Mullins, Robert A <robert.a.mullins@wv.gov>

R30-05100125-2024

1 message

Mullins, Robert A <robert.a.mullins@wv.gov> Tue, Oct 1, 2024 at 9:56 AM
To: WFUhl@marathonpetroleum.com, CGKelley@marathonpetroleum.com, "Juarez, Allie M." <AJuarez@marathonpetroleum.com>

Attached is the Pre-Draft Title V Renewal and Factsheet for MarkWest Liberty Midstream and Resources L.L.C.' Majorsville Gas Plant. Please review and respond with any questions or comments by October 16, 2024 so that I can address any questions/comments before sending the permit out to Notice.

Thanks,

--

Robert Mullins

WV Department of Environmental Protection

Division of Air Quality

601 57th Street, SE

Charleston, WV 25304

Phone: (304)926-0499 ext. 41286

2 attachments

Pre-DPPermit R30-05100125-2024.pdf
908K

Pre-DPFactSheet_R30-05100125-2024.pdf
236K

Mullins, Robert A <robert.a.mullins@wv.gov>

Re: 051-00125 SLEIS question

1 message

Porter, David J <david.j.porter@wv.gov> Wed, Aug 28, 2024 at 4:13 PM
To: "Mullins, Robert A" <robert.a.mullins@wv.gov>
Cc: "Kemper, Matt A" <matt.a.kemper@wv.gov>, Megan E Grose <megan.e.grose@wv.gov>, CPhelpsSpencer@marathonpetroleum.com

2023 Majorsville Amendment Heaters.eml
(45K)

Done

Note that the middle 2 units on Claudia's spreadsheet were actually H2731 and H1731

On Wed, Aug 28, 2024 at 12:29 PM Mullins, Robert A <robert.a.mullins@wv.gov> wrote:

> Dave,
>
> I'me working on the Title V renewal for MarWest's Majorsville and notified them of a Potential error in their 2023 SLEIS data. They reviewed and submitted an amendment to the data on 8/12/24, I checked SLEIS earlier today and it still has the incorrect data. Can you let me know when SLEIS has been corrected so I can use the corrected data in my factsheet.
>
> R.A.

Mullins, Robert A <robert.a.mullins@wv.gov>

RE: [EXTERNAL] R30-05100125-2024

1 message

Juarez, Allie M. <AJuarez@marathonpetroleum.com> Wed, Aug 14, 2024 at 1:37 PM
To: "Mullins, Robert A" <robert.a.mullins@wv.gov>, "Uhl, William F." <WFUhl@marathonpetroleum.com>, "Kelley, Christopher G." <CGKelley@marathonpetroleum.com>

Hi Robert,

I spoke with the person who prepared the SLEIS report and it appears there was a typo for H-3741 where 0.581 was entered instead of 0.0581. See the attached amendment which was sent to David Porter on 8/12/24.

Allie Juarez
Environmental Engineer
4600 J Barry Court, Suite 500
Canonsburg, PA 15317
Mobile: 412-815-8886
ajuarez@marathonpetroleum.com

From: Mullins, Robert A <robert.a.mullins@wv.gov>
Sent: Thursday, August 8, 2024 11:42 AM
To: Uhl, William F. <WFUhl@marathonpetroleum.com>; Kelley, Christopher G. <CGKelley@marathonpetroleum.com>; Juarez, Allie M. <AJuarez@marathonpetroleum.com>
Subject: [EXTERNAL] R30-05100125-2024

I'm working on the Title V permit renewal for the Majorsville Gas Plant and in writing the Factsheet I noticed that the 2023 actual facility-wide PM emissions in SLEIS exceeds the facility-Wide PM PTE emissions in the Title V Fact sheet. Can you review the 2023 Actual Emissions to determine why.

--

Robert Mullins

WV Department of Environmental Protection

Division of Air Quality

601 57th Street, SE

Charleston, WV 25304

Phone: (304)926-0499 ext. 41286

Majorsville Amendments.xlsx
14K

STATE	FACILITY_NAME	FACILITY_ID	SOURCE_NAME	RATING	RATING_UNIT	ANNUAL_HRS	HHV	FUEL_TYPE	VOC	CO	NOX	PM_10	PMCOND	SO2	HCHO	BENZENE	TOLUENE	'HYLBENZEI	HEXANE
WV	Majorsville Gas Plant	237	H-7781	16.07	mmBtu/hr	58.23	1063.308	Natural Gas	0.0024	0.037	0.0449	0.0008	0.0025	0.0003	0	0	0		0.0008
WV	Majorsville Gas Plant	237	MJ-H-D2741	14.8	mmBtu/hr	8760	1063.308	Natural Gas	1.2317	2.6578	2.5929	2.1391	0.6352	0.0366	0.0168	0.0005	0.0007		0.4031
WV	Majorsville Gas Plant	237	MJ1-H-D1741	14.8	mmBtu/hr	8760	1063.308	Natural Gas	1.2317	2.6578	2.5929	2.1391	0.6352	0.0366	0.0168	0.0005	0.0007		0.4031
WV	Majorsville Gas Plant	237	MJ3-H-3741	7.69	mmBtu/hr	8454	1063.308	Natural Gas	0.1682	1.3327	1.7228	0.0581	0.1743	0.0183	0.0023	0.0001	0.0001		0.055
												Corrections Below							
WV	Majorsville Gas Plant	237	H-7781	16.07	mmBtu/hr	58.23	1063.308	Natural Gas	0.0024	0.037	0.0449	0.0008	0.0025	0.0003	0	0	0		0.0008
WV	Majorsville Gas Plant	237	MJ-H-D2741	14.8	mmBtu/hr	8760	1063.308	Natural Gas	1.2317	2.6578	2.5929	0.1159	0.6352	0.0366	0.0168	0.0005	0.0007		0.4031
WV	Majorsville Gas Plant	237	MJ1-H-D1741	14.8	mmBtu/hr	8760	1063.308	Natural Gas	1.2317	2.6578	2.5929	0.1159	0.6352	0.0366	0.0168	0.0005	0.0007		0.4031
WV	Majorsville Gas Plant	237	MJ3-H-3741	7.69	mmBtu/hr	8454	1063.308	Natural Gas	0.1682	1.3327	1.7228	0.0581	0.1743	0.0183	0.0023	0.0001	0.0001		0.055

Mullins, Robert A <robert.a.mullins@wv.gov>

Completeness Determination, Majorsville Gas Plant, Application No. R30-05100125-2024

1 message

Mullins, Robert A <robert.a.mullins@wv.gov> Thu, May 30, 2024 at 10:51 AM
To: WFUhl@marathonpetroleum.com, CGKelley@marathonpetroleum.com, "Juarez, Allie M." <AJuarez@marathonpetroleum.com>

From	Robert Mullins
To	William F. Uhl; Christopher Kelley; Alexandra Juarez
Subject	Completeness Determination, Majorsville Gas Plant, Application No. R30-05100125-2024

Your Title V renewal application for a permit to operate the above referenced facility was received by this Division on May 3, 2024. After review of said application, it has been determined that the application is administratively complete as submitted. Therefore, the above referenced facility qualifies for an Application Shield.

The applicant has the duty to supplement or correct the application. Any applicant who fails to submit any relevant facts or who has submitted incorrect information in a permit application shall, upon becoming aware of such failure or incorrect submittal, promptly submit such supplementary facts or corrected information. In addition, an applicant shall provide additional information as necessary to address any requirements that become applicable to the source after the date it filed a complete application but prior to release of a draft permit.

The submittal of a complete application shall not affect the requirement that any source have all **preconstruction permits** required under the rules of the Division.

If during the processing of this application it is determined that additional information is necessary to evaluate or take final action on this application, a request for such information will be made in writing with a reasonable deadline for a response. Until which time as your renewal permit is issued or denied, please continue to operate this facility in accordance with 45CSR30, section 6.3.c. which states: *If the Secretary fails to take final action to deny or approve a timely and complete permit application before the end of the term of the previous permit, the permit shall not expire until the renewal permit has been issued or denied, and any permit shield granted for the permit shall continue in effect during that time.* This protection shall cease to apply if, subsequent to the

completeness determination made pursuant to paragraph 6.1.d. of 45CSR30 and as required by paragraph 4.1.b., the applicant fails to submit by the deadline specified in writing any additional information identified as being needed to process the application.

Please remember, **failure of the applicant to timely submit information required or requested to process the application may cause the Application Shield to be revoked.** Should you have any questions regarding this determination, please contact me.

Sincerely,

--

Robert Mullins

WV Department of Environmental Protection

Division of Air Quality

601 57th Street, SE

Charleston, WV 25304

Phone: (304)926-0499 ext. 41286

Mullins, Robert A <robert.a.mullins@wv.gov>

WV DAQ Title V Permit Application Status for MarkWest Liberty Midstream & Resources, LLC; Majorsville Gas Plant

1 message

Mink, Stephanie R <stephanie.r.mink@wv.gov> Tue, May 7, 2024 at 10:40 AM
To: "Uhl, William F." <wfuhl@marathonpetroleum.com>, "Juarez, Allie M." <ajuarez@marathonpetroleum.com>
Cc: Carrie McCumbers <carrie.mccumbers@wv.gov>, Robert A Mullins <robert.a.mullins@wv.gov>

RE: Application Status

MarkWest Liberty Midstream and Resources LLC

Majorsville Gas Plant

Facility ID No. 051-00125

Application No. R30-05100125-2024

Dear Mr. Uhl,

Your application for a Title V Permit Renewal for MarkWest Liberty Midstream and Resources LLC's Majorsville Gas Plant was received by this Division on May 3, 2024, and was assigned to Robert "R.A." Mullins.

Should you have any questions, please contact the assigned permit writer, Robert "R.A." Mullins, at 304-926-0499, extension 41286, or Robert.A.Mullins@wv.gov.

--

Stephanie Mink

Environmental Resources Associate

West Virginia Department of Environmental Protection

Division of Air Quality, Title V & NSR Permitting

601 57th Street SE

Charleston, WV 25304

Phone: 304-926-0499 x41281

MarkWest Liberty Midstream and Resources, L.L.C.
1515 Arapahoe Street
Tower 1, Suite 1600
Denver, CO 80202
(303) 925-9200

Received
May 3, 2024
WV DEP/Div of Air Quality

May 1, 2024

Ms. Laura Crowder
West Virginia Department of Environmental Protection
Division of Air Quality
Charleston, WV 25304

Re: MarkWest Liberty Midstream & Resources L.L.C.
Majorsville Gas Plant

Dear Ms. Crowder:

MarkWest Liberty Midstream & Resources L.L.C. (MPLX) hereby submits a Title V Operating Permit Renewal application for the Majorsville Gas Plant (facility) located at 1700 Majorsville Road, in Dallas, Marshall County, West Virginia. The facility began operations in September 2010, and is currently operating under permit R13-2818N and Title V permit R30-05100125-2019(MM04).

Should you have any questions about this Title V renewal application, please contact me at (412) 815-8886 or via email at ajuarez@marathonpetroleum.com.

Sincerely,

Alexandra M. Juarez
Environmental Engineer

Table of Contents

Section 1
Facility Information/Process Description

WEST VIRGINIA DEPARTMENT OF ENVIRONMENTAL PROTECTION

DIVISION OF AIR QUALITY

601 57th Street SE

Charleston, WV 25304

Phone: (304) 926-0475

www.dep.wv.gov/daq

INITIAL/RENEWAL TITLE V PERMIT APPLICATION - GENERAL FORMS

Section 1: General Information

1. **Name of Applicant (As registered with the WV Secretary of State's Office):** MarkWest Liberty Midstream and Resources, L.L.C	**2. Facility Name or Location:** Majorsville Gas Plant
3. DAQ Plant ID No.: 051-00125	**4. Federal Employer ID No. (FEIN):** 30-0528059

5. **Permit Application Type:**

☐ Initial Permit — When did operations commence? 09/2010

☒ Permit Renewal — What is the expiration date of the existing permit? 11/05/2024

☐ Update to Initial/Renewal Permit Application

6. Type of Business Entity:

☐ Corporation ☐ Governmental Agency ☒ LLC
☐ Partnership ☐ Limited Partnership

8. Number of onsite employees:

21

7. Is the Applicant the:

☐ Owner ☐ Operator ☒ Both

If the Applicant is not both the owner and operator, please provide the name and address of the other party.

_____

_____

_____

9. Governmental Code:

☒ Privately owned and operated; 0
☐ Federally owned and operated; 1
☐ State government owned and operated; 2
☐ County government owned and operated; 3
☐ Municipality government owned and operated; 4
☐ District government owned and operated; 5

10. Business Confidentiality Claims

Does this application include confidential information (per 45CSR31)? ☐ Yes ☒ No

If yes, identify each segment of information on each page that is submitted as confidential, and provide justification for each segment claimed confidential, including the criteria under 45CSR§31-4.1, and in accordance with the DAQ's *"PRECAUTIONARY NOTICE-CLAIMS OF CONFIDENTIALITY"* guidance.

11. Mailing Address		
Street or P.O. Box: 1515 Arapahoe Street, Tower 1, Suite 1600		
City: Denver	**State:** CO	**Zip:** 80202-2137
Telephone Number: (303) 925-9200	**Fax Number:** (303) 290-8769	

12. Facility Location		
Street: 1700 Majorsville Road	**City:** Dallas	**County:** Marshall
UTM Easting: 540.95 km	**UTM Northing:** 4,423.83 km	**Zone:** ☒ 17 or ☐ 18
Directions: From Dallas, head south on Dallas Pike Rd toward Dallas St. Turn right onto Number 2 Ridge Rd (1.4 mi), turn left onto Warton Hill Rd (341 ft), take the first right to stay on Warton Hill Rd (2.6 mi), turn right onto Calis Majorsville Rd (0.2 mi), destination is on the right.		
Portable Source? ☐ Yes ☒ No		
Is facility located within a nonattainment area? ☐ Yes ☒ No		**If yes, for what air pollutants?**
Is facility located within 50 miles of another state? ☒ Yes ☐ No		**If yes, name the affected state(s).** Pennsylvania, Ohio
Is facility located within 100 km of a Class I Area[1]? ☐ Yes ☒ No **If no, do emissions impact a Class I Area[1]?** ☐ Yes ☒ No		**If yes, name the area(s).**

[1] *Class I areas include Dolly Sods and Otter Creek Wilderness Areas in West Virginia, and Shenandoah National Park and James River Face Wilderness Area in Virginia.*

13. Contact Information		
Responsible Official: William F. Uhl		**Title:** Operations Director
Street or P.O. Box: 43050 Industrial Park Road		
City: Cadiz	**State:** OH	**Zip:** 43907
Telephone Number: (724) 514-4363	**Fax Number:**	
E-mail address: wfuhl@marathonpetroleum.com		
Environmental Contact: Christopher Kelley		**Title:** Environmental Manager
Street or P.O. Box: 440 Hartman Road		
City: Evans City	**State:** PA	**Zip:** 16033
Telephone Number: (412) 260-0294	**Fax Number:**	
E-mail address: cgkelley@marathonpetroleum.com		
Application Preparer: Alexandra Juarez		**Title:** Environmental Engineer
Company: MPLX, L.P.		
Street or P.O. Box: 4600 J Barry Court, Suite 500		
City: Canonsburg	**State:** PA	**Zip:** 15317
Telephone Number: (412) 815-8886	**Fax Number:**	
E-mail address: ajuarez@marathonpetroleum.com		

14. Facility Description

List all processes, products, NAICS and SIC codes for normal operation, in order of priority. Also list any process, products, NAICS and SIC codes associated with any alternative operating scenarios if different from those listed for normal operation.

Process	Products	NAICS	SIC
Natural Gas Processing	Pipeline grade natural gas and natural gas liquids	211112	1311

Provide a general description of operations.

Natural gas from surrounding area wells enters the facility through an inlet separator which removes any free liquids entrained in the gas. The gas is subsequently compressed, and is then sent through a molecular sieve to remove any remaining liquids from the gas stream. The gas is then cooled through a cryogenic process which serves to remove ethane and heavier hydrocarbons from the gas stream. The remaining gas stream (mostly methane) is compressed and transferred offsite via pipeline. The mixed hydrocarbon or natural gas liquid (NGL) stream then passes through the de-ethanizer to separate the ethane. Ethane is transferred off site via pipeline. The remaining de-ethanized NGL stream is transferred off site via pipeline.

15. Provide an **Area Map** showing plant location as **ATTACHMENT A**.

16. Provide a **Plot Plan(s)**, e.g. scaled map(s) and/or sketch(es) showing the location of the property on which the stationary source(s) is located as **ATTACHMENT B**. For instructions, refer to "Plot Plan - Guidelines."

17. Provide a detailed **Process Flow Diagram(s)** showing each process or emissions unit as **ATTACHMENT C**. Process Flow Diagrams should show all emission units, control equipment, emission points, and their relationships.

Section 2
Applicable Requirements

Section 2: Applicable Requirements

18. Applicable Requirements Summary	
Instructions: Mark all applicable requirements.	
☐ SIP	☐ FIP
☐ Minor source NSR (45CSR13)	☐ PSD (45CSR14)
☐ NESHAP (45CSR34)	☐ Nonattainment NSR (45CSR19)
☒ Section 111 NSPS	☐ Section 112(d) MACT standards
☐ Section 112(g) Case-by-case MACT	☒ 112(r) RMP
☐ Section 112(i) Early reduction of HAP	☐ Consumer/commercial prod. reqts., section 183(e)
☐ Section 129 Standards/Reqts.	☐ Stratospheric ozone (Title VI)
☐ Tank vessel reqt., section 183(f)	☐ Emissions cap 45CSR§30-2.6.1
☐ NAAQS, increments or visibility (temp. sources)	☐ 45CSR27 State enforceable only rule
☒ 45CSR4 State enforceable only rule	☐ Acid Rain (Title IV, 45CSR33)
☐ Emissions Trading and Banking (45CSR28)	☐ **C**ompliance **A**ssurance **M**onitoring (40CFR64)
☐ CAIR NO_x Annual Trading Program (45CSR39)	☐ CAIR NO_x Ozone Season Trading Program (45CSR40)
☐ CAIR SO_2 Trading Program (45CSR41)	

19. Non Applicability Determinations

List all requirements which the source has determined not applicable and for which a permit shield is requested. The listing shall also include the rule citation and the reason why the shield applies.

State Implementation Plan: This application does not involve a stationary source to be located in a non-attainment area subject to a SIP.

Federal Implementation Plan: No Federal Implementation Plan is in effect where this stationary source is located.

45 CSR 14 – Prevention of Significant Deterioration: The facility is not a major stationary source as defined by the PSD rule, and is therefore not subject to the provisions of this rule.

45 CSR 19 – Nonattainment New Source Review: The facility is located in Marshall County, an area that is non-attainment for SO_2. The facility is not a major source of SO_2, therefore this rule does not apply.

45 CSR 27 – Toxic Air Pollutants: The facility is not a chemical process unit as defined in the rule, therefore this rule does not apply.

45 CSR 28 – Emissions Trading and Banking: MPLX does not voluntarily choose to participate in an emission reduction credit trading program.

45 CSR 30-2.6.1: The facility is not subject to any emissions caps as provided by this rule.

45 CSR 33 – Acid Rain Program: The facility is not an affected source under the provisions of the Acid Rain Program, therefore this rule does not apply.

45 CSR 39 – CAIR NO_x Annual Trading Program: There are no CAIR NO_x Annual units present at the facility, therefore the requirements of this rule do not apply.

45 CSR 40 – CAIR NO_x Ozone Season Trading Program: There are no CAIR NO_x Ozone Season units present at the facility, therefore the requirements of this rule do not apply.

45 CSR 41 – CAIR SO_2 Annual Trading Program: There are no CAIR SO_2 Annual units present at the facility, therefore the requirements of this rule do not apply.

Section 112(d) MACT standards: The facility is not a major source of hazardous air pollutants, therefore this rule does not apply.

Section 112(g) MACT standards: The facility is not a major source of hazardous air pollutants, therefore this rule does not apply.

Section 112(i) MACT standards: The facility is not a major source of hazardous air pollutants, therefore this rule does not apply.

Section 183(e) Consumer/commercial Product Requirements: Operation of the facility does not involve the manufacture or sale of consumer or commercial products and will not be subject to this regulatory provision.

Section 129 Standards/Requirements: Operation of this facility does not involve solid waste combustion or incineration; therefore, this rule does not apply.

Section 183(f) – Tank Vessel Requirements: There are no marine tank vessels present at the facility, therefore this rule does not apply.

NAAQS, increment or visibility (temp. sources): There are no temporary sources present at the facility, therefore this rule does not apply.

Stratospheric Ozone (Title IV): The facility does not use Class I ozone-depleting substances (ODS) including chlorofluorocarbons (CFC) and Class II ODS, which are hydrochlorofluorcarbons (HCFC), so this provision does not apply.

☒ Permit Shield

19. Non Applicability Determinations *(Continued)* - *Attach additional pages as necessary.*

List all requirements which the source has determined not applicable and for which a permit shield is requested. The listing shall also include the rule citation and the reason why the shield applies.

40 CFR 60 Subpart Dc – Standards of Performance for Small Industrial-Commercial-Institutional Steam Generating Units: This subpart applies to steam generating units with maximum design heat input capacity of 100 mmbtu/hr or less, but greater than or equal to 10 mmbtu/hr. All the heaters at the facility are process heaters, which are excluded from the definition of steam generating unit. Therefore, this subpart does not apply.

40 CFR 60 Subpart LLL – Standards of Performance for SO_2 Emissions from Onshore Natural Gas Processing for Which Construction, Reconstruction, or Modification Commenced After January 20, 1984, and on or Before August 23, 2011: There are no sweetening units, as defined in this subpart, present at the facility. Therefore, this subpart does not apply.

40 CFR 64 – Compliance Assurance Monitoring: Under General Applicability, CAM applies to pollutant-specific emissions units at a major source that are required to obtain a Part 70 permit, if three criteria are satisfied. The first criteria requires that the unit is subject to an emission limitation or standard for the applicable regulated air pollutant , other than an emission limitation or standard that is exempt under paragraph (b)(1).

Per section (b)(1)(i), emission limitations or standards proposed by the Administrator after November 15, 1990 pursuant to Section 111 or 112 of the Act are exempt emission limitations or standards.

The compressor engines (C-102, C103, and C-104) and their control devices operating at the facility are subject to the emission limitations and standards of 40 CFR 60 Subpart JJJJ, which are contained in Section 111 of the Act and were promulgated after November 15, 1990. This rule does not apply to the compressor engines.

The flares (FL-991, FL-1991) control maintenance blowdowns and emergency process venting during upset conditions. Maintenance blowdowns and emergency process venting are not subject to emission limitations or standards. The first of three criteria is not satisfied for CAM applicability, therefore this rule does not apply to the flares.

☒ Permit Shield

20. Facility-Wide Applicable Requirements

List all facility-wide applicable requirements. For each applicable requirement, include the underlying rule/regulation citation and/or construction permit with the condition number. (*Note: Title V permit condition numbers alone are not the underlying applicable requirements*).

Permit R13-2818E Conditions:

3.1.1. Open burning [45CSR§6-3.1]

3.1.2. Open burning exemptions [45CSR§6-3.2]

3.1.3. Asbestos [40CFR§61.145(b) and 45CSR§34]

3.1.4. Odor [45CSR§4-3.1]

3.1.5. Standby plan for reducing emissions [45CSR§11-5.2.]

3.1.6. Emission Inventory [WV Code § 22-5-4(a)(14)]

3.1.7. Ozone-depleting substances [40 C.F.R. 82, Subpart F]

3.1.8. Risk Management Plan [40 C.F.R. 68]

3.1.9. Minor Source of Hazardous Air Pollutant (HAP) [45CSR13]

3.1.10. Operation and Maintenance of Air Pollution Control Equipment [45CSR13-5.10.]

3.1.11. Maximum Throughput Limitation [45CSR13]

3.3.1. Stack Testing [WV Code § 22-5-4(a)(14-15) and 45CSR13]

3.4.1. Monitoring Information [45CSR30-5.1.c.2.A and R13-2818, 4.1.1.]

3.4.2. Retention of Records [45CSR30-5.1.c.2.B]

3.4.3. Odors [45CSR30-5.1.c. State-Enforceable only]

3.4.4. Record of Malfunctions of Air Pollution Control Equipment [45CSR13, R13-2818, 4.1.4.]

3.5.1. Responsible Official [45CSR30-4.4. and 5.1.c.3.D.]

3.5.2. Confidential Information [45CSR30-5.1.c.3.E.]

3.5.3. Correspondence

3.5.4. Fees [45CSR30-8]

3.5.5. Compliance certification [45CSR30-5.3.e.]

3.5.6. Semi-annual monitoring reports [45CSR30-5.1.c.3.A.]

3.5.8. Deviations [45CSR30-5.1.c.3.B.-C.]

3.5.9. New applicable requirements [45CSR30-4.3.h.1.B]

☒ Permit Shield

For all facility-wide applicable requirements listed above, provide monitoring/testing / recordkeeping / reporting which shall be used to demonstrate compliance. If the method is based on a permit or rule, include the condition number and/or citation. (Note: Each requirement listed above must have an associated method of demonstrating compliance. If there is not already a required method in place, then a method must be proposed.)

Section	Monitoring	Testing	Recordkeeping	Reporting	Condition or Citation
3.1.1	NA	NA	NA	Notification	45CSR§6-3.1
3.1.2	NA	NA	NA	NA	45CSR§6-3.2
3.1.3	NA	NA	Asbestos inspection	Notification	40CFR§61.145(b), 45CSR§34
3.1.4	NA	NA	NA	NA	45CSR§4-3.1
3.1.5	NA	NA	Prepare standby plans when requested by the Secretary	NA	45CSR§11-5.2
3.1.6	NA	NA	NA	Emissions inventory annually	W.Va. Code § 22-5-4(a)(14)
3.1.7	NA	NA	NA	NA	40 CFR 82, Subpart F
3.1.8	NA	NA	NA	NA	40 CFR 68
3.1.9	NA	NA	HAP emissions	NA	45CSR13
3.1.10	NA	NA	NA	NA	45CSR13-5.10
3.1.11	NA	NA	Natural as throughput limit 1500 mmscf/day	NA	45CSR13
3.3.1	NA	Stack testing	NA	Results of stack test	WV Code§22-5-4(a)(14-15), 45CSR§13
3.4.1	NA	NA	Maintain monitoring records	NA	45CSR30-5.1.c.2.A and R13-2818, 4.1.1
3.4.2	NA	Na	Maintain all required records for 5 years.	NA	45CSR30-5.1.c.2.B
3.4.3	NA	NA	Odor complaints	NA	45CSR30-5.1.c. State-Enforceable only
3.4.4	NA	NA	Maintain malfunctions records	NA	45CSR13, R13-2818, 4.1.4
3.5.1	NA	NA	NA	Certification by responsible official	45CSR30-4.4. and 5.1.c.3.D
3.5.2	NA	NA	NA	NA	45CSR30-5.1.c.3.E
3.5.3	NA	NA	NA	Submit to DAQ and EPA	3.5.3
3.5.4	NA	NA	Emissions inventory receipt	Certified emissions statement	45CSR30-8
3.5.5	NA	NA	NA	Compliance certification	45CSR30-5.3.e
3.5.6	NA	NA	NA	Semi-annual monitoring reports	45CSR30-5.1.c.3.A
3.5.8	NA	NA	NA	Deviations	45CSR30-5.1.c.3.B.-C
3.5.9	NA	NA	NA	NA	45CSR30-4.3.h.1.B

Are you in compliance with all facility-wide applicable requirements? ☒ Yes ☐ No

If no, complete the **Schedule of Compliance Form** as **ATTACHMENT F**.

21. Active Permits/Consent Orders		
Permit or Consent Order Number	Date of Issuance MM/DD/YYYY	List any Permit Determinations that Affect the Permit *(if any)*
R13-2818 N	2/16/2024	
R30-05100125-2019 (MM04)	1/23/2024	
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22. Inactive Permits/Obsolete Permit Conditions		
Permit Number	Date of Issuance	Permit Condition Number
R13-2818A	8/10/2010	All conditions
R13-2818C	01/31/2011	All conditions
R13-2818D	01/17/2013	All conditions
R13-2818 E	04/23/2014	All conditions
R13-2818 F	6/19/2014	All conditions
R13-2818 G	3/21/2017	All conditions
R13-2818 H	11/28/2017	All conditions
R13-2818 I	4/21/2020	All conditions
R13-2818 J	7/20/2020	All conditions
R13-2818 K	1/24/2022	All conditions
R13-2818 L	7/11/2022	All conditions
R13-2818 M	10/31/2023	All conditions
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Section 3: Facility-Wide Emissions

23. Facility-Wide Emissions Summary [Tons per Year]	
Criteria Pollutants	Potential Emissions
Carbon Monoxide (CO)	131.75
Nitrogen Oxides (NO_X)	131.87
Lead (Pb)	0.00
Particulate Matter ($PM_{2.5}$)[1]	15.90
Particulate Matter (PM_{10})[1]	15.90
Total Particulate Matter (TSP)	15.90
Sulfur Dioxide (SO_2)	1.86
Volatile Organic Compounds (VOC)	109.81
Hazardous Air Pollutants[2]	Potential Emissions
Formaldehyde	5.62
n-Hexane	4.02
Benzene	0.10
Toluene	0.09
Xylenes	0.04
Total HAPs	14.29
Regulated Pollutants other than Criteria and HAP	Potential Emissions
Greenhouse Gases (GHGs)	Potential Emissions
Carbon Dioxide (CO_2)	262,197.02
Nitrous Oxide (N_2O)	1.07
Methane (CH_4)	101.48
Hydrofluorocarbons (HFCs)	
Perfluorocarbons (PFCs)	
Sulfur hexafluoride (SF_6)	
CO_2 equivalent (CO_2e)	264,946.08

[1]$PM_{2.5}$ and PM_{10} are components of TSP.
[2]For HAPs that are also considered PM or VOCs, emissions should be included in both the HAPs section and the Criteria Pollutants section.

Section 3
Facility-Wide Emissions

MarkWest Liberty Midstream & Resources L.L.C.
Majorsville Gas Plant

Summary of Potential Emissions

Criteria Pollutant Potential Emissions

Process/Facility	Potential Emissions (lb/hr)					
	NOx	CO	VOC	SO_2	PM[1]	HAPs
Compressor Engine (C-102)	2.61	0.99	2.09	0.01	0.16	0.72
Compressor Engine (C-103)	2.61	0.99	2.09	0.01	0.16	0.72
Compressor Engine (C-104)	2.61	0.99	2.09	0.01	0.16	0.72
Regeneration Heater (H-741)	0.30	0.46	0.03	0.00	0.04	0.01
Regeneration Heater (H-2741)	0.30	0.46	0.03	0.00	0.04	0.01
Regeneration Heater (H-3741)	0.41	0.32	0.04	0.00	0.06	0.01
Regeneration Heater (H-4741)	0.41	0.32	0.04	0.00	0.06	0.01
Regeneration Heater (H-5741)	0.41	0.32	0.04	0.00	0.06	0.01
Regeneration Heater (H-6741)	0.41	0.32	0.04	0.00	0.06	0.01
Regeneration Heater (H-7741)	0.41	0.32	0.04	0.00	0.06	0.01
Hot Oil Heater (H-781)	1.33	1.27	0.08	0.01	0.11	0.03
Hot Oil Heater (H-3781)	1.61	1.32	0.09	0.01	0.12	0.03
Hot Oil Heater (H-4781)	1.61	1.32	0.09	0.01	0.12	0.03
Hot Oil Heater (H-7781)	1.61	1.32	0.09	0.01	0.12	0.03
DeEthanizer HMO (H-D1782)	4.77	4.77	0.64	0.07	0.89	0.22
DeEthanizer HMO (H-D2782)	4.77	4.77	0.64	0.07	0.89	0.22
DeEthanizer Regeneration Heater (H-D1741)	0.59	0.61	0.28	0.01	0.19	0.03
DeEthanizer Regeneration Heater (H-D2741)	0.59	0.61	0.28	0.01	0.19	0.03
Stabilization Heater (H-4782)	0.69	0.96	0.06	0.01	0.09	0.02
Majorsville I & II Emergency Gen (M1-G-12)	1.33	1.53	0.42	0.28	0.09	0.00
Majorsville III Emergency Gen (M3-G-2)	0.70	0.18	0.02	0.58	0.23	0.01
Majorsville III MCC Emergency Gen (M3-G-3)	0.70	0.18	0.02	0.58	0.23	0.01
Majorsville IV MCC Emergency Gen (M4-G-6)	0.70	0.18	0.02	0.58	0.23	0.01
Majorsville IV Emergency Gen (M4-G-7)	0.70	0.18	0.02	0.58	0.23	0.01
Majorsville VII MCC Emergency Gen (M7-G-9)	0.46	0.23	0.46	0.03	0.02	0.00
DeEth I Control Room Emergency Gen (MD1-G-4)	0.49	0.52	0.49	0.13	0.00	0.00
DeEth I Emergency Gen (MD1-G-5)	0.31	0.36	0.31	0.08	0.00	0.00
DeEth II Control Room Emergency Gen (MD2-G-10)	0.19	0.02	0.01	0.05	0.01	0.00
DeEth II Emergency Gen (MD2-G-11)	0.46	0.23	0.46	0.03	0.02	0.00
Plant Flare (FL-991) - MI, II, III, V	0.57	2.40	1.46	0.00	0.00	0.06
Plant Flare (FL-1991) - DeEth, MIV, MVI, MVII	1.14	5.04	3.09	0.00	0.00	0.12
Pigging Equipment (Included in flare emissions)	--	--	--	--	--	--
Blowdown Emissions	--	--	1.24	--	--	0.06
Fugitive Emissions (FUG-001)	--	--	9.36	--	--	0.07
Rod Packing Emissions	--	--	0.99	--	--	0.04
Methanol Tanks	--	--	0.02	--	--	0.02
Site Wide Emissions (lb/hr)	**35.81**	**33.47**	**27.15**	**3.16**	**4.64**	**3.32**

[1] $PM = PM_{10} = PM_{2.5}$

MarkWest Liberty Midstream & Resources L.L.C.
Majorsville Gas Plant

Summary of Potential Emissions

Process/Facility	Potential Emissions (tpy)					
	NOx	CO	VOC	SO_2	PM[1]	HAPs
Compressor Engine (C-102)	11.44	4.35	9.15	0.04	0.69	3.17
Compressor Engine (C-103)	11.44	4.35	9.15	0.04	0.69	3.17
Compressor Engine (C-104)	11.44	4.35	9.15	0.04	0.69	3.17
Regeneration Heater (H-741)	1.32	2.02	0.13	0.01	0.18	0.05
Regeneration Heater (H-2741)	1.32	2.02	0.13	0.01	0.18	0.05
Regeneration Heater (H-3741)	1.80	1.38	0.18	0.02	0.25	0.06
Regeneration Heater (H-4741)	1.80	1.38	0.18	0.02	0.25	0.06
Regeneration Heater (H-5741)	1.80	1.38	0.18	0.02	0.25	0.06
Regeneration Heater (H-6741)	1.80	1.38	0.18	0.02	0.25	0.06
Regeneration Heater (H-7741)	1.80	1.38	0.18	0.02	0.25	0.06
Hot Oil Heater (H-781)	5.85	5.55	0.36	0.04	0.50	0.12
Hot Oil Heater (H-3781)	7.04	5.80	0.38	0.04	0.52	0.13
Hot Oil Heater (H-4781)	7.04	5.80	0.38	0.04	0.52	0.13
Hot Oil Heater (H-7781)	7.04	5.80	0.38	0.04	0.52	0.13
DeEthanizer HMO (H-D1782)	20.88	20.88	2.82	0.31	3.89	0.97
DeEthanizer HMO (H-D2782)	20.88	20.88	2.82	0.31	3.89	0.97
DeEthanizer Regeneration Heater (H-D1741)	2.59	2.66	1.23	0.04	0.84	0.12
DeEthanizer Regeneration Heater (H-D2741)	2.59	2.66	1.23	0.04	0.84	0.12
Stabilization Heater (H-4782)	3.01	4.23	0.28	0.03	0.38	0.10
Majorsville I & II Emergency Gen (M1-G-12)	0.33	0.38	0.10	0.07	0.02	0.00
Majorsville III Emergency Gen (M3-G-2)	0.18	0.04	0.00	0.14	0.06	0.00
Majorsville III MCC Emergency Gen (M3-G-3)	0.18	0.04	0.00	0.14	0.06	0.00
Majorsville IV MCC Emergency Gen (M4-G-6)	0.18	0.04	0.00	0.14	0.06	0.00
Majorsville IV Emergency Gen (M4-G-7)	0.18	0.04	0.00	0.14	0.06	0.00
Majorsville VII MCC Emergency Gen (M7-G-9)	0.11	0.06	0.11	0.01	0.01	0.00
DeEth I Control Room Emergency Gen (MD1-G-4)	0.12	0.13	0.12	0.03	0.00	0.00
DeEth I Emergency Gen (MD1-G-5)	0.08	0.09	0.08	0.02	0.00	0.00
DeEth II Control Room Emergency Gen (MD2-G-10)	0.05	0.00	0.00	0.01	0.00	0.00
DeEth II Emergency Gen (MD2-G-11)	0.11	0.06	0.11	0.01	0.01	0.00
Plant Flare (FL-991) - MI, II, III, V	2.48	10.51	6.38	0.00	0.02	0.24
Plant Flare (FL-1991) - DeEth, MIV, MVI, MVII	5.00	22.10	13.55	0.00	0.01	0.51
Pigging Equipment (Included in flare emissions)	--	--	--	--	--	--
Blowdown Emissions	--	--	5.41	--	--	0.26
Fugitive Emissions (FUG-001)	--	--	41.01	--	--	0.31
Rod Packing Emissions	--	--	4.32	--	--	0.19
Methanol Tanks	--	--	0.08	--	--	0.08
Site Wide Emissions (tpy)	**131.87**	**131.75**	**109.81**	**1.86**	**15.90**	**14.29**

[1] $PM = PM_{10} = PM_{2.5}$

MarkWest Liberty Midstream & Resources L.L.C.
Majorsville Gas Plant

Summary of Potential Emissions

Hazardous Air Pollutant Potential Emissions

Process/Facility	HAPs - Potential Emissions (lb/hr)								
	Benzene	Ethylbenzene	Toluene	Xylenes	n-Hexane	HCOH	Acrolein	Acetaldehyde	Methanol
Compressor Engine (C-102)	6.91E-03	6.24E-04	6.41E-03	2.89E-03	1.74E-02	4.18E-01	8.08E-02	1.31E-01	3.93E-02
Compressor Engine (C-103)	6.91E-03	6.24E-04	6.41E-03	2.89E-03	1.74E-02	4.18E-01	8.08E-02	1.31E-01	3.93E-02
Compressor Engine (C-104)	6.91E-03	6.24E-04	6.41E-03	2.89E-03	1.74E-02	4.18E-01	8.08E-02	1.31E-01	3.93E-02
Regeneration Heater (H-741)	1.15E-05	--	1.87E-05	--	9.88E-03	4.12E-04	--	--	--
Regeneration Heater (H-2741)	1.15E-05	--	1.87E-05	--	9.88E-03	4.12E-04	--	--	--
Regeneration Heater (H-3741)	1.58E-05	--	2.56E-05	--	1.36E-02	5.65E-04	--	--	--
Regeneration Heater (H-4741)	1.58E-05	--	2.56E-05	--	1.36E-02	5.65E-04	--	--	--
Regeneration Heater (H-5741)	1.58E-05	--	2.56E-05	--	1.36E-02	5.65E-04	--	--	--
Regeneration Heater (H-6741)	1.58E-05	--	2.56E-05	--	1.36E-02	5.65E-04	--	--	--
Regeneration Heater (H-7741)	1.58E-05	--	2.56E-05	--	1.36E-02	5.65E-04	--	--	--
Hot Oil Heater (H-781)	3.17E-05	--	5.13E-05	--	2.72E-02	1.13E-03	--	--	--
Hot Oil Heater (H-3781)	3.31E-05	--	5.36E-05	--	2.84E-02	1.18E-03	--	--	--
Hot Oil Heater (H-4781)	3.31E-05	--	5.36E-05	--	2.84E-02	1.18E-03	--	--	--
Hot Oil Heater (H-7781)	3.31E-05	--	5.36E-05	--	2.84E-02	1.18E-03	--	--	--
DeEthanizer HMO (H-D1782)	2.45E-04	--	3.97E-04	--	2.10E-01	8.76E-03	--	--	--
DeEthanizer HMO (H-D2782)	2.45E-04	--	3.97E-04	--	2.10E-01	8.76E-03	--	--	--
DeEthanizer Regeneration Heater (H-D1741)	3.05E-05	--	4.93E-05	--	2.61E-02	1.09E-03	--	--	--
DeEthanizer Regeneration Heater (H-D2741)	3.05E-05	--	4.93E-05	--	2.61E-02	1.09E-03	--	--	--
Stabilization Heater (H-4782)	2.41E-05	--	3.91E-05	--	2.07E-02	8.62E-04	--	--	--
Majorsville I & II Emergency Gen (M1-G-12)	1.73E-03	--	7.59E-04	5.29E-04	--	2.19E-03	1.72E-04	1.42E-03	--
Majorsville III Emergency Gen (M3-G-2)	3.59E-03	--	1.57E-03	1.10E-03	--	4.54E-03	3.56E-04	2.95E-03	--
Majorsville III MCC Emergency Gen (M3-G-3)	3.59E-03	--	1.57E-03	2.74E-04	--	4.54E-03	3.56E-04	2.95E-03	--
Majorsville IV MCC Emergency Gen (M4-G-6)	3.59E-03	--	1.57E-03	1.10E-03	--	4.54E-03	3.56E-04	2.95E-03	--
Majorsville IV Emergency Gen (M4-G-7)	3.59E-03	--	1.57E-03	1.10E-03	--	4.54E-03	3.56E-04	2.95E-03	--
Majorsville VII MCC Emergency Gen (M7-G-9)	4.15E-04	--	1.82E-04	1.27E-04	--	5.25E-04	4.12E-05	3.41E-04	--
DeEth I Control Room Emergency Gen (MD1-G-4)	4.23E-04	--	1.85E-04	1.29E-04	--	5.35E-04	4.19E-05	3.48E-04	--
DeEth I Emergency Gen (MD1-G-5)	2.69E-04	--	1.18E-04	8.22E-05	--	3.40E-04	2.67E-05	2.21E-04	--
DeEth II Control Room Emergency Gen (MD2-G-10)	1.79E-04	--	7.87E-05	5.48E-05	--	2.27E-04	1.78E-05	1.48E-04	--
DeEth II Emergency Gen (MD2-G-11)	4.15E-04	--	1.82E-04	1.27E-04	--	5.25E-04	4.12E-05	3.41E-04	--
Plant Flare (FL-991) - MI, II, III, V	1.05E-06	0.00E+00	1.70E-06	0.00E+00	5.53E-02	3.75E-05	--	--	--
Plant Flare (FL-1991) - DeEth, MIV, MVI, MVII	8.76E-07	0.00E+00	1.42E-06	0.00E+00	1.16E-01	3.13E-05	--	--	--
Pigging Equipment (Included in flare emissions)	--	--	--	--	--	--	--	--	--
Blowdown Emissions	--	--	--	--	--	--	--	--	--
Fugitive Emissions (FUG-001)	--	--	--	--	--	--	--	--	--
Rod Packing Emissions	--	--	--	--	--	--	--	--	--
Methanol Tanks									1.72E-02
Site Wide Emissions (lb/hr)	**0.04**	**1.87E-03**	**0.03**	**0.01**	**0.92**	**1.31**	**0.24**	**0.41**	**0.14**

