
i-butane	0.00	0
n-butane	0.00	0
i-pentane	0.00	0
n-pentane	0.00	0
n-hexane	0.00	0
TOTAL:	**0.00**	**0.00**

CLIENT	Sunoco Pipeline L.P. (SPLP)	JOB NUMBER	112IC05958.20 [62]
SUBJECT:	Blainsport Station -- Existing Equipment Product Analysis Specification		
BASED ON	SPLP Product Analyses	DRAWING NUMBER	Not Applicable

BY	CHECKED BY		DATE
VJPlachy	AMO'Bradovich		8/10/2016

Calculations (continued):

3. Calculate the VOC Wt% of in Butane and Propane Streams.
   a. Butane Stream

$Wt\%_{ButaneVOC}$ = ∑Wt% for components with carbon atoms of C_3 or higher
= $(Wt\%_{propane}) + (Wt\%_{i\text{-}butane}) + (Wt\%_{n\text{-}butane}) + (Wt\%_{i\text{-}pentane})$
= 1.50 + 43.67 + 53.60 + 1.23 wt% = 100.00 wt% VOC

   b. Propane Stream

$Wt\%_{PropaneVOC}$ = ∑Wt% for components with carbon atoms of C_3 or higher
= $(Wt\%_{propane}) + (Wt\%_{i\text{-}butane})$
= 94.09 + 4.56 wt% = 98.65 wt% VOC

   c. LPG Stream

$Wt\%_{LPGVOC}$ = ∑Wt% for components with carbon atoms of C_3 or higher
= $(Wt\%_{propane}) + (Wt\%_{i\text{-}butane}) + (Wt\%_{n\text{-}butane}) + (Wt\%_{i\text{-}pentane}) + (Wt\%_{n\text{-}pentane}) + (Wt\%_{n\text{-}hexane})$
= 0 + 0 + 0 + 0 + 0 + 0 wt% = 0.00 wt% VOC

$Wt\%_{LPGHAP}$ = Wt% of Hexane
= 0 wt% HAP

Butane Stream		
Component	MM (lb/lb-mol)	Wt%
propane	0.88	1.50
i-butane	25.57	43.67
n-butane	31.38	53.60
i-pentane	0.72	1.23
TOTAL VOCs:		**100.00**

Propane Stream		
Component	MM (lb/lb-mol)	Wt%
ethane	0.60	N/A
propane	41.90	94.09
i-butane	2.03	4.56
TOTAL VOCs:		**98.65**

LPG Stream		
Component	MM (lb/lb-mol)	Wt%
ethane	0.00	0
propane	0.00	0
i-butane	0.00	0
n-butane	0.00	0
i-pentane	0.00	0
n-pentane	0.00	0
n-hexane	0.00	0
TOTAL VOCs:		**0.00**
TOTAL HAPs:		**0**

CLIENT: Sunoco Pipeline L.P. (SPLP)		JOB NUMBER: 112IC05958.20 [63]	
SUBJECT: Blainsport Station -- Existing Equipment Combustion Source's Hazardous Air Pollutant (HAP) Emission Factor Estimate			
BASED ON: Emission Calculation Workbooks		DRAWING NUMBER: Not Applicable	
BY: VJPlachy	CHECKED BY: AMO'Bradovich		DATE: 8/10/2016

Objective: Develop emission factors for Hazardous Air Pollutants (HAPs) based on AP-42 Section 1.4, Tables 1.4-3 and 1.4-4, and Section 3.3 Table 3.3-2.

Inputs and Assumptions: AP-42; Section 1.4; Tables 1.4-3 and 1.4-4
Source: http://www3.epa.gov/ttn/chief/ap42/ch01/final/c01s04.pdf

AP-42, Section 1.4, Tables 1.4-3 and 1.4-4 Emission Factors for Speciated Organic Compounds from Natural Gas Combustion

Individual HAP	Emission Factor (EF) (lb/MMscf)
2-Methylnaphthalene	2.40E-05
3-Methylchloranthrene	1.80E-06
7,12-Dimethylbenz(a)anthracene	1.60E-05
Acenaphthene	1.80E-06
Acenaphthylene	1.80E-06
Anthracene	2.40E-06
Benz(a)anthracene	1.80E-06
Benzene	2.10E-03
Benzo(a)pyrene	1.20E-06
Benzo(b)fluoranthene	1.80E-06
Benzo(g,h,i)perylene	1.20E-06
Benzo(k)fluoranthene	1.80E-06
Chrysene	1.80E-06
Dibenzo(a,h)anthracene	1.20E-06
Dichlorobenzene	1.20E-03
Fluoranthene	3.00E-06
Fluorene	2.80E-06
Formaldehyde	7.50E-02
Hexane	1.80E+00
Indeno(1,2,3-cd)pyrene	1.80E-06
Naphthalene	6.10E-04
Phenanathrene	1.70E-05
Pyrene	5.00E-06
Toluene	3.40E-03
Arsenic	2.00E-04
Beryllium	1.20E-05
Cadmium	1.10E-03
Chromium	1.40E-03
Cobalt	8.40E-05
Manganese	3.80E-04
Mercury	2.60E-04
Nickel	2.10E-03
Selenium	2.40E-05
TOTAL ($HAP_{individual-total}$):	**1.89E+00**

Calculations: Total ($HAP_{individual-total}$) = Sum of the individual HAP constituents

CLIENT Sunoco Pipeline L.P. (SPLP)		JOB NUMBER 112IC05958.20 [64]	
SUBJECT Blainsport Station -- Existing Equipment Conversion Factors, Physical Properties, and Abbreviations / Acronyms used in the emission estimate calculation workbooks.			
BASED ON SPLP Equipment Data / Specifications / Reference Material		DRAWING NUMBER Not Applicable	
BY VJPlachy	CHECKED BY AMO'Bradovich		DATE 8/10/2016

Objective: Consolidate the inputs of conversion factors, emission factors, acronyms, and abbreviations that are used throughout the emission estimations associated with potential emission sources for midstream operations.

Inputs and Assumptions:

1. Miscellaneous Conversion Factors (CF):

   1 lb-mol = 379.5 scf

   Basis: Ideal gas law conversion factor (CF_{ideal}):

   1 mole of any ideal gas at standard conditions occupies a volume of 379.5 cubic feet (cf).

   10,000 = ppm H_2S = 1 mole % H_2S = 627 grains H_2S per 100 scf

   Source: AP-42 Chapter 5.3 Table 5.3.1; footnote d.

   https://www3.epa.gov/ttn/chief/ap42/ch05/final/c05s03.pdf

2. CO_2e Global Warming Potential EFs (EF_{GWP})

CO_2	CH_4	N_2O
1	25	298

CO_2e emission rates use the following carbon equivalence factors: 25 for CH_4 and 298 for N_2O from 40 CFR Part 98, Subpart A, Table A-1.

http://www.ecfr.gov/cgi-bin/text-idx?SID=7cd55ec5ecd5f06bf94c50d3452a94c3&mc=true&node=pt40.21.98&rgn=div5%20-%20ap40.21.98_19.1#ap40.21.98_19.1

3. Flare Emission Factors (EFs)

NO_X[a]	CO[a]	VOC[a]	$PM/PM_{10}/PM_{2.5}$[b]	SO_X[c]	HAPs	CO_2		CH_4[e]	N_2O[e]
						butane[d]	propane[d]		
(lb/MMBtu)				(ppmw)		(kg/MMBtu)			
0.068	0.31	0.57	0	30	TBD	64.77	62.87	0.003	0.0006

Footnotes:

a. NO_X, CO, PM, and VOC emission factor (EF) source is AP-42; Chapter 13.5 for Industrial Flares, Table 13.5-1 and 13.5-2, dated: April 2015.
   PM emissions are assumed to be negligible because the enclosed flare is considered to be 100% smokeless.
   https://www3.epa.gov/ttn/chief/ap42/ch13/final/C13S05_4-20-15.pdf

b. PM emission factor based on AP-42; Chapter 13.5 for Industrial Flares April 2015 found in Table 6-4 for heavily smoking flares in the site below. The emission factor is based on the LHV.
   https://www3.epa.gov/ttnchie1/efpac/protocol/Emission_Estimation_Protocol_for_Petroleum_Refinerie_052011.pdf

c. Provided by SPLP

d. Gas heat content (Btu/scf) for butane and propane (kg/MMBtu) is based on the higher heating values (HHV) presented in 40 CFR Part 98 Subpart C, Table C-1.

e. CH_4 and N_2O emission factors (kg/MMBtu) are based on the default emission factors presented in 40 CFR Part 98 Subpart C, Table C-2 for "Petroleum (All fuel types in Table C-1)."
   http://www.ecfr.gov/cgi-bin/text-idx?SID=7cd55ec5ecd5f06bf94c50d3452a94c3&mc=true&node=pt40.21.98&rgn=div5%20-%20ap40.21.98_19.1%20-%20ap40.21.98_138.1%20-%20ap40.21.98_138.1

NOTES:

AP-42 VOC EF is only applicable to emission estimates for VOCs from the pilot gas, that is, VOC emissions from the captured gas that are sent to the flare from GC, Pumps, and RV emissions are based on the flare's DRE.

