April 17, 2015

Mr. John A. Benedict
Director, Division of Air Quality
West Virginia Department of Environmental Protection
601 57th Street
Charleston, West Virginia 25304

Via FedEx

Subject: **Rule 13 Air Permit Modification Application**
Natrium Extraction and Fractionation Processing Plant (R13-2896C)
Proctor, Marshall County
Blue Racer Midstream, LLC

Dear Mr. Benedict:

On behalf of Blue Racer Midstream, LLC (BRM), Apex TITAN Inc. (Apex), a Subsidiary of Apex Companies, LLC, is pleased to submit to the West Virginia Department of Environmental Protection (WV DEP) the enclosed Rule 13 Air Permit Modification Application to authorize the replacement of the plant flare with a ground flare (the Project) at the Natrium Extraction and Fractionation Processing Plant (Plant), located in Proctor, Marshall County. All other equipment emission representations will remain unchanged by this permitting action. The Plant is currently authorized by WV DEP Rule 13 Air Permit Number R13-2896C. The Project is a minor modification to the Rule 13 Air Permit and will not cause an increase over any major source thresholds for criteria pollutants.

Enclosed please find one (1) hard copy and two (2) electronic copies of the Rule 13 air permit application.

BRM and Apex truly appreciate the WV DEP's review and approval of the enclosed application. If you have any questions or require additional information, please do not hesitate to contact Mr. Sean Wilson of BRM at (214) 580-7340 or at *SWilson@caimanenergy.com* or myself at 469-365-1121 or at *odeleon@apexcos.com*.

Sincerely,
Apex TITAN, Inc.

Osman De Leon
Project Manager

cc: Mr. Sean Wilson, Blue Racer Midstream
Mr. Daniel Wentworth, Blue Racer Midstream

RULE 13 AIR PERMIT MODIFICATION APPLICATION

Prepared for:

Natrium Extraction and Fractionation Processing Plant

Proctor, Marshall County, West Virginia

April 2015

Apex TITAN Job No: 72500646-11-001

Prepared by:

Apex TITAN, Inc., a subsidiary of Apex Companies, LLC
2801 Network Boulevard, Suite 200
Frisco, TX 75034
T 469.365.1100 · F 469.365.1199
apexcos.com

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INTRODUCTION

Blue Racer Midstream, LLC (BRM) is submitting this Rule 13 air permit modification application to the West Virginia Department of Environmental Protection (WV DEP) Air Permits Division (APD) to authorize the replacement of the plant flare with a pit flare (the Project) at the Natrium Extraction and Fractionation Processing Plant (Natrium Plant, or Plant) located in Proctor, Marshall County, West Virginia. The Plant emits carbon monoxide (CO), oxides of nitrogen (NO_X), particulate matter (PM), including PM with aerodynamic diameters of 10 and 2.5 microns or less (PM_{10} and $PM_{2.5}$, respectively), sulfur dioxide (SO_2), volatile organic compounds (VOC), hazardous air pollutants (HAPs), and Greenhouse Gases (GHG).

Plant Permitting History

In an effort to facilitate the WV DEP's review of air permitting applicability to the Project and retrospectively to the Plant, the following paragraphs present a summary of the Plant's air permitting and ownership history.

Original Plant Construction under Dominion Natrium LLC Ownership

- August 2011: Original air permit application submittal
  - 400 MMscfd Natural Gas Processing Facility, including two 200 MMscfd cryogenic units and associated NGL fractionation
  - February 1, 2012: Anticipated Start of Construction (SOC)
  - December 1, 2012: Anticipated Start of Operation (SOO)
  - Site-wide Potential to Emit (PTE), excluding fugitives:
    - CO: 37.97 T/yr
    - NO_X: 23.94 T/yr
    - $PM/PM_{10}/PM_{2.5}$: 4.76 T/yr
    - SO_2: 0.37 T/yr
    - VOC: 6.03 T/yr
    - CO_2e: 85,062 T/yr
  - Synthetic minor source, due to federally enforceable operating limitations on the annual fuel firing rate of the Hot Oil Heater (Emissions Unit Number [EU#] S001).
- December 19, 2011: Permit R13-2896 issued
- May 15, 2013: Actual SOO (construction exceeded anticipated project timeline)
- Upon SOO, flare operational issues resulted in visible emissions in excess of those allowed under 40 Code of Federal Regulations (CFR) §60.18 (adopted by reference in WV regulation §45-16-4) and insufficient destruction efficiency.
- July 31, 2013: Consent Decree issued by WV DEP

August 14, 2013: Change of Ownership to Blue Racer Natrium, LLC

- August 20, 2013: Rule 13 permit modification application submittal
  - Change of ownership from Dominion Natrium LLC to Blue Racer Natrium LLC
  - Replacement of the flare tip (modification to EU# S004) to resolve operational issues, per the Consent Decree
  - Installation of a vapor recovery unit (VRU) on the Natural Gasoline Tank (EU# S005), per the Consent Decree, to capture and route the tank emissions (primarily natural gas blanket emissions) to the Hot Oil Heater (EU# S001) fuel system instead of the flare
  - Installation of a VRU on the Slop Tank (EU# S007), per the Consent Decree, to capture and route the tank emissions (primarily natural gas blanket emissions) to the Flare (EU# S004)
  - Installation of two new natural gas-fired heaters (EU#s S012 and S013) to provide heat to the second cryogenic unit[1]
  - Update to site-wide PTE, excluding fugitives:
    - CO: 24.09 T/yr
    - NO_X: 34.35 T/yr
    - $PM/PM_{10}/PM_{2.5}$: 5.93 T/yr
    - SO_2: 0.46 T/yr
    - VOC: 2.22 T/yr
    - CO_2e: 94,877 T/yr
  - Retention of synthetic minor source status due to federally enforceable operating limitations on the annual fuel firing rate of the Hot Oil Heater (EU# S001).
- December 26, 2013: Permit R13-2896B issued by WV DEP
- During this review, WV DEP agreed that the installation of the two heaters were a separate, distinct project from the original construction of the Plant, as these heaters were not anticipated to be needed during the original design and permitting of the Plant.

August 1, 2014: Fractionation Plant Expansion

- August 1, 2014: Rule 13 permit modification application submittal
- Change of owner/operator name to Blue Racer Midstream LLC (Blue Racer Natrium LLC is being absorbed into its parent company)
- Increase in NGL fractionation capacity of the Plant by:
  - Tying a new NGL pipeline into the Plant's receiving area, and increasing the potential truck, railcar, and barge unloading of NGL;
  - Installation of two deethanizer towers and associated equipment;
  - Installation of an ethane amine treating unit and associated equipment;
  - Installation of a depropanizer tower and associated equipment;
  - Installation of a debutanizer tower and associated equipment;
  - Installation of four (4) natural gas-fired hot oil heaters (EU#s S016, S017, S018, and S019);
  - Installation of a glycol reboiler (EU# S020) and a regen gas heater (EU# S022);

- Installation of an emergency flare for upsets (EU# S021);
- Installation of a 38,788 bbl gasoline storage tank equipped with a natural gas blanket to reduce VOC emissions (EU# S023);
- Installation of four (4) pressurized butane bullet tanks;
- Increased utilization of the existing Plant Hot Oil Heater (EU# S001);
- Revised plant natural gas processing rate from 400 MMscfd to 460 MMscfd;
- Increased throughput of the existing Plant product storage tanks, which are pressurized to prevent emissions during normal operations;
- Update to site-wide PTE, excluding fugitives:
  - CO: 99.23 T/yr
  - NO_X: 72.55 T/yr
  - $PM/PM_{10}/PM_{2.5}$: 16.78 T/yr
  - SO_2: 1.63 T/yr
  - VOC: 10.20 T/yr
  - CO_2e: 288,861 T/yr

- Due to Supreme Court ruling, GHG emissions alone may not trigger Prevention of Significant Deterioration (PSD) permitting on sources with total criteria pollutant potential to emit less than the PSD major source threshold.
- November 6, 2014: Permit R13-2896C issued by WV DEP

Project Description

With this filing, Blue Racer Midstream LLC is requesting that the WV DEP authorize the replacement of the existing plant flare (EU# S004) with a ground flare (EU# S004A).

Regulated Air Pollutant	Site Total PTE (T/yr)
Oxides of Nitrogen (NO_X):	72.63
Carbon Monoxide (CO):	97.45
Volatile Organic Compounds (VOC):	43.60
Particulate Matter (PM):	31.97
PM with an aerodynamic diameter of less than or equal to 10 microns (PM_{10})	20.81
PM with an aerodynamic diameter of less than or equal to 2.5 microns ($PM_{2.5}$)	17.17
Sulfur Dioxide (SO_2):	1.63
Greenhouse Gases (CO_2e):	288,945

The flare replacement does not result in an increase in potential emissions of criteria pollutants above major source permitting thresholds. Although GHG emissions are above the major source threshold of 100,000 T/yr CO_2e, GHG emissions cannot trigger PSD permitting unless one criteria pollutant triggers PSD permitting. As a result, BRM is submitting this Air Permit application to authorize the replacement of the flare.

WEST VIRGINIA DEPARTMENT OF ENVIRONMENTAL PROTECTION

DIVISION OF AIR QUALITY

601 57th Street, SE
Charleston, WV 25304
(304) 926-0475
www.dep.wv.gov/daq

APPLICATION FOR NSR PERMIT AND TITLE V PERMIT REVISION (OPTIONAL)

PLEASE CHECK ALL THAT APPLY TO **NSR (45CSR13)** (IF KNOWN):

☐ **CONSTRUCTION** ☒ **MODIFICATION** ☐ **RELOCATION**
☐ **CLASS I ADMINISTRATIVE UPDATE** ☐ **TEMPORARY**
☐ **CLASS II ADMINISTRATIVE UPDATE** ☐ **AFTER-THE-FACT**

PLEASE CHECK TYPE OF **45CSR30 (TITLE V)** REVISION (IF ANY):

☐ **ADMINISTRATIVE AMENDMENT** ☐ **MINOR MODIFICATION**
☐ **SIGNIFICANT MODIFICATION**

IF ANY BOX ABOVE IS CHECKED, INCLUDE TITLE V REVISION INFORMATION AS **ATTACHMENT S** TO THIS APPLICATION

FOR TITLE V FACILITIES ONLY: Please refer to "Title V Revision Guidance" in order to determine your Title V Revision options (Appendix A, "Title V Permit Revision Flowchart") and ability to operate with the changes requested in this Permit Application.

Section I. General

1. Name of applicant *(as registered with the WV Secretary of State's Office):*
Blue Racer Midstream, LLC

2. Federal Employer ID No. ***(FEIN):***
46-1520107

3. Name of facility *(if different from above):*
Natrium Extraction and Fractionation Processing Plant (NPP)

4. The applicant is the:
☐ **OWNER** ☐ **OPERATOR** ☒ **BOTH**

5A. Applicant's mailing address:
5949 Sherry Lane, Suite 1300
Dallas, TX 75225

5B. Facility's present physical address:
Natrium Extraction and Fractionation Processing Plant
14787 Energy Road
Proctor, WV 26055

6. **West Virginia Business Registration.** Is the applicant a resident of the State of West Virginia? ☐ **YES** ☒ **NO**

- If **YES,** provide a copy of the **Certificate of Incorporation/Organization/Limited Partnership** (one page) including any name change amendments or other Business Registration Certificate as **Attachment A.**
- If **NO,** provide a copy of the **Certificate of Authority/Authority of L.L.C./Registration** (one page) including any name change amendments or other Business Certificate as **Attachment A.**

7. If applicant is a subsidiary corporation, please provide the name of parent corporation:

8. Does the applicant own, lease, have an option to buy or otherwise have control of the *proposed site?* ☒ **YES** ☐ **NO**

- If **YES,** please explain: Applicant is the owner of the site.
- If **NO,** you are not eligible for a permit for this source.

9. Type of plant or facility (stationary source) to be **constructed, modified, relocated, administratively updated** or **temporarily permitted** (e.g., coal preparation plant, primary crusher, etc.): Natural Gas Extraction and Fractionation Facility

10. North American Industry Classification System **(NAICS)** code for the facility:
211112 Natural Gas Liquid Extraction

11A. DAQ Plant ID No. (for existing facilities only):
051 – 00142

11B. List all current 45CSR13 and 45CSR30 (Title V) permit numbers associated with this process (for existing facilities only):
R13-2896C

All of the required forms and additional information can be found under the Permitting Section of DAQ's website, or requested by phone.

12A.

- For **Modifications, Administrative Updates** or **Temporary permits** at an existing facility, please provide directions to the *present location* of the facility from the nearest state road;
- For **Construction** or **Relocation permits,** please provide directions to the *proposed new site location* from the nearest state road. Include a **MAP** as **Attachment B**.

Facility is located off of State Road 2 at 14787 Energy Road, Proctor, WV.

12.B. New site address (if applicable):	12C. Nearest city or town:	12D. County:
14787 Energy Road Proctor, WV 26055	Proctor	Marshall
12.E. UTM Northing (KM): 4400.8	12F. UTM Easting (KM): 512.1	12G. UTM Zone: 17

13. Briefly describe the proposed change(s) at the facility:
Replace existing plant flare with a ground flare.

14A. Provide the date of anticipated installation or change: 6/1/2015 If this is an **After-The-Fact** permit application, provide the date upon which the proposed change did happen: / /	14B. Date of anticipated Start-Up if a permit is granted: 6/1/2015

14C. Provide a **Schedule** of the planned **Installation** of/**Change** to and **Start-Up** of each of the units proposed in this permit application as **Attachment C** (if more than one unit is involved).

15. Provide maximum projected **Operating Schedule** of activity/activities outlined in this application:
Hours Per Day 24 Days Per Week 7 Weeks Per Year 52

16. Is demolition or physical renovation at an existing facility involved? ☒ **YES** ☐ **NO**

17**. Risk Management Plans.** If this facility is subject to 112(r) of the 1990 CAAA, or will become subject due to proposed changes (for applicability help see www.epa.gov/ceppo), submit your **Risk Management Plan (RMP)** to U. S. EPA Region III.

18**. Regulatory Discussion.** List all Federal and State air pollution control regulations that you believe are applicable to the proposed process *(if known).* A list of possible applicable requirements is also included in Attachment S of this application (Title V Permit Revision Information). Discuss applicability and proposed demonstration(s) of compliance *(if known).* Provide this information as **Attachment D.**

Section II. Additional attachments and supporting documents.

19. Include a check payable to WVDEP – Division of Air Quality with the appropriate **application fee** (per 45CSR22 and 45CSR13).

20. Include a **Table of Contents** as the first page of your application package.

21. Provide a **Plot Plan,** e.g. scaled map(s) and/or sketch(es) showing the location of the property on which the stationary source(s) is or is to be located as **Attachment E** (Refer to ***Plot Plan Guidance***) **.**

- Indicate the location of the nearest occupied structure (e.g. church, school, business, residence).

22. Provide a **Detailed Process Flow Diagram(s)** showing each proposed or modified emissions unit, emission point and control device as **Attachment F.**

23. Provide a **Process Description** as **Attachment G.**

- Also describe and quantify to the extent possible all changes made to the facility since the last permit review (if applicable).

All of the required forms and additional information can be found under the Permitting Section of DAQ's website, or requested by phone.

24. Provide **Material Safety Data Sheets (MSDS)** for all materials processed, used or produced as **Attachment H.**

– For chemical processes, provide a MSDS for each compound emitted to the air.

25. Fill out the **Emission Units Table** and provide it as **Attachment I.**

26. Fill out the **Emission Points Data Summary Sheet (Table 1 and Table 2)** and provide it as **Attachment J.**

27. Fill out the **Fugitive Emissions Data Summary Sheet** and provide it as **Attachment K.**

28. Check all applicable **Emissions Unit Data Sheets** listed below:

☒ Bulk Liquid Transfer Operations	☒ Haul Road Emissions	☐ Quarry
☒ Chemical Processes	☐ Hot Mix Asphalt Plant	☐ Solid Materials Sizing, Handling and Storage Facilities
☐ Concrete Batch Plant	☐ Incinerator	☒ Storage Tanks
☐ Grey Iron and Steel Foundry	☒ Indirect Heat Exchanger	

☒ General Emission Unit, specify: **Fire Pump Engines (2), Flares.**

Fill out and provide the **Emissions Unit Data Sheet(s)** as **Attachment L.**

29. Check all applicable **Air Pollution Control Device Sheets** listed below:

☐ Absorption Systems	☐ Baghouse	☒ Flare
☐ Adsorption Systems	☐ Condenser	☐ Mechanical Collector
☐ Afterburner	☐ Electrostatic Precipitator	☐ Wet Collecting System

☒ Other Collectors, specify: **Electric Vapor Recovery Units (2)**

Fill out and provide the **Air Pollution Control Device Sheet(s)** as **Attachment M.**

30. Provide all **Supporting Emissions Calculations** as **Attachment N,** or attach the calculations directly to the forms listed in Items 28 through 31.

31. **Monitoring, Recordkeeping, Reporting and Testing Plans.** Attach proposed monitoring, recordkeeping, reporting and testing plans in order to demonstrate compliance with the proposed emissions limits and operating parameters in this permit application. Provide this information as **Attachment O.**

➢ Please be aware that all permits must be practically enforceable whether or not the applicant chooses to propose such measures. Additionally, the DAQ may not be able to accept all measures proposed by the applicant. If none of these plans are proposed by the applicant, DAQ will develop such plans and include them in the permit.

32. **Public Notice.** At the time that the application is submitted, place a **Class I Legal Advertisement** in a newspaper of general circulation in the area where the source is or will be located (See 45CSR§13-8.3 through 45CSR§13-8.5 and ***Example Legal Advertisement*** for details). Please submit the **Affidavit of Publication** as **Attachment P** immediately upon receipt.

33**. 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 found in the ***General Instructions*** as **Attachment Q.**

Section III. Certification of Information

34. **Authority/Delegation of Authority.** Only required when someone other than the responsible official signs the application. Check applicable **Authority Form** below:

☐ Authority of Corporation or Other Business Entity	☐ Authority of Partnership
☐ Authority of Governmental Agency	☐ Authority of Limited Partnership

Submit completed and signed **Authority Form** as **Attachment R.**

All of the required forms and additional information can be found under the Permitting Section of DAQ's website, or requested by phone.

35A. **Certification of Information.** To certify this permit application, a Responsible Official (per 45CSR§13-2.22 and 45CSR§30-2.28) or Authorized Representative shall check the appropriate box and sign below.

Certification of Truth, Accuracy, and Completeness

I, the undersigned ☒ **Responsible Official** / ☐ **Authorized Representative,** hereby certify that all information contained in this application and any supporting documents appended hereto, is true, accurate, and complete based on information and belief after reasonable inquiry I further agree to assume responsibility for the construction, modification and/or relocation and operation of the stationary source described herein in accordance with this application and any amendments thereto, as well as the Department of Environmental Protection, Division of Air Quality permit issued in accordance with this application, along with all applicable rules and regulations of the West Virginia Division of Air Quality and W.Va. Code § 22-5-1 et seq. (State Air Pollution Control Act). If the business or agency changes its Responsible Official or Authorized Representative, the Director of the Division of Air Quality will be notified in writing within 30 days of the official change.

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.

SIGNATURE _____ DATE: 4/15/15

(Please use blue ink) *(Please use blue ink)*

35B. Printed name of signee: Daniel Wentworth		35C. Title: Sr. Vice President Engineering and Operations
35D. E-mail: daniel@caimanenergy.com	36E. Phone: 214-580-3700	36F. FAX: 214-580-3750
36A. Printed name of contact person (if different from above): Sean Wilson		36B. Title: Director, Environmental, Health, and Safety
36C. E-mail: SWilson@caimanenergy.com	36D. Phone: 214-580-7340	36E. FAX: 214-580-7360

PLEASE CHECK ALL APPLICABLE ATTACHMENTS INCLUDED WITH THIS PERMIT APPLICATION:

- ☒ **Attachment A: Business Certificate**
- ☒ **Attachment B: Map(s)**
- ☒ **Attachment C: Installation and Start Up Schedule**
- ☒ **Attachment D: Regulatory Discussion**
- ☒ **Attachment E: Plot Plan**
- ☒ **Attachment F: Detailed Process Flow Diagram(s)**
- ☒ **Attachment G: Process Description**
- ☒ **Attachment H: Material Safety Data Sheets (MSDS)**
- ☒ **Attachment I: Emission Units Table**
- ☒ **Attachment J: Emission Points Data Summary Sheet**
- ☒ **Attachment K: Fugitive Emissions Data Summary Sheet**
- ☒ **Attachment L: Emissions Unit Data Sheet(s)**
- ☒ **Attachment M: Air Pollution Control Device Sheet(s)**
- ☒ **Attachment N: Supporting Emissions Calculations**
- ☒ **Attachment O: Monitoring/Recordkeeping/Reporting/Testing Plans**
- ☒ **Attachment P: Public Notice**
- ☐ **Attachment Q: Business Confidential Claims**
- ☐ **Attachment R: Authority Forms**
- ☐ **Attachment S: Title V Permit Revision Information**
- ☒ **Application Fee**

Please mail an original and three (3) copies of the complete permit application with the signature(s) to the DAQ, Permitting Section, at the address listed on the first page of this application. Please DO NOT fax permit applications.

FOR AGENCY USE ONLY – IF THIS IS A TITLE V SOURCE:

- ☐ ***Forward 1 copy of the application to the Title V Permitting Group and:***
- ☐ ***For Title V Administrative Amendments:***
  - ☐ ***NSR permit writer should notify Title V permit writer of draft permit,***
- ☐ ***For Title V Minor Modifications:***
  - ☐ ***Title V permit writer should send appropriate notification to EPA and affected states within 5 days of receipt,***
  - ☐ ***NSR permit writer should notify Title V permit writer of draft permit.***
- ☐ ***For Title V Significant Modifications processed in parallel with NSR Permit revision:***
  - ☐ ***NSR permit writer should notify a Title V permit writer of draft permit,***
  - ☐ ***Public notice should reference both 45CSR13 and Title V permits,***
  - ☐ ***EPA has 45 day review period of a draft permit.***

All of the required forms and additional information can be found under the Permitting Section of DAQ's website, or requested by phone.

CASH ONLY IF ALL *CheckLock*™ SECURITY FEATURES LISTED ON BACK INDICATE NO TAMPERING OR COPYING

APEX TITAN, INC.
2801 NETWORK BLVD, SUITE 200
FRISCO, TX 75034

BANK OF TEXAS, NA
DALLAS, TX
32-1432/1110

26054

4/16/2015

PAY TO THE ORDER OF WV DEP Division of Air Quality

$ **2,000.00

Two Thousand and 00/100********** DOLLARS

▲ TAMPER RESISTANT TONER AREA ▲

West VA Dept. of Environmental Protection
Division of Air Quality
601 57th Street SE
Charleston, WV 25304

VOID AFTER 90 DAYS

MEMO Agency Fee 72500646-11.001

⑈026054⑈ ⑆111014325⑆ ⑈8092671152⑈

TITAN ENGINEERING, INC. 26054

WV DEP Division of Air Quality 4/16/2015

Date	Type	Reference	Original Amt.	Balance Due	Discount	Payment
4/16/2015	Bill	72500646-11.001	2,000.00	2,000.00		2,000.00
					Check Amount	2,000.00

Bank of Texas Operati Agency Fee 72500646-11.001 2,000.00

ATTACHMENT A: BUSINESS CERTIFICATE

RULE 13 AIR PERMIT APPLICATION

NATRIUM EXTRACTION AND FRACTIONATION PROCESSING PLANT

BLUE RACER MIDSTREAM, LLC

State of West Virginia

Certificate

Emily

I, Natalie E. Tennant, Secretary of State of the State of West Virginia, hereby certify that

BLUE RACER MIDSTREAM, LLC

Control Number: 99Y8J

a limited liability company, organized under the laws of the State of Delaware

has filed its "Application for Certificate of Authority" in my office according to the provisions of West Virginia Code §31B-10-1002. I hereby declare the organization to be registered as a foreign limited liability company from its effective date of December 20, 2012, until a certificate of cancellation is filed with our office.