MarkWest Liberty Midstream & Resources L.L.C.
Majorsville Gas Plant

Summary of Potential Emissions

Process/Facility	HAPs - Potential Emissions (tpy)								
	Benzene	Ethylbenzene	Toluene	Xylenes	n-Hexane	HCOH	Acrolein	Acetaldehyde	Methanol
Compressor Engine (C-102)	3.03E-02	2.73E-03	2.81E-02	1.27E-02	7.64E-02	1.83E+00	3.54E-01	5.75E-01	1.72E-01
Compressor Engine (C-103)	3.03E-02	2.73E-03	2.81E-02	1.27E-02	7.64E-02	1.83E+00	3.54E-01	5.75E-01	1.72E-01
Compressor Engine (C-104)	3.03E-02	2.73E-03	2.81E-02	1.27E-02	7.64E-02	1.83E+00	3.54E-01	5.75E-01	1.72E-01
Regeneration Heater (H-741)	5.05E-05	--	8.18E-05	--	4.33E-02	1.80E-03	--	--	--
Regeneration Heater (H-2741)	5.05E-05	--	8.18E-05	--	4.33E-02	1.80E-03	--	--	--
Regeneration Heater (H-3741)	6.93E-05	--	1.12E-04	--	5.94E-02	2.48E-03	--	--	--
Regeneration Heater (H-4741)	6.93E-05	--	1.12E-04	--	5.94E-02	2.48E-03	--	--	--
Regeneration Heater (H-5741)	6.93E-05	--	1.12E-04	--	5.94E-02	2.48E-03	--	--	--
Regeneration Heater (H-6741)	6.93E-05	--	1.12E-04	--	5.94E-02	2.48E-03	--	--	--
Regeneration Heater (H-7741)	6.93E-05	--	1.12E-04	--	5.94E-02	2.48E-03	--	--	--
Hot Oil Heater (H-781)	1.39E-04	--	2.25E-04	--	1.19E-01	4.96E-03	--	--	--
Hot Oil Heater (H-3781)	1.45E-04	--	2.35E-04	--	1.24E-01	5.18E-03	--	--	--
Hot Oil Heater (H-4781)	1.45E-04	--	2.35E-04	--	1.24E-01	5.18E-03	--	--	--
Hot Oil Heater (H-7781)	1.45E-04	--	2.35E-04	--	1.24E-01	5.18E-03	--	--	--
DeEthanizer HMO (H-D1782)	1.07E-03	--	1.74E-03	--	9.21E-01	3.84E-02	--	--	--
DeEthanizer HMO (H-D2782)	1.07E-03	--	1.74E-03	--	9.21E-01	3.84E-02	--	--	--
DeEthanizer Regeneration Heater (H-D1741)	1.33E-04	--	2.16E-04	--	1.14E-01	4.77E-03	--	--	--
DeEthanizer Regeneration Heater (H-D2741)	1.33E-04	--	2.16E-04	--	1.14E-01	4.77E-03	--	--	--
Stabilization Heater (H-4782)	1.06E-04	--	1.71E-04	--	9.06E-02	3.77E-03	--	--	--
Majorsville I & II Emergency Gen (M1-G-12)	4.33E-04	--	1.90E-04	1.32E-04	--	5.47E-04	4.29E-05	3.56E-04	--
Majorsville III Emergency Gen (M3-G-2)	8.97E-04	--	3.93E-04	2.74E-04	--	1.13E-03	8.90E-05	7.38E-04	--
Majorsville III MCC Emergency Gen (M3-G-3)	8.97E-04	--	3.93E-04	2.74E-04	--	1.13E-03	8.90E-05	7.38E-04	--
Majorsville IV MCC Emergency Gen (M4-G-6)	8.97E-04	--	3.93E-04	2.74E-04	--	1.13E-03	8.90E-05	7.38E-04	--
Majorsville IV Emergency Gen (M4-G-7)	8.97E-04	--	3.93E-04	2.74E-04	--	1.13E-03	8.90E-05	7.38E-04	--
Majorsville VII MCC Emergency Gen (M7-G-9)	1.04E-04	--	4.55E-05	3.17E-05	--	1.31E-04	1.03E-05	8.54E-05	--
DeEth I Control Room Emergency Gen (MD1-G-4)	1.06E-04	--	4.64E-05	2.74E-04	--	1.34E-04	1.05E-05	8.69E-05	--
DeEth I Emergency Gen (MD1-G-5)	6.73E-05	--	1.97E-05	1.37E-05	--	5.67E-05	6.67E-06	5.53E-05	--
DeEth II Control Room Emergency Gen (MD2-G-10)	4.49E-05	--	4.64E-05	1.37E-05	--	1.34E-04	4.45E-06	3.69E-05	--
DeEth II Emergency Gen (MD2-G-11)	1.04E-04	--	4.55E-05	3.17E-05	--	1.31E-04	1.03E-05	8.54E-05	--
Plant Flare (FL-991) - MI, II, III, V	4.60E-06	0.00E+00	7.45E-06	0.00E+00	2.42E-01	1.64E-04	--	--	--
Plant Flare (FL-1991) - DeEth, MIV, MVI, MVII	3.84E-06	0.00E+00	6.21E-06	0.00E+00	5.10E-01	1.37E-04	--	--	--
Pigging Equipment (Included in flare emissions)	--	--	--	--	--	--	--	--	--
Blowdown Emissions	--	--	--	--	--	--	--	--	--
Fugitive Emissions (FUG-001)	--	--	--	--	--	--	--	--	--
Rod Packing Emissions	--	--	--	--	--	--	--	--	--
Methanol Tanks	--	--	--	--	--	--	--	--	7.54E-02
Site Wide Emissions (tpy)	**0.10**	**8.20E-03**	**0.09**	**0.04**	**4.02**	**5.62**	**1.06**	**1.73**	**0.59**

GHG Calculations
MarkWest Liberty Midstream & Resources L.L.C.
Majorsville Gas Plant

Source	$CO_2(e)$ CO_2 Emission Rate (tpy)	$CO_2(e)$ CH_4 Emission Rate (tpy)	$CO_2(e)$ N_2O Emission Rate (tpy)
Reboiler/Heaters & Flares	234,035.49	1,341.65	193.92
Natural gas Engines	27,315.31	10.82	15.97
Diesel Engines	845.60	0.72	2.13
Fugitives	0.09	704.71	-
Blowdown Emissions	0.53	479.15	-
Pigging (Included in flare emissions)	-	-	-
Rod Packing	11.60	5,872.61	-
Total Emissions	**262,197.02**	**2,537.04**	**212.02**

Total CO_2 Equivalent	**264,946.08**

GHG Calculations
MarkWest Liberty Midstream & Resources L.L.C.
Majorsville Gas Plant

Fugitive GHG Calculation

Equipment type	Stream Type (Gas/Liquid etc)	Total Emissions (tpy)	CH_4 * Wt%	CO_2 * Wt%	CO_2 (tpy)	CO_2(e) from CH_4
Compressors	Gas	0.9311	61.82	0.20	0.00	14.39
Compressors	Light Oil	0.0109	0.494	0.002	0.00	0.00
Flange	Gas	7.6681	61.82	0.20	0.02	118.51
Flange	Gas	4.8615	61.82	0.20	0.01	75.13
Flange	Gas	0.1873	61.82	0.20	0.00	2.89
Flange	Light Oil	1.8124	0.494	0.002	0.00	0.22
Flange	Light Oil	0.0275	0.494	0.002	0.00	0.00
Flange	Heavy Oil	0.0000	0.494	0.002	0.00	0.00
Connector	Gas	10.9151	61.82	0.20	0.02	168.69
Connector	Gas	8.7345	61.82	0.20	0.02	134.99
Connector	Gas	0.2016	61.82	0.20	0.00	3.12
Connector	Light Oil	6.7680	0.494	0.002	0.00	0.84
Connector	Light Oil	0.2571	0.494	0.002	0.00	0.03
PRD	Gas	0.1977	61.82	0.20	0.00	3.06
PRD	Gas	0.4528	61.82	0.20	0.00	7.00
PRD	Gas	0.0255	61.82	0.20	0.00	0.39
PRD	Light Oil	0.1141	0.494	0.002	0.00	0.01
Pump	Gas	0.1826	61.82	0.20	0.00	2.82
Pump	Light Oil	1.3425	0.494	0.002	0.00	0.17
Valve	Gas	5.5274	61.82	0.20	0.01	85.43
Valve	Gas	5.1524	61.82	0.20	0.01	79.63
Valve	Gas	0.4565	61.82	0.20	0.00	7.06
Valve	Heavy Oil	0.0000	0.494	0.002	0.00	0.00
Valve	Heavy Oil	0.0001	0.494	0.002	0.00	0.00
Valve	Light Oil	2.6161	0.494	0.002	0.00	0.32
CO_2(e) from CH_4					0.09	704.71

*Taken from Gas Analysis and Condensate Analysis

GHG Vented Blowdown Emissions

Blowdown Emissions Sources	Number of Units	Vented Gas Volume Per Blowdown Event (scf)	Number of Blowdown Events per year	Total Volume Emitted (scf/yr)	Flare Control Efficiency (%)	Potential CH_4 Emissions[1] (tpy)	Potential CO_2 Emissions[1] (tpy)	Potential CO_2e Emissions (tpy)
CAT 3608s	3	2,200	36	237,600	0%	3.87	0.013	97
Electric Compressors	29	1,561	6	271,700	0%	4.43	0.015	111
Miscellaneous Events	--	--	--	500,000	0%	8.15	0.028	204
Majorsville I&II	2	182,525	4	1,460,200	98%	0.48	0.083	12
Majorsville III & IV	2	250,000	4	2,000,000	98%	0.65	0.113	16
Majorsville V, VI, VII	3	250,000	4	3,000,000	98%	0.98	0.170	25
Deethanizer	1	459,000	4	1,836,000	98%	0.60	0.104	15
Total						**19.1**	**0.527**	**479.1**

1. Calculated in accordance with Equations W-35 and W-36 in Subpart W of 40 CFR 98.

GHG Calculations
MarkWest Liberty Midstream & Resources L.L.C.
Majorsville Gas Plant

Reboiler/Heaters & Flares

Equipment	Heat Input (LHV) (mmbtu/hr)	Heat Input (HHV) (mmbtu/hr)	Emission Factors CO_2 (lb/mmbtu)	Emission Factors CH_4 (lb/mmbtu)	Emission Factors N_2O (lb/mmbtu)	$CO_2(e)$ CO_2 Emission Rate (tpy)	$CO_2(e)$ CH_4 Emission Rate (tpy)	$CO_2(e)$ N_2O Emission Rate (tpy)
Flare FL-991	See Calculation Sheets					4,180.98	395.94	22.84
Flare FL-1991						8,546.29	841.36	46.69
Heater H-741	5.60	6.1600	116.887892	0.0022046	0.00022046	3,153.73	1.49	1.77
Heater H-2741	5.60	6.1600	116.887892	0.0022046	0.00022046	3,153.73	1.49	1.77
Heater H-3741	7.69	8.4590	116.887892	0.0022046	0.00022046	4,330.75	2.04	2.43
Heater H-4741	7.69	8.4590	116.887892	0.0022046	0.00022046	4,330.75	2.04	2.43
Heater H-5741	7.69	8.4590	116.887892	0.0022046	0.00022046	4,330.75	2.04	2.43
Heater H-6741	7.69	8.4590	116.887892	0.0022046	0.00022046	4,330.75	2.04	2.43
Heater H-7741	7.69	8.4590	116.887892	0.0022046	0.00022046	4,330.75	2.04	2.43
Heater H-781	15.40	16.9400	116.887892	0.0022046	0.00022046	8,672.75	4.09	4.87
Heater H-3781	16.07	17.6770	116.887892	0.0022046	0.00022046	9,050.08	4.27	5.09
Heater H-4781	16.07	17.6770	116.887892	0.0022046	0.00022046	9,050.08	4.27	5.09
Heater H-7781	16.07	17.6770	116.887892	0.0022046	0.00022046	9,050.08	4.27	5.09
Heater H-D1782	119.20	131.1200	116.887892	0.0022046	0.00022046	67,129.37	31.65	37.73
Heater H-D2782	119.20	131.1200	116.887892	0.0022046	0.00022046	67,129.37	31.65	37.73
Heater H-D1741	14.80	16.2767	116.887892	0.0022046	0.00022046	8,333.16	3.93	4.68
Heater H-D2741	14.80	16.2767	116.887892	0.0022046	0.00022046	8,333.16	3.93	4.68
Heater H-4782	11.72	12.8895	116.887892	0.0022046	0.00022046	6,599.00	3.11	3.71
Total						**234,035.49**	**1,341.65**	**193.92**

Natural gas Engines

Equipment	HP	Fuel Use (HHV) (btu/bhp-hr)	Fuel Use (HHV) (mmbtu/yr)	Emission Factors CO_2 (lb/mmbtu)	Emission Factors CH_4 (lb/mmbtu)	Emission Factors N_2O (lb/mmbtu)	$CO_2(e)$ CO_2 Emission Rate (tpy)	$CO_2(e)$ CH_4 Emission Rate (tpy)	$CO_2(e)$ N_2O Emission Rate (tpy)
C-102	2,370	7504	155792.045	116.887892	0.0022046	0.00022046	9,105.10	3.61	5.32
C-103	2,370	7504	155792.045	116.887892	0.0022046	0.00022046	9,105.10	3.61	5.32
C-104	2,370	7504	155792.045	116.887892	0.0022046	0.00022046	9,105.10	3.61	5.32
Total							**27,315.31**	**10.82**	**15.97**

Diesel Engines

Equipment	HP	Fuel Use (gal/hr)	Heat Content (HHV) (btu/gal)	Fuel Use (HHV) (mmbtu/yr)	Emission Factors CO_2 (lb/mmbtu)	Emission Factors CH_4 (lb/mmbtu)	Emission Factors N_2O (lb/mmbtu)	$CO_2(e)$ CO_2 Emission Rate (tpy)	$CO_2(e)$ CH_4 Emission Rate (tpy)	$CO_2(e)$ N_2O Emission Rate (tpy)
M3-G-1	198	13.5	137,380	927	163.052216	0.0066138	0.00132276	75.60	0.06	0.19
M3-G-2	145	28	137,380	1923	163.052216	0.0066138	0.00132276	156.80	0.13	0.39
M3-G-3	145	28	137,380	1923	163.052216	0.0066138	0.00132276	156.80	0.13	0.39
M4-G-6	145	28	137,380	1923	163.052216	0.0066138	0.00132276	156.80	0.13	0.39
M4-G-7	145	28	137,380	1923	163.052216	0.0066138	0.00132276	156.80	0.13	0.39
M7-G-9	69	3.1	137,380	213	163.052216	0.0066138	0.00132276	17.36	0.01	0.04
MD1-G-4	64	3.3	137,380	227	163.052216	0.0066138	0.00132276	18.48	0.02	0.05
MD1-G-5	40	2.1	137,380	144	163.052216	0.0066138	0.00132276	11.76	0.01	0.03
MD2-G-10	25	1.4	137,380	96	163.052216	0.0066138	0.00132276	7.84	0.01	0.02
MD2-G-11	40	2.1	137,380	144	163.052216	0.0066138	0.00132276	11.76	0.01	0.03
M1-G-M12	198	13.5	137,380	927	163.052216	0.0066138	0.00132276	75.60	0.06	0.19
Total								**845.60**	**0.72**	**2.13**

MarkWest Liberty Midstream & Resources L.L.C.
Majorsville Gas Plant

Compressor Engine Emissions (Per Engine)
(C102, C103, C104)

Source Designation:	
Manufacturer:	Caterpillar
Model No.:	G3608 LE
Stroke Cycle:	4-stroke
Type of Burn:	Lean
Year Installed/Date Manufactured	2010
Fuel Used:	Natural Gas
Fuel High Heating Value (HHV) (Btu/scf):	1,124
Rated Horsepower (bhp):	2,370
Specific Fuel Consumption (Btu/bhp-hr)	6,629
Maximum Fuel Consumption at 100% Load (scf/hr):	13,978
Heat Input (MMBtu/hr)	15.71
Stack Designation:	TBD

Operational Details:

Potential Annual Hours of Operation (hr/yr):	8,760
Potential Fuel Consumption (MMscf/yr):	122.44

Criteria and Manufacturer Specific Pollutant Emission Factors:

Pollutant	**Emission Factors[a]**	**Units**
NOx	0.50	g/bhp-hr
CO (uncontrolled)	2.75	g/bhp-hr
CO (controlled)	0.19	g/bhp-hr
SO_2	5.88E-04	lb/MMBtu
PM_{10} (Filterable)	7.71E-05	lb/MMBtu
$PM_{2.5}$ (Filterable)	7.71E-05	lb/MMBtu
PM Condensable	9.91E-03	lb/MMBtu
PM Total	9.99E-03	lb/MMBtu
VOC (uncontrolled)	0.63	g/bhp-hr
VOC (controlled)	0.32	g/bhp-hr
Formaldehyde (HCHO) (uncontrolled)	0.40	g/bhp-hr
Formaldehyde (HCHO) (controlled)	0.08	g/bhp-hr

Criteria and Manufacturer Specific Pollutant Emission Rates

Pollutant	**Potential Emissions**	
	(lb/hr)[b]	**(tons/yr)[c]**
NO_x	2.61	11.44
CO (uncontrolled)	14.37	62.93
CO (controlled)	0.99	4.35
SO_2	0.01	0.04
PM_{10} (Filterable)	0.001	0.01
$PM_{2.5}$ (Filterable)	0.001	0.01
PM Condensable	0.16	0.68
PM Total	0.16	0.69
VOC (uncontrolled)	5.38	23.57
VOC (controlled)	2.09	9.15
Formaldehyde (HCHO) (uncontrolled)	2.09	9.15
Formaldehyde (HCHO) (controlled)	0.42	1.83

Compressor Engine Emissions (Per Engine)
(C102, C103, C104)

Hazardous Air Pollutant (HAP) Potential Emissions

Pollutant	Emission Factor (lb/MMBtu)[a]	Potential Emissions (lb/hr)[b]	Potential Emissions (tons/yr)[c]
HAPs:			
Acenaphthene	1.25E-06	1.96E-05	8.60E-05
Acenaphthylene	5.53E-06	8.69E-05	3.81E-04
Acetaldehyde	8.36E-03	1.31E-01	5.75E-01
Acrolein	5.14E-03	8.08E-02	3.54E-01
Benzene	4.40E-04	6.91E-03	3.03E-02
Benzo(b)fluoranthene	1.66E-07	2.61E-06	1.14E-05
Benzo(e)pyrene	4.15E-07	6.52E-06	2.86E-05
Benzo(g,h,i)perlyene	4.14E-07	6.50E-06	2.85E-05
Biphenyl	2.12E-04	3.33E-03	1.46E-02
1,3-Butadiene	2.67E-04	4.19E-03	1.84E-02
Carbon Tetrachloride	3.67E-05	5.77E-04	2.53E-03
Chlorobenzene	3.04E-05	4.78E-04	2.09E-03
Chloroform	2.85E-05	4.48E-04	1.96E-03
Chrysene	6.93E-07	1.09E-05	4.77E-05
1,3-Dichloropropene	2.64E-05	4.15E-04	1.82E-03
Ethylbenzene	3.97E-05	6.24E-04	2.73E-03
Ethylene Dibromide	4.43E-05	6.96E-04	3.05E-03
Fluoranthene	1.11E-06	1.74E-05	7.64E-05
Fluorene	5.67E-06	8.91E-05	3.90E-04
Methanol	2.50E-03	3.93E-02	1.72E-01
Methylene Chloride	2.00E-05	3.14E-04	1.38E-03
n-Hexane	1.11E-03	1.74E-02	7.64E-02
Phenanthrene	1.04E-05	1.63E-04	7.16E-04
Phenol	2.40E-05	3.77E-04	1.65E-03
Pyrene	1.36E-06	2.14E-05	9.36E-05
Styrene	2.36E-05	3.71E-04	1.62E-03
Toluene	4.08E-04	6.41E-03	2.81E-02
1,1,2,2-Tetrachloroethane	4.00E-05	6.28E-04	2.75E-03
Tetrachloroethane	2.48E-06	3.90E-05	1.71E-04
1,1,2-Trichloroethane	3.18E-05	5.00E-04	2.19E-03
2,2,4-Trimethylpentane	2.50E-04	3.93E-03	1.72E-02
Vinyl Chloride	1.49E-05	2.34E-04	1.03E-03
Xylene	1.84E-04	2.89E-03	1.27E-02
Polycyclic Organic Matter:			
Naphthalene	7.44E-05	1.17E-03	5.12E-03
2-Methylnaphthalene	3.32E-05	5.22E-04	2.28E-03
PAH	2.69E-05	4.23E-04	1.85E-03
Total HAP		**0.72**	**3.17**

[a] SO_2, PM, and HAP emission factors from AP-42 Section 3.2, Table 3.2-2"Uncontrolled Emission Factors for 4-Stroke Lean-Burn Engines,"

[b] Emission Rate (lb/hr) = Rated Capacity (MMBtu/hr or bhp) × Emission Factor (lb/MMBtu or lb/bhp-hr).

[c] Annual Emissions $(tons/yr)_{Potential}$ = $(lb/hr)_{Emissions}$ × (Maximum Allowable Operating Hours, 8,760 hr/yr) × (1 ton/2000 lb).

MarkWest Liberty Midstream & Resources L.L.C.
Majorsville Gas Plant

Emergency Generator Engine Emissions
(M1-G-12)

Source Designation:	
Manufacturer:	Generac
Model No.:	SD150
Stroke Cycle:	4-stroke
Type of Burn:	Diesel
Year Installed	2024
Fuel Used:	Diesel
Fuel High Heating Value (HHV) (Btu/gal):	137,380
Rated Horsepower (bhp):	198
Specific Fuel Consumption (gal/hr)	13.5
Maximum Fuel Consumption at 100% Load (gal/hr):	13.5
Heat Input (MMBtu/hr)	1.85
Stack Designation:	TBD

Operational Details:

Potential Annual Hours of Operation (hr/yr):	500
Potential Fuel Consumption (gal/yr):	6,750

Criteria and Manufacturer Specific Pollutant Emission Factors:

Pollutant	**Emission Factors[a]**	**Units**
NOx	3.04	g/bhp-hr
CO (uncontrolled)	3.50	g/bhp-hr
CO (controlled)	3.50	g/bhp-hr
SO_2	1.50E-01	lb/hp-hr
PM_{10} (Filterable)	0.20	g/bhp-hr
$PM_{2.5}$ (Filterable)	0.20	g/bhp-hr
PM Condensable	0.20	g/bhp-hr
PM Total	0.20	g/bhp-hr
VOC (uncontrolled)	0.96	g/bhp-hr
VOC (controlled)	0.96	g/bhp-hr

MarkWest Liberty Midstream & Resources L.L.C.
Majorsville Gas Plant

Emergency Generator Engine Emissions
(M1-G-12)

Criteria and Manufacturer Specific Pollutant Emission Rates

Pollutant	Potential Emissions (lb/hr)[b]	Potential Emissions (tons/yr)[c]
NO_x	1.33	0.33
CO (uncontrolled)	1.53	0.38
CO (controlled)	1.53	0.38
SO_2	0.28	0.07
PM_{10} (Filterable)	0.09	0.02
$PM_{2.5}$ (Filterable)	0.09	0.02
PM Condensable	0.09	0.02
PM Total	0.09	0.02
VOC (uncontrolled)	0.42	0.10
VOC (controlled)	0.42	0.10

Hazardous Air Pollutant (HAP) Potential Emissions

Pollutant	Emission Factor (lb/MMBtu)[a]	Potential Emissions (lb/hr)[b]	Potential Emissions (tons/yr)[c]
HAPs:			
Acetaldehyde	7.67E-04	1.42E-03	3.56E-04
Acrolein	9.25E-05	1.72E-04	4.29E-05
Benzene	9.33E-04	1.73E-03	4.33E-04
1,3-Butadiene	3.91E-05	7.25E-05	1.81E-05
Formaldehyde	1.18E-03	2.19E-03	5.47E-04
Toluene	4.09E-04	7.59E-04	1.90E-04
Xylene	2.85E-04	5.29E-04	1.32E-04
Polycyclic Organic Matter:			
Naphthalene	8.48E-05	1.57E-04	3.93E-05
Total HAP		**0.01**	**0.00**

[a] HAP emission factors from AP-42 Section 3.2, Table 3.3-2 "Speciated Organic Compound Emission Factors for Uncontrolled Diesel Engines,"

[b] Emission Rate (lb/hr) = Rated Capacity (MMBtu/hr or bhp) × Emission Factor (lb/MMBtu or lb/bhp-hr).

[c] Annual Emissions $(tons/yr)_{Potential} = (lb/hr)_{Emissions} \times$ (Maximum Allowable Operating Hours/yr) × (1 ton/2000 lb).

MarkWest Liberty Midstream & Resources L.L.C.
Majorsville Gas Plant

Emergency Generator Engine Emissions (Per Engine)
(M3-G-2, M3-G-3, M4-G-6, M4-G-7)

Source Designation:	
Manufacturer:	Cummins
Model No.:	60 DSFAD
Stroke Cycle:	4-stroke
Type of Burn:	Diesel
Year Installed	2014
Fuel Used:	Diesel
Fuel High Heating Value (HHV) (Btu/gal):	137,380
Rated Horsepower (bhp):	145
Specific Fuel Consumption (gal/hr)	28.0
Maximum Fuel Consumption at 100% Load (gal/hr):	28.0
Heat Input (MMBtu/hr)	3.85
Stack Designation:	TBD

Operational Details:

Potential Annual Hours of Operation (hr/yr):	500
Potential Fuel Consumption (gal/yr):	14,000

Criteria and Manufacturer Specific Pollutant Emission Factors:

Pollutant	**Emission Factors[a]**	**Units**
NOx	2.20	g/bhp-hr
CO (uncontrolled)	0.56	g/bhp-hr
CO (controlled)	0.56	g/bhp-hr
SO_2	1.50E-01	lb/hp-hr
PM_{10} (Filterable)	6.00E-02	lb/hp-hr
$PM_{2.5}$ (Filterable)	6.00E-02	lb/hp-hr
PM Condensable	6.00E-02	g/bhp-hr
PM Total	6.00E-02	g/bhp-hr
VOC (uncontrolled)	0.05	g/bhp-hr
VOC (controlled)	0.05	g/bhp-hr

MarkWest Liberty Midstream & Resources L.L.C.
Majorsville Gas Plant

Emergency Generator Engine Emissions (Per Engine)
(M3-G-2, M3-G-3, M4-G-6, M4-G-7)

Criteria and Manufacturer Specific Pollutant Emission Rates

Pollutant	Potential Emissions (lb/hr)[b]	(tons/yr)[c]
NO_x	0.70	0.18
CO (uncontrolled)	0.18	0.04
CO (controlled)	0.18	0.04
SO_2	0.58	0.14
PM_{10} (Filterable)	0.231	0.06
$PM_{2.5}$ (Filterable)	0.231	0.06
PM Condensable	0.23	0.06
PM Total	0.23	0.06
VOC (uncontrolled)	0.02	0.00
VOC (controlled)	0.02	0.00

Hazardous Air Pollutant (HAP) Potential Emissions

Pollutant	Emission Factor (lb/MMBtu)[a]	Potential Emissions (lb/hr)[b]	(tons/yr)[c]
HAPs:			
Acetaldehyde	7.67E-04	2.95E-03	7.38E-04
Acrolein	9.25E-05	3.56E-04	8.90E-05
Benzene	9.33E-04	3.59E-03	8.97E-04
1,3-Butadiene	3.91E-05	1.50E-04	3.76E-05
Formaldehyde	1.18E-03	4.54E-03	1.13E-03
Toluene	4.09E-04	1.57E-03	3.93E-04
Xylene	2.85E-04	1.10E-03	2.74E-04
Polycyclic Organic Matter:			
Naphthalene	8.48E-05	3.26E-04	8.15E-05
Total HAP		**0.01**	**0.00**

[a] HAP emission factors from AP-42 Section 3.2, Table 3.3-2 "Speciated Organic Compound Emission Factors for Uncontrolled Diesel Engines,"

[b] Emission Rate (lb/hr) = Rated Capacity (MMBtu/hr or bhp) × Emission Factor (lb/MMBtu or lb/bhp-hr).

[c] Annual Emissions $(tons/yr)_{Potential}$ = $(lb/hr)_{Emissions}$ × (Maximum Allowable Operating Hours/yr) × (1 ton/2000 lb).

MarkWest Liberty Midstream & Resources L.L.C.
Majorsville Gas Plant

Emergency Generator Engine Emissions (Per Engine)
(MD1-G-4)

Source Designation:	
Manufacturer:	Generac
Model No.:	MMG45
Stroke Cycle:	4-stroke
Type of Burn:	Diesel
Year Installed	2014
Fuel Used:	Diesel
Fuel High Heating Value (HHV) (Btu/gal):	137,380
Rated Horsepower (bhp):	63.7
Specific Fuel Consumption (gal/hr)	3.3
Maximum Fuel Consumption at 100% Load (gal/hr):	3.3
Heat Input (MMBtu/hr)	0.45
Stack Designation:	TBD

Operational Details:

Potential Annual Hours of Operation (hr/yr):	500
Potential Fuel Consumption (gal/yr):	1,650

Criteria and Manufacturer Specific Pollutant Emission Factors:

Pollutant	**Emission Factors[a]**	**Units**
NOx	3.50	g/bhp-hr
CO (uncontrolled)	3.70	g/bhp-hr
CO (controlled)	3.70	g/bhp-hr
SO_2	2.05E-03	g/bhp-hr
PM_{10} (Filterable)	0.022	g/bhp-hr
$PM_{2.5}$ (Filterable)	0.022	g/bhp-hr
PM Condensable	0.022	g/bhp-hr
PM Total	0.022	g/bhp-hr
VOC (uncontrolled)	3.50	g/bhp-hr
VOC (controlled)	3.50	g/bhp-hr

MarkWest Liberty Midstream & Resources L.L.C.
Majorsville Gas Plant

Emergency Generator Engine Emissions (Per Engine)
(MD1-G-4)

Criteria and Manufacturer Specific Pollutant Emission Rates

Pollutant	Potential Emissions (lb/hr)[b]	(tons/yr)[c]
NO_x	0.49	0.12
CO (uncontrolled)	0.52	0.13
CO (controlled)	0.52	0.13
SO_2	0.13	0.03
PM_{10} (Filterable)	0.00	0.00
$PM_{2.5}$ (Filterable)	0.00	0.00
PM Condensable	0.00	0.00
PM Total	0.00	0.00
VOC (uncontrolled)	0.49	0.12
VOC (controlled)	0.49	0.12

Hazardous Air Pollutant (HAP) Potential Emissions

Pollutant	Emission Factor (lb/MMBtu)[a]	Potential Emissions (lb/hr)[b]	(tons/yr)[c]
HAPs:			
Acetaldehyde	7.67E-04	3.48E-04	8.69E-05
Acrolein	9.25E-05	4.19E-05	1.05E-05
Benzene	9.33E-04	4.23E-04	1.06E-04
1,3-Butadiene	3.91E-05	1.77E-05	4.43E-06
Formaldehyde	1.18E-03	5.35E-04	1.34E-04
Toluene	4.09E-04	1.85E-04	4.64E-05
Xylene	2.85E-04	1.29E-04	3.23E-05
Polycyclic Organic Matter:			
Naphthalene	8.48E-05	3.84E-05	9.61E-06
Total HAP		**0.00**	**0.00**

[a] HAP emission factors from AP-42 Section 3.2, Table 3.3-2 "Speciated Organic Compound Emission Factors for Uncontrolled Diesel Engines," Supplement F, October 1996. Criteria pollutant factors are based on EPA Tier IV standards.

[b] Emission Rate (lb/hr) = Rated Capacity (MMBtu/hr or bhp) × Emission Factor (lb/MMBtu or lb/bhp-hr).

[c] Annual Emissions $(tons/yr)_{Potential}$ = $(lb/hr)_{Emissions}$ × (Maximum Allowable Operating Hours/yr) × (1 ton/2000 lb).

MarkWest Liberty Midstream & Resources L.L.C.
Majorsville Gas Plant

Emergency Generator Engine Emissions (Per Engine, DeC2+ MCC Building) (M-7-G9, MD2-G-11)

Source Designation:	
Manufacturer:	Cummins
Model No.:	C35 D6 - 4BT3.3-G5
Stroke Cycle:	4-stroke
Type of Burn:	Diesel
Year Installed	2019/2017
Fuel Used:	Diesel
Fuel High Heating Value (HHV) (Btu/gal):	137,380
Full Prime Horsepower (bhp):	69
Specific Fuel Consumption (gal/hr)	3.2
Maximum Fuel Consumption at 100% Load (gal/hr):	3.2
Heat Input (MMBtu/hr)	0.45
Stack Designation:	TBD

Operational Details:

Potential Annual Hours of Operation (hr/yr):	500
Potential Fuel Consumption (gal/yr):	1,620

Criteria and Manufacturer Specific Pollutant Emission Factors:

Pollutant	**Emission Factors[a]**	**Units**
NOx	3.00	g/bhp-hr
CO (uncontrolled)	1.50	g/bhp-hr
CO (controlled)	1.50	g/bhp-hr
SO_2	1.70E-01	g/bhp-hr
PM_{10} (Filterable)	9.00E-02	g/bhp-hr
$PM_{2.5}$ (Filterable)	9.00E-02	g/bhp-hr
PM Condensable	9.00E-02	g/bhp-hr
PM Total	1.50E-01	g/bhp-hr
VOC (uncontrolled)	3.00	g/bhp-hr
VOC (controlled)	3.00	g/bhp-hr

Criteria and Manufacturer Specific Pollutant Emission Rates

Pollutant	Potential Emissions (lb/hr)[b]	(tons/yr)[c]
NO_x	0.46	0.11
CO (uncontrolled)	0.23	0.06
CO (controlled)	0.23	0.06
SO_2	0.03	0.01
PM_{10} (Filterable)	0.01	0.00
$PM_{2.5}$ (Filterable)	0.01	0.00
PM Condensable	0.01	0.00
PM Total	0.02	0.01
VOC (uncontrolled)	0.46	0.11
VOC (controlled)	0.46	0.11

Hazardous Air Pollutant (HAP) Potential Emissions

Pollutant	Emission Factor (lb/MMBtu)[a]	Potential Emissions (lb/hr)[b]	(tons/yr)[c]
HAPs:			
Acetaldehyde	7.67E-04	3.41E-04	8.54E-05
Acrolein	9.25E-05	4.12E-05	1.03E-05
Benzene	9.33E-04	4.15E-04	1.04E-04
1,3-Butadiene	3.91E-05	1.74E-05	4.35E-06
Formaldehyde	1.18E-03	5.25E-04	1.31E-04
Toluene	4.09E-04	1.82E-04	4.55E-05
Xylene	2.85E-04	1.27E-04	3.17E-05
Polycyclic Organic Matter:			
Naphthalene	8.48E-05	3.77E-05	9.44E-06
Total HAP		**0.00**	**0.00**

[a] HAP emission factors from AP-42 Section 3.2, Table 3.3-2 "Speciated Organic Compound Emission Factors for Uncontrolled Diesel Engines," Supplement F, October 1996. Criteria pollutant factors are based on EPA Tier IV standards.

[b] Emission Rate (lb/hr) = Rated Capacity (MMBtu/hr or bhp) × Emission Factor (lb/MMBtu or lb/bhp-hr).

[c] Annual Emissions $(tons/yr)_{Potential}$ = $(lb/hr)_{Emissions}$ × (Maximum Allowable Operating Hours/yr) × (1 ton/2000 lb).

MarkWest Liberty Midstream & Resources L.L.C.
Majorsville Gas Plant

Emergency Generator Engine Emissions (Per Engine)
(MD2-G-10)

Source Designation:	
Manufacturer:	Cummins
Model No.:	C15 D6
Stroke Cycle:	4-stroke
Type of Burn:	Diesel
Year Installed	2017
Fuel Used:	Diesel
Fuel High Heating Value (HHV) (Btu/gal):	137,380
Full Standby Rating (bhp @ 1800 RPM):	25
Specific Fuel Consumption (gal/hr)	1.4
Maximum Fuel Consumption at 100% Load (gal/hr):	1.4
Heat Input (MMBtu/hr)	0.19
Stack Designation:	TBD

Operational Details:

Potential Annual Hours of Operation (hr/yr):	500
Potential Fuel Consumption (gal/yr):	700

Criteria and Manufacturer Specific Pollutant Emission Factors:

Pollutant	**Emission Factors[a]**	**Units**
NOx	3.50	g/bhp-hr
CO (uncontrolled)	0.30	g/bhp-hr
CO (controlled)	0.30	g/bhp-hr
SO_2	2.05E-03	g/bhp-hr
PM_{10} (Filterable)	0.11	g/bhp-hr
$PM_{2.5}$ (Filterable)	0.11	g/bhp-hr
PM Condensable	0.11	g/bhp-hr
PM Total	0.11	g/bhp-hr
VOC (uncontrolled)	0.10	g/bhp-hr
VOC (controlled)	0.10	g/bhp-hr

Criteria and Manufacturer Specific Pollutant Emission Rates

Pollutant	Potential Emissions (lb/hr)[b]	(tons/yr)[c]
NO_x	0.19	0.05
CO (uncontrolled)	0.02	0.00
CO (controlled)	0.02	0.00
SO_2	0.05	0.01
PM_{10} (Filterable)	0.01	0.00
$PM_{2.5}$ (Filterable)	0.01	0.00
PM Condensable	0.01	0.00
PM Total	0.01	0.00
VOC (uncontrolled)	0.01	0.00
VOC (controlled)	0.01	0.00

Hazardous Air Pollutant (HAP) Potential Emissions

Pollutant	Emission Factor (lb/MMBtu)[a]	Potential Emissions (lb/hr)[b]	(tons/yr)[c]
HAPs:			
Acetaldehyde	7.67E-04	1.48E-04	3.69E-05
Acrolein	9.25E-05	1.78E-05	4.45E-06
Benzene	9.33E-04	1.79E-04	4.49E-05
1,3-Butadiene	3.91E-05	7.52E-06	1.88E-06
Formaldehyde	1.18E-03	2.27E-04	5.67E-05
Toluene	4.09E-04	7.87E-05	1.97E-05
Xylene	2.85E-04	5.48E-05	1.37E-05
Polycyclic Organic Matter:			
Naphthalene	8.48E-05	1.63E-05	4.08E-06
Total HAP		**0.00**	**0.00**

[a] HAP emission factors from AP-42 Section 3.2, Table 3.3-2 "Speciated Organic Compound Emission Factors for Uncontrolled Diesel Engines," Supplement F, October 1996. Criteria pollutant factors are based on Cummins C15 D6 Exhause Emission Data Sheet.

[b] Emission Rate (lb/hr) = Rated Capacity (MMBtu/hr or bhp) × Emission Factor (lb/MMBtu or lb/bhp-hr).

[c] Annual Emissions $(tons/yr)_{Potential}$ = $(lb/hr)_{Emissions}$ × (Maximum Allowable Operating Hours/yr) × (1 ton/2000 lb).

MarkWest Liberty Midstream & Resources L.L.C.
Majorsville Gas Plant

Emergency Generator Engine Emissions (Per Engine)
(MD1-G-5)

Source Designation:	
Manufacturer:	Generac
Model No.:	MMG25
Stroke Cycle:	4-stroke
Type of Burn:	Diesel
Year Installed	2014
Fuel Used:	Diesel
Fuel High Heating Value (HHV) (Btu/gal):	137,380
Rated Horsepower (bhp):	40.2
Specific Fuel Consumption (gal/hr)	2.1
Maximum Fuel Consumption at 100% Load (gal/hr):	2.1
Heat Input (MMBtu/hr)	0.29
Stack Designation:	TBD

Operational Details:

Potential Annual Hours of Operation (hr/yr):	500
Potential Fuel Consumption (gal/yr):	1,050

Criteria and Manufacturer Specific Pollutant Emission Factors:

Pollutant	**Emission Factors[a]**	**Units**
NOx	3.50	g/bhp-hr
CO (uncontrolled)	4.10	g/bhp-hr
CO (controlled)	4.10	g/bhp-hr
SO_2	2.05E-03	lb/bhp-hr
PM_{10} (Filterable)	0.022	g/bhp-hr
$PM_{2.5}$ (Filterable)	0.022	g/bhp-hr
PM Condensable	0.022	g/bhp-hr
PM Total	0.022	g/bhp-hr
VOC (uncontrolled)	3.50	g/bhp-hr
VOC (controlled)	3.50	g/bhp-hr

MarkWest Liberty Midstream & Resources L.L.C.
Majorsville Gas Plant

Emergency Generator Engine Emissions (Per Engine)
(MD1-G-5)

Criteria and Manufacturer Specific Pollutant Emission Rates

Pollutant	Potential Emissions (lb/hr)[b]	Potential Emissions (tons/yr)[c]
NO_x	0.31	0.08
CO (uncontrolled)	0.36	0.09
CO (controlled)	0.36	0.09
SO_2	0.08	0.02
PM_{10} (Filterable)	0.00	0.00
$PM_{2.5}$ (Filterable)	0.00	0.00
PM Condensable	0.00	0.00
PM Total	0.00	0.00
VOC (uncontrolled)	0.31	0.08
VOC (controlled)	0.31	0.08

Hazardous Air Pollutant (HAP) Potential Emissions

Pollutant	Emission Factor (lb/MMBtu)[a]	Potential Emissions (lb/hr)[b]	Potential Emissions (tons/yr)[c]
HAPs:			
Acetaldehyde	7.67E-04	2.21E-04	5.53E-05
Acrolein	9.25E-05	2.67E-05	6.67E-06
Benzene	9.33E-04	2.69E-04	6.73E-05
1,3-Butadiene	3.91E-05	1.13E-05	2.82E-06
Formaldehyde	1.18E-03	3.40E-04	8.51E-05
Toluene	4.09E-04	1.18E-04	2.95E-05
Xylene	2.85E-04	8.22E-05	2.06E-05
Polycyclic Organic Matter:			
Naphthalene	8.48E-05	2.45E-05	6.12E-06
Total HAP		**0.00**	**0.00**

[a] HAP emission factors from AP-42 Section 3.2, Table 3.3-2 "Speciated Organic Compound Emission Factors for Uncontrolled Diesel Engines," Supplement F, October 1996. Criteria pollutant factors are based on EPA Tier IV standards.

[b] Emission Rate (lb/hr) = Rated Capacity (MMBtu/hr or bhp) × Emission Factor (lb/MMBtu or lb/bhp-hr).

[c] Annual Emissions $(tons/yr)_{Potential}$ = $(lb/hr)_{Emissions}$ × (Maximum Allowable Operating Hours/yr) × (1 ton/2000 lb).

MarkWest Liberty Midstream & Resources L.L.C.
Majorsville Gas Plant

Regeneration Heaters
(H-741 & H-2741)

Source Designation:	
Manufacturer:	Heatec
Year Installed	2010
Fuel Used:	Natural Gas
Higher Heating Value (HHV) (Btu/scf):	1,020
Heat Input (MMBtu/hr)	5.60
Fuel Consumption (mmscf/hr):	5.49E-03
Potential Annual Hours of Operation (hr/yr):	8,760

[a] Heat input is based on design duty provided by manufacturer, with an applied efficiency of 86% and converted to HHV.

Criteria and Manufacturer Specific Pollutant Emission Rates

Pollutant	**Emission Factor (lb/MMscf)[a,b]**	**Potential Emissions (lb/hr)[c]**	**(tons/yr)[d]**
NO_x	55	0.302	1.323
CO	84	0.461	2.020
SO_2	0.6	0.003	0.0144
PM Total	7.6	0.042	0.1828
PM Condensable	5.7	0.031	0.137
PM_{10} (Filterable)	1.9	0.010	0.046
$PM_{2.5}$ (Filterable)	1.9	0.010	0.046
VOC	5.5	0.030	0.132

MarkWest Liberty Midstream & Resources L.L.C.

Majorsville Gas Plant

Regeneration Heaters
(H-741 & H-2741)

Hazardous Air Pollutant (HAP) Potential Emissions

Pollutant	Emission Factor (lb/MMscf)[a]	Potential Emissions	
		(lb/hr)[c]	(tons/yr)[d]
HAPs:			
3-Methylchloranthrene	1.80E-06	9.88E-09	4.33E-08
7,12-Dimethylbenz(a)anthracene	1.60E-05	8.78E-08	3.85E-07
Acenaphthene	1.80E-06	9.88E-09	4.33E-08
Acenaphthylene	1.80E-06	9.88E-09	4.33E-08
Anthracene	2.40E-06	1.32E-08	5.77E-08
Benz(a)anthracene	1.80E-06	9.88E-09	4.33E-08
Benzene	2.10E-03	1.15E-05	5.05E-05
Benzo(a)pyrene	1.20E-06	6.59E-09	2.89E-08
Benzo(b)fluoranthene	1.80E-06	9.88E-09	4.33E-08
Benzo(g,h,i)perylene	1.20E-06	6.59E-09	2.89E-08
Benzo(k)fluoranthene	1.80E-06	9.88E-09	4.33E-08
Chrysene	1.80E-06	9.88E-09	4.33E-08
Dibenzo(a,h) anthracene	1.20E-06	6.59E-09	2.89E-08
Dichlorobenzene	1.20E-03	6.59E-06	2.89E-05
Fluoranthene	3.00E-06	1.65E-08	7.21E-08
Fluorene	2.80E-06	1.54E-08	6.73E-08
Formaldehyde	7.50E-02	4.12E-04	1.80E-03
Hexane	1.80E+00	9.88E-03	4.33E-02
Indo(1,2,3-cd)pyrene	1.80E-06	9.88E-09	4.33E-08
Phenanthrene	1.70E-05	9.33E-08	4.09E-07
Pyrene	5.00E-06	2.75E-08	1.20E-07
Toluene	3.40E-03	1.87E-05	8.18E-05
Arsenic	2.00E-04	1.10E-06	4.81E-06
Beryllium	1.20E-05	6.59E-08	2.89E-07
Cadmium	1.10E-03	6.04E-06	2.65E-05
Chromium	1.40E-03	7.69E-06	3.37E-05
Cobalt	8.40E-05	4.61E-07	2.02E-06
Lead	5.00E-04	2.75E-06	1.20E-05
Manganese	3.80E-04	2.09E-06	9.14E-06
Mercury	2.60E-04	1.43E-06	6.25E-06
Nickel	2.10E-03	1.15E-05	5.05E-05
Selenium	2.40E-05	1.32E-07	5.77E-07
Polycyclic Organic Matter:			
Methylnaphthalene (2-)	2.40E-05	1.32E-07	5.77E-07
Naphthalene	6.10E-04	3.35E-06	1.47E-05
Total HAP		**1.04E-02**	**4.54E-02**

[a] Emission factors from AP-42 Section 1.4 "Natural Gas Combustion" Tables 1.4-1, 1.4-2, & 1.4-3

[b] NO_x emission factors from vendor guarantee.

[c] Emission Rate (lb/hr) = Rated Capacity (MMscf/hr) × Emission Factor (lb/MMscf) x (Actual Fuel HHV/1020).

[d] Annual Emissions $(tons/yr)_{Potential}$ = $(lb/hr)_{Emissions}$ × (Maximum Allowable Operating Hours, 8760 hr/yr) × (1 ton/2000 lb).

MarkWest Liberty Midstream & Resources L.L.C.
Majorsville Gas Plant

HMO Heater
(H-781)

Source Designation:	
Manufacturer:	Heatec
Year Installed	2011
Fuel Used:	Natural Gas
Higher Heating Value (HHV) (Btu/scf):	1,020
Heat Input (MMBtu/hr)	15.40
Fuel Consumption (mmscf/hr):	1.51E-02
Potential Annual Hours of Operation (hr/yr):	8,760

[a] Heat input is based on design duty provided by manufacturer, accounting for efficiency of 84% and converting to HHV.