CLIENT Sunoco Pipeline L.P. (SPLP)		JOB NUMBER 112IC05958.20 [65]	
SUBJECT Blainsport Station -- Existing Equipment Conversion Factors, Physical Properties, and Abbreviations / Acronyms used in the emission estimate calculation workbooks.			
BASED ON SPLP Equipment Data / Specifications / Reference Material		DRAWING NUMBER Not Applicable	
BY VJPlachy	CHECKED BY AMO'Bradovich		DATE 8/10/2016

Inputs and Assumptions (Continued):

4. Sources of standard operating scenario emission to the flare can include: GC(s), Pump Seal(s), and/or Relief Valves that are connected to the flare header.

5. Sources of maintenances emission to the flare can include evaluation of the following equipment: filter(s), pig launcher(s), pig receiver(s), and/or prover(s).

6. Physical Properties:

Source: http://www.lenntech.com/calculators/molecular/molecular-weight-calculator.htm

i-butane	= n-C_4H_{10}	= 58.12	lb/lb mol (g/g mol)	
n-butane	= i-C_4H_{10}	= 58.12	lb/lb mol (g/g mol)	
carbon	= C	= 12.01	lb/lb mol (g/g mol)	
carbon monoxide	= CO	= 28.01	lb/lb mol (g/g mol)	Calculated
ethane	= C_2H_6	= 30.07	lb/lb mol (g/g mol)	
methane	= CH_4	= 16.04	lb/lb mol (g/g mol)	
n-hexane	= C_6H_{14}	= 86.17	lb/lb mol (g/g mol)	
hydrogen	= H	= 1.01	lb/lb mol (g/g mol)	
nitrogen	= N	= 14.01	lb/lb mol (g/g mol)	
nitrogen dioxide	= N_2O	= 44.02	lb/lb mol (g/g mol)	Calculated
oxygen	= O	= 16.00	lb/lb mol (g/g mol)	
i-pentane	= i-C_5H_{12}	= 72.15	lb/lb mol (g/g mol)	
n-pentane	= n-C_5H_{12}	= 72.15	lb/lb mol (g/g mol)	
propane	= C_3H_8	= 44.10	lb/lb mol (g/g mol)	
sulfur	= S	= 32.07	lb/lb mol (g/g mol)	
sulfur dioxide	= SO_2	= 64.07	lb/lb mol (g/g mol)	Calculated

7. Higher heating value (HHV) and lower heating value (LHV):

a. propane

$HHV_{propane}$ = 2,516 Btu/scf

Source: http://www.altenergy.com/downloads/pdf_public/propdatapdf.pdf

$LHV_{propane}$ = 2,315 Btu/scf

Source: GPA 2145-09 http://www.elmiraohio.com/Gasifier%20Docs/GPA%20std%202145.pdf

= 19,567 Btu/lb

Source: The density of propane at atmospheric conditions taken from the National Institute of Standards and Technology website of isothermal properties for propane.

http://webbook.nist.gov/cgi/fluid.cgi?ID=C74986&TUnit=F&PUnit=atm&DUnit=lbm%2Fft3&HUnit=Btu%2Flbm&WUnit=ft%2Fs&VisUnit=cP&STUnit=lb%2Fft&Type=IsoTherm&RefState=DEF&Action=Page

b. butane

HHV_{butane} = 0.103 MMBtu/gal default HHV

40 CFR Part 98 Subpart C, Table C-1 value used with the Volume of butane vapor/gallon @ 60°F.

Source: http://www.ecfr.gov/cgi-bin/text-idx?SID=9da8a4fcd9db970a85466ea8928596cb&mc=true&node=sp40.21.98.c&rgn=div6#ap40.21.98_138.1

Vol_{butane} = 31.75 scf/gal at 60°F

Source: http://www.aeropres.com/files/physical%20properties.pdf

CLIENT Sunoco Pipeline L.P. (SPLP)		JOB NUMBER 112IC05958.20 [66]	
SUBJECT Blainsport Station -- Existing Equipment Conversion Factors, Physical Properties, and Abbreviations / Acronyms used in the emission estimate calculation workbooks.			
BASED ON SPLP Equipment Data / Specifications / Reference Material		DRAWING NUMBER Not Applicable	
BY VJPlachy	CHECKED BY AMO'Bradovich		DATE 8/10/2016

Inputs and Assumptions (Continued):

7. b. Higher heating value (HHV) and lower heating value (LHV) (continued):

HHV_{butane} = 3,244 Btu/scf $\left|\frac{0.103\ \text{MMBtu}}{\text{gal}}\right|\left|\frac{\text{gal}}{31.75\ \text{scf}}\right|\left|\frac{1E+06\ \text{Btu}}{1\ \text{MMBtu}}\right|$

= 21,221 Btu/lb

Source: http://www.altenergy.com/downloads/pdf_public/propdatapdf.pdf

LHV_{butane} = 3,011 Btu/scf

Source: GPA 2145-09 http://www.elmiraohio.com/Gasifier%20Docs/GPA%20std%202145.pdf

= 18,998 Btu/lb

Source: The density of butane at atmospheric conditions taken from the National Institute of Standards and Technology website of isothermal properties for butane. lbm&WUnit=ft%2Fs&VisUnit=lbm%2Fft*s&STUnit=lb%2Fft&Type=IsoTherm&RefState=DEF&Action=Page

8. Conversion factors (CF):

				Source:
1	bhp	=	0.746 kW	http://www.convertunits.com/from/horsepower/to/kilowatt
1	°F	=	460.67 °R	http://www.convertunits.com/from/Fahrenheit/to/Rankine
1	atm	=	14.7 psi	http://www.convertunits.com/from/atm/to/psi
1	day	=	24 hours	http://www.convertunits.com/from/day/to/hour
1	wt%	=	1E+04 ppmw	http://www.rapidtables.com/convert/number/PPM_to_Percent.htm
1	DecEq	=	100 %	http://www.calculatorsoup.com/calculators/math/percent-to-decimal-calculator.php
1	g	=	0.002205 lb	http://www.convertunits.com/from/grams/to/pounds
1	grain	=	0.000143 lb	http://www.convert-me.com/en/convert/weight/grain.html
1	hp-hr	=	7,000 Btu	Source: AP-42, Table 3.3-1; footnote a.
1	hr	=	60 minutes	http://www.convertunits.com/from/hours/to/minutes
1	kg	=	1,000 g	http://www.convertunits.com/from/kilograms/to/grams
1	kg/m^3	=	0.008345 lb/gal	http://convert-to.com/conversion/density/convert-kg-per-m3-to-lb-per-gal.html
1	lb	=	453.6 g	http://www.convertunits.com/from/pounds/to/grams
1	lb	=	0.4536 kg	http://www.convertunits.com/from/pounds/to/kilograms
1	lb	=	8.34 gal@60°F	http://www.engineeringtoolbox.com/water-density-specific-weight-d_595.html
1	MMBtu	=	1E+06 Btu	http://www.convertunits.com/from/million+British+thermal+unit/to/British+thermal+unit
1	MMscf	=	1E+06 scf	http://www.convertunits.com/from/million+cubic+feet/to/cubic+feet
1	pascal	=	0.000010 atm	http://www.convertunits.com/from/pascal/to/atmosphere+[standard]
1	ppmw	=	0.0001 wt%	http://www.rapidtables.com/convert/number/PPM_to_Percent.htm
1	ft^3 / scf	=	28,317 cc	http://www.convertunits.com/from/cubic+feet/to/cubic+centimeters
1	ton	=	2,000 lb	http://www.convertunits.com/from/ton+[short,+US]/to/pounds
1	yr	=	8,760 hrs	Calculated: (24 hours/day) * (365 days/year)

9. Abbreviations / Acronyms

%	=	percent
Ann	=	annual
AOH	=	annual operating hours
cc	=	cubic centimeter
CF	=	conversion factor
CH_4	=	methane

CLIENT Sunoco Pipeline L.P. (SPLP)		JOB NUMBER 112IC05958.20 [67]	
SUBJECT Blainsport Station -- Existing Equipment Conversion Factors, Physical Properties, and Abbreviations / Acronyms used in the emission estimate calculation workbooks.			
BASED ON SPLP Equipment Data / Specifications / Reference Material		DRAWING NUMBER Not Applicable	
BY VJPlachy	CHECKED BY AMO'Bradovich		DATE 8/10/2016

Inputs and Assumptions (Continued):

9. Abbreviations / Acronyms (Continued)

CO = carbon monoxide
CO_2e = carbon dioxide equivalent
dec = decimal
DecEq = Decimal Equivalent
EC = equipment count
EF = emission factor
eq = equivalent
ER = Emission Rate
FR = flow rate
ft = feet
ft^3 = cubic feet
g = gram
GC = gas chromatograph
HAP = hazardous air pollutant
HHV = higher heating value
hr = hour
kg = kilogram
kg/MMBtu = kilograms per million British thermal units
lb = pound
lb/MMBtu = pounds per million British thermal units
lb/MMscf = pounds per million standard cubic feet
lb/scf = pounds per standard cubic feet
lb-mol = pound mole
LPG = liquid petroleum gas
LHV = lower heating value
Max Daily = maximum daily
Max Hourly = maximum hourly
MM = molar mass
mol = mole
MW = molecular weight
n = moles
N/A = Pollutant is Not Applicable to this source
N/A E = This equipment is not applicable to this station
N/C = Not Calculated
N_2O = nitrogen dioxide
NOx = oxides of nitrogen
OSF = operating service factor
P = pressure
PM = particulate matter
PM_{10} = particles with an aerodynamic diameter less than or equal to 10 micrometers
$PM_{2.5}$ = particles with an aerodynamic diameter less than or equal to 2.5 micrometers
ppmw = parts per million by weight
propane = C_3H_8
psi = pounds per square inch