Therefore, I hereby issue this

CERTIFICATE OF AUTHORITY OF A FOREIGN LIMITED LIABILITY COMPANY

to the limited liability company authorizing it to transact business in West Virginia

Given under my hand and the Great Seal of the State of West Virginia on this day of December 20, 2012

Natalie E Tennant

Secretary of State

S

FILED

DEC 20 2012

IN THE OFFICE OF SECRETARY OF STATE

Natalie E. Tennant
Secretary of State
1900 Kanawha Blvd E.
Bldg 1, Suite 157-K
Charleston, WV 25305

Penney Barker, Manager
Corporations Division
Tel: (304)558-8000
Fax: (304)558-8381
www.wvsos.com
Hrs: 8:30 a.m. – 5:00 p.m. ET

FILE ONE ORIGINAL
(Two if you want a filed stamped copy returned to you)
FEE: $150

WV APPLICATION FOR CERTIFICATE OF AUTHORITY OF LIMITED LIABILITY COMPANY

Control # 9948J

******A CERTIFICATE OF EXISTENCE dated during the current tax year, from your home state**** of original organization is required to accompany this filing.**

1. The **name** of the company as registered in its **home state** is: Blue Racer Midstream, LLC
   and the state or country of organization is: State of Delaware

2. The **name** to be used in **West Virginia** will be:
   [The name must contain one of the required terms such as "limited liability company" or abbreviations such as "LLC" or "PLLC". See instructions for complete list of acceptable terms and requirements for use of trade name.]
   - ☒ Home State name as listed above, if available in WV
   - ☐ DBA name _____ (ONLY if home state name is unavailable in WV)

3. The company will be a: [See instructions for limitations on professions which may form P.L.L.C. in WV. All members must have WV professional license. In most cases, a Letter of **Authorization/Approval from the appropriate State Licensing Board** is required to process the application.]
   - ☒ regular **L.L.C.**
   - ☐ **Professional L.L.C.** for the profession of _____

4. The **address of the designated office** of the company in WV, if any, will be:
   - No. & Street: _____
   - City/State/Zip: _____

5. The street address of the **principal office** is:
   - No. & Street: 120 Tredegar Street
   - City/State/Zip: Richmond, VA 23219

   and the mailing address (if different) is:
   - Street/Box: _____
   - City/State/Zip: _____

6. **Agent of Process:** Properly designated person to whom notice of process may be sent, if any:
   - Name: C T Corporation System
   - Address: 5400 D Big Tyler Road,
   - City/State/Zip: Charleston, West Virginia 25313

7. **E-mail address** where business correspondence can be received: _____

Form LLF-1 — Issued by the Office of the Secretary of State — Revised 0512

WV045 - 09/06/2012 Wolters Kluwer Online

8. **Website address of the business,** if any: _____

9. The company is:
   - [X] an **at-will** company, for an indefinite period
   - [ ] a **term** company, for the term of _____ years, which will expire on _____.

10. The company is:
    - [ ] **member**-managed. [List the names and addresses of all members.]
    - [X] **manager**-managed. [List the names and addresses of all managers.]

List the **name(s) of the members/managers** of the company (attach additional pages if necessary).

Name	Street Address	City, State, Zip
Dominion Natrium Holdings, Inc.	120 Tredegar Street	
	Richmond, VA 23219	

11. All or specified members of a limited liability company are liable in their capacity as members for all or specified debts, obligations or liabilities of the company.
    - [X] **No**--All debts, obligations and liabilities are those of the company
    - [ ] **Yes**--Those persons who are liable in their capacity as members for all debts, obligations or liability of the company have consented in writing to the adoption of the provision or to be bound by the provision

12. The **purpose** for which this limited liability company is formed are as follows:
(Describe the type(s) of business activity which will be conducted, for example, "real estate," "construction of residential and commercial buildings," "commercial printing," "professional practice of architecture.")

The purpose of the company is to engage in any lawful activity, including without limitation, the development of gas processing and fractionation and NGL transportation and any and all related activities.

13. Is the business a **Scrap Metal Dealer?**
    - [ ] Yes [If "Yes," you must complete the **Scrap Metal Dealer Registration Form** (Form SMD-1) and proceed to question 14.].
    - [X] No [Proceed to question 14.]

14. The number of pages attached and included in this application is: 6

1. The requested **effective date** is: [Requested date *may not be earlier than filing nor later than 90 days after filing.*]
   - [X] the date & time of filing
   - [ ] the following date _____ and time _____

15. Contact and Signature Information:

a. _____ _____
Contact Name Phone Number

b. Gary L. Sypolt President, Dominion Natrium Holdings, Inc., as sole Member
Print or type name of signer Title / Capacity of Signer

c. Gary L Sypolt 12/18/12
Signature Date

Delaware

The First State

I, JEFFREY W. BULLOCK, SECRETARY OF STATE OF THE STATE OF DELAWARE, DO HEREBY CERTIFY "BLUE RACER MIDSTREAM, LLC" IS DULY FORMED UNDER THE LAWS OF THE STATE OF DELAWARE AND IS IN GOOD STANDING AND HAS A LEGAL EXISTENCE SO FAR AS THE RECORDS OF THIS OFFICE SHOW, AS OF THE NINETEENTH DAY OF DECEMBER, A.D. 2012.

AND I DO HEREBY FURTHER CERTIFY THAT THE ANNUAL TAXES HAVE NOT BEEN ASSESSED TO DATE.

Jeffrey W. Bullock, Secretary of State

5245987 8300

AUTHENTICATION: 0082629

121362169

DATE: 12-19-12

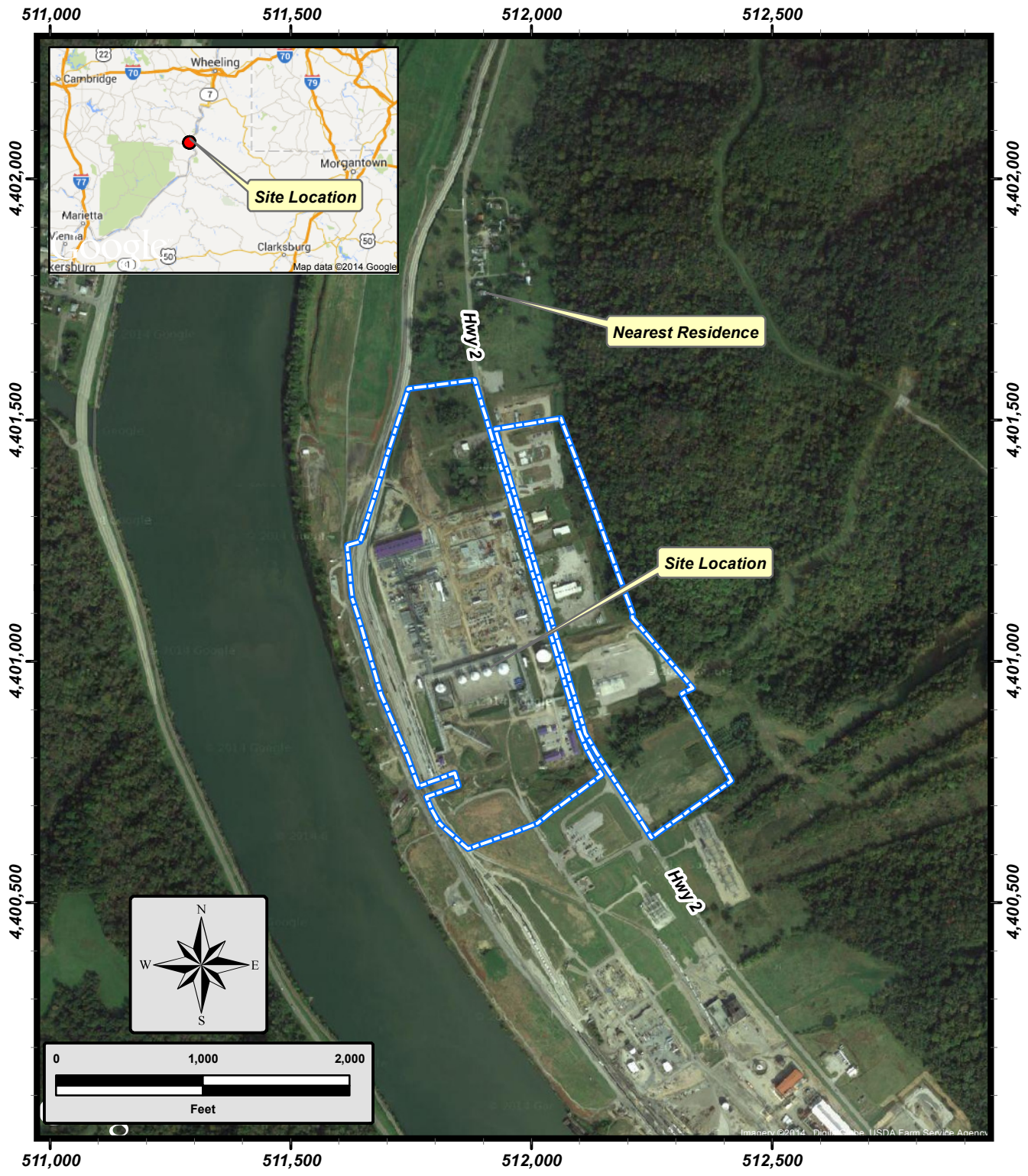
You may verify this certificate online at corp.delaware.gov/authver.shtml

ATTACHMENT B: MAPS

RULE 13 AIR PERMIT APPLICATION

NATRIUM EXTRACTION AND FRACTIONATION PROCESSING PLANT

BLUE RACER MIDSTREAM, LLC



Grid Presented is UTM Zone 17, NAD 1983

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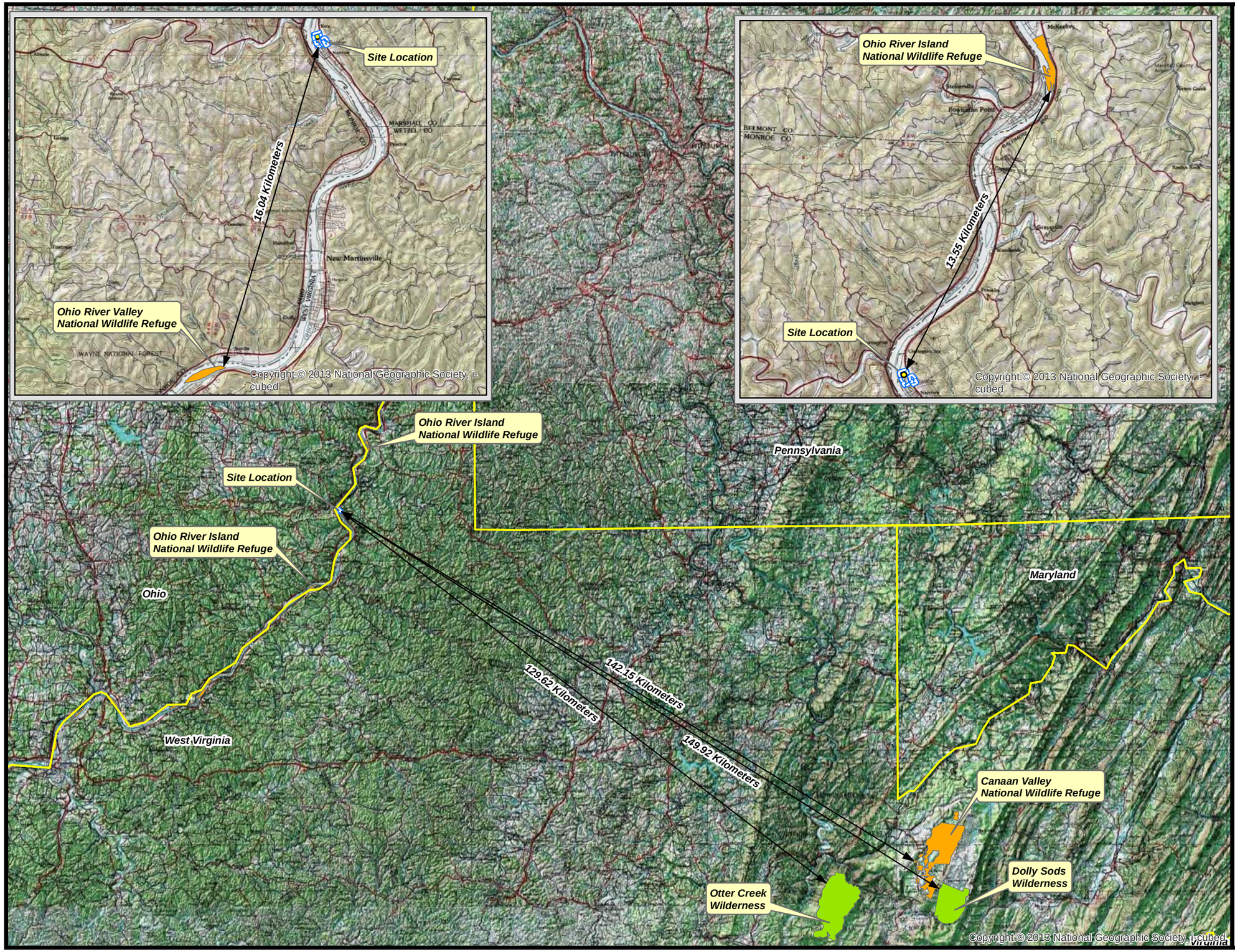
ATTACHMENT B-1 AREA MAP

Blue Racer Midstream
Natrium Extraction and Fractionation Processing Plant
Apex-TITAN Project No. 72500646-11
April 2015

from USGS Quadrangle Powhatan Point, WV
Ground Condition Depicted October 2013
Digital Data Courtesy of Google Earth



Legend

- State Line Boundaries
- US Fish & Wildlife Class 1 Area
- US Forest Service Class 1 Area

N
W E
S

0 20 40
Kilometers

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BLUEracer MIDSTREAM

ATTACHMENT B-2
CLASS 1 AREA MAP

Blue Racer Midstream
Natrium Extraction and
Fractionation Processing Plant
Apex-TITAN Project No. 72500646-11

Digital Data Courtesy of ESRI Online Datasets

ATTACHMENT C: INSTALLATION AND START-UP SCHEDULE

RULE 13 AIR PERMIT APPLICATION

NATRIUM EXTRACTION AND FRACTIONATION PROCESSING PLANT

BLUE RACER MIDSTREAM, LLC

Upon permit submittal, BRM intends to commence construction on those activities allowed by WV DEP, at the sole risk of BRM. BRM anticipates the ground flare operation commencing on 6/1/2015.

ATTACHMENT D: REGULATORY DISCUSSION

RULE 13 AIR PERMIT APPLICATION

NATRIUM EXTRACTION AND FRACTIONATION PROCESSING PLANT

BLUE RACER MIDSTREAM, LLC

TABLE OF CONTENTS

ATTACHMENT D: REGULATORY DISCUSSION

This Attachment D discusses the federal and state regulations that apply to the Project and the existing Plant.

D.1. 45 CSR 2 and 2A: PM from Combustion of Fuel in Indirect Heat Exchangers

45 CSR 2-3 limits opacity from fuel burning equipment to ten percent (10 %) opacity, based on a six minute block average, except during periods of startup, shutdown, or malfunction (SSM). At all times, including periods of start-ups, shutdowns and malfunctions, BRM will, to the extent practicable, maintain and operate the Plant's fuel burning unit(s) in a manner consistent with good air pollution control practice for minimizing emissions. Attachment O presents the Plant's monitoring methods for demonstrating compliance with this rule.

45CSR 2-4 contains weight-based PM emissions standards for fuel burning units. The Plant's heaters are all type "b" units, as defined in the rule. For type "b" fuel burning units, the PM emission limit is the product of 0.09 and the total design heat input for such units in million British thermal units per hour (MMBtu/hr), not to exceed 600 lb/hr PM from all such units. Fuel burning units with a heat input less than ten (10) MMBtu/hr are exempt from this rule. Therefore, other than the two 9.7 MMBtu/hr Regen Gas Heaters (EU#: S012 and S022) and the 3.0 MMBTU/hr Glycol Reboiler (EU#: S020), the existing and hot oil heaters at the Plant are subject to this rule. These units have allowable and potential PM emission rates as follows:

Emissions Unit ID	Maximum Heat Input (MMBtu/hr)	Allowable PM Emission Rate (lb/hr)	Potential PM Emission Rate (lb/hr)
S001	216.7	19.50	1.61
S013	26.3	2.37	0.19
S016	61.6	5.54	0.46
S017	61.6	5.54	0.46
S018	61.6	5.54	0.46
S019	61.6	5.54	0.46
Total		600	3.64

As shown in the above table, these units satisfy the requirements of this rule.

No other requirements of this rule apply to the Plant.

D.2. 45 CSR 4: Discharge of Air Pollutants that Cause Objectionable Odors

This rule prohibits the discharge of air contaminants that cause or contribute to an objectionable odor. This rule applies to the Plant, and BRM will continue to comply with this rule.

D.3. 45 CSR 6: Control of Air Pollution from Combustion of Refuse

This rule establishes emission standards for PM and requirements for activities involving incineration of refuse which are not subject to, or are exempted from, regulation under a federal counterpart for specific combustion sources. This rule also prohibits (with limited exception) open burning and sets forth the registration, permitting, reporting, testing, emergency, natural disaster and exemption provisions for activities involving the combustion of refuse and land clearing debris. This rule applies to the Plant. BRM will continue to comply with the open burning provisions of this rule.

This rule limits the Flare's visible emissions to 20% opacity, except during periods aggregating to no more than eight (8) minutes in any sixty (60) minute period, during which opacity is limited to 40%. This rule also requires that the Flare be permitted, and that the Flare be tested upon agency request. BRM will operate the ground flare (EU#: S004A) in accordance with this rule. The emergency flare (EU#: S021) will continue to comply with the requirements of this rule.

D.4. 45 CSR 7: To Prevent and Control Particulate Matter Air Pollution from Manufacturing Processes and Associated Operations

This rule establishes emission standards for PM and opacity from manufacturing processes. This rule does not apply to emissions regulated by 45 CSR 2, 3, or 5 or to source(s) that have a PTE less than one (1) lb/hr PM and an aggregate of less than one thousand (1,000) lb/yr for all such sources of particulate matter located at the stationary source. Therefore, this rule does not apply to the Plant's fuel burning units (EU#s: S001, S012, S013, S016, S017, S018, S019, S020, and S022) because they are regulated by 45 CSR 2. The remaining emissions sources at the Plant have negligible PM emission rates and/or are not manufacturing processes. Therefore, this rule does not apply.

D.5. 45 CSR 10: To Prevent and Control Air Pollution from the Emission of Sulfur Oxides

This rule establishes weight-based emission standards for SO_2 from fuel burning units. Marshall County is listed as a Priority I region in Table 45-10A. The Plant's heaters are all type "b" units, as defined in the rule. For type "b" fuel burning units in a Priority I region, the SO_2 emission limit is the product of 3.1 and the total design heat inputs for such units in MMBtu/hr, with each stack not exceeding 25% of the total allowable emission rate for the site. All heaters at the Plant are fired on sweet natural gas, with an emission rate well below this limitation.

No other requirements of this rule apply to the Plant.

D.6. 45 CSR 13: Permits for Construction, Modification, Relocation and Operation of Stationary Sources, Notification Requirements, Administrative Updates, Temporary Permits, General Permits, Permission to Commence Construction, and Procedures for Evaluation

This rule establishes the permitting requirements for minor sources. The Plant is currently permitted by Rule 13 Permit No. R13-2896C, in accordance with this rule. The Plant is not a major source of criteria pollutants, and the Project results in a minor modification, subject to the permitting requirements of this rule. Detailed emission rate calculations are included in Attachment N to this application.

D.7. 45 CSR 14: Permits for Construction and Major Modification of Major Stationary Sources for the Prevention of Significant Deterioration of Air Quality

The Plant is a minor source and the Project will not increase emissions of criteria pollutants above the major source thresholds. Therefore, this rule is not applicable.

D.8. 45 CSR 16: Standards of Performance for New Stationary Sources

This rule incorporates by reference the NSPS codified in 40 CFR Part 60. The following sections address the NSPS applicable to the Plant, which include:

- NSPS Supbart A, §60.18 for Flares
- NSPS Subpart Db – Standards of Performance for Industrial-Commercial-Institutional Steam Generating Units
- NSPS Subpart Dc – Standards of Performance for Small Industrial-Commercial-Institutional Steam Generating Units
- NSPS Subpart Kb – Standards of Performance for Volatile Organic Liquid Storage Vessels (Including Petroleum Liquid Storage) for Which Construction, Reconstruction, or Modification Commenced After July 23, 1984
- NSPS KKK – Standards of Performance for Equipment Leaks of VOC from Onshore Natural Gas Processing Plant for Which Construction, Reconstruction, or Modification Commenced After January 20, 1984 and on or Before August 23, 2011
- NSPS IIII – Standards of Performance for Stationary Compression Ignition Internal Combustion Engines
- NSPS OOOO – Standards of Performance for Crude Oil and Natural Gas Production, Transmission and Distribution

D.8.1. NSPS A, §60.18

Because the ground flare (EU#: S004A) controls equipment subject to NSPS standards (e.g., pressure relief valves subject to NSPS OOOO), the ground flare is subject to the requirements of 40 CFR §60.18. BRM will design and operate the flare in accordance with 40 CFR §60.18, including specifications for minimum heating value of the waste gas and flame monitoring, as summarized in Attachment O. The emergency flare (EU#: S021) is used to control upset events only, and thus is not required to comply with this rule.

D.8.2. NSPS Db

NSPS Db (40 CFR 60, Subpart Db - Standards of Performance for Industrial-Commercial-Institutional Steam Generating Units) is applicable to steam generating units that commence construction, modification, or reconstruction after June 19, 1984, and that have a heat input capacity greater than 100 MMBtu/hr. The Hot Oil Heater (EU#: S001) is subject to the NO_X emission limitation of this subpart of 0.1 lb/MMBtu because it fires natural gas, as defined in this rule. The heater will continue to comply with this requirement through the use of next generation Low-NO_X Burners, which have a performance guarantee of 0.026 lb/MMBtu.

The heater meets the exemption from the SO_2 limitations because it fires natural gas, as defined in this rule, and has a PTE less than 0.32 lb/MMBtu SO_2.

BRM will demonstrate continuous compliance with NSPS Db by complying with the applicable monitoring, recordkeeping, and reporting requirements of this rule as outlined in Attachment O.

D.8.3. NSPS Dc

NSPS Dc (40 CFR Part 60, Subpart Dc - Standards of Performance for Small Industrial-Commercial-Institutional Steam Generating Units) outlines specific requirements for steam generating units built after June 9, 1989 with a heat duty between 10 MMBtu and 100 MMBtu. The remaining heaters at the Plant are subject to this rule. Because they fire natural gas, the heaters have no emissions standards, but they will continue to comply with the monitoring, recordkeeping, and reporting requirements of this subpart, as applicable and as outlined in Attachment O. The glycol reboiler (EU#: S020) and regen gas heater (EU#: S022) are not subject to this rule since the fuel firing rate is below 10 MMBtu/hr.

D.8.4. NSPS Kb

NSPS Kb (40 CFR Part 60 Subpart Kb – Standards of Performance for Volatile Organic Liquid Storage Vessels (Including Petroleum Liquid Storage Vessels) for Which Construction, Reconstruction, or Modification Commenced After July 23, 1984) outlines specific requirements for storage vessels containing volatile organic liquids. NSPS Kb is not applicable to pressurized storage vessels, or to storage vessels with a capacity less than 75 cubic meters (472 barrels).

The Natural Gasoline Tanks (EU#: S005 and S023) are the only tanks at the Plant subject to NSPS Kb. These tanks are equipped with a natural gas blanket to reduce VOC emissions. The tank emissions are vented to a closed vent system through a VRU for compression and then to the Hot Oil Heater (EU#: S001) fuel supply. BRM will continue to comply with applicable monitoring, recordkeeping, and reporting requirements of NSPS Kb as outlined in Attachment O.

D.8.5. NSPS KKK

NSPS KKK (40 CFR Part 60 Subpart KKK - Standards of Performance for Equipment Leaks of VOC from Onshore Natural Gas Processing for which Construction, Reconstruction, or Modification commenced after January 20, 1984, and on or before August 23, 2011) is not applicable to the Project, since construction will be commenced after the applicability date of August 23, 2011.

The original Plant construction is subject to NSPS KKK. BRM will continue to comply with the applicable requirements of NSPS KKK as outlined in Attachment O.

D.8.6. NSPS IIII

NSPS IIII (40 CFR Part 60 Subpart IIII - Standards of Performance for Stationary Compression Ignition Internal Combustion Engines) outlines specific requirements for new or modified engines. According to 40 CFR §60.4200(a)(4), compression ignition internal combustion engines commencing construction after July 11, 2005 are subject to these standards. The existing emergency firewater pump engines (EU#s: S002 and S003) are manufacturer-certified as compliant with NSPS IIII; therefore, they meet the requirements of NSPS IIII. BRM will continue to comply with the applicable monitoring, recordkeeping, and reporting requirements of NSPS IIII as outlined in Attachment O.

D.8.7. NSPS OOOO

NSPS OOOO (40 CFR Part 60 Subpart OOOO – Standards of Performance for Crude Oil and Natural Gas Production, Transmission, and Distribution) outlines requirements for well completions, pneumatic controllers, equipment leaks from natural gas processing plants, reciprocating compressors, centrifugal compressors, and storage vessels which are constructed, modified or reconstructed after August 23, 2011.

The existing Plant commenced construction prior to August 23, 2011, and, therefore, is not subject to this rule. The NGL fractionation unit is subject to NSPS OOOO.

This equipment, which is collectively labelled Fugitive Area 2 (EU#: FUG AREA 2), is subject to the equipment leak standards for onshore natural gas processing plants. According to §60.5400 equipment leaks must comply with the requirements of §§ 60.482-1a(a), (b), and (d), 60.482-2a, and 60.482-4a through 60.482-11a, except as provided in § 60.5401. BRM will continue to comply with the requirements of this rule with the following practices:

- Pumps in light liquid service will be monitored monthly to detect leaks and will be visually inspected every calendar week for indications of liquids dripping, and will follow the protocol for leak repairs as specified in §60.482-2a
- Relief valves in gas service emissions will be routed to the ground flare and will comply with the monitoring and inspection requirements of §60.482-11a in lieu of the requirements of §482-4a(a) and (b).
- Sampling connections will comply with the requirements of §60.482-5a through the use of closed-loop sampling that does not cause additional emissions during sampling. Also purged

process fluid is returned to the process line. However, per §60.5401(c), sampling connections are not subject to the requirements of §60.482-5(a).