Criteria and Manufacturer Specific Pollutant Emission Rates

Pollutant	**Emission Factor (lb/MMscf)[a,b]**	**Potential Emissions (lb/hr)[c]**	**Potential Emissions (tons/yr)[d]**
NO_x	88.4	1.335	5.846
CO	84	1.268	5.555
SO_2	0.6	0.009	0.0397
PM Total	7.6	0.115	0.5026
PM Condensable	5.7	0.086	0.377
PM_{10} (Filterable)	1.9	0.029	0.126
$PM_{2.5}$ (Filterable)	1.9	0.029	0.126
VOC	5.5	0.083	0.364

MarkWest Liberty Midstream & Resources L.L.C.
Majorsville Gas Plant

HMO Heater
(H-781)

Hazardous Air Pollutant (HAP) Potential Emissions

Pollutant	Emission Factor (lb/MMscf)[a]	Potential Emissions	
		(lb/hr)[c]	(tons/yr)[d]
HAPs:			
3-Methylchloranthrene	1.80E-06	2.72E-08	1.19E-07
7,12-Dimethylbenz(a)anthracene	1.60E-05	2.42E-07	1.06E-06
Acenaphthene	1.80E-06	2.72E-08	1.19E-07
Acenaphthylene	1.80E-06	2.72E-08	1.19E-07
Anthracene	2.40E-06	3.62E-08	1.59E-07
Benz(a)anthracene	1.80E-06	2.72E-08	1.19E-07
Benzene	2.10E-03	3.17E-05	1.39E-04
Benzo(a)pyrene	1.20E-06	1.81E-08	7.94E-08
Benzo(b)fluoranthene	1.80E-06	2.72E-08	1.19E-07
Benzo(g,h,i)perylene	1.20E-06	1.81E-08	7.94E-08
Benzo(k)fluoranthene	1.80E-06	2.72E-08	1.19E-07
Chrysene	1.80E-06	2.72E-08	1.19E-07
Dibenzo(a,h) anthracene	1.20E-06	1.81E-08	7.94E-08
Dichlorobenzene	1.20E-03	1.81E-05	7.94E-05
Fluoranthene	3.00E-06	4.53E-08	1.98E-07
Fluorene	2.80E-06	4.23E-08	1.85E-07
Formaldehyde	7.50E-02	1.13E-03	4.96E-03
Hexane	1.80E+00	2.72E-02	1.19E-01
Indo(1,2,3-cd)pyrene	1.80E-06	2.72E-08	1.19E-07
Phenanthrene	1.70E-05	2.57E-07	1.12E-06
Pyrene	5.00E-06	7.55E-08	3.31E-07
Toluene	3.40E-03	5.13E-05	2.25E-04
Arsenic	2.00E-04	3.02E-06	1.32E-05
Beryllium	1.20E-05	1.81E-07	7.94E-07
Cadmium	1.10E-03	1.66E-05	7.27E-05
Chromium	1.40E-03	2.11E-05	9.26E-05
Cobalt	8.40E-05	1.27E-06	5.55E-06
Lead	5.00E-04	7.55E-06	3.31E-05
Manganese	3.80E-04	5.74E-06	2.51E-05
Mercury	2.60E-04	3.93E-06	1.72E-05
Nickel	2.10E-03	3.17E-05	1.39E-04
Selenium	2.40E-05	3.62E-07	1.59E-06
Polycyclic Organic Matter:			
Methylnaphthalene (2-)	2.40E-05	3.62E-07	1.59E-06
Naphthalene	6.10E-04	9.21E-06	4.03E-05
Total HAP		**2.85E-02**	**1.25E-01**

[a] Emission factors from AP-42 Section 1.4 "Natural Gas Combustion" Tables 1.4-1, 1.4-2, & 1.4-3

[b] NO_x emission factors from vendor guarantee.

[c] Emission Rate (lb/hr) = Rated Capacity (MMscf/hr) × Emission Factor (lb/MMscf) x (Actual Fuel HHV/1020).

[d] Annual Emissions $(tons/yr)_{Potential} = (lb/hr)_{Emissions} \times$ (Maximum Allowable Operating Hours, 8760 hr/yr) × (1 ton/2000 lb).

MarkWest Liberty Midstream & Resources L.L.C.
Majorsville Gas Plant

Regeneration Heaters
(H-3741, 4741, 5741, 6741, 7741)

Source Designation:	
Manufacturer:	Heatec
Year Installed	2013 (H-3741, H-4741) 2014 (H-5741, H-6741) 2017 (H-7741)
Fuel Used:	Natural Gas
Higher Heating Value (HHV) (Btu/scf):	1,020
Heat Input (MMBtu/hr)	7.69
Fuel Consumption (mmscf/hr):	7.54E-03
Potential Annual Hours of Operation (hr/yr):	8,760

[a] Heat input is based on the normal heat load provided by manufacturer with a 30% factor applied per the manufacturer.

Criteria and Manufacturer Specific Pollutant Emission Rates

Pollutant	**Emission Factor (lb/MMscf)[a,b]**	**Potential Emissions (lb/hr)[c]**	**Potential Emissions (tons/yr)[d]**
NO_x	54.4	0.410	1.796
CO	41.82	0.315	1.381
SO_2	0.6	0.005	0.0198
PM Total	7.6	0.057	0.2510
PM Condensable	5.7	0.043	0.188
PM_{10} (Filterable)	1.9	0.014	0.063
$PM_{2.5}$ (Filterable)	1.9	0.014	0.063
VOC	5.5	0.041	0.182

MarkWest Liberty Midstream & Resources L.L.C.
Majorsville Gas Plant

Regeneration Heaters
(H-3741, 4741, 5741, 6741, 7741)

Hazardous Air Pollutant (HAP) Potential Emissions

Pollutant	Emission Factor (lb/MMscf)[a]	Potential Emissions	
		(lb/hr)[c]	(tons/yr)[d]
HAPs:			
3-Methylchloranthrene	1.80E-06	1.36E-08	5.94E-08
7,12-Dimethylbenz(a)anthracene	1.60E-05	1.21E-07	5.28E-07
Acenaphthene	1.80E-06	1.36E-08	5.94E-08
Acenaphthylene	1.80E-06	1.36E-08	5.94E-08
Anthracene	2.40E-06	1.81E-08	7.93E-08
Benz(a)anthracene	1.80E-06	1.36E-08	5.94E-08
Benzene	2.10E-03	1.58E-05	6.93E-05
Benzo(a)pyrene	1.20E-06	9.05E-09	3.96E-08
Benzo(b)fluoranthene	1.80E-06	1.36E-08	5.94E-08
Benzo(g,h,i)perylene	1.20E-06	9.05E-09	3.96E-08
Benzo(k)fluoranthene	1.80E-06	1.36E-08	5.94E-08
Chrysene	1.80E-06	1.36E-08	5.94E-08
Dibenzo(a,h) anthracene	1.20E-06	9.05E-09	3.96E-08
Dichlorobenzene	1.20E-03	9.05E-06	3.96E-05
Fluoranthene	3.00E-06	2.26E-08	9.91E-08
Fluorene	2.80E-06	2.11E-08	9.25E-08
Formaldehyde	7.50E-02	5.65E-04	2.48E-03
Hexane	1.80E+00	1.36E-02	5.94E-02
Indo(1,2,3-cd)pyrene	1.80E-06	1.36E-08	5.94E-08
Phenanthrene	1.70E-05	1.28E-07	5.61E-07
Pyrene	5.00E-06	3.77E-08	1.65E-07
Toluene	3.40E-03	2.56E-05	1.12E-04
Arsenic	2.00E-04	1.51E-06	6.60E-06
Beryllium	1.20E-05	9.05E-08	3.96E-07
Cadmium	1.10E-03	8.29E-06	3.63E-05
Chromium	1.40E-03	1.06E-05	4.62E-05
Cobalt	8.40E-05	6.33E-07	2.77E-06
Lead	5.00E-04	3.77E-06	1.65E-05
Manganese	3.80E-04	2.86E-06	1.25E-05
Mercury	2.60E-04	1.96E-06	8.59E-06
Nickel	2.10E-03	1.58E-05	6.93E-05
Selenium	2.40E-05	1.81E-07	7.93E-07
Polycyclic Organic Matter:			
Methylnaphthalene (2-)	2.40E-05	1.81E-07	7.93E-07
Naphthalene	6.10E-04	4.60E-06	2.01E-05
Total HAP		**1.42E-02**	**6.24E-02**

[a] Emission factors from AP-42 Section 1.4 "Natural Gas Combustion" Tables 1.4-1, 1.4-2, & 1.4-3

[b] NO_x and CO emission factors from vendor guarantee.

[c] Emission Rate (lb/hr) = Rated Capacity (MMscf/hr) × Emission Factor (lb/MMscf) x (Actual Fuel HHV/1020).

[d] Annual Emissions $(tons/yr)_{Potential}$ = $(lb/hr)_{Emissions}$ × (Maximum Allowable Operating Hours, 8760 hr/yr) × (1 ton/2000 lb).

MarkWest Liberty Midstream & Resources L.L.C.
Majorsville Gas Plant

Hot Oil Heaters
(H-3781, 4781, 7781)

Source Designation:	
Manufacturer:	Heatec
Year Installed	TBD
Fuel Used:	Natural Gas
Higher Heating Value (HHV) (Btu/scf):	1,020
Heat Input (MMBtu/hr)	16.07
Fuel Consumption (mmscf/hr):	1.58E-02
Potential Annual Hours of Operation (hr/yr):	8,760

[a] Heat input is based on the burner input required (HHV) provided by manufacturer with a 10% factor applied per the manufacturer.

Criteria and Manufacturer Specific Pollutant Emission Rates

Pollutant	**Emission Factor (lb/MMscf)[a,b]**	**Potential Emissions (lb/hr)[c]**	**(tons/yr)[d]**
NO_x	102	1.607	7.039
CO	84	1.323	5.797
SO_2	0.6	0.009	0.0414
PM Total	7.6	0.120	0.5244
PM Condensable	5.7	0.090	0.393
PM_{10} (Filterable)	1.9	0.030	0.131
$PM_{2.5}$ (Filterable)	1.9	0.030	0.131
VOC	5.5	0.087	0.380

MarkWest Liberty Midstream & Resources L.L.C.
Majorsville Gas Plant

Hot Oil Heaters
(H-3781, 4781, 7781)

Hazardous Air Pollutant (HAP) Potential Emissions

Pollutant	Emission Factor (lb/MMscf)[a]	Potential Emissions	
		(lb/hr)[c]	(tons/yr)[d]
HAPs:			
3-Methylchloranthrene	1.80E-06	2.84E-08	1.24E-07
7,12-Dimethylbenz(a)anthracene	1.60E-05	2.52E-07	1.10E-06
Acenaphthene	1.80E-06	2.84E-08	1.24E-07
Acenaphthylene	1.80E-06	2.84E-08	1.24E-07
Anthracene	2.40E-06	3.78E-08	1.66E-07
Benz(a)anthracene	1.80E-06	2.84E-08	1.24E-07
Benzene	2.10E-03	3.31E-05	1.45E-04
Benzo(a)pyrene	1.20E-06	1.89E-08	8.28E-08
Benzo(b)fluoranthene	1.80E-06	2.84E-08	1.24E-07
Benzo(g,h,i)perylene	1.20E-06	1.89E-08	8.28E-08
Benzo(k)fluoranthene	1.80E-06	2.84E-08	1.24E-07
Chrysene	1.80E-06	2.84E-08	1.24E-07
Dibenzo(a,h) anthracene	1.20E-06	1.89E-08	8.28E-08
Dichlorobenzene	1.20E-03	1.89E-05	8.28E-05
Fluoranthene	3.00E-06	4.73E-08	2.07E-07
Fluorene	2.80E-06	4.41E-08	1.93E-07
Formaldehyde	7.50E-02	1.18E-03	5.18E-03
Hexane	1.80E+00	2.84E-02	1.24E-01
Indo(1,2,3-cd)pyrene	1.80E-06	2.84E-08	1.24E-07
Phenanthrene	1.70E-05	2.68E-07	1.17E-06
Pyrene	5.00E-06	7.88E-08	3.45E-07
Toluene	3.40E-03	5.36E-05	2.35E-04
Arsenic	2.00E-04	3.15E-06	1.38E-05
Beryllium	1.20E-05	1.89E-07	8.28E-07
Cadmium	1.10E-03	1.73E-05	7.59E-05
Chromium	1.40E-03	2.21E-05	9.66E-05
Cobalt	8.40E-05	1.32E-06	5.80E-06
Lead	5.00E-04	7.88E-06	3.45E-05
Manganese	3.80E-04	5.99E-06	2.62E-05
Mercury	2.60E-04	4.10E-06	1.79E-05
Nickel	2.10E-03	3.31E-05	1.45E-04
Selenium	2.40E-05	3.78E-07	1.66E-06
Polycyclic Organic Matter:			
Methylnaphthalene (2-)	2.40E-05	3.78E-07	1.66E-06
Naphthalene	6.10E-04	9.61E-06	4.21E-05
Total HAP		**2.98E-02**	**1.30E-01**

[a] Emission factors from AP-42 Section 1.4 "Natural Gas Combustion" Tables 1.4-1, 1.4-2, & 1.4-3

[b] NO_x and CO emission factors from vendor guarantee.

[c] Emission Rate (lb/hr) = Rated Capacity (MMscf/hr) × Emission Factor (lb/MMscf) x (Actual Fuel HHV/1020).

[d] Annual Emissions $(tons/yr)_{Potential} = (lb/hr)_{Emissions} \times$ (Maximum Allowable Operating Hours, 8760 hr/yr) × (1 ton/2000 lb).

MarkWest Liberty Midstream & Resources L.L.C.
Majorsville Gas Plant

Regenerative Heaters
(H-D1741 & H-D2741)

Source Designation:	
Manufacturer:	Tulsa Heaters Inc.
Year Installed	TBD
Fuel Used:	Natural Gas
Higher Heating Value (HHV) (Btu/scf):	1,020
Heat Input (MMBtu/hr)	14.80
Fuel Consumption (mmscf/hr):	1.45E-02
Potential Annual Hours of Operation (hr/yr):	8,760

[a] Heat input is based on design duty of 10.15 MMBtu/hr provided by manufacturer, accounting for efficiency of 83%, converting to HHV, and applying 10% per the manufacturer footnote.

Criteria and Manufacturer Specific Pollutant Emission Rates

Pollutant	**Emission Factor (lb/MMscf)[a,b]**	**Potential Emissions (lb/hr)[c]**	**(tons/yr)[d]**
NO_x	40.8	0.592	2.592
CO	41.82	0.607	2.657
SO_2	0.6	0.009	0.0381
PM Total	13.26	0.192	0.8425
PM Condensable	5.7	0.083	0.362
PM_{10} (Filterable)	1.9	0.028	0.121
$PM_{2.5}$ (Filterable)	1.9	0.028	0.121
VOC	19.38	0.281	1.231

MarkWest Liberty Midstream & Resources L.L.C.

Majorsville Gas Plant

Regenerative Heaters
(H-D1741 & H-D2741)

Hazardous Air Pollutant (HAP) Potential Emissions

Pollutant	Emission Factor (lb/MMscf)[a]	Potential Emissions	
		(lb/hr)[c]	(tons/yr)[d]
HAPs:			
3-Methylchloranthrene	1.80E-06	2.61E-08	1.14E-07
7,12-Dimethylbenz(a)anthracene	1.60E-05	2.32E-07	1.02E-06
Acenaphthene	1.80E-06	2.61E-08	1.14E-07
Acenaphthylene	1.80E-06	2.61E-08	1.14E-07
Anthracene	2.40E-06	3.48E-08	1.52E-07
Benz(a)anthracene	1.80E-06	2.61E-08	1.14E-07
Benzene	2.10E-03	3.05E-05	1.33E-04
Benzo(a)pyrene	1.20E-06	1.74E-08	7.62E-08
Benzo(b)fluoranthene	1.80E-06	2.61E-08	1.14E-07
Benzo(g,h,i)perylene	1.20E-06	1.74E-08	7.62E-08
Benzo(k)fluoranthene	1.80E-06	2.61E-08	1.14E-07
Chrysene	1.80E-06	2.61E-08	1.14E-07
Dibenzo(a,h) anthracene	1.20E-06	1.74E-08	7.62E-08
Dichlorobenzene	1.20E-03	1.74E-05	7.62E-05
Fluoranthene	3.00E-06	4.35E-08	1.91E-07
Fluorene	2.80E-06	4.06E-08	1.78E-07
Formaldehyde	7.50E-02	1.09E-03	4.77E-03
Hexane	1.80E+00	2.61E-02	1.14E-01
Indo(1,2,3-cd)pyrene	1.80E-06	2.61E-08	1.14E-07
Phenanthrene	1.70E-05	2.47E-07	1.08E-06
Pyrene	5.00E-06	7.25E-08	3.18E-07
Toluene	3.40E-03	4.93E-05	2.16E-04
Arsenic	2.00E-04	2.90E-06	1.27E-05
Beryllium	1.20E-05	1.74E-07	7.62E-07
Cadmium	1.10E-03	1.60E-05	6.99E-05
Chromium	1.40E-03	2.03E-05	8.90E-05
Cobalt	8.40E-05	1.22E-06	5.34E-06
Lead	5.00E-04	7.25E-06	3.18E-05
Manganese	3.80E-04	5.51E-06	2.41E-05
Mercury	2.60E-04	3.77E-06	1.65E-05
Nickel	2.10E-03	3.05E-05	1.33E-04
Selenium	2.40E-05	3.48E-07	1.52E-06
Polycyclic Organic Matter:			
Methylnaphthalene (2-)	2.40E-05	3.48E-07	1.52E-06
Naphthalene	6.10E-04	8.85E-06	3.88E-05
Total HAP		**2.74E-02**	**1.20E-01**

[a] Emission factors from AP-42 Section 1.4 "Natural Gas Combustion" Tables 1.4-1, 1.4-2, & 1.4-3

[b] NO_x, CO, Pmtotal, and VOC emission factors from vendor guarantee.

[c] Emission Rate (lb/hr) = Rated Capacity (MMscf/hr) × Emission Factor (lb/MMscf) x (Actual Fuel HHV/1020).

[d] Annual Emissions $(tons/yr)_{Potential}$ = $(lb/hr)_{Emissions}$ × (Maximum Allowable Operating Hours, 8760 hr/yr) × (1 ton/2000 lb).

MarkWest Liberty Midstream & Resources L.L.C.
Majorsville Gas Plant

Hot Oil Heater
(H-D1782, H-D2782)

Source Designation:	
Manufacturer:	Optimized Process Furnaces
Year Installed	2013 (D-1782) 2017 (D-2782)
Fuel Used:	Natural Gas
Higher Heating Value (HHV) (Btu/scf):	1,020
Heat Input (MMBtu/hr)	119.20
Fuel Consumption (mmscf/hr):	1.17E-01
Potential Annual Hours of Operation (hr/yr):	8,760

[a] Heat input is based on the maximum heat release per burner provided by manufacturer and applied to the total number of burners (8).

Criteria and Manufacturer Specific Pollutant Emission Rates

Pollutant	**Emission Factor (lb/MMscf)[a] (lb/MMBtu)[b]**	**Potential Emissions (lb/hr)[c]**	**(tons/yr)[d]**
NO_x	0.04	4.768	20.884
CO	0.04	4.768	20.884
SO_2	0.6	0.070	0.3071
PM Total	7.6	0.888	3.8901
PM Condensable	5.7	0.666	2.918
PM_{10} (Filterable)	1.9	0.222	0.973
$PM_{2.5}$ (Filterable)	1.9	0.222	0.973
VOC	5.5	0.643	2.815

MarkWest Liberty Midstream & Resources L.L.C.

Majorsville Gas Plant

Hot Oil Heater
(H-D1782, H-D2782)

Hazardous Air Pollutant (HAP) Potential Emissions

Pollutant	Emission Factor (lb/MMscf)[a]	Potential Emissions (lb/hr)[c]	Potential Emissions (tons/yr)[d]
HAPs:			
3-Methylchloranthrene	1.80E-06	2.10E-07	9.21E-07
7,12-Dimethylbenz(a)anthracene	1.60E-05	1.87E-06	8.19E-06
Acenaphthene	1.80E-06	2.10E-07	9.21E-07
Acenaphthylene	1.80E-06	2.10E-07	9.21E-07
Anthracene	2.40E-06	2.80E-07	1.23E-06
Benz(a)anthracene	1.80E-06	2.10E-07	9.21E-07
Benzene	2.10E-03	2.45E-04	1.07E-03
Benzo(a)pyrene	1.20E-06	1.40E-07	6.14E-07
Benzo(b)fluoranthene	1.80E-06	2.10E-07	9.21E-07
Benzo(g,h,i)perylene	1.20E-06	1.40E-07	6.14E-07
Benzo(k)fluoranthene	1.80E-06	2.10E-07	9.21E-07
Chrysene	1.80E-06	2.10E-07	9.21E-07
Dibenzo(a,h) anthracene	1.20E-06	1.40E-07	6.14E-07
Dichlorobenzene	1.20E-03	1.40E-04	6.14E-04
Fluoranthene	3.00E-06	3.51E-07	1.54E-06
Fluorene	2.80E-06	3.27E-07	1.43E-06
Formaldehyde	7.50E-02	8.76E-03	3.84E-02
Hexane	1.80E+00	2.10E-01	9.21E-01
Indo(1,2,3-cd)pyrene	1.80E-06	2.10E-07	9.21E-07
Phenanthrene	1.70E-05	1.99E-06	8.70E-06
Pyrene	5.00E-06	5.84E-07	2.56E-06
Toluene	3.40E-03	3.97E-04	1.74E-03
Arsenic	2.00E-04	2.34E-05	1.02E-04
Beryllium	1.20E-05	1.40E-06	6.14E-06
Cadmium	1.10E-03	1.29E-04	5.63E-04
Chromium	1.40E-03	1.64E-04	7.17E-04
Cobalt	8.40E-05	9.82E-06	4.30E-05
Lead	5.00E-04	5.84E-05	2.56E-04
Manganese	3.80E-04	4.44E-05	1.95E-04
Mercury	2.60E-04	3.04E-05	1.33E-04
Nickel	2.10E-03	2.45E-04	1.07E-03
Selenium	2.40E-05	2.80E-06	1.23E-05
Polycyclic Organic Matter:			
Methylnaphthalene (2-)	2.40E-05	2.80E-06	1.23E-05
Naphthalene	6.10E-04	7.13E-05	3.12E-04
Total HAP		**2.21E-01**	**9.67E-01**

[a] Emission factors from AP-42 Section 1.4 "Natural Gas Combustion" Tables 1.4-1, 1.4-2, & 1.4-3

[b] NO_x and CO emission factors from vendor guarantee.

[c] Emission Rate (lb/hr) = Rated Capacity (MMscf/hr) × Emission Factor (lb/MMscf) x (Actual Fuel HHV/1020).

[d] Annual Emissions $(tons/yr)_{Potential} = (lb/hr)_{Emissions} \times$ (Maximum Allowable Operating Hours, 8760 hr/yr) × (1 ton/2000 lb).

MarkWest Liberty Midstream & Resources L.L.C.
Majorsville Gas Plant

Stabilization Heater
(H-4782)

Source Designation:	
Manufacturer:	Heatec
Year Installed	2014
Fuel Used:	Natural Gas
Higher Heating Value (HHV) (Btu/scf):	1,020
Heat Input (MMBtu/hr)	11.72
Fuel Consumption (mmscf/hr):	1.15E-02
Potential Annual Hours of Operation (hr/yr):	8,760

[a] Heat input is based on design duty of 8.735 MMBtu/hr provided by manufacturer, accounting for efficiency of 82%, and converting to

Criteria and Manufacturer Specific Pollutant Emission Rates

Pollutant	**Emission Factor (lb/MMscf)[a,b]**	**Potential Emissions (lb/hr)[c]**	**(tons/yr)[d]**
NO_x	59.84	0.687	3.011
CO	84	0.965	4.227
SO_2	0.6	0.007	0.0302
PM Total	7.6	0.087	0.3824
PM Condensable	5.7	0.065	0.287
PM_{10} (Filterable)	1.9	0.022	0.096
$PM_{2.5}$ (Filterable)	1.9	0.022	0.096
VOC	5.5	0.063	0.277

MarkWest Liberty Midstream & Resources L.L.C.

Majorsville Gas Plant

Stabilization Heater (H-4782)

Hazardous Air Pollutant (HAP) Potential Emissions

Pollutant	Emission Factor (lb/MMscf)[a]	Potential Emissions (lb/hr)[c]	Potential Emissions (tons/yr)[d]
HAPs:			
3-Methylchloranthrene	1.80E-06	2.07E-08	9.06E-08
7,12-Dimethylbenz(a)anthracene	1.60E-05	1.84E-07	8.05E-07
Acenaphthene	1.80E-06	2.07E-08	9.06E-08
Acenaphthylene	1.80E-06	2.07E-08	9.06E-08
Anthracene	2.40E-06	2.76E-08	1.21E-07
Benz(a)anthracene	1.80E-06	2.07E-08	9.06E-08
Benzene	2.10E-03	2.41E-05	1.06E-04
Benzo(a)pyrene	1.20E-06	1.38E-08	6.04E-08
Benzo(b)fluoranthene	1.80E-06	2.07E-08	9.06E-08
Benzo(g,h,i)perylene	1.20E-06	1.38E-08	6.04E-08
Benzo(k)fluoranthene	1.80E-06	2.07E-08	9.06E-08
Chrysene	1.80E-06	2.07E-08	9.06E-08
Dibenzo(a,h) anthracene	1.20E-06	1.38E-08	6.04E-08
Dichlorobenzene	1.20E-03	1.38E-05	6.04E-05
Fluoranthene	3.00E-06	3.45E-08	1.51E-07
Fluorene	2.80E-06	3.22E-08	1.41E-07
Formaldehyde	7.50E-02	8.62E-04	3.77E-03
Hexane	1.80E+00	2.07E-02	9.06E-02
Indo(1,2,3-cd)pyrene	1.80E-06	2.07E-08	9.06E-08
Phenanthrene	1.70E-05	1.95E-07	8.55E-07
Pyrene	5.00E-06	5.74E-08	2.52E-07
Toluene	3.40E-03	3.91E-05	1.71E-04
Arsenic	2.00E-04	2.30E-06	1.01E-05
Beryllium	1.20E-05	1.38E-07	6.04E-07
Cadmium	1.10E-03	1.26E-05	5.53E-05
Chromium	1.40E-03	1.61E-05	7.04E-05
Cobalt	8.40E-05	9.65E-07	4.23E-06
Lead	5.00E-04	5.74E-06	2.52E-05
Manganese	3.80E-04	4.37E-06	1.91E-05
Mercury	2.60E-04	2.99E-06	1.31E-05
Nickel	2.10E-03	2.41E-05	1.06E-04
Selenium	2.40E-05	2.76E-07	1.21E-06
Polycyclic Organic Matter:			
Methylnaphthalene (2-)	2.40E-05	2.76E-07	1.21E-06
Naphthalene	6.10E-04	7.01E-06	3.07E-05
Total HAP		**2.17E-02**	**9.50E-02**

[a] Emission factors from AP-42 Section 1.4 "Natural Gas Combustion" Tables 1.4-1, 1.4-2, & 1.4-3

[b] NO_x and CO emission factors from vendor guarantee.

[c] Emission Rate (lb/hr) = Rated Capacity (MMscf/hr) × Emission Factor (lb/MMscf) x (Actual Fuel HHV/1020).

[d] Annual Emissions $(tons/yr)_{Potential}$ = $(lb/hr)_{Emissions}$ × (Maximum Allowable Operating Hours, 8760 hr/yr) × (1 ton/2000 lb).

MarkWest Liberty Midstream & Resources L.L.C.
Majorsville Gas Plant

Fugitive Emissions from Component Leaks

Component	Service Type	Component Count[1]	Component Count[2]	TOC Emission Factor[3] (kg/hr/component)	Average NG Leak Rate (lb/hr)	VOC Wt%[4]	HAP Wt %	Potential VOC Emissions (tpy)	Potential HAP Emissions (tpy)
Compressors	Gas	73	73	1.32E-03	0.21	0.50%	0.00%	0.00	0.00
Compressors	Light Oil	1	1	1.13E-03	0.00	100.00%	1.49%	0.01	0.00
Flange	Gas	2907	2,907	2.73E-04	1.75	100.00%	0.27%	7.67	0.02
Flange	Gas	1843	1,843	2.73E-04	1.11	20.00%	0.27%	0.97	0.01
Flange	Gas	71	71	2.73E-04	0.04	0.50%	0.00%	0.00	0.00
Flange	Light Oil	2436	2,436	7.70E-05	0.41	100.00%	1.49%	1.81	0.03
Flange	Light Oil	37	37	7.70E-05	0.01	0.50%	1.49%	0.00	0.00
Flange	Heavy Oil	2	2	2.73E-07	0.00	100.00%	1.49%	0.00	0.00
Connector	Gas	8069	8,069	1.40E-04	2.49	100.00%	0.27%	10.92	0.03
Connector	Gas	6457	6,457	1.40E-04	1.99	20.00%	0.27%	1.75	0.02
Connector	Gas	149	149	1.40E-04	0.05	0.50%	0.00%	0.00	0.00
Connector	Light Oil	4765	4,765	1.47E-04	1.55	100.00%	1.49%	6.77	0.10
Connector	Light Oil	181	181	1.47E-04	0.06	0.50%	1.49%	0.00	0.00
PRD	Gas	62	78	2.64E-04	0.05	100.00%	0.27%	0.20	0.00
PRD	Gas	142	178	2.64E-04	0.10	20.00%	0.27%	0.09	0.00
PRD	Gas	8	10	2.64E-04	0.01	0.50%	0.00%	0.00	0.00
PRD	Light Oil	42	53	2.25E-04	0.03	100.00%	1.49%	0.11	0.00
Pump	Gas	42	53	3.60E-04	0.04	100.00%	0.27%	0.18	0.00
Pump	Light Oil	57	71	1.95E-03	0.31	100.00%	1.49%	1.34	0.02
Valve	Gas	3390	4,238	1.35E-04	1.26	100.00%	0.27%	5.53	0.01
Valve	Gas	3160	3,950	1.35E-04	1.18	20.00%	0.27%	1.03	0.01
Valve	Gas	280	350	1.35E-04	0.10	0.50%	0.00%	0.00	0.00
Valve	Heavy Oil	2	3	2.52E-07	0.00	100.00%	1.49%	0.00	0.00
Valve	Heavy Oil	17	21	2.52E-07	0.00	0.50%	1.49%	0.00	0.00
Valve	Light Oil	2888	3,610	7.50E-05	0.60	100.00%	1.49%	2.62	0.04
Valve	Light Oil	161	201	7.50E-05	0.03	0.50%	1.49%	0.00	0.00
Total		**37,242**	**39,805**					**41.006**	**0.311**

[1] Component counts are based on actual counts from LeakDAS, LDAR tracking system, and estimations.

[2] Counts are based on actuals counts and apply a factor for conservatism.

[3] *Table 2-4 :Oil & Gas Production Operations Average Emission Factors* , Protocol for Equipment Leak Emission Estimates, EPA 453/R-95-017, November 1995 with applied reduction percentages from NSPS Subpart OOOO monitoring program per TCEQ Air Permit Technical Guidance for Chemical Sources: Equipment Leak Fugitives October 2000. Emission factors based on average measured TOC from component types indicated in gas service at O&G Production Operations.

[4] VOC and HAP weight percent based on most conservative monthly gas analysis 2016. For HAPs the C6+ were speciated using a typical lumped C6+ gas analysis from GRI-GLYCalc estimations to determine hazardous constituents.

MarkWest Liberty Midstream & Resources L.L.C.
Majorsville Gas Plant

Plant Flare
(FL-991)

Source Designation:	
Manufacturer:	Superior Fabrication
Year Installed	2010
Operating Hours: (hr/yr)	8,760
Control Efficiency:	98%
Flow Rate per Pilot (scfm)	1.39
Number of Pilots	6.00
Pilot Gas Volume (scfm)	8.34
Purge Gas Volume (scfm)	0.00
Annual Fuel Use (MMBtu/yr)	4,471
Annual Fuel Use (mmscf/yr)	4.4
Fuel Consumption (mmscf/hr):	5.0E-04
Fuel HHV (Btu/scf)	1,020

Emissions Resulting From Combustion of Pilot/Purge Gas

Pollutant	**Emission Factor (lb/MMscf)[a]**	**Potential Emissions (lb/hr)[b]**	**(tons/yr)[c]**
NO_x	100	0.050	0.219
CO	84	0.042	0.184
SO_2	0.6	0.000	0.001
PM Total	7.6	0.004	0.017
PM Condensable	1.9	0.001	0.004
PM_{10} (Filterable)	5.7	0.003	0.012
$PM_{2.5}$ (Filterable)	5.7	0.003	0.012
VOC	5.5	0.003	0.012
Formaldehyde	7.50E-02	0.000	0.000
Benzene	2.10E-03	0.000	0.000
Toluene	3.40E-03	0.000	0.000
n-Hexane	1.80E+00	0.001	0.004
Total HAPs	-	0.001	0.004
CO_2	120,000.00	60.048	263.010
CH_4	2.30	0.001	0.005
N_2O	2.20	0.001	0.005
Total GHG	-	60.413	264.611

[a] Emission factors from AP-42 Section 1.4 "Natural Gas Combustion" Tables 1.4-1.

[b] Emission Rate (lb/hr) = Rated Capacity (MMscf/hr) × Emission Factor (lb/MMscf).

[c] Annual Emissions $(tons/yr)_{Potential} = (lb/hr)_{Emissions} \times$ (Maximum Allowable Operating Hours, 8760 hr/yr) × (1 ton/2000 lb).

MarkWest Liberty Midstream & Resources L.L.C.
Majorsville Gas Plant

Plant Flare
(FL-991)

Combustion of Hydrocarbons

Source Designation:	
Hourly Gas Flow (scf/hr)[b]	5,747
Annual Gas Flow (mmscf/yr)	50.34
Molecular Weight (lb/lbmole)	21.64
Hourly Gas Flow (lb/hr)	328.13
Annual Gas Flow (ton/yr)	1437.19
Heating value (btu/scf)	1,323.00
Maximum Heat Release of Flare (mmbtu/hr)	7.6
Maximum Heat Release of Flare (mmbtu/yr)	66,605
NO_X Emission Rate (lb/mmbtu)[a]	0.068
CO Emission Rate (lb/mmbtu)[a]	0.31
CO_2 Emission Rate (lb/mmscf)[c]	155,647.06
N_2O Emission Rate (lb/mmscf)[c]	2.85

[a] Emission factors from AP-42 Section 13.5 "Industrial Flares" Table 13.5-1

[b] Includes emissions from pump maintenance and pigging

[c] Emission factors from AP-42 Section 1.4 "Natural Gas Combustion" Tables 1.4-1.

Emissions From Combustion of Hydrocarbons

Pollutant	Annual average lb/hr	tpy
NO_X	0.5170	2.2646
CO	2.3570	10.3238
VOC	1.4549	6.3724
Benzene	0.0000	0.0000
Toluene	0.0000	0.0000
Ethylbenzene	0.0000	0.0000
Xylene	0.0000	0.0000
n-Hexane	0.0544	0.2383
Total HAPs	0.0544	0.2383
CO_2	894.5126	3,917.9652
CH_4	3.6147	15.8326
N_2O	0.0164	0.0718
Total GHG	975.5060	4,335.1846

Total Emissions

Pollutant	Annual average lb/hr	tpy
NO_X	0.5671	2.4838
CO	2.3991	10.5079
SO_2	0.0003	0.0013
PM Total	0.0038	0.0167
PM Condensable	0.0010	0.0042
PM_{10} (Filterable)	0.0029	0.0125
$PM_{2.5}$ (Filterable)	0.0029	0.0125
VOC	1.4576	6.3844
Formaldehyde	0.0000	0.0002
Benzene	0.0000	0.0000
Toluene	0.0000	0.0000
Ethylbenzene	0.0000	0.0000
Xylene	0.0000	0.0000
n-Hexane	0.0553	0.2422
Total HAPs	0.0553	0.2424
CO_2	954.5606	4,180.9754
CH_4	3.6159	15.8376
N_2O	0.0175	0.0767
Total GHG	1,035.9194	4,599.7955

MarkWest Liberty Midstream & Resources L.L.C.
Majorsville Gas Plant

Plant Flare
(FL-1991)

Source Designation:	
Manufacturer:	Callidus
Year Installed	2012/2013
Operating Hours: (hr/yr)	8,760
Control Efficiency:	98%
Flow Rate per Pilot (scfm)	1.39
Number of Pilots	5.00
Pilot Gas Volume (scfm)	6.95
Purge Gas Volume (scfm)	0.00
Annual Fuel Use (MMBtu/yr)	3,726
Annual Fuel Use (mmscf/yr)	3.65
Fuel Consumption (mmscf/hr):	4.2E-04
Fuel HHV (Btu/scf)	1,020

Emissions Resulting From Combustion of Pilot/Purge Gas

Pollutant	**Emission Factor (lb/MMscf)[a]**	**Potential Emissions (lb/hr)[b]**	**(tons/yr)[c]**
NO_x	100	0.042	0.183
CO	84	0.035	0.153
SO_2	0.6	0.000	0.001
PM Total	7.6	0.003	0.014
PM Condensable	1.9	0.001	0.003
PM_{10} (Filterable)	5.7	0.002	0.010
$PM_{2.5}$ (Filterable)	5.7	0.002	0.010
VOC	5.5	0.002	0.010
Formaldehyde	7.50E-02	0.000	0.000
Benzene	2.10E-03	0.000	0.000
Toluene	3.40E-03	0.000	0.000
n-Hexane	1.80E+00	0.001	0.003
Total HAPs	-	0.001	0.003
CO_2	120,000.00	50.040	219.175
CH_4	2.30	0.001	0.004
N_2O	2.20	0.001	0.004
Total GHG	-	50.345	220.509

[a] Emission factors from AP-42 Section 1.4 "Natural Gas Combustion" Tables 1.4-1.

[b] Emission Rate (lb/hr) = Rated Capacity (MMscf/hr) × Emission Factor (lb/MMscf).

[c] Annual Emissions $(tons/yr)_{Potential}$ = $(lb/hr)_{Emissions}$ × (Maximum Allowable Operating Hours, 8760 hr/yr) × (1 ton/2000 lb).

MarkWest Liberty Midstream & Resources L.L.C.
Majorsville Gas Plant

Plant Flare
(FL-1991)

Combustion of Hydrocarbons

Source Designation:	
Hourly Gas Flow (scf/hr)	12,214.61
Annual Gas Flow (mmscf/yr)	107.00
Molecular Weight	21.64
Hourly Gas Flow (lb/hr)	697.39
Annual Gas Flow (ton/yr)	3,054.57
Heating value (btu/scf)	1,323.00
Maximum Heat Release of Flare (mmbtu/hr)	16.2
Maximum Heat Release of Flare (mmbtu/yr)	141,561
NO_X Emission Rate (lb/mmbtu)[a]	0.068
CO Emission Rate (lb/mmbtu)[a]	0.31
CO_2 Emission Rate (lb/mmscf)[c]	155,647.06
N_2O Emission Rate (lb/mmscf)[c]	2.85

[a] Emission factors from AP-42 Section 13.5 "Industrial Flares" Table 13.5-1

[b] Includes emissions from pump maintenance and pigging

[c] Emission factors from AP-42 Section 1.4 "Natural Gas Combustion" Tables 1.4-1.

Emissions From Combustion of Hydrocarbons

Pollutant	**lb/hr**	**tpy**
NO_X	1.0989	4.8131
CO	5.0096	21.9420
VOC	3.0921	13.5436
Benzene	0.0000	0.0000
Toluene	0.0000	0.0000
Ethylbenzene	0.0000	0.0000
Xylene	0.0000	0.0000
n-Hexane	0.1156	0.5064
Total HAPs	0.1156	0.5064
CO_2	1,901.1684	8,327.1176
CH_4	7.6827	33.6500
N_2O	0.0349	0.1527
Total GHG	2073.3092	9,213.8624

Total Emissions

Pollutant	**lb/hr**	**tpy**
NO_X	1.1406	4.9957
CO	5.0446	22.0954
SO_2	0.0003	0.0011
PM Total	0.0032	0.0139
PM Condensable	0.0008	0.0035
PM_{10} (Filterable)	0.0024	0.0104
$PM_{2.5}$ (Filterable)	0.0024	0.0104
VOC	3.0944	13.5537
Formaldehyde	0.0000	0.0001
Benzene	0.0000	0.0000
Toluene	0.0000	0.0000
Ethylbenzene	0.0000	0.0000
Xylene	0.0000	0.0000
n-Hexane	0.1164	0.5097
Total HAPs	0.1164	0.5098
CO_2	1,951.2084	8,546.2928
CH_4	7.6836	33.6542
N_2O	0.0358	0.1567
Total GHG	2,123.6537	9,434.3715

MarkWest Liberty Midstream & Resources, L.L.C.
Majorsville Gas Plant
Rod Packing Emissions

Rod Packing Emissions

Summary of Rodpacking Emissions

Pollutant	Total Emissions	
	lb/hr	tpy
VOC	**0.99**	**4.32**
Total HAPs	**0.04**	**0.19**
Methane	**53.63**	**234.90**
CO2	**2.65**	**11.60**

[a] Rodpacking emissions are based on the historical maximum average monitored leak rate per compressor.

Residue Gas Compressors

Vent Rate (SCFH)	56.651	
Number of Compressors	23	
Total Emissions[a]	56.900	(lb/hr)

Pollutant	Mass %	Emissions	
		lb/hr	tpy
VOC	0.11%	0.061	0.269
Total HAPs	0.00%	0.00	0.00
Methane	93.36%	53.12	232.68
CO2	0.70%	0.40	1.74

Stabilizer Overhead Compressors

Vent Rate (SCFH)	4.871	
Number of Compressors	6	
Total Emissions[a]	2.248	(lb/hr)

Pollutant	Mass %	Emissions	
		lb/hr	tpy
VOC	41.10%	0.924	4.046
Total HAPs	1.90%	0.043	0.19
Methane	22.22%	0.499	2.19
CO2	0.16%	0.004	0.02

Ethane Compressors

Vent Rate (SCFH)	285.982	
Number of Compressors	6	
Total Emissions[a]	135.526	(lb/hr)

Pollutant	Mass %	Emissions	
		lb/hr	tpy
VOC	0.02%	0.000	0.002
Total HAPs	0.00%	0.000	0.00
Methane	0.38%	0.009	0.04
CO2	0.00%	0.000	0.00

CO2 Compressors

Vent Rate (SCFH)	0.060	
Number of Compressors	2	
Total Emissions[a]	0.014	(lb/hr)

Pollutant	Mass %	Emissions	
		lb/hr	tpy
VOC	0.001%	0.000	0.00
Total HAPs	0.001%	0.000	0.00
Methane	0.001%	0.000	0.00
CO2	99.99%	2.248	9.84

MarkWest Liberty Midstream & Resources L.L.C.
Majorsville Gas Plant

Blowdowns

VOC and HAP Vented Blowdown Emissions

Blowdown Emissions Sources	Number of Units	Vented Gas Volume Per Blowdown Event (scf)	Number of Blowdown Events per year	Total Volume Emitted (scf/yr)	Flare Control Efficiency (%)	Potential VOC Emissions (tpy)	Potential HAP Emissions (tpy)
CAT 3608s	3	2,200	36	237,600	0%	1.27	0.061
Electric Compressors	29	1,561	6	271,700	0%	1.46	0.070
Miscellaneous Events	--	--	--	500,000	0%	2.68	0.129
Majorsville I&II	2	182,525	4	1,460,200	98%	0.16	0.377
Majorsville III & IV	2	250,000	4	2,000,000	98%	0.21	0.516
Majorsville V, VI, VII	3	250,000	4	3,000,000	98%	0.32	0.774
Deethanizer	1	459,000	4	1,836,000	98%	0.20	0.474
Total						**5.41**	**0.260**

Density of natural gas: 0.055 Based on more conservative inlet stream.

MarkWest Liberty Midstream and Resources, L.L.C.

Sherwood Gas Plant

Methanol Tank Emissions

Methanol Tank

Source Information:	
Contents:	Methanol
Quantity:	7
Tank Orientation/Geometry:	Horizontal Cylinder
Approx. Length (ft):	5.0
Approx. Diameter (ft):	4.2
Volume (gal):	520
Turnovers per year:	6
Maximum Fill Level:	90%
Insulation:	None
Tank Color:	Red
Control Percentage:	0%

Contents	Site-Wide Throughput (gal/yr)	(bbl/day)
Methanol	21,840	1.425

Tank Working and Breathing Emissions Summary:

Pollutant	Uncontrolled Tank Losses		Controlled Tank Losses	
	lb/hr	tpy	lb/hr	tpy
Total VOC	0.017	0.075	0.017	0.075
Total HAP	0.017	0.075	0.017	0.075

Methanol emission estimates are conservatively based on 12 turnovers per year and modeled using ProMax 5.0.