CLIENT Sunoco Pipeline L.P. (SPLP)		JOB NUMBER 112IC05958.20 [68]	
SUBJECT Blainsport Station -- Existing Equipment Conversion Factors, Physical Properties, and Abbreviations / Acronyms used in the emission estimate calculation workbooks.			
BASED ON SPLP Equipment Data / Specifications / Reference Material		DRAWING NUMBER Not Applicable	
BY VJPlachy	CHECKED BY AMO'Bradovich		DATE 8/10/2016

Inputs and Assumptions (Continued):

9. Abbreviations / Acronyms (Continued)

psia = pounds per square inch absolute
psig = pounds per square inch gauge
$R_{specific}$ = Ideal gas law constant specific to units
RV = relief valve
S = sulfur
scf = standard cubic feet
SG_O = specific gravity of the oil
SO_2 = sulfur dioxide
SO_x = oxides of sulfur
T = temperature
t = ton
TBD = To Be Determined
TF = Total Fugitives
tpy = tons per year
USEPA = United States Environmental Protection Agency
V = volume
VS = valve seat
VOC = volatile organic compound
wt = weight
yr = year

Appendix B

Aggregation Analysis

SPLP understands that Pennsylvania is considered a “moderate” ozone nonattainment area for oxides of nitrogen (NO_x) and volatile organic compounds (VOCs) because Pennsylvania is a jurisdiction in the Ozone Transport Region (Section 184 of the Clean Air Act). Therefore, an aggregation determination under New Source Review (NSR) would be determined on a case-by-case basis using the two-part test that considers whether the air contamination source or combination of sources are located on one or more contiguous or adjacent properties and whether the sources are owned or operated by the same person under common control. This case-by-case single source determination would apply to all sources irrespective of their separate status as “minor” or “major” air contamination sources. PADEP and the Pennsylvania Environmental Hearing Board have made clear that the terms “contiguous” and “adjacent” should be given their plain meaning. To that end, PADEP’s guidance document has developed a common sense approach to determine if sources are located on adjacent or contiguous properties and considers sources located within a quarter-mile distance to be considered contiguous or adjacent (PADEP, 2012). Sources greater than a quarter-mile may be considered contiguous or adjacent on a case-by-case basis. Interdependence may be a factor in conducting a single source determination. That said, the plain meaning of the terms “contiguous” and “adjacent,” and not interdependence, should be the dispositive factor in determining whether stationary sources are located on contiguous or adjacent properties.

To determine if the under common control test is met, ownership of each of the operations is just one aspect in determining if the facilities are under common control. If a contract for service relationship exists between the two companies and/or if a support/dependency relationship exists, then this would constitute indirect control. United States Environmental Protection Agency (USEPA) has historically interpreted that an evaluation of common control must consider whether the facilities are functionally interrelated or interdependent of each other. As discussed in the Federal Register (USEPA, 2009), USEPA states that “To be ‘substantially related,’ there should be an apparent interconnection–either technically or economically–between the physical and/or operational changes, or a complementary relationship whereby a change at a plant may exist and operate independently, however its benefit is significantly reduced without the other activity.”

BLAINSPORT PUMP STATION

In determining whether the Blainsport Pump Station’s emissions should be aggregated with any another sources for the purpose of evaluating the applicability of the nonattainment NSR and Title V programs, one facility was identified: the Hopelane Road Block Valve. Per the PADEP SCRO’s request, SPLP reviewed the area within 5.0 miles of the Plainfield Station; no additional facilities for aggregation consideration were found during this review.

Hopelane Road Block Valve

The distance between the Blainsport Pump Station and the Hopelane Road Block Valve is approximately 5.1 miles. The distance of approximately 5.1 miles exceeds the one-quarter mile

rule of thumb in the PADEP guidance document (PADEP, 2012) and the 5.0 mile evaluation requested by the PADEP SCRO. However, it is being evaluated because it is the closet location owned by SPLP to the Blainsport Pump Station.

Furthermore, aggregation would not be appropriate because the two sites should not otherwise be considered “adjacent” or “contiguous” due to the lack of any interdependence between the Hopelane Road Block Valve and the Blainsport Pump Station. The Hopelane Road Block Valve is an independently operated valve for isolating a section of pipeline for safety, environmental, or maintenance purposes, whereas the purpose of the Blainsport Pump Station is to maintain pipeline system pressure during the transportation of natural gas liquids (NGLs). Neither location is dependent upon the other to properly function. In fact, both locations could fully function even if the other is nonfunctional.

In short, the Blainsport Pump Station’s emissions should not be aggregated with those from the Hopelane Road Block Valve because the two locations are not interdependent of each other and are not in close proximity of each other, and therefore are neither “contiguous” nor “adjacent” for the purposes of aggregating air emissions.

REFERENCES:

Pennsylvania Department of Environmental Protection (PADEP), 2012. Guidance for Performing Single Stationary Source Determinations for Oil and Gas Industries. Document No.: 270-0810-006, October 6, 2012.

United States Environmental Protection Agency (USEPA), 2009. Title 40 Code of Federal Regulations Parts 51 and 52, Prevention of Significant Deterioration (PSD) and Nonattainment New Source Review (NSR): Aggregation and Project Netting. Federal Register Volume 74, No. 10, January 15, 2009, pages 2376-2383.

Weaver, William

From: WERNER, JED A <JAWERNER@sunocologistics.com>
Sent: Friday, March 10, 2017 1:51 PM
To: Weaver, William
Subject: Mariner East facilities
Attachments: MARINER EAST I EQUIPMENT LIST.pdf

Mr. Weaver,

Attached is a list of all the sources installed at each Pump Station as part of the Mariner East project.

In the Southcentral Region Pump Stations there are the following pigging sources:

Hollidaysburg

- One (1) Pig Launcher – 8 inch
- One (1) Pig Receiver – 8 inch

Mt. Union

- One (1) Pig Launcher – 8 inch
- One (1) Pig Receiver – 8 inch

Middletown

- One (1) Pig Launcher – 8 inch
- One (1) Pig Receiver – 8 inch

Beckersville

- One (1) Pig Launcher – 8 inch
- One (1) Pig Receiver – 8 inch

Please let me know if you have any questions

Jed A. Werner
Manager - Environmental Compliance and Projects
525 Fritztown Road
Sinking Spring, PA 19608
p-610-670-3297
c-610-858-0802
f-866-599-4936

EVERY day, is a good day!

MARINER EAST I: STATION EQUIPMENT

Southwest Region

Delmont Station

- One (1) Mainline Pump – 1,500 horsepower (hp)
- One (1) Filter – 31.94 ft^3
- One (1) Pig Launcher – 8 in
- One (1) Pig Receiver – 12 in
- One (1) Propane Storage Tank – 60,000 gallons
- One (1) Propane Pilot Gas Tank – 500 gallons
- One (1) Hose – 2 in diameter, 18 feet long
- One (1) Basket Strainer – 0.34 ft^3
- One (1) Basket Strainer – 1.27 ft^3
- One (1) Prover – 5.35 ft^3
- One (1) Enclosed Flare – 10 million British thermal units per hour (MMBtu/hr)

Blairsville Station

- One (1) Mainline Pump – 1,500 hp
- One (1) Filter – 31.94 ft^3
- One (1) Propane Pilot Gas Tank – 500 gallons
- One (1) Enclosed Flare – 10 MMBtu/hr

Ebensburg Station

- One (1) Mainline Pump – 1,750 hp
- One (1) Filter – 31.94 ft^3
- One (1) Propane Pilot Gas Tank – 500 gallons
- One (1) Enclosed Flare – 10 MMBtu/hr

Cramer Station

- One (1) Mainline Pump – 1,750 hp
- One (1) Filter – 31.94 ft^3
- One (1) Propane Pilot Gas Tank – 500 gallons
- One (1) Enclosed Flare – 10 MMBtu/hr

South Central Region

Hollidaysburg Station

- One (1) Mainline Pump – 1,500 hp
- One (1) Filter – 31.94 ft^3
- One (1) Prover – 31.42 ft^3
- One (1) Pig Launcher – 8 in
- One (1) Pig Receiver – 8 in
- One (1) Coriolis Meter
- One (1) Propane Pilot Gas Tank – 500 gallons
- One (1) Enclosed Flare – 10 MMBtu/hr

Marklesburg Station

- One (1) Mainline Pump – 1,250 hp
- One (1) Filter – 31.94 ft^3
- One (1) Propane Pilot Gas Tank – 500 gallons
- One (1) Enclosed Flare – 10 MMBtu/hr

Mt. Union Station

- One (1) Mainline Pump – 1,500 hp
- One (1) Filter – 31.94 ft^3
- One (1) Pig Launcher – 8 in
- One (1) Pig Receiver – 8 in
- One (1) Propane Pilot Gas Tank – 500 gallons
- One (1) Enclosed Flare – 10 MMBtu/hr

Doylesburg Station

- One (1) Mainline Pump – 1,500 hp
- One (1) Filter – 31.94 ft^3
- One (1) Propane Pilot Gas Tank – 500 gallons
- One (1) Enclosed Flare – 10 MMBtu/hr

Mechanicsburg Station

- One (1) Mainline Pump – 1,750 hp
- One (1) Filter – 31.94 ft^3

Plainfield Station

- One (1) Mainline Pump – 1,750 hp
- One (1) Filter – 31.94 ft^3
- One (1) Propane Pilot Gas Tank – 500 gallons
- One (1) Enclosed Flare – 10 MMBtu/hr