- Valves in vapor service and light liquid service will be monitored monthly to detect leaks as specified in §60.482-7a.
- Pumps, valves, and connectors in heavy liquid service and pressure relief devices in light liquid or heavy liquid service will be inspected and repaired as outlined in §60.482-8a.
- Connectors in vapor service and light liquid service will comply with the monitoring and repair requirements of §60.482-11a.
- BRM will continue to comply with the recordkeeping requirements of §60.486a and reporting requirements of §60.487a as well as the additional requirements of §60.5421 and §60.5422.

The Ethane Amine Unit (EU#: S014) removes CO_2 and trace amounts of H_2S from the NGL stream. The requirements of NSPS OOOO do not apply to this Amine Unit since it does not process natural gas from wells.

D.9. 45 CSR 17: To Prevent and Control PM Air Pollution from Materials Handling, Preparation, Storage, and Other Sources of Fugitive PM

BRM will continue to utilize dust control measures to prevent fugitive PM from being emitted beyond the property line during the construction of the Project. BRM will also continue to maintain the Plant roads in a manner consistent with this rule.

D.10. 45 CSR 19: Permits for Construction and Modifications in Nonattainment Areas

The Plant is located in the Franklin Tax District in Marshall County, West Virginia. In 2013, EPA designated this area as nonattainment for the 2010 primary SO_2 NAAQS. Therefore, the major source threshold for SO_2 is 100 T/yr. As shown in the Attachment N – Emissions Calculations, the post-Project Plant's potential to emit SO_2 will be well below this threshold. Therefore, this rule does not apply.

D.11. 45 CSR 20: Good Engineering Practices as Applicable to Stack Heights

The Plant does not include any existing or proposed stack that exceeds the Good Engineering Practice height.

D.12. 45 CSR 22: Air Quality Management Fee Program

This rule contains fee structure information for permits to construct and operate. In accordance with 45CSR§22-3, BRM is submitting an application fee in accordance with Rule 13 air permit application as follows:

- NSPS Source: $ 1,000
- Base Fee: $ 1,000

$ 2,000

D.13. 45 CSR 30: Requirements for Operating Permits

The Plant is not a major source with respect to Title V; therefore, this rule does not apply.

D.14. 45 CSR 34: Emission Standards for Hazardous Air Pollutants

This rule incorporates by reference the National Emissions Standards for Hazardous Air Pollutants codified in 40 CFR Part 61 (NESHAPs) and in 40 CFR Part 63 (MACTs).

40 CFR Part 61 contains standards for various materials, including radon, beryllium, mercury, vinyl chloride, radionuclides, benzene, asbestos, and inorganic arsenic emissions from various types of sources. The Plant is not subject to any NESHAPs listed in 40 CFR Part 61.

40 CFR Part 63 contains MACT standards for various source categories and/or industries. The Plant is an area source of HAPs. The Project does not include the installation of any equipment subject to a MACT standard listed in 40 CFR Part 63. The following sections address the MACT standards that potentially apply to the existing Plant, including:

- MACT HH – National Emissions Standards for Hazardous Air Pollutants from Oil and Natural Gas Production Facilities
- MACT ZZZZ – National Emissions Standards for Hazardous Air Pollutants for Stationary Reciprocating Internal Combustion Engines
- MACT DDDDD – National Emission Standards for Hazardous Air Pollutants for Industrial, Commercial, and Institutional Boilers and Process Heaters
- MACT JJJJJJ – National Emissions Standards for Hazardous Air Pollutants for Industrial, Commercial, and Institutional Boilers at Area Sources

D.14.1. MACT HH

MACT HH (40 CFR Part 63 Subpart HH – National Emissions Standards for Hazardous Air Pollutants from Oil and Natural Gas Production Facilities) outlines specific requirements for major or area sources at oil and natural gas production facilities. As previously discussed, the Plant is located at an area source of HAPs. The Glycol Dehydration Unit (EU#: S006) is a TEG dehydration unit. Because its potential benzene emissions are less than 1 T/yr, the unit is only subject to the recordkeeping requirements required to demonstrate exemption from the control requirements of the rule. Attachment O contains a summary of these requirements.

D.14.2. MACT ZZZZ

MACT ZZZZ (40 CFR Part 63 Subpart ZZZZ – National Emissions Standards for Hazardous Air Pollutants for Stationary Reciprocating Internal Combustion Engines) outlines specific requirements for new or modified engines at major and area sources of HAPs. The emergency firewater pump engines (EU#s: S002 and S003) are new compression ignition reciprocating internal combustion engines located

at an area source of HAPs. Accordingly, these units will continue to meet the requirements of MACT ZZZZ by meeting NSPS IIII.

D.14.3. MACT DDDDD

MACT DDDDD (40 CFR Part 63 Subpart DDDDD – National Emission Standards for Hazardous Air Pollutants for Industrial, Commercial, and Institutional Boilers and Process Heaters) outlines specific requirements for industrial, commercial, and institutional boilers and process heaters at major sources of HAPs. The Plant is not a major source of HAPs and is thus not subject to the requirements of this rule.

D.14.4. MACT JJJJJJ

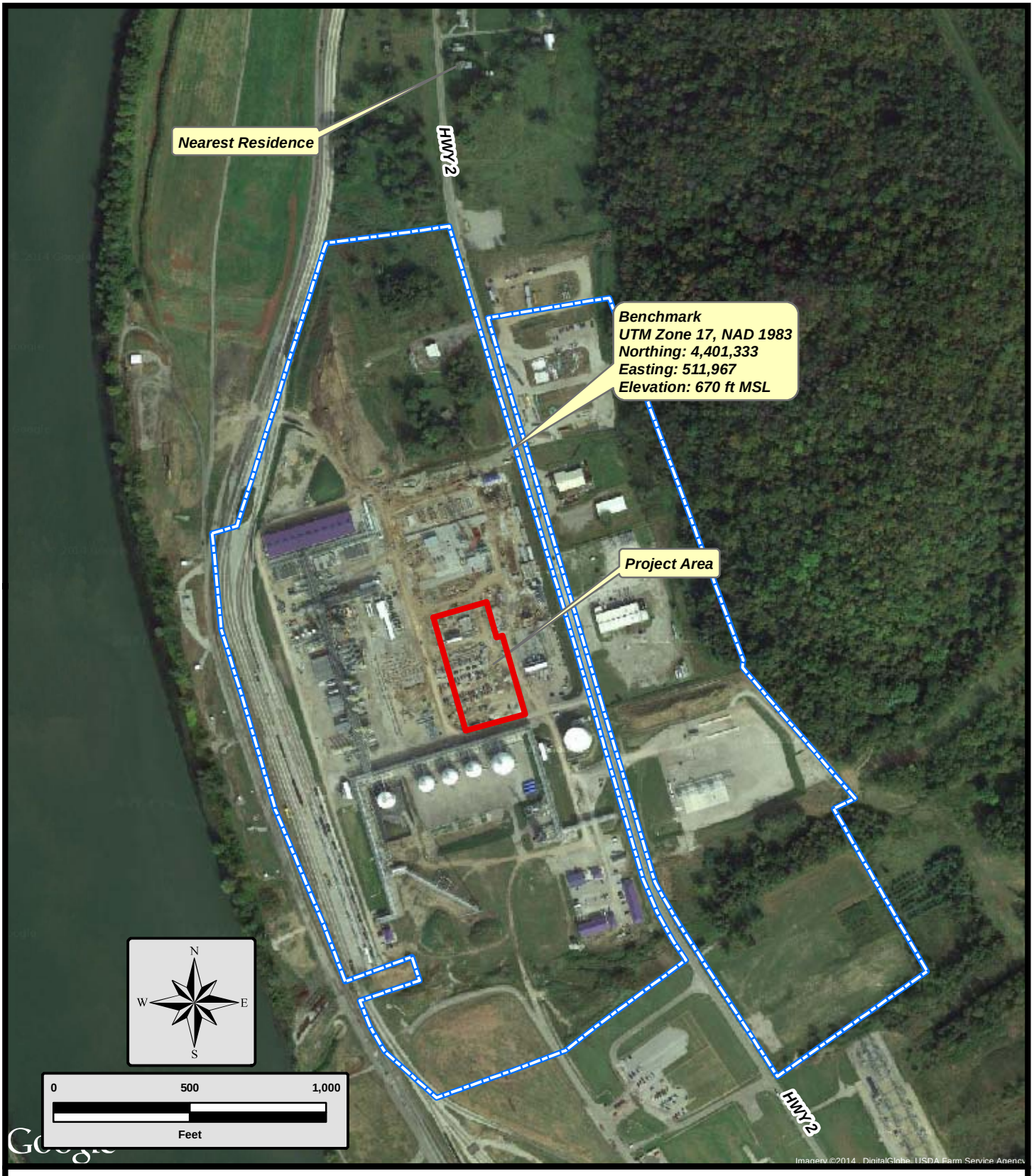
MACT JJJJJJ (40 CFR Part 63 Subpart JJJJJJ – National Emissions Standards for Hazardous Air Pollutants for Industrial, Commercial, and Institutional Boilers at Area Sources) outlines requirements for boilers at area sources of HAPs. Per 63.11195(e), gas-fired boilers as defined by this subpart are not subject to the requirements of this rule. Therefore, the Plant's heaters are not subject to the requirements of this rule.

ATTACHMENT E: PLOT PLANS

RULE 13 AIR PERMIT APPLICATION

NATRIUM EXTRACTION AND FRACTIONATION PROCESSING PLANT

BLUE RACER MIDSTREAM, LLC



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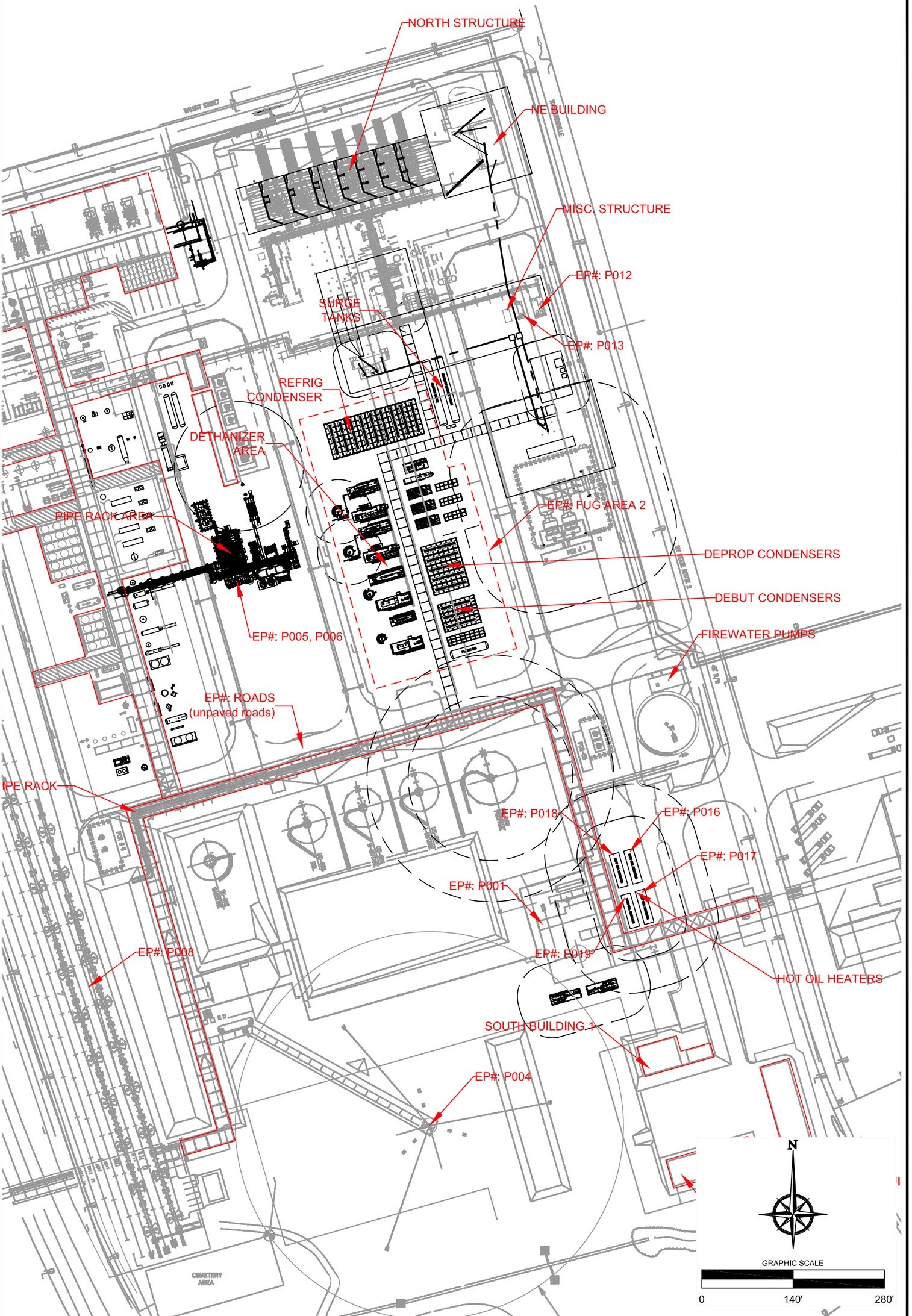
ATTACHMENT E-1

Blue Racer Midstream
Natrium Extraction and
Fractionation Processing Plant
April 2015

from USGS Quadrangle Powhatan Point, WV
Ground Condition Depicted March 2011
Digital Data Courtesy of Google Earth



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ATTACHMENT E-2
PLOT PLAN

BLUE racer MIDSTREAM

Blue Racer Midstream
Natrium Extraction and
Fractionation Processing Plant

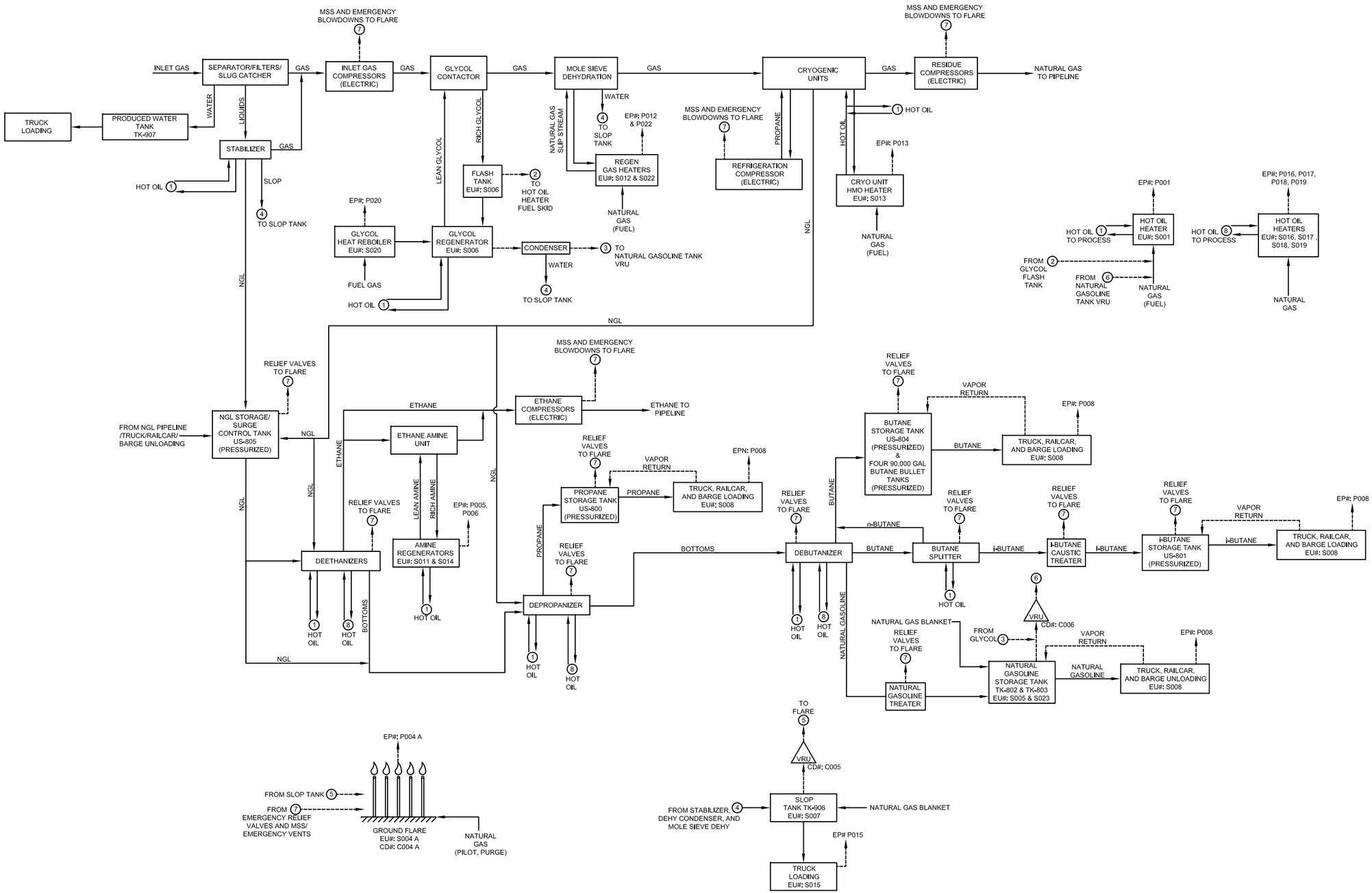
DESIGNED BY:	DETAILED BY:	CHECKED BY:
Blue Racer	LLA	SE
FILE NAME: T:\BlueRacerMidstream\646-04\Figures\CAD		
DATE: 2014	PROJECT NO.: 84800646-04	PLOT SCALE: 1"=100'
DRAWING NO.: TEI-0000	REVISION: 0	ATT: E-2

ATTACHMENT F: DETAILED PROCESS FLOW DIAGRAM

RULE 13 AIR PERMIT APPLICATION

NATRIUM EXTRACTION AND FRACTIONATION PROCESSING PLANT

BLUE RACER MIDSTREAM, LLC



NOTES

1)

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ATTACHMENT F
DETAILED PROCESS FLOW DIAGRAM

BLUEracer MIDSTREAM

Natrium Extraction and Fractionation Processing Plant

DESIGNED BY:	DETAILED BY:	CHECKED BY:
TEI	MCK	ODL
FILE NAME: T:\BlueRacerMid\646-04\646-04.001\Fig\CAD		
DATE: 04/2015	PROJECT NO.: 72500646-11-001	PLOT SCALE: N.T.S.
DRAWING NO.: TEI-0000	REVISION: 0	FIGURE: F

ATTACHMENT G: PROCESS DESCRIPTION

RULE 13 AIR PERMIT APPLICATION

NATRIUM EXTRACTION AND FRACTIONATION PROCESSING PLANT

BLUE RACER MIDSTREAM, LLC

ATTACHMENT G: PROCESS DESCRIPTION

The Natrium Extraction and Fractionation Processing Plant (Plant) is an existing 460 million standard cubic feet per day (MMscfd) natural gas processing plant with natural gas liquids (NGL) processing capability. This Project will authorize the replacement of the existing plant flare (EU# S004) with a ground flare (EU# S004A). All other equipment emissions will remain unchanged as part of this permitting action. The following sections describe the operating configuration of the Plant.

G.1. Inlet Gas/Liquids Separation and Liquids Handling

Gas from the pipeline passes through horizontal separators, or slug catchers, which separate entrained liquids from the inlet gas. In addition, liquids can be received via "pigging" operations. "Pigging" is an industry term to describe a pipeline maintenance activity, in which a solid slug, called a "pig" is inserted into the pipeline at a "pig launcher." As the pig travels through the pipeline with the natural gas, it pushes liquids that have collected in lower areas of the pipeline. The liquids and the pig that is pushing the liquids arrive at a "pig receiver" downstream of the "pig launcher." The liquids are routed into the slug catcher.

The liquids are treated in the stabilizer (application of heat provided by the Plant Hot Oil Heater, where the lighter components are removed and combined with the separated inlet gas for processing. Light-end liquid components driven off in the stabilization process (NGL) are then routed to the pressurized NGL storage/surge tank prior to processing in the fractionation trains. Water/slop oil separated from the NGL in the stabilizer are routed to the Slop Tank and hauled off site via trucks.

The Slop Oil tank is equipped with a natural gas blanket to minimize air emissions. Emissions from the tank are routed via VRU to the ground flare for control.

NGL can also be received at the Plant via pipeline, truck, railcar, or barge. Received NGL is stored in the pressurized NGL tanks prior to processing. The NLG unloading operations are performed under pressure, in order to prevent emissions to the atmosphere.

G.2. Natural Gas Processing

After liquids separation, the inlet gas is compressed. The inlet compressors are electric-driven, such that they do not result in air emissions during normal operations (i.e., other than fugitive equipment piping leaks).

Each compressor is equipped with a blowdown vent through which a small amount of natural gas is emitted during shutdown (i.e., for decompression, which is required for safety purposes). Note that these emissions are re-routed back to the inlet suction when possible. Otherwise, they are routed to the ground flare for combustion.

The ground flare will have one annual emission limit per pollutant, which will include normal operations and scheduled maintenance, startup, and shutdown (MSS) emissions (combustion of blowdown vent emissions).

After compression, the TEG Dehydration Unit uses TEG to remove water from the gas. Rich glycol is routed from the glycol contactor tower to the glycol reboiler, where heat from the Hot Oil Heater is used to drive off the water from the glycol. Lean glycol is then returned to the contactor for reuse. The rich glycol flash tank is not vented to the atmosphere, but is routed to the Hot Oil Heater fuel header for use as fuel. The glycol regenerator still vent is routed first through a condenser for liquid removal (water that is routed to the Slop Tank), then to the inlet of the Natural Gasoline Storage Tanks VRU where it is compressed and routed to the Hot Oil Heater fuel inlet.

From the TEG Unit, the gas is routed to the molecular sieve dehydration unit, where the water content is reduced further. The natural gas-fired mole sieve regenerator heater is used to heat a small amount of natural gas that is slip-streamed from the residue line as needed to regenerate the beds. The gas is then routed back into the system. The molecular sieve units do not have vents to atmosphere. The residue gas from the beds that are regenerated is routed back to the residue gas stream. Therefore, the only emissions from this unit are associated with fugitive piping/equipment leaks and combustion-related emissions from the heater.

After the molecular sieve dehydration unit, the propane-cooled cryogenic units remove heavier components to produce NGL by cooling the stream and reducing the stream pressure. One cryogenic unit utilizes heat from the Hot Oil Heater, and one unit has a dedicated natural gas-fired heat medium oil (HMO) heater. The natural gas leaving the cryogenic units is lean and dry (i.e., pipeline quality), and it is compressed via electric-driven residue gas compressors and shipped off site via pipeline.

The NGL liquids can be transferred back to the NGL storage/surge tanks or directly into the deethanizers of the NGL fractionation trains. The only emissions from these cryogenic units are associated with fugitive piping/equipment leaks and the Cryo Unit HMO Heater.

G.3. NGL Fractionation

NGL leaving the cryogenic units or received on site as raw material feed is fed to a series of trayed columns for separation into constituent product gases. At the bottom of each column is a reboiler that is heated by the Plant's heating oil system. As the NGL stream enters a column in the middle, the reboiler vaporizes a portion of the feed to produce stripping vapors rising inside the column. This stripping vapor rises up through the column contacting down-flowing liquids allowing for the fractionation of the liquids. Vapor leaving the top of the column enters a condenser where heat is removed by a cooling medium and the vapor condensed. Liquid is returned to the column as reflux to limit the loss of heavy components overhead. The product leaving the lower part of the column has the highest boiling point, whereas the hydrocarbon leaving the top of the column has the lowest boiling point.

After the Project, the Plant's NGL Fractionation trains will include three deethanizers, two depropanizers, two debutanizers, and a butane splitter.

Ethane product may be compressed and shipped off site via pipeline or further treated in one of the Plant's two Ethane Amine Units (one existing and one proposed), depending upon customer specifications, prior to transportation.

In the Ethane Amine Units, amine contactors are used to remove CO_2 and the trace amounts of hydrogen sulfide (H_2S) from the ethane product stream. Small amounts of hydrocarbons may also be absorbed in this process as well. The saturated (rich) amine enters a flash tank where gaseous vapors are flashed and vented to atmosphere. After the flash tank, the liquid stream (rich amine) is routed to an amine regenerator, where heat from the Plant's heating oil system volatilizes the remaining CO_2, H_2S and hydrocarbons from the rich amine stream. The lean amine is returned to the amine contactors for reuse while the waste gas from the amine regenerator is vented to the atmosphere. The amine unit vent streams are primarily (~97%) CO_2, with water and trace amounts (~0.5%) of hydrocarbons.

The remaining separated streams (propane, butanes, and natural gasoline) are stored and shipped off-site via truck, railcar, and/or barge loading. All loading is pressurized with vapor return, in order to prevent emissions to atmosphere.