MarkWest Liberty Midstream & Resources L.L.C.
Majorsville Gas Plant

Pigging Equipment

Pigging Emissions are Accounted for in Flare Emissions

Description	Gas Source Basis	Pressure Type	Control Device	Efficiency	Size	Pigging Frequency	Max Events/Yr	Pressure (PSIG)	Temp (deg F)
Mobley to Majorsville Receiver	Ethane	HP		98%	10	156	156	1000	60
Houston to Majorsville Receiver	Ethane	HP	Flare	98%	16	1	1	1400	60
Sherwood to Majorsville Receiver	Ethane	HP	Flare	98%	12	1	1	1200	60
Majorsville to Day Road Launcher	NGL	HP	Flare	98%	10	1	1	905	100
Sherwood to Majorsville Receiver	NGL	HP	Flare	98%	20	1	1	900	60
Majorsville to Beech Bottom Launcher	NGL	HP	Flare	98%	20	1	1	900	60
Chesapeake Condensate Receiver	Condensate	HP	Flare	98%	6	2	2	950	60
Total									

Section 4
Insignificant Activities

Section 4: Insignificant Activities

24. Insignificant Activities (Check all that apply)		
☒	1.	Air compressors and pneumatically operated equipment, including hand tools.
☒	2.	Air contaminant detectors or recorders, combustion controllers or shutoffs.
☒	3.	Any consumer product used in the same manner as in normal consumer use, provided the use results in a duration and frequency of exposure which are not greater than those experienced by consumer, and which may include, but not be limited to, personal use items; janitorial cleaning supplies, office supplies and supplies to maintain copying equipment.
☒	4.	Bathroom/toilet vent emissions.
☒	5.	Batteries and battery charging stations, except at battery manufacturing plants.
☒	6.	Bench-scale laboratory equipment used for physical or chemical analysis, but not lab fume hoods or vents. Many lab fume hoods or vents might qualify for treatment as insignificant (depending on the applicable SIP) or be grouped together for purposes of description.
☐	7.	Blacksmith forges.
☐	8.	Boiler water treatment operations, not including cooling towers.
☐	9.	Brazing, soldering or welding equipment used as an auxiliary to the principal equipment at the source.
☐	10.	CO_2 lasers, used only on metals and other materials which do not emit HAP in the process.
☐	11.	Combustion emissions from propulsion of mobile sources, except for vessel emissions from Outer Continental Shelf sources.
☒	12.	Combustion units designed and used exclusively for comfort heating that use liquid petroleum gas or natural gas as fuel.
☒	13.	Comfort air conditioning or ventilation systems not used to remove air contaminants generated by or released from specific units of equipment.
☐	14.	Demineralized water tanks and demineralizer vents.
☐	15.	Drop hammers or hydraulic presses for forging or metalworking.
☐	16.	Electric or steam-heated drying ovens and autoclaves, but not the emissions from the articles or substances being processed in the ovens or autoclaves or the boilers delivering the steam.
☐	17.	Emergency (backup) electrical generators at residential locations.
☐	18.	Emergency road flares.
☐	19.	Emission units which do not have any applicable requirements and which emit criteria pollutants (CO, NO_x, SO_2, VOC and PM) into the atmosphere at a rate of less than 1 pound per hour and less than 10,000 pounds per year aggregate total for each criteria pollutant from all emission units. Please specify all emission units for which this exemption applies along with the quantity of criteria pollutants emitted on an hourly and annual basis: _____ _____ _____ _____ _____ _____ _____ _____ _____

24. Insignificant Activities (Check all that apply)		
☐	20.	Emission units which do not have any applicable requirements and which emit hazardous air pollutants into the atmosphere at a rate of less than 0.1 pounds per hour and less than 1,000 pounds per year aggregate total for all HAPs from all emission sources. This limitation cannot be used for any source which emits dioxin/furans nor for toxic air pollutants as per 45CSR27. Please specify all emission units for which this exemption applies along with the quantity of hazardous air pollutants emitted on an hourly and annual basis: _____ _____ _____ _____ _____
☐	21.	Environmental chambers not using hazardous air pollutant (HAP) gases.
☐	22.	Equipment on the premises of industrial and manufacturing operations used solely for the purpose of preparing food for human consumption.
☐	23.	Equipment used exclusively to slaughter animals, but not including other equipment at slaughterhouses, such as rendering cookers, boilers, heating plants, incinerators, and electrical power generating equipment.
☒	24.	Equipment used for quality control/assurance or inspection purposes, including sampling equipment used to withdraw materials for analysis.
☐	25.	Equipment used for surface coating, painting, dipping or spray operations, except those that will emit VOC or HAP.
☒	26.	Fire suppression systems.
☒	27.	Firefighting equipment and the equipment used to train firefighters.
☐	28.	Flares used solely to indicate danger to the public.
☒	29.	Fugitive emission related to movement of passenger vehicle provided the emissions are not counted for applicability purposes and any required fugitive dust control plan or its equivalent is submitted.
☐	30.	Hand-held applicator equipment for hot melt adhesives with no VOC in the adhesive formulation.
☒	31.	Hand-held equipment for buffing, polishing, cutting, drilling, sawing, grinding, turning or machining wood, metal or plastic.
☐	32.	Humidity chambers.
☒	33.	Hydraulic and hydrostatic testing equipment.
☐	34.	Indoor or outdoor kerosene heaters.
☒	35.	Internal combustion engines used for landscaping purposes.
☐	36.	Laser trimmers using dust collection to prevent fugitive emissions.
☐	37.	Laundry activities, except for dry-cleaning and steam boilers.
☐	38.	Natural gas pressure regulator vents, excluding venting at oil and gas production facilities.
☐	39.	Oxygen scavenging (de-aeration) of water.
☐	40.	Ozone generators.
☒	41.	Plant maintenance and upkeep activities (e.g., grounds-keeping, general repairs, cleaning, painting, welding, plumbing, re-tarring roofs, installing insulation, and paving parking lots) provided these activities are not conducted as part of a manufacturing process, are not related to the source's primary business activity, and not otherwise triggering a permit modification. (Cleaning and painting activities qualify if they are not subject to VOC or HAP control requirements. Asphalt batch plant

24. Insignificant Activities (Check all that apply)		
		owners/operators must still get a permit if otherwise requested.)
☐	42.	Portable electrical generators that can be moved by hand from one location to another. "Moved by Hand" means that it can be moved without the assistance of any motorized or non-motorized vehicle, conveyance, or device.
☐	43.	Process water filtration systems and demineralizers.
☒	44.	Repair or maintenance shop activities not related to the source's primary business activity, not including emissions from surface coating or de-greasing (solvent metal cleaning) activities, and not otherwise triggering a permit modification.
☒	45.	Repairs or maintenance where no structural repairs are made and where no new air pollutant emitting facilities are installed or modified.
☒	46.	Routing calibration and maintenance of laboratory equipment or other analytical instruments.
☐	47.	Salt baths using nonvolatile salts that do not result in emissions of any regulated air pollutants. Shock chambers.
☐	48.	Shock chambers.
☐	49.	Solar simulators.
☐	50.	Space heaters operating by direct heat transfer.
☐	51.	Steam cleaning operations.
☐	52.	Steam leaks.
☐	53.	Steam sterilizers.
☐	54.	Steam vents and safety relief valves.
☐	55.	Storage tanks, reservoirs, and pumping and handling equipment of any size containing soaps, vegetable oil, grease, animal fat, and nonvolatile aqueous salt solutions, provided appropriate lids and covers are utilized.
☒	56.	Storage tanks, vessels, and containers holding or storing liquid substances that will not emit any VOC or HAP. Exemptions for storage tanks containing petroleum liquids or other volatile organic liquids should be based on size limits such as storage tank capacity and vapor pressure of liquids stored and are not appropriate for this list.
☐	57.	Such other sources or activities as the Director may determine.
☒	58.	Tobacco smoking rooms and areas.
☒	59.	Vents from continuous emissions monitors and other analyzers.

Section 5
Emission Units, Control Devices, and Emission Points

Section 5: Emission Units, Control Devices, and Emission Points

25. Equipment Table

Fill out the **Title V Equipment Table** and provide it as **ATTACHMENT D**.

26. Emission Units

For each emission unit listed in the **Title V Equipment Table**, fill out and provide an **Emission Unit Form** as **ATTACHMENT E**.

For each emission unit not in compliance with an applicable requirement, fill out a **Schedule of Compliance Form** as **ATTACHMENT F**.

27. Control Devices

For each control device listed in the **Title V Equipment Table**, fill out and provide an **Air Pollution Control Device Form** as **ATTACHMENT G**.

For any control device that is required on an emission unit in order to meet a standard or limitation for which the potential pre-control device emissions of an applicable regulated air pollutant is greater than or equal to the Title V Major Source Threshold Level, refer to the **Compliance Assurance Monitoring (CAM) Form(s)** for CAM applicability. Fill out and provide these forms, if applicable, for each Pollutant Specific Emission Unit (PSEU) as **ATTACHMENT H**.

Section 6
Certification of Information

Section 6: Certification of Information

28. Certification of Truth, Accuracy and Completeness and Certification of Compliance

*Note: This Certification must be signed by a responsible official. The **original**, signed in **blue ink**, must be submitted with the application. Applications without an **original** signed certification will be considered as incomplete.*

a. Certification of Truth, Accuracy and Completeness

I certify that I am a responsible official (as defined at 45CSR§30-2.38) and am accordingly authorized to make this submission on behalf of the owners or operators of the source described in this document and its attachments. I certify under penalty of law that I have personally examined and am familiar with the statements and information submitted in this document and all its attachments. Based on my inquiry of those individuals with primary responsibility for obtaining the information, I certify that the statements and information are to the best of my knowledge and belief true, accurate, and complete. I am aware that there are significant penalties for submitting false statements and information or omitting required statements and information, including the possibility of fine and/or imprisonment.

b. Compliance Certification

Except for requirements identified in the Title V Application for which compliance is not achieved, I, the undersigned hereby certify that, based on information and belief formed after reasonable inquiry, all air contaminant sources identified in this application are in compliance with all applicable requirements.

Responsible official (type or print)

Name: William F. Uhl	Title: Operations Director

Responsible official's signature:

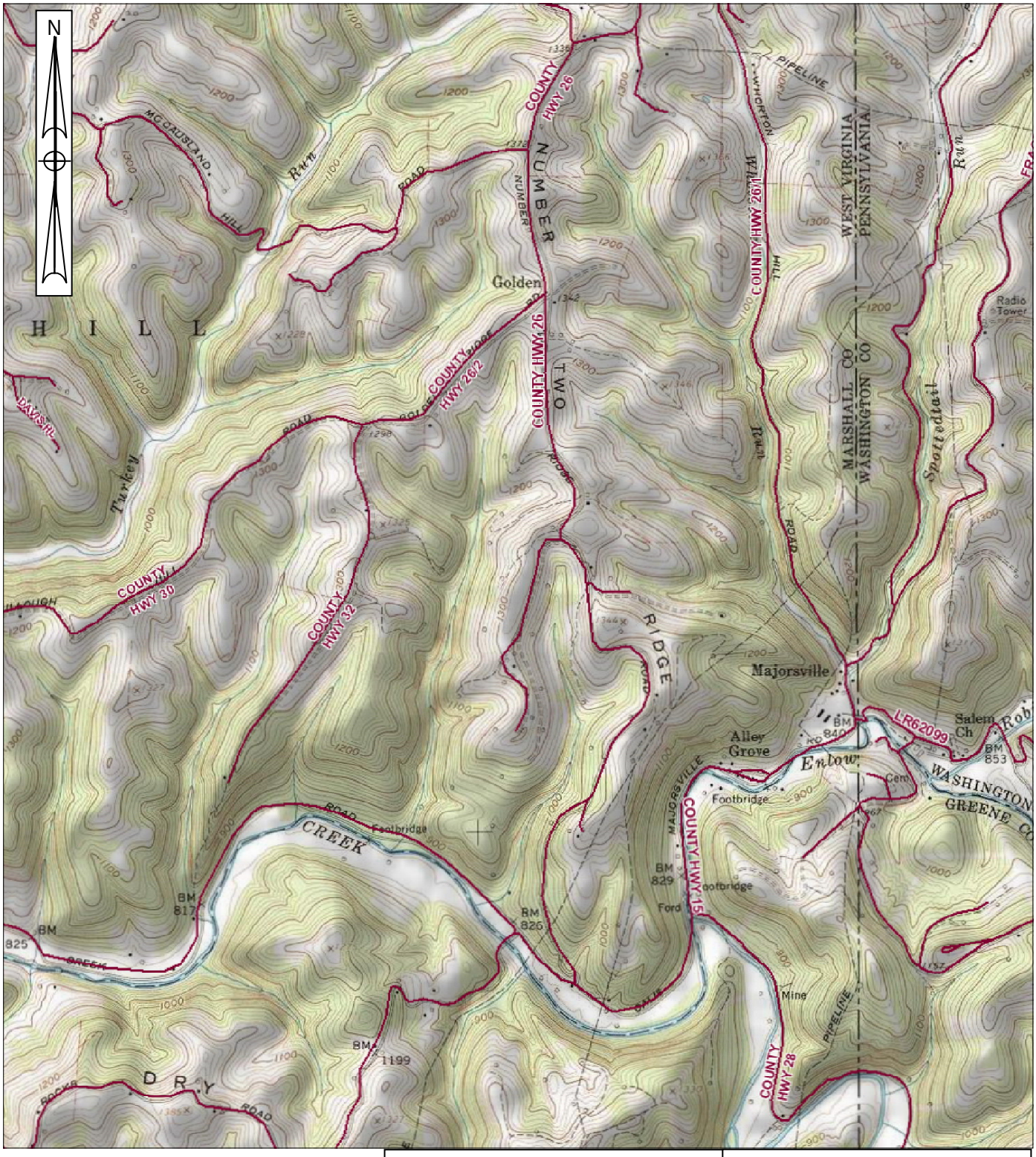
Signature: _____ Signature Date: 5/2/2024

(Must be signed and dated in blue ink)

Note: Please check all applicable attachments included with this permit application:	
☒	ATTACHMENT A: Area Map
☒	ATTACHMENT B: Plot Plan(s)
☒	ATTACHMENT C: Process Flow Diagram(s)
☒	ATTACHMENT D: Equipment Table
☒	ATTACHMENT E: Emission Unit Form(s)
☐	ATTACHMENT F: Schedule of Compliance Form(s)
☒	ATTACHMENT G: Air Pollution Control Device Form(s)
☐	ATTACHMENT H: Compliance Assurance Monitoring (CAM) Form(s)

All of the required forms and additional information can be found and downloaded from, the DEP website at www.dep.wv.gov/daq, requested by phone (304) 926-0475, and/or obtained through the mail.

Attachment A
Area Maps



0 Miles 1

0 Kilometers 1

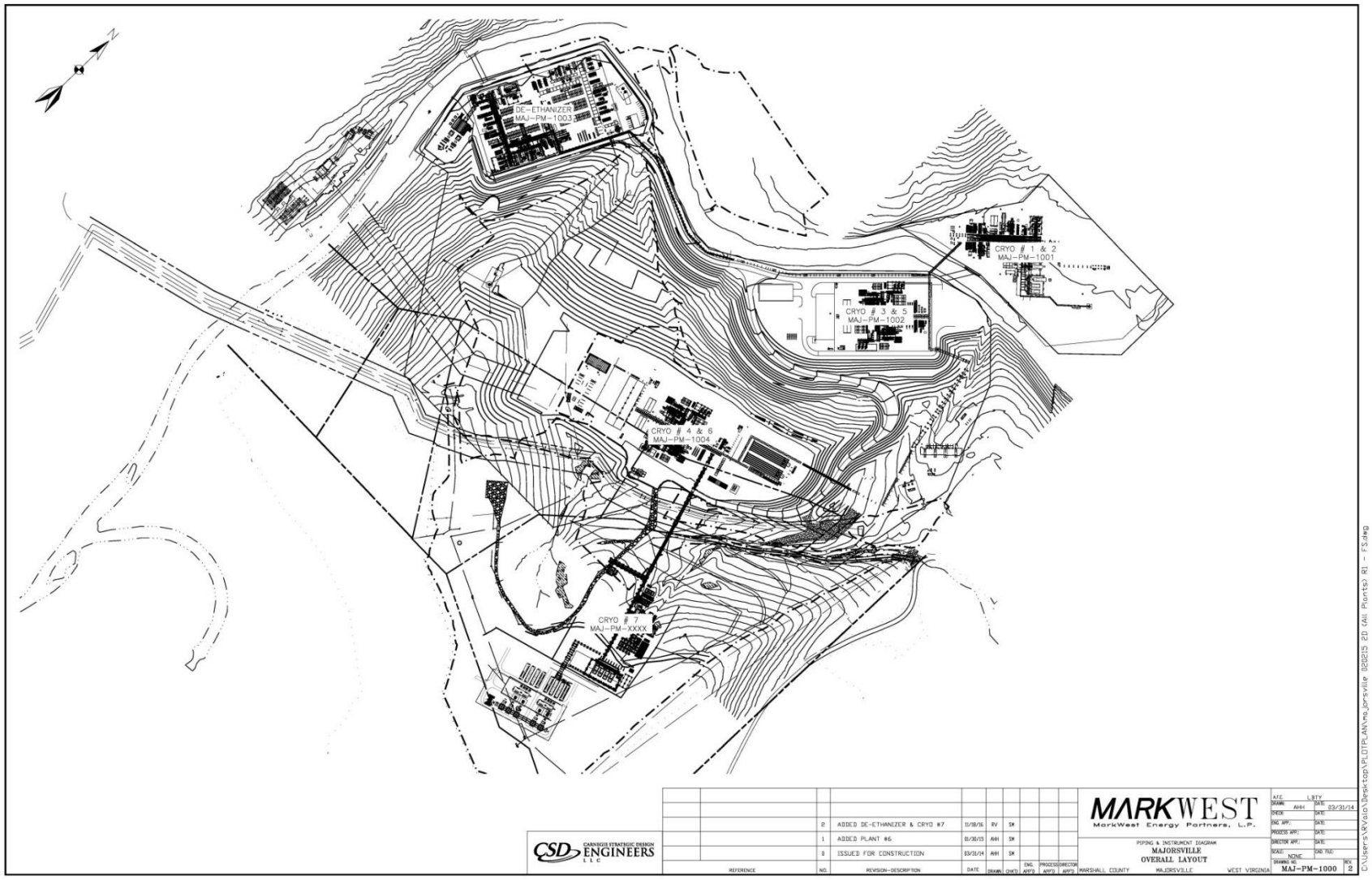
MARKWEST

02/09/2009 – NAD83 – Zone 17

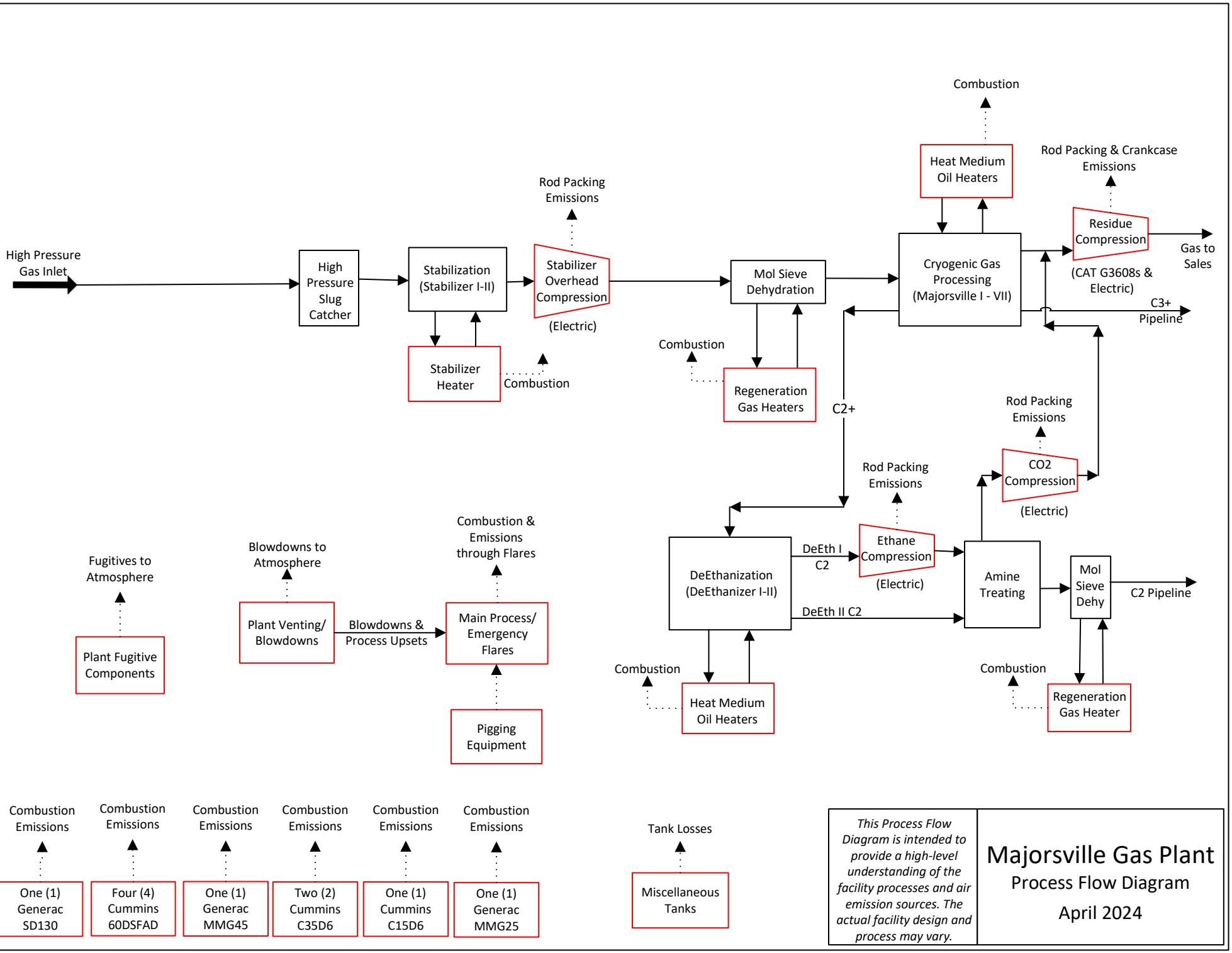
MarkWest Liberty Midstream & Resources, L.L.C.

Majorsville Gas Plant

Attachment B
Plot Plans


DE-ETHANIZER
MAJ-PM-1003
CRYO # 1 & 2
MAJ-PM-1001
CRYO # 3 & 5
MAJ-PM-1002
CRYO # 4 & 6
MAJ-PM-1004
CRYO # 7
MAJ-PM-XXXX
CSD ENGINEERS
MARKWEST
MarkWest Energy Partners, L.P.
PIPING & INSTRUMENT DIAGRAM
MAJORSVILLE
OVERALL LAYOUT
MARSHALL COUNTY
MAJORSVILLE
WEST VIRGINIA
MAJ-PM-1000
2 ADDED DE-ETHANIZER & CRYO #7 11/18/16
1 ADDED PLANT #6 01/30/15
0 ISSUED FOR CONSTRUCTION 03/31/14

Attachment C
Process Flow Diagram


High Pressure Gas Inlet
High Pressure Slug Catcher
Stabilization (Stabilizer I-II)
Stabilizer Heater
Combustion
Rod Packing Emissions
Stabilizer Overhead Compression
(Electric)
Mol Sieve Dehydration
Regeneration Gas Heaters
Combustion
Combustion
Heat Medium Oil Heaters
Cryogenic Gas Processing (Majorsville I - VII)
Rod Packing & Crankcase Emissions
Residue Compression
(CAT G3608s & Electric)
Gas to Sales
C3+ Pipeline
C2+
Rod Packing Emissions
CO2 Compression
(Electric)
Rod Packing Emissions
Ethane Compression
(Electric)
DeEthanization (DeEthanizer I-II)
DeEth I C2
DeEth II C2
Amine Treating
Mol Sieve Dehy
C2 Pipeline
Combustion
Heat Medium Oil Heaters
Combustion
Regeneration Gas Heater
Fugitives to Atmosphere
Plant Fugitive Components
Blowdowns to Atmosphere
Plant Venting/ Blowdowns
Blowdowns & Process Upsets
Combustion & Emissions through Flares
Main Process/ Emergency Flares
Pigging Equipment
Combustion Emissions
One (1) Generac SD130
Combustion Emissions
Four (4) Cummins 60DSFAD
Combustion Emissions
One (1) Generac MMG45
Combustion Emissions
Two (2) Cummins C35D6
Combustion Emissions
One (1) Cummins C15D6
Combustion Emissions
One (1) Generac MMG25
Tank Losses
Miscellaneous Tanks
This Process Flow Diagram is intended to provide a high-level understanding of the facility processes and air emission sources. The actual facility design and process may vary.
Majorsville Gas Plant
Process Flow Diagram
April 2024

Attachment D
Equipment Table

ATTACHMENT D - Title V Equipment Table

(includes all emission units at the facility except those designated as insignificant activities in Section 4, Item 24 of the General Forms)

Emission Point ID[1]	Control Device[1]	Emission Unit ID[1]	Emission Unit Description	Design Capacity	Year Installed/ Modified
2E	Oxid. Cat.	C-102	Caterpillar G3608 Compressor Engine	2,370 hp	2010
3E	Oxid. Cat.	C-103	Caterpillar G3608 Compressor Engine	2,370 hp	2010
4E	Oxid. Cat	C-104	Caterpillar G3608 Compressor Engine	2,370 hp	2010
5E	None	H-741	Plant 1 Regenerator Heater	5.60 mmbtu/hr	2010
6E	None	H-781	Plant 1 & 2 HMO Heater	15.40 mmbtu/hr	2010
7E	None	FUG-001	Fugitive Leaks	NA	2010/2014
9E	None	H-2741	Plant 2 Regenerator Heater	5.60 mmbtu/hr	2010
	1C	FL-991	Flare	3.70 mmscf/hr	2010
10E	None	H-3741	Heater M III Regen Heater	7.69 mmbtu/hr	2012/2013
11E	None	H-4741	Heater M IV Regen Heater	7.69 mmbtu/hr	2012/2013
12E	None	H-3781	Heater M III HMO Heater	16.07 mmbtu/hr	2012/2013
13E	None	H-D1782	DeEthanizer I HMO Heater	119.20	2012/2013
23E	None	H-D2782	DeEthanizer II HMO Heater	119.20	2017
14E	None	H-D1741	DeEthanizer I Regen Heater	14.80 mmbtu/hr	2012/2013
24E	None	H-D2741	DeEthanizer II Regen Heater	14.80 mmbtu/hr	2017
	3C	FL-1991	Flare DeEth, MIV, MVI, MVII	3.70 mmscf/hr	2012/2013
15E	None	H-5741	Heater M V Regen Heater	7.69 mmbtu/hr	2014
16E	None	H-6741	Heater M VI Regen Heater	7.69 mmbtu/hr	2014
17E	None	H-7741	Heater M VII Regen Heater	7.69 mmbtu/hr	2018
18E	None	H-4781	Heater M IV HMO Heater	16.07 mmbtu/hr	2014
19E	None	H-7781	Heater M VII HMO Heater	16.07 mmbtu/hr	2018
20E	None	H-4782	Stabilization Heater	11.72 mmbtu/hr	2014
22E	None	M3-G-2	Majorsville 3 Emergency Gen	145 hp	2014
25E	None	M3-G-3	Majorsville 3 MCC Emergency Gen	145 hp	2014
26E	None	M4-G-6	Majorsville 4 MCC Emergency Gen	145 hp	2014
27E	None	M4-G-7	Majorsville 4 Emergency Gen	145 hp	2014
29E	None	M7-G-9	Majorsville 7 MCC Emergency Gen	69 hp	2018
30E	None	MD1-G-4	DeEthanizer 1 Control Room Emergency Gen	63.7 hp	2012/2013

31E	None	MD1-G-5	DeEthanizer 1 Emergency Gen	40.2 hp	2012/2013
32E	None	MD2-G-10	DeEthanizer 2 Control Room Emergency Gen	25 hp	2017
33E	None	MD2-G-11	DeEthanizer 2 Emergency Gen	69 hp	2017
52E	None	M1-G-12	Majorsville 1 & 2 Emergency Generator	279 hp	2024
34E	None	MT-1	Plant 1 Methanol Tank	520 Gal	2012/2013
35E	None	MT-2	Plant 2 Methanol Tank	520 Gal	2012/2013
36E	None	MT-3	Plant 3 Methanol Tank	520 Gal	2014
37E	None	MT-4	Plant 4 Methanol Tank	520 Gal	2014
38E	None	MT-5	Plant 5 Methanol Tank	520 Gal	2014
39E	None	MT-6	Plant 6 Methanol Tank	520 Gal	2014
40E	None	MT-7	Plant 7 Methanol Tank	520 Gal	2017
41E	None	GT-1	Gasoline Dispensing Tank	520 Gal	2014
42E	None	DT-1	Diesel Dispensing Tank	520 Gal	2014
43E	None	TK-1740	Lube Oil Day Tank	520 Gal	2012/2013
44E	None	UOT-1	Used Oil Tank	1,000 Gal	2012/2013
45E	None	TK-7411	Lube Oil Tank	2,133 Gal	2012/2013
46E	None	TK-7419	Amine Tank		2012/2013
47E	None	TK-7421	Amine Tank		2012/2013
48E	None	TK-4825	Compressor Drain Tank	2,326 Gal	2014
49E	None	TK-4826	Lube Oil Tank	2,133 Gal	2014
50E	None	TK-4824	Closed Drain Tank	4,200 Gal	2014
51E	None	TK-4725	Closed Drain Tank	4,200 Gal	2014
1B	None	1B	Compressor Blowdowns	N/A	2010
2B	None	2B	Facility Blowdowns	N/A	2010
RP	None	RP	Rod Packing Emissions	N/A	2010

[1]For 45CSR13 permitted sources, the numbering system used for the emission points, control devices, and emission units should be consistent with the numbering system used in the 45CSR13 permit. For grandfathered sources, the numbering system should be consistent with registrations or emissions inventory previously submitted to DAQ. For emission points, control devices, and emissions units which have not been previously labeled, use the following 45CSR13 numbering system: 1S, 2S, 3S,... or other appropriate description for emission units; 1C, 2C, 3C,... or other appropriate designation for control devices; 1E, 2E, 3E, ... or other appropriate designation for emission points.

Attachment E
Emission Unit Forms

ATTACHMENT E - Emission Unit Form

Emission Unit Description

Emission unit ID number:	**Emission unit name:**	**List any control devices associated with this emission unit:**
C-102	Caterpillar G3608 LE Compressor Engine	Oxidation Catalyst

Provide a description of the emission unit (type, method of operation, design parameters, etc.):
2,370 hp natural gas fired 4-stroke lean-burn compressor engine

Manufacturer:	**Model number:**	**Serial number:**
Caterpillar	G3608 LE	BEN0644

Construction date:	**Installation date:**	**Modification date(s):**
01/28/2010	09/13/2010	NA

Design Capacity (examples: furnaces - tons/hr, tanks - gallons): 2,370 hp

Maximum Hourly Throughput:	**Maximum Annual Throughput:**	**Maximum Operating Schedule:**
		8,760 hrs/year

Fuel Usage Data **(fill out all applicable fields)**

Does this emission unit combust fuel? _X__Yes ___ No	**If yes, is it?** ___ Indirect Fired _X_Direct Fired
Maximum design heat input and/or maximum horsepower rating: 15.71 mmbtu/hr 2,370 hp	**Type and Btu/hr rating of burners:** NA

List the primary fuel type(s) and if applicable, the secondary fuel type(s). For each fuel type listed, provide the maximum hourly and annual fuel usage for each.
Natural Gas
13,978 scf/hr
122.44 mmscf/yr

Describe each fuel expected to be used during the term of the permit.

Fuel Type	Max. Sulfur Content	Max. Ash Content	BTU Value
Natural Gas	0%	0%	1,124 btu/scf

Emissions Data

Criteria Pollutants	Potential Emissions	
	PPH	TPY
Carbon Monoxide (CO)	0.99	4.35
Nitrogen Oxides (NO_X)	2.61	11.44
Lead (Pb)	0.00	0.00
Particulate Matter ($PM_{2.5}$)	0.16	0.69
Particulate Matter (PM_{10})	0.16	0.69
Total Particulate Matter (TSP)	0.16	0.69
Sulfur Dioxide (SO_2)	0.01	0.04
Volatile Organic Compounds (VOC)	1.67	7.32
Hazardous Air Pollutants	Potential Emissions	
	PPH	TPY
Acetaldehyde	0.13	0.58
Acrolein	0.08	0.35
Formaldehyde	0.42	1.83
Methanol	0.04	0.17
Total HAPs	0.72	3.17
Regulated Pollutants other than Criteria and HAP	Potential Emissions	
	PPH	TPY
CO2(e)	2,080.83	9,114.03

List the method(s) used to calculate the potential emissions (include dates of any stack tests conducted, versions of software used, source and dates of emission factors, etc.).

-NOx, CO, VOC, HCHO: Engine and catalyst manufacturer specified emission factors (g/hp-hr)
-PM2.5, PM10, TSP, SO2, HAPs (excluding HCHO): AP-42 Table 3.2-2 Uncontrolled Emission Factors for 4-Stroke Lean-Burn Engines
-CO2(e): 40 CFR 98 Table C-1. Default CO2 Emission Factors and High Heat Values for Various Types of Fuel and Table C-2. Default CH4 and N2O Emission Factors for Various Types of Fuel

Applicable Requirements

List all applicable requirements for this emission unit. For each applicable requirement, include the

underlying rule/regulation citation and/or <u>construction permit</u> with the condition number. (*Note: Title V permit condition numbers alone are not the underlying applicable requirements*). If an emission limit is calculated based on the type of source and design capacity or if a standard is based on a design parameter, this information should also be included.

Permit R13-2818E
4.1.1
4.1.2
4.1.3 [45CSR§13-5.11]
4.1.4
5.1.1
5.1.2
5.2
5.3 [WV Code § 22-5-4(a)(14-15) and 45CSR13]
5.4
5.5
8.2.2 d [40CFR§60.4243(b)(2)(ii), 40CFR§60.4244]
8.3.1 b [40CFR§60.4243(b)]
8.3.3 [40CFR§60.4243(e)]
8.3.4 [40CFR§60.4243(g)]
8.4 [40CFR§60.4244 (a),(b),(c),(e),(d),(f),(g)]
8.5.1 a [40CFR§60.4245 (a)]
8.5.1 c [40CFR§60.4245(c), §60.7(a)(1)]
8.5.1 d [40CFR§60.4245(d)]

__X__ Permit Shield

For all applicable requirements listed above, provide monitoring/testing/recordkeeping/reporting which shall be used to demonstrate compliance. If the method is based on a permit or rule, include the condition number or citation. (Note: Each requirement listed above must have an associated method of demonstrating compliance. If there is not already a required method in place, then a method must be proposed.)

Section	Monitoring	Testing	Recordkeeping	Reporting	Condition or Citation
4.1.1	NA	NA	Records of monitoring	NA	4.1.1
4.1.2	NA	NA	Total HAP emission calculations	NA	4.1.2
4.1.3	Monitor air pollution control equipment and associated monitoring equipment to ensure operation and maintenance in accordance with safety and good air pollution control practices	NA	NA	NA	45CSR§13-5.11
4.1.4	NA	NA	Control equipment malfunction events	NA	4.1.4
5.1.1	Quantity of natural gas consumed by each engine	NA	Records of natural gas consumed	NA	5.1.1
5.1.2	NA	NA	Emission calculations for NOx, CO, VOC, and formaldehyde based on fuel consumption	NA	5.1.2
5.2	Regularly inspect catalytic reduction devices and auxiliary air pollution control devices	NA	NA	NA	5.2

5.3	NA	Stack testing in accordance with Section 3.3	NA	Reporting in accordance with Section 3.3	5.3, 3.3 [WV Code § 22-5-4(a)(14-15) and 45CSR13]
5.4	NA	NA	Amount and type of fuel consumed and hours of operation. Maintain records for 5 years	NA	5.4
5.5	NA	NA	NA	Reporting in accordance with Section 3.5	5.5, 3.5
8.2.2d	NA	Initial performance test and subsequent performance testing every 8,760 hours or 3 years, whichever comes first	NA	NA	40CFR§60.4243(b)(2)(ii), 40CFR§60.4244
8.3.1 b	NA	Initial performance test and subsequent annual performance testing.	Keep a maintenance plan and records of conducted maintenance	NA	40CFR§60.4243(b)
8.3.3	NA	Performance test required if operating over 100 hours using propane fuel.	Record operating hours when using propane fuel		40CFR§60.4243(e)
8.3.4	Monitor AFR controller to ensure proper maintenance and operation	NA	NA	NA	40CFR§60.4243(g)
8.4	NA	NOx, CO, and VOC performance testing	NA	NA	40CFR§60.4244 (a),(b),(c),(e),(d),(f),(g)
8.5.1 a	NA	NA	Notifications, engine maintenance, manufacturer certifications, emissions testing documentation	Notification and testing reports	40CFR§60.4245 (a)
8.5.1 c	NA	NA	NA	Initial notification	40CFR§60.4245(c), §60.7(a)(1)
8.5.1 d	NA	NA	NA	Submit copy of each performance test within 60 days after test has been completed	40CFR§60.4245(d)

Are you in compliance with all applicable requirements for this emission unit? _X__Yes ___No

If no, complete the **Schedule of Compliance Form** as **ATTACHMENT F**.

ATTACHMENT E - Emission Unit Form

Emission Unit Description

Emission unit ID number:	**Emission unit name:**	**List any control devices associated with this emission unit:**
C-103	Caterpillar G3608 LE Compressor Engine	Oxidation Catalyst

Provide a description of the emission unit (type, method of operation, design parameters, etc.):
2,370 hp natural gas fired 4-stroke lean-burn compressor engine

Manufacturer:	**Model number:**	**Serial number:**
Caterpillar	G3608 LE	BEN0646
Construction date:	**Installation date:**	**Modification date(s):**
02/18/2010	09/13/2010	NA

Design Capacity (examples: furnaces - tons/hr, tanks - gallons): 2,370 hp

Maximum Hourly Throughput:	**Maximum Annual Throughput:**	**Maximum Operating Schedule:**
		8,760 hrs/year

Fuel Usage Data **(fill out all applicable fields)**

Does this emission unit combust fuel? _X__Yes ___ No	**If yes, is it?** ___ Indirect Fired _X_Direct Fired
Maximum design heat input and/or maximum horsepower rating: 15.71 mmbtu/hr 2,370 hp	**Type and Btu/hr rating of burners:** NA

List the primary fuel type(s) and if applicable, the secondary fuel type(s). For each fuel type listed, provide the maximum hourly and annual fuel usage for each.
Natural Gas
13,978 scf/hr
122.44 mmscf/yr

Describe each fuel expected to be used during the term of the permit.

Fuel Type	Max. Sulfur Content	Max. Ash Content	BTU Value
Natural Gas	0%	0%	1,124 btu/scf

Emissions Data

Criteria Pollutants	Potential Emissions	
	PPH	TPY
Carbon Monoxide (CO)	0.99	4.35
Nitrogen Oxides (NO_X)	2.61	11.44
Lead (Pb)	0.00	0.00
Particulate Matter ($PM_{2.5}$)	0.16	0.69
Particulate Matter (PM_{10})	0.16	0.69
Total Particulate Matter (TSP)	0.16	0.69
Sulfur Dioxide (SO_2)	0.01	0.04
Volatile Organic Compounds (VOC)	1.67	7.32
Hazardous Air Pollutants	Potential Emissions	
	PPH	TPY
Acetaldehyde	0.13	0.58
Acrolein	0.08	0.35
Formaldehyde	0.42	1.83
Methanol	0.04	0.17
Total HAPs	0.72	3.17
Regulated Pollutants other than Criteria and HAP	Potential Emissions	
	PPH	TPY
CO2(e)	2,083.83	9,114.03

List the method(s) used to calculate the potential emissions (include dates of any stack tests conducted, versions of software used, source and dates of emission factors, etc.).

-NOx, CO, VOC, HCHO: Engine and catalyst manufacturer specified emission factors (g/hp-hr)
-PM2.5, PM10, TSP, SO2, HAPs (excluding HCHO): AP-42 Table 3.2-2 Uncontrolled Emission Factors for 4-Stroke Lean-Burn Engines
-CO2(e): 40 CFR 98 Table C-1. Default CO2 Emission Factors and High Heat Values for Various Types of Fuel and Table C-2. Default CH4 and N2O Emission Factors for Various Types of Fuel

Applicable Requirements

List all applicable requirements for this emission unit. For each applicable requirement, include the

underlying rule/regulation citation and/or <u>construction permit</u> with the condition number. (*Note: Title V permit condition numbers alone are not the underlying applicable requirements*). If an emission limit is calculated based on the type of source and design capacity or if a standard is based on a design parameter, this information should also be included.

Permit R13-2818E
4.1.1
4.1.2
4.1.3 [45CSR§13-5.11]
4.1.4
5.1.1
5.1.2
5.2
5.3 [WV Code § 22-5-4(a)(14-15) and 45CSR13]
5.4
5.5
8.2.2 d [40CFR§60.4243(b)(2)(ii), 40CFR§60.4244]
8.3.1 b [40CFR§60.4243(b)]
8.3.3 [40CFR§60.4243(e)]
8.3.4 [40CFR§60.4243(g)]
8.4 [40CFR§60.4244 (a),(b),(c),(e),(d),(f),(g)]
8.5.1 a [40CFR§60.4245 (a)]
8.5.1 c [40CFR§60.4245(c), §60.7(a)(1)]
8.5.1 d [40CFR§60.4245(d)]

__X__ Permit Shield

For all applicable requirements listed above, provide monitoring/testing/recordkeeping/reporting which shall be used to demonstrate compliance. If the method is based on a permit or rule, include the condition number or citation. (Note: Each requirement listed above must have an associated method of demonstrating compliance. If there is not already a required method in place, then a method must be proposed.)

Section	Monitoring	Testing	Recordkeeping	Reporting	Condition or Citation
4.1.1	NA	NA	Records of monitoring	NA	4.1.1
4.1.2	NA	NA	Total HAP emission calculations	NA	4.1.2
4.1.3	Monitor air pollution control equipment and associated monitoring equipment to ensure operation and maintenance in accordance with safety and good air pollution control practices	NA	NA	NA	45CSR§13-5.11
4.1.4	NA	NA	Control equipment malfunction events	NA	4.1.4
5.1.1	Quantity of natural gas consumed by each engine	NA	Records of natural gas consumed	NA	5.1.1
5.1.2	NA	NA	Emission calculations for NOx, CO, VOC, and formaldehyde based on fuel consumption	NA	5.1.2
5.2	Regularly inspect catalytic reduction devices and auxiliary air pollution control devices	NA	NA	NA	5.2

5.3	NA	Stack testing in accordance with Section 3.3	NA	Reporting in accordance with Section 3.3	5.3, 3.3 [WV Code § 22-5-4(a)(14-15) and 45CSR13]
5.4	NA	NA	Amount and type of fuel consumed and hours of operation. Maintain records for 5 years	NA	5.4
5.5	NA	NA	NA	Reporting in accordance with Section 3.5	5.5, 3.5
8.2.2d	NA	Initial performance test and subsequent performance testing every 8,760 hours or 3 years, whichever comes first	NA	NA	40CFR§60.4243(b)(2)(ii), 40CFR§60.4244
8.3.1 b	NA	Initial performance test and subsequent annual performance testing.	Keep a maintenance plan and records of conducted maintenance	NA	40CFR§60.4243(b)
8.3.3	NA	Performance test required if operating over 100 hours using propane fuel.	Record operating hours when using propane fuel		40CFR§60.4243(e)
8.3.4	Monitor AFR controller to ensure proper maintenance and operation	NA	NA	NA	40CFR§60.4243(g)
8.4	NA	NOx, CO, and VOC performance testing	NA	NA	40CFR§60.4244 (a),(b),(c),(e),(d),(f),(g)
8.5.1 a	NA	NA	Notifications, engine maintenance, manufacturer certifications, emissions testing documentation	Notification and testing reports	40CFR§60.4245 (a)
8.5.1 c	NA	NA	NA	Initial notification	40CFR§60.4245(c), §60.7(a)(1)
8.5.1 d	NA	NA	NA	Submit copy of each performance test within 60 days after test has been completed	40CFR§60.4245(d)

Are you in compliance with all applicable requirements for this emission unit? _X__Yes ___No

If no, complete the **Schedule of Compliance Form** as **ATTACHMENT F**.

ATTACHMENT E - Emission Unit Form

Emission Unit Description		
Emission unit ID number: C-104	**Emission unit name:** Caterpillar G3608 LE Compressor Engine	**List any control devices associated with this emission unit:**Oxidation Catalyst
Provide a description of the emission unit (type, method of operation, design parameters, etc.): 2,370 hp natural gas fired 4-stroke lean-burn compressor engine		
Manufacturer: Caterpillar	**Model number:** G3608 LE	**Serial number:** BEN0645
Construction date: 02/16/2010	**Installation date:** 09/13/2010	**Modification date(s):** NA
Design Capacity (examples: furnaces - tons/hr, tanks - gallons): 2,370 hp		
Maximum Hourly Throughput:	**Maximum Annual Throughput:**	**Maximum Operating Schedule:** 8,760 hrs/year
***Fuel Usage Data* (fill out all applicable fields)**		
Does this emission unit combust fuel? _X__Yes ___ No		**If yes, is it?** ___ Indirect Fired _X_Direct Fired
Maximum design heat input and/or maximum horsepower rating: 15.71 mmbtu/hr 2,370 hp		**Type and Btu/hr rating of burners:** NA
List the primary fuel type(s) and if applicable, the secondary fuel type(s). For each fuel type listed, provide the maximum hourly and annual fuel usage for each. Natural Gas 13,978 scf/hr 122.44 mmscf/yr		

Describe each fuel expected to be used during the term of the permit.

Fuel Type	Max. Sulfur Content	Max. Ash Content	BTU Value
Natural Gas	0%	0%	1,124 btu/scf

Emissions Data	
Criteria Pollutants	Potential Emissions

	PPH	TPY
Carbon Monoxide (CO)	0.99	4.35
Nitrogen Oxides (NO_X)	2.61	11.44
Lead (Pb)	0.00	0.00
Particulate Matter ($PM_{2.5}$)	0.16	0.69
Particulate Matter (PM_{10})	0.16	0.69
Total Particulate Matter (TSP)	0.16	0.69
Sulfur Dioxide (SO_2)	0.01	0.04
Volatile Organic Compounds (VOC)	1.67	7.32
Hazardous Air Pollutants	Potential Emissions	
	PPH	TPY
Acetaldehyde	0.13	0.58
Acrolein	0.08	0.35
Formaldehyde	0.42	1.83
Methanol	0.04	0.17
Total HAPs	0.72	3.17
Regulated Pollutants other than Criteria and HAP	Potential Emissions	
	PPH	TPY
CO2(e)	2,083.83	9,114.03

List the method(s) used to calculate the potential emissions (include dates of any stack tests conducted, versions of software used, source and dates of emission factors, etc.).

-NOx, CO, VOC, HCHO: Engine and catalyst manufacturer specified emission factors (g/hp-hr)
-PM2.5, PM10, TSP, SO2, HAPs (excluding HCHO): AP-42 Table 3.2-2 Uncontrolled Emission Factors for 4-Stroke Lean-Burn Engines
-CO2(e): 40 CFR 98 Table C-1. Default CO2 Emission Factors and High Heat Values for Various Types of Fuel and Table C-2. Default CH4 and N2O Emission Factors for Various Types of Fuel

Applicable Requirements

List all applicable requirements for this emission unit. For each applicable requirement, include the underlying rule/regulation citation and/or <u>construction permit</u> with the condition number. (*Note: Title V permit condition numbers alone are not the underlying applicable requirements*). If an emission limit is calculated based on the type of source and design capacity or if a standard is based on a design parameter,

this information should also be included.

Permit R13-2818E
4.1.1
4.1.2
4.1.3 [45CSR§13-5.11]
4.1.4
5.1.1
5.1.2
5.2
5.3 [WV Code § 22-5-4(a)(14-15) and 45CSR13]
5.4
5.5
8.2.2 d [40CFR§60.4243(b)(2)(ii), 40CFR§60.4244]
8.3.1 b [40CFR§60.4243(b)]
8.3.3 [40CFR§60.4243(e)]
8.3.4 [40CFR§60.4243(g)]
8.4 [40CFR§60.4244 (a),(b),(c),(e),(d),(f),(g)]
8.5.1 a [40CFR§60.4245 (a)]
8.5.1 c [40CFR§60.4245(c), §60.7(a)(1)]
8.5.1 d [40CFR§60.4245(d)]

__X__ Permit Shield

For all applicable requirements listed above, provide monitoring/testing/recordkeeping/reporting which shall be used to demonstrate compliance. If the method is based on a permit or rule, include the condition number or citation. (Note: Each requirement listed above must have an associated method of demonstrating compliance. If there is not already a required method in place, then a method must be proposed.)