Middletown Station

- One (1) Mainline Pump – 1,500 hp
- One (1) Filter – 31.94 ft^3
- One (1) Prover – 31.42 ft^3

- One (1) Pig Launcher – 8 in
- One (1) Pig Receiver – 8 in
- One (1) Coriolis Meter
- One (1) Propane Pilot Gas Tank – 500 gallons
- One (1) Enclosed Flare – 10 MMBtu/hr

Cornwall Station

- One (1) Mainline Pump – 1,500 hp
- One (1) Filter – 31.94 ft^3
- One (1) Propane Pilot Gas Tank – 500 gallons
- One (1) Enclosed Flare – 10 MMBtu/hr

Blainsport Station

- One (1) Mainline Pump – 1,750 hp
- One (1) Filter – 31.94 ft^3
- One (1) Propane Pilot Gas Tank – 500 gallons
- One (1) Enclosed Flare – 10 MMBtu/hr

Beckersville Station

- One (1) Mainline Pump – 1,750 hp
- One (1) Filter – 31.94 ft^3
- One (1) Gas Chromatograph
- One (1) Pig Launcher – 8 in
- One (1) Pig Receiver – 8 in
- One (1) Propane Pilot Gas Tank – 500 gallons
- One (1) Enclosed Flare – 10 MMBtu/hr

Southeast Region

Eagle Station

- One (1) Mainline Pump – 1,000 hp
- One (1) Filter – 31.94 ft^3
- One (1) Propane Pilot Gas Tank – 1,000 gallons
- One (1) Enclosed Flare – 10 MMBtu/hr

Boot Station

- One (1) Mainline Pump – 1,750 hp
- One (1) Filter – 31.94 ft^3
- One (1) Propane Pilot Gas Tank – 1,000 gallons
- One (1) Enclosed Flare – 10 MMBtu/hr

Twin Oaks Station

- One (1) Filter – 31.94 ft^3
- One (1) Prover – 31.42 ft^3
- One (1) Pig Launcher – 12 in
- One (1) Pig Receiver – 8 in
- One (1) Coriolis Meter
- One (1) Propane Pilot Gas Tank – 1,000 gallons
- One (1) Enclosed Flare – 10 MMBtu/hr

Hartline, Darrell

From: SION, LAUREN N <LAUREN.SION@energytransfer.com>
Sent: Wednesday, August 09, 2017 10:42 AM
To: Hartline, Darrell
Subject: RE: Air Quality Permit Responsible Officials

Yes- Mark Martin should also be the Responsible Offical there if you do not already have that information.

Thanke,

Lauren Sion
Energy Transfer Partners
Office: (412) 784-3474
Cell: (313) 706-9455

From: Hartline, Darrell [mailto:dahartline@pa.gov]
Sent: Wednesday, August 09, 2017 10:41 AM
To: SION, LAUREN N <LAUREN.SION@energytransfer.com>
Subject: RE: Air Quality Permit Responsible Officials

Thanks Lauren. Will you be the Permit Contact Person for Cornwall?

Thanks,
Darrell Hartline

From: SION, LAUREN N [mailto:LAUREN.SION@energytransfer.com]
Sent: Wednesday, August 09, 2017 10:14 AM
To: Hartline, Darrell <dahartline@pa.gov>
Subject: RE: Air Quality Permit Responsible Officials

Darrell-

I will be the permit contact for all of these facilities:

Lauren Sion
Environmental Specialist
(412) 784-3474

The Responsible Official for Beckersville, Blainsport, and Middletown is Mark Martin:

Mark A. Martin
Operations Supervisor
(610) 670-3278

The Responsible Official for Doylesburg and Mt. Union is Jim Tidd:

James W. Tidd
Operations Supervisor
(724) 630-2462

Please let me know if you need any more information.

Thank you,

Lauren Sion
Energy Transfer Partners
Office: (412) 784-3474
Cell: (313) 706-9455

From: WERNER, JED A
Sent: Wednesday, August 09, 2017 9:46 AM
To: SION, LAUREN N <LAUREN.SION@energytransfer.com>
Cc: O'TOOLE, RONALD J <RONALD.OTOOLE@energytransfer.com>
Subject: Fwd: Air Quality Permit Responsible Officials

Lauren

Can you please provide this information to Darrell

Thanks

Jed

Sent from my iPhone

Begin forwarded message:

> **From:** "Hartline, Darrell" <dahartline@pa.gov>
> **Date:** August 9, 2017 at 9:40:49 AM EDT
> **To:** "WERNER, JED A" <JED.WERNER@energytransfer.com>
> **Subject: Air Quality Permit Responsible Officials**
>
> Jed,
>
> Are the Responsible Officials or Permit Contact Person for Doylesburg, Middletown, Mt. Union, Beckersville and Blainsport going to change? If so, please provide their name, job title and telephone number.
>
> Thanks,
> Darrell Hartline

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION
AIR QUALITY PROGRAM

STATE ONLY OPERATING PERMIT

Issue Date: Effective Date:

Expiration Date:

In accordance with the provisions of the Air Pollution Control Act, the Act of January 8, 1960, P.L. 2119, as amended, and 25 Pa. Code Chapter 127, the Owner, [and Operator if noted] (hereinafter referred to as permittee) identified below is authorized by the Department of Environmental Protection (Department) to operate the air emission source(s) more fully described in this permit. This Facility is subject to all terms and conditions specified in this permit. Nothing in this permit relieves the permittee from its obligations to comply with all applicable Federal, State and Local laws and regulations.

The regulatory or statutory authority for each permit condition is set forth in brackets. All terms and conditions in this permit are federally enforceable unless otherwise designated.

State Only Permit No: 36-03197

Federal Tax Id - Plant Code: 23-3102656-19

Owner Information

Name: SUNOCO PIPELINE LP
Mailing Address: 525 FRITZTOWN RD
SINKING SPRING, PA 19608-1509

Plant Information

Plant: SUNOCO PIPELINE LP/BLAINSPORT
Location: 36 Lancaster County 36957 West Cocalico Township
SIC Code: 4619 Trans. & Utilities - Pipelines, Nec

Responsible Official

Name: MARK A MARTIN
Title: OPERATIONS SUPERVISOR
Phone (610) 670 - 3278

Permit Contact Person

Name: LAUREN SION
Title: ENVIRONMENTAL SPECIALIST
Phone: (412) 784 - 3474

[Signature] _____
WILLIAM R. WEAVER, SOUTHCENTRAL REGION AIR PROGRAM MANAGER

SECTION A. Table of Contents

Section A. Facility/Source Identification

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Section D. Source Level State Only Requirements

D-I: Restrictions
D-II: Testing Requirements
D-III: Monitoring Requirements
D-IV: Recordkeeping Requirements
D-V: Reporting Requirements
D-VI: Work Practice Standards
D-VII: Additional Requirements

Note: These same sub-sections are repeated for each source!

Section E. Source Group Restrictions

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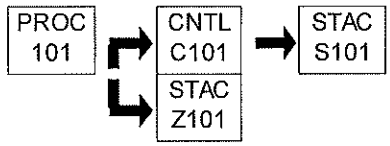
SECTION A. Site Inventory List

Source ID	Source Name	Capacity/Throughput	Fuel/Material
101	PUMP STATION SEAL LEAKS		
103	MAINTENANCE OPERATIONS		
C101	ENCLOSED FLARE		
S101	ENCLOSED FLARE STACK		
Z101	FUGITIVE EMISSIONS		

PERMIT MAPS



SECTION B. General State Only Requirements

#001 [25 Pa. Code § 121.1]

Definitions.

Words and terms that are not otherwise defined in this permit shall have the meanings set forth in Section 3 of the Air Pollution Control Act (35 P.S. § 4003) and in 25 Pa. Code § 121.1.

#002 [25 Pa. Code § 127.446]

Operating Permit Duration.

(a) This operating permit is issued for a fixed term of five (5) years and shall expire on the date specified on Page 1 of this permit.

(b) The terms and conditions of the expired permit shall automatically continue pending issuance of a new operating permit, provided the permittee has submitted a timely and complete application and paid applicable fees required under 25 Pa. Code Chapter 127, Subchapter I and the Department is unable, through no fault of the permittee, to issue or deny a new permit before the expiration of the previous permit.

#003 [25 Pa. Code §§ 127.412, 127.413, 127.414, 127.446 & 127.703(b)&(c)]

Permit Renewal.

(a) The permittee shall submit a timely and complete application for renewal of the operating permit to the appropriate Regional Air Program Manager. The application for renewal of the operating permit shall be submitted at least six (6) months and not more than 18 months before the expiration date of this permit.

(b) The application for permit renewal shall include the current permit number, a description of any permit revisions that occurred during the permit term, and any applicable requirements that were promulgated and not incorporated into the permit during the permit term. An application is complete if it contains sufficient information to begin processing the application, has the applicable sections completed and has been signed by a responsible official.

(c) The permittee shall submit with the renewal application a fee for the processing of the application and an additional annual administrative fee as specified in 25 Pa. Code § 127.703(b) and (c). The fees shall be made payable to "The Commonwealth of Pennsylvania - Clean Air Fund" and shall be for the amount specified in the following schedule specified in 25 Pa. Code § 127.703(b) and (c).