The propane and butane tanks are pressurized. The Natural Gasoline Storage Tanks are equipped with a natural gas blanket for emissions control. The emissions from these tanks are captured and compressed via VRU and routed to the Hot Oil Heater fuel system. The natural gas blanket used for the slop tank is vented to flare during upset events.

G.4. Hot Oil System

The hot oil systems provide heat to the Plant processes. By using oil, the heat can be transferred to the Project processes with a minimum loss of heat to the oil, allowing for a quicker recovery to the desired temperature in a closed-loop system. The hot oil system is a network of piping that circulates hot oil through each of the units and provides heat as needed.

The hot oil systems result in emissions of VOC due to piping equipment leaks (i.e., fugitives). Also, the combustion of sweet natural gas in the heaters results in combustion-related emissions.

G.5. Diesel-Fired Engines

The Plant has two existing emergency diesel fire water pumps in case of fire. These engines are operated in nonemergency situations less than 100 hr/yr for testing and maintenance to ensure reliability during emergency situations.

ATTACHMENT H: MATERIAL SAFETY DATA SHEETS

RULE 13 AIR PERMIT APPLICATION

NATRIUM EXTRACTION AND FRACTIONATION PROCESSING PLANT

BLUE RACER MIDSTREAM, LLC

MSDS **Page**

MATERIAL SAFETY DATA SHEET
Issue Date: 8/10/05
Page 1 of 4

Section I. Company and Product Identification

MANUFACTURER/SUPPLIER
DOMINION TRANSMISSION, INC.
445 West Main Street
Clarksburg, WV 26301

Emergency Telephone Number:
Chemtrec 1-800-424-9300
General MSDS Information:
1-304-627-3760

Product Name: **NATURAL GAS LIQUIDS**

Synonyms/Common Names: NGL's, Raw Product, Petroleum Hydrocarbons
DOT Hazard Class: Class 2.1 Flammable Gas
DOT ID Number: UN 1075
Chemical Family: Mixture
Chemical Formula: Mixture

National Fire Protection Association Hazard Rating:

Health	Fire	Reactivity	Special Hazard
1	4	0	N/A

Hazard Rank Guide:

Least - 0	Slight - 1	Moderate – 2
High – 3	Extreme - 4	

Section II. Hazardous Components

Ingredients	CAS Number	Percent by Wt.	OSHA PEL	ACGIH TLV
Ethane	74-84-0	1-4	NE	Asphyxiant
Propane	74-98-6	1-50	1,000 ppm	Asphyxiant
N-Butane	106-97-8	1-20	800 ppm	800 ppm
Isobutane	75-28-5	1-11	NE	NE
Isopentane	78-78-4	1-7	NE	NE
Pentanes	109-66-0	1-4	600 ppm	600 ppm
Hexane	110-54-3	1-4	50 ppm	50 ppm
N-Pentane	----------	1-6		

Section III. Physical Properties

Appearance: Colorless to straw colored liquid
Odor: Petroleum Odor
Boiling Point: Not established
Vapor Density: >1 (Air = 1)
Vapor Pressure: Not established
Specific Gravity: <1 (Water = 1)
Evaporation Rate: >1 (N-Butyl Acetate = 1)
Volatility: Complete
Water Solubility: Negligible

NATURAL GAS LIQUIDS
Page 2 of 4

Section IV. Fire and Explosion Data

Flash Point:	<-100°F (<-73°C) estimated
Lower Explosive Limits (LEL):	2.0 - 2.9%
Upper Explosive Limits (UEL):	9.5 -13%
Auto Ignite Temp:	882°F (472°C) estimated
Extinguishing Media:	Dry chemical powder, foam, or carbon dioxide (CO_2)
Special Fire Fighting Procedures:	Evacuate area of all unnecessary personnel. Shut off product source and allow fire to burn itself out. Use water fog or spray to cool exposed containers and equipment to prevent overheating, flashbacks or explosions. Firefighters directly addressing the fire must use proper protective equipment including breathing apparatus to protect against hazardous combustion products and/or oxygen deficiencies.
Fire and Explosion Hazards:	DANGER EXTREMELY FLAMMABLE! Highly flammable vapors which are heavier than air may accumulate in low areas. These vapors may travel long distances to a point of ignition and then flash back. Liquid propane will vaporize rapidly at well below ambient temperatures and readily forms flammable mixtures with air. Flames impinging on product storage vessels above the liquid level will cause sudden vessel failure, resulting in a BLEVE (Boiling Liquid Expanding Vapor Explosion), unless the vessel surfaces are kept cooled with water. If this cannot be done, evacuate the area. Gasoline portion may continue to "pool" after propane and butane vaporize.

Section V. Reactivity Data

Stability:	Stable
Conditions To Avoid:	Not applicable
Incompatible Materials:	Oxygen and strong oxidizing agents
Hazardous Decomposition Products:	Carbon oxides and various hydrocarbons form when burned.
Hazardous Polymerization:	Will not occur

Section VI. Health Hazard Data

Primary Routes of Entry:	Inhalation
Eye Contact:	May cause irritation including pain, blurred vision, redness, tearing and superficial corneal turbidity.
Skin Irritation:	May cause slight irritation. Extreme exposure may produce discoloration, muscle weakness, breathing difficulties and other central nervous system effects. Direct contact may cause freeze burns.
Inhalation:	At high concentrations a simple asphyxiant. May produce nausea, diarrhea, loss of appetite, dizziness, disorientation, headache, excitation, rapid respiration, drowsiness, labored breathing, anesthesia and other central nervous system effects. May cause lung paralysis and asphyxiation. Extreme overexposure may cause unconsciousness and respiratory arrest.
Ingestion:	Not a likely route of exposure.

Section VII. Protective Equipment

Ventilation:	To prevent accumulations of explosive mixtures, the use of local exhaust and general room ventilation may be essential. If mechanical ventilation is used, electrical equipment must meet National Electric Code requirements. Portable air movers, properly grounded, may be used.
Respiratory:	Not generally required. In case of spill or leak resulting in unknown concentration, use only NIOSH/MSHA approved self contained breathing apparatus.
Eye:	Use safety glasses with side shields.
Skin:	No special garments required. Avoid unnecessary skin contamination with material.

Section VIII. Emergency First Aid

Inhalation:	Move victim to area of fresh air. For respiratory distress give air, oxygen or administer cardiopulmonary resuscitation if needed. Seek medical attention -- call 911 or emergency medical services.
Eye Contact:	Flush eyes gently with water for at least 15 minutes. If illness or adverse symptoms develop, seek medical attention.
Skin Contact:	Immediately flush skin with water for 15 minutes. Frozen tissue should be gradually warmed using warm water. Clothing frozen to the skin should be thawed before removal. Do not use hot water! Cryogenic burns may occur as evidenced by blistering. Protect affected area with dry gauze and get prompt medical attention.
Ingestion:	Seek immediate medical attention.

Section IX. Storage, Handling and Transporting

Storage:	Keep containers tightly closed. Keep away from heat, open flames, or other sources of ignition. No smoking or open lighting. Outside or detached storage is preferred. Keep away from oxidizers, e.g. chlorine, oxygen, bleaches, fertilizers.
Handling:	Avoid breathing vapor. Use self-contained breathing apparatus (SCBA) if appropriate. Use explosion-proof equipment and non-sparking tools in areas where explosive vapors may form. Electrically ground and bond shipping container, transfer line and receiving container. Material may be at elevated temperatures and/or pressures. Exercise care when opening tank hatches, sampling ports and/or bleeder valves.
Transporting:	DOT Proper Shipping Name: Liquefied Petroleum Gas Hazard Class: 2.1 Identification Number: UN 1075 DOT Label(s): Flammable Gas DOT Placard: Flammable Gas

Section X. Spill and Disposal

All non-essential personnel should be evacuated. Isolate area until all vapors disperse. Eliminate all ignition sources. Stop leak if you can do it without risk. Wear protective equipment/garments if exposure conditions

warrant. Ventilate enclosed areas to prevent formation of flammable or oxygen-deficient atmospheres. Liquid spills will vaporize rapidly and produce vapor cloud. Be alert for latent pooling of gasoline portion. Because vapors are heavier than air they will not readily disperse. Avoid vapor cloud even with proper respiratory equipment.

Section X. Spill and Disposal Continued

Releases are expected to cause only localized non-persistent environmental damage. Waste mixtures containing these gases should not be allowed to enter drains or sewers where there is a danger of ignition and/or explosion. This material should be disposed of as an auxiliary fuel or burned in a properly designed flare or incinerator (in conformity with all applicable disposal regulations). Venting of gas to atmosphere should be avoided.

Under the Resource Conservation and Recovery Act (RCRA), it is the responsibility of the user of the product to determine, at the time of disposal, whether the material is a hazardous waste subject to RCRA. Consult local, state and federal regulations to ascertain the applicability of hazardous waste storage, transportation and disposal requirements.

The transportation, storage, treatment and disposal of RCRA waste material must be conducted in compliance with 40 CFR 262, 263, 264, 268, and 270. Disposal can occur only in properly permitted facilities. Check state regulations. Chemical additions, processing or otherwise altering this material may make the waste management information presented in this MSDS incomplete, inaccurate or otherwise inappropriate. Disposal of this material must be conducted in compliance with all federal, state and local regulations.

IMPORTANT NOTICE:

Dominion Transmission, Inc. makes no representations or warranties as to the accuracy or completeness of this information. DTI expressly disclaims all warranties of every kind and nature, including those of merchantability and of fitness for a particular purpose with respect to this product and to all information contained herein.

MATERIAL SAFETY DATA SHEET

Product name: **Isobutane**

SECTION I **Supplier Information**

Common Name:	Isobutane, LP Gas
Chemical Name:	Isobutane, Liquefied Propane Gas
Formula/CAS:	C_4H_{10}

Supplier:	Dominion Transmission Corp. PO Bosx 2450 445 West Main Street Clarksburg WV 26302-2450	Phone Emergency Phone: CHEMTREC:	(304) 627-3760 (304) 627-3760 1-800-424-9300

Section II **Ingredient Information**

Propane $C_3 H_8$	% by volume <3	CAS no: 00074-98-6	PEL-OSHA: 1000ppm	TLV-ACGIH 1000 ppm **
Isobutane $C_4 H_{10}$	% by volume >95	CAS no: 00075-28-5	PEL-OSHA: NE	TLV-ACGIH NE
n-Butane $C_4 H_{10}$	% by volume <2.5	CAS no: 00106-97-8	PEL OSHA: 800 ppm	TLV-ACGIH 800 ppm

Ingredient Hazard Statement

** Current OSHA standard for Propane and LPG mixtures. ACGIH labels ethane, propane, and butane as simple asphyxiants (control at 18 vol% minimum oxygen.)

Section III **Physical/Chemical Characteristics**

Boiling Point:	Isobutane @ 1 ATM. 11° F
Specific Gravity:	0.564 (Water =1)
Melting Point:	N/A
Vapor Pressure:	50 to 60 PSI at 100° F
Vapor Density:	2 (Air=1)
Evaporation Rate:	Very rapid
Solubility/Water:	Slightly soluble

Appearance and Odor

A colorless gas at room temperature and 1 ATM pressure. It can be liquefied by lowering the temperature, increasing the pressure or both . It can have a sulfurous odor like "natural gas", but sweetened isobutane has a slight, pleasant odor.

Section IV **Fire and Explosion Hazard Data**

Flash Point:	-117 ° F
Autoignition	860 ° F
LEL	>1.8 %
UEL	8.5 %

NFPA Hazard Classification

Flammable: 4	Health:	Reactivity:	Special:

Extinguishing Media

If feasible, stop the flow of gas. Use water to cool fire-exposed tanks, surroundings and to protect personnel . If gas flow cannot be stopped , reduce the intensity of the fire by directing water spray, dry powder or carbon dioxide at the flame. Do not completely extinguish the flame unless gas flow is shut off.

Isobutane

Unusual Fire and Explosion Hazards

Isobutane is a dangerous fire and explosion hazard when mixed with air. Vapors may migrate for considerable distances before reaching an ignition source at which time the fire would flash back to the source of the release.

Special Fire Fighting Procedures

Those putting out fire must use self-contained breathing apparatus and protective equipment. Continue cooling containers with water until well after fire has been extinguished.

Section V **Reactivity Data**

Stability : Stable when stored as a liquid in steel tanks under its own pressure.
Incompatibility : Avoid oxidizing agents
Miscellaneous: Isobutane burns with a luminous , smoky flame; and it can produce carbon monoxide when oxidized with a deficiency of oxygen.
Hazardous Decomposition or By -Products: Carbon monoxide and volatile hydrocarbon vapors
Polymerization: No
Conditions to avoid: Sparks, open flame, other ignition sources.

Section VI **Health Hazard Data**

Routes of Entry

Inhalation: Yes
Skin: Yes
Ingestion: No
Eyes: Yes

Additional Information

The material is an asphyxiant (and it may have anesthetic properties at very high concentrations). If it is present in sufficient concentrations to reduce the oxygen level below 18% in inhaled air, symptoms such as rapid respiration, mental dullness, lack of coordination, poor judgment, nausea, and unconsciousness may result. (Oxygen deficiency may occur without warning in areas where this gas may displace air).

First Aid:

Inhalation: Remove victim to fresh air. Restore and/or support breathing. Prompt mouth to mouth resuscitation may be indicated. Administer oxygen if exposure was serious or if oxygen deficiency symptoms persist. Get medical help. (Caution: would-be rescuers need to be concerned with their own safety in oxygen deficient areas. Use self contained or air supplied breathing apparatus in such atmospheres.

Liquid contact: Contact with liquefied gas can produce frostbite. Promptly flush affected area with tepid water. If freezing burns have occurred apply a bulky, dry sterile bandage to protect the area and get medical help.

Carcinogenicity: None established

Section VII **Precautions for Safe Handling and Use**

DOT Classification: UN 1075 (LPG) UN 1969 (Propane) UN 1965 (Hydrocarbon Gas Liquefied); Label as: Flammable Gas.

Steps To Be Taken If Material Is Released Or Spilled

Personnel involved in leak stoppage should use self contained breathing equipment and should have protection against direct contact with liquid hydrocarbon. Ventilate closed spaces before entering them. Evacuate area:, eliminate sources of ignition. Supply maximum air ventilation (explosion-proof equipment) to keep concentration well below lower flammability limit. Stop leak or remove leaking cylinder or tank. Place cylinder or tank in remote place and allow gas to slowly bleed off to atmosphere or place in pit and ignite escaping gas.

Waste Disposal Method

Incinerate waste gas by laying a pipeline to a furnace and burning with caution in accordance with federal ,state, and local regulations.

Precautions To Be Taken In Handling and Storage

Store cylinders and tanks in well-ventilated areas, away from heat, sunlight, and sources of ignition. No smoking in areas of storage or use. Electrically bond and ground all lines and equipment used with isobutane Keep away from oxidizing agents and from cylinders or oxygen or chlorine. Follow standard procedures for handling cylinders and tanks of flammable compressed gas. Provide protection against damaging cylinders and tanks. See NFPA # 58 and # 59 for handling and storage of LPG.

Other Precautions

Provide adequate explosion-proof ventilation where this material is used to meet TLV requirements and to keep concentration in air below 25% of LEL. Provide special ventilation in sumps and confined areas. Self contained respirators should be available for non-routine and emergency use. Electrical services and equipment should be explosion-proof where isobutane is used. Where contact with liquid isobutane is possible, use protective clothing, gloves, and face shield. Monitoring methods for LPG-NIOSH # 593 .

Section VIII **Control Measures**

Respiratory Protection

Use Self-Contained or Air-Supplied breathing apparatus only.

Ventilation

Local exhaust, special exhaust, and mechanical exhaust must be Explosion-Proof.

Other Protection

Gloves: Insulated, impervious industrial quality gloves are recommended
Eye Protection: Safety glasses (required) and goggle and /or face shield (recommended).

MATERIAL SAFETY DATA SHEET

Product name: **Normal Butane**

Section I **SUPPLIER INFORMATION**

Common Name: Butane
Chemical Name: N-Butane, Butyl Hydride
Formula: C_4H_{10}

Supplier:	Dominion Transmission Corp.	Phone	(304) 627-3760
	PO Box 2450	Emergency Phone:	(304) 627-3760
	445 West Main Street	CHEMTREC:	1-800-424-9300
	Clarksburg, WV 26302-2450		

Section II **INGREDIENT INFORMATION**

n-Butane C_4H_{10}	% by volume >95	CAS no. 106-97-8	PEL-OSHA: none listed	TLV-ACGIH: 800 ppm**
Propane C_3H_8	% by volume <1	CAS No: 00074-98-6	PEL-OSHA: N/A	TLV-ACGIH 1000 ppm **
Isobutane C_4H_{10}	% by volume <2	CAS no: 00075-28-5	PEL-OSHA: NE	TLV-ACGIH NE
C_5^+ Hydrocarbons	% by volume <2	CAS No:	PEL OSHA: N/A	TLV-ACGIH

Ingredient Hazard Statement

** Current OSHA standard for Butane mixtures. ACGIH labels ethane, propane, and butane as simple asphyxiants (control at 18 vol% minimum oxygen.)

Section III **PHYSICAL/CHEMICAL CHARACTERISTICS**

Boiling Point:	31 ° F	Vapor Density:	2.07 (Air=1)
Specific Gravity:	0.584 @ 31° F (Water=1)	Evaporation Rate:	
Melting Point:	N/A	Solubility/Water:	Slightly
Vapor Pressure:	37 PSI @ 100° F	Solubility in alcohol or ether:	very

Appearance and Odor

A colorless gas at room temperature and 1 ATM pressure. It can be liquefied by lowering the temperature, increasing the pressure or both . It has a slight disagreeable odor.

Section IV **FIRE AND EXPLOSION HAZARD DATA**

Flash Point:	-66 ° F
Autoignition:	
LEL:	1.8%
UEL:	8.4%

NFPA Hazard Classification

Flammable: 4	Health:	Reactivity:	Special:

Extinguishing Media

If feasible, stop the flow of gas. Use water to cool fire-exposed tanks, surroundings and to protect personnel. If gas flow cannot be stopped, reduce the intensity of the fire by directing water spray, dry powder or carbon dioxide at the flame. Do not completely extinguish the flame unless gas flow is shut off.

Unusual Fire and Explosion Hazards

Butane is a dangerous fire and explosion hazard when mixed with air. Vapors may migrate for considerable distances before reaching an ignition source at which time the fire would flash back to the source of the release.
Explosion Hazard: High when exposed to flame, also when mixed with [$Ni(CO)_4 + O_2$]

Special Fire Fighting Procedures

Those putting out fire must use self-contained breathing apparatus and protective equipment. Continue cooling containers with water until well after fire has been extinguished.

Normal Butane

Section V **REACTIVITY DATA** **Normal Butane**

Stability : Stable when stored as a liquid in steel tanks under its own pressure.
Incompatibility : Avoid oxidizing agents; especially $NI(CO)_4$ $+O_2$
Miscellaneous: Butane burns with a luminous , smoky flame; and it can produce carbon monoxide when oxidized with a deficiency of oxygen.
Hazardous Decomposition or By -Products: No pertinent
Polymerization: No

Section VI **HEALTH HAZARD DATA**

Routes of Entry

Inhalation: Yes, can cause dizziness or difficulty in breathing
Skin: Yes, liquid will cause frostbite
Ingestion: Data not available
Eyes: Yes, liquids may cause burns upon direct contact.
Effects of Overexposure:
Acute: produces drowsiness but no other evidence of systemic effect.
Chronic : Systemic effects are unknown, but continued skin exposure to liquid splashes will cause drying and cracking of skin.

Additional Information

The material is an asphyxiant (and it may have anesthetic properties at very high concentrations). If it is present in sufficient concentrations to reduce the oxygen level below 18% in inhaled air, symptoms such as rapid respiration, mental dullness, lack of coordination, poor judgment, nausea, and unconsciousness may result. (Oxygen deficiency may occur without warning in areas where this gas may displace air).

First Aid:

Inhalation: Remove victim to fresh air. Restore and/or support breathing. Prompt mouth to mouth resuscitation may be indicated. Administer oxygen if exposure was serious or if oxygen deficiency symptoms persist. Get medical help. (Caution: would-be rescuers need to be concerned with their own safety in oxygen deficient areas. Use self contained or air supplied breathing apparatus in such atmospheres.)

Liquid contact: Contact with liquefied gas can produce frostbite. Promptly flush affected area with tepid water. If freezing burns have occurred apply a bulky, dry sterile bandage to protect the area and get medical help.

Carcinogenicity: None established

Section VII **PRECAUTIONS FOR SAFE HANDLING AND USE**

DOT Classification: UN 1075 (LPG) UN 1011 (N-Butane) UN 1965 (Hydrocarbon Gas Liquefied); Label as: Flammable Gas.

Steps To Be Taken If Material Is Released Or Spilled

Personnel involved in leak stoppage should use self contained breathing equipment and should have protection against direct contact with liquid hydrocarbon. Ventilate closed spaces before entering them. Evacuate area:, eliminate sources of ignition. Supply maximum air ventilation (explosion - proof equipment) to keep concentration well below lower flammability limit. Stop leak or remove leaking cylinder or tank. Place cylinder or tank in remote place and allow gas to slowly bleed off to atmosphere or place in pit and ignite escaping gas.

Waste Disposal Method

Incinerate waste gas by laying a pipeline to a furnace and burning with caution in accordance with federal ,state, and local regulations.

Precautions To Be Taken In Handling and Storage

Store and use butane cylinders and tanks well-ventilated areas, away from heat, sunlight, and sources of ignition. No smoking in areas of storage or use. Electrically bond and ground all lines and equipment used with butane. Keep away from oxidizing agents and from cylinders or oxygen or chlorine. Follow standard procedures for handling cylinders and tanks of flammable compressed gas. Provide protection against damaging cylinders and tanks. See NFPA # 58 and # 59 for handling and storage of LPG.

Other Precautions

Provide adequate explosion-proof ventilation where this material is used to meet TLV requirements and to keep concentration in air below 25% of LEL. Provide special ventilation in sumps and confined areas. Self contained respirators should be available for non-routine and emergency use. Electrical services and equipment should be explosion-proof where butane is used. Where contact with liquid butane is possible, use protective clothing, gloves and face shield. Monitoring methods for LPG-NIOSH # 593.

Normal Butane

Section VIII **CONTROL MEASURES** **Normal Butane**

Respiratory Protection: Use self-contained or Air-Supplied breathing apparatus only.
Ventilation: Local exhaust, special exhaust, and mechanical exhaust must be Explosion-Proof.
Other Protection: Gloves and face shield

MATERIAL SAFETY DATA SHEET

Product name: **Natural Gasoline**

SECTION I **Supplier Information**

Vendor's Product Name: Natural Gasoline
Synonyms: Casinghead gasoline, 14#
Common Name: Natural Gasoline
Chemical Name: Gasoline
Formula/CAS: See ingredients

Supplier: Dominion Transmission
PO Box 2450
445 West Main Street
Clarksburg, WV 26302-2450

Phone (304)627-3760
Emergency Phone: (304)627-3760
CHEMTREC 1-800-424-9300

Section II **Hazardous Components**

Ingredient	CAS NO.	% (approx.)	TLV	PEL
C_4-C_{12}		100	300 ppm	1000 ppm
Benzene	71-43-2	0.45	1 ppm	1 ppm
Cyclohexane	110-82-7	3.4	300 ppm	300 ppm
Xylene(s)	1330-20-7	0 29	100ppm	100ppm
Toluene	1080-88-3	0.75	200 ppm	200 ppm

Ingredient Hazard Statement

Flammable, Skin Hazard, Eye Hazard Carcinogen.

Section III **Physical/Chemical Characteristics**

Physical Description: Clear, colorless liquid, distinct hydrocarbon odo r
Boiling Point: Natural gasoline @ 1 ATM. 80° F (IBP)
Specific Gravity: 0.670 (Water =1)
Melting Point : N/A
Vapor Pressure : 11 to 14 PSI at 100° F
Vapor Density: 3-4 (Air=1)
Evaporation Rate: Moderately rapid
Solubility/Water: Slightly soluble

Appearance and Odor

A clear colorless liquid at room temperature and 1 ATM pressure, with a distinct hydrocarbon odor.

Section IV **Fire and Explosion Hazard Data** (based on NFPA gasoline)

Flash Point: -45° F
Autoignition 536° F
LEL >1.4 %
UEL <7.6 %

NFPA Hazard Classification

Flammable: 3 Health: Reactivity: Special:

Extinguishing media

Dry chemical, foam, carbon dioxide

Natural Gasoline

Special Fire Fighting Procedures: Shut off the source of product as soon as possible. Use water to cool fire-exposed tanks, surroundings and to protect personnel, but avoid spraying water on the pooled liquid. If product flow cannot be stopped, reduce the intensity of the fire by directing foam, dry powder or carbon dioxide at the flame.

Unusual Fire and Explosion Hazards

Natural Gasoline is a dangerous fire and explosion hazard when mixed with air. Vapors may migrate for considerable distances before reaching an ignition source at which time the fire would flash back to the source of the release.

Special Fire Fighting Procedures

Those putting out fire must use self-contained breathing apparatus and protective equipment. Continue cooling containers with water until well after fire has been extin guished.