Section	Monitoring	Testing	Recordkeeping	Reporting	Condition or Citation
4.1.1	NA	NA	Records of monitoring	NA	4.1.1
4.1.2	NA	NA	Total HAP emission calculations	NA	4.1.2
4.1.3	Monitor air pollution control equipment and associated monitoring equipment to ensure operation and maintenance in accordance with safety and good air pollution control practices	NA	NA	NA	45CSR§13-5.11
4.1.4	NA	NA	Control equipment malfunction events	NA	4.1.4
5.1.1	Quantity of natural gas consumed by each engine	NA	Records of natural gas consumed	NA	5.1.1
5.1.2	NA	NA	Emission calculations for NOx, CO, VOC, and formaldehyde based on fuel consumption	NA	5.1.2
5.2	Regularly inspect catalytic reduction devices and auxiliary air pollution control devices	NA	NA	NA	5.2
5.3	NA	Stack testing in accordance with Section 3.3	NA	Reporting in accordance with Section 3.3	5.3, 3.3 [WV Code § 22-5-4(a)(14-15) and 45CSR13]

5.4	NA	NA	Amount and type of fuel consumed and hours of operation. Maintain records for 5 years	NA	5.4
5.5	NA	NA	NA	Reporting in accordance with Section 3.5	5.5, 3.5
8.2.2d	NA	Initial performance test and subsequent performance testing every 8,760 hours or 3 years, whichever comes first	NA	NA	40CFR§60.4243(b)(2)(ii), 40CFR§60.4244
8.3.1 b	NA	Initial performance test and subsequent annual performance testing.	Keep a maintenance plan and records of conducted maintenance	NA	40CFR§60.4243(b)
8.3.3	NA	Performance test required if operating over 100 hours using propane fuel.	Record operating hours when using propane fuel		40CFR§60.4243(e)
8.3.4	Monitor AFR controller to ensure proper maintenance and operation	NA	NA	NA	40CFR§60.4243(g)
8.4	NA	NOx, CO, and VOC performance testing	NA	NA	40CFR§60.4244 (a),(b),(c),(e),(d),(f),(g)
8.5.1 a	NA	NA	Notifications, engine maintenance, manufacturer certifications, emissions testing documentation	Notification and testing reports	40CFR§60.4245 (a)
8.5.1 c	NA	NA	NA	Initial notification	40CFR§60.4245(c), §60.7(a)(1)
8.5.1 d	NA	NA	NA	Submit copy of each performance test within 60 days after test has been completed	40CFR§60.4245(d)

Are you in compliance with all applicable requirements for this emission unit? _X__Yes ___No

If no, complete the **Schedule of Compliance Form** as **ATTACHMENT F**.

ATTACHMENT E - Emission Unit Form

Emission Unit Description

Emission unit ID number:	**Emission unit name:**	**List any control devices associated with this emission unit:**
G-OSBL	Cummins 60 DSFAD Emergency Generator Engine	

Provide a description of the emission unit (type, method of operation, design parameters, etc.):
145 hp 4-stroke diesel powered emergency generator engine

Manufacturer:	**Model number:**	**Serial number:**
Cummins	60 DSFAD	TBD
Construction date:	**Installation date:**	**Modification date(s):**
TBD	TBD	NA

Design Capacity (examples: furnaces - tons/hr, tanks - gallons): 145 hp

Maximum Hourly Throughput:	**Maximum Annual Throughput:**	**Maximum Operating Schedule:**
		500 hrs/year

Fuel Usage Data **(fill out all applicable fields)**

Does this emission unit combust fuel? _X__Yes ___ No	**If yes, is it?** ___ Indirect Fired _X_Direct Fired
Maximum design heat input and/or maximum horsepower rating: 3.85 mmbtu/hr 145 hp	**Type and Btu/hr rating of burners:** NA

List the primary fuel type(s) and if applicable, the secondary fuel type(s). For each fuel type listed, provide the maximum hourly and annual fuel usage for each.
Diesel fuel
28.0 gal/hr
14,000 gal/yr

Describe each fuel expected to be used during the term of the permit.

Fuel Type	Max. Sulfur Content	Max. Ash Content	BTU Value
Diesel	15 ppm		137,380 Btu/gal

Emissions Data

Criteria Pollutants	Potential Emissions	
	PPH	TPY
Carbon Monoxide (CO)	0.18	0.04
Nitrogen Oxides (NO_X)	0.70	0.18
Lead (Pb)	0.00	0.00
Particulate Matter ($PM_{2.5}$)	0.23	0.06
Particulate Matter (PM_{10})	0.23	0.06
Total Particulate Matter (TSP)	0.23	0.06
Sulfur Dioxide (SO_2)	0.58	0.14
Volatile Organic Compounds (VOC)	0.02	0.00
Hazardous Air Pollutants	Potential Emissions	
	PPH	TPY
Acetaldehyde	0.003	0.001
Formaldehyde	0.005	0.001
Toluene	0.002	0.000
Xylene	0.001	0.000
Total HAPs	0.015	0.004
Regulated Pollutants other than Criteria and HAP	Potential Emissions	
	PPH	TPY
CO2(e)	35.92	157.33

List the method(s) used to calculate the potential emissions (include dates of any stack tests conducted, versions of software used, source and dates of emission factors, etc.).

-NOx, CO, VOC: Engine and catalyst manufacturer specified emission factors (g/hp-hr)
-PM, SO2: AP-42 Table 3.3-1 Emission Factors for Uncontrolled Gasoline and Diesel Industrial Engines
-HAPs: AP-42 Table 3.3-2 Speciated Organic Compound Emission Factors for Uncontrolled Diesel Engines
-CO2(e): 40 CFR 98 Table C-1. Default CO2 Emission Factors and High Heat Values for Various Types of Fuel and Table C-2. Default CH4 and N2O Emission Factors for Various Types of Fuel

Applicable Requirements

List all applicable requirements for this emission unit. For each applicable requirement, include the

underlying rule/regulation citation and/or <u>construction permit</u> with the condition number. (*Note: Title V permit condition numbers alone are not the underlying applicable requirements*). If an emission limit is calculated based on the type of source and design capacity or if a standard is based on a design parameter, this information should also be included.

Permit R13-2818E
4.1.1
4.1.2
4.1.3 [45CSR§13-5.11]
4.1.4
5.1.4
5.1.5
5.1.6
5.3 [WV Code § 22-5-4(a)(14-15) and 45CSR13]
5.4
5.5
9.1.2 [40CFR§60.4206]
9.1.3 [40CFR§60.4207b]
9.1.6 [40CFR§60.4211]
9.1.7 [40CFR§60.4209a]
9.1.8 [40CFR§60.4209b]
9.1.9 [40CFR§60.4211a]
9.1.10 [40CFR§60.4211c]
9.1.11 [40CFR§60.4211e]
9.2.1 [45CSR13, WV Code § 22-5-4(a)(15)]
9.2.2
9.2.3
9.2.4 [40CFR§60.4212(a) – (d)]
9.2.5 [40CFR§60.4212a]
9.2.6 [40CFR§60.4212b]
9.2.7 [40CFR§60.4212c]
9.3.1
9.3.2
9.3.3
9.3.4 [40CFR§60.4214b]
9.3.5 [40CFR§60.4214c]

__X__ Permit Shield

For all applicable requirements listed above, provide monitoring/testing/recordkeeping/reporting which shall be used to demonstrate compliance. If the method is based on a permit or rule, include the condition number or citation. (Note: Each requirement listed above must have an associated method of demonstrating compliance. If there is not already a required method in place, then a method must be proposed.)

Section	Monitoring	Testing	Recordkeeping	Reporting	Condition or Citation
4.1.1	NA	NA	Records of monitoring	NA	4.1.1
4.1.2	NA	NA	Total HAP emission calculations	NA	4.1.2
4.1.3	Monitor air pollution control equipment and associated monitoring equipment to ensure operation and maintenance in accordance with safety and good air pollution control practices	NA	NA	NA	45CSR§13-5.11

4.1.4	NA	NA	Control equipment malfunction events	NA	4.1.4
5.1.4	Quantity of diesel fuel consumed by each engine	NA	Records of diesel fuel consumed	NA	5.1.4
5.1.5	NA	NA	Emission calculations for NOx, and CO based on fuel consumption	NA	5.1.5
5.1.6	Hours of engine operation	NA	Records of hours of engine operation	NA	5.1.6
5.3	NA	Stack testing in accordance with Section 3.3	NA	Reporting in accordance with Section 3.3	5.3, 3.3 [WV Code § 22-5-4(a)(14-15) and 45CSR13]
5.4	NA	NA	Amount and type of fuel consumed and hours of operation. Maintain records for 5 years	NA	5.4
5.5	NA	NA	NA	Reporting in accordance with Section 3.5	5.5, 3.5
9.1.2	NA	NA	NA	NA	40CFR§60.4206
9.1.3	NA	NA	NA	NA	40CFR§60.4207b
9.1.6	Monitoring in accordance with 40CFR§60.4209 and 40CFR§60.4211	NA	NA	NA	40CFR§60.4211
9.1.7	Install non-resettable hour meter	NA	NA	NA	40CFR§60.4209a
9.1.8	NA	NA	NA	NA	40CFR§60.4209b
9.1.9	Monitoring in accordance with manufacturer's recommended maintenance an40 CFR Parts 89, 94, and 1068 as applicable.	NA	NA	NA	40CFR§60.4211a
9.1.10	NA	NA	NA	NA	40CFR§60.42.11c
9.1.11	Hours of engine operation for maintenance checks and readiness testing	NA	Hours of engine operation for maintenance checks and readiness testing	NA	40CFR§60.4211e
9.2.1	NA	Visual determinations, conventional in-stack measurements or other tests specified by the Secretary	NA	Stack testing data upon request from the Secretary.	45CSR13, WV Code § 22-5-4(a)(15)
9.2.2	NA	NA	NA	Submit stack testing protocol 30 days prior to any testing. Notification 15 days prior to testing.	9.2.2
9.2.3	NA	Alternative test	NA	NA	9.2.3

		methods as required by the Secretary			
9.2.4	NA	Testing in accordance with 40CFR§60.4212(a) through (d)	NA	NA	40CFR§60.4212(a) - (d)
9.2.5	NA	Testing in accordance with the in-use testing procedures in 40CFR Part 1039, Subpart F	NA	NA	40CFR§60.4212a
9.2.6	NA	NA	NA	NA	40CFR§60.4212b
9.2.7	NA	NA	NA	NA	40CFR§60.4212c
9.3.1	NA	NA	Records of monitoring information	NA	9.3.1
9.3.2	NA	NA	Records of maintenance relating to failure/repair of fire pump equipment.	NA	9.3.2
9.3.3	NA	NA	NA	Submit records of performance testing	9.3.3
9.3.4	NA	NA	Records of engine hours of operation	NA	40CFR§60.4214b
9.3.5	NA	NA	Records of corrective action taken after the high backpressure limit is approached	NA	40CFR§60.4214c

Are you in compliance with all applicable requirements for this emission unit? _X__Yes ___No

If no, complete the **Schedule of Compliance Form** as **ATTACHMENT F**.

ATTACHMENT E - Emission Unit Form

Emission Unit Description

Emission unit ID number:	**Emission unit name:**	**List any control devices associated with this emission unit:**
G-ISBL	Cummins 60 DSFAD Emergency Generator Engine	

Provide a description of the emission unit (type, method of operation, design parameters, etc.):
145 hp 4-stroke diesel powered emergency generator engine

Manufacturer:	**Model number:**	**Serial number:**
Cummins	60 DSFAD	TBD
Construction date:	**Installation date:**	**Modification date(s):**
TBD	TBD	NA

Design Capacity (examples: furnaces - tons/hr, tanks - gallons): 145 hp

Maximum Hourly Throughput:	**Maximum Annual Throughput:**	**Maximum Operating Schedule:**
		500 hrs/year

Fuel Usage Data **(fill out all applicable fields)**

Does this emission unit combust fuel? _X__Yes ___ No	**If yes, is it?** ___ Indirect Fired _X_Direct Fired
Maximum design heat input and/or maximum horsepower rating: 3.85 mmbtu/hr 145 hp	**Type and Btu/hr rating of burners:** NA

List the primary fuel type(s) and if applicable, the secondary fuel type(s). For each fuel type listed, provide the maximum hourly and annual fuel usage for each.
Diesel fuel
28.0 gal/hr
14,000 gal/yr

Describe each fuel expected to be used during the term of the permit.

Fuel Type	Max. Sulfur Content	Max. Ash Content	BTU Value
Diesel	15 ppm		137,380 Btu/gal

Emissions Data

Criteria Pollutants	Potential Emissions	
	PPH	TPY
Carbon Monoxide (CO)	0.18	0.04
Nitrogen Oxides (NO_X)	0.70	0.18
Lead (Pb)	0.00	0.00
Particulate Matter ($PM_{2.5}$)	0.23	0.06
Particulate Matter (PM_{10})	0.23	0.06
Total Particulate Matter (TSP)	0.23	0.06
Sulfur Dioxide (SO_2)	0.58	0.14
Volatile Organic Compounds (VOC)	0.02	0.00
Hazardous Air Pollutants	Potential Emissions	
	PPH	TPY
Acetaldehyde	0.003	0.001
Formaldehyde	0.005	0.001
Toluene	0.002	0.000
Xylene	0.001	0.000
Total HAPs	0.015	0.004
Regulated Pollutants other than Criteria and HAP	Potential Emissions	
	PPH	TPY
CO2(e)	35.92	157.33

List the method(s) used to calculate the potential emissions (include dates of any stack tests conducted, versions of software used, source and dates of emission factors, etc.).

-NOx, CO, VOC: Engine and catalyst manufacturer specified emission factors (g/hp-hr)
-PM, SO2: AP-42 Table 3.3-1 Emission Factors for Uncontrolled Gasoline and Diesel Industrial Engines
-HAPs: AP-42 Table 3.3-2 Speciated Organic Compound Emission Factors for Uncontrolled Diesel Engines
-CO2(e): 40 CFR 98 Table C-1. Default CO2 Emission Factors and High Heat Values for Various Types of Fuel and Table C-2. Default CH4 and N2O Emission Factors for Various Types of Fuel

Applicable Requirements

List all applicable requirements for this emission unit. For each applicable requirement, include the

underlying rule/regulation citation and/or <u>construction permit</u> with the condition number. (*Note: Title V permit condition numbers alone are not the underlying applicable requirements*). If an emission limit is calculated based on the type of source and design capacity or if a standard is based on a design parameter, this information should also be included.

Permit R13-2818E
4.1.1
4.1.2
4.1.3 [45CSR§13-5.11]
4.1.4
5.1.4
5.1.5
5.1.6
5.3 [WV Code § 22-5-4(a)(14-15) and 45CSR13]
5.4
5.5
9.1.2 [40CFR§60.4206]
9.1.3 [40CFR§60.4207b]
9.1.6 [40CFR§60.4211]
9.1.7 [40CFR§60.4209a]
9.1.8 [40CFR§60.4209b]
9.1.9 [40CFR§60.4211a]
9.1.10 [40CFR§60.4211c]
9.1.11 [40CFR§60.4211e]
9.2.1 [45CSR13, WV Code § 22-5-4(a)(15)]
9.2.2
9.2.3
9.2.4 [40CFR§60.4212(a) – (d)]
9.2.5 [40CFR§60.4212a]
9.2.6 [40CFR§60.4212b]
9.2.7 [40CFR§60.4212c]
9.3.1
9.3.2
9.3.3
9.3.4 [40CFR§60.4214b]
9.3.5 [40CFR§60.4214c]

__X__ Permit Shield

For all applicable requirements listed above, provide monitoring/testing/recordkeeping/reporting which shall be used to demonstrate compliance. If the method is based on a permit or rule, include the condition number or citation. (Note: Each requirement listed above must have an associated method of demonstrating compliance. If there is not already a required method in place, then a method must be proposed.)

Section	Monitoring	Testing	Recordkeeping	Reporting	Condition or Citation
4.1.1	NA	NA	Records of monitoring	NA	4.1.1
4.1.2	NA	NA	Total HAP emission calculations	NA	4.1.2
4.1.3	Monitor air pollution control equipment and associated monitoring equipment to ensure operation and maintenance in accordance with safety and good air pollution control practices	NA	NA	NA	45CSR§13-5.11

4.1.4	NA	NA	Control equipment malfunction events	NA	4.1.4
5.1.4	Quantity of diesel fuel consumed by each engine	NA	Records of diesel fuel consumed	NA	5.1.4
5.1.5	NA	NA	Emission calculations for NOx, and CO based on fuel consumption	NA	5.1.5
5.1.6	Hours of engine operation	NA	Records of hours of engine operation	NA	5.1.6
5.3	NA	Stack testing in accordance with Section 3.3	NA	Reporting in accordance with Section 3.3	5.3, 3.3 [WV Code § 22-5-4(a)(14-15) and 45CSR13]
5.4	NA	NA	Amount and type of fuel consumed and hours of operation. Maintain records for 5 years	NA	5.4
5.5	NA	NA	NA	Reporting in accordance with Section 3.5	5.5, 3.5
9.1.2	NA	NA	NA	NA	40CFR§60.4206
9.1.3	NA	NA	NA	NA	40CFR§60.4207b
9.1.6	Monitoring in accordance with 40CFR§60.4209 and 40CFR§60.4211	NA	NA	NA	40CFR§60.4211
9.1.7	Install non-resettable hour meter	NA	NA	NA	40CFR§60.4209a
9.1.8	NA	NA	NA	NA	40CFR§60.4209b
9.1.9	Monitoring in accordance with manufacturer's recommended maintenance an40 CFR Parts 89, 94, and 1068 as applicable.	NA	NA	NA	40CFR§60.4211a
9.1.10	NA	NA	NA	NA	40CFR§60.42.11c
9.1.11	Hours of engine operation for maintenance checks and readiness testing	NA	Hours of engine operation for maintenance checks and readiness testing	NA	40CFR§60.4211e
9.2.1	NA	Visual determinations, conventional in-stack measurements or other tests specified by the Secretary	NA	Stack testing data upon request from the Secretary.	45CSR13, WV Code § 22-5-4(a)(15)
9.2.2	NA	NA	NA	Submit stack testing protocol 30 days prior to any testing. Notification 15 days prior to testing.	9.2.2
9.2.3	NA	Alternative test	NA	NA	9.2.3

		methods as required by the Secretary			
9.2.4	NA	Testing in accordance with 40CFR§60.4212(a) through (d)	NA	NA	40CFR§60.4212(a) - (d)
9.2.5	NA	Testing in accordance with the in-use testing procedures in 40CFR Part 1039, Subpart F	NA	NA	40CFR§60.4212a
9.2.6	NA	NA	NA	NA	40CFR§60.4212b
9.2.7	NA	NA	NA	NA	40CFR§60.4212c
9.3.1	NA	NA	Records of monitoring information	NA	9.3.1
9.3.2	NA	NA	Records of maintenance relating to failure/repair of fire pump equipment.	NA	9.3.2
9.3.3	NA	NA	NA	Submit records of performance testing	9.3.3
9.3.4	NA	NA	Records of engine hours of operation	NA	40CFR§60.4214b
9.3.5	NA	NA	Records of corrective action taken after the high backpressure limit is approached	NA	40CFR§60.4214c

Are you in compliance with all applicable requirements for this emission unit? _X__Yes ___No

If no, complete the **Schedule of Compliance Form** as **ATTACHMENT F**.

ATTACHMENT E - Emission Unit Form

Emission Unit Description

Emission unit ID number:	**Emission unit name:**	**List any control devices associated with this emission unit:**
H-741, H-2741	Heatec Process Heater	NA

Provide a description of the emission unit (type, method of operation, design parameters, etc.):
5.60 mmbtu/hr natural gas-fired regeneration heater

Manufacturer:	**Model number:**	**Serial number:**
Heatec		

Construction date:	**Installation date:**	**Modification date(s):**
MM/DD/YYY	2010	NA

Design Capacity (examples: furnaces - tons/hr, tanks - gallons): 5.60 mmbtu/hr

Maximum Hourly Throughput:	**Maximum Annual Throughput:**	**Maximum Operating Schedule:**
5.60 mmbtu/hr	49,056 mmbtu/yr	8,760 hrs/year

Fuel Usage Data **(fill out all applicable fields)**

Does this emission unit combust fuel? _X__Yes ___ No	**If yes, is it?** ___ Indirect Fired _X_Direct Fired
Maximum design heat input and/or maximum horsepower rating: 5.60 mmbtu/hr	**Type and Btu/hr rating of burners:** Helical coil 5.60 mmbtu/hr

List the primary fuel type(s) and if applicable, the secondary fuel type(s). For each fuel type listed, provide the maximum hourly and annual fuel usage for each.
Natural Gas
5,490.20 scf/hr
48.09 mmscf/yr

Describe each fuel expected to be used during the term of the permit.

Fuel Type	Max. Sulfur Content	Max. Ash Content	BTU Value
Natural Gas	0%	0%	1,020 btu/scf

Emissions Data

Criteria Pollutants	Potential Emissions	
	PPH	TPY
Carbon Monoxide (CO)	0.46	2.02
Nitrogen Oxides (NO_X)	0.30	1.32
Lead (Pb)	0.00	0.00
Particulate Matter ($PM_{2.5}$)	0.04	0.18
Particulate Matter (PM_{10})	0.04	0.18
Total Particulate Matter (TSP)	0.04	0.18
Sulfur Dioxide (SO_2)	0.00	0.01
Volatile Organic Compounds (VOC)	0.03	0.13
Hazardous Air Pollutants	Potential Emissions	
	PPH	TPY
Formaldehyde	0.00	0.00
n-Hexane	0.01	0.04
Total HAPs	0.01	0.05
Regulated Pollutants other than Criteria and HAP	Potential Emissions	
	PPH	TPY
CO2(e)	720.74	3,156.82

List the method(s) used to calculate the potential emissions (include dates of any stack tests conducted, versions of software used, source and dates of emission factors, etc.).

-NOx emission factor from vendor guarantee
-All other criteria pollutants and HAP emission factors from AP-42 Section 1.4 "Natural Gas Combustion" Tables 1.4-1, 1.4-2, &1.4-3
-GHG: 40 CFR 98, Subpart C Tier 1 Methodology

Applicable Requirements

List all applicable requirements for this emission unit. For each applicable requirement, include the underlying rule/regulation citation and/or <u>construction permit</u> with the condition number. (*Note: Title V permit condition numbers alone are not the underlying applicable requirements*). If an emission limit is calculated based on the type of source and design capacity or if a standard is based on a design parameter, this information should also be included.

Permit R13-2818E
4.1.1
4.1.2
6.1.1
6.1.2
6.1.3 [45CSR§2-3.1]
6.2 [40 CFR 60 Appendix A, Method 9]
6.3 [45CSR§2-3.2]
6.4 [40 CFR 60 Appendix A]
6.5

__X__ Permit Shield

For all applicable requirements listed above, provide monitoring/testing/recordkeeping/reporting which shall be used to demonstrate compliance. If the method is based on a permit or rule, include the condition number or citation. (Note: Each requirement listed above must have an associated method of demonstrating compliance. If there is not already a required method in place, then a method must be proposed.)

Section	Monitoring	Testing	Recordkeeping	Reporting	Condition or Citation
4.1.1	NA	NA	Records of monitoring	NA	4.1.1
4.1.2	NA	NA	Total HAP emission calculations	NA	4.1.2
6.1.1	NA	NA	Equipment specifications	NA	6.1.1
6.1.2	NA	NA	Emissions calculations which demonstrate compliance with NOx, CO, and VOC emission limits	NA	6.1.2
6.1.3	NA	NA	NA	NA	45CSR§2-3.1
6.2	Method 9 emissions observations	NA	NA	NA	40 CFR 60 Appendix A, Method 9
6.3	NA	Testing using Method 9 emissions observations or continuous opacity monitoring systems	NA	NA	45CSR§2-3.2
6.4	NA	NA	Records of all data required by Section 6.2.1	NA	40 CFR Appendix A
6.5	NA	NA	NA	Report deviations to the Director within 10 calendar days of the occurrence	6.5.1

Are you in compliance with all applicable requirements for this emission unit? _X__Yes ___No

If no, complete the **Schedule of Compliance Form** as **ATTACHMENT F**.

ATTACHMENT E - Emission Unit Form

Emission Unit Description

Emission unit ID number:	**Emission unit name:**	**List any control devices associated with this emission unit:** NA
H-781	Heatec Process Heater	

Provide a description of the emission unit (type, method of operation, design parameters, etc.):
15.40 mmbtu/hr natural gas-fired hot oil heater

Manufacturer:	**Model number:**	**Serial number:**
Heatec		

Construction date:	**Installation date:**	**Modification date(s):**
MM/DD/YYY	2010	NA

Design Capacity (examples: furnaces - tons/hr, tanks - gallons): 15.40 mmbtu/hr

Maximum Hourly Throughput:	**Maximum Annual Throughput:**	**Maximum Operating Schedule:**
15.40 mmbtu/hr	134,904 mmbtu/yr	8,760 hrs/year

Fuel Usage Data **(fill out all applicable fields)**

Does this emission unit combust fuel? _X__Yes ___ No	**If yes, is it?** ___ Indirect Fired _X_Direct Fired
Maximum design heat input and/or maximum horsepower rating: 15.40 mmbtu/hr	**Type and Btu/hr rating of burners:** Helical coil 15.40 mmbtu/hr

List the primary fuel type(s) and if applicable, the secondary fuel type(s). For each fuel type listed, provide the maximum hourly and annual fuel usage for each.
Natural Gas
15,098.04 scf/hr
132.26 mmscf/yr

Describe each fuel expected to be used during the term of the permit.

Fuel Type	Max. Sulfur Content	Max. Ash Content	BTU Value
Natural Gas	0%	0%	1,020 btu/scf

Emissions Data		
Criteria Pollutants	Potential Emissions	
	PPH	TPY
Carbon Monoxide (CO)	1.27	5.56
Nitrogen Oxides (NO_X)	1.34	5.85
Lead (Pb)	0.00	0.00
Particulate Matter ($PM_{2.5}$)	0.11	0.50
Particulate Matter (PM_{10})	0.11	0.50
Total Particulate Matter (TSP)	0.11	0.50
Sulfur Dioxide (SO_2)	0.01	0.04
Volatile Organic Compounds (VOC)	0.08	0.36
Hazardous Air Pollutants	Potential Emissions	
	PPH	TPY
Formaldehyde	0.00	0.00
n-Hexane	0.03	0.12
Total HAPs	0.03	0.13
Regulated Pollutants other than Criteria and HAP	Potential Emissions	
	PPH	TPY
CO2(e)	1,982.02	8,681.26

List the method(s) used to calculate the potential emissions (include dates of any stack tests conducted, versions of software used, source and dates of emission factors, etc.).

-NOx emission factor from vendor guarantee
-All other criteria pollutants and HAP emission factors from AP-42 Section 1.4 "Natural Gas Combustion" Tables 1.4-1, 1.4-2, &1.4-3
-GHG: 40 CFR 98, Subpart C Tier 1 Methodology

Applicable Requirements

List all applicable requirements for this emission unit. For each applicable requirement, include the underlying rule/regulation citation and/or <u>construction permit</u> with the condition number. (*Note: Title V permit condition numbers alone are not the underlying applicable requirements*). If an emission limit is calculated based on the type of source and design capacity or if a standard is based on a design parameter, this information should also be included.

Permit R13-2818E
4.1.1
4.1.2
6.1.1
6.1.2
6.1.3 [45CSR§2-3.1]
6.2 [40 CFR 60 Appendix A, Method 9]
6.3 [45CSR§2-3.2]
6.4 [40 CFR 60 Appendix A]
6.5

__X__ Permit Shield

For all applicable requirements listed above, provide monitoring/testing/recordkeeping/reporting which shall be used to demonstrate compliance. If the method is based on a permit or rule, include the condition number or citation. (Note: Each requirement listed above must have an associated method of demonstrating compliance. If there is not already a required method in place, then a method must be proposed.)

Section	Monitoring	Testing	Recordkeeping	Reporting	Condition or Citation
4.1.1	NA	NA	Records of monitoring	NA	4.1.1
4.1.2	NA	NA	Total HAP emission calculations	NA	4.1.2
6.1.1	NA	NA	Equipment specifications	NA	6.1.1
6.1.2	NA	NA	Emissions calculations which demonstrate compliance with NOx, CO, and VOC emission limits	NA	6.1.2
6.1.3	NA	NA	NA	NA	45CSR§2-3.1
6.2	Method 9 emissions observations	NA	NA	NA	40 CFR 60 Appendix A, Method 9
6.3	NA	Testing using Method 9 emissions observations or continuous opacity monitoring systems	NA	NA	45CSR§2-3.2
6.4	NA	NA	Records of all data required by Section 6.2.1	NA	40 CFR Appendix A
6.5	NA	NA	NA	Report deviations to the Director within 10 calendar days of the occurrence	6.5.1

Are you in compliance with all applicable requirements for this emission unit? _X__Yes ___No

If no, complete the **Schedule of Compliance Form** as **ATTACHMENT F**.

ATTACHMENT E - Emission Unit Form

Emission Unit Description

Emission unit ID number:	**Emission unit name:**	**List any control devices associated with this emission unit:** NA
H-3741	Majorsville III Regeneration Heater	

Provide a description of the emission unit (type, method of operation, design parameters, etc.):
7.69 mmbtu/hr natural gas-fired molecular sieve regeneration heater

Manufacturer:	**Model number:**	**Serial number:**
Heatec		

Construction date:	**Installation date:**	**Modification date(s):**
MM/DD/YYY	2013	NA

Design Capacity (examples: furnaces - tons/hr, tanks - gallons): 7.69 mmbtu/hr

Maximum Hourly Throughput:	**Maximum Annual Throughput:**	**Maximum Operating Schedule:**
7.69 mmbtu/hr	67,364.40 mmbtu/yr	8,760 hrs/year

Fuel Usage Data **(fill out all applicable fields)**

Does this emission unit combust fuel? _X__Yes ___ No	**If yes, is it?** ___ Indirect Fired _X_Direct Fired
Maximum design heat input and/or maximum horsepower rating: 7.69 mmbtu/hr	**Type and Btu/hr rating of burners:** Helical coil 7.69 mmbtu/hr

List the primary fuel type(s) and if applicable, the secondary fuel type(s). For each fuel type listed, provide the maximum hourly and annual fuel usage for each.
Natural Gas
7,539.22 scf/hr
66.04 mmscf/yr

Describe each fuel expected to be used during the term of the permit.

Fuel Type	Max. Sulfur Content	Max. Ash Content	BTU Value
Natural Gas	0%	0%	1,020 btu/scf

Emissions Data		
Criteria Pollutants	Potential Emissions	
	PPH	TPY
Carbon Monoxide (CO)	0.32	1.38
Nitrogen Oxides (NO_X)	0.41	1.80
Lead (Pb)	0.00	0.00
Particulate Matter ($PM_{2.5}$)	0.06	0.25
Particulate Matter (PM_{10})	0.06	0.25
Total Particulate Matter (TSP)	0.06	0.25
Sulfur Dioxide (SO_2)	0.00	0.02
Volatile Organic Compounds (VOC)	0.04	0.18
Hazardous Air Pollutants	Potential Emissions	
	PPH	TPY
Formaldehyde	0.00	0.00
n-Hexane	0.01	0.06
Total HAPs	0.01	0.06
Regulated Pollutants other than Criteria and HAP	Potential Emissions	
	PPH	TPY
CO2(e)	989.72	4,334.99

List the method(s) used to calculate the potential emissions (include dates of any stack tests conducted, versions of software used, source and dates of emission factors, etc.).

-NOx and CO emission factors from vendor guarantee
-All other criteria pollutants and HAP emission factors from AP-42 Section 1.4 "Natural Gas Combustion" Tables 1.4-1, 1.4-2, &1.4-3
-GHG: 40 CFR 98, Subpart C Tier 1 Methodology

Applicable Requirements

List all applicable requirements for this emission unit. For each applicable requirement, include the underlying rule/regulation citation and/or <u>construction permit</u> with the condition number. (*Note: Title V permit condition numbers alone are not the underlying applicable requirements*). If an emission limit is calculated based on the type of source and design capacity or if a standard is based on a design parameter, this information should also be included.

Permit R13-2818E
4.1.1
4.1.2
6.1.1
6.1.2
6.1.3 [45CSR§2-3.1]
6.2 [40 CFR 60 Appendix A, Method 9]
6.3 [45CSR§2-3.2]
6.4 [40 CFR 60 Appendix A]
6.5

__X__ Permit Shield

For all applicable requirements listed above, provide monitoring/testing/recordkeeping/reporting which shall be used to demonstrate compliance. If the method is based on a permit or rule, include the condition number or citation. (Note: Each requirement listed above must have an associated method of demonstrating compliance. If there is not already a required method in place, then a method must be proposed.)

Section	Monitoring	Testing	Recordkeeping	Reporting	Condition or Citation
4.1.1	NA	NA	Records of monitoring	NA	4.1.1
4.1.2	NA	NA	Total HAP emission calculations	NA	4.1.2
6.1.1	NA	NA	Equipment specifications	NA	6.1.1
6.1.2	NA	NA	Emissions calculations which demonstrate compliance with NOx, CO, and VOC emission limits	NA	6.1.2
6.1.3	NA	NA	NA	NA	45CSR§2-3.1
6.2	Method 9 emissions observations	NA	NA	NA	40 CFR 60 Appendix A, Method 9
6.3	NA	Testing using Method 9 emissions observations or continuous opacity monitoring systems	NA	NA	45CSR§2-3.2
6.4	NA	NA	Records of all data required by Section 6.2.1	NA	40 CFR Appendix A
6.5	NA	NA	NA	Report deviations to the Director within 10 calendar days of the occurrence	6.5.1

Are you in compliance with all applicable requirements for this emission unit? _X__Yes ___No

If no, complete the **Schedule of Compliance Form** as **ATTACHMENT F**.

ATTACHMENT E - Emission Unit Form

Emission Unit Description

Emission unit ID number:	**Emission unit name:**	**List any control devices associated with this emission unit:** NA
H-4741	Majorsville IV Regeneration Heater	

Provide a description of the emission unit (type, method of operation, design parameters, etc.):
7.69 mmbtu/hr natural gas-fired molecular sieve regeneration heater

Manufacturer:	**Model number:**	**Serial number:**
Heatec		
Construction date:	**Installation date:**	**Modification date(s):**
MM/DD/YYY	2013	NA

Design Capacity (examples: furnaces - tons/hr, tanks - gallons): 7.69 mmbtu/hr

Maximum Hourly Throughput:	**Maximum Annual Throughput:**	**Maximum Operating Schedule:**
7.69 mmbtu/hr	67,364.40 mmbtu/yr	8,760 hrs/year

Fuel Usage Data **(fill out all applicable fields)**

Does this emission unit combust fuel? _X__Yes ___ No	**If yes, is it?** ___ Indirect Fired _X_Direct Fired
Maximum design heat input and/or maximum horsepower rating: 7.69 mmbtu/hr	**Type and Btu/hr rating of burners:** Helical coil 7.69 mmbtu/hr

List the primary fuel type(s) and if applicable, the secondary fuel type(s). For each fuel type listed, provide the maximum hourly and annual fuel usage for each.
Natural Gas
7,539.22 scf/hr
66.04 mmscf/yr

Describe each fuel expected to be used during the term of the permit.

Fuel Type	Max. Sulfur Content	Max. Ash Content	BTU Value
Natural Gas	0%	0%	1,020 btu/scf

Emissions Data		
Criteria Pollutants	Potential Emissions	
	PPH	TPY
Carbon Monoxide (CO)	0.32	1.38
Nitrogen Oxides (NO_X)	0.41	1.80
Lead (Pb)	0.00	0.00
Particulate Matter ($PM_{2.5}$)	0.06	0.25
Particulate Matter (PM_{10})	0.06	0.25
Total Particulate Matter (TSP)	0.06	0.25
Sulfur Dioxide (SO_2)	0.00	0.02
Volatile Organic Compounds (VOC)	0.04	0.18
Hazardous Air Pollutants	Potential Emissions	
	PPH	TPY
Formaldehyde	0.00	0.00
n-Hexane	0.01	0.06
Total HAPs	0.01	0.06
Regulated Pollutants other than Criteria and HAP	Potential Emissions	
	PPH	TPY
CO2(e)	989.72	4,334.99

List the method(s) used to calculate the potential emissions (include dates of any stack tests conducted, versions of software used, source and dates of emission factors, etc.).

-NOx and CO emission factors from vendor guarantee
-All other criteria pollutants and HAP emission factors from AP-42 Section 1.4 "Natural Gas Combustion" Tables 1.4-1, 1.4-2, &1.4-3
-GHG: 40 CFR 98, Subpart C Tier 1 Methodology

Applicable Requirements

List all applicable requirements for this emission unit. For each applicable requirement, include the underlying rule/regulation citation and/or <u>construction permit</u> with the condition number. (*Note: Title V permit condition numbers alone are not the underlying applicable requirements*). If an emission limit is calculated based on the type of source and design capacity or if a standard is based on a design parameter, this information should also be included.

Permit R13-2818E
4.1.1
4.1.2
6.1.1
6.1.2
6.1.3 [45CSR§2-3.1]
6.2 [40 CFR 60 Appendix A, Method 9]
6.3 [45CSR§2-3.2]
6.4 [40 CFR 60 Appendix A]
6.5

__X__ Permit Shield

For all applicable requirements listed above, provide monitoring/testing/recordkeeping/reporting which shall be used to demonstrate compliance. If the method is based on a permit or rule, include the condition number or citation. (Note: Each requirement listed above must have an associated method of demonstrating compliance. If there is not already a required method in place, then a method must be proposed.)

Section	Monitoring	Testing	Recordkeeping	Reporting	Condition or Citation
4.1.1	NA	NA	Records of monitoring	NA	4.1.1
4.1.2	NA	NA	Total HAP emission calculations	NA	4.1.2
6.1.1	NA	NA	Equipment specifications	NA	6.1.1
6.1.2	NA	NA	Emissions calculations which demonstrate compliance with NOx, CO, and VOC emission limits	NA	6.1.2
6.1.3	NA	NA	NA	NA	45CSR§2-3.1
6.2	Method 9 emissions observations	NA	NA	NA	40 CFR 60 Appendix A, Method 9
6.3	NA	Testing using Method 9 emissions observations or continuous opacity monitoring systems	NA	NA	45CSR§2-3.2
6.4	NA	NA	Records of all data required by Section 6.2.1	NA	40 CFR Appendix A
6.5	NA	NA	NA	Report deviations to the Director within 10 calendar days of the occurrence	6.5.1

Are you in compliance with all applicable requirements for this emission unit? _X__Yes ___No

If no, complete the **Schedule of Compliance Form** as **ATTACHMENT F**.

ATTACHMENT E - Emission Unit Form

Emission Unit Description

Emission unit ID number:	**Emission unit name:**	**List any control devices associated with this emission unit:** NA
H-3781	Majorsville III HMO Heater	

Provide a description of the emission unit (type, method of operation, design parameters, etc.):
16.07 mmbtu/hr natural gas-fired hot oil heater

Manufacturer:	**Model number:**	**Serial number:**
Heatec		
Construction date:	**Installation date:**	**Modification date(s):**
MM/DD/YYY	2013	NA

Design Capacity (examples: furnaces - tons/hr, tanks - gallons): 16.07 mmbtu/hr

Maximum Hourly Throughput:	**Maximum Annual Throughput:**	**Maximum Operating Schedule:**
16.07 mmbtu/hr	140,773.20 mmbtu/yr	8,760 hrs/year

Fuel Usage Data **(fill out all applicable fields)**

Does this emission unit combust fuel? _X__Yes ___ No	**If yes, is it?** ___ Indirect Fired _X_Direct Fired
Maximum design heat input and/or maximum horsepower rating: 16.07 mmbtu/hr	**Type and Btu/hr rating of burners:** Helical coil 16.07 mmbtu/hr

List the primary fuel type(s) and if applicable, the secondary fuel type(s). For each fuel type listed, provide the maximum hourly and annual fuel usage for each.
Natural Gas
15,755 scf/hr
138.01 mmscf/yr

Describe each fuel expected to be used during the term of the permit.

Fuel Type	Max. Sulfur Content	Max. Ash Content	BTU Value
Natural Gas	0%	0%	1,020 btu/scf

Emissions Data		
Criteria Pollutants	Potential Emissions	
	PPH	TPY
Carbon Monoxide (CO)	1.32	5.80
Nitrogen Oxides (NO_X)	1.61	7.04
Lead (Pb)	0.00	0.00
Particulate Matter ($PM_{2.5}$)	0.12	0.52
Particulate Matter (PM_{10})	0.12	0.52
Total Particulate Matter (TSP)	0.12	0.52
Sulfur Dioxide (SO_2)	0.01	0.04
Volatile Organic Compounds (VOC)	0.09	0.38
Hazardous Air Pollutants	Potential Emissions	
	PPH	TPY
Formaldehyde	0.00	0.01
n-Hexane	0.03	0.12
Total HAPs	0.03	0.13
Regulated Pollutants other than Criteria and HAP	Potential Emissions	
	PPH	TPY
CO2(e)	2,068.25	9,058.95

List the method(s) used to calculate the potential emissions (include dates of any stack tests conducted, versions of software used, source and dates of emission factors, etc.).

-NOx and CO emission factors from vendor guarantee
-All other criteria pollutants and HAP emission factors from AP-42 Section 1.4 "Natural Gas Combustion" Tables 1.4-1, 1.4-2, &1.4-3
-GHG: 40 CFR 98, Subpart C Tier 1 Methodology

Applicable Requirements

List all applicable requirements for this emission unit. For each applicable requirement, include the underlying rule/regulation citation and/or <u>construction permit</u> with the condition number. (*Note: Title V permit condition numbers alone are not the underlying applicable requirements*). If an emission limit is calculated based on the type of source and design capacity or if a standard is based on a design parameter, this information should also be included.

Permit R13-2818E
4.1.1
4.1.2
6.1.1
6.1.2
6.1.3 [45CSR§2-3.1]
6.2 [40 CFR 60 Appendix A, Method 9]
6.3 [45CSR§2-3.2]
6.4 [40 CFR 60 Appendix A]
6.5

__X__ Permit Shield

For all applicable requirements listed above, provide monitoring/testing/recordkeeping/reporting which shall be used to demonstrate compliance. If the method is based on a permit or rule, include the condition number or citation. (Note: Each requirement listed above must have an associated method of demonstrating compliance. If there is not already a required method in place, then a method must be proposed.)

Section	Monitoring	Testing	Recordkeeping	Reporting	Condition or Citation
4.1.1	NA	NA	Records of monitoring	NA	4.1.1
4.1.2	NA	NA	Total HAP emission calculations	NA	4.1.2
6.1.1	NA	NA	Equipment specifications	NA	6.1.1
6.1.2	NA	NA	Emissions calculations which demonstrate compliance with NOx, CO, and VOC emission limits	NA	6.1.2
6.1.3	NA	NA	NA	NA	45CSR§2-3.1
6.2	Method 9 emissions observations	NA	NA	NA	40 CFR 60 Appendix A, Method 9
6.3	NA	Testing using Method 9 emissions observations or continuous opacity monitoring systems	NA	NA	45CSR§2-3.2
6.4	NA	NA	Records of all data required by Section 6.2.1	NA	40 CFR Appendix A
6.5	NA	NA	NA	Report deviations to the Director within 10 calendar days of the occurrence	6.5.1

Are you in compliance with all applicable requirements for this emission unit? _X__Yes ___No

If no, complete the **Schedule of Compliance Form** as **ATTACHMENT F**.

ATTACHMENT E - Emission Unit Form

Emission Unit Description

Emission unit ID number:	**Emission unit name:**	**List any control devices associated with this emission unit:** NA
H-D1782	De-Ethanizer I HMO Heater	

Provide a description of the emission unit (type, method of operation, design parameters, etc.):
119.20 mmbtu/hr natural gas-fired hot oil heater

Manufacturer:	**Model number:**	**Serial number:**
Optimized Process Furnaces		

Construction date:	**Installation date:**	**Modification date(s):**
MM/DD/YYY	2013	NA

Design Capacity (examples: furnaces - tons/hr, tanks - gallons): 119.20 mmbtu/hr

Maximum Hourly Throughput:	**Maximum Annual Throughput:**	**Maximum Operating Schedule:**
119.20 mmbtu/hr	1,044,192.00 mmbtu/yr	8,760 hrs/year

Fuel Usage Data **(fill out all applicable fields)**

Does this emission unit combust fuel? _X__Yes ___ No	**If yes, is it?** ___ Indirect Fired _X_Direct Fired
Maximum design heat input and/or maximum horsepower rating: 119.20 mmbtu/hr	**Type and Btu/hr rating of burners:** Vertical cylindrical heater 8 burners @ 14.9 mmbtu/hr each

List the primary fuel type(s) and if applicable, the secondary fuel type(s). For each fuel type listed, provide the maximum hourly and annual fuel usage for each.
Natural Gas
116,862.75 scf/hr
1,023.72 mmscf/yr

Describe each fuel expected to be used during the term of the permit.

Fuel Type	Max. Sulfur Content	Max. Ash Content	BTU Value
Natural Gas	0%	0%	1,020 btu/scf

Emissions Data		
Criteria Pollutants	Potential Emissions	
	PPH	TPY
Carbon Monoxide (CO)	4.77	20.88
Nitrogen Oxides (NO_X)	3.58	15.66
Lead (Pb)	0.00	0.00
Particulate Matter ($PM_{2.5}$)	0.89	3.89
Particulate Matter (PM_{10})	0.89	3.89
Total Particulate Matter (TSP)	0.89	3.89
Sulfur Dioxide (SO_2)	0.07	0.31
Volatile Organic Compounds (VOC)	0.64	2.82
Hazardous Air Pollutants	Potential Emissions	
	PPH	TPY
Formaldehyde	0.01	0.04
n-Hexane	0.21	0.92
Total HAPs	0.22	0.97
Regulated Pollutants other than Criteria and HAP	Potential Emissions	
	PPH	TPY
CO2(e)	15,341.37	67,195.21

List the method(s) used to calculate the potential emissions (include dates of any stack tests conducted, versions of software used, source and dates of emission factors, etc.).