(1) Three hundred dollars for applications filed during the 2000-2004 calendar years.

(2) Three hundred seventy-five dollars for applications filed for the calendar years beginning in 2005:

(d) The renewal application shall also include submission of proof that the local municipality and county, in which the facility is located, have been notified in accordance with 25 Pa. Code § 127.413.

(e) The application for renewal of the operating permit shall also include submission of supplemental compliance review forms in accordance with the requirements of 25 Pa. Code § 127.412(b) and § 127.412(j).

(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 as necessary to address any requirements that become applicable to the source after the permittee submits a complete application, but prior to the date the Department takes action on the permit application.

#004 [25 Pa. Code § 127.703]

Operating Permit Fees under Subchapter I.

(a) The permittee shall pay fees according to the following schedule specified in 25 Pa. Code § 127.703(b):

(1) Three hundred dollars for applications filed during the 2000-2004 calendar years.

(2) Three hundred seventy-five dollars for applications filed for the calendar years beginning in 2005.

This fee schedule shall apply to the processing of an application for an operating permit as well as the extension,

SECTION B. General State Only Requirements

modification, revision, renewal, and re-issuance of each operating permit or part thereof.

(b) The permittee shall pay an annual operating permit administrative fee according to the fee schedule established in 25 Pa. Code § 127.703(c).

(1) Two hundred fifty dollars for applications filed during the 1995-1999 calendar years.

(2) Three hundred dollars for applications filed during the 2000-2004 calendar years.

(3) Three hundred seventy-five dollars for applications filed during the years beginning in 2005.

(c) The applicable fees shall be made payable to "The Commonwealth of Pennsylvania - Clean Air Fund".

#005 [25 Pa. Code §§ 127.450 (a)(4) and 127.464]

Transfer of Operating Permits.

(a) This operating permit may not be transferred to another person, except in cases of transfer-of-ownership that are documented and approved by the Department.

(b) In accordance with 25 Pa. Code § 127.450(a)(4), a change in ownership of the source shall be treated as an administrative amendment if the Department determines that no other change in the permit is required and a written agreement has been submitted to the Department identifying the specific date of the transfer of permit responsibility, coverage and liability between the current and the new permittee and a compliance review form has been submitted to, and the permit transfer has been approved by, the Department.

(c) This operating permit is valid only for those specific sources and the specific source locations described in this permit.

#006 [25 Pa. Code § 127.441 and 35 P.S. § 4008]

Inspection and Entry.

(a) Upon presentation of credentials and other documents as may be required by law, the permittee shall allow the Department or authorized representatives of the Department to perform the following:

(1) Enter at reasonable times upon the permittee's premises where a source is located or emissions related activity is conducted, or where records are kept under the conditions of this permit;

(2) Have access to and copy, at reasonable times, any records that are kept under the conditions of this permit;

(3) Inspect at reasonable times, any facilities, equipment including monitoring and air pollution control equipment, practices, or operations regulated or required under this permit;

(4) Sample or monitor, at reasonable times, any substances or parameters, for the purpose of assuring compliance with the permit or applicable requirements as authorized by the Clean Air Act, the Air Pollution Control Act, or the regulations promulgated under the Acts.

(b) Pursuant to 35 P.S. § 4008, no person shall hinder, obstruct, prevent or interfere with the Department or its personnel in the performance of any duty authorized under the Air Pollution Control Act or regulations adopted thereunder including denying the Department access to a source at this facility. Refusal of entry or access may constitute grounds for permit revocation and assessment of criminal and/or civil penalties.

(c) Nothing in this permit condition shall limit the ability of the EPA to inspect or enter the premises of the permittee in accordance with Section 114 or other applicable provisions of the Clean Air Act.

#007 [25 Pa. Code §§ 127.441 & 127.444]

Compliance Requirements.

(a) The permittee shall comply with the conditions of this operating permit. Noncompliance with this permit constitutes

a violation of the Clean Air Act and the Air Pollution Control Act and is grounds for one or more of the following:

(1) Enforcement action

(2) Permit termination, revocation and reissuance or modification

(3) Denial of a permit renewal application

(b) A person may not cause or permit the operation of a source which is subject to 25 Pa. Code Article III unless the source(s) and air cleaning devices identified in the application for the plan approval and operating permit and the plan approval issued for the source is operated and maintained in accordance with specifications in the applications and the conditions in the plan approval and operating permit issued by the Department. A person may not cause or permit the operation of an air contamination source subject to 25 Pa. Code Chapter 127 in a manner inconsistent with good operating practices.

(c) For purposes of Sub-condition (b) of this permit condition, the specifications in applications for plan approvals and operating permits are the physical configurations and engineering design details which the Department determines are essential for the permittee's compliance with the applicable requirements in this State-Only permit. Nothing in this sub-condition shall be construed to create an independent affirmative duty upon the permittee to obtain a predetermination from the Department for physical configuration or engineering design detail changes made by the permittee.

#008 [25 Pa. Code § 127.441]

Need to Halt or Reduce Activity Not a Defense.

It shall not be a defense for the permittee in an enforcement action that it was necessary to halt or reduce the permitted activity in order to maintain compliance with the conditions of this permit.

#009 [25 Pa. Code §§ 127.442(a) & 127.461]

Duty to Provide Information.

(a) The permittee shall submit reports to the Department containing information the Department may prescribe relative to the operation and maintenance of each source at the facility.

(b) The permittee shall furnish to the Department, in writing, information that the Department may request to determine whether cause exists for modifying, revoking and reissuing, or terminating this permit, or to determine compliance with the permit. Upon request, the permittee shall also furnish to the Department copies of records that the permittee is required to maintain in accordance with this permit.

#010 [25 Pa. Code § 127.461]

Revising an Operating Permit for Cause.

This operating permit may be terminated, modified, suspended or revoked and reissued if one or more of the following applies:

(1) The permittee constructs or operates the source subject to the operating permit so that it is in violation of the Air Pollution Control Act, the Clean Air Act, the regulations thereunder, a plan approval, a permit or in a manner that causes air pollution.

(2) The permittee fails to properly or adequately maintain or repair an air pollution control device or equipment attached to or otherwise made a part of the source.

(3) The permittee has failed to submit a report required by the operating permit or an applicable regulation.

(4) The EPA determines that the permit is not in compliance with the Clean Air Act or the regulations thereunder.

#011 [25 Pa. Code §§ 127.450 & 127.462]

Operating Permit Modifications

(a) The permittee is authorized to make administrative amendments, minor operating permit modifications and

significant operating permit modifications, under this permit, as outlined below:

(b) Administrative Amendments. The permittee shall make administrative operating permit amendments (as defined in 25 Pa. Code § 127.450(a)), according to procedures specified in § 127.450 unless precluded by the Clean Air Act or its regulations.

(c) Minor Operating Permit Modifications. The permittee shall make minor operating permit modifications (as defined 25 Pa. Code § 121.1) in accordance with 25 Pa. Code § 127.462.

(d) Permit modifications which do not qualify as minor permit modifications under 25 Pa. Code § 127.541 will be treated as a significant operating permit revision subject to the public notification procedures in §§ 127.424 and 127.425.

#012 [25 Pa. Code § 127.441]

Severability Clause.

The provisions of this permit are severable, and if any provision of this permit is determined by a court of competent jurisdiction to be invalid or unenforceable, such a determination will not affect the remaining provisions of this permit.

#013 [25 Pa. Code § 127.449]

De Minimis Emission Increases.

(a) This permit authorizes de minimis emission increases in accordance with 25 Pa. Code § 127.449 so long as the permittee provides the Department with seven (7) days prior written notice before commencing any de minimis emissions increase. The written notice shall:

(1) Identify and describe the pollutants that will be emitted as a result of the de minimis emissions increase.

(2) Provide emission rates expressed in tons per year and in terms necessary to establish compliance consistent with any applicable requirement.

(b) The Department may disapprove or condition de minimis emission increases at any time.

(c) Except as provided below in (d), the permittee is authorized to make de minimis emission increases (expressed in tons per year) up to the following amounts without the need for a plan approval or prior issuance of a permit modification:

(1) Four tons of carbon monoxide from a single source during the term of the permit and 20 tons of carbon monoxide at the facility during the term of the permit.

(2) One ton of NOx from a single source during the term of the permit and 5 tons of NOx at the facility during the term of the permit.

(3) One and six-tenths tons of the oxides of sulfur from a single source during the term of the permit and 8.0 tons of oxides of sulfur at the facility during the term of the permit.

(4) Six-tenths of a ton of PM10 from a single source during the term of the permit and 3.0 tons of PM10 at the facility during the term of the permit. This shall include emissions of a pollutant regulated under Section 112 of the Clean Air Act unless precluded by the Clean Air Act, the regulations thereunder or 25 Pa. Code Article III.

(5) One ton of VOCs from a single source during the term of the permit and 5.0 tons of VOCs at the facility during the term of the permit. This shall include emissions of a pollutant regulated under Section 112 of the Clean Air Act unless precluded by the Clean Air Act, the regulations thereunder or 25 Pa. Code Article III.

(6) Other sources and classes of sources determined to be of minor significance by the Department.

(d) In accordance with § 127.14, the permittee is authorized to install the following minor sources without the need for a plan approval or permit modification:

(1) Air conditioning or ventilation systems not designed to remove pollutants generated or released from other sources.

(2) Combustion units rated at 2,500,000 or less Btu per hour of heat input.