Section V **Reactivity Data**

Stability: Stable.
Incompatibility: Avoid oxidizing agents
Miscellaneous: Natural gasoline flame produces a heavy, black, thick smoke; and it can produce carbon monoxide when oxidized with a deficiency of oxygen.
Hazardous Decomposition or By-Products: Carbon monoxide and volatile hydrocarbon vapors
Polymerization: No
Conditions to avoid: Sparks, open flame, other ignition sources.

Section VI **Health Hazard Data**

Routes of Entry

Inhalation: Yes
Skin: Yes
Ingestion: Yes
Eyes: Yes

Additional Information

The material is an asphyxiant (and it may have anesthetic properties at very high concentrations). If it is present in sufficient concentrations to reduce the oxygen level below 18% in inhaled air, sy mptoms such as rapid respiration, mental dullness, lack of coordination, poor judgment, nausea, and unconsciousness may result. (Oxygen deficiency may occur without warning in areas where this gas may displace air.)

First Aid:

Inhalation: Remove victim to fresh air. Restore and/or support breathing. Prompt mouth to mouth resuscitation may be indicated. Administer oxygen if exposure was serious or if oxygen deficiency symptoms persist. Get medical help. (Caution: would-be rescuers need to be concerned with their own safety in oxygen deficient areas. Use self contained or air supplied breathing apparatus in such atmospheres.

Liquid contact: Dermal contact may result in drying of the skin and chronic dermatitis. Can cause blistering. May be absorbed through the skin and cause CNS depression.

Carcinogenicity: None established

Section VII **Precautions for Safe Handling and Use**

DOT Classification: UN 1203 Natural Gasoline, label as flammable liquid

Steps To Be Taken If Material Is Released Or Spilled

Personnel involved in leak stoppage should use self-contained breathing equipment and should have protection against direct contact with liquid hydrocarbon. Ventilate closed spaces before entering them. Evacuate area:, eliminate sources of ignition. Supply maximum air ventilation (explosion-proof equipment) to keep concentration well below lower flammability limit. Stop leak or remove leaking can.

Waste Disposal Method

Incinerate waste gas by laying a pipe line to a furnace and burning with caution in accordance with federal, state, and local regulations.

Precautions To Be Taken In Handling and Storage

Store in well-ventilated areas, away from heat, sunlight, and sources of ignition. No smoking in areas of storage or use. Electrically bond and ground all lines and equipment used with natural gasoline Keep away from oxidizing agents and from cylinders of oxygen.

Other Precautions

Provide adequate explosion-proof ventilation where this material is used to meet TLV requirements and to keep concentration in air below 25% of LEL. Provide special ventilation in sumps and confined areas. Self-contained respirators should be available for non-routine and emergency use. Electrical services and equipment should be explosion-proof where natural gasoline is used. Where contact with liquid natural gasoline is possible, use protective clothing, gloves, and face shield.

Section VIII **Control Measures**

Respiratory Protection

Use Self-Contained or Air-Supplied breathing apparatus only.

Ventilation

Local exhaust, special exhaust, and mechanical exhaust must be Explosion-Proof.

Other Protection

Gloves: Insulated, impervious industrial quality gloves are recommended
Eye Protection: Safety glasses (required) and goggles and /or face shield (recommended).

DOMINION TRANSMISSION, INC.
MATERIAL SAFETY DATA SHEET

Product Name: **Propane**

Section I **SUPPLIER INFORMATION**

Common Name: LP Gas
Chemical Name: Liquefied Propane Gas
Formula/CAS: C_3H_8

Supplier: Dominion Transmission, Inc.
PO Box 2450
445 West Main Street
Clarksburg, WV 26302-2450

Phone (304) 627-3760
Emergency Phone: (304) 627-3760
CHEMTREC: 1-800-424-9300

Section II **INGREDIENT INFORMATION**

Propane C_3H_8	% by volume >90	CAS No: 00074-98-6	PEL-OSHA: N/A	TLV-ACGIH 1000 ppm **
Ethane C_2H_6	% by volume <7%	CAS No: 00074-84-0	PEL-OSHA: N/A	TLV-ACGIH
C_4^+ Hydrocarbons	% by volume <5%	CAS No:	PEL OSHA: N/A	TLV-ACGIH

Ingredient Hazard Statement

** Current OSHA standard for Propane and LPG mixtures. ACGIH labels ethane, propane, and butane as simple asphyxiant (control at 18 vol% minimum oxygen.)

Section III **PHYSICAL/CHEMICAL CHARACTERISTICS**

Boiling Point: Propane @ 1 ATM. - 47° F
Specific Gravity: 0.508 @ -42.2 ° (Water =1)
Melting Point : N/A
Vapor Pressure : 208 PSI at 100° F

Vapor Density: 1.80 (Air=1)
Evaporation Rate:
Solubility/Water: Slightly soluble
Expansion Ratio Propane Liquid to Vapor: 270:1

Appearance and Odor

A colorless gas at room temperature and 1 ATM pressure. It can be liquefied by lowering the temperature, increasing the pressure, or both . It can have an odor like "natural gas", but pure propane is odorless and requires the addition of odorant.

Section IV **FIRE AND EXPLOSION HAZARD DATA**

Flash Point: -156 ° F
Autoignition 874 ° F
LEL >2 %
UEL 10 %

NFPA Hazard Classification

Flammable: 4 Health: 1 Reactivity: 0 Special: -

Extinguishing Media

Shut off source of product as soon as possible. Use water to cool fire-exposed tanks, surroundings and to protect personnel. If gas flow cannot be stopped, reduce the intensity of the fire by directing water spray, dry powder or carbon dioxide at the flame. Do not completely extinguish the flame unless gas flow is shut off.

Unusual Fire and Explosion Hazards

Propane is a dangerous fire and explosion hazard when mixed with air. Vapors may migrate for considerable distances before reaching an ignition source at which time the fire would flash back to the source of the release.

Special Fire Fighting Procedures

Those putting out fire in confined spaces must use SCBA and protective equipment. Continue cooling containers with water until well after fire has been extinguished. Flames impinging on product storage vessels above the liquid level, will cause sudden vessel failure in approximately eight or more minutes resulting in a BLEVE (Boiling Liquid Expansion Violent Explosion), unless vessels are cooled by water. If this cannot be done, evacuate the area. Vapors will seek low-lying areas.

Product Name: **Propane**

Section V **REACTIVITY DATA**

Stability : Stable when stored as a liquid in steel tanks under its own pressure.
Incompatibility : Avoid oxidizing agents.

Miscellaneous: Propane burns with a luminous, smoky flame, and it can produce carbon monoxide when oxidized with a deficiency of oxygen. One volume of propane requires about twenty-five volumes of air for complete combustion.

Hazardous Decomposition or By -Products:

Polymerization: No

Section VI **HEALTH HAZARD DATA**

Routes of Entry

Inhalation: Yes
Skin: Yes
Ingestion: No
Eyes: Yes

Additional Information

The material is an asphyxiant (and it may have anesthetic properties at very high concentrations). If it is present in sufficient concentrations to reduce the oxygen level below 18% in inhaled air, symptoms such as rapid respiration, mental dullness, lack of coordination, poor judgment, nausea, and unconsciousness may result. (Oxygen deficiency may occur without warning in areas where this gas may displace air.)

First Aid:
Inhalation: Remove victim to fresh air. Restore and/or support breathing. Prompt mouth-to-mouth resuscitation may be indicated. Administer oxygen if exposure was serious or if oxygen deficiency symptoms persist. Get medical help. (Caution: would-be rescuers need to be concerned with their own safety in oxygen deficient areas. Use self-contained or air-supplied breathing apparatus in such atmospheres.)

Liquid contact: Contact with liquefied gas can produce frostbite. Promptly flush affected area with tepid water. If freezing burns have occurred, apply a bulky, dry sterile bandage to protect the area and get medical help.

Carcinogenicity: None established

Section VII **PRECAUTIONS FOR SAFE HANDLING AND USE**

DOT Classification: UN 1075 (LPG) UN 1978 (Propane) ; Label as: Flammable Gas; Shipping Name: Propane, Liquefied Petroleum Gas

Steps To Be Taken If Material Is Released Or Spilled

Personnel involved in leak stoppage must assure adequate oxygen for breathing, or should use self-contained breathing equipment and should have protection against direct contact with liquid hydrocarbon. Use water fog to displace vapors. Ventilate closed spaces before entering them.

Evacuate area, eliminate sources of ignition. Supply maximum air ventilation (explosion-proof equipment) to keep concentration well below lower flammability limit. Stop leak or remove leaking cylinder or tank. Place small cylinder or tank in remote place and allow gas to slowly bleed off to atmosphere or place in pit and ignite escaping gas, or install flare stack.

Waste Disposal Method

Incinerate waste gas by laying a pipeline to a furnace or flare stack and burning with caution in accordance with federal, state, and local regulations.

Precautions To Be Taken In Handling and Storage

Store and use propane cylinders and tanks in well-ventilated areas, away from heat, sunlight, and sources of ignition. No smoking in areas of storage or use. Electrically bond and ground all lines and equipment used with propane. Keep away from oxidizing agents and from cylinders of oxygen or chlorine. Follow standard procedures for handling cylinders and tanks of flammable compressed gas. Provide protection against damaging cylinders and tanks. See NFPA #58 and #59 for handling and storage of LPG.

Other Precautions

Provide adequate explosion-proof ventilation where this material is used to meet TLV requirements and to keep concentration in air below 25% of LEL. Provide special ventilation in sumps and confined areas. Electrical services and equipment should be explosion-proof where propane is used. Where contact with liquid propane is possible, use protective clothing, gloves, goggles, and face shield. Monitoring methods for LPG-NIOSH #593 and for propane -NOSH #587.

Product Name: **Propane**

Section VIII **CONTROL MEASURES**

Respiratory Protection

If concentrations are high enough to warrant respiratory protection, use only SCBA or air-supplied units. Also, the atmosphere may be flammable.

Ventilation

Local exhaust, special exhaust, and mechanical exhaust must be Explosion-Proof.

Other Protection

Gloves, splash goggles and face shield

Issued by: Dominion Transmission, Inc.
September 30, 2001
Revised November 22, 2006
Paul E. Grubb Jr.

Triethylene

MATERIAL SAFETY DATA SHEET

SECTION 1 – Chemical Product

Product/Chemical Name: TRIETHYLENE GLYCOL
Chemical Formula: (CH20CH2CH2OH)2
CAS Number: 112-27-6
Synonyms: TEG

SECTION 2 – Hazards Indentification

Acute Effects:
Inhalation: Short term harmful health effects are not expected from vapor generated at ambient temperatures. No evidence of short term harmful effects from respirable aresol based on available information.
Eye: Splashing in eye causes irritation with transitory disturbances of corneal epithelium. However, these effects diminish and no permanent injury is expected. Vapors are non-irritating.
Skin: Prolonged exposure may cause skin irritation.
Ingestion: Abdominal discomfort, nausea and vomiting may occur.
Carcinogenicity: Not Classifiable as a Human Carcinogen.
Medical Conditions Aggravated by Long-Term Exposure: A knowledge of the available toxicology information and of the physical and chemical properties of the material suggests that overexposure is unlikely to aggravate existing medical conditions.
Chronic Effects: Exposure to high concentrations of aerosol generated at room temperature may cause lung injury and liver dysfunction.

SECTION 3 – First Aid Measures

Inhalation: Remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Call a physician.
Eye Contact: Immediately flush eyes with plenty of water for at least 15 minutes, lifting lower and upper eyelids occasionally. Get medical attention immediately.
Skin Contact: Remove any contaminated clothing. Wash skin with soap and water for at least 15 minutes. Get medical attention.
Ingestion: If large amounts are swallowed, give water to drink and get medical advice. Never give anything by mouth to an unconscious person. Get medical attention.

SECTION 4 – Fire Fighting Measures

Flash Point: 350^{0}F (176.6^{0}C)
Flash Point Method: CC
Burning Rate: Not available
Autoignition Temperature: 700^{0}F (371^{0}C)
LEL: 0.9% v/v
UEL: 9.2% v/v
Flammability Classification: Slight fire hazard when exposed to heat or flame.
Extinguishing Media: Dry chemical, foam or carbon dioxide. Water or foam may cause frothing. Water spray may be used to extinguish surrounding fire and cool exposed containers. Water spray will also reduce fume and irritiant gases.
Unusual Fire or Explosion Hazards: Above flash point, vapor-air mixtures are explosive within flammable limits noted above. Containers may explode when involved in a fire. LEAKS INTO POROUS INSULATION MATERIAL MAY IGNITE AT TEMPERATURES FAR BELOW PUBLISHED AUTOIGNITION OR INGNITION TEMPERATURES, POTENTIALLY EVEN BELOW THE NORMAL FLASH POINT.

SECTION 4 – Fire Fighting Measures – continued

Hazardous Combustion Products: Carbon Dioxide and Carbon Monoxide may form when heated to decomposition. May produce smoke and irritating fumes when heated to decomposition.
Fire-Fighting Instructions: Do not release runoff from fire control methods to sewers or waterways.
Fire-Fighting Equipment: Wear full protective clothing and NIOSH approved self-contained breathing apparatus with full facepiece in the pressure demand or positive pressure mode.

SECTION 5 – Accidental Release Measures

Spill/Leak Procedures: Ventilate area of leak or spill. Remove all sources of ignition. Wear appropriate personal protective equipment. Isolate hazard area. Keep unnecessary and unprotected personnel from entering. Use non-sparking tools and equipment. Do not flush to sewer.
Small Spills: Contain and recover liquid when possible. Collect liquid in an appropriate container or absorb with an inert material (e.g., vermiculate, dry sand), and place in a chemical waste container. Do not use combustible materials, such as saw dust.
Large Spills:
Containment: Wear respirator and protective clothing as appropriate. Shut off source of leak if safe to do so. For large spills, dike far ahead of liquid spill for later disposal. Do not release into sewers or waterways.
Cleanup: Contain and recover liquid when possible. Collect liquid in appropriate container. Absorb residue with an inert material. Consult with your environmental department for detailed clean up instructions.
Regulatory Requirements: Follow applicable OSHA regulations (29CFR 1910.120). CERCLA requires reporting spills and release to soil, water and air in excess of reportable quantities.

SECTION 6 – Handling and Storage

Handling Precautions: Potential peroxide former. Store away from heat and light. If peroxide formation is suspected, do not open or move container.
Storage Requirements: Store in a cool, dry ventilated area. Separate from acids and oxidizing materials.
Regulatory Requirements: This product contains the following chemical(s) subject to the reporting requirements of SARA Title III Section 311, 312, and 313: None

SECTION 7 – Exposure Controls/Personal Protection

Engineering Controls: Controls should be such that adequate ventilation is provided.
Ventilation: Local exhaust ventilation is preferred because it prevents contaminant dispersion into the work area by controlling it at its source.
Respiratory Protection: Seek professional advice prior to respirator selection and use. Follow OSHA respirator regulations (29 CFR 1910.134) and, if necessary wear a MSHA/NIOSH approved respirator. Select respirator based on its suitability to provide adequate worker protection for given working conditions, level of airborne contamination, and presence of sufficient oxygen. For emergency or non-routine operations (cleaning spills, reactor vessels, or storage tanks), wear an SCBA. *Warning! Air-purifying respirators do not protect workers in oxygen-deficient atmospheres.* If respirators are used, OSHA requires a written respiratory protection program.
Protective Clothing/Equipment: Wear chemically protective gloves, boots, aprons, and gauntlets to prevent prolonged or repeated skin contact. Wear protective eyeglasses or chemical safety goggles, per OSHA eye and face protection regulations (29CFR 1910.133). Contact lenses are not eye protective devices. Appropriate eye protection must be worn instead of, or in conjunction with contact lenses.
Contaminated Equipment: Separate contaminated work clothes from street clothes. Launder before reuse. Remove this material from your shoes and clean personal protective equipment.
Comments: Never eat, drink or smoke in work areas. Practice good personal hygiene after using this material.

SECTION 7 – Physical and Chemical Properties

Physical State: Liquid
Appearance and Odor: Clear, Colorless, mild odor
Odor Threshold: NA
Vapor Pressure: <0.01 mm Hg @ 20 C
Vapor Density (Air=1): 5.2
Formula Weight: 150.7
Density: 9.3 lbs/gal @ 20^0 C
Specific Gravity (H2O=1, @ 4^0C): 1.12
pH: NA

Water Solubility: Soluble
Other Solubilities: Alcohols, methyl isosbutyl carbitol
Boiling Point: 285^0 C (545^0F)
Freezing/Melting Point: -5^0 C (23^0 F)
Viscosity: 29cP @ 20^0 C
Refractive Index: 1.447 @ 20^0C
Surface Tension: 47 dyne/cm @ 20^0C
% Volatile: Negligable @ 25^0 C
Evaporation Rate: NA

SECTION 8 – Stability and Reactivity

Stability: Stable, however forms peroxides of unknown stability.
Polymerization: Hazardous polymerization will not occur.
Chemical Incompatibilities: Strong oxidizing agents, strong bases.
Conditions to Avoid: Heat, flames, ignition sources, and incompatibles.
Hazardous Decomposition Products: Carbon dioxide and carbon monoxide may form when heated to decomposition.

SECTION 9 – Disposal Considerations

Disposal: Follow applicable Federal, state, and local regulations.
Container Cleaning and Disposal: Dispose of container and unused contents in accordance with Federal state and local requirements.

SECTION 10 – Transport Information

Shipping Name: Triethylene Glycol
ID No.: NA
Label: NA

Hazard Class: NA
Packing Group: NA

SECTION 11 – Other Information

Disclaimer: This product is FOR INDUSTRIAL USE ONLY. Keep out of reach of children. Do not take internally.

Best Chemical Corporation believes that the information and recommendations contained herein are accurate as of the date hereof. No warranty of fitness for any particular purpose, warranty of merchantability, or any other warranty expressed or implied, is made concerning the information provided herein. The information provided herein relates on to the specific product designated and may not be valid where such product is used in combination with any other materials or in any process. Further, since the conditions and methods of use of the product and the information referred to herein are beyond the control of Best Chemical, Best Chemical expressly disclaims any and all liability as to any results obtained or arising from any use of the product or reliance on such information.

For addition product information contact Best Chemical Corporation at: P.O. Box 4284, Victoria, Texas 77903, or by phone at 361/575-6184 (24 hour answering service number), or fax at 361/572-8977.

Material Safety Data Sheet

HUNTSMAN
Enriching lives through innovation

1 . Product and company identification

Product name : **DIGLYCOLAMINE® AGENT (DGA)** **MSDS # 00033118**

Product Use : **Welding and cutting of metals.**

Huntsman Petrochemical Corporation
P.O. Box 4980
The Woodlands, TX 77387-4980

TELEPHONE NUMBERS
Transportation Emergency
Company: (800) 328-8501
CHEMTREC: (800) 424-9300
Medical Emergency: (409) 722-9673 (24 Hour)
General MSDS Assistance: (281) 719-6000
Technical Information: (281) 719-7780
E-MAIL: MSDS@huntsman.com

Validation date : **12/6/2007.**

In Case of Emergency

Spills Leaks Fire or Exposure Call Chemtrec: (800) 424-9300
Medical Emergency Information: (800) 328-8501
In Mexico: 01 800 00 214 00

2 . Hazards identification

Physical state : Liquid.

Odor : Amine-like.

OSHA/HCS status : This material is considered hazardous by the OSHA Hazard Communication Standard (29 CFR 1910.1200).

Emergency overview : DANGER !

CAUSES EYE AND SKIN BURNS.
CAUSES RESPIRATORY TRACT IRRITATION.
MAY BE HARMFUL IF SWALLOWED.
ASPIRATION HAZARD IF SWALLOWED - CAN ENTER LUNGS AND CAUSE DAMAGE

Corrosive to the skin. Causes burns. Harmful if swallowed. Irritating to eyes and respiratory system. Do not breathe vapor or mist. Do not ingest. Do not get in eyes or on skin or clothing. Use only with adequate ventilation. Keep container tightly closed and sealed until ready for use. Wash thoroughly after handling.

GENERAL INFORMATION : Read the entire MSDS for a more thorough evaluation of the hazards.

3. Composition/information on ingredients

Name	CAS number	%
2-(2-Aminoethoxy)ethanol	929-06-6	60 - 100

4. First aid measures

Eye contact

Get medical attention immediately. Immediately flush eyes with plenty of water, occasionally lifting the upper and lower eyelids. Check for and remove any contact lenses. Continue to rinse for at least 10 minutes. Chemical burns must be treated promptly by a physician.

Skin contact

Get medical attention immediately. Flush contaminated skin with plenty of water. Remove contaminated clothing and shoes. Wash contaminated clothing thoroughly with water before removing or wear gloves. Continue to rinse for at least 10 minutes. Chemical burns must be treated promptly by a physician. Wash clothing before reuse. Clean shoes thoroughly before reuse.

Inhalation

Get medical attention immediately. Move exposed person to fresh air. If it is suspected that fumes are still present, the rescuer should wear an appropriate mask or self-contained breathing apparatus. Keep person warm and at rest. If not breathing, if breathing is irregular or if respiratory arrest occurs, provide artificial respiration or oxygen by trained personnel. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband. In case of inhalation of decomposition products in a fire, symptoms may be delayed. The exposed person may need to be kept under medical surveillance for 48 hours.

Ingestion

Get medical attention immediately. Wash out mouth with water. Move exposed person to fresh air. Do not induce vomiting unless directed to do so by medical personnel. Chemical burns must be treated promptly by a physician. Never give anything by mouth to an unconscious person.

Notes to physician : Symptomatic and supportive therapy as needed. Following severe exposure medical follow-up should be monitored for at least 48 hours.

5. Fire-fighting measures

Flash point : Closed cup: 124°C (255.2°F)

Products of combustion : Decomposition products may include the following materials:
carbon oxides
nitrogen oxides

Extinguishing media

Suitable : Use an extinguishing agent suitable for the surrounding fire.

Not suitable : None known.

Special exposure hazards : In a fire or if heated, a pressure increase will occur and the container may burst.

Promptly isolate the scene by removing all persons from the vicinity of the incident if there is a fire. No action shall be taken involving any personal risk or without suitable training.

Special protective equipment for fire-fighters : Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode.

6 . Accidental release measures

Personal precautions : No action shall be taken involving any personal risk or without suitable training. Evacuate surrounding areas. Keep unnecessary and unprotected personnel from entering. Do not touch or walk through spilled material. Avoid breathing vapor or mist. Provide adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Put on appropriate personal protective equipment (see section 8).

Environmental precautions : Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil or air).

Methods for cleaning up : Stop leak if without risk. Move containers from spill area. Approach release from upwind. Prevent entry into sewers, water courses, basements or confined areas. Wash spillages into an effluent treatment plant or proceed as follows. Contain and collect spillage with non-combustible, absorbent material e.g. sand, earth, vermiculite or diatomaceous earth and place in container for disposal according to local regulations (see section 13). Dispose of via a licensed waste disposal contractor. Contaminated absorbent material may pose the same hazard as the spilled product. Note: see section 1 for emergency contact information and section 13 for waste disposal.

7 . Handling and storage

Handling : Put on appropriate personal protective equipment (see section 8). Eating, drinking and smoking should be prohibited in areas where this material is handled, stored and processed. Workers should wash hands and face before eating, drinking and smoking. Do not get in eyes or on skin or clothing. Do not ingest. Avoid breathing vapor or mist. If during normal use the material presents a respiratory hazard, use only with adequate ventilation or wear appropriate respirator. Keep in the original container or an approved alternative made from a compatible material, kept tightly closed when not in use. Keep away from acids. Empty containers retain product residue and can be hazardous. Do not reuse container.

Storage : Store in accordance with local regulations. Store in original container protected from direct sunlight in a dry, cool and well-ventilated area, away from incompatible materials (see section 10) and food and drink. Separate from acids. Keep container tightly closed and sealed until ready for use. Containers that have been opened must be carefully resealed and kept upright to prevent leakage. Do not store in unlabeled containers. Use appropriate containment to avoid environmental contamination.

8 . Exposure controls/personal protection

Consult local authorities for acceptable exposure limits.

Preventive Measures : Conditions of use, adequacy of engineering or other control measures, and actual exposures will dictate the need for specific protective devices at your workplace.

Engineering Controls : Use local exhaust ventilation to maintain airborne concentrations below the TLV. Suitable respiratory equipment should be used in cases of insufficient ventilation or where operational procedures demand it. For guidance on engineering control measures refer to publications such as the ACGIH current edition of 'Industrial Ventilation, a manual of Recommended Practice.'

Personal protection

Eyes : Safety eyewear complying with an approved standard should be used when a risk assessment indicates this is necessary to avoid exposure to liquid splashes, mists, gases or dusts.

Skin : Personal protective equipment for the body should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product.

8 . Exposure controls/personal protection

Respiratory : Use a properly fitted, air-purifying or air-fed respirator complying with an approved standard if a risk assessment indicates this is necessary. Respirator selection must be based on known or anticipated exposure levels, the hazards of the product and the safe working limits of the selected respirator.

Hands : Chemical-resistant, impervious gloves complying with an approved standard should be worn at all times when handling chemical products if a risk assessment indicates this is necessary.

9 . Physical and chemical properties

General information

Appearance

Physical state : Liquid.