-NOx and CO emission factors from vendor guarantee
-All other criteria pollutants and HAP emission factors from AP-42 Section 1.4 "Natural Gas Combustion" Tables 1.4-1, 1.4-2, &1.4-3
-GHG: 40 CFR 98, Subpart C Tier 1 Methodology

Applicable Requirements

List all applicable requirements for this emission unit. For each applicable requirement, include the underlying rule/regulation citation and/or <u>construction permit</u> with the condition number. (*Note: Title V permit condition numbers alone are not the underlying applicable requirements*). If an emission limit is calculated based on the type of source and design capacity or if a standard is based on a design parameter, this information should also be included.

Permit R13-2818E
4.1.1
4.1.2
6.1.1
6.1.2
6.1.3 [45CSR§2-3.1]
6.2 [40 CFR 60 Appendix A, Method 9]
6.3 [45CSR§2-3.2]
6.4 [40 CFR 60 Appendix A]
6.5

__X__ Permit Shield

For all applicable requirements listed above, provide monitoring/testing/recordkeeping/reporting which shall be used to demonstrate compliance. If the method is based on a permit or rule, include the condition number or citation. (Note: Each requirement listed above must have an associated method of demonstrating compliance. If there is not already a required method in place, then a method must be proposed.)

Section	Monitoring	Testing	Recordkeeping	Reporting	Condition or Citation
4.1.1	NA	NA	Records of monitoring	NA	4.1.1
4.1.2	NA	NA	Total HAP emission calculations	NA	4.1.2
6.1.1	NA	NA	Equipment specifications	NA	6.1.1
6.1.2	NA	NA	Emissions calculations which demonstrate compliance with NOx, CO, and VOC emission limits	NA	6.1.2
6.1.3	NA	NA	NA	NA	45CSR§2-3.1
6.2	Method 9 emissions observations	NA	NA	NA	40 CFR 60 Appendix A, Method 9
6.3	NA	Testing using Method 9 emissions observations or continuous opacity monitoring systems	NA	NA	45CSR§2-3.2
6.4	NA	NA	Records of all data required by Section 6.2.1	NA	40 CFR Appendix A
6.5	NA	NA	NA	Report deviations to the Director within 10 calendar days of the occurrence	6.5.1

Are you in compliance with all applicable requirements for this emission unit? _X__Yes ___No

If no, complete the **Schedule of Compliance Form** as **ATTACHMENT F**.

ATTACHMENT E - Emission Unit Form

Emission Unit Description

Emission unit ID number:	**Emission unit name:**	**List any control devices associated with this emission unit:** NA
H-1731	De-Ethanizer I Regen Heater	

Provide a description of the emission unit (type, method of operation, design parameters, etc.):
14.25 mmbtu/hr natural gas-fired regeneration heater

Manufacturer:	**Model number:**	**Serial number:**
Tulsa Heaters Inc.		
Construction date:	**Installation date:**	**Modification date(s):**
MM/DD/YYY	2013	NA

Design Capacity (examples: furnaces - tons/hr, tanks - gallons): 14.25 mmbtu/hr

Maximum Hourly Throughput:	**Maximum Annual Throughput:**	**Maximum Operating Schedule:**
14.25 mmbtu/hr	124,830 mmbtu/yr	8,760 hrs/year

Fuel Usage Data **(fill out all applicable fields)**

Does this emission unit combust fuel? _X__Yes ___ No	**If yes, is it?** ___ Indirect Fired _X_Direct Fired
Maximum design heat input and/or maximum horsepower rating: 14.25 mmbtu/hr	**Type and Btu/hr rating of burners:** Helical Coil 3 burners @ 4.75 mmbtu/hr each

List the primary fuel type(s) and if applicable, the secondary fuel type(s). For each fuel type listed, provide the maximum hourly and annual fuel usage for each.
Natural Gas
13,970.59 scf/hr
122.38 mmscf/yr

Describe each fuel expected to be used during the term of the permit.

Fuel Type	Max. Sulfur Content	Max. Ash Content	BTU Value
Natural Gas	0%	0%	1,020 btu/scf

Emissions Data

Criteria Pollutants	Potential Emissions	
	PPH	TPY
Carbon Monoxide (CO)	0.58	2.56
Nitrogen Oxides (NO_X)	0.57	2.50
Lead (Pb)	0.00	0.00
Particulate Matter ($PM_{2.5}$)	0.19	0.81
Particulate Matter (PM_{10})	0.19	0.81
Total Particulate Matter (TSP)	0.19	0.81
Sulfur Dioxide (SO_2)	0.01	0.04
Volatile Organic Compounds (VOC)	0.27	1.19
Hazardous Air Pollutants	Potential Emissions	
	PPH	TPY
Formaldehyde	0.00	0.00
n-Hexane	0.03	0.11
Total HAPs	0.03	0.12
Regulated Pollutants other than Criteria and HAP	Potential Emissions	
	PPH	TPY
CO2(e)	1,834.02	8,032.98

List the method(s) used to calculate the potential emissions (include dates of any stack tests conducted, versions of software used, source and dates of emission factors, etc.).

-NOx, CO, PM Total, and VOC emission factors from vendor guarantee
-All other criteria pollutants and HAP emission factors from AP-42 Section 1.4 "Natural Gas Combustion" Tables 1.4-1, 1.4-2, &1.4-3
-GHG: 40 CFR 98, Subpart C Tier 1 Methodology

Applicable Requirements

List all applicable requirements for this emission unit. For each applicable requirement, include the underlying rule/regulation citation and/or <u>construction permit</u> with the condition number. (*Note: Title V permit condition numbers alone are not the underlying applicable requirements*). If an emission limit is calculated based on the type of source and design capacity or if a standard is based on a design parameter, this information should also be included.

Permit R13-2818E
4.1.1
4.1.2
6.1.1
6.1.2
6.1.3 [45CSR§2-3.1]
6.2 [40 CFR 60 Appendix A, Method 9]
6.3 [45CSR§2-3.2]
6.4 [40 CFR 60 Appendix A]
6.5

__X__ Permit Shield

For all applicable requirements listed above, provide monitoring/testing/recordkeeping/reporting which shall be used to demonstrate compliance. If the method is based on a permit or rule, include the condition number or citation. (Note: Each requirement listed above must have an associated method of demonstrating compliance. If there is not already a required method in place, then a method must be proposed.)

Section	Monitoring	Testing	Recordkeeping	Reporting	Condition or Citation
4.1.1	NA	NA	Records of monitoring	NA	4.1.1
4.1.2	NA	NA	Total HAP emission calculations	NA	4.1.2
6.1.1	NA	NA	Equipment specifications	NA	6.1.1
6.1.2	NA	NA	Emissions calculations which demonstrate compliance with NOx, CO, and VOC emission limits	NA	6.1.2
6.1.3	NA	NA	NA	NA	45CSR§2-3.1
6.2	Method 9 emissions observations	NA	NA	NA	40 CFR 60 Appendix A, Method 9
6.3	NA	Testing using Method 9 emissions observations or continuous opacity monitoring systems	NA	NA	45CSR§2-3.2
6.4	NA	NA	Records of all data required by Section 6.2.1	NA	40 CFR Appendix A
6.5	NA	NA	NA	Report deviations to the Director within 10 calendar days of the occurrence	6.5.1

Are you in compliance with all applicable requirements for this emission unit? _X__Yes ___No

If no, complete the **Schedule of Compliance Form** as **ATTACHMENT F**.

ATTACHMENT E - Emission Unit Form

Emission Unit Description

Emission unit ID number:	**Emission unit name:**	**List any control devices associated with this emission unit:** NA
H-5741	Majorsville V Regen Heater	

Provide a description of the emission unit (type, method of operation, design parameters, etc.):
7.69 mmbtu/hr natural gas-fired molecular sieve regeneration heater

Manufacturer:	**Model number:**	**Serial number:**
Heatec		
Construction date:	**Installation date:**	**Modification date(s):**
MM/DD/YYY	2013	NA

Design Capacity (examples: furnaces - tons/hr, tanks - gallons): 7.69 mmbtu/hr

Maximum Hourly Throughput:	**Maximum Annual Throughput:**	**Maximum Operating Schedule:**
7.69 mmbtu/hr	67,364.40 mmbtu/yr	8,760 hrs/year

Fuel Usage Data **(fill out all applicable fields)**

Does this emission unit combust fuel? _X__Yes ___ No	**If yes, is it?** ___ Indirect Fired _X_Direct Fired
Maximum design heat input and/or maximum horsepower rating: 7.69 mmbtu/hr	**Type and Btu/hr rating of burners:** Helical coil 7.69 mmbtu/hr

List the primary fuel type(s) and if applicable, the secondary fuel type(s). For each fuel type listed, provide the maximum hourly and annual fuel usage for each.
Natural Gas
7,539.22 scf/hr
66.04 mmscf/yr

Describe each fuel expected to be used during the term of the permit.

Fuel Type	Max. Sulfur Content	Max. Ash Content	BTU Value
Natural Gas	0%	0%	1,020 btu/scf

Emissions Data		
Criteria Pollutants	Potential Emissions	
	PPH	TPY
Carbon Monoxide (CO)	0.32	1.38
Nitrogen Oxides (NO_X)	0.41	1.80
Lead (Pb)	0.00	0.00
Particulate Matter ($PM_{2.5}$)	0.06	0.25
Particulate Matter (PM_{10})	0.06	0.25
Total Particulate Matter (TSP)	0.06	0.25
Sulfur Dioxide (SO_2)	0.00	0.02
Volatile Organic Compounds (VOC)	0.04	0.18
Hazardous Air Pollutants	Potential Emissions	
	PPH	TPY
Formaldehyde	0.00	0.00
n-Hexane	0.01	0.06
Total HAPs	0.01	0.06
Regulated Pollutants other than Criteria and HAP	Potential Emissions	
	PPH	TPY
CO2(e)	989.72	4,334.99

List the method(s) used to calculate the potential emissions (include dates of any stack tests conducted, versions of software used, source and dates of emission factors, etc.).

-NOx and CO emission factors from vendor guarantee
-All other criteria pollutants and HAP emission factors from AP-42 Section 1.4 "Natural Gas Combustion" Tables 1.4-1, 1.4-2, &1.4-3
-GHG: 40 CFR 98, Subpart C Tier 1 Methodology

Applicable Requirements

List all applicable requirements for this emission unit. For each applicable requirement, include the underlying rule/regulation citation and/or <u>construction permit</u> with the condition number. (*Note: Title V permit condition numbers alone are not the underlying applicable requirements*). If an emission limit is calculated based on the type of source and design capacity or if a standard is based on a design parameter, this information should also be included.

Permit R13-2818E
4.1.1
4.1.2
6.1.1
6.1.2
6.1.3 [45CSR§2-3.1]
6.2 [40 CFR 60 Appendix A, Method 9]
6.3 [45CSR§2-3.2]
6.4 [40 CFR 60 Appendix A]
6.5

__X__ Permit Shield

For all applicable requirements listed above, provide monitoring/testing/recordkeeping/reporting which shall be used to demonstrate compliance. If the method is based on a permit or rule, include the condition number or citation. (Note: Each requirement listed above must have an associated method of demonstrating compliance. If there is not already a required method in place, then a method must be proposed.)

Section	Monitoring	Testing	Recordkeeping	Reporting	Condition or Citation
4.1.1	NA	NA	Records of monitoring	NA	4.1.1
4.1.2	NA	NA	Total HAP emission calculations	NA	4.1.2
6.1.1	NA	NA	Equipment specifications	NA	6.1.1
6.1.2	NA	NA	Emissions calculations which demonstrate compliance with NOx, CO, and VOC emission limits	NA	6.1.2
6.1.3	NA	NA	NA	NA	45CSR§2-3.1
6.2	Method 9 emissions observations	NA	NA	NA	40 CFR 60 Appendix A, Method 9
6.3	NA	Testing using Method 9 emissions observations or continuous opacity monitoring systems	NA	NA	45CSR§2-3.2
6.4	NA	NA	Records of all data required by Section 6.2.1	NA	40 CFR Appendix A
6.5	NA	NA	NA	Report deviations to the Director within 10 calendar days of the occurrence	6.5.1

Are you in compliance with all applicable requirements for this emission unit? _X__Yes ___No

If no, complete the **Schedule of Compliance Form** as **ATTACHMENT F**.

ATTACHMENT E - Emission Unit Form

Emission Unit Description

Emission unit ID number:	**Emission unit name:**	**List any control devices associated with this emission unit:** NA
H-6741	Majorsville VI Regen Heater	

Provide a description of the emission unit (type, method of operation, design parameters, etc.):
7.69 mmbtu/hr natural gas-fired molecular sieve regeneration heater

Manufacturer:	**Model number:**	**Serial number:**
Heatec		
Construction date:	**Installation date:**	**Modification date(s):**
MM/DD/YYY	TBD	NA

Design Capacity (examples: furnaces - tons/hr, tanks - gallons): 7.69 mmbtu/hr

Maximum Hourly Throughput:	**Maximum Annual Throughput:**	**Maximum Operating Schedule:**
7.69 mmbtu/hr	67,364.40 mmbtu/yr	8,760 hrs/year

Fuel Usage Data **(fill out all applicable fields)**

Does this emission unit combust fuel? _X__Yes ___ No	**If yes, is it?** ___ Indirect Fired _X_Direct Fired
Maximum design heat input and/or maximum horsepower rating: 7.69 mmbtu/hr	**Type and Btu/hr rating of burners:** Helical coil 7.69 mmbtu/hr

List the primary fuel type(s) and if applicable, the secondary fuel type(s). For each fuel type listed, provide the maximum hourly and annual fuel usage for each.
Natural Gas
7,539.22 scf/hr
66.04 mmscf/yr

Describe each fuel expected to be used during the term of the permit.

Fuel Type	Max. Sulfur Content	Max. Ash Content	BTU Value
Natural Gas	0%	0%	1,020 btu/scf

Emissions Data		
Criteria Pollutants	Potential Emissions	
	PPH	TPY
Carbon Monoxide (CO)	0.32	1.38
Nitrogen Oxides (NO_X)	0.41	1.80
Lead (Pb)	0.00	0.00
Particulate Matter ($PM_{2.5}$)	0.06	0.25
Particulate Matter (PM_{10})	0.06	0.25
Total Particulate Matter (TSP)	0.06	0.25
Sulfur Dioxide (SO_2)	0.00	0.02
Volatile Organic Compounds (VOC)	0.04	0.18
Hazardous Air Pollutants	Potential Emissions	
	PPH	TPY
Formaldehyde	0.00	0.00
n-Hexane	0.01	0.06
Total HAPs	0.01	0.06
Regulated Pollutants other than Criteria and HAP	Potential Emissions	
	PPH	TPY
CO2(e)	989.72	4,334.99

List the method(s) used to calculate the potential emissions (include dates of any stack tests conducted, versions of software used, source and dates of emission factors, etc.).

-NOx and CO emission factors from vendor guarantee
-All other criteria pollutants and HAP emission factors from AP-42 Section 1.4 "Natural Gas Combustion" Tables 1.4-1, 1.4-2, &1.4-3
-GHG: 40 CFR 98, Subpart C Tier 1 Methodology

Applicable Requirements

List all applicable requirements for this emission unit. For each applicable requirement, include the underlying rule/regulation citation and/or <u>construction permit</u> with the condition number. (*Note: Title V permit condition numbers alone are not the underlying applicable requirements*). If an emission limit is calculated based on the type of source and design capacity or if a standard is based on a design parameter, this information should also be included.

Permit R13-2818E
4.1.1
4.1.2
6.1.1
6.1.2
6.1.3 [45CSR§2-3.1]
6.2 [40 CFR 60 Appendix A, Method 9]
6.3 [45CSR§2-3.2]
6.4 [40 CFR 60 Appendix A]
6.5

__X__ Permit Shield

For all applicable requirements listed above, provide monitoring/testing/recordkeeping/reporting which shall be used to demonstrate compliance. If the method is based on a permit or rule, include the condition number or citation. (Note: Each requirement listed above must have an associated method of demonstrating compliance. If there is not already a required method in place, then a method must be proposed.)

Section	Monitoring	Testing	Recordkeeping	Reporting	Condition or Citation
4.1.1	NA	NA	Records of monitoring	NA	4.1.1
4.1.2	NA	NA	Total HAP emission calculations	NA	4.1.2
6.1.1	NA	NA	Equipment specifications	NA	6.1.1
6.1.2	NA	NA	Emissions calculations which demonstrate compliance with NOx, CO, and VOC emission limits	NA	6.1.2
6.1.3	NA	NA	NA	NA	45CSR§2-3.1
6.2	Method 9 emissions observations	NA	NA	NA	40 CFR 60 Appendix A, Method 9
6.3	NA	Testing using Method 9 emissions observations or continuous opacity monitoring systems	NA	NA	45CSR§2-3.2
6.4	NA	NA	Records of all data required by Section 6.2.1	NA	40 CFR Appendix A
6.5	NA	NA	NA	Report deviations to the Director within 10 calendar days of the occurrence	6.5.1

Are you in compliance with all applicable requirements for this emission unit? _X__Yes ___No

If no, complete the **Schedule of Compliance Form** as **ATTACHMENT F**.

ATTACHMENT E - Emission Unit Form

Emission Unit Description

Emission unit ID number:	**Emission unit name:**	**List any control devices associated with this emission unit:** NA
H-7741	Majorsville VII Regen Heater	

Provide a description of the emission unit (type, method of operation, design parameters, etc.):
7.69 mmbtu/hr natural gas-fired molecular sieve regeneration heater

Manufacturer:	**Model number:**	**Serial number:**
Heatec		
Construction date:	**Installation date:**	**Modification date(s):**
MM/DD/YYY	TBD	NA

Design Capacity (examples: furnaces - tons/hr, tanks - gallons): 7.69 mmbtu/hr

Maximum Hourly Throughput:	**Maximum Annual Throughput:**	**Maximum Operating Schedule:**
7.69 mmbtu/hr	67,364.40 mmbtu/yr	8,760 hrs/year

Fuel Usage Data **(fill out all applicable fields)**

Does this emission unit combust fuel? _X__Yes ___ No	**If yes, is it?** ___ Indirect Fired _X_Direct Fired
Maximum design heat input and/or maximum horsepower rating: 7.69 mmbtu/hr	**Type and Btu/hr rating of burners:** Helical coil 7.69 mmbtu/hr

List the primary fuel type(s) and if applicable, the secondary fuel type(s). For each fuel type listed, provide the maximum hourly and annual fuel usage for each.
Natural Gas
7,539.22 scf/hr
66.04 mmscf/yr

Describe each fuel expected to be used during the term of the permit.

Fuel Type	Max. Sulfur Content	Max. Ash Content	BTU Value
Natural Gas	0%	0%	1,020 btu/scf

Emissions Data

Criteria Pollutants	Potential Emissions	
	PPH	TPY
Carbon Monoxide (CO)	0.32	1.38
Nitrogen Oxides (NO_X)	0.41	1.80
Lead (Pb)	0.00	0.00
Particulate Matter ($PM_{2.5}$)	0.06	0.25
Particulate Matter (PM_{10})	0.06	0.25
Total Particulate Matter (TSP)	0.06	0.25
Sulfur Dioxide (SO_2)	0.00	0.02
Volatile Organic Compounds (VOC)	0.04	0.18
Hazardous Air Pollutants	Potential Emissions	
	PPH	TPY
Formaldehyde	0.00	0.00
n-Hexane	0.01	0.06
Total HAPs	0.01	0.06
Regulated Pollutants other than Criteria and HAP	Potential Emissions	
	PPH	TPY
CO2(e)	989.72	4,334.99

List the method(s) used to calculate the potential emissions (include dates of any stack tests conducted, versions of software used, source and dates of emission factors, etc.).

-NOx and CO emission factors from vendor guarantee
-All other criteria pollutants and HAP emission factors from AP-42 Section 1.4 "Natural Gas Combustion" Tables 1.4-1, 1.4-2, &1.4-3
-GHG: 40 CFR 98, Subpart C Tier 1 Methodology

Applicable Requirements

List all applicable requirements for this emission unit. For each applicable requirement, include the underlying rule/regulation citation and/or <u>construction permit</u> with the condition number. (*Note: Title V permit condition numbers alone are not the underlying applicable requirements*). If an emission limit is calculated based on the type of source and design capacity or if a standard is based on a design parameter, this information should also be included.

Permit R13-2818E
4.1.1
4.1.2
6.1.1
6.1.2
6.1.3 [45CSR§2-3.1]
6.2 [40 CFR 60 Appendix A, Method 9]
6.3 [45CSR§2-3.2]
6.4 [40 CFR 60 Appendix A]
6.5

__X__ Permit Shield

For all applicable requirements listed above, provide monitoring/testing/recordkeeping/reporting which shall be used to demonstrate compliance. If the method is based on a permit or rule, include the condition number or citation. (Note: Each requirement listed above must have an associated method of demonstrating compliance. If there is not already a required method in place, then a method must be proposed.)

Section	Monitoring	Testing	Recordkeeping	Reporting	Condition or Citation
4.1.1	NA	NA	Records of monitoring	NA	4.1.1
4.1.2	NA	NA	Total HAP emission calculations	NA	4.1.2
6.1.1	NA	NA	Equipment specifications	NA	6.1.1
6.1.2	NA	NA	Emissions calculations which demonstrate compliance with NOx, CO, and VOC emission limits	NA	6.1.2
6.1.3	NA	NA	NA	NA	45CSR§2-3.1
6.2	Method 9 emissions observations	NA	NA	NA	40 CFR 60 Appendix A, Method 9
6.3	NA	Testing using Method 9 emissions observations or continuous opacity monitoring systems	NA	NA	45CSR§2-3.2
6.4	NA	NA	Records of all data required by Section 6.2.1	NA	40 CFR Appendix A
6.5	NA	NA	NA	Report deviations to the Director within 10 calendar days of the occurrence	6.5.1

Are you in compliance with all applicable requirements for this emission unit? _X__Yes ___No

If no, complete the **Schedule of Compliance Form** as **ATTACHMENT F**.

ATTACHMENT E - Emission Unit Form

Emission Unit Description

Emission unit ID number:	**Emission unit name:**	**List any control devices associated with this emission unit:** NA
H-4781	Majorsville IV HMO Heater	

Provide a description of the emission unit (type, method of operation, design parameters, etc.):
16.07 mmbtu/hr natural gas-fired hot oil heater

Manufacturer:	**Model number:**	**Serial number:**
Heatec		
Construction date:	**Installation date:**	**Modification date(s):**
MM/DD/YYY	2014	NA

Design Capacity (examples: furnaces - tons/hr, tanks - gallons): 16.07 mmbtu/hr

Maximum Hourly Throughput:	**Maximum Annual Throughput:**	**Maximum Operating Schedule:**
16.07 mmbtu/hr	140,773.20 mmbtu/yr	8,760 hrs/year

Fuel Usage Data **(fill out all applicable fields)**

Does this emission unit combust fuel? _X__Yes ___ No	**If yes, is it?** ___ Indirect Fired _X_Direct Fired
Maximum design heat input and/or maximum horsepower rating: 16.07 mmbtu/hr	**Type and Btu/hr rating of burners:** Helical coil 16.07 mmbtu/hr

List the primary fuel type(s) and if applicable, the secondary fuel type(s). For each fuel type listed, provide the maximum hourly and annual fuel usage for each.
Natural Gas
15,755 scf/hr
138.01 mmscf/yr

Describe each fuel expected to be used during the term of the permit.

Fuel Type	Max. Sulfur Content	Max. Ash Content	BTU Value
Natural Gas	0%	0%	1,020 btu/scf

Emissions Data

Criteria Pollutants	Potential Emissions	
	PPH	TPY
Carbon Monoxide (CO)	1.32	5.80
Nitrogen Oxides (NO_X)	1.61	7.04
Lead (Pb)	0.00	0.00
Particulate Matter ($PM_{2.5}$)	0.12	0.52
Particulate Matter (PM_{10})	0.12	0.52
Total Particulate Matter (TSP)	0.12	0.52
Sulfur Dioxide (SO_2)	0.01	0.04
Volatile Organic Compounds (VOC)	0.09	0.38
Hazardous Air Pollutants	Potential Emissions	
	PPH	TPY
Formaldehyde	0.00	0.01
n-Hexane	0.03	0.12
Total HAPs	0.03	0.13
Regulated Pollutants other than Criteria and HAP	Potential Emissions	
	PPH	TPY
CO2(e)	2,068.25	9,058.95

List the method(s) used to calculate the potential emissions (include dates of any stack tests conducted, versions of software used, source and dates of emission factors, etc.).

-NOx and CO emission factors from vendor guarantee
-All other criteria pollutants and HAP emission factors from AP-42 Section 1.4 "Natural Gas Combustion" Tables 1.4-1, 1.4-2, &1.4-3
-GHG: 40 CFR 98, Subpart C Tier 1 Methodology

Applicable Requirements

List all applicable requirements for this emission unit. For each applicable requirement, include the underlying rule/regulation citation and/or <u>construction permit</u> with the condition number. (*Note: Title V permit condition numbers alone are not the underlying applicable requirements*). If an emission limit is calculated based on the type of source and design capacity or if a standard is based on a design parameter, this information should also be included.

Permit R13-2818E
4.1.1
4.1.2
6.1.1
6.1.2
6.1.3 [45CSR§2-3.1]
6.2 [40 CFR 60 Appendix A, Method 9]
6.3 [45CSR§2-3.2]
6.4 [40 CFR 60 Appendix A]
6.5

__X__ Permit Shield

For all applicable requirements listed above, provide monitoring/testing/recordkeeping/reporting which shall be used to demonstrate compliance. If the method is based on a permit or rule, include the condition number or citation. (Note: Each requirement listed above must have an associated method of demonstrating compliance. If there is not already a required method in place, then a method must be proposed.)

Section	Monitoring	Testing	Recordkeeping	Reporting	Condition or Citation
4.1.1	NA	NA	Records of monitoring	NA	4.1.1
4.1.2	NA	NA	Total HAP emission calculations	NA	4.1.2
6.1.1	NA	NA	Equipment specifications	NA	6.1.1
6.1.2	NA	NA	Emissions calculations which demonstrate compliance with NOx, CO, and VOC emission limits	NA	6.1.2
6.1.3	NA	NA	NA	NA	45CSR§2-3.1
6.2	Method 9 emissions observations	NA	NA	NA	40 CFR 60 Appendix A, Method 9
6.3	NA	Testing using Method 9 emissions observations or continuous opacity monitoring systems	NA	NA	45CSR§2-3.2
6.4	NA	NA	Records of all data required by Section 6.2.1	NA	40 CFR Appendix A
6.5	NA	NA	NA	Report deviations to the Director within 10 calendar days of the occurrence	6.5.1

Are you in compliance with all applicable requirements for this emission unit? _X__Yes ___No

If no, complete the **Schedule of Compliance Form** as **ATTACHMENT F**.

ATTACHMENT E - Emission Unit Form

Emission Unit Description

Emission unit ID number:	**Emission unit name:**	**List any control devices associated with this emission unit:** NA
H-7781	Majorsville VII HMO Heater	

Provide a description of the emission unit (type, method of operation, design parameters, etc.):
16.07 mmbtu/hr natural gas-fired hot oil heater

Manufacturer:	**Model number:**	**Serial number:**
Heatec		

Construction date:	**Installation date:**	**Modification date(s):**
MM/DD/YYY	TBD	NA

Design Capacity (examples: furnaces - tons/hr, tanks - gallons): 16.07 mmbtu/hr

Maximum Hourly Throughput:	**Maximum Annual Throughput:**	**Maximum Operating Schedule:**
16.07 mmbtu/hr	140,773.20 mmbtu/yr	8,760 hrs/year

Fuel Usage Data **(fill out all applicable fields)**

Does this emission unit combust fuel? _X__Yes ___ No	**If yes, is it?** ___ Indirect Fired _X_Direct Fired
Maximum design heat input and/or maximum horsepower rating: 16.07 mmbtu/hr	**Type and Btu/hr rating of burners:** Helical coil 16.07 mmbtu/hr

List the primary fuel type(s) and if applicable, the secondary fuel type(s). For each fuel type listed, provide the maximum hourly and annual fuel usage for each.
Natural Gas
15,755 scf/hr
138.01 mmscf/yr

Describe each fuel expected to be used during the term of the permit.

Fuel Type	Max. Sulfur Content	Max. Ash Content	BTU Value
Natural Gas	0%	0%	1,020 btu/scf

Emissions Data		
Criteria Pollutants	Potential Emissions	
	PPH	TPY
Carbon Monoxide (CO)	1.32	5.80
Nitrogen Oxides (NO_X)	1.61	7.04
Lead (Pb)	0.00	0.00
Particulate Matter ($PM_{2.5}$)	0.12	0.52
Particulate Matter (PM_{10})	0.12	0.52
Total Particulate Matter (TSP)	0.12	0.52
Sulfur Dioxide (SO_2)	0.01	0.04
Volatile Organic Compounds (VOC)	0.09	0.38
Hazardous Air Pollutants	Potential Emissions	
	PPH	TPY
Formaldehyde	0.00	0.01
n-Hexane	0.03	0.12
Total HAPs	0.03	0.13
Regulated Pollutants other than Criteria and HAP	Potential Emissions	
	PPH	TPY
CO2(e)	2,068.25	9,058.95

List the method(s) used to calculate the potential emissions (include dates of any stack tests conducted, versions of software used, source and dates of emission factors, etc.).

-NOx and CO emission factors from vendor guarantee
-All other criteria pollutants and HAP emission factors from AP-42 Section 1.4 "Natural Gas Combustion" Tables 1.4-1, 1.4-2, &1.4-3
-GHG: 40 CFR 98, Subpart C Tier 1 Methodology

Applicable Requirements

List all applicable requirements for this emission unit. For each applicable requirement, include the underlying rule/regulation citation and/or <u>construction permit</u> with the condition number. (*Note: Title V permit condition numbers alone are not the underlying applicable requirements*). If an emission limit is calculated based on the type of source and design capacity or if a standard is based on a design parameter, this information should also be included.

Permit R13-2818E
4.1.1
4.1.2
6.1.1
6.1.2
6.1.3 [45CSR§2-3.1]
6.2 [40 CFR 60 Appendix A, Method 9]
6.3 [45CSR§2-3.2]
6.4 [40 CFR 60 Appendix A]
6.5

__X__ Permit Shield

For all applicable requirements listed above, provide monitoring/testing/recordkeeping/reporting which shall be used to demonstrate compliance. If the method is based on a permit or rule, include the condition number or citation. (Note: Each requirement listed above must have an associated method of demonstrating compliance. If there is not already a required method in place, then a method must be proposed.)

Section	Monitoring	Testing	Recordkeeping	Reporting	Condition or Citation
4.1.1	NA	NA	Records of monitoring	NA	4.1.1
4.1.2	NA	NA	Total HAP emission calculations	NA	4.1.2
6.1.1	NA	NA	Equipment specifications	NA	6.1.1
6.1.2	NA	NA	Emissions calculations which demonstrate compliance with NOx, CO, and VOC emission limits	NA	6.1.2
6.1.3	NA	NA	NA	NA	45CSR§2-3.1
6.2	Method 9 emissions observations	NA	NA	NA	40 CFR 60 Appendix A, Method 9
6.3	NA	Testing using Method 9 emissions observations or continuous opacity monitoring systems	NA	NA	45CSR§2-3.2
6.4	NA	NA	Records of all data required by Section 6.2.1	NA	40 CFR Appendix A
6.5	NA	NA	NA	Report deviations to the Director within 10 calendar days of the occurrence	6.5.1

Are you in compliance with all applicable requirements for this emission unit? _X__Yes ___No

If no, complete the **Schedule of Compliance Form** as **ATTACHMENT F**.

ATTACHMENT E - Emission Unit Form

Emission Unit Description

Emission unit ID number:	**Emission unit name:**	**List any control devices associated with this emission unit:** NA
H-4782	Stabilization Heater	

Provide a description of the emission unit (type, method of operation, design parameters, etc.):
11.72 mmbtu/hr natural gas-fired stabilization heater

Manufacturer:	**Model number:**	**Serial number:**
Heatec		

Construction date:	**Installation date:**	**Modification date(s):**
MM/DD/YYY	TBD	NA

Design Capacity (examples: furnaces - tons/hr, tanks - gallons): 11.72 mmbtu/hr

Maximum Hourly Throughput:	**Maximum Annual Throughput:**	**Maximum Operating Schedule:**
11.72 mmbtu/hr	102,647 mmbtu/yr	8,760 hrs/year

Fuel Usage Data **(fill out all applicable fields)**

Does this emission unit combust fuel? _X__Yes ___ No	**If yes, is it?** ___ Indirect Fired _X_Direct Fired
Maximum design heat input and/or maximum horsepower rating: 11.72 mmbtu/hr	**Type and Btu/hr rating of burners:** Helical coil 11.72 mmbtu/hr

List the primary fuel type(s) and if applicable, the secondary fuel type(s). For each fuel type listed, provide the maximum hourly and annual fuel usage for each.
Natural Gas
11,487.92 scf/hr
100.63 mmscf/yr

Describe each fuel expected to be used during the term of the permit.

Fuel Type	Max. Sulfur Content	Max. Ash Content	BTU Value
Natural Gas	0%	0%	1,020 btu/scf

Emissions Data		
Criteria Pollutants	Potential Emissions	
	PPH	TPY
Carbon Monoxide (CO)	0.97	4.23
Nitrogen Oxides (NO_X)	0.69	3.01
Lead (Pb)	0.00	0.00
Particulate Matter ($PM_{2.5}$)	0.09	0.38
Particulate Matter (PM_{10})	0.09	0.38
Total Particulate Matter (TSP)	0.09	0.38
Sulfur Dioxide (SO_2)	0.01	0.03
Volatile Organic Compounds (VOC)	0.06	0.28
Hazardous Air Pollutants	Potential Emissions	
	PPH	TPY
Formaldehyde	0.00	0.003
n-Hexane	0.02	0.09
Total HAPs	0.02	0.10
Regulated Pollutants other than Criteria and HAP	Potential Emissions	
	PPH	TPY
CO2(e)	1,370.69	6,003.60

List the method(s) used to calculate the potential emissions (include dates of any stack tests conducted, versions of software used, source and dates of emission factors, etc.).

-NOx and CO emission factors from vendor guarantee
-All other criteria pollutants and HAP emission factors from AP-42 Section 1.4 "Natural Gas Combustion" Tables 1.4-1, 1.4-2, &1.4-3
-GHG: 40 CFR 98, Subpart C Tier 1 Methodology

Applicable Requirements

List all applicable requirements for this emission unit. For each applicable requirement, include the underlying rule/regulation citation and/or <u>construction permit</u> with the condition number. (*Note: Title V permit condition numbers alone are not the underlying applicable requirements*). If an emission limit is calculated based on the type of source and design capacity or if a standard is based on a design parameter, this information should also be included.

Permit R13-2818E
4.1.1
4.1.2
6.1.1
6.1.2
6.1.3 [45CSR§2-3.1]
6.2 [40 CFR 60 Appendix A, Method 9]
6.3 [45CSR§2-3.2]
6.4 [40 CFR 60 Appendix A]
6.5

__X__ Permit Shield

For all applicable requirements listed above, provide monitoring/testing/recordkeeping/reporting which shall be used to demonstrate compliance. If the method is based on a permit or rule, include the condition number or citation. (Note: Each requirement listed above must have an associated method of demonstrating compliance. If there is not already a required method in place, then a method must be proposed.)

Section	Monitoring	Testing	Recordkeeping	Reporting	Condition or Citation
4.1.1	NA	NA	Records of monitoring	NA	4.1.1
4.1.2	NA	NA	Total HAP emission calculations	NA	4.1.2
6.1.1	NA	NA	Equipment specifications	NA	6.1.1
6.1.2	NA	NA	Emissions calculations which demonstrate compliance with NOx, CO, and VOC emission limits	NA	6.1.2
6.1.3	NA	NA	NA	NA	45CSR§2-3.1
6.2	Method 9 emissions observations	NA	NA	NA	40 CFR 60 Appendix A, Method 9
6.3	NA	Testing using Method 9 emissions observations or continuous opacity monitoring systems	NA	NA	45CSR§2-3.2
6.4	NA	NA	Records of all data required by Section 6.2.1	NA	40 CFR Appendix A
6.5	NA	NA	NA	Report deviations to the Director within 10 calendar days of the occurrence	6.5.1

Are you in compliance with all applicable requirements for this emission unit? _X__Yes ___No

If no, complete the **Schedule of Compliance Form** as **ATTACHMENT F**.

ATTACHMENT E - Emission Unit Form

Emission Unit Description

Emission unit ID number:	**Emission unit name:**	**List any control devices associated with this emission unit:** NA
FL-991	Flare Pilot	

Provide a description of the emission unit (type, method of operation, design parameters, etc.):
Pilot gas combustion

Manufacturer:	**Model number:**	**Serial number:**
Callidus		
Construction date:	**Installation date:**	**Modification date(s):**
MM/DD/YYY	2010	NA

Design Capacity (examples: furnaces - tons/hr, tanks - gallons):

Maximum Hourly Throughput:	**Maximum Annual Throughput:**	**Maximum Operating Schedule:**
500 scf/hr	4.38 mmscf/yr	8,760 hrs/year

Fuel Usage Data **(fill out all applicable fields)**

Does this emission unit combust fuel? _X__Yes ___ No	**If yes, is it?** ___ Indirect Fired _X_Direct Fired
Maximum design heat input and/or maximum horsepower rating:	**Type and Btu/hr rating of burners:** 6 pilots @ 85,000 btu/hr

List the primary fuel type(s) and if applicable, the secondary fuel type(s). For each fuel type listed, provide the maximum hourly and annual fuel usage for each.
Natural Gas (Pilot)
500 scf/hr
4.38 mmscf/yr

Describe each fuel expected to be used during the term of the permit.

Fuel Type	Max. Sulfur Content	Max. Ash Content	BTU Value
Natural Gas	0%	0%	1,020 btu/scf

Emissions Data

Criteria Pollutants	Potential Emissions	
	PPH	TPY
Carbon Monoxide (CO)	0.04	0.18
Nitrogen Oxides (NO_X)	0.05	0.22
Lead (Pb)	0.00	0.00
Particulate Matter ($PM_{2.5}$)	0.00	0.02
Particulate Matter (PM_{10})	0.00	0.02
Total Particulate Matter (TSP)	0.00	0.02
Sulfur Dioxide (SO_2)	0.00	0.00
Volatile Organic Compounds (VOC)	0.00	0.01
Hazardous Air Pollutants	Potential Emissions	
	PPH	TPY
Regulated Pollutants other than Criteria and HAP	Potential Emissions	
	PPH	TPY
CO2(e)	65.64	287.50

List the method(s) used to calculate the potential emissions (include dates of any stack tests conducted, versions of software used, source and dates of emission factors, etc.).

-Criteria pollutants and HAP emission factors from AP-42 Section 1.4 “Natural Gas Combustion” Tables 1.4-1, 1.4-2, & 1.4-3
-GHG: 40 CFR 98, Subpart C Tier 1 Methodology

Applicable Requirements

List all applicable requirements for this emission unit. For each applicable requirement, include the underlying rule/regulation citation and/or <u>construction permit</u> with the condition number. (*Note: Title V permit condition numbers alone are not the underlying applicable requirements*). If an emission limit is calculated based on the type of source and design capacity or if a standard is based on a design parameter, this information should also be included.

Permit R13-2818E
4.1.1
4.1.2
7.1.1 [40 CFR 63, Supart HH]
7.1.2 a [40 CFR Appendix A, Method 22]
7.1.2 b
7.1.2 c
7.1.2 d
7.1.2 e
7.1.3 [40 CFR Appendix A]
7.1.4
7.1.5 [45CSR§6-4.3] [40 CFR 60 Appendix A, Method 22]
7.1.6 [45CSR§6-4.4]
7.1.7 [45CSR§6-4.6]
7.1.8 [45CSR§6-4.1]
7.1.10
7.1.11
7.2.2
7.4.5
7.5.1
7.5.2
7.5.3
7.5.4

__X__ Permit Shield

For all applicable requirements listed above, provide monitoring/testing/recordkeeping/reporting which shall be used to demonstrate compliance. If the method is based on a permit or rule, include the condition number or citation. (Note: Each requirement listed above must have an associated method of demonstrating compliance. If there is not already a required method in place, then a method must be proposed.)

Section	Monitoring	Testing	Recordkeeping	Reporting	Condition or Citation
4.1.1	NA	NA	Records of monitoring	NA	4.1.1
4.1.2	NA	NA	Total HAP emission calculations	NA	4.1.2
7.1.1	NA	NA	Records of PTE HAP emission calculations	NA	40 CFR 63 Subpart HH
7.1.2 a	NA	NA	Records of flare design evaluation	NA	7.4.2
7.1.2 b	NA	EPA Method 22 within one year of permit issuance or initial startup whichever is later	Records of EPA Method 22 testing	NA	7.3.1, 7.4.4, 40 CFR 60 Appendix A Method 22
7.1.2 c	Monitor presence of a flame with a thermocouple except during SSM events	NA	Records of times and duration of all periods which the pilot flame was absent	NA	7.2.1, 7.4.1
7.1.2 d	NA	NA	Records of net heating value calculations	NA	7.1.2 d

7.1.2 e	NA	NA	Records of exit velocity calculations	NA	7.1.2 e
7.1.3	NA	Testing as requested by the Director.	Records of flare design evaluation and flare compliance assessment. Records of any testing	Compliance assessment as requested by the Director.	7.3.2, 7.4.2, 40 CFR 60 Appendix A Test Methods 2, 2A, 2C, or 2D. Also Method 4/18.
7.1.4	Monitor pilot light fuel consumption	NA	Records of pilot light fuel consumption	NA	7.1.9
7.1.5	NA	EPA Method 22	Records of EPA Method 22 testing	NA	45CSR§6-4.3, 40 CFR 60 Appendix A Method 22
7.1.6	Monitor percent opacity during start-up	NA	NA	NA	45CSR§6-4.4
7.1.7	NA	NA	NA	NA	45CSR§6-4.6
7.1.8	NA	NA	Records of PM emission calculations	NA	45CSR§6-4.1
7.1.10	NA	NA	NA	NA	7.1.10
7.1.11	NA	NA	Affirmative defense	NA	2.1.2
7.2.2	Throughput of wet natural gas fed to the flare	NA	Records of wet natural gas throughput fed to the flare on a monthly basis. Maintain records for 5 years.	NA	7.4.3, 7.4.6
7.4.5	NA	NA	Maintain all records required under Section 7.4 for a period of five years	Provide records to the Director upon request	7.4.5
7.5.1	NA	NA	NA	If compliance demonstration with 7.1.1 is required, submit testing protocol 30 days prior to testing. Submit notification 15 days prior to testing. Submit testing results and all supporting calculations and testing data within 60 days of testing.	7.5.1
7.5.2	NA	NA	NA	Report deviations from allowable visible emission requirements discovered using Method 9 or Method 22 within 10 days.	7.5.2
7.5.3	NA	NA	NA	Report deviations from the flare design and operation criteria in writing within 10 days of discovery of such deviation	7.5.3
7.5.4	NA	NA	NA	Report to the Director the time, cause of event, estimate of emissions and corrective actions taken when	7.5.4

				the flare was used for an emergency	

Are you in compliance with all applicable requirements for this emission unit? _X__Yes ___No

If no, complete the **Schedule of Compliance Form** as **ATTACHMENT F**.

ATTACHMENT E - Emission Unit Form

Emission Unit Description

Emission unit ID number:	**Emission unit name:**	**List any control devices associated with this emission unit:** NA
FL-1991	Flare Pilot	

Provide a description of the emission unit (type, method of operation, design parameters, etc.):
Pilot gas combustion

Manufacturer:	**Model number:**	**Serial number:**
Callidus		

Construction date:	**Installation date:**	**Modification date(s):**
MM/DD/YYY	2013	NA

Design Capacity (examples: furnaces - tons/hr, tanks - gallons):

Maximum Hourly Throughput:	**Maximum Annual Throughput:**	**Maximum Operating Schedule:**
333 scf/hr	2.92 mmscf/yr	8,760 hrs/year

Fuel Usage Data **(fill out all applicable fields)**

Does this emission unit combust fuel? _X__Yes ___ No	**If yes, is it?** ___ Indirect Fired _X_Direct Fired
Maximum design heat input and/or maximum horsepower rating:	**Type and Btu/hr rating of burners:** 4 pilots @ 85,000 btu/hr

List the primary fuel type(s) and if applicable, the secondary fuel type(s). For each fuel type listed, provide the maximum hourly and annual fuel usage for each.
Natural Gas (Pilot)
333 scf/hr
2.92 mmscf/yr

Describe each fuel expected to be used during the term of the permit.

Fuel Type	Max. Sulfur Content	Max. Ash Content	BTU Value
Natural Gas	0%	0%	1,020 btu/scf

Emissions Data

Criteria Pollutants	Potential Emissions	
	PPH	TPY
Carbon Monoxide (CO)	0.03	0.12
Nitrogen Oxides (NO_X)	0.03	0.15
Lead (Pb)	0.00	0.00
Particulate Matter ($PM_{2.5}$)	0.00	0.01
Particulate Matter (PM_{10})	0.00	0.01
Total Particulate Matter (TSP)	0.00	0.01
Sulfur Dioxide (SO_2)	0.00	0.00
Volatile Organic Compounds (VOC)	0.00	0.01
Hazardous Air Pollutants	Potential Emissions	
	PPH	TPY
Regulated Pollutants other than Criteria and HAP	Potential Emissions	
	PPH	TPY
CO2(e)	43.76	191.66

List the method(s) used to calculate the potential emissions (include dates of any stack tests conducted, versions of software used, source and dates of emission factors, etc.).

-Criteria pollutants and HAP emission factors from AP-42 Section 1.4 “Natural Gas Combustion” Tables 1.4-1, 1.4-2, & 1.4-3
-GHG: 40 CFR 98, Subpart C Tier 1 Methodology

Applicable Requirements

List all applicable requirements for this emission unit. For each applicable requirement, include the underlying rule/regulation citation and/or <u>construction permit</u> with the condition number. (*Note: Title V permit condition numbers alone are not the underlying applicable requirements*). If an emission limit is calculated based on the type of source and design capacity or if a standard is based on a design parameter, this information should also be included.