(3) Combustion units with a rated capacity of less than 10,000,000 Btu per hour heat input fueled by natural gas supplied by a public utility or by commercial fuel oils which are No. 2 or lighter, viscosity less than or equal to 5.82 c St, and which meet the sulfur content requirements of 25 Pa. Code §123.22 (relating to combustion units). For purposes of this permit, commercial fuel oil shall be virgin oil which has no reprocessed, recycled or waste material added.

(4) Space heaters which heat by direct heat transfer.

(5) Laboratory equipment used exclusively for chemical or physical analysis.

(6) Other sources and classes of sources determined to be of minor significance by the Department.

(e) This permit does not authorize de minimis emission increases if the emissions increase would cause one or more of the following:

(1) Increase the emissions of a pollutant regulated under Section 112 of the Clean Air Act except as authorized in Subparagraphs (c)(4) and (5) of this permit condition.

(2) Subject the facility to the prevention of significant deterioration requirements in 25 Pa. Code Chapter 127, Subchapter D and/or the new source review requirements in Subchapter E.

(3) Violate any applicable requirement of this permit, the Air Pollution Control Act, the Clean Air Act, or the regulations promulgated under either of the acts.

(f) Emissions authorized under this permit condition shall be included in the monitoring, recordkeeping and reporting requirements of this permit.

(g) Except for de minimis emission increases, installation of minor sources made pursuant to this permit condition and Plan Approval Exemptions under 25 Pa. Code § 127.14 (relating to exemptions), the permittee is prohibited from making changes or engaging in activities that are not specifically authorized under this permit without first applying for a plan approval. In accordance with § 127.14(b), a plan approval is not required for the construction, modification, reactivation, or installation of the sources creating the de minimis emissions increase.

(h) The permittee may not meet de minimis emission threshold levels by offsetting emission increases or decreases at the same source.

#014 [25 Pa. Code § 127.3]

Operational Flexibility.

The permittee is authorized to make changes within the facility in accordance with the regulatory provisions outlined in 25 Pa. Code § 127.3 (relating to operational flexibility) to implement the operational flexibility requirements provisions authorized under Section 6.1(i) of the Air Pollution Control Act and the operational flexibility terms and conditions of this permit. The provisions in 25 Pa. Code Chapter 127 which implement the operational flexibility requirements include the following:

(1) Section 127.14 (relating to exemptions)

(2) Section 127.447 (relating to alternative operating scenarios)

(3) Section 127.448 (relating to emissions trading at facilities with Federally enforceable emissions caps)

(4) Section 127.449 (relating to de minimis emission increases)

(5) Section 127.450 (relating to administrative operating permit amendments)

SECTION B. General State Only Requirements

(6) Section 127.462 (relating to minor operating permit modifications)

(7) Subchapter H (relating to general plan approvals and general operating permits)

#015 [25 Pa. Code § 127.11]

Reactivation

(a) The permittee may not reactivate a source that has been out of operation or production for at least one year unless the reactivation is conducted in accordance with a plan approval granted by the Department or in accordance with reactivation and maintenance plans developed and approved by the Department in accordance with 25 Pa. Code § 127.11a(a).

(b) A source which has been out of operation or production for more than five (5) years but less than 10 years may be reactivated and will not be considered a new source if the permittee satisfies the conditions specified in 25 Pa. Code § 127.11a(b).

#016 [25 Pa. Code § 127.36]

Health Risk-based Emission Standards and Operating Practice Requirements.

(a) When needed to protect public health, welfare and the environment from emissions of hazardous air pollutants from new and existing sources, the permittee shall comply with the health risk-based emission standards or operating practice requirements imposed by the Department, except as precluded by §§ 6.6(d)(2) and (3) of the Air Pollution Control Act [35 P.S. § 4006.6(d)(2) and (3)].

(b) A person challenging a performance or emission standard established by the Department has the burden to demonstrate that performance or emission standard does not meet the requirements of Section 112 of the Clean Air Act.

#017 [25 Pa. Code § 121.9]

Circumvention.

No person may permit the use of a device, stack height which exceeds good engineering practice stack height, dispersion technique or other technique which, without resulting in reduction of the total amount of air contaminants emitted, conceals or dilutes an emission of air contaminants which would otherwise be in violation of 25 Pa. Code Article III, except that with prior approval of the Department, the device or technique may be used for control of malodors.

#018 [25 Pa. Code §§ 127.402(d) & 127.442]

Reporting Requirements.

(a) The permittee shall comply with the applicable reporting requirements of the Clean Air Act, the regulations thereunder, the Air Pollution Control Act and 25 Pa. Code Article III including Chapters 127, 135 and 139.

(b) The permittee shall submit reports to the Department containing information the Department may prescribe relative to the operation and maintenance of any air contamination source.

(c) Reports, test data, monitoring data, notifications and requests for renewal of the permit shall be submitted to the:

Regional Air Program Manager
PA Department of Environmental Protection
(At the address given in the permit transmittal letter, or otherwise notified)

(d) Any records or information including applications, forms, or reports submitted pursuant to this permit condition shall contain a certification by a responsible official as to truth, accuracy and completeness. The certifications submitted under this permit shall require a responsible official of the facility to certify that based on information and belief formed after reasonable inquiry, the statements and information in the documents are true, accurate and complete.

(e) Any records, reports or information submitted to the Department shall be available to the public except for such

records, reports or information which meet the confidentiality requirements of § 4013.2 of the Air Pollution Control Act and §§ 112(d) and 114(c) of the Clean Air Act. The permittee may not request a claim of confidentiality for any emissions data generated for the facility.

#019 [25 Pa. Code §§ 127.441(c) & 135.5]

Sampling, Testing and Monitoring Procedures.

(a) The permittee shall comply with the monitoring, recordkeeping or reporting requirements of 25 Pa. Code Chapter 139 and the other applicable requirements of 25 Pa. Code Article III and additional requirements related to monitoring, reporting and recordkeeping required by the Clean Air Act and the regulations thereunder including the Compliance Assurance Monitoring requirements of 40 CFR Part 64, where applicable.

(b) Unless alternative methodology is required by the Clean Air Act and regulations adopted thereunder, sampling, testing and monitoring required by or used by the permittee to demonstrate compliance with any applicable regulation or permit condition shall be conducted in accordance with the requirements of 25 Pa. Code Chapter 139.

#020 [25 Pa. Code §§ 127.441(c) and 135.5]

Recordkeeping.

(a) The permittee shall maintain and make available, upon request by the Department, the following records of monitored information:

(1) The date, place (as defined in the permit) and time of sampling or measurements.

(2) The dates the analyses were performed.

(3) The company or entity that performed the analyses.

(4) The analytical techniques or methods used.

(5) The results of the analyses.

(6) The operating conditions as existing at the time of sampling or measurement.

(b) The permittee shall retain records of any required monitoring data and supporting information for at least five (5) years from the date of the monitoring, sample, measurement, report or application. Supporting information includes the calibration data and maintenance records and original strip-chart recordings for continuous monitoring instrumentation, and copies of reports required by the permit.

(c) The permittee shall maintain and make available to the Department upon request, records including computerized records that may be necessary to comply with the reporting, recordkeeping and emission statement requirements in 25 Pa. Code Chapter 135 (relating to reporting of sources). In accordance with 25 Pa. Code Chapter 135, § 135.5, such records may include records of production, fuel usage, maintenance of production or pollution control equipment or other information determined by the Department to be necessary for identification and quantification of potential and actual air contaminant emissions.

#021 [25 Pa. Code § 127.441(a)]

Property Rights.

This permit does not convey any property rights of any sort, or any exclusive privileges.

#022 [25 Pa. Code § 127.447]

Alternative Operating Scenarios.

The permittee is authorized to make changes at the facility to implement alternative operating scenarios identified in this permit in accordance with 25 Pa. Code § 127.447.

SECTION C. Site Level Requirements

I. RESTRICTIONS.

Emission Restriction(s).

 # 001 [25 Pa. Code §121.7]
Prohibition of air pollution.
No person may permit air pollution as that term is defined in the Air Pollution Control Act (35 P.S. Section 4003).

 # 002 [25 Pa. Code §123.1]
Prohibition of certain fugitive emissions
No person may permit the emission into the outdoor atmosphere of fugitive air contaminant from a source other than the following:

(a) construction or demolition of buildings or structures;

(b) grading, paving and maintenance of roads and streets;

(c) use of roads and streets. Emissions from material in or on trucks, railroad cars and other vehicular equipment are not considered as emissions from use of roads and streets;

(d) clearing of land;

(e) stockpiling of materials;

(f) open burning operations, as specified in 25 Pa. Code § 129.14;

(g) blasting in open pit mines. Emissions from drilling are not considered as emissions from blasting;

(h) coke oven batteries, provided the fugitive air contaminants emitted from any coke oven battery comply with the standards for visible fugitive emissions in 25 Pa. Code §§ 123.44 and 129.15 (relating to limitations of visible fugitive air contaminants from operation of any coke oven battery; and coke pushing operations); and

(i) sources and classes of sources other than those identified in (a)-(h), above, for which the permittee has obtained a determination from the Department that fugitive emissions from the source, after appropriate control, meet the following requirements:

(1) the emissions are of minor significance with respect to causing air pollution; and

(2) the emissions are not preventing or interfering with the attainment or maintenance of any ambient air quality standard.

 # 003 [25 Pa. Code §123.2]
Fugitive particulate matter
The permittee shall not allow the emission of fugitive particulate matter into the outdoor atmosphere from a source specified in Section C, Condition #002, if the emissions are visible at the point the emissions pass outside the person's property.