Color : Clear.

Odor : Amine-like.

Odor threshold : Not available.

Important health, safety and environmental information

pH : 11.8

Boiling point : 221°C (429.8°F)

Melting point : -12.2°C (10°F)

Flash point : Closed cup: 124°C (255.2°F)

Oxidizing properties : Not available.

Vapor pressure : <0.0013 kPa (<0.01 mm Hg)

Relative density : 1.06 (Specific gravity)

Octanol/water partition coefficient : -1.2

Viscosity : Kinematic: 0.075 cm^2/s (7.5cSt at 51.7°C)

Vapor density : 3.6 [Air = 1]

Auto-ignition temperature : 370°C (698°F)

VOC content : 99%

10 . Stability and reactivity

Stability and reactivity : The product is stable.

Incompatibility with various substances : Extremely reactive or incompatible with the following materials: acids.
Reactive or incompatible with the following materials: metals.

Hazardous polymerization : Will not occur.

Hazardous decomposition products : Decomposition products may include the following materials:
carbon oxides
nitrogen oxides

11 . Toxicological information

Toxicity data

Acute toxicity

Product/ingredient name	Test	Species	Result	Exposure
2-(2-Aminoethoxy)ethanol	LD50 Dermal	Rabbit	>2000 mg/kg	-
	LD50 Oral	Rat	2560 to 3000 mg/kg	-
	LD50 Oral	Mouse	2825 mg/kg	-

11 . Toxicological information

Potential acute health effects

Ingestion	: Harmful if swallowed. May cause burns to mouth, throat and stomach.
Inhalation	: Irritating to respiratory system.
Eyes	: Corrosive to eyes. Causes burns.
Skin	: Corrosive to the skin. Causes burns.

Potential chronic health effects

Target organs	: None known.
Carcinogenicity	: No known significant effects or critical hazards.
Mutagenicity	: No known significant effects or critical hazards.
Teratogenicity	: No known significant effects or critical hazards.
Developmental effects	: No known significant effects or critical hazards.
Fertility effects	: No known significant effects or critical hazards.

12 . Ecological information

Aquatic ecotoxicity

Product/ingredient name	Test	Result	Species	Exposure
2-(2-Aminoethoxy)ethanol	-	Acute EC50 190 mg/L	Daphnia	48 hours
	-	Acute IC50 160 mg/L	Algae	72 hours
	-	Acute LC50 460 mg/L	Fish	96 hours

Bioaccumulative potential

Product/ingredient name	$LogP_{ow}$	BCF	Potential
2-(2-Aminoethoxy)ethanol	-1.2	-	low

Environmental effects : This product shows a low bioaccumulation potential.

13 . Disposal considerations

Waste disposal : The generation of waste should be avoided or minimized wherever possible. Dispose of surplus and non-recyclable products via a licensed waste disposal contractor. Disposal of this product, solutions and any by-products should at all times comply with the requirements of environmental protection and waste disposal legislation and any regional local authority requirements. Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers.

14 . Transport information

Transportation Emergency Number 1-800-424-9300 (CHEMTREC).

14 . Transport information

Regulatory information	UN number	Proper shipping name	Class	PG*	Label	Additional information
DOT Classification	UN3055	2-(2-Aminoethoxy)ethanol	8	III		
TDG Classification	UN3055	2-(2-Aminoethoxy)ethanol	8	III		-
IMDG Class	UN3055	2-(2-Aminoethoxy)ethanol	8	III		**Emergency schedules (EmS)** F-A, S-B
IATA-DGR Class	UN3055	2-(2-Aminoethoxy)ethanol	8	III		-

PG* : Packing group

15 . Regulatory information

United States

HCS Classification : Corrosive material

U.S. Federal regulations : **United States inventory (TSCA 8b):** All components are listed or exempted.

CERCLA: Hazardous substances. : No ingredients listed.

SARA 313 : No ingredients listed.

This product does not contain nor is it manufactured with ozone depleting substances.

California Prop 65 : No ingredients listed.

Canada

WHMIS (Canada) : Class E: Corrosive material

CEPA : **Canada inventory:** All components are listed or exempted.

This product has been classified according to the hazard criteria of the CPR and the MSDS contains all the information required by the CPR.

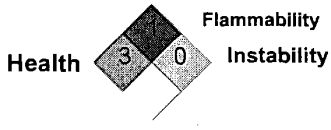
16 . Other information

Label requirements : CAUSES EYE AND SKIN BURNS.
CAUSES RESPIRATORY TRACT IRRITATION.
MAY BE HARMFUL IF SWALLOWED.
ASPIRATION HAZARD IF SWALLOWED - CAN ENTER LUNGS AND CAUSE DAMAGE

Hazardous Material Information System (U.S.A.) :

16 . Other information

National Fire Protection Association (U.S.A.) :



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Date of issue : 12/6/2007.

Date of previous issue : No previous validation.

Notice to reader

While the information and recommendations in this publication are to the best of our knowledge, information and belief accurate at the date of publication, NOTHING HEREIN IS TO BE CONSTRUED AS A WARRANTY, EXPRESS OR OTHERWISE.

IN ALL CASES, IT IS THE RESPONSIBILITY OF THE USER TO DETERMINE THE APPLICABILITY OF SUCH INFORMATION AND RECOMMENDATIONS AND THE SUITABILITY OF ANY PRODUCT FOR ITS OWN PARTICULAR PURPOSE.

THE PRODUCT MAY PRESENT HAZARDS AND SHOULD BE USED WITH CAUTION. WHILE CERTAIN HAZARDS ARE DESCRIBED IN THIS PUBLICATION, NO GUARANTEE IS MADE THAT THESE ARE THE ONLY HAZARDS THAT EXIST.

Hazards, toxicity, and behavior of the products may differ when used with other materials and are dependent upon the manufacturing circumstances or other processes. Such hazards, toxicity and behavior should be determined by the user and made known to handlers, processors and end users.

NO PERSON OR ORGANIZATION EXCEPT A DULY AUTHORIZED HUNTSMAN EMPLOYEE IS AUTHORIZED TO PROVIDE, OR MAKE AVAILABLE, DATA SHEETS FOR HUNTSMAN PRODUCTS. DATA SHEETS FROM UNAUTHORIZED SOURCES MAY CONTAIN INFORMATION THAT IS NO LONGER CURRENT OR ACCURATE. NO PART OF THIS DATA SHEET MAY BE REPRODUCED OR TRANSMITTED IN ANY FORM, OR BY ANY MEANS, WITHOUT PERMISSION IN WRITING FROM HUNTSMAN. ALL REQUESTS FOR PERMISSION TO REPRODUCE MATERIAL FROM THIS DATA SHEET SHOULD BE DIRECTED TO HUNTSMAN, MANAGER, PRODUCT SAFETY, AT THE ABOVE ADDRESS.

HUNTSMAN

Enriching lives through innovation

April 08, 2009

RECEIVED

JUN 0 8 2009

CL THOMAS
Risk Management

THOMAS PETROLEUM
PO BOX 1876
VICTORIA, TX 77902
USA

Dear Customer:

Enclosed please find a Material Safety Data Sheet (MSDS) for the product(s) identified at the bottom of this page. Please make this MSDS available to employees in your organization, including health and safety personnel, and your customers who could come in contact with this product.

We are in the process of updating our MSDSs. On some of the MSDSs, the actual hazard profile of the product will be different, since the process of conversion included a re-evaluation of each product. Please read over the MSDS carefully to determine if any changes will require a re-evaluation of your handling procedures. The amended sections will be highlighted with a triangle-sign at the beginning of the section (☞).

Applicable MSDSs are routinely mailed to our customers with the purchase of our products and, subsequently, with first purchases in every calendar year. Any significant changes in MSDS information also will result in mailing of the revised MSDS with the next order placed. MSDSs also are available upon request for any of our products.

We appreciate your business and we wish to continue serving your business needs. If you have any questions regarding our MSDSs or need copies, please call our MSDS Information Helpline on 1-800-257-5547

MSDS Details			
Products:	Code:	Order Number:	Product No.:
DIGLYCOLAMINE AGENT	33118	55198144	800123

Enclosure

8600 Gosling Rd, The Woodlands, Texas 77381 *281-719-7400 *Fax 281-719-7500

Material Safety Data Sheet
The Dow Chemical Company

Product Name: DOWTHERM* T HEAT TRANSFER FLUID

Issue Date: 11/19/2008
Print Date: 21 Jan 2009

The Dow Chemical Company encourages and expects you to read and understand the entire (M)SDS, as there is important information throughout the document. We expect you to follow the precautions identified in this document unless your use conditions would necessitate other appropriate methods or actions.

1. Product and Company Identification

Product Name
DOWTHERM* T HEAT TRANSFER FLUID

COMPANY IDENTIFICATION
The Dow Chemical Company
2030 Willard H. Dow Center
Midland, MI 48674
USA

Customer Information Number: 800-258-2436

EMERGENCY TELEPHONE NUMBER
24-Hour Emergency Contact: 989-636-4400
Local Emergency Contact: 989-636-4400

2. Hazards Identification

Emergency Overview
Color: Yellow
Physical State: Liquid
Odor: Odorless
Hazards of product:

CAUTION! May cause eye irritation. May cause skin irritation. May cause central nervous system effects; may cause respiratory tract irritation. Highly toxic to fish and/or other aquatic organisms. Isolate area. Keep upwind of spill. Avoid temperatures above 310 °C (590 °F).

OSHA Hazard Communication Standard
This product is a "Hazardous Chemical" as defined by the OSHA Hazard Communication Standard, 29 CFR 1910.1200.

Potential Health Effects
Eye Contact: May cause slight eye irritation. May cause slight corneal injury.
Skin Contact: Prolonged contact may cause moderate skin irritation with local redness.
Skin Absorption: Prolonged skin contact is unlikely to result in absorption of harmful amounts.

Inhalation: At room temperature, exposure to vapor is minimal due to low volatility. Vapor from heated material may cause respiratory irritation and other effects. May cause respiratory irritation and central nervous system depression. Symptoms may include headache, dizziness and drowsiness, progressing to incoordination and unconsciousness.
Ingestion: Very low toxicity if swallowed. Harmful effects not anticipated from swallowing small amounts.
Effects of Repeated Exposure: In animals, effects have been reported on the following organs: Blood.

3. Composition Information

Component	CAS #	Amount
Benzene, C14-30-alkyl derivatives	68855-24-3	100.0 %

4. First-aid measures

Eye Contact: Flush eyes thoroughly with water for several minutes. Remove contact lenses after the initial 1-2 minutes and continue flushing for several additional minutes. If effects occur, consult a physician, preferably an ophthalmologist.
Skin Contact: Wash skin with plenty of water.
Inhalation: Move person to fresh air. If not breathing, give artificial respiration; if by mouth to mouth use rescuer protection (pocket mask, etc). If breathing is difficult, oxygen should be administered by qualified personnel. Call a physician or transport to a medical facility.
Ingestion: No emergency medical treatment necessary.
Notes to Physician: Maintain adequate ventilation and oxygenation of the patient. If burn is present, treat as any thermal burn, after decontamination. No specific antidote. Treatment of exposure should be directed at the control of symptoms and the clinical condition of the patient.

5. Fire Fighting Measures

Extinguishing Media: Water fog or fine spray. Dry chemical fire extinguishers. Carbon dioxide fire extinguishers. Foam. Do not use direct water stream. May spread fire. Alcohol resistant foams (ATC type) are preferred. General purpose synthetic foams (including AFFF) or protein foams may function, but will be less effective.
Fire Fighting Procedures: Keep people away. Isolate fire and deny unnecessary entry. Do not use direct water stream. May spread fire. Burning liquids may be moved by flushing with water to protect personnel and minimize property damage. Avoid accumulation of water. Product may be carried across water surface spreading fire or contacting an ignition source. Contain fire water run-off if possible. Fire water run-off, if not contained, may cause environmental damage. Review the "Accidental Release Measures" and the "Ecological Information" sections of this (M)SDS.
Special Protective Equipment for Firefighters: Wear positive-pressure self-contained breathing apparatus (SCBA) and protective fire fighting clothing (includes fire fighting helmet, coat, trousers, boots, and gloves). If protective equipment is not available or not used, fight fire from a protected location or safe distance.
Unusual Fire and Explosion Hazards: Violent steam generation or eruption may occur upon application of direct water stream to hot liquids. Liquid mist of this product can burn. Flammable concentrations of vapor can accumulate at temperatures above flash point; see Section 9.
Hazardous Combustion Products: During a fire, smoke may contain the original material in addition to combustion products of varying composition which may be toxic and/or irritating. Combustion products may include and are not limited to: Hydrocarbons. Carbon monoxide. Carbon dioxide.

6. Accidental Release Measures

Steps to be Taken if Material is Released or Spilled: Small spills: Absorb with materials such as: Non-combustible material. Collect in suitable and properly labeled containers. Large spills: Dike area to contain spill. Pump into suitable and properly labeled containers. See Section 13, Disposal Considerations, for additional information.
Personal Precautions: Isolate area. Keep upwind of spill. Ventilate area of leak or spill. Keep unnecessary and unprotected personnel from entering the area. Refer to Section 7, Handling, for additional precautionary measures. Use appropriate safety equipment. For additional information, refer to Section 8, Exposure Controls and Personal Protection.
Environmental Precautions: Prevent from entering into soil, ditches, sewers, waterways and/or groundwater. See Section 12, Ecological Information.

7. Handling and Storage

Handling
General Handling: Avoid contact with eyes, skin, and clothing. Avoid breathing vapor. Wash thoroughly after handling. Keep container closed. Use with adequate ventilation. Spills of these organic materials on hot fibrous insulations may lead to lowering of the autoignition temperatures possibly resulting in spontaneous combustion.

Storage
Do not store in: Opened or unlabeled containers. Store away from incompatible materials. See STABILITY AND REACTIVITY section. Store in tightly closed container. See Section 10 for more specific information. Additional storage and handling information on this product may be obtained by calling your Dow sales or customer service contact.

8. Exposure Controls / Personal Protection

Exposure Limits

None established

Personal Protection
Eye/Face Protection: Use chemical goggles.
Skin Protection: Wear clean, body-covering clothing.

Hand protection: Use gloves chemically resistant to this material when prolonged or frequently repeated contact could occur. Examples of preferred glove barrier materials include: Polyethylene. Ethyl vinyl alcohol laminate ("EVAL"). Polyvinyl alcohol ("PVA"). Polyvinyl chloride ("PVC" or "vinyl"). Styrene/butadiene rubber. Viton. Examples of acceptable glove barrier materials include: Butyl rubber. Chlorinated polyethylene. Natural rubber ("latex"). Neoprene. Nitrile/butadiene rubber ("nitrile" or "NBR"). NOTICE: The selection of a specific glove for a particular application and duration of use in a workplace should also take into account all relevant workplace factors such as, but not limited to: Other chemicals which may be handled, physical requirements (cut/puncture protection, dexterity, thermal protection), potential body reactions to glove materials, as well as the instructions/specifications provided by the glove supplier.

Respiratory Protection: Respiratory protection should be worn when there is a potential to exceed the exposure limit requirements or guidelines. If there are no applicable exposure limit requirements or guidelines, wear respiratory protection when adverse effects, such as respiratory irritation or discomfort have been experienced, or where indicated by your risk assessment process. For emergency conditions, use an approved positive-pressure self-contained breathing apparatus. The following should be effective types of air-purifying respirators: Organic vapor cartridge.
Ingestion: Use good personal hygiene. Do not consume or store food in the work area. Wash hands before smoking or eating.

Engineering Controls

Ventilation: Use local exhaust ventilation, or other engineering controls to maintain airborne levels below exposure limit requirements or guidelines. If there are no applicable exposure limit requirements or guidelines, general ventilation should be sufficient for most operations. Local exhaust ventilation may be necessary for some operations.

9. Physical and Chemical Properties

Physical State	Liquid
Color	Yellow
Odor	Odorless
Odor Threshold	Odorless
Flash Point - Closed Cup	> 170 °C (> 338 °F) *ASTM D93*
Flammability (solid, gas)	Not applicable to liquids
Flammable Limits In Air	**Lower**: Not determined **Upper**: Not determined
Autoignition Temperature	375 °C (707 °F) *ASTM D2155*
Vapor Pressure	< 0.01 mmHg @ 20 °C *Measured*
Boiling Point (760 mmHg)	> 320 °C (> 608 °F) *ASTM D86* (@ 1 atmosphere).
Vapor Density (air = 1)	Not determined
Specific Gravity (H2O = 1)	0.86 - 0.89 *Literature*
Freezing Point	< -40 °C (< -40 °F) *Literature* Pour point
Melting Point	Not applicable to liquids
Solubility in Water (by weight)	0.0001 % *Literature*
pH	Not applicable
Decomposition Temperature	No test data available
Evaporation Rate (Butyl Acetate = 1)	Not applicable
Kinematic Viscosity	12 - 27 mm2/s @ 40 °C *ASTM D7042*

10. Stability and Reactivity

Stability/Instability

Thermally stable at typical use temperatures.
Conditions to Avoid: Avoid temperatures above 310 °C (590 °F). Avoid contact with air (oxygen). Exposure to elevated temperatures can cause product to decompose.

Incompatible Materials: Avoid contact with oxidizing materials.

Hazardous Polymerization

Will not occur.

Thermal Decomposition

Decomposition products depend upon temperature, air supply and the presence of other materials.

11. Toxicological Information

Acute Toxicity

Ingestion
LD50, Rat > 5,000 mg/kg
Skin Absorption

LD50, Rabbit > 2,000 mg/kg

Repeated Dose Toxicity

In animals, effects have been reported on the following organs: Blood.

Genetic Toxicology

In vitro genetic toxicity studies were negative.

12. Ecological Information

ENVIRONMENTAL FATE

Movement & Partitioning

Bioconcentration potential is high (BCF > 3000 or Log Pow between 5 and 7).

Persistence and Degradability

Biodegradation may occur under aerobic conditions (in the presence of oxygen).

ECOTOXICITY

Material is very highly toxic to aquatic organisms on an acute basis (LC50/EC50 <0.1 mg/L in most sensitive species).

Fish Acute & Prolonged Toxicity

LC50, rainbow trout (Oncorhynchus mykiss), 96 h: > 100 mg/l

Aquatic Invertebrate Acute Toxicity

EC50, water flea Daphnia magna, 48 h, immobilization: 0.05 mg/l

Aquatic Plant Toxicity

EC50, green alga Pseudokirchneriella subcapitata (formerly known as Selenastrum capricornutum), 96 h: > 1,000 mg/l

13. Disposal Considerations

DO NOT DUMP INTO ANY SEWERS, ON THE GROUND, OR INTO ANY BODY OF WATER. All disposal practices must be in compliance with all Federal, State/Provincial and local laws and regulations. Regulations may vary in different locations. Waste characterizations and compliance with applicable laws are the responsibility solely of the waste generator. AS YOUR SUPPLIER, WE HAVE NO CONTROL OVER THE MANAGEMENT PRACTICES OR MANUFACTURING PROCESSES OF PARTIES HANDLING OR USING THIS MATERIAL. THE INFORMATION PRESENTED HERE PERTAINS ONLY TO THE PRODUCT AS SHIPPED IN ITS INTENDED CONDITION AS DESCRIBED IN MSDS SECTION: Composition Information. FOR UNUSED & UNCONTAMINATED PRODUCT, the preferred options include sending to a licensed, permitted: Recycler. Reclaimer. Incinerator or other thermal destruction device. As a service to its customers, Dow can provide names of information resources to help identify waste management companies and other facilities which recycle, reprocess or manage chemicals or plastics, and that manage used drums. Telephone Dow's Customer Information Group at 1-800-258-2436 or 1-989-832-1556 (U.S.), or 1-800-331-6451 (Canada) for further details.

14. Transport Information

DOT Non-Bulk

NOT REGULATED

DOT Bulk

NOT REGULATED

IMDG
NOT REGULATED

ICAO/IATA
NOT REGULATED

This information is not intended to convey all specific regulatory or operational requirements/information relating to this product. Additional transportation system information can be obtained through an authorized sales or customer service representative. It is the responsibility of the transporting organization to follow all applicable laws, regulations and rules relating to the transportation of the material.

15. Regulatory Information

OSHA Hazard Communication Standard
This product is a "Hazardous Chemical" as defined by the OSHA Hazard Communication Standard, 29 CFR 1910.1200.

Superfund Amendments and Reauthorization Act of 1986 Title III (Emergency Planning and Community Right-to-Know Act of 1986) Sections 311 and 312

Immediate (Acute) Health Hazard	Yes
Delayed (Chronic) Health Hazard	No
Fire Hazard	No
Reactive Hazard	No
Sudden Release of Pressure Hazard	No

Superfund Amendments and Reauthorization Act of 1986 Title III (Emergency Planning and Community Right-to-Know Act of 1986) Section 313
To the best of our knowledge, this product does not contain chemicals at levels which require reporting under this statute.

Pennsylvania (Worker and Community Right-To-Know Act): Pennsylvania Hazardous Substances List and/or Pennsylvania Environmental Hazardous Substance List:
To the best of our knowledge, this product does not contain chemicals at levels which require reporting under this statute.

Pennsylvania (Worker and Community Right-To-Know Act): Pennsylvania Special Hazardous Substances List:
To the best of our knowledge, this product does not contain chemicals at levels which require reporting under this statute.

California Proposition 65 (Safe Drinking Water and Toxic Enforcement Act of 1986)
This product contains no listed substances known to the State of California to cause cancer, birth defects or other reproductive harm, at levels which would require a warning under the statute.

US. Toxic Substances Control Act
All components of this product are on the TSCA Inventory or are exempt from TSCA Inventory requirements under 40 CFR 720.30

CEPA - Domestic Substances List (DSL)
All substances contained in this product are listed on the Canadian Domestic Substances List (DSL) or are not required to be listed.

16. Other Information

Hazard Rating System

NFPA	Health	Fire	Reactivity
	1	1	0

Recommended Uses and Restrictions

Heat transfer fluid. Intended as a heat transfer fluid for closed-loop systems. For industrial use only. We recommend that you use this product in a manner consistent with the listed use. If your intended use is not consistent with the stated use, please contact your sales or technical service representative.

Revision

Identification Number: 81478 / 1001 / Issue Date 11/19/2008 / Version: 3.0
Most recent revision(s) are noted by the bold, double bars in left-hand margin throughout this document.

Legend

N/A	Not available
W/W	Weight/Weight
OEL	Occupational Exposure Limit
STEL	Short Term Exposure Limit
TWA	Time Weighted Average
ACGIH	American Conference of Governmental Industrial Hygienists, Inc.
DOW IHG	Dow Industrial Hygiene Guideline
WEEL	Workplace Environmental Exposure Level
HAZ_DES	Hazard Designation
Action Level	A value set by OSHA that is lower than the PEL which will trigger the need for activities such as exposure monitoring and medical surveillance if exceeded.

The Dow Chemical Company urges each customer or recipient of this (M)SDS to study it carefully and consult appropriate expertise, as necessary or appropriate, to become aware of and understand the data contained in this (M)SDS and any hazards associated with the product. The information herein is provided in good faith and believed to be accurate as of the effective date shown above. However, no warranty, express or implied, is given. Regulatory requirements are subject to change and may differ between various locations. It is the buyer's/user's responsibility to ensure that his activities comply with all federal, state, provincial or local laws. The information presented here pertains only to the product as shipped. Since conditions for use of the product are not under the control of the manufacturer, it is the buyer's/user's duty to determine the conditions necessary for the safe use of this product. Due to the proliferation of sources for information such as manufacturer-specific (M)SDSs, we are not and cannot be responsible for (M)SDSs obtained from any source other than ourselves. If you have obtained an (M)SDS from another source or if you are not sure that the (M)SDS you have is current, please contact us for the most current version.

Lubricant: Pneutech XD 680

MATERIAL SAFETY DATA SHEET	AIRDYNE INTERNATIONAL, LTD 149 10 Henry Rd., Houston, TX 77060 (281) 820-0000

DATE: 10/23/07 **REVISED:** **SUPERSEDES:**

PRODUCT IDENTIFICATION

Trade Name:	**PNEUTECH XD680**
Chief Constituent:	Polyol Ester Blend
Hazardous Ingredients/OSHA:	None
Carcinogenic Ingredients/OSHA/NTP/IARC:	None
Ingredients Regulated by SARA Title 3, Section 313:	None

II. WARNING STATEMENTS

This product is non-hazardous as defined in 29 CFR 1910.1200.

III. PHYSICAL AND CHEMICAL DATA

Appearance and Odor:	Bright and Clear, Mild Odor
Specific Gravity:	< 1.0
Boiling Point:	> 600°F
Vapor Pressure:	< 0.035 mm Hg @ 300°F

IV. FIRE PROTECTION

Flash Point:	> 450°F$_{(coc)}$
Extinguishing Media:	Water fog, dry chemical, foam or CO_2
Special Firefighting Procedure:	Burning will produce toxic fumes. Wear self-contained breathing apparatus and full turn out gear to fight fire. Avoid spreading liquid and fire by water flooding.
Unusual Fire Hazard:	Exposure to heat builds up pressure in closed containers. Cool with water spray.