Permit R13-2818E
4.1.1
4.1.2
7.1.1 [40 CFR 63, Supart HH]
7.1.2 a [40 CFR Appendix A, Method 22]
7.1.2 b
7.1.2 c
7.1.2 d
7.1.2 e
7.1.3 [40 CFR Appendix A]
7.1.4
7.1.5 [45CSR§6-4.3] [40 CFR 60 Appendix A, Method 22]
7.1.6 [45CSR§6-4.4]
7.1.7 [45CSR§6-4.6]
7.1.8 [45CSR§6-4.1]
7.1.10
7.1.11
7.2.2
7.4.5
7.5.1
7.5.2
7.5.3
7.5.4

__X__ Permit Shield

For all applicable requirements listed above, provide monitoring/testing/recordkeeping/reporting which shall be used to demonstrate compliance. If the method is based on a permit or rule, include the condition number or citation. (Note: Each requirement listed above must have an associated method of demonstrating compliance. If there is not already a required method in place, then a method must be proposed.)

Section	Monitoring	Testing	Recordkeeping	Reporting	Condition or Citation
4.1.1	NA	NA	Records of monitoring	NA	4.1.1
4.1.2	NA	NA	Total HAP emission calculations	NA	4.1.2
7.1.1	NA	NA	Records of PTE HAP emission calculations	NA	40 CFR 63 Subpart HH
7.1.2 a	NA	NA	Records of flare design evaluation	NA	7.4.2
7.1.2 b	NA	EPA Method 22 within one year of permit issuance or initial startup whichever is later	Records of EPA Method 22 testing	NA	7.3.1, 7.4.4, 40 CFR 60 Appendix A Method 22
7.1.2 c	Monitor presence of a flame with a thermocouple except during SSM events	NA	Records of times and duration of all periods which the pilot flame was absent	NA	7.2.1, 7.4.1
7.1.2 d	NA	NA	Records of net heating value calculations	NA	7.1.2 d

7.1.2 e	NA	NA	Records of exit velocity calculations	NA	7.1.2 e
7.1.3	NA	Testing as requested by the Director.	Records of flare design evaluation and flare compliance assessment. Records of any testing	Compliance assessment as requested by the Director.	7.3.2, 7.4.2, 40 CFR 60 Appendix A Test Methods 2, 2A, 2C, or 2D. Also Method 4/18.
7.1.4	Monitor pilot light fuel consumption	NA	Records of pilot light fuel consumption	NA	7.1.9
7.1.5	NA	EPA Method 22	Records of EPA Method 22 testing	NA	45CSR§6-4.3, 40 CFR 60 Appendix A Method 22
7.1.6	Monitor percent opacity during start-up	NA	NA	NA	45CSR§6-4.4
7.1.7	NA	NA	NA	NA	45CSR§6-4.6
7.1.8	NA	NA	Records of PM emission calculations	NA	45CSR§6-4.1
7.1.10	NA	NA	NA	NA	7.1.10
7.1.11	NA	NA	Affirmative defense	NA	2.1.2
7.2.2	Throughput of wet natural gas fed to the flare	NA	Records of wet natural gas throughput fed to the flare on a monthly basis. Maintain records for 5 years.	NA	7.4.3, 7.4.6
7.4.5	NA	NA	Maintain all records required under Section 7.4 for a period of five years	Provide records to the Director upon request	7.4.5
7.5.1	NA	NA	NA	If compliance demonstration with 7.1.1 is required, submit testing protocol 30 days prior to testing. Submit notification 15 days prior to testing. Submit testing results and all supporting calculations and testing data within 60 days of testing.	7.5.1
7.5.2	NA	NA	NA	Report deviations from allowable visible emission requirements discovered using Method 9 or Method 22 within 10 days.	7.5.2
7.5.3	NA	NA	NA	Report deviations from the flare design and operation criteria in writing within 10 days of discovery of such deviation	7.5.3
7.5.4	NA	NA	NA	Report to the Director the time, cause of event, estimate of emissions and corrective actions taken when	7.5.4

				the flare was used for an emergency	

Are you in compliance with all applicable requirements for this emission unit? _X__Yes ___No

If no, complete the **Schedule of Compliance Form** as **ATTACHMENT F**.

ATTACHMENT D - Title V Equipment Table

(includes all emission units at the facility except those designated as insignificant activities in Section 4, Item 24 of the General Forms)

Emission Point ID[1]	Control Device[1]	Emission Unit ID[1]	Emission Unit Description	Design Capacity	Year Installed/ Modified
2E	Oxid. Cat.	C-102	Caterpillar G3608 Compressor Engine	2,370 hp	2010
3E	Oxid. Cat.	C-103	Caterpillar G3608 Compressor Engine	2,370 hp	2010
4E	Oxid. Cat	C-104	Caterpillar G3608 Compressor Engine	2,370 hp	2010
5E	None	H-741	Plant 1 Regenerator Heater	5.60 mmbtu/hr	2010
6E	None	H-781	Plant 1 & 2 HMO Heater	15.40 mmbtu/hr	2010
7E	None	FUG-001	Fugitive Leaks	NA	2010/2014
9E	None	H-2741	Plant 2 Regenerator Heater	5.60 mmbtu/hr	2010
	1C	FL-991	Flare	3.70 mmscf/hr	2010
10E	None	H-3741	Heater M III Regen Heater	7.69 mmbtu/hr	2012/2013
11E	None	H-4741	Heater M IV Regen Heater	7.69 mmbtu/hr	2012/2013
12E	None	H-3781	Heater M III HMO Heater	16.07 mmbtu/hr	2012/2013
13E	None	H-D1782	DeEthanizer I HMO Heater	119.20	2012/2013
23E	None	H-D2782	DeEthanizer II HMO Heater	119.20	2017
14E	None	H-D1741	DeEthanizer I Regen Heater	14.80 mmbtu/hr	2012/2013
24E	None	H-D2741	DeEthanizer II Regen Heater	14.80 mmbtu/hr	2017
	3C	FL-1991	Flare DeEth, MIV, MVI, MVII	3.70 mmscf/hr	2012/2013
15E	None	H-5741	Heater M V Regen Heater	7.69 mmbtu/hr	2014
16E	None	H-6741	Heater M VI Regen Heater	7.69 mmbtu/hr	2014
17E	None	H-7741	Heater M VII Regen Heater	7.69 mmbtu/hr	2018
18E	None	H-4781	Heater M IV HMO Heater	16.07 mmbtu/hr	2014
19E	None	H-7781	Heater M VII HMO Heater	16.07 mmbtu/hr	2018
20E	None	H-4782	Stabilization Heater	11.72 mmbtu/hr	2014
22E	None	M3-G-2	Majorsville 3 Emergency Gen	145 hp	2014
25E	None	M3-G-3	Majorsville 3 MCC Emergency Gen	145 hp	2014
26E	None	M4-G-6	Majorsville 4 MCC Emergency Gen	145 hp	2014
27E	None	M4-G-7	Majorsville 4 Emergency Gen	145 hp	2014
29E	None	M7-G-9	Majorsville 7 MCC Emergency Gen	69 hp	2018
30E	None	MD1-G-4	DeEthanizer 1 Control Room Emergency Gen	63.7 hp	2012/2013

31E	None	MD1-G-5	DeEthanizer 1 Emergency Gen	40.2 hp	2012/2013
32E	None	MD2-G-10	DeEthanizer 2 Control Room Emergency Gen	25 hp	2017
33E	None	MD2-G-11	DeEthanizer 2 Emergency Gen	69 hp	2017
52E	None	M1-G-12	Majorsville 1 & 2 Emergency Generator	279 hp	2024
34E	None	MT-1	Plant 1 Methanol Tank	520 Gal	2012/2013
35E	None	MT-2	Plant 2 Methanol Tank	520 Gal	2012/2013
36E	None	MT-3	Plant 3 Methanol Tank	520 Gal	2014
37E	None	MT-4	Plant 4 Methanol Tank	520 Gal	2014
38E	None	MT-5	Plant 5 Methanol Tank	520 Gal	2014
39E	None	MT-6	Plant 6 Methanol Tank	520 Gal	2014
40E	None	MT-7	Plant 7 Methanol Tank	520 Gal	2017
41E	None	GT-1	Gasoline Dispensing Tank	520 Gal	2014
42E	None	DT-1	Diesel Dispensing Tank	520 Gal	2014
43E	None	TK-1740	Lube Oil Day Tank	520 Gal	2012/2013
44E	None	UOT-1	Used Oil Tank	1,000 Gal	2012/2013
45E	None	TK-7411	Lube Oil Tank	2,133 Gal	2012/2013
46E	None	TK-7419	Amine Tank		2012/2013
47E	None	TK-7421	Amine Tank		2012/2013
48E	None	TK-4825	Compressor Drain Tank	2,326 Gal	2014
49E	None	TK-4826	Lube Oil Tank	2,133 Gal	2014
50E	None	TK-4824	Closed Drain Tank	4,200 Gal	2014
51E	None	TK-4725	Closed Drain Tank	4,200 Gal	2014
1B	None	1B	Compressor Blowdowns	N/A	2010
2B	None	2B	Facility Blowdowns	N/A	2010
RP	None	RP	Rod Packing Emissions	N/A	2010

[1]For 45CSR13 permitted sources, the numbering system used for the emission points, control devices, and emission units should be consistent with the numbering system used in the 45CSR13 permit. For grandfathered sources, the numbering system should be consistent with registrations or emissions inventory previously submitted to DAQ. For emission points, control devices, and emissions units which have not been previously labeled, use the following 45CSR13 numbering system: 1S, 2S, 3S,... or other appropriate description for emission units; 1C, 2C, 3C,... or other appropriate designation for control devices; 1E, 2E, 3E, ... or other appropriate designation for emission points.

ATTACHMENT E - Emission Unit Form

Emission Unit Description

Emission unit ID number:	**Emission unit name:**	**List any control devices associated with this emission unit:** NA
H-3781	Majorsville III HMO Heater	

Provide a description of the emission unit (type, method of operation, design parameters, etc.):
16.07 mmbtu/hr natural gas-fired hot oil heater

Manufacturer:	**Model number:**	**Serial number:**
Heatec		

Construction date:	**Installation date:**	**Modification date(s):**
MM/DD/YYY	2013	NA

Design Capacity (examples: furnaces - tons/hr, tanks - gallons): 16.07 mmbtu/hr

Maximum Hourly Throughput:	**Maximum Annual Throughput:**	**Maximum Operating Schedule:**
16.07 mmbtu/hr	140,773.20 mmbtu/yr	8,760 hrs/year

Fuel Usage Data **(fill out all applicable fields)**

Does this emission unit combust fuel? _X__Yes ___ No	**If yes, is it?** ___ Indirect Fired _X_Direct Fired
Maximum design heat input and/or maximum horsepower rating: 16.07 mmbtu/hr	**Type and Btu/hr rating of burners:** Helical coil 16.07 mmbtu/hr

List the primary fuel type(s) and if applicable, the secondary fuel type(s). For each fuel type listed, provide the maximum hourly and annual fuel usage for each.
Natural Gas
15,755 scf/hr
138.01 mmscf/yr

Describe each fuel expected to be used during the term of the permit.

Fuel Type	Max. Sulfur Content	Max. Ash Content	BTU Value
Natural Gas	0%	0%	1,020 btu/scf

Emissions Data		
Criteria Pollutants	Potential Emissions	
	PPH	TPY
Carbon Monoxide (CO)	1.32	5.80
Nitrogen Oxides (NO_X)	1.61	7.04
Lead (Pb)	0.00	0.00
Particulate Matter ($PM_{2.5}$)	0.12	0.52
Particulate Matter (PM_{10})	0.12	0.52
Total Particulate Matter (TSP)	0.12	0.52
Sulfur Dioxide (SO_2)	0.01	0.04
Volatile Organic Compounds (VOC)	0.09	0.38
Hazardous Air Pollutants	Potential Emissions	
	PPH	TPY
Formaldehyde	0.00	0.01
n-Hexane	0.03	0.12
Total HAPs	0.03	0.13
Regulated Pollutants other than Criteria and HAP	Potential Emissions	
	PPH	TPY
CO2(e)	2,068.25	9,058.95

List the method(s) used to calculate the potential emissions (include dates of any stack tests conducted, versions of software used, source and dates of emission factors, etc.).

-NOx and CO emission factors from vendor guarantee
-All other criteria pollutants and HAP emission factors from AP-42 Section 1.4 "Natural Gas Combustion" Tables 1.4-1, 1.4-2, &1.4-3
-GHG: 40 CFR 98, Subpart C Tier 1 Methodology

Applicable Requirements

List all applicable requirements for this emission unit. For each applicable requirement, include the underlying rule/regulation citation and/or <u>construction permit</u> with the condition number. (*Note: Title V permit condition numbers alone are not the underlying applicable requirements*). If an emission limit is calculated based on the type of source and design capacity or if a standard is based on a design parameter, this information should also be included.

Permit R13-2818H
6.1.1
6.1.2
6.1.3 [45CSR§2-3.1]
6.2.1 [40 CFR 60 Appendix A, Method 9]
6.2.2
6.3 [45CSR§2-3.2]
6.4 [40 CFR 60 Appendix A]
6.5

__X__ Permit Shield

For all applicable requirements listed above, provide monitoring/testing/recordkeeping/reporting which shall be used to demonstrate compliance. If the method is based on a permit or rule, include the condition number or citation. (Note: Each requirement listed above must have an associated method of demonstrating compliance. If there is not already a required method in place, then a method must be proposed.)

Section	Monitoring	Testing	Recordkeeping	Reporting	Condition or Citation
6.1.1			Maximum heater rating will be maintained.		
6.1.2			Records sufficient to demonstrate compliance with the emission limits will be maintained.		
6.1.3			Records sufficient to demonstrate compliance with the emission limits will be maintained.		45CSR§2-3.1
6.2.1	When required Method 9 monitoring will be performed.		Records of each monitoring event will be maintained.		40 CFR 60 Appendix A, Method 9
6.2.2	Operating hours will be maintained.		Records showing operating hours and calculated fuel usage will be maintained.		40 CFR §60.48(g)(2) 45 CSR §2A-7.1.a.1
6.3	When required Method 9 monitoring will be performed.		Records of each monitoring event will be maintained.		45CSR§2-3.2
6.4			Records of all data required by Section 6.2.1 will be maintained.		
6.5				Report deviations to the Director within 10 calendar days of the occurrence	

Are you in compliance with all applicable requirements for this emission unit? _X__Yes ___No

If no, complete the **Schedule of Compliance Form** as **ATTACHMENT F**.

ATTACHMENT E - Emission Unit Form

Emission Unit Description

Emission unit ID number:	**Emission unit name:**	**List any control devices associated with this emission unit:** NA
H-D2782	De-Ethanizer II HMO Heater	

Provide a description of the emission unit (type, method of operation, design parameters, etc.):
119.20 mmbtu/hr natural gas-fired hot oil heater

Manufacturer:	**Model number:**	**Serial number:**
Optimized Process Furnaces		
Construction date:	**Installation date:**	**Modification date(s):**
MM/DD/YYY	2013	NA

Design Capacity (examples: furnaces - tons/hr, tanks - gallons): 119.20 mmbtu/hr

Maximum Hourly Throughput:	**Maximum Annual Throughput:**	**Maximum Operating Schedule:**
119.20 mmbtu/hr	1,044,192.00 mmbtu/yr	8,760 hrs/year

Fuel Usage Data **(fill out all applicable fields)**

Does this emission unit combust fuel? _X__Yes ___ No	**If yes, is it?** ___ Indirect Fired _X_Direct Fired
Maximum design heat input and/or maximum horsepower rating: 119.20 mmbtu/hr	**Type and Btu/hr rating of burners:** Vertical cylindrical heater 8 burners @ 14.9 mmbtu/hr each

List the primary fuel type(s) and if applicable, the secondary fuel type(s). For each fuel type listed, provide the maximum hourly and annual fuel usage for each.
Natural Gas
116,862.75 scf/hr
1,023.72 mmscf/yr

Describe each fuel expected to be used during the term of the permit.

Fuel Type	Max. Sulfur Content	Max. Ash Content	BTU Value
Natural Gas	0%	0%	1,020 btu/scf

Emissions Data		
Criteria Pollutants	Potential Emissions	
	PPH	TPY
Carbon Monoxide (CO)	4.77	20.88
Nitrogen Oxides (NO_X)	3.58	15.66
Lead (Pb)	0.00	0.00
Particulate Matter ($PM_{2.5}$)	0.89	3.89
Particulate Matter (PM_{10})	0.89	3.89
Total Particulate Matter (TSP)	0.89	3.89
Sulfur Dioxide (SO_2)	0.07	0.31
Volatile Organic Compounds (VOC)	0.64	2.82
Hazardous Air Pollutants	Potential Emissions	
	PPH	TPY
Formaldehyde	0.01	0.04
n-Hexane	0.21	0.92
Total HAPs	0.22	0.97
Regulated Pollutants other than Criteria and HAP	Potential Emissions	
	PPH	TPY
CO2(e)	15,341.37	67,195.21

List the method(s) used to calculate the potential emissions (include dates of any stack tests conducted, versions of software used, source and dates of emission factors, etc.).

-NOx and CO emission factors from vendor guarantee
-All other criteria pollutants and HAP emission factors from AP-42 Section 1.4 "Natural Gas Combustion" Tables 1.4-1, 1.4-2, &1.4-3
-GHG: 40 CFR 98, Subpart C Tier 1 Methodology

Applicable Requirements

List all applicable requirements for this emission unit. For each applicable requirement, include the underlying rule/regulation citation and/or <u>construction permit</u> with the condition number. (*Note: Title V permit condition numbers alone are not the underlying applicable requirements*). If an emission limit is calculated based on the type of source and design capacity or if a standard is based on a design parameter, this information should also be included.

Permit R13-2818H
6.1.1
6.1.2
6.1.3 [45CSR§2-3.1]
6.2.1 [40 CFR 60 Appendix A, Method 9]
6.2.2
6.3 [45CSR§2-3.2]
6.4 [40 CFR 60 Appendix A]
6.5

__X__ Permit Shield

For all applicable requirements listed above, provide monitoring/testing/recordkeeping/reporting which shall be used to demonstrate compliance. If the method is based on a permit or rule, include the condition number or citation. (Note: Each requirement listed above must have an associated method of demonstrating compliance. If there is not already a required method in place, then a method must be proposed.)

Section	Monitoring	Testing	Recordkeeping	Reporting	Condition or Citation
6.1.1			Maximum heater rating will be maintained.		
6.1.2			Records sufficient to demonstrate compliance with the emission limits will be maintained.		
6.1.3			Records sufficient to demonstrate compliance with the emission limits will be maintained.		45CSR§2-3.1
6.2.1	When required Method 9 monitoring will be performed.		Records of each monitoring event will be maintained.		40 CFR 60 Appendix A, Method 9
6.2.2	Operating hours will be maintained.		Records showing operating hours and calculated fuel usage will be maintained.		40 CFR §60.48(g)(2) 45 CSR §2A-7.1.a.1
6.3	When required Method 9 monitoring will be performed.		Records of each monitoring event will be maintained.		45CSR§2-3.2
6.4			Records of all data required by Section 6.2.1 will be maintained.		
6.5				Report deviations to the Director within 10 calendar days of the occurrence	

Are you in compliance with all applicable requirements for this emission unit? _X__Yes ___No

If no, complete the **Schedule of Compliance Form** as **ATTACHMENT F**.

ATTACHMENT E - Emission Unit Form

Emission Unit Description

Emission unit ID number:	**Emission unit name:**	**List any control devices associated with this emission unit:** NA
H-D1741	De-Ethanizer I Regen Heater	

Provide a description of the emission unit (type, method of operation, design parameters, etc.):
14.25 mmbtu/hr natural gas-fired regeneration heater

Manufacturer:	**Model number:**	**Serial number:**
Tulsa Heaters Inc.		
Construction date:	**Installation date:**	**Modification date(s):**
MM/DD/YYY	2013	NA

Design Capacity (examples: furnaces - tons/hr, tanks - gallons): 14.25 mmbtu/hr

Maximum Hourly Throughput:	**Maximum Annual Throughput:**	**Maximum Operating Schedule:**
14.25 mmbtu/hr	124,830 mmbtu/yr	8,760 hrs/year

Fuel Usage Data **(fill out all applicable fields)**

Does this emission unit combust fuel? _X__Yes ___ No	**If yes, is it?** ___ Indirect Fired _X_Direct Fired
Maximum design heat input and/or maximum horsepower rating: 14.25 mmbtu/hr	**Type and Btu/hr rating of burners:** Helical Coil 3 burners @ 4.75 mmbtu/hr each

List the primary fuel type(s) and if applicable, the secondary fuel type(s). For each fuel type listed, provide the maximum hourly and annual fuel usage for each.
Natural Gas
13,970.59 scf/hr
122.38 mmscf/yr

Describe each fuel expected to be used during the term of the permit.

Fuel Type	Max. Sulfur Content	Max. Ash Content	BTU Value
Natural Gas	0%	0%	1,020 btu/scf

Emissions Data		
Criteria Pollutants	Potential Emissions	
	PPH	TPY
Carbon Monoxide (CO)	0.58	2.56
Nitrogen Oxides (NO_X)	0.57	2.50
Lead (Pb)	0.00	0.00
Particulate Matter ($PM_{2.5}$)	0.19	0.81
Particulate Matter (PM_{10})	0.19	0.81
Total Particulate Matter (TSP)	0.19	0.81
Sulfur Dioxide (SO_2)	0.01	0.04
Volatile Organic Compounds (VOC)	0.27	1.19
Hazardous Air Pollutants	Potential Emissions	
	PPH	TPY
Formaldehyde	0.00	0.00
n-Hexane	0.03	0.11
Total HAPs	0.03	0.12
Regulated Pollutants other than Criteria and HAP	Potential Emissions	
	PPH	TPY
CO2(e)	1,834.02	8,032.98

List the method(s) used to calculate the potential emissions (include dates of any stack tests conducted, versions of software used, source and dates of emission factors, etc.).

-NOx, CO, PM Total, and VOC emission factors from vendor guarantee
-All other criteria pollutants and HAP emission factors from AP-42 Section 1.4 "Natural Gas Combustion" Tables 1.4-1, 1.4-2, &1.4-3
-GHG: 40 CFR 98, Subpart C Tier 1 Methodology

Applicable Requirements

List all applicable requirements for this emission unit. For each applicable requirement, include the underlying rule/regulation citation and/or <u>construction permit</u> with the condition number. (*Note: Title V permit condition numbers alone are not the underlying applicable requirements*). If an emission limit is calculated based on the type of source and design capacity or if a standard is based on a design parameter, this information should also be included.

Permit R13-2818H
6.1.1
6.1.2
6.1.3 [45CSR§2-3.1]
6.2.1 [40 CFR 60 Appendix A, Method 9]
6.2.2
6.3 [45CSR§2-3.2]
6.4 [40 CFR 60 Appendix A]
6.5

__X__ Permit Shield

For all applicable requirements listed above, provide monitoring/testing/recordkeeping/reporting which shall be used to demonstrate compliance. If the method is based on a permit or rule, include the condition number or citation. (Note: Each requirement listed above must have an associated method of demonstrating compliance. If there is not already a required method in place, then a method must be proposed.)

Section	Monitoring	Testing	Recordkeeping	Reporting	Condition or Citation
6.1.1			Maximum heater rating will be maintained.		
6.1.2			Records sufficient to demonstrate compliance with the emission limits will be maintained.		
6.1.3			Records sufficient to demonstrate compliance with the emission limits will be maintained.		45CSR§2-3.1
6.2.1	When required Method 9 monitoring will be performed.		Records of each monitoring event will be maintained.		40 CFR 60 Appendix A, Method 9
6.2.2	Operating hours will be maintained.		Records showing operating hours and calculated fuel usage will be maintained.		40 CFR §60.48(g)(2) 45 CSR §2A-7.1.a.1
6.3	When required Method 9 monitoring will be performed.		Records of each monitoring event will be maintained.		45CSR§2-3.2
6.4			Records of all data required by Section 6.2.1 will be maintained.		
6.5				Report deviations to the Director within 10 calendar days of the occurrence	

Are you in compliance with all applicable requirements for this emission unit? _X__Yes ___No

If no, complete the **Schedule of Compliance Form** as **ATTACHMENT F**.

ATTACHMENT E - Emission Unit Form

Emission Unit Description

Emission unit ID number:	**Emission unit name:**	**List any control devices associated with this emission unit:** NA
H-D2741	De-Ethanizer II Regen Heater	

Provide a description of the emission unit (type, method of operation, design parameters, etc.):
14.25 mmbtu/hr natural gas-fired regeneration heater

Manufacturer:	**Model number:**	**Serial number:**
Tulsa Heaters Inc.		
Construction date:	**Installation date:**	**Modification date(s):**
MM/DD/YYY	2013	NA

Design Capacity (examples: furnaces - tons/hr, tanks - gallons): 14.25 mmbtu/hr

Maximum Hourly Throughput:	**Maximum Annual Throughput:**	**Maximum Operating Schedule:**
14.25 mmbtu/hr	124,830 mmbtu/yr	8,760 hrs/year

Fuel Usage Data **(fill out all applicable fields)**

Does this emission unit combust fuel? _X__Yes ___ No	**If yes, is it?** ___ Indirect Fired _X_Direct Fired
Maximum design heat input and/or maximum horsepower rating: 14.25 mmbtu/hr	**Type and Btu/hr rating of burners:** Helical Coil 3 burners @ 4.75 mmbtu/hr each

List the primary fuel type(s) and if applicable, the secondary fuel type(s). For each fuel type listed, provide the maximum hourly and annual fuel usage for each.
Natural Gas
13,970.59 scf/hr
122.38 mmscf/yr

Describe each fuel expected to be used during the term of the permit.

Fuel Type	Max. Sulfur Content	Max. Ash Content	BTU Value
Natural Gas	0%	0%	1,020 btu/scf

Emissions Data		
Criteria Pollutants	Potential Emissions	
	PPH	TPY
Carbon Monoxide (CO)	0.58	2.56
Nitrogen Oxides (NO_X)	0.57	2.50
Lead (Pb)	0.00	0.00
Particulate Matter ($PM_{2.5}$)	0.19	0.81
Particulate Matter (PM_{10})	0.19	0.81
Total Particulate Matter (TSP)	0.19	0.81
Sulfur Dioxide (SO_2)	0.01	0.04
Volatile Organic Compounds (VOC)	0.27	1.19
Hazardous Air Pollutants	Potential Emissions	
	PPH	TPY
Formaldehyde	0.00	0.00
n-Hexane	0.03	0.11
Total HAPs	0.03	0.12
Regulated Pollutants other than Criteria and HAP	Potential Emissions	
	PPH	TPY
CO2(e)	1,834.02	8,032.98

List the method(s) used to calculate the potential emissions (include dates of any stack tests conducted, versions of software used, source and dates of emission factors, etc.).

-NOx, CO, PM Total, and VOC emission factors from vendor guarantee
-All other criteria pollutants and HAP emission factors from AP-42 Section 1.4 "Natural Gas Combustion" Tables 1.4-1, 1.4-2, &1.4-3
-GHG: 40 CFR 98, Subpart C Tier 1 Methodology

Applicable Requirements

List all applicable requirements for this emission unit. For each applicable requirement, include the underlying rule/regulation citation and/or <u>construction permit</u> with the condition number. (*Note: Title V permit condition numbers alone are not the underlying applicable requirements*). If an emission limit is calculated based on the type of source and design capacity or if a standard is based on a design parameter, this information should also be included.

Permit R13-2818H
6.1.1
6.1.2
6.1.3 [45CSR§2-3.1]
6.2.1 [40 CFR 60 Appendix A, Method 9]
6.2.2
6.3 [45CSR§2-3.2]
6.4 [40 CFR 60 Appendix A]
6.5

__X__ Permit Shield

For all applicable requirements listed above, provide monitoring/testing/recordkeeping/reporting which shall be used to demonstrate compliance. If the method is based on a permit or rule, include the condition number or citation. (Note: Each requirement listed above must have an associated method of demonstrating compliance. If there is not already a required method in place, then a method must be proposed.)

Section	Monitoring	Testing	Recordkeeping	Reporting	Condition or Citation
6.1.1			Maximum heater rating will be maintained.		
6.1.2			Records sufficient to demonstrate compliance with the emission limits will be maintained.		
6.1.3			Records sufficient to demonstrate compliance with the emission limits will be maintained.		45CSR§2-3.1
6.2.1	When required Method 9 monitoring will be performed.		Records of each monitoring event will be maintained.		40 CFR 60 Appendix A, Method 9
6.2.2	Operating hours will be maintained.		Records showing operating hours and calculated fuel usage will be maintained.		40 CFR §60.48(g)(2) 45 CSR §2A-7.1.a.1
6.3	When required Method 9 monitoring will be performed.		Records of each monitoring event will be maintained.		45CSR§2-3.2
6.4			Records of all data required by Section 6.2.1 will be maintained.		
6.5				Report deviations to the Director within 10 calendar days of the occurrence	

Are you in compliance with all applicable requirements for this emission unit? _X__Yes ___No

If no, complete the **Schedule of Compliance Form** as **ATTACHMENT F**.

ATTACHMENT E - Emission Unit Form

Emission Unit Description

Emission unit ID number:	**Emission unit name:**	**List any control devices associated with this emission unit:** NA
M1-G-12	Majorsville I and II Emergency Generator	

Provide a description of the emission unit (type, method of operation, design parameters, etc.):
Emergency Generator for Majorsville Plants I and II.

Manufacturer:	**Model number:**	**Serial number:**
Generac	SD150	

Construction date:	**Installation date:**	**Modification date(s):**
MM/DD/YYY	2024	NA

Design Capacity (examples: furnaces - tons/hr, tanks - gallons): 198 hp

Maximum Hourly Throughput:	**Maximum Annual Throughput:**	**Maximum Operating Schedule:**
		8,760 hrs/year

Fuel Usage Data **(fill out all applicable fields)**

Does this emission unit combust fuel? _X__Yes ___ No	**If yes, is it?** ___ Indirect Fired _X_Direct Fired
Maximum design heat input and/or maximum horsepower rating: 198 hp	**Type and Btu/hr rating of burners:**

List the primary fuel type(s) and if applicable, the secondary fuel type(s). For each fuel type listed, provide the maximum hourly and annual fuel usage for each.
Diesel
13.5 gal/hr
6,750 gal/yr

Describe each fuel expected to be used during the term of the permit.

Fuel Type	Max. Sulfur Content	Max. Ash Content	BTU Value
Diesel	15 ppm		137,380 btu/gal

Emissions Data		
Criteria Pollutants	Potential Emissions	
	PPH	TPY
Carbon Monoxide (CO)	1.53	0.38
Nitrogen Oxides (NO_X)	1.33	0.33
Lead (Pb)	0.00	0.00
Particulate Matter ($PM_{2.5}$)	0.09	0.02
Particulate Matter (PM_{10})	0.09	0.02
Total Particulate Matter (TSP)	0.09	0.02
Sulfur Dioxide (SO_2)	0.28	0.07
Volatile Organic Compounds (VOC)	0.42	0.10
Hazardous Air Pollutants	Potential Emissions	
	PPH	TPY
Total HAP	0.01	0.00
Regulated Pollutants other than Criteria and HAP	Potential Emissions	
	PPH	TPY
CO2(e)	17.32	75.85

List the method(s) used to calculate the potential emissions (include dates of any stack tests conducted, versions of software used, source and dates of emission factors, etc.).

-NOx, CO, PM, SO2 and VOC from Manufacturers Specifications
-HAP emission factors from AP-42 Section 3.2 “Speciated Organic Compound Emission Factors for Uncontrolled Diesel Engines” Table 3.3-2
-GHG: 40 CFR 98, Subpart C Tier 1 Methodology

Applicable Requirements

List all applicable requirements for this emission unit. For each applicable requirement, include the underlying rule/regulation citation and/or construction permit with the condition number. (*Note: Title V permit condition numbers alone are not the underlying applicable requirements*). If an emission limit is calculated based on the type of source and design capacity or if a standard is based on a design parameter, this information should also be included.

Permit R13-2818H
5.1.4
5.1.8
9.1.1 40 CFR 60.4205d
9.1.2 40 CFR 60.4206
9.1.3 40 CFR 60.4207b
9.1.9 40 CFR 60.4211f
9.2.1 WV Code 22-5-4(a)(15)
9.2.2
9.3.1
9.3.2
9.3.3

__X__ Permit Shield

For all applicable requirements listed above, provide monitoring/testing/recordkeeping/reporting which shall be used to demonstrate compliance. If the method is based on a permit or rule, include the condition number or citation. (Note: Each requirement listed above must have an associated method of demonstrating compliance. If there is not already a required method in place, then a method must be proposed.)

Section	Monitoring	Testing	Recordkeeping	Reporting	Condition or Citation
5.1.4			Emission limitations will be kept and maintained.		
5.1.8	Engine operation hours will be monitored.	operation or once every three years whichever comes first.	Records of engine operation hours will be maintained.		
5.4.1			Record type of fuel used and calculation of fuel consumed.		
9.1.1			Records will be kept of manufacturer certification to meet emission requirements.		40 CFR 60 .4205d
9.1.2			Maintenance records will be kept.		40 CFR 60.4206
9.1.3			Records of fuel receipts showing compliance will be kept.		40 CFR 60.4207b
9.1.9			Records of hourly usage will be kept for both emergency and non-emergency usage.		40 CFR 60.4211f
9.2.1		Testing will be performed as requested by the Administrator.			WV Code 22-5-4(a)(15)

9.2.2				Reports of test protocols will be submitted 30 days prior and the WVDEP shall be notified 15 days prior to testing.	
9.3.1	Monitoring will be conducted as described when required		Records of all monitoring data will be kept.		
9.3.2			Maintenance records of the engines will be maintained.		
9.3.3				If compliance testing is required reports will be submitted describing the methods and results of such testing.	

Are you in compliance with all applicable requirements for this emission unit? _X__Yes ___No

If no, complete the **Schedule of Compliance Form** as **ATTACHMENT F**.

ATTACHMENT E - Emission Unit Form

Emission Unit Description

Emission unit ID number:	**Emission unit name:**	**List any control devices associated with this emission unit:** NA
M3-G-2	Majorsville III Emergency Generator	

Provide a description of the emission unit (type, method of operation, design parameters, etc.):
Emergency Generator for Majorsville Plant III.

Manufacturer:	**Model number:**	**Serial number:**
Cummins	60 DSF AD	

Construction date:	**Installation date:**	**Modification date(s):**
MM/DD/YYY	2014	NA

Design Capacity (examples: furnaces - tons/hr, tanks - gallons): 145 hp

Maximum Hourly Throughput:	**Maximum Annual Throughput:**	**Maximum Operating Schedule:**
		8,760 hrs/year

Fuel Usage Data **(fill out all applicable fields)**

Does this emission unit combust fuel? _X__Yes ___ No	**If yes, is it?** ___ Indirect Fired _X_Direct Fired
Maximum design heat input and/or maximum horsepower rating: 145 hp	**Type and Btu/hr rating of burners:**

List the primary fuel type(s) and if applicable, the secondary fuel type(s). For each fuel type listed, provide the maximum hourly and annual fuel usage for each.
Diesel
28 gal/hr
14,000 gal/yr

Describe each fuel expected to be used during the term of the permit.

Fuel Type	Max. Sulfur Content	Max. Ash Content	BTU Value
Diesel	15 ppm		137,380 btu/gal

Emissions Data		
Criteria Pollutants	Potential Emissions	
	PPH	TPY
Carbon Monoxide (CO)	0.18	0.04
Nitrogen Oxides (NO_X)	0.70	0.18
Lead (Pb)	0.00	0.00
Particulate Matter ($PM_{2.5}$)	0.23	0.06
Particulate Matter (PM_{10})	0.23	0.06
Total Particulate Matter (TSP)	0.23	0.06
Sulfur Dioxide (SO_2)	0.58	0.14
Volatile Organic Compounds (VOC)	0.02	0.00
Hazardous Air Pollutants	Potential Emissions	
	PPH	TPY
Total HAP	0.01	0.00
Regulated Pollutants other than Criteria and HAP	Potential Emissions	
	PPH	TPY
CO2(e)	629.31	157.33

List the method(s) used to calculate the potential emissions (include dates of any stack tests conducted, versions of software used, source and dates of emission factors, etc.).

-NOx, CO, PM, SO2 and VOC from Manufacturers Specifications
-HAP emission factors from AP-42 Section 3.2 “Speciated Organic Compound Emission Factors for Uncontrolled Diesel Engines” Table 3.3-2
-GHG: 40 CFR 98, Subpart C Tier 1 Methodology

Applicable Requirements

List all applicable requirements for this emission unit. For each applicable requirement, include the underlying rule/regulation citation and/or construction permit with the condition number. (*Note: Title V permit condition numbers alone are not the underlying applicable requirements*). If an emission limit is calculated based on the type of source and design capacity or if a standard is based on a design parameter, this information should also be included.

Permit R13-2818H
5.1.4
5.1.8
9.1.1 40 CFR 60.4205d
9.1.2 40 CFR 60.4206
9.1.3 40 CFR 60.4207b
9.1.9 40 CFR 60.4211f
9.2.1 WV Code 22-5-4(a)(15)
9.2.2
9.3.1
9.3.2
9.3.3

__X__ Permit Shield

For all applicable requirements listed above, provide monitoring/testing/recordkeeping/reporting which shall be used to demonstrate compliance. If the method is based on a permit or rule, include the condition number or citation. (Note: Each requirement listed above must have an associated method of demonstrating compliance. If there is not already a required method in place, then a method must be proposed.)

Section	Monitoring	Testing	Recordkeeping	Reporting	Condition or Citation
5.1.4			Emission limitations will be kept and maintained.		
5.1.8	Engine operation hours will be monitored.	operation or once every three years whichever comes first.	Records of engine operation hours will be maintained.		
5.4.1			Record type of fuel used and calculation of fuel consumed.		
9.1.1			Records will be kept of manufacturer certification to meet emission requirements.		40 CFR 60 .4205d
9.1.2			Maintenance records will be kept.		40 CFR 60.4206
9.1.3			Records of fuel receipts showing compliance will be kept.		40 CFR 60.4207b
9.1.9			Records of hourly usage will be kept for both emergency and non-emergency usage.		40 CFR 60.4211f
9.2.1		Testing will be performed as requested by the Administrator.			WV Code 22-5-4(a)(15)

9.2.2				Reports of test protocols will be submitted 30 days prior and the WVDEP shall be notified 15 days prior to testing.	
9.3.1	Monitoring will be conducted as described when required		Records of all monitoring data will be kept.		
9.3.2			Maintenance records of the engines will be maintained.		
9.3.3				If compliance testing is required reports will be submitted describing the methods and results of such testing.	

Are you in compliance with all applicable requirements for this emission unit? _X__Yes ___No

If no, complete the **Schedule of Compliance Form** as **ATTACHMENT F**.

ATTACHMENT E - Emission Unit Form

Emission Unit Description

Emission unit ID number:	**Emission unit name:**	**List any control devices associated with this emission unit:** NA
M3-G-3	Majorsville III MCC Emergency Generator	

Provide a description of the emission unit (type, method of operation, design parameters, etc.):
Emergency Generator for Majorsville MCC at Plant III.

Manufacturer:	**Model number:**	**Serial number:**
Cummins	60 DSF AD	
Construction date:	**Installation date:**	**Modification date(s):**
MM/DD/YYY	2014	NA

Design Capacity (examples: furnaces - tons/hr, tanks - gallons): 145 hp

Maximum Hourly Throughput:	**Maximum Annual Throughput:**	**Maximum Operating Schedule:**
		8,760 hrs/year

Fuel Usage Data **(fill out all applicable fields)**

Does this emission unit combust fuel? _X__Yes ___ No	**If yes, is it?** ___ Indirect Fired _X_Direct Fired
Maximum design heat input and/or maximum horsepower rating: 145 hp	**Type and Btu/hr rating of burners:**

List the primary fuel type(s) and if applicable, the secondary fuel type(s). For each fuel type listed, provide the maximum hourly and annual fuel usage for each.
Diesel
28 gal/hr
14,000 gal/yr

Describe each fuel expected to be used during the term of the permit.

Fuel Type	Max. Sulfur Content	Max. Ash Content	BTU Value
Diesel	15 ppm		137,380 btu/gal

Emissions Data		
Criteria Pollutants	Potential Emissions	
	PPH	TPY
Carbon Monoxide (CO)	0.18	0.04
Nitrogen Oxides (NO_X)	0.70	0.18
Lead (Pb)	0.00	0.00
Particulate Matter ($PM_{2.5}$)	0.23	0.06
Particulate Matter (PM_{10})	0.23	0.06
Total Particulate Matter (TSP)	0.23	0.06
Sulfur Dioxide (SO_2)	0.58	0.14
Volatile Organic Compounds (VOC)	0.02	0.00
Hazardous Air Pollutants	Potential Emissions	
	PPH	TPY
Total HAP	0.01	0.00
Regulated Pollutants other than Criteria and HAP	Potential Emissions	
	PPH	TPY
CO2(e)	629.31	157.33

List the method(s) used to calculate the potential emissions (include dates of any stack tests conducted, versions of software used, source and dates of emission factors, etc.).

-NOx, CO, PM, SO2 and VOC from Manufacturers Specifications
-HAP emission factors from AP-42 Section 3.2 “Speciated Organic Compound Emission Factors for Uncontrolled Diesel Engines” Table 3.3-2
-GHG: 40 CFR 98, Subpart C Tier 1 Methodology

Applicable Requirements

List all applicable requirements for this emission unit. For each applicable requirement, include the underlying rule/regulation citation and/or construction permit with the condition number. (*Note: Title V permit condition numbers alone are not the underlying applicable requirements*). If an emission limit is calculated based on the type of source and design capacity or if a standard is based on a design parameter, this information should also be included.

Permit R13-2818H
5.1.4
5.1.8
9.1.1 40 CFR 60.4205d
9.1.2 40 CFR 60.4206
9.1.3 40 CFR 60.4207b
9.1.9 40 CFR 60.4211f
9.2.1 WV Code 22-5-4(a)(15)
9.2.2
9.3.1
9.3.2
9.3.3

__X__ Permit Shield

For all applicable requirements listed above, provide monitoring/testing/recordkeeping/reporting which shall be used to demonstrate compliance. If the method is based on a permit or rule, include the condition number or citation. (Note: Each requirement listed above must have an associated method of demonstrating compliance. If there is not already a required method in place, then a method must be proposed.)

Section	Monitoring	Testing	Recordkeeping	Reporting	Condition or Citation
5.1.4			Emission limitations will be kept and maintained.		
5.1.8	Engine operation hours will be monitored.	operation or once every three years whichever comes first.	Records of engine operation hours will be maintained.		
5.4.1			Record type of fuel used and calculation of fuel consumed.		
9.1.1			Records will be kept of manufacturer certification to meet emission requirements.		40 CFR 60 .4205d
9.1.2			Maintenance records will be kept.		40 CFR 60.4206
9.1.3			Records of fuel receipts showing compliance will be kept.		40 CFR 60.4207b
9.1.9			Records of hourly usage will be kept for both emergency and non-emergency usage.		40 CFR 60.4211f
9.2.1		Testing will be performed as requested by the Administrator.			WV Code 22-5-4(a)(15)

9.2.2				Reports of test protocols will be submitted 30 days prior and the WVDEP shall be notified 15 days prior to testing.	
9.3.1	Monitoring will be conducted as described when required		Records of all monitoring data will be kept.		
9.3.2			Maintenance records of the engines will be maintained.		
9.3.3				If compliance testing is required reports will be submitted describing the methods and results of such testing.	

Are you in compliance with all applicable requirements for this emission unit? _X__Yes ___No

If no, complete the **Schedule of Compliance Form** as **ATTACHMENT F**.

ATTACHMENT E - Emission Unit Form

Emission Unit Description

Emission unit ID number:	**Emission unit name:**	**List any control devices associated with this emission unit:** NA
M4-G-6	Majorsville IV MCC Emergency Generator	

Provide a description of the emission unit (type, method of operation, design parameters, etc.):
Emergency Generator for Majorsville MCC at Plant IV.

Manufacturer:	**Model number:**	**Serial number:**
Cummins	60 DSF AD	
Construction date:	**Installation date:**	**Modification date(s):**
MM/DD/YYY	2014	NA

Design Capacity (examples: furnaces - tons/hr, tanks - gallons): 145 hp

Maximum Hourly Throughput:	**Maximum Annual Throughput:**	**Maximum Operating Schedule:**
		8,760 hrs/year

Fuel Usage Data **(fill out all applicable fields)**

Does this emission unit combust fuel? _X__Yes ___ No	**If yes, is it?** ___ Indirect Fired _X_Direct Fired
Maximum design heat input and/or maximum horsepower rating: 145 hp	**Type and Btu/hr rating of burners:**

List the primary fuel type(s) and if applicable, the secondary fuel type(s). For each fuel type listed, provide the maximum hourly and annual fuel usage for each.
Diesel
28 gal/hr
14,000 gal/yr

Describe each fuel expected to be used during the term of the permit.

Fuel Type	Max. Sulfur Content	Max. Ash Content	BTU Value
Diesel	15 ppm		137,380 btu/gal

Emissions Data		
Criteria Pollutants	Potential Emissions	
	PPH	TPY
Carbon Monoxide (CO)	0.18	0.04
Nitrogen Oxides (NO_X)	0.70	0.18
Lead (Pb)	0.00	0.00
Particulate Matter ($PM_{2.5}$)	0.23	0.06
Particulate Matter (PM_{10})	0.23	0.06
Total Particulate Matter (TSP)	0.23	0.06
Sulfur Dioxide (SO_2)	0.58	0.14
Volatile Organic Compounds (VOC)	0.02	0.00
Hazardous Air Pollutants	Potential Emissions	
	PPH	TPY
Total HAP	0.01	0.00
Regulated Pollutants other than Criteria and HAP	Potential Emissions	
	PPH	TPY
CO2(e)	629.31	157.33

List the method(s) used to calculate the potential emissions (include dates of any stack tests conducted, versions of software used, source and dates of emission factors, etc.).

-NOx, CO, PM, SO2 and VOC from Manufacturers Specifications
-HAP emission factors from AP-42 Section 3.2 “Speciated Organic Compound Emission Factors for Uncontrolled Diesel Engines” Table 3.3-2
-GHG: 40 CFR 98, Subpart C Tier 1 Methodology

Applicable Requirements

List all applicable requirements for this emission unit. For each applicable requirement, include the underlying rule/regulation citation and/or construction permit with the condition number. (*Note: Title V permit condition numbers alone are not the underlying applicable requirements*). If an emission limit is calculated based on the type of source and design capacity or if a standard is based on a design parameter, this information should also be included.