 # 004 [25 Pa. Code §123.31]
Limitations
The permittee shall not allow the emission into the outdoor atmosphere of any malodorous air contaminants from any source in such a manner that the malodors are detectable outside the property of the person on whose land the source is being operated.

 # 005 [25 Pa. Code §123.41]
Limitations
The permittee shall not allow the emission into the outdoor atmosphere of visible air contaminants in such a manner that the opacity of the emission is either of the following:

(a) Equal to or greater than 20% for a period or periods aggregating more than three (3) minutes in any one hour.

(b) Equal to or greater than 60% at any time.

SECTION C. Site Level Requirements

 # 006 [25 Pa. Code §123.42]
Exceptions
The emission limitation of 25 Pa. Code Section 123.41, shall not apply when:

(a) The presence of uncombined water is the only reason for failure of the emission to meet the limitations.

(b) The emission results from the operation of equipment used solely to train and test persons in observing the opacity of visible emissions.

(c) The emission results from sources specified in Section C, Condition #002, subsections (a) - (i).

 # 007 [25 Pa. Code §129.14]
Open burning operations
(a) The permittee shall not conduct open burning of materials in such a manner that:

(1) The emissions are visible, at any time, at the point such emissions pass outside the property of the person on whose land the open burning is being conducted.

(2) Malodorous air contaminants from the open burning are detectable outside the property of the person on whose land the open burning is being conducted.

(3) The emissions interfere with the reasonable enjoyment of life and property.

(4) A fire set in conjunction with the production of agricultural commodities in their unmanufactured state on the premises of the farm operation.

(5) The emissions cause damage to vegetation or property.

(6) The emissions are or may be deleterious to human or animal health.

(b) Exceptions. The requirements of Subsection (a) do not apply where the open burning operations result from:

(1) A fire set to prevent or abate a fire hazard, when approved by the Department and set by or under the supervision of a public official.

(2) Any fire set for the purpose of instructing personnel in fire fighting, when approved by the Department.

(3) A fire set for the prevention and control of disease or pests, when approved by the Department.

(4) A fire set solely for recreational or ceremonial purposes.

(5) A fire set solely for cooking food.

(c) This permit does not constitute authorization to burn solid waste pursuant to section 610 (3) of the Solid Waste Management Act 35 P.S. Section 6018.610 (3), or any other provision of the Solid Waste Management Act.

II. TESTING REQUIREMENTS.

 # 008 [25 Pa. Code §127.441]
Operating permit terms and conditions.
(a). If at any time the Department has cause to believe that air contaminant emissions from any source(s) listed in Section A, of this Permit, may be in excess of the limitations specified in this Permit, or established pursuant to, any applicable rule or regulation contained in 25 Pa. Code Article III, the permittee shall be required to conduct whatever tests are deemed necessary by the Department to determine the actual emission rate(s).

(b). Such testing shall be conducted in accordance with the provisions of 25 Pa. Code Chapter 139, when applicable, and in accordance with any restrictions or limitations established by the Department at such time as it notifies the permittee that testing is required.

III. MONITORING REQUIREMENTS.

 # 009 [25 Pa. Code §123.43]
Measuring techniques

Visible emissions may be measured using either of the following:

(a) A device approved by the Department and maintained to provide accurate opacity measurements.

(b) Observers, trained and qualified to measure plume opacity with the naked eye or with the aid of any device(s) approved by the Department.

 # 010 [25 Pa. Code §127.441]
Operating permit terms and conditions.

(a) The permittee shall monitor the facility weekly for the following:

(1) odors which may be objectionable (as per 25 Pa. Code §123.31);
(2) visible emissions (as per 25 Pa. Code §§123.41 and 123.42); and
(3) fugitive emissions (as per 25 Pa. Code §§ 123.1 and 123.2).

(b) Objectionable odors, fugitive emissions, and visible emissions that are caused or may be caused by operations at the site shall:

(1) be investigated;
(2) be reported to the facility management, or individual(s) designated by the permittee;
(3) have appropriate corrective action taken (for emissions that originate on-site); and
(4) be recorded in a permanent written log.
(5) for any observed problems, a first attempt at equipment repair must be made within 15 days of discovery, and DEP must be notified if the final repair is not completed in 30 days.

(c) After six (6) months of weekly monitoring, and upon the permittee's request, the Department will determine the feasibility of decreasing the frequency of monitoring to monthly.

(d) The Department reserves the right to change the above monitoring requirements at any time, based on but not limited to: the review of the compliance certification, complaints, monitoring results, and/or Department findings.

 # 011 [25 Pa. Code §127.441]
Operating permit terms and conditions.

The permittee shall calculate the total emissions of VOCs for the entire facility on a 12-month rolling sum basis.

IV. RECORDKEEPING REQUIREMENTS.

 # 012 [25 Pa. Code §127.441]
Operating permit terms and conditions.

The permittee shall maintain a record of all monitoring of fugitive emissions, visible emissions and odors, including those that deviate from the conditions found in this permit. The record of deviations shall contain, at a minimum, the following items:

(a) date, time, and location of the incident(s);
(b) the cause of the event; and
(c) the corrective action taken, if necessary, to abate the situation and prevent future occurrences.

 # 013 [25 Pa. Code §127.441]
Operating permit terms and conditions.

The permittee shall compile and record the total emissions of VOCs for the entire facility on a 12-month rolling sum basis.

 # 014 [25 Pa. Code §127.441]
Operating permit terms and conditions.
The permittee shall maintain records of all the facility's increases of emissions from the following categories:

(a). Deminimus increases without notification to the Department.
(b). Deminimus increases with notification to the Department, via letter.
(c). Increases resulting from a Request for Determination (RFD) to the Department.
(d). Increases resulting from the issuance of a plan approval and subsequent operating permit.

V. REPORTING REQUIREMENTS.

 # 015 [25 Pa. Code §127.441]
Operating permit terms and conditions.
The permittee shall report malfunctions to the Department which result in, or may possibly result in, the emission of air contaminants in excess of the limitations specified in this permit, or regulation contained in 25 Pa. Code Article III. Malfunctions shall be reported as follows:

(a) Any malfunction which poses an imminent danger to the public health, safety, welfare, and environment, shall be immediately reported to the Department by telephone. The telephone report of such malfunctions shall occur no later than two (2) hours after the incident. The permittee shall submit a written report of instances of such malfunctions to the Department within three (3) days of the telephone report.

(b) Unless otherwise required by this permit, any other malfunction that is not subject to the reporting requirement of subsection (a) above, shall be reported to the Department, in writing, within five (5) days of malfunction discovery.

(c) Telephone reports can be made to the Lancaster District Office at (717) 299-7601 during normal business hours or to the Department's Emergency Hotline (866) 825-0208 at any time.

(d) Written reports of malfunctions shall describe, at a minimum, the following:

(1). The malfunction(s).
(2). The emission(s).
(3). The duration.
(4). Any corrective action taken.

 # 016 [25 Pa. Code §127.441]
Operating permit terms and conditions.
[Additional authority for this permit condition is also derived from 40 CFR Part 68.]

(a). If required by Section 112(r) of the Clean Air Act, the permittee shall develop and implement an accidental release program consistent with requirements of the Clean Air Act, 40 C.F.R. Part 68 (relating to chemical accident prevention provisions) and the Federal Chemical Safety Information, Site Security and Fuels Regulatory Relief Act (P.L. 106-40).

(b). The permittee shall prepare and implement a Risk Management Plan (RMP) which meets the requirements of Section 112(r) of the Clean Air Act, 40 C.F.R. Part 68 and the Federal Chemical Safety Information, Site Security and Fuels Regulatory Relief Act when a regulated substance listed in 40 C.F.R. § 68.130 is present in a process in more than the threshold quantity at a facility. The permittee shall submit the RMP to the federal Environmental Protection Agency according to the following schedule and requirements:
(1). The permittee shall submit the first RMP to a central point specified by EPA no later than the latest of the following:
(i). Three years after the date on which a regulated substance is first listed under 40 C.F.R. § 68.130; or,
(ii). The date on which a regulated substance is first present above a threshold quantity in a process.

(2). The permittee shall submit any additional relevant information requested by the Department or EPA concerning the RMP and shall make subsequent submissions of RMPs in accordance with 40 C.F.R. § 68.190.

(3). The permittee shall certify that the RMP is accurate and complete in accordance with the requirements of 40 C.F.R. Part

68, including a checklist addressing the required elements of a complete RMP.

(c). As used in this permit condition, the term "process" shall be as defined in 40 C.F.R. § 68.3. The term "process" means any activity involving a regulated substance including any use, storage, manufacturing, handling, or on-site movement of such substances or any combination of these activities. For purposes of this definition, any group of vessels that are interconnected, or separate vessels that are located such that a regulated substance could be involved in a potential release, shall be considered a single process.

(d). If this facility is subject to 40 C.F.R. Part 68, as part of the certification required under this permit, the permittee shall:

(1). Submit a compliance schedule for satisfying the requirements of 40 C.F.R. Part 68 by the date specified in 40 C.F.R. § 68.10(a); or,

(2). Certify that this facility is in compliance with all requirements of 40 C.F.R. Part 68 including the registration and submission of the RMP.

(e). If this facility is subject to 40 C.F.R. Part 68, the permittee shall maintain records supporting the implementation of an accidental release program for five (5) years in accordance with 40 C.F.R. § 68.200.

(f). When this facility is subject to the accidental release program requirements of Section 112(r) of the Clean Air Act and 40 C.F.R. Part 68, appropriate enforcement action will be taken by the Department if the permittee fails to register and submit the RMP or a revised plan pursuant to 40 C.F.R. Part 68.

 # 017 [25 Pa. Code §135.3]
Reporting

[Additional authority for this permit condition is also derived from 25 Pa. Code § 127.441.]

If the permittee has been previously advised by the Department to submit a source report, the permittee shall submit by March 1, of each year, a source report for the preceding calendar year. The report shall include information from all previously reported sources, new sources which were first operated during the preceding calendar year, and sources modified during the same period which were not previously reported, including those sources listed in the Miscellaneous Section of this permit.

The permittee may request an extension of time from the Department for the filing of a source report, and the Department may grant the extension for reasonable cause.

VI. WORK PRACTICE REQUIREMENTS.

 # 018 [25 Pa. Code §123.1]
Prohibition of certain fugitive emissions

The permittee shall take all reasonable actions to prevent particulate matter from becoming airborne from any source specified in Section C, Condition #002(a) -(i). These actions shall include, but are not limited to, the following:

(a) Use, where possible, of water or chemicals for control of dust in the demolition of buildings or structures, construction operations, the grading of roads, or the clearing of land.

(b) Application of asphalt, oil, water, or suitable chemicals on dirt roads, material stockpiles, and other surfaces, which may give rise to airborne dusts.

(c) Paving and maintenance of roadways.

(d) Prompt removal of earth or other material from paved streets onto which earth or other material has been transported by trucking or earth moving equipment, erosion by water, or other means.

 # 019 [25 Pa. Code §127.441]
Operating permit terms and conditions.

The permittee shall immediately, upon discovery, implement measures, which may include the application for the

installation of an air cleaning device(s), if necessary, to reduce the air contaminant emissions to within applicable limitations, if at any time the operation of the source(s) identified in Section A, of this permit, is causing the emission of air contaminants in excess of the limitations specified in, or established pursuant to, 25 Pa. Code Article III or any other applicable rule promulgated under the Clean Air Act.

 # 020 [25 Pa. Code §127.444]

Compliance requirements.

The permittee shall operate and maintain all sources and any air cleaning devices identified in this operating permit in accordance with the manufacturers' recommendations/specifications, as well as in a manner consistent with good operating practices.

VII. ADDITIONAL REQUIREMENTS.

 # 021 [25 Pa. Code §127.441]

Operating permit terms and conditions.

Nothing herein shall be construed to supersede, amend, or authorize violation of the provisions of any valid and applicable local law, ordinance, or regulation, or any court order, provided that said local law, ordinance, or regulation, or court order is not preempted by the Air Pollution Control Act, Act of January 8, 1960, P.L. 2119 (1959), as amended, 35 P.S. §4001 et seq., and the rules and regulations promulgated thereunder. It is the applicant's responsibility, separate and apart from the application process, to obtain any authorizations, permits, approvals, or licenses that the applicant might need in order to perform the construction permitted by this plan approval, including access, ownership, or lease of the subject parcel or parcels of property. The Department incurs no enforcement obligations with respect to this condition.

 # 022 [25 Pa. Code §127.441]

Operating permit terms and conditions.

The potential fugitive plus stack emissions from this facility, after appropriate control as prescribed in this permit, have been estimated as follows: 0.06 tpy of NOx, 0.24 tpy of CO, 0.76 tpy of VOCs, 0.01 tpy of Methane and 108 tpy of GHGs. The Department has determined these emissions remaining after appropriate control are of minor significance with regard to causing air pollution, and will not prevent or interfere with the attainment or maintenance of an ambient air quality standard.

VIII. COMPLIANCE CERTIFICATION.

No additional compliance certifications exist except as provided in other sections of this permit including Section B (relating to State Only General Requirements).

IX. COMPLIANCE SCHEDULE.

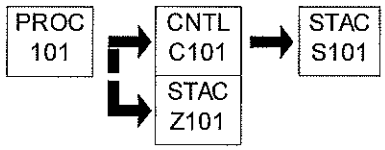
No compliance milestones exist.

SECTION D. Source Level Requirements

Source ID: 101 Source Name: PUMP STATION SEAL LEAKS

Source Capacity/Throughput:

Conditions for this source occur in the following groups: GRP 01



I. RESTRICTIONS.

No additional requirements exist except as provided in other sections of this permit including Section B (State Only General Requirements) and/or Section E (Source Group Restrictions).

II. TESTING REQUIREMENTS.

No additional testing requirements exist except as provided in other sections of this permit including Section B (State Only General Requirements) and/or Section E (Source Group Restrictions).

III. MONITORING REQUIREMENTS.

No additional monitoring requirements exist except as provided in other sections of this permit including Section B (State Only General Requirements) and/or Section E (Source Group Restrictions).

IV. RECORDKEEPING REQUIREMENTS.

No additional record keeping requirements exist except as provided in other sections of this permit including Section B (State Only General Requirements) and/or Section E (Source Group Restrictions).

V. REPORTING REQUIREMENTS.

No additional reporting requirements exist except as provided in other sections of this permit including Section B (State Only General Requirements) and/or Section E (Source Group Restrictions).

VI. WORK PRACTICE REQUIREMENTS.

No additional work practice requirements exist except as provided in other sections of this permit including Section B (State Only General Requirements) and/or Section E (Source Group Restrictions).

VII. ADDITIONAL REQUIREMENTS.

No additional requirements exist except as provided in other sections of this permit including Section B (State Only General Requirements) and/or Section E (Source Group Restrictions).

SECTION D. Source Level Requirements

Source ID: 103 Source Name: MAINTENANCE OPERATIONS

Source Capacity/Throughput:

Conditions for this source occur in the following groups: GRP 01

I. RESTRICTIONS.

No additional requirements exist except as provided in other sections of this permit including Section B (State Only General Requirements) and/or Section E (Source Group Restrictions).

II. TESTING REQUIREMENTS.

No additional testing requirements exist except as provided in other sections of this permit including Section B (State Only General Requirements) and/or Section E (Source Group Restrictions).

III. MONITORING REQUIREMENTS.

No additional monitoring requirements exist except as provided in other sections of this permit including Section B (State Only General Requirements) and/or Section E (Source Group Restrictions).

IV. RECORDKEEPING REQUIREMENTS.

No additional record keeping requirements exist except as provided in other sections of this permit including Section B (State Only General Requirements) and/or Section E (Source Group Restrictions).

V. REPORTING REQUIREMENTS.

No additional reporting requirements exist except as provided in other sections of this permit including Section B (State Only General Requirements) and/or Section E (Source Group Restrictions).

VI. WORK PRACTICE REQUIREMENTS.

No additional work practice requirements exist except as provided in other sections of this permit including Section B (State Only General Requirements) and/or Section E (Source Group Restrictions).

VII. ADDITIONAL REQUIREMENTS.

No additional requirements exist except as provided in other sections of this permit including Section B (State Only General Requirements) and/or Section E (Source Group Restrictions).

SECTION E. Source Group Restrictions.

Group Name: GRP 01

Group Description: Pump Station & Maintenance

Sources included in this group

ID	Name
101	PUMP STATION SEAL LEAKS
103	MAINTENANCE OPERATIONS

I. RESTRICTIONS.

Emission Restriction(s).

 # 001 [25 Pa. Code §127.441]

Operating permit terms and conditions.

The enclosed flare shall be operated with no visible emissions and no visible flame.

Fuel Restriction(s).

 # 002 [25 Pa. Code §127.441]

Operating permit terms and conditions.

The permittee shall burn only propane, butane, ethane or a mixture of these in the enclosed flare.

 # 003 [25 Pa. Code §127.441]

Operating permit terms and conditions.

The enclosed flare pilot light shall burn propane gas.

II. TESTING REQUIREMENTS.

No additional testing requirements exist except as provided in other sections of this permit including Section B (State Only General Requirements).

III. MONITORING REQUIREMENTS.

No additional monitoring requirements exist except as provided in other sections of this permit including Section B (State Only General Requirements).

IV. RECORDKEEPING REQUIREMENTS.

 # 004 [25 Pa. Code §127.441]

Operating permit terms and conditions.

When the enclosed flare is not operational, the permittee shall record the downtime and the associated emissions.

 # 005 [25 Pa. Code §127.441]

Operating permit terms and conditions.

The permittee shall maintain detailed records of all maintenance performed on the enclosed flare. The permittee shall retain these records for a minimum of five (5) years and shall make them available to the department upon its request.

V. REPORTING REQUIREMENTS.

No additional reporting requirements exist except as provided in other sections of this permit including Section B (State Only General Requirements).

VI. WORK PRACTICE REQUIREMENTS.

 # 006 [25 Pa. Code §127.441]

Operating permit terms and conditions.

The permittee shall maintain a system to notify the operator immediately when the enclosed flare is not operational.

SECTION E. Source Group Restrictions.

VII. ADDITIONAL REQUIREMENTS.

No additional requirements exist except as provided in other sections of this permit including Section B (State Only General Requirements).

SECTION F. Alternative Operation Requirements.

No Alternative Operations exist for this State Only facility.

SECTION G. Emission Restriction Summary.

No emission restrictions listed in this section of the permit.

SECTION H. Miscellaneous.

****** End of Report ******