V. REACTIVITY DATA

Thermal Stability:	Stable
Materials to Avoid:	Strong oxidizers
Hazardous Polymerization:	Will not occur
Hazardous Decomposition Products:	Burning will produce toxic fumes

VI. HEALTH HAZARD DATA

Exposure Limits:	Not applicable
Effects of Overexposure:	Low oral and dermal toxicity. Prolonged or repeated exposure may cause irritation, nausea, and vomiting.

VII. PHYSIOLOGICAL EFFECTS SUMMARY

ACUTE:	
Eyes:	Irritating and may injure eye tissue if not removed promptly.
Skin:	Believed to be minimally irritating
Respiratory System:	Believed to be minimally irritating
CHRONIC:	Not determined
OTHER:	None

VIII. PRECAUTIONS FOR SAFE HANDLING

For general personal hygiene, wash hands thoroughly after handling material. Avoid contact with skin and eyes.

IX. PROTECTION AND CONTROL MEASURES

Protective Equipment:	Impermeable gloves, splash goggles, eye wash and safety shower.
Respiratory Protection:	If overheated, use approved respiratory protective equipment.
Ventilation:	Local exhaust and mechanical recommended.

X. EMERGENCY AND FIRST AID PROCEDURES

Eye Contact:	Flush eyes with water for 15 minutes. Call a physician if irritation develops.
Skin Contact:	Wash skin with soap and water.
Inhalation:	Remove to fresh air. Give artificial respiration or oxygen if necessary.
Ingestion:	First Aid not normally required. If uncomfortable, call physician.

XI. NOTES

HAZARD RATING INFORMATION

	NPCA/HMIS	NFPA	KEY	
Health	1	1	4 = Severe	1 = Slight
Flammability	1	1	3 = Serious	0 = Minimal
Reactivity	0	0	2 = Moderate	

XII. SPILL AND DISPOSAL PROCEDURES

Environmental Impact: Report spills as required to appropriate authorities. U. S. Coast Guard regulations require immediate reporting of spills that could reach any waterway including intermittent dry creeks. Report spill to Coast Guard Toll Free Number (800) 424-8802.

Procedures if Material is Released or Spilled: Absorb on fire retardant treated sawdust, diatomaceous earth, etc. Shovel up and dispose of at an appropriate waste disposal facility in accordance with current applicable laws and regulations, and product characteristics at time of disposal.

Waste Management: Dispose of according to Federal, State and Local regulations.

Toxic Substance Inventory Control Act: All components are included on the TSCA Inventory and are in compliance with the TSCA.

FOR ADDITIONAL INFORMATION CONTACT:

AIRDYNE INTERNATIONAL, LTD
14910 Henry Road
Houston, TX 77060
(281) 820-0000

Lubricant: Cameron Compression Turbo

Cameron Compression Systems TurboBlend™ 46

Material Safety Data Sheet

1. PRODUCT AND COMPANY IDENTIFICATION

Product Name:	Cameron Compression Systems TurboBlend™ 46
MSDS Code:	775472
Intended Use:	Compressor Oil
Responsible Party:	ConocoPhillips Lubricants 600 N. Dairy Ashford Houston, Texas 77079-1175
Customer Service:	888-766-7676
Technical Information:	800-255-9556
MSDS Information:	Internet: http://w3.conocophillips.com/NetMSDS/
Emergency Telephone Numbers:	Chemtrec: 800-424-9300 (24 Hours) California Poison Control System: 800-356-3219

2. HAZARDS IDENTIFICATION

Emergency Overview

This material is not considered hazardous according to OSHA criteria.

NFPA

Appearance: Clear and bright
Physical Form: Liquid
Odor: Petroleum

Potential Health Effects

Eye: Contact may cause mild eye irritation including stinging, watering, and redness.

Skin: Contact may cause mild skin irritation including redness and a burning sensation. Prolonged or repeated contact can defat the skin, causing drying and cracking of the skin, and possible dermatitis (inflammation). A component of this material may cause an allergic skin reaction. No harmful effects from skin absorption are expected.

Inhalation (Breathing): No information available on acute toxicity.

Ingestion (Swallowing): Low degree of toxicity by ingestion.

Signs and Symptoms: Effects of overexposure may include irritation of the digestive tract, nausea and diarrhea. Inhalation of oil mist or vapors at elevated temperatures may cause respiratory irritation.

Pre-Existing Medical Conditions: Conditions aggravated by exposure may include skin disorders.

See Section 11 for additional Toxicity Information.

3. COMPOSITION / INFORMATION ON INGREDIENTS

Component	CAS	Concentration (wt.%)
Lubricant Base Oil (Petroleum)	VARIOUS	>99
Additives	PROPRIETARY	<1

4. FIRST AID MEASURES

Eye: If irritation or redness develops from exposure, flush eyes with clean water. If symptoms persist, seek medical attention.

Skin: Remove contaminated shoes and clothing and cleanse affected area(s) thoroughly by washing with mild soap and water or a waterless hand cleaner. If irritation or redness develops and persists, seek medical attention.

Inhalation (Breathing): If respiratory symptoms develop, move victim away from source of exposure and into fresh air. If symptoms persist, seek medical attention.

Ingestion (Swallowing): First aid is not normally required; however, if swallowed and symptoms develop, seek medical attention.

Notes to Physician: Acute aspirations of large amounts of oil-laden material may produce a serious aspiration pneumonia. Patients who aspirate these oils should be followed for the development of long-term sequelae. Inhalation exposure to oil mists below current workplace exposure limits is unlikely to cause pulmonary abnormalities.

5. FIRE-FIGHTING MEASURES

NFPA 704 Hazard Class

Health: 0 **Flammability:** 1 **Instability:** 0 (0-Minimal, 1-Slight, 2-Moderate, 3-Serious, 4-Severe)

Unusual Fire & Explosion Hazards: This material may burn, but will not ignite readily. If container is not properly cooled, it can rupture in the heat of a fire.

Extinguishing Media: Dry chemical, carbon dioxide, foam, or water spray is recommended. Water or foam may cause frothing of materials heated above 212°F. Carbon dioxide can displace oxygen. Use caution when applying carbon dioxide in confined spaces.

Fire Fighting Instructions: For fires beyond the incipient stage, emergency responders in the immediate hazard area should wear bunker gear. When the potential chemical hazard is unknown, in enclosed or confined spaces, or when explicitly required by DOT, a self contained breathing apparatus should be worn. In addition, wear other appropriate protective equipment as conditions warrant (see Section 8).

Isolate immediate hazard area and keep unauthorized personnel out. Stop spill/release if it can be done with minimal risk. Move undamaged containers from immediate hazard area if it can be done with minimal risk. Water spray may be useful in minimizing or dispersing vapors and to protect personnel. Cool equipment exposed to fire with water, if it can be done with minimal risk. Avoid spreading burning liquid with water used for cooling purposes.

See Section 9 for Flammable Properties including Flash Point and Flammable (Explosive) Limits

6. ACCIDENTAL RELEASE MEASURES

Personal Precautions: This material may burn, but will not ignite readily. Keep all sources of ignition away from spill/release. The use of explosion-proof electrical equipment is recommended. Stay upwind and away from spill/release. Notify persons down wind of the spill/release, isolate immediate hazard area and keep unauthorized personnel out. Wear appropriate protective equipment, including respiratory protection, as conditions warrant (see Section 8). See Sections 2 and 7 for additional information on hazards and precautionary measures.

Environmental Precautions: Stop spill/release if it can be done with minimal risk. Prevent spilled material from entering sewers, storm drains, other unauthorized drainage systems, and natural waterways. Use water sparingly to minimize environmental contamination and reduce disposal requirements.
Spills into or upon navigable waters, the contiguous zone, or adjoining shorelines that cause a sheen or discoloration on the surface of the water, may require notification of the National Response Center (phone number 800-424-8802).

Methods for Containment and Clean-Up: Notify fire authorities and appropriate federal, state, and local agencies. Immediate cleanup of any spill is recommended. Dike far ahead of spill for later recovery or disposal. Absorb spill with inert material such as sand or vermiculite, and place in suitable container for disposal.

7. HANDLING AND STORAGE

Precautions for safe handling: Wash thoroughly after handling. Use good personal hygiene practices and wear appropriate personal protective equipment.

Do Not Use this product in any compressor operating indoors or in closed circulation that produces "breathing air."
Do not enter confined spaces such as tanks or pits without following proper entry procedures such as ASTM D-4276 and 29CFR 1910.146. Do not wear contaminated clothing or shoes.

"Empty" containers retain residue and may be dangerous. Do not pressurize, cut, weld, braze, solder, drill, grind, or expose such containers to heat, flame, sparks, or other sources of ignition. They may explode and cause injury or death. "Empty" drums should be completely drained, properly bunged, and promptly shipped to the supplier or a drum reconditioner. All containers should be disposed of in an environmentally safe manner and in accordance with governmental regulations. Before working on or in tanks which contain or have contained this material, refer to OSHA regulations, ANSI Z49.1, and other references pertaining to cleaning, repairing, welding, or other contemplated operations.

Conditions for safe storage: Keep container(s) tightly closed. Use and store this material in cool, dry, well-ventilated areas away from heat and all sources of ignition. Store only in approved containers. Keep away from any incompatible material (see Section 10). Protect container(s) against physical damage.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

Component	ACGIH	OSHA	Other
Lubricant Base Oil (Petroleum)	TWA: 5mg/m³ STEL: 10 mg/m³ as Oil Mist, if generated	TWA: 5 mg/m³ as Oil Mist, if generated	---

Note: State, local or other agencies or advisory groups may have established more stringent limits. Consult an industrial hygienist or similar professional, or your local agencies, for further information.

Engineering controls: If current ventilation practices are not adequate to maintain airborne concentrations below the established exposure limits, additional engineering controls may be required.

Personal Protective Equipment (PPE):

Eye/Face: The use of eye protection that meets or exceeds ANSI Z.87.1 is recommended to protect against potential eye contact, irritation, or injury. Depending on conditions of use, a face shield may be necessary.

Skin: The use of gloves impervious to the specific material handled is advised to prevent skin contact. Users should check with manufacturers to confirm the performance of their products. Suggested protective materials: Nitrile.

Respiratory: Where there is potential for airborne exposure above the exposure limit a NIOSH certified air purifying respirator equipped with R or P95 filters may be used.

A respiratory protection program that meets or is equivalent to OSHA 29 CFR 1910.134 and ANSI Z88.2 should be followed whenever workplace conditions warrant a respirator's use. Air purifying respirators provide limited protection and cannot be used in atmospheres that exceed the maximum use concentration (MUC) as directed by regulation or the manufacturer's instructions, in oxygen deficient (less than 19.5 percent oxygen) situations, or other conditions that are immediately dangerous to life and health (IDLH).

Suggestions provided in this section for exposure control and specific types of protective equipment are based on readily available information. Users should consult with the specific manufacturer to confirm the performance of their protective equipment. Specific situations may require consultation with industrial hygiene, safety, or engineering professionals.

9 PHYSICAL AND CHEMICAL PROPERTIES

Note: Unless otherwise stated, values are determined at 20°C (68°F) and 760 mm Hg (1 atm). Data represent typical values and are not intended to be specifications.

Appearance:	Clear and bright
Physical Form:	Liquid
Odor:	Petroleum
Odor Threshold:	No data
pH:	Not applicable
Vapor Pressure:	<1
Vapor Density (air=1):	>1
Boiling Point/Range:	No data
Melting/Freezing Point:	<-13°F / <-25°C
Pour Point:	<-13°F / <-25°C
Solubility in Water:	Insoluble
Partition Coefficient (n-octanol/water) (Kow):	No data
Specific Gravity:	0.86 @ 60°F (15.6°C)
Bulk Density:	7.2 lbs/gal
Viscosity:	6.7 cSt @ 100°C; 46 cSt @ 40°C
Percent Volatile:	Negligible
Evaporation Rate (nBuAc=1):	No data
Flash Point:	320°F / 160°C
Test Method:	Pensky-Martens Closed Cup (PMCC), ASTM D93, EPA 1010
LEL (vol % in air):	No data
UEL (vol % in air):	No data
Autoignition Temperature:	No data

10 STABILITY AND REACTIVITY

Stability: Stable under normal ambient and anticipated conditions of storage and handling.

Conditions to Avoid: Extended exposure to high temperatures can cause decomposition.

Materials to Avoid (Incompatible Materials): Avoid contact with strong oxidizing agents.

Hazardous Decomposition Products: Combustion can yield oxides of carbon, nitrogen and sulfur.

Hazardous Polymerization: Not known to occur..

11. TOXICOLOGICAL INFORMATION

Chronic Data:

Lubricant Base Oil (Petroleum)

Carcinogenicity: The petroleum base oils contained in this product have been highly refined by a variety of processes including severe hydrocracking/hydroprocessing to reduce aromatics and improve performance characteristics. All of the oils meet the IP-346 criteria of less than 3 percent PAH's and are not considered carcinogens by NTP, IARC, or OSHA.

Acute Data:

Component	Oral LD50	Dermal LD50	Inhalation LC50
Lubricant Base Oil (Petroleum)	>5 g/kg	>2 g/kg	No data

12. ECOLOGICAL INFORMATION

Lubricant oil basestocks are complex mixtures of hydrocarbons (primarily branched chain alkanes and cycloalkanes) ranging in carbon number from C15 to C50. The aromatic hydrocarbon content of these mixtures varies with the severity of the refining process. White oils have negligible levels of aromatic hydrocarbons, whereas significant proportions are found in unrefined basestocks. Olefins are found only at very low concentrations. Volatilization is not significant after release of lubricating oil basestocks to the environment due to the very low vapor pressure of the hydrocarbon constituents. In water, lubricating oil basestocks will float and will spread at a rate that is viscosity dependent. Water solubilities are very low and dispersion occurs mainly from water movement with adsorption by sediment being the major fate process. In soil, lubricating oil basestocks show little mobility and adsorption is the predominant physical process.

Both acute and chronic ecotoxicity studies have been conducted on lubricant base oils. Results indicate that the acute aquatic toxicities to fish, Daphnia, Ceriodaphnia and algal species are above 1000 mg/l using either water accommodated fractions or oil in water dispersions. Since lubricant base oils mainly contain hydrocarbons having carbon numbers in the range C15 to C50, it is predicted that acute toxicity would not be observed with these substances due to low water solubility. Results from chronic toxicity tests show that the no observed effect level (NOEL) usually exceeds 1000 mg/l for lubricant base oils with the overall weight of experimental evidence leading to the conclusion that lubricant base oils do not cause chronic toxicity to fish and invertebrates.

Large volumes spills of lubricant base oils into water will produce a layer of undissolved oil on the water surface that will cause direct physical fouling of organisms and may interfere with surface air exchange resulting in lower levels of dissolved oxygen. Petroleum products have also been associated with causing taint in fish even when the latter are caught in lightly contaminated environments. Highly refined base oils sprayed onto the surface of eggs will result in a failure to hatch.

Extensive experience from laboratory and field trials in a wide range of crops has confirmed that little or no damage is produced as a result of either aerosol exposure or direct application of oil emulsion to the leaves of crop plants. Base oils incorporated into soil have resulted in little or no adverse effects on seed germination and plant growth at contamination rates up to 4%.

13. DISPOSAL CONSIDERATIONS

The generator of a waste is always responsible for making proper hazardous waste determinations and needs to consider state and local requirements in addition to federal regulations.

This material, if discarded as produced, would not be a federally regulated RCRA "listed" hazardous waste and is not believed to exhibit characteristics of hazardous waste. See Sections 7 and 8 for information on handling, storage and personal protection and Section 9 for physical/chemical properties. It is possible that the material as produced contains constituents which are not required to be listed in the MSDS but could affect the hazardous waste determination. Additionally, use which results in chemical or physical change of this material could subject it to regulation as a hazardous waste.

This material under most intended uses would become "Used Oil" due to contamination by physical or chemical impurities. Whenever possible, Recycle Used Oil in accordance with applicable federal and state or local regulations. Container contents should be completely used and containers should be emptied prior to discard.

14. TRANSPORTATION INFORMATION

U.S. Department of Transportation (DOT)

Shipping Description: Not regulated
Note: If shipped by land in a packaging having a capacity of 3,500 gallons or more, the provisions of 49 CFR, Part 130 apply. (Contains oil)

14. TRANSPORTATION INFORMATION

International Maritime Dangerous Goods (IMDG)
Shipping Description: Not regulated
Note: Federal compliance requirements may apply. See 49 CFR 171.12.

International Civil Aviation Org. / International Air Transport Assoc. (ICAO/IATA)
UN/ID #: Not regulated

	LTD. QTY	Passenger Aircraft	Cargo Aircraft Only
Packaging Instruction #:	---	---	---
Max. Net Qty. Per Package:	---	---	---

15. REGULATORY INFORMATION

CERCLA/SARA - Section 302 Extremely Hazardous Substances and TPQs (in pounds):
This material does not contain any chemicals subject to the reporting requirements of SARA 302 and 40 CFR 372.

CERCLA/SARA - Section 311/312 (Title III Hazard Categories)
Acute Health: No
Chronic Health: No
Fire Hazard: No
Pressure Hazard: No
Reactive Hazard: No

CERCLA/SARA - Section 313 and 40 CFR 372:
This material does not contain any chemicals subject to the reporting requirements of SARA 313 and 40 CFR 372.

EPA (CERCLA) Reportable Quantity (in pounds):
This material does not contain any chemicals with CERCLA Reportable Quantities.

California Proposition 65:
This material does not contain any chemicals which are known to the State of California to cause cancer, birth defects or other reproductive harm at concentrations that trigger the warning requirements of California Proposition 65.

Canadian Regulations:
This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations (CPR) and the MSDS contains all the information required by the Regulations.

WHMIS Hazard Class
None

National Chemical Inventories:
All components are either listed on the US TSCA Inventory, or are not regulated under TSCA.
All components are either on the DSL, or are exempt from DSL listing requirements.

U.S. Export Control Classification Number: EAR99

Other Regulatory Information
Diphenylamine, CASRN 122-39-4, which is present at trace amounts, is subject to the export notification requirements of TSCA Section 12(b).

16. OTHER INFORMATION

Issue Date: 03-Jan-2008
Status: Final
Previous Issue Date: 17-Aug-2006

16. OTHER INFORMATION

Revised Sections or Basis for Revision: NFPA ratings (Section 2)
Regulatory information (Section 15)

MSDS Code: 775472

MSDS Legend:
ACGIH = American Conference of Governmental Industrial Hygienists; CAS = Chemical Abstracts Service Registry; CEILING = Ceiling Limit (15 minutes); CERCLA = The Comprehensive Environmental Response, Compensation, and Liability Act; EPA = Environmental Protection Agency; IARC = International Agency for Research on Cancer; LEL = Lower Explosive Limit; NE = Not Established; NFPA = National Fire Protection Association; NTP = National Toxicology Program; OSHA = Occupational Safety and Health Administration; PEL = Permissible Exposure Limit (OSHA); SARA = Superfund Amendments and Reauthorization Act; STEL = Short Term Exposure Limit (15 minutes); TLV = Threshold Limit Value (ACGIH); TWA = Time Weighted Average (8 hours); UEL = Upper Explosive Limit; WHMIS = Worker Hazardous Materials Information System (Canada)

Disclaimer of Expressed and Implied Warranties:
The information presented in this Material Safety Data Sheet is based on data believed to be accurate as of the date this Material Safety Data Sheet was prepared. HOWEVER, NO WARRANTY OF MERCHANTABILITY, FITNESS FOR ANY PARTICULAR PURPOSE, OR ANY OTHER WARRANTY IS EXPRESSED OR IS TO BE IMPLIED REGARDING THE ACCURACY OR COMPLETENESS OF THE INFORMATION PROVIDED ABOVE, THE RESULTS TO BE OBTAINED FROM THE USE OF THIS INFORMATION OR THE PRODUCT, THE SAFETY OF THIS PRODUCT, OR THE HAZARDS RELATED TO ITS USE. No responsibility is assumed for any damage or injury resulting from abnormal use or from any failure to adhere to recommended practices. The information provided above, and the product, are furnished on the condition that the person receiving them shall make their own determination as to the suitability of the product for their particular purpose and on the condition that they assume the risk of their use. In addition, no authorization is given nor implied to practice any patented invention without a license.

Lubricant: Frick #12B

Prepared according to 29CFR 1910.1200.

1 Chemical Product and Company Identification

Johnson Controls Inc
9104 Yellow Brick Road
Baltimore, MD 21237
Phone: (410) 574-0400

Product Trade Name	FRICK #12B
CAS Number	Not applicable for mixtures.
Synonyms	None.
Generic Chemical Name	Mixture.
Product Type	Multipurpose.
Preparation/Revision Date	25 March 2010

2 Hazards Identification

Appearance	Clear to yellow liquid.
Odor	Mild
Principal Hazards	Caution. • May cause eye irritation.

See Section 11 for complete health hazard information.

3 Composition/Information on Ingredients

Hazardous Ingredients	This material contains no ingredients requiring disclosure under regulatory hazard criteria for this jurisdiction. See Section 11 for additional details.

4 First Aid Measures

Eyes	Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. If eye irritation persists, get medical attention.
Skin	Wash with soap and water. Get medical attention if irritation develops. Launder contaminated clothing before reuse.
Inhalation	Remove exposed person to fresh air if adverse effects are observed.
Oral	DO NOT INDUCE VOMITING. Get immediate medical attention.
Additional Information	Note to physician: Treat symptomatically.

5 Fire Fighting Measures

Flash Point	260 °C, 500 °F COC (Typical)
Extinguishing Media	CO2, dry chemical, or foam. Water can be used to cool and protect exposed material.
Firefighting Procedures	Wear full protective firegear including self-containing breathing apparatus operated in the positive pressure mode with full facepiece, coat, pants, gloves and boots. Water may be ineffective fighting fires.
Unusual Fire & Explosion Hazards	None known.

6 Accidental Release Measures

Spill Procedures	Personal Protective Equipment must be worn, see Personal Protection Section for PPE recommendations. Ventilate area if spilled in confined space or other poorly ventilated areas. Prevent entry into sewers and waterways, dispose of in accordance with all federal, state and local environmental regulation. Pick up free liquid for recycle and/or disposal. Residual liquid can be absorbed on inert material.

7 Handling and Storage

Pumping Temperature	Not determined.
Maximum Handling Temperature	Not determined.
Handling Procedures	Keep containers closed when not in use. Do not discharge into drains or the environment, dispose to an authorized waste collection point. Use appropriate containment to avoid environmental contamination. Avoid breathing dust, fume, gas, mist, vapors or spray. Wash thoroughly after handling. Empty container contains product residue which may exhibit hazards of product.
Maximum Storage Temperature	Not determined.
Storage Procedures	No special storage precautions required.
Loading Temperature	Not determined.

8 Exposure Controls/Personal Protection

Exposure Limits	None established
Other Exposure Limits	None known.
Engineering Controls	Use with adequate ventilation.
Gloves Procedures	Use nitrile or neoprene gloves.
Eye Protection	Safety Glasses.
Respiratory Protection	Use NIOSH/MSHA approved respirator with a combination organic vapor and high efficiency filter cartridge if recommended exposure limit is exceeded. Use self-contained breathing apparatus for entry into confined space, for other poorly ventilated areas and for large spill clean-up sites.
Clothing Recommendation	Long sleeve shirt is recommended. Launder contaminated clothing before reuse.

9 Physical and Chemical Properties

Flash Point	260 °C, 500 °F COC (Typical)
Upper Flammable Limit	Not determined.
Lower Flammable Limit	Not determined.
Autoignition Point	Not determined.
Explosion Data	Material does not have explosive properties.
Vapor Pressure	Not determined.
pH	Not determined.
Specific Gravity	0.99 (15.6 °C)
Bulk Density	8.27 Lb/gal, 0.99 Kg/L
Water Solubility	Soluble.
Percent Solid	Not determined.
Percent Volatile	Not determined.
Volatile Organic Compound	Not determined.
Vapor Density	Not determined.
Evaporation Rate	Not determined.
Odor	Mild
Appearance	Clear to yellow liquid.
Viscosity	92.3 Centistokes (40 °C) 18.6 Centistokes (100 °C)
Odor Threshold	Not determined.
Boiling Point	Not determined.
Pour Point Temperature	-40 °C, -40 °F
Melting / Freezing Point	Not determined.

The above data are typical values and do not constitute a specification. Vapor pressure data are calculated unless otherwise noted.

10 Stability and Reactivity

Stability	Material is normally stable at moderately elevated temperatures and pressures.
Decomposition Temperature	Not determined.
Incompatibility	Strong oxidizing agents.
Polymerization	Will not occur.
Thermal Decomposition	Smoke, carbon monoxide, carbon dioxide, aldehydes and other products of incomplete combustion.

Conditions to Avoid	Not determined.

11	Toxicological Information

	– ACUTE EXPOSURE –
Eye Irritation	May cause eye irritation. Does not meet Canadian D2B or EU R36 criteria. Based on data from similar materials.
Skin Irritation	Not expected to be a primary skin irritant. Based on data from components or similar materials. Prolonged or repeated contact may cause dermatitis. Contact with heated material may cause thermal burns.
Respiratory Irritation	No data available to indicate product or components may cause respiratory irritation under normal workplace conditions and good industrial hygiene practices.
Dermal Toxicity	The LD50 in rabbits is > 2000 mg/Kg. Based on data from components or similar materials.
Inhalation Toxicity	No data available to indicate product or components may be a toxic inhalation hazard.
Oral Toxicity	The LD50 in rats is > 10,000 mg/Kg. Based on data from components or similar materials. Swallowing material may cause irritation of the gastrointestinal lining, nausea, vomiting, diarrhea, and abdominal pain.
Dermal Sensitization	No data available to indicate product or components may be a skin sensitizer.
Inhalation Sensitization	No data available to indicate product or components may be respiratory sensitizers.
	– CHRONIC EXPOSURE –
Chronic Toxicity	No data available to indicate product or components present at greater than 1% are chronic health hazards.
Carcinogenicity	No data available to indicate any components present at greater than 0.1% may present a carcinogenic hazard.
Mutagenicity	No data available to indicate product or any components present at greater than 0.1% are mutagenic or genotoxic.
Reproductive Toxicity	No data available to indicate either product or components present at greater than 0.1% that may cause reproductive toxicity.
Teratogenicity	No data available to indicate product or any components contained at greater than 0.1% may cause birth defects.
	– ADDITIONAL INFORMATION –
Other	No other health hazards known.

12	Ecological Information

	– ENVIRONMENTAL TOXICITY –
Freshwater Fish Toxicity	The acute LC50 is 10 - 100 mg/L based on component data.
Freshwater Invertebrates Toxicity	The acute EC50 is 10 - 100 mg/L based on component data.
Algal Inhibition	The acute EC50 is 10 - 100 mg/L based on component data.
Saltwater Fish Toxicity	Not determined.
Saltwater Invertebrates Toxicity	Not determined.
Bacteria Toxicity	Not determined.
Miscellaneous Toxicity	Not determined.
	– ENVIRONMENTAL FATE –
Biodegradation	Adequate data is not available to estimate the biodegradation potential of this material.
Bioaccumulation	Less than 1.0% of the components potentially bioconcentrate, based on octanol/water coefficients.
Soil Mobility	Not determined.

13	Disposal Considerations

Waste Disposal	This material, if discarded, is not a hazardous waste under RCRA Regulation 40 CFR 261. Treatment, storage, transportation, and disposal must be in accordance with applicable Federal, State/Provincial, and Local regulations.

14	Transport Information

ICAO/IATA I	Not regulated.
ICAO/IATA II	Not regulated.
IMDG	Not regulated.
IMDG EMS Fire	Not applicable.
IMDG EMS Spill	Not applicable.
IMDG MFAG	Not applicable.
MARPOL Annex II	Not determined.
USCG Compatibility	Not determined.
U.S. DOT Bulk	Not regulated.
DOT NAERG	Not applicable.
U.S. DOT (Intermediate)	Not regulated.
U.S. DOT Intermediate NAERG	Not applicable.

U.S. DOT Non-Bulk	Not regulated.
U.S. DOT Non-Bulk NAERG	Not applicable.
Canada	Not regulated.
Mexico	Not regulated.
Bulk Quantity	85000 KG, 187391 lbs.
Intermediate Quantity	11000 KG, 24251 lbs.
Non-Bulk Quantity	400 KG, 882 lbs.

Review classification requirements before shipping materials at elevated temperatures.

15 Regulatory Information

-- Global Chemical Inventories --

USA	All components of this material are on the US TSCA Inventory or are exempt.
Other TSCA Reg.	None known.
EU	All components are in compliance with the EC Seventh amendment Directive 92/32/EEC.
Japan	All components are in compliance with the Chemical Substances Control Law of Japan.
Australia	All components are in compliance with chemical notification requirements in Australia.
New Zealand	May require notification before sale under New Zealand regulations.
Canada	All components are in compliance with the Canadian Environmental Protection Act and are present on the Domestic Substances List.
Switzerland	All components are in compliance with the Environmentally Hazardous Substances Ordinance in Switzerland.
Korea	All components are in compliance in Korea.
Philippines	May require notification before sale under Philippines Republic Act 6969.
China	This product may require notification in China.

-- Other U.S. Federal Regulations --

SARA Ext. Haz. Subst.	This product does not contain greater than 1.0% of any chemical substance on the SARA Extremely Hazardous Substances list.
SARA Section 313	This product does not contain greater than 1.0% (greater than 0.1% for carcinogenic substance) of any chemical substances listed under SARA Section 313.

SARA 311 Classifications

Acute Hazard	No
Chronic Hazard	No
Fire Hazard	No
Reactivity Hazard	No

CERCLA Hazardous Substances None known.

-- State Regulations --

Cal. Prop. 65 This product contains the following chemical(s) known to the state of California to cause cancer and/or birth defects based on maximum impurity levels of components: < 0.01 ppm 2-Naphthylamine, CAS no. 91-59-8 < 0.5 ppm 1-Naphthylamine, CAS no. 134-32-7 < 0.5 ppm Aniline, CAS no. 62-53-3 < 1 ppm 1, 4 Dioxane, CAS no. 123-91-1 < 1 ppm Ethylene oxide, CAS no. 75-21-8

-- Product Registrations --

U.S. Fuel Registration	Not applicable.
Finnish Registration Number	Not Registered
Swedish Registration Number	Not Registered
Norwegian Registration Number	Not Registered
Danish Registration Number	Not Registered
Swiss Registration Number	Not Registered
Italian Registration Number	Not Registered

-- Other / International --

Miscellaneous Regulatory Information Not determined.

16 Other Information

US NFPA Codes

Health	Fire	Reactivity	Special
1	1	0	N/E

(N/E) - None established

HMIS Codes

Health	Fire	Reactivity
0	1	0

Precautionary Labels

Caution.

- May cause eye irritation.

Revision Indicators

Section: 2 Target organs.	Changed: 16 March 2010
Section: 3 Hazardous ingredients.	Changed: 16 March 2010
Section: 5 Unusual fire& explosion hazards.	Changed: 25 March 2010
Section: 8 Hazardous ingredients.	Changed: 16 March 2010
Section: 10 Incompatibility.	Changed: 16 March 2010
Section: 11 Oral toxicity.	Changed: 16 March 2010
Section: 15 SARA section 311/312.	Changed: 16 March 2010
Section: 16 HMIS codes.	Changed: 16 March 2010

Lubricant: Mobil DTE Oil Heavy Medium

MATERIAL SAFETY DATA SHEET

SECTION 1 PRODUCT AND COMPANY IDENTIFICATION

PRODUCT

Product Name: MOBIL DTE OIL HEAVY MEDIUM
Product Description: Base Oil and Additives
Product Code: 201560501590, 600163-00, 970172
Intended Use: Turbine oil

COMPANY IDENTIFICATION

Supplier: EXXON MOBIL CORPORATION
3225 GALLOWS RD.
FAIRFAX, VA. 22037 USA

24 Hour Health Emergency	609-737-4411
Transportation Emergency Phone	800-424-9300
ExxonMobil Transportation No.	281-834-3296
Product Technical Information	800-662-4525, 800-947-9147
MSDS Internet Address	http://www.exxon.com, http://www.mobil.com

SECTION 2 COMPOSITION / INFORMATION ON INGREDIENTS

No Reportable Hazardous Substance(s) or Complex Substance(s).

SECTION 3 HAZARDS IDENTIFICATION

This material is not considered to be hazardous according to regulatory guidelines (see (M)SDS Section 15).

POTENTIAL HEALTH EFFECTS

Low order of toxicity. Excessive exposure may result in eye, skin, or respiratory irritation. High-pressure injection under skin may cause serious damage.

NFPA Hazard ID:	Health:	0	Flammability:	1	Reactivity:	0
HMIS Hazard ID:	Health:	0	Flammability:	1	Reactivity:	0

NOTE: This material should not be used for any other purpose than the intended use in Section 1 without expert advice. Health studies have shown that chemical exposure may cause potential human health risks which may vary from person to person.

SECTION 4 FIRST AID MEASURES

INHALATION

Remove from further exposure. For those providing assistance, avoid exposure to yourself or others. Use

adequate respiratory protection. If respiratory irritation, dizziness, nausea, or unconsciousness occurs, seek immediate medical assistance. If breathing has stopped, assist ventilation with a mechanical device or use mouth-to-mouth resuscitation.

SKIN CONTACT

Wash contact areas with soap and water. If product is injected into or under the skin, or into any part of the body, regardless of the appearance of the wound or its size, the individual should be evaluated immediately by a physician as a surgical emergency. Even though initial symptoms from high pressure injection may be minimal or absent, early surgical treatment within the first few hours may significantly reduce the ultimate extent of injury.

EYE CONTACT

Flush thoroughly with water. If irritation occurs, get medical assistance.

INGESTION

First aid is normally not required. Seek medical attention if discomfort occurs.

SECTION 5 FIRE FIGHTING MEASURES

EXTINGUISHING MEDIA

Appropriate Extinguishing Media: Use water fog, foam, dry chemical or carbon dioxide (CO2) to extinguish flames.

Inappropriate Extinguishing Media: Straight Streams of Water

FIRE FIGHTING

Fire Fighting Instructions: Evacuate area. Prevent runoff from fire control or dilution from entering streams, sewers, or drinking water supply. Firefighters should use standard protective equipment and in enclosed spaces, self-contained breathing apparatus (SCBA). Use water spray to cool fire exposed surfaces and to protect personnel.

Hazardous Combustion Products: Smoke, Fume, Aldehydes, Sulfur oxides, Incomplete combustion products, Oxides of carbon

FLAMMABILITY PROPERTIES

Flash Point [Method]: >223C (433F) [ASTM D-92]
Flammable Limits (Approximate volume % in air): LEL: 0.9 UEL: 7.0
Autoignition Temperature: N/D

SECTION 6 ACCIDENTAL RELEASE MEASURES

NOTIFICATION PROCEDURES

In the event of a spill or accidental release, notify relevant authorities in accordance with all applicable regulations. US regulations require reporting releases of this material to the environment which exceed the applicable reportable quantity or oil spills which could reach any waterway including intermittent dry creeks. The National Response Center can be reached at (800)424-8802.

PROTECTIVE MEASURES

Avoid contact with spilled material. See Section 5 for fire fighting information. See the Hazard Identification Section for Significant Hazards. See Section 4 for First Aid Advice. See Section 8 for advice on the minimum requirements for personal protective equipment. Additional protective measures may be necessary, depending on the specific circumstances and/or the expert judgment of the emergency responders. For emergency responders: Respiratory protection: respiratory protection will be necessary only in special cases, e.g., formation of mists. Half-face or full-face respirator with filter(s) for dust/organic vapor or Self Contained Breathing Apparatus (SCBA) can be used depending on the size of spill and potential level of exposure. If the exposure cannot be completely characterized or an oxygen deficient atmosphere is possible or anticipated, SCBA is recommended. Work gloves that are resistant to hydrocarbons are recommended. Gloves made of polyvinyl acetate (PVA) are not water-resistant and are not suitable for emergency use. Chemical goggles are recommended if splashes or contact with eyes is possible. Small spills: normal antistatic work clothes are usually adequate. Large spills: full body suit of chemical resistant, antistatic material is recommended.

SPILL MANAGEMENT

Land Spill: Stop leak if you can do it without risk. Recover by pumping or with suitable absorbent.

Water Spill: Stop leak if you can do it without risk. Confine the spill immediately with booms. Warn other shipping. Remove from the surface by skimming or with suitable absorbents. Seek the advice of a specialist before using dispersants.

Water spill and land spill recommendations are based on the most likely spill scenario for this material; however, geographic conditions, wind, temperature, (and in the case of a water spill) wave and current direction and speed may greatly influence the appropriate action to be taken. For this reason, local experts should be consulted. Note: Local regulations may prescribe or limit action to be taken.

ENVIRONMENTAL PRECAUTIONS

Large Spills: Dike far ahead of liquid spill for later recovery and disposal. Prevent entry into waterways, sewers, basements or confined areas.

SECTION 7 HANDLING AND STORAGE

HANDLING

Prevent small spills and leakage to avoid slip hazard. Material can accumulate static charges which may cause an electrical spark (ignition source). When the material is handled in bulk, an electrical spark could ignite any flammable vapors from liquids or residues that may be present (e.g., during switch-loading operations). Use proper bonding and/or ground procedures. However, bonding and grounds may not eliminate the hazard from static accumulation. Consult local applicable standards for guidance. Additional references include American Petroleum Institute 2003 (Protection Against Ignitions Arising out of Static, Lightning and Stray Currents) or National Fire Protection Agency 77 (Recommended Practice on Static Electricity) or CENELEC CLC/TR 50404 (Electrostatics - Code of practice for the avoidance of hazards due to static electricity).

Static Accumulator: This material is a static accumulator.

STORAGE

The container choice, for example storage vessel, may effect static accumulation and dissipation. Do not store in open or unlabelled containers. Keep away from incompatible materials.

SECTION 8 EXPOSURE CONTROLS / PERSONAL PROTECTION

Exposure limits/standards for materials that can be formed when handling this product: When mists/aerosols can occur the following are recommended: 5 mg/m³ - ACGIH TLV (inhalable fraction), 5 mg/m³ - OSHA PEL.

NOTE: Limits/standards shown for guidance only. Follow applicable regulations.

ENGINEERING CONTROLS

The level of protection and types of controls necessary will vary depending upon potential exposure conditions. Control measures to consider:
No special requirements under ordinary conditions of use and with adequate ventilation.

PERSONAL PROTECTION

Personal protective equipment selections vary based on potential exposure conditions such as applications, handling practices, concentration and ventilation. Information on the selection of protective equipment for use with this material, as provided below, is based upon intended, normal usage.

Respiratory Protection: If engineering controls do not maintain airborne contaminant concentrations at a level which is adequate to protect worker health, an approved respirator may be appropriate. Respirator selection, use, and maintenance must be in accordance with regulatory requirements, if applicable. Types of respirators to be considered for this material include:
No special requirements under ordinary conditions of use and with adequate ventilation.

For high airborne concentrations, use an approved supplied-air respirator, operated in positive pressure mode. Supplied air respirators with an escape bottle may be appropriate when oxygen levels are inadequate, gas/vapor warning properties are poor, or if air purifying filter capacity/rating may be exceeded.

Hand Protection: Any specific glove information provided is based on published literature and glove manufacturer data. Glove suitability and breakthrough time will differ depending on the specific use conditions. Contact the glove manufacturer for specific advice on glove selection and breakthrough times for your use conditions. Inspect and replace worn or damaged gloves. The types of gloves to be considered for this material include:
No protection is ordinarily required under normal conditions of use.

Eye Protection: If contact is likely, safety glasses with side shields are recommended.

Skin and Body Protection: Any specific clothing information provided is based on published literature or manufacturer data. The types of clothing to be considered for this material include:
No skin protection is ordinarily required under normal conditions of use. In accordance with good industrial hygiene practices, precautions should be taken to avoid skin contact.

Specific Hygiene Measures: Always observe good personal hygiene measures, such as washing after handling the material and before eating, drinking, and/or smoking. Routinely wash work clothing and protective equipment to remove contaminants. Discard contaminated clothing and footwear that cannot be cleaned. Practice good housekeeping.

ENVIRONMENTAL CONTROLS
See Sections 6, 7, 12, 13.

SECTION 9 PHYSICAL AND CHEMICAL PROPERTIES

Note: Physical and chemical properties are provided for safety, health and environmental considerations only and may not fully represent product specifications. Contact the Supplier for additional information.

GENERAL INFORMATION
Physical State: Liquid
Color: Amber
Odor: Characteristic
Odor Threshold: N/D

IMPORTANT HEALTH, SAFETY, AND ENVIRONMENTAL INFORMATION
Relative Density (at 15 C): 0.87
Flash Point [Method]: >223C (433F) [ASTM D-92]
Flammable Limits (Approximate volume % in air): LEL: 0.9 UEL: 7.0
Autoignition Temperature: N/D
Boiling Point / Range: > 316C (600F) [Estimated]
Vapor Density (Air = 1): > 2 at 101 kPa [Estimated]
Vapor Pressure: < 0.013 kPa (0.1 mm Hg) at 20 C [Estimated]
Evaporation Rate (n-butyl acetate = 1): N/D
pH: N/A
Log Pow (n-Octanol/Water Partition Coefficient): > 3.5 [Estimated]
Solubility in Water: Negligible
Viscosity: 67.9 cSt (67.9 mm2/sec) at 40 C | 8.7 cSt (8.7 mm2/sec) at 100C
Oxidizing Properties: See Hazards Identification Section.

OTHER INFORMATION
Freezing Point: N/D
Melting Point: N/A
Pour Point: -27°C (-17°F)
DMSO Extract (mineral oil only), IP-346: < 3 %wt
Decomposition Temperature: N/D

SECTION 10 STABILITY AND REACTIVITY

STABILITY: Material is stable under normal conditions.

CONDITIONS TO AVOID: Excessive heat. High energy sources of ignition.

MATERIALS TO AVOID: Strong oxidizers

HAZARDOUS DECOMPOSITION PRODUCTS: Material does not decompose at ambient temperatures.

HAZARDOUS POLYMERIZATION: Will not occur.

SECTION 11 TOXICOLOGICAL INFORMATION

ACUTE TOXICITY

Route of Exposure	Conclusion / Remarks

Inhalation	
Toxicity (Rat): LC50 > 5000 mg/m3	Minimally Toxic. Based on test data for structurally similar materials.
Irritation: No end point data.	Negligible hazard at ambient/normal handling temperatures. Based on assessment of the components.
Ingestion	
Toxicity (Rat): LD50 > 5000 mg/kg	Minimally Toxic. Based on test data for structurally similar materials.
Skin	
Toxicity (Rabbit): LD50 > 5000 mg/kg	Minimally Toxic. Based on test data for structurally similar materials.
Irritation (Rabbit): Data available.	Negligible irritation to skin at ambient temperatures. Based on test data for structurally similar materials.
Eye	
Irritation (Rabbit): Data available.	May cause mild, short-lasting discomfort to eyes. Based on test data for structurally similar materials.

CHRONIC/OTHER EFFECTS

Contains:

Base oil severely refined: Not carcinogenic in animal studies. Representative material passes IP-346, Modified Ames test, and/or other screening tests. Dermal and inhalation studies showed minimal effects; lung non-specific infiltration of immune cells, oil deposition and minimal granuloma formation. Not sensitizing in test animals.

Additional information is available by request.

The following ingredients are cited on the lists below: None.

--REGULATORY LISTS SEARCHED--

1 = NTP CARC
2 = NTP SUS
3 = IARC 1
4 = IARC 2A
5 = IARC 2B
6 = OSHA CARC

SECTION 12 ECOLOGICAL INFORMATION

The information given is based on data available for the material, the components of the material, and similar materials.

ECOTOXICITY

Material -- Not expected to be harmful to aquatic organisms.

MOBILITY

Base oil component -- Low solubility and floats and is expected to migrate from water to the land. Expected to partition to sediment and wastewater solids.

PERSISTENCE AND DEGRADABILITY

Biodegradation:

Base oil component -- Expected to be inherently biodegradable

BIOACCUMULATION POTENTIAL

Base oil component -- Has the potential to bioaccumulate, however metabolism or physical properties may reduce the bioconcentration or limit bioavailability.

SECTION 13 DISPOSAL CONSIDERATIONS

Disposal recommendations based on material as supplied. Disposal must be in accordance with current applicable laws and regulations, and material characteristics at time of disposal.

DISPOSAL RECOMMENDATIONS

Product is suitable for burning in an enclosed controlled burner for fuel value or disposal by supervised incineration at very high temperatures to prevent formation of undesirable combustion products. Protect the environment. Dispose of used oil at designated sites. Minimize skin contact. Do not mix used oils with solvents, brake fluids or coolants.

REGULATORY DISPOSAL INFORMATION

RCRA Information: The unused product, in our opinion, is not specifically listed by the EPA as a hazardous waste (40 CFR, Part 261D), nor is it formulated to contain materials which are listed as hazardous wastes. It does not exhibit the hazardous characteristics of ignitability, corrosivity or reactivity and is not formulated with contaminants as determined by the Toxicity Characteristic Leaching Procedure (TCLP). However, used product may be regulated.

Empty Container Warning Empty Container Warning (where applicable): Empty containers may contain residue and can be dangerous. Do not attempt to refill or clean containers without proper instructions. Empty drums should be completely drained and safely stored until appropriately reconditioned or disposed. Empty containers should be taken for recycling, recovery, or disposal through suitably qualified or licensed contractor and in accordance with governmental regulations. DO NOT PRESSURISE, CUT, WELD, BRAZE, SOLDER, DRILL, GRIND, OR EXPOSE SUCH CONTAINERS TO HEAT, FLAME, SPARKS, STATIC ELECTRICITY, OR OTHER SOURCES OF IGNITION. THEY MAY EXPLODE AND CAUSE INJURY OR DEATH.

SECTION 14 TRANSPORT INFORMATION

LAND (DOT): Not Regulated for Land Transport

LAND (TDG): Not Regulated for Land Transport

SEA (IMDG): Not Regulated for Sea Transport according to IMDG-Code

AIR (IATA): Not Regulated for Air Transport

SECTION 15 REGULATORY INFORMATION

OSHA HAZARD COMMUNICATION STANDARD: When used for its intended purposes, this material is not classified as hazardous in accordance with OSHA 29 CFR 1910.1200.

Complies with the following national/regional chemical inventory requirements:: DSL, IECSC, TSCA, EINECS, PICCS, AICS

EPCRA: This material contains no extremely hazardous substances.

SARA (311/312) REPORTABLE HAZARD CATEGORIES: None.

SARA (313) TOXIC RELEASE INVENTORY: This material contains no chemicals subject to the supplier notification requirements of the SARA 313 Toxic Release Program.

The following ingredients are cited on the lists below:

Chemical Name	CAS Number	List Citations
PHOSPHORODITHOIC ACID, O,O-DI C1-14-ALKYL ESTERS, ZINC SALTS (2:1) (ZDDP)	68649-42-3	15

--REGULATORY LISTS SEARCHED--

1 = ACGIH ALL	6 = TSCA 5a2	11 = CA P65 REPRO	16 = MN RTK
2 = ACGIH A1	7 = TSCA 5e	12 = CA RTK	17 = NJ RTK
3 = ACGIH A2	8 = TSCA 6	13 = IL RTK	18 = PA RTK
4 = OSHA Z	9 = TSCA 12b	14 = LA RTK	19 = RI RTK
5 = TSCA 4	10 = CA P65 CARC	15 = MI 293	

Code key: CARC=Carcinogen; REPRO=Reproductive

SECTION 16 OTHER INFORMATION

N/D = Not determined, N/A = Not applicable

THIS SAFETY DATA SHEET CONTAINS THE FOLLOWING REVISIONS:
Revision Changes:
Section 06: Notification Procedures - Header was modified.
Section 13: Disposal Considerations - Disposal Recommendations was modified.
Section 10 Stability and Reactivity - Header was modified.
Section 13: Disposal Recommendations - Note was modified.
Section 13: Empty Container Warning was modified.
Section 09: Phys/Chem Properties Note was modified.
Section 09: Boiling Point C(F) was modified.
Section 09: Flash Point C(F) was modified.
Section 09: n-Octanol/Water Partition Coefficient was modified.
Section 08: Personal Protection was modified.
Section 08: Hand Protection was modified.
Section 07: Handling and Storage - Handling was modified.
Section 07: Handling and Storage - Storage Phrases was modified.
Section 11: Dermal Lethality Test Data was modified.

Section 11: Oral Lethality Test Data was modified.
Section 05: Hazardous Combustion Products was modified.
Section 06: Accidental Release - Spill Management - Water was modified.
Section 09: Relative Density - Header was modified.
Section 09: Flash Point C(F) was modified.
Section 09: Viscosity was modified.
Section 14: Sea (IMDG) - Header was modified.
Section 14: Air (IATA) - Header was modified.
Section 14: LAND (TDG) - Header was modified.
Section 14: LAND (DOT) - Header was modified.
Section 15: List Citation Table - Header was modified.
Section 14: LAND (DOT) - Default was modified.
Section 14: LAND (TDG) Default was modified.
Section 14: Sea (IMDG) - Default was modified.
Section 14: Air (IATA) - Default was modified.
Section 15: National Chemical Inventory Listing - Header was modified.
Section 15: National Chemical Inventory Listing was modified.
Section 16: Code to MHCs was modified.
Section 08: Exposure limits/standards was modified.
Hazard Identification: OSHA - May be Hazardous Statement was modified.
Section 06: Notification Procedures was modified.
Section 09: Oxidizing Properties was modified.
Section 01: Company Contact Methods Sorted by Priority was modified.
Section 06: Protective Measures was added.
Section 06: Accidental Release - Protective Measures - Header was added.
Section 15: Chemical Name - Header was added.
Section 15: CAS Number - Header was added.
Section 15: List Citations - Header was added.
Section 15: List Citations Table was added.
Section 09: Decomposition Temperature was added.
Section 09: Decomposition Temp - Header was added.
Section 09: Vapor Pressure was added.

Internal Use Only
MHC: 0B, 0B, 0, 0, 0, 0 PPEC: A

DGN: 2007083XUS (1013293)

Lubricant: Mobil DTE Oil BB

MATERIAL SAFETY DATA SHEET

SECTION 1 PRODUCT AND COMPANY IDENTIFICATION