Permit R13-2818H
5.1.4
5.1.8
9.1.1 40 CFR 60.4205d
9.1.2 40 CFR 60.4206
9.1.3 40 CFR 60.4207b
9.1.9 40 CFR 60.4211f
9.2.1 WV Code 22-5-4(a)(15)
9.2.2
9.3.1
9.3.2
9.3.3

__X__ Permit Shield

For all applicable requirements listed above, provide monitoring/testing/recordkeeping/reporting which shall be used to demonstrate compliance. If the method is based on a permit or rule, include the condition number or citation. (Note: Each requirement listed above must have an associated method of demonstrating compliance. If there is not already a required method in place, then a method must be proposed.)

Section	Monitoring	Testing	Recordkeeping	Reporting	Condition or Citation
5.1.4			Emission limitations will be kept and maintained.		
5.1.8	Engine operation hours will be monitored.	operation or once every three years whichever comes first.	Records of engine operation hours will be maintained.		
5.4.1			Record type of fuel used and calculation of fuel consumed.		
9.1.1			Records will be kept of manufacturer certification to meet emission requirements.		40 CFR 60 .4205d
9.1.2			Maintenance records will be kept.		40 CFR 60.4206
9.1.3			Records of fuel receipts showing compliance will be kept.		40 CFR 60.4207b
9.1.9			Records of hourly usage will be kept for both emergency and non-emergency usage.		40 CFR 60.4211f
9.2.1		Testing will be performed as requested by the Administrator.			WV Code 22-5-4(a)(15)

9.2.2				Reports of test protocols will be submitted 30 days prior and the WVDEP shall be notified 15 days prior to testing.	
9.3.1	Monitoring will be conducted as described when required		Records of all monitoring data will be kept.		
9.3.2			Maintenance records of the engines will be maintained.		
9.3.3				If compliance testing is required reports will be submitted describing the methods and results of such testing.	

Are you in compliance with all applicable requirements for this emission unit? _X__Yes ___No

If no, complete the **Schedule of Compliance Form** as **ATTACHMENT F**.

ATTACHMENT E - Emission Unit Form

Emission Unit Description

Emission unit ID number:	**Emission unit name:**	**List any control devices associated with this emission unit:** NA
M4-G-7	Majorsville IV Emergency Generator	

Provide a description of the emission unit (type, method of operation, design parameters, etc.):
Emergency Generator for Majorsville Plant IV

Manufacturer:	**Model number:**	**Serial number:**
Cummins	60 DSF AD	

Construction date:	**Installation date:**	**Modification date(s):**
MM/DD/YYY	2014	NA

Design Capacity (examples: furnaces - tons/hr, tanks - gallons): 145 hp

Maximum Hourly Throughput:	**Maximum Annual Throughput:**	**Maximum Operating Schedule:**
		8,760 hrs/year

Fuel Usage Data **(fill out all applicable fields)**

Does this emission unit combust fuel? _X__Yes ___ No	**If yes, is it?** ___ Indirect Fired _X_Direct Fired
Maximum design heat input and/or maximum horsepower rating: 145 hp	**Type and Btu/hr rating of burners:**

List the primary fuel type(s) and if applicable, the secondary fuel type(s). For each fuel type listed, provide the maximum hourly and annual fuel usage for each.
Diesel
28 gal/hr
14,000 gal/yr

Describe each fuel expected to be used during the term of the permit.

Fuel Type	Max. Sulfur Content	Max. Ash Content	BTU Value
Diesel	15 ppm		137,380 btu/gal

Emissions Data		
Criteria Pollutants	Potential Emissions	
	PPH	TPY
Carbon Monoxide (CO)	0.18	0.04
Nitrogen Oxides (NO_X)	0.70	0.18
Lead (Pb)	0.00	0.00
Particulate Matter ($PM_{2.5}$)	0.23	0.06
Particulate Matter (PM_{10})	0.23	0.06
Total Particulate Matter (TSP)	0.23	0.06
Sulfur Dioxide (SO_2)	0.58	0.14
Volatile Organic Compounds (VOC)	0.02	0.00
Hazardous Air Pollutants	Potential Emissions	
	PPH	TPY
Total HAP	0.01	0.00
Regulated Pollutants other than Criteria and HAP	Potential Emissions	
	PPH	TPY
CO2(e)	629.31	157.33

List the method(s) used to calculate the potential emissions (include dates of any stack tests conducted, versions of software used, source and dates of emission factors, etc.).

-NOx, CO, PM, SO2 and VOC from Manufacturers Specifications
-HAP emission factors from AP-42 Section 3.2 “Speciated Organic Compound Emission Factors for Uncontrolled Diesel Engines” Table 3.3-2
-GHG: 40 CFR 98, Subpart C Tier 1 Methodology

Applicable Requirements

List all applicable requirements for this emission unit. For each applicable requirement, include the underlying rule/regulation citation and/or construction permit with the condition number. (*Note: Title V permit condition numbers alone are not the underlying applicable requirements*). If an emission limit is calculated based on the type of source and design capacity or if a standard is based on a design parameter, this information should also be included.

Permit R13-2818H
5.1.4
5.1.8
9.1.1 40 CFR 60.4205d
9.1.2 40 CFR 60.4206
9.1.3 40 CFR 60.4207b
9.1.9 40 CFR 60.4211f
9.2.1 WV Code 22-5-4(a)(15)
9.2.2
9.3.1
9.3.2
9.3.3

__X__ Permit Shield

For all applicable requirements listed above, provide monitoring/testing/recordkeeping/reporting which shall be used to demonstrate compliance. If the method is based on a permit or rule, include the condition number or citation. (Note: Each requirement listed above must have an associated method of demonstrating compliance. If there is not already a required method in place, then a method must be proposed.)

Section	Monitoring	Testing	Recordkeeping	Reporting	Condition or Citation
5.1.4			Emission limitations will be kept and maintained.		
5.1.8	Engine operation hours will be monitored.	operation or once every three years whichever comes first.	Records of engine operation hours will be maintained.		
5.4.1			Record type of fuel used and calculation of fuel consumed.		
9.1.1			Records will be kept of manufacturer certification to meet emission requirements.		40 CFR 60 .4205d
9.1.2			Maintenance records will be kept.		40 CFR 60.4206
9.1.3			Records of fuel receipts showing compliance will be kept.		40 CFR 60.4207b
9.1.9			Records of hourly usage will be kept for both emergency and non-emergency usage.		40 CFR 60.4211f
9.2.1		Testing will be performed as requested by the Administrator.			WV Code 22-5-4(a)(15)

9.2.2				Reports of test protocols will be submitted 30 days prior and the WVDEP shall be notified 15 days prior to testing.	
9.3.1	Monitoring will be conducted as described when required		Records of all monitoring data will be kept.		
9.3.2			Maintenance records of the engines will be maintained.		
9.3.3				If compliance testing is required reports will be submitted describing the methods and results of such testing.	

Are you in compliance with all applicable requirements for this emission unit? _X__Yes ___No

If no, complete the **Schedule of Compliance Form** as **ATTACHMENT F**.

ATTACHMENT E - Emission Unit Form

Emission Unit Description

Emission unit ID number:	**Emission unit name:**	**List any control devices associated with this emission unit:** NA
M7-G-9	Majorsville VII MCC Emergency Generator	

Provide a description of the emission unit (type, method of operation, design parameters, etc.):
Emergency Generator for Majorsville MCC at Plant VII.

Manufacturer:	**Model number:**	**Serial number:**
Cummins	C35 D6	

Construction date:	**Installation date:**	**Modification date(s):**
MM/DD/YYY	2019	NA

Design Capacity (examples: furnaces - tons/hr, tanks - gallons): 145 hp

Maximum Hourly Throughput:	**Maximum Annual Throughput:**	**Maximum Operating Schedule:**
		8,760 hrs/year

Fuel Usage Data **(fill out all applicable fields)**

Does this emission unit combust fuel? _X__Yes ___ No	**If yes, is it?** ___ Indirect Fired _X_Direct Fired
Maximum design heat input and/or maximum horsepower rating: 69 hp	**Type and Btu/hr rating of burners:**

List the primary fuel type(s) and if applicable, the secondary fuel type(s). For each fuel type listed, provide the maximum hourly and annual fuel usage for each.
Diesel
3.2 gal/hr
1,600 gal/yr

Describe each fuel expected to be used during the term of the permit.

Fuel Type	Max. Sulfur Content	Max. Ash Content	BTU Value
Diesel	15 ppm		137,380 btu/gal

Emissions Data		
Criteria Pollutants	Potential Emissions	
	PPH	TPY
Carbon Monoxide (CO)	0.23	0.06
Nitrogen Oxides (NO_X)	0.40	0.10
Lead (Pb)	0.00	0.00
Particulate Matter ($PM_{2.5}$)	0.03	0.01
Particulate Matter (PM_{10})	0.03	0.01
Total Particulate Matter (TSP)	0.03	0.01
Sulfur Dioxide (SO_2)	0.14	0.04
Volatile Organic Compounds (VOC)	0.15	0.04
Hazardous Air Pollutants	Potential Emissions	
	PPH	TPY
Total HAP	0.00	0.00
Regulated Pollutants other than Criteria and HAP	Potential Emissions	
	PPH	TPY
CO2(e)	69.64	17.41

List the method(s) used to calculate the potential emissions (include dates of any stack tests conducted, versions of software used, source and dates of emission factors, etc.).

-NOx, CO, PM, SO2 and VOC from Manufacturers Specifications
-HAP emission factors from AP-42 Section 3.2 “Speciated Organic Compound Emission Factors for Uncontrolled Diesel Engines” Table 3.3-2
-GHG: 40 CFR 98, Subpart C Tier 1 Methodology

Applicable Requirements

List all applicable requirements for this emission unit. For each applicable requirement, include the underlying rule/regulation citation and/or construction permit with the condition number. (*Note: Title V permit condition numbers alone are not the underlying applicable requirements*). If an emission limit is calculated based on the type of source and design capacity or if a standard is based on a design parameter, this information should also be included.

Permit R13-2818H
5.1.4
5.1.8
9.1.1 40 CFR 60.4205d
9.1.2 40 CFR 60.4206
9.1.3 40 CFR 60.4207b
9.1.9 40 CFR 60.4211f
9.2.1 WV Code 22-5-4(a)(15)
9.2.2
9.3.1
9.3.2
9.3.3

__X__ Permit Shield

For all applicable requirements listed above, provide monitoring/testing/recordkeeping/reporting which shall be used to demonstrate compliance. If the method is based on a permit or rule, include the condition number or citation. (Note: Each requirement listed above must have an associated method of demonstrating compliance. If there is not already a required method in place, then a method must be proposed.)

Section	Monitoring	Testing	Recordkeeping	Reporting	Condition or Citation
5.1.4			Emission limitations will be kept and maintained.		
5.1.8	Engine operation hours will be monitored.	operation or once every three years whichever comes first.	Records of engine operation hours will be maintained.		
5.4.1			Record type of fuel used and calculation of fuel consumed.		
9.1.1			Records will be kept of manufacturer certification to meet emission requirements.		40 CFR 60 .4205d
9.1.2			Maintenance records will be kept.		40 CFR 60.4206
9.1.3			Records of fuel receipts showing compliance will be kept.		40 CFR 60.4207b
9.1.9			Records of hourly usage will be kept for both emergency and non-emergency usage.		40 CFR 60.4211f
9.2.1		Testing will be performed as requested by the Administrator.			WV Code 22-5-4(a)(15)

9.2.2				Reports of test protocols will be submitted 30 days prior and the WVDEP shall be notified 15 days prior to testing.	
9.3.1	Monitoring will be conducted as described when required		Records of all monitoring data will be kept.		
9.3.2			Maintenance records of the engines will be maintained.		
9.3.3				If compliance testing is required reports will be submitted describing the methods and results of such testing.	

Are you in compliance with all applicable requirements for this emission unit? _X__Yes ___No

If no, complete the **Schedule of Compliance Form** as **ATTACHMENT F**.

ATTACHMENT E - Emission Unit Form

Emission Unit Description

Emission unit ID number:	**Emission unit name:**	**List any control devices associated with this emission unit:** NA
MD1-G-4	DeEthanizer I Control Room Emergency Generator	

Provide a description of the emission unit (type, method of operation, design parameters, etc.):
Emergency Generator for the control room for DeEthanizer I.

Manufacturer:	**Model number:**	**Serial number:**
Generac	MMG45	

Construction date:	**Installation date:**	**Modification date(s):**
MM/DD/YYY	2014	NA

Design Capacity (examples: furnaces - tons/hr, tanks - gallons): 53 hp

Maximum Hourly Throughput:	**Maximum Annual Throughput:**	**Maximum Operating Schedule:**
		8,760 hrs/year

Fuel Usage Data **(fill out all applicable fields)**

Does this emission unit combust fuel? _X__Yes ___ No	**If yes, is it?** ___ Indirect Fired _X_Direct Fired
Maximum design heat input and/or maximum horsepower rating: 63.7 hp	**Type and Btu/hr rating of burners:**

List the primary fuel type(s) and if applicable, the secondary fuel type(s). For each fuel type listed, provide the maximum hourly and annual fuel usage for each.
Diesel
3.3 gal/hr
1,650 gal/yr

Describe each fuel expected to be used during the term of the permit.

Fuel Type	Max. Sulfur Content	Max. Ash Content	BTU Value
Diesel	15 ppm		137,380 btu/gal

Emissions Data		
Criteria Pollutants	Potential Emissions	
	PPH	TPY
Carbon Monoxide (CO)	0.52	0.13
Nitrogen Oxides (NO_X)	0.49	0.12
Lead (Pb)	0.00	0.00
Particulate Matter ($PM_{2.5}$)	0.00	0.00
Particulate Matter (PM_{10})	0.00	0.00
Total Particulate Matter (TSP)	0.00	0.00
Sulfur Dioxide (SO_2)	0.13	0.03
Volatile Organic Compounds (VOC)	0.49	0.12
Hazardous Air Pollutants	Potential Emissions	
	PPH	TPY
Total HAP	0.00	0.00
Regulated Pollutants other than Criteria and HAP	Potential Emissions	
	PPH	TPY
CO2(e)	4.23	18.54

List the method(s) used to calculate the potential emissions (include dates of any stack tests conducted, versions of software used, source and dates of emission factors, etc.).

-NOx, CO, PM, SO2 and VOC from Manufacturers Specifications
-HAP emission factors from AP-42 Section 3.2 “Speciated Organic Compound Emission Factors for Uncontrolled Diesel Engines” Table 3.3-2
-GHG: 40 CFR 98, Subpart C Tier 1 Methodology

Applicable Requirements

List all applicable requirements for this emission unit. For each applicable requirement, include the underlying rule/regulation citation and/or construction permit with the condition number. (*Note: Title V permit condition numbers alone are not the underlying applicable requirements*). If an emission limit is calculated based on the type of source and design capacity or if a standard is based on a design parameter, this information should also be included.

Permit R13-2818H
5.1.4
5.1.8
9.1.1 40 CFR 60.4205d
9.1.2 40 CFR 60.4206
9.1.3 40 CFR 60.4207b
9.1.9 40 CFR 60.4211f
9.2.1 WV Code 22-5-4(a)(15)
9.2.2
9.3.1
9.3.2
9.3.3

__X__ Permit Shield

For all applicable requirements listed above, provide monitoring/testing/recordkeeping/reporting which shall be used to demonstrate compliance. If the method is based on a permit or rule, include the condition number or citation. (Note: Each requirement listed above must have an associated method of demonstrating compliance. If there is not already a required method in place, then a method must be proposed.)

Section	Monitoring	Testing	Recordkeeping	Reporting	Condition or Citation
5.1.4			Emission limitations will be kept and maintained.		
5.1.8	Engine operation hours will be monitored.	operation or once every three years whichever comes first.	Records of engine operation hours will be maintained.		
5.4.1			Record type of fuel used and calculation of fuel consumed.		
9.1.1			Records will be kept of manufacturer certification to meet emission requirements.		40 CFR 60 .4205d
9.1.2			Maintenance records will be kept.		40 CFR 60.4206
9.1.3			Records of fuel receipts showing compliance will be kept.		40 CFR 60.4207b
9.1.9			Records of hourly usage will be kept for both emergency and non-emergency usage.		40 CFR 60.4211f
9.2.1		Testing will be performed as requested by the Administrator.			WV Code 22-5-4(a)(15)

9.2.2				Reports of test protocols will be submitted 30 days prior and the WVDEP shall be notified 15 days prior to testing.	
9.3.1	Monitoring will be conducted as described when required		Records of all monitoring data will be kept.		
9.3.2			Maintenance records of the engines will be maintained.		
9.3.3				If compliance testing is required reports will be submitted describing the methods and results of such testing.	

Are you in compliance with all applicable requirements for this emission unit? _X__Yes ___No

If no, complete the **Schedule of Compliance Form** as **ATTACHMENT F**.

ATTACHMENT E - Emission Unit Form

Emission Unit Description

Emission unit ID number:	**Emission unit name:**	**List any control devices associated with this emission unit:** NA
MD1-G-5	DeEthanizer I Emergency Generator	

Provide a description of the emission unit (type, method of operation, design parameters, etc.):
Emergency Generator for DeEthanizer I.

Manufacturer:	**Model number:**	**Serial number:**
Generac	MMG25	

Construction date:	**Installation date:**	**Modification date(s):**
MM/DD/YYY	2014	NA

Design Capacity (examples: furnaces - tons/hr, tanks - gallons): 40.2 hp

Maximum Hourly Throughput:	**Maximum Annual Throughput:**	**Maximum Operating Schedule:**
		8,760 hrs/year

Fuel Usage Data **(fill out all applicable fields)**

Does this emission unit combust fuel? _X__Yes ___ No	**If yes, is it?** ___ Indirect Fired _X_Direct Fired
Maximum design heat input and/or maximum horsepower rating: 40.2 hp	**Type and Btu/hr rating of burners:**

List the primary fuel type(s) and if applicable, the secondary fuel type(s). For each fuel type listed, provide the maximum hourly and annual fuel usage for each.
Diesel
2.1 gal/hr
1,050 gal/yr

Describe each fuel expected to be used during the term of the permit.

Fuel Type	Max. Sulfur Content	Max. Ash Content	BTU Value
Diesel	15 ppm		137,380 btu/gal

Emissions Data		
Criteria Pollutants	Potential Emissions	
	PPH	TPY
Carbon Monoxide (CO)	0.36	0.09
Nitrogen Oxides (NO_X)	0.31	0.08
Lead (Pb)	0.00	0.00
Particulate Matter ($PM_{2.5}$)	0.00	0.00
Particulate Matter (PM_{10})	0.00	0.00
Total Particulate Matter (TSP)	0.00	0.00
Sulfur Dioxide (SO_2)	0.07	0.02
Volatile Organic Compounds (VOC)	0.31	0.08
Hazardous Air Pollutants	Potential Emissions	
	PPH	TPY
Total HAP	0.00	0.00
Regulated Pollutants other than Criteria and HAP	Potential Emissions	
	PPH	TPY
CO2(e)	2.69	11.80

List the method(s) used to calculate the potential emissions (include dates of any stack tests conducted, versions of software used, source and dates of emission factors, etc.).

-NOx, CO, PM, SO2 and VOC from Manufacturers Specifications
-HAP emission factors from AP-42 Section 3.2 “Speciated Organic Compound Emission Factors for Uncontrolled Diesel Engines” Table 3.3-2
-GHG: 40 CFR 98, Subpart C Tier 1 Methodology

Applicable Requirements

List all applicable requirements for this emission unit. For each applicable requirement, include the underlying rule/regulation citation and/or construction permit with the condition number. (*Note: Title V permit condition numbers alone are not the underlying applicable requirements*). If an emission limit is calculated based on the type of source and design capacity or if a standard is based on a design parameter, this information should also be included.

Permit R13-2818H
5.1.4
5.1.8
9.1.1 40 CFR 60.4205d
9.1.2 40 CFR 60.4206
9.1.3 40 CFR 60.4207b
9.1.9 40 CFR 60.4211f
9.2.1 WV Code 22-5-4(a)(15)
9.2.2
9.3.1
9.3.2
9.3.3

__X__ Permit Shield

For all applicable requirements listed above, provide monitoring/testing/recordkeeping/reporting which shall be used to demonstrate compliance. If the method is based on a permit or rule, include the condition number or citation. (Note: Each requirement listed above must have an associated method of demonstrating compliance. If there is not already a required method in place, then a method must be proposed.)

Section	Monitoring	Testing	Recordkeeping	Reporting	Condition or Citation
5.1.4			Emission limitations will be kept and maintained.		
5.1.8	Engine operation hours will be monitored.	operation or once every three years whichever comes first.	Records of engine operation hours will be maintained.		
5.4.1			Record type of fuel used and calculation of fuel consumed.		
9.1.1			Records will be kept of manufacturer certification to meet emission requirements.		40 CFR 60 .4205d
9.1.2			Maintenance records will be kept.		40 CFR 60.4206
9.1.3			Records of fuel receipts showing compliance will be kept.		40 CFR 60.4207b
9.1.9			Records of hourly usage will be kept for both emergency and non-emergency usage.		40 CFR 60.4211f
9.2.1		Testing will be performed as requested by the Administrator.			WV Code 22-5-4(a)(15)

9.2.2				Reports of test protocols will be submitted 30 days prior and the WVDEP shall be notified 15 days prior to testing.	
9.3.1	Monitoring will be conducted as described when required		Records of all monitoring data will be kept.		
9.3.2			Maintenance records of the engines will be maintained.		
9.3.3				If compliance testing is required reports will be submitted describing the methods and results of such testing.	

Are you in compliance with all applicable requirements for this emission unit? _X__Yes ___No

If no, complete the **Schedule of Compliance Form** as **ATTACHMENT F**.

ATTACHMENT E - Emission Unit Form

Emission Unit Description

Emission unit ID number:	**Emission unit name:**	**List any control devices associated with this emission unit:** NA
MD2-G-10	DeEthanizer II Control Room Emergency Generator	

Provide a description of the emission unit (type, method of operation, design parameters, etc.):
Emergency Generator for the control room for DeEthanizer II.

Manufacturer:	**Model number:**	**Serial number:**
Cummins	C15D6	

Construction date:	**Installation date:**	**Modification date(s):**
MM/DD/YYY	2017	NA

Design Capacity (examples: furnaces - tons/hr, tanks - gallons): 25 hp

Maximum Hourly Throughput:	**Maximum Annual Throughput:**	**Maximum Operating Schedule:**
		8,760 hrs/year

Fuel Usage Data **(fill out all applicable fields)**

Does this emission unit combust fuel? _X__Yes ___ No	**If yes, is it?** ___ Indirect Fired _X_Direct Fired
Maximum design heat input and/or maximum horsepower rating: 25 hp	**Type and Btu/hr rating of burners:**

List the primary fuel type(s) and if applicable, the secondary fuel type(s). For each fuel type listed, provide the maximum hourly and annual fuel usage for each.
Diesel

1.4 gal/hr
700 gal/yr

Describe each fuel expected to be used during the term of the permit.

Fuel Type	Max. Sulfur Content	Max. Ash Content	BTU Value
Diesel	15 ppm		137,380 btu/gal

Emissions Data		
Criteria Pollutants	Potential Emissions	
	PPH	TPY
Carbon Monoxide (CO)	0.02	0.00
Nitrogen Oxides (NO_X)	0.20	0.05
Lead (Pb)	0.00	0.00
Particulate Matter ($PM_{2.5}$)	0.01	0.00
Particulate Matter (PM_{10})	0.01	0.00
Total Particulate Matter (TSP)	0.01	0.00
Sulfur Dioxide (SO_2)	0.05	0.00
Volatile Organic Compounds (VOC)	0.01	0.00
Hazardous Air Pollutants	Potential Emissions	
	PPH	TPY
Total HAP	0.00	0.00
Regulated Pollutants other than Criteria and HAP	Potential Emissions	
	PPH	TPY
CO2(e)	31.48	7.87

List the method(s) used to calculate the potential emissions (include dates of any stack tests conducted, versions of software used, source and dates of emission factors, etc.).

-NOx, CO, PM, SO2 and VOC from Manufacturers Specifications
-HAP emission factors from AP-42 Section 3.2 “Speciated Organic Compound Emission Factors for Uncontrolled Diesel Engines” Table 3.3-2
-GHG: 40 CFR 98, Subpart C Tier 1 Methodology

Applicable Requirements

List all applicable requirements for this emission unit. For each applicable requirement, include the underlying rule/regulation citation and/or construction permit with the condition number. (*Note: Title V permit condition numbers alone are not the underlying applicable requirements*). If an emission limit is calculated based on the type of source and design capacity or if a standard is based on a design parameter, this information should also be included.

Permit R13-2818H
5.1.4
5.1.8
9.1.1 40 CFR 60.4205d
9.1.2 40 CFR 60.4206
9.1.3 40 CFR 60.4207b
9.1.9 40 CFR 60.4211f
9.2.1 WV Code 22-5-4(a)(15)
9.2.2
9.3.1
9.3.2
9.3.3

__X__ Permit Shield

For all applicable requirements listed above, provide monitoring/testing/recordkeeping/reporting which shall be used to demonstrate compliance. If the method is based on a permit or rule, include the condition number or citation. (Note: Each requirement listed above must have an associated method of demonstrating compliance. If there is not already a required method in place, then a method must be proposed.)

Section	Monitoring	Testing	Recordkeeping	Reporting	Condition or Citation
5.1.4			Emission limitations will be kept and maintained.		
5.1.8	Engine operation hours will be monitored.	operation or once every three years whichever comes first.	Records of engine operation hours will be maintained.		
5.4.1			Record type of fuel used and calculation of fuel consumed.		
9.1.1			Records will be kept of manufacturer certification to meet emission requirements.		40 CFR 60 .4205d
9.1.2			Maintenance records will be kept.		40 CFR 60.4206
9.1.3			Records of fuel receipts showing compliance will be kept.		40 CFR 60.4207b
9.1.9			Records of hourly usage will be kept for both emergency and non-emergency usage.		40 CFR 60.4211f
9.2.1		Testing will be performed as requested by the Administrator.			WV Code 22-5-4(a)(15)

9.2.2				Reports of test protocols will be submitted 30 days prior and the WVDEP shall be notified 15 days prior to testing.	
9.3.1	Monitoring will be conducted as described when required		Records of all monitoring data will be kept.		
9.3.2			Maintenance records of the engines will be maintained.		
9.3.3				If compliance testing is required reports will be submitted describing the methods and results of such testing.	

Are you in compliance with all applicable requirements for this emission unit? _X__Yes ___No

If no, complete the **Schedule of Compliance Form** as **ATTACHMENT F**.

ATTACHMENT E - Emission Unit Form

Emission Unit Description

Emission unit ID number:	**Emission unit name:**	**List any control devices associated with this emission unit:** NA
MD2-G-11	DeEthanizer II Emergency Generator	

Provide a description of the emission unit (type, method of operation, design parameters, etc.):
Emergency Generator for DeEthanizer II.

Manufacturer:	**Model number:**	**Serial number:**
Generac	MMG25	

Construction date:	**Installation date:**	**Modification date(s):**
MM/DD/YYY	2017	NA

Design Capacity (examples: furnaces - tons/hr, tanks - gallons): 69 hp

Maximum Hourly Throughput:	**Maximum Annual Throughput:**	**Maximum Operating Schedule:**
		8,760 hrs/year

Fuel Usage Data **(fill out all applicable fields)**

Does this emission unit combust fuel? _X__Yes ___ No	**If yes, is it?** ___ Indirect Fired _X_Direct Fired
Maximum design heat input and/or maximum horsepower rating: 69 hp	**Type and Btu/hr rating of burners:**

List the primary fuel type(s) and if applicable, the secondary fuel type(s). For each fuel type listed, provide the maximum hourly and annual fuel usage for each.
Diesel
3.2 gal/hr
1,620 gal/yr

Describe each fuel expected to be used during the term of the permit.

Fuel Type	Max. Sulfur Content	Max. Ash Content	BTU Value
Diesel	15 ppm		137,380 btu/gal

Emissions Data		
Criteria Pollutants	Potential Emissions	
	PPH	TPY
Carbon Monoxide (CO)	0.23	0.06
Nitrogen Oxides (NO_X)	0.46	0.11
Lead (Pb)	0.00	0.00
Particulate Matter ($PM_{2.5}$)	0.00	0.00
Particulate Matter (PM_{10})	0.00	0.00
Total Particulate Matter (TSP)	0.00	0.00
Sulfur Dioxide (SO_2)	0.03	0.01
Volatile Organic Compounds (VOC)	0.46	0.11
Hazardous Air Pollutants	Potential Emissions	
	PPH	TPY
Total HAP	0.00	0.00
Regulated Pollutants other than Criteria and HAP	Potential Emissions	
	PPH	TPY
CO2(e)	2.69	11.80

List the method(s) used to calculate the potential emissions (include dates of any stack tests conducted, versions of software used, source and dates of emission factors, etc.).

-NOx, CO, PM, SO2 and VOC from Manufacturers Specifications
-HAP emission factors from AP-42 Section 3.2 “Speciated Organic Compound Emission Factors for Uncontrolled Diesel Engines” Table 3.3-2
-GHG: 40 CFR 98, Subpart C Tier 1 Methodology

Applicable Requirements

List all applicable requirements for this emission unit. For each applicable requirement, include the underlying rule/regulation citation and/or construction permit with the condition number. (*Note: Title V permit condition numbers alone are not the underlying applicable requirements*). If an emission limit is calculated based on the type of source and design capacity or if a standard is based on a design parameter, this information should also be included.

Permit R13-2818H
5.1.4
5.1.8
9.1.1 40 CFR 60.4205d
9.1.2 40 CFR 60.4206
9.1.3 40 CFR 60.4207b
9.1.9 40 CFR 60.4211f
9.2.1 WV Code 22-5-4(a)(15)
9.2.2
9.3.1
9.3.2
9.3.3

__X__ Permit Shield

For all applicable requirements listed above, provide monitoring/testing/recordkeeping/reporting which shall be used to demonstrate compliance. If the method is based on a permit or rule, include the condition number or citation. (Note: Each requirement listed above must have an associated method of demonstrating compliance. If there is not already a required method in place, then a method must be proposed.)

Section	Monitoring	Testing	Recordkeeping	Reporting	Condition or Citation
5.1.4			Emission limitations will be kept and maintained.		
5.1.8	Engine operation hours will be monitored.	operation or once every three years whichever comes first.	Records of engine operation hours will be maintained.		
5.4.1			Record type of fuel used and calculation of fuel consumed.		
9.1.1			Records will be kept of manufacturer certification to meet emission requirements.		40 CFR 60 .4205d
9.1.2			Maintenance records will be kept.		40 CFR 60.4206
9.1.3			Records of fuel receipts showing compliance will be kept.		40 CFR 60.4207b
9.1.9			Records of hourly usage will be kept for both emergency and non-emergency usage.		40 CFR 60.4211f
9.2.1		Testing will be performed as requested by the Administrator.			WV Code 22-5-4(a)(15)

9.2.2				Reports of test protocols will be submitted 30 days prior and the WVDEP shall be notified 15 days prior to testing.	
9.3.1	Monitoring will be conducted as described when required		Records of all monitoring data will be kept.		
9.3.2			Maintenance records of the engines will be maintained.		
9.3.3				If compliance testing is required reports will be submitted describing the methods and results of such testing.	

Are you in compliance with all applicable requirements for this emission unit? _X__Yes ___No

If no, complete the **Schedule of Compliance Form** as **ATTACHMENT F**.

ATTACHMENT E - Emission Unit Form

Emission Unit Description

Emission unit ID number:	**Emission unit name:**	**List any control devices associated with this emission unit:** NA
FUG-001	Fugitive Leaks	

Provide a description of the emission unit (type, method of operation, design parameters, etc.):
Fugitive Leaks from valves, connectors, flanges, pump seals and other equipment throughout the facility. All leaks will be monitored and reported under NSPS Subpart OOOO

Manufacturer: Various	**Model number:**	**Serial number:**
Construction date: MM/DD/YYY	**Installation date:** 2010-2017	**Modification date(s):** 2017

Design Capacity (examples: furnaces - tons/hr, tanks - gallons):
N/A

Maximum Hourly Throughput:	**Maximum Annual Throughput:**	**Maximum Operating Schedule:** 8,760 hrs/year

Fuel Usage Data **(fill out all applicable fields)**

Does this emission unit combust fuel? ___Yes __X_ No	**If yes, is it?** ___ Indirect Fired __Direct Fired
Maximum design heat input and/or maximum horsepower rating:	**Type and Btu/hr rating of burners:**

List the primary fuel type(s) and if applicable, the secondary fuel type(s). For each fuel type listed, provide the maximum hourly and annual fuel usage for each.

Describe each fuel expected to be used during the term of the permit.

Fuel Type	Max. Sulfur Content	Max. Ash Content	BTU Value

Emissions Data		
Criteria Pollutants	Potential Emissions	
	PPH	TPY
Carbon Monoxide (CO)	0.00	0.00
Nitrogen Oxides (NO_X)	0.00	0.00
Lead (Pb)	0.00	0.00
Particulate Matter ($PM_{2.5}$)	0.00	0.00
Particulate Matter (PM_{10})	0.00	0.00
Total Particulate Matter (TSP)	0.00	0.00
Sulfur Dioxide (SO_2)	0.00	0.00
Volatile Organic Compounds (VOC)	--	41.01
Hazardous Air Pollutants	Potential Emissions	
	PPH	TPY
Total HAP		
Regulated Pollutants other than Criteria and HAP	Potential Emissions	
	PPH	TPY
CO2(e)		

List the method(s) used to calculate the potential emissions (include dates of any stack tests conducted, versions of software used, source and dates of emission factors, etc.).

Table 2-4: Oil & Gas Production Operations Average Emission Factors, Protocol for Equipment Leak Emission Estimates, EPA 453/R-95-017, November 1995. Emission factors based on average measured TOC from component types indicated in gas service at O&G Production Operations. A control factor is applied to the leak rates of valves in gas and light liquid service as well as pumps in light liquid service to account for LDAR program as per NSPS OOOO

Applicable Requirements

List all applicable requirements for this emission unit. For each applicable requirement, include the underlying rule/regulation citation and/or construction permit with the condition number. (*Note: Title V permit condition numbers alone are not the underlying applicable requirements*). If an emission limit is calculated based on the type of source and design capacity or if a standard is based on a design parameter, this information should also be included.

Permit R13-2818H – All fugitive leaks will meet NSPS Subpart OOOO requirements.
11.1.1 40 CFR 60.5390 & 5390a
13.1.3 40 CFR 60.5400
13.3.1 40 CFR 60.5415
13.4.1 40 CFR 60.5401(b)(1)
13.4.3 40 CFR 60.5422
14.1.4 40 CFR 60.5400a
14.3.1 40 CFR 60.5415a
14.4.1 40 CFR 60.5401(b)(1)a
14.4.2 40 CFR 60.5422a

__X__ Permit Shield

For all applicable requirements listed above, provide monitoring/testing/recordkeeping/reporting which shall be used to demonstrate compliance. If the method is based on a permit or rule, include the condition number or citation. (Note: Each requirement listed above must have an associated method of demonstrating compliance. If there is not already a required method in place, then a method must be proposed.)

Section	Monitoring	Testing	Recordkeeping	Reporting	Condition or Citation
11.1.1			Records of pneumatics will be kept showing the bleed rate of 0.		40 CFR 60.5390 40 CFR 60.5390a
13.1.3	Monitoring of components will be performed to meet the equipment leak standards.				40 CFR 60.5400
13.3.1	Monitoring will be performed per the requirements of the permit and NSPS Subpart OOOO.				40 CFR 60.5415
13.4.1			Records of leaks and delay of repair will be kept for at least 2 years.		40 CFR 60.5421
13.4.3				Semi-annual reports will be provided to the USEPA and WVDEP detailing leak rates and DORs.	40 CFR 60.5422
14.1.4	Monitoring of components will be performed to meet the equipment leak standards.				40 CFR 60.5400a
14.3.1	Monitoring will be performed per the requirements of the permit and NSPS Subpart OOOO.				40 CFR 60.5415a

14.4.1			Records of leaks and delay of repair will be kept for at least 2 years.		40 CFR 60.5421a
14.4.2				Semi-annual reports will be provided to the USEPA and WVDEP detailing leak rates and DORs.	40 CFR 60.5422

Are you in compliance with all applicable requirements for this emission unit? _X__Yes ___No

If no, complete the **Schedule of Compliance Form** as **ATTACHMENT F**.

Attachment F

Schedule of Compliance Forms

(Not Applicable)

Attachment G
Air Pollution Control Device Forms

ATTACHMENT G - Air Pollution Control Device Form

Control device ID number: Oxid. Cat.	**List all emission units associated with this control device.** C-102	
Manufacturer: Miratech	**Model number:** SP-ZESIOG-54x61-20/24-XH3.5B2	**Installation date:** 9/13/2010

Type of Air Pollution Control Device:

___ Baghouse/Fabric Filter	___ Venturi Scrubber	___ Multiclone
___ Carbon Bed Adsorber	___ Packed Tower Scrubber	___ Single Cyclone
___ Carbon Drum(s)	___ Other Wet Scrubber	___ Cyclone Bank
___ Catalytic Incinerator	___ Condenser	___ Settling Chamber
___ Thermal Incinerator	___ Flare	_X_ Other (describe): Oxidation Catalyst
___ Wet Plate Electrostatic Precipitator		___ Dry Plate Electrostatic Precipitator

List the pollutants for which this device is intended to control and the capture and control efficiencies.

Pollutant	Capture Efficiency	Control Efficiency
NOx		N/A
CO		93%
VOC		50%
HCHO		80%

Explain the characteristic design parameters of this control device (flow rates, pressure drops, number of bags, size, temperatures, etc.).

Catalyst inlet temperature: 550 – 1250 ºF
Catalyst outlet temperature: 1350 ºF
Exhaust flow rate: 16,144 acfm
Exhaust temperature: 857 ºF
Pressure drop: 6.0 in. of WC

Is this device subject to the CAM requirements of 40 C.F.R. 64? ___ Yes _X__ No

If Yes, **Complete ATTACHMENT H**

If No**, Provide justification.** Compressor engine is subject to the emission limitations of 40 CFR 60 Subpart JJJJ.

Describe the parameters monitored and/or methods used to indicate performance of this control device.
5.2.1 a.The permittee shall regularly inspect, properly maintain and/or replace catalytic reduction devices and auxiliary air pollution control devices to ensure functional and effective operation of the engine's physical and operational design. The permittee shall ensure proper operation, maintenance and performance of catalytic reduction devices and auxiliary air pollution control devices by:
1. Maintaining proper operation of the automatic air/fuel ratio controller or automatic feedback controller.
2. Following operating and maintenance recommendations of the catalyst element manufacturer.

ATTACHMENT G - Air Pollution Control Device Form

Control device ID number: Oxid. Cat.	**List all emission units associated with this control device.** C-103	
Manufacturer: Miratech	**Model number:** SP-ZESIOG-54x61-20/24-XH3.5B2	**Installation date:** 9/13/2010

Type of Air Pollution Control Device:

___ Baghouse/Fabric Filter	___ Venturi Scrubber	___ Multiclone
___ Carbon Bed Adsorber	___ Packed Tower Scrubber	___ Single Cyclone
___ Carbon Drum(s)	___ Other Wet Scrubber	___ Cyclone Bank
___ Catalytic Incinerator	___ Condenser	___ Settling Chamber
___ Thermal Incinerator	___ Flare	_X_ Other (describe): Oxidation Catalyst
___ Wet Plate Electrostatic Precipitator		___ Dry Plate Electrostatic Precipitator

List the pollutants for which this device is intended to control and the capture and control efficiencies.

Pollutant	Capture Efficiency	Control Efficiency
NOx		N/A
CO		93%
VOC		50%
HCHO		80%

Explain the characteristic design parameters of this control device (flow rates, pressure drops, number of bags, size, temperatures, etc.).

Catalyst inlet temperature: 550 – 1250 ºF
Catalyst outlet temperature: 1350 ºF
Exhaust flow rate: 16,144 acfm
Exhaust temperature: 857 ºF
Pressure drop: 6.0 in. of WC

Is this device subject to the CAM requirements of 40 C.F.R. 64? ___ Yes _X__ No

If Yes, **Complete ATTACHMENT H**

If No**, Provide justification.** Compressor engine is subject to the emission limitations of 40 CFR 60 Subpart JJJJ.

Describe the parameters monitored and/or methods used to indicate performance of this control device.
5.2.1 a.The permittee shall regularly inspect, properly maintain and/or replace catalytic reduction devices and auxiliary air pollution control devices to ensure functional and effective operation of the engine's physical and operational design. The permittee shall ensure proper operation, maintenance and performance of catalytic reduction devices and auxiliary air pollution control devices by:
1. Maintaining proper operation of the automatic air/fuel ratio controller or automatic feedback controller.
2. Following operating and maintenance recommendations of the catalyst element manufacturer.

ATTACHMENT G - Air Pollution Control Device Form

Control device ID number: Oxid. Cat.	**List all emission units associated with this control device.** C-104	
Manufacturer: Miratech	**Model number:** SP-ZESIOG-54x61-20/24-XH3.5B2	**Installation date:** 9/13/2010

Type of Air Pollution Control Device:

___ Baghouse/Fabric Filter	___ Venturi Scrubber	___ Multiclone
___ Carbon Bed Adsorber	___ Packed Tower Scrubber	___ Single Cyclone
___ Carbon Drum(s)	___ Other Wet Scrubber	___ Cyclone Bank
___ Catalytic Incinerator	___ Condenser	___ Settling Chamber
___ Thermal Incinerator	___ Flare	_X_ Other (describe): Oxidation Catalyst
___ Wet Plate Electrostatic Precipitator		___ Dry Plate Electrostatic Precipitator

List the pollutants for which this device is intended to control and the capture and control efficiencies.

Pollutant	Capture Efficiency	Control Efficiency
NOx		N/A
CO		93%
VOC		50%
HCHO		80%

Explain the characteristic design parameters of this control device (flow rates, pressure drops, number of bags, size, temperatures, etc.).

Catalyst inlet temperature: 550 – 1250 ºF
Catalyst outlet temperature: 1350 ºF
Exhaust flow rate: 16,144 acfm
Exhaust temperature: 857 ºF
Pressure drop: 6.0 in. of WC

Is this device subject to the CAM requirements of 40 C.F.R. 64? ___ Yes _X__ No

If Yes, **Complete ATTACHMENT H**

If No**, Provide justification.** Compressor engine is subject to the emission limitations of 40 CFR 60 Subpart JJJJ.

Describe the parameters monitored and/or methods used to indicate performance of this control device.
5.2.1 a.The permittee shall regularly inspect, properly maintain and/or replace catalytic reduction devices and auxiliary air pollution control devices to ensure functional and effective operation of the engine's physical and operational design. The permittee shall ensure proper operation, maintenance and performance of catalytic reduction devices and auxiliary air pollution control devices by:
1. Maintaining proper operation of the automatic air/fuel ratio controller or automatic feedback controller.
2. Following operating and maintenance recommendations of the catalyst element manufacturer.

ATTACHMENT G - Air Pollution Control Device Form

Control device ID number: FL-991	**List all emission units associated with this control device.** Maintenance blowdowns and emergency process venting	
Manufacturer: Callidus	**Model number:**	**Installation date:** 2010

Type of Air Pollution Control Device:

___ Baghouse/Fabric Filter	___ Venturi Scrubber	___ Multiclone
___ Carbon Bed Adsorber	___ Packed Tower Scrubber	___ Single Cyclone
___ Carbon Drum(s)	___ Other Wet Scrubber	___ Cyclone Bank
___ Catalytic Incinerator	___ Condenser	___ Settling Chamber
___ Thermal Incinerator	_X__ Flare	__ Other (describe):
___ Wet Plate Electrostatic Precipitator		___ Dry Plate Electrostatic Precipitator

List the pollutants for which this device is intended to control and the capture and control efficiencies.

Pollutant	Capture Efficiency	Control Efficiency
NOx		
CO		
VOC	100%	98%
HCHO		

Explain the characteristic design parameters of this control device (flow rates, pressure drops, number of bags, size, temperatures, etc.).

Continuous pilot
No visible emissions
Gas heating value 300 btu/scf or greater

Is this device subject to the CAM requirements of 40 C.F.R. 64? ___ Yes _X_ No

If Yes, **Complete ATTACHMENT H**

If No**, Provide justification.** See Title V application General Forms Section 19

Describe the parameters monitored and/or methods used to indicate performance of this control device.
Presence of a flame monitored by thermocouple

Compliance with opacity requirements using EPA Method 22

Flare compliance assessment using Test Method 18/4 and 40 CFR Part 60 Appendix A Test Method 2, 2A, 2C, or 2D

ATTACHMENT G - Air Pollution Control Device Form

Control device ID number: FL-1991	**List all emission units associated with this control device.** Maintenance blowdowns and emergency process venting	
Manufacturer: Callidus	**Model number:**	**Installation date:** 2013

Type of Air Pollution Control Device:

___ Baghouse/Fabric Filter	___ Venturi Scrubber	___ Multiclone
___ Carbon Bed Adsorber	___ Packed Tower Scrubber	___ Single Cyclone
___ Carbon Drum(s)	___ Other Wet Scrubber	___ Cyclone Bank
___ Catalytic Incinerator	___ Condenser	___ Settling Chamber
___ Thermal Incinerator	_X__ Flare	__ Other (describe):
___ Wet Plate Electrostatic Precipitator		___ Dry Plate Electrostatic Precipitator

List the pollutants for which this device is intended to control and the capture and control efficiencies.

Pollutant	Capture Efficiency	Control Efficiency
NOx		
CO		
VOC	100%	98%
HCHO		

Explain the characteristic design parameters of this control device (flow rates, pressure drops, number of bags, size, temperatures, etc.).

Continuous pilot
No visible emissions
Gas heating value 300 btu/scf or greater

Is this device subject to the CAM requirements of 40 C.F.R. 64? ___ Yes _X__ No

If Yes, **Complete ATTACHMENT H**

If No**, Provide justification.** See Title V application General Forms Section 19

Describe the parameters monitored and/or methods used to indicate performance of this control device.
Presence of a flame monitored by thermocouple

Compliance with opacity requirements using EPA Method 22

Flare compliance assessment using Test Method 18/4 and 40 CFR Part 60 Appendix A Test Method 2, 2A, 2C, or 2D

Attachment H

Compliance Assurance Monitoring Forms

(Not Applicable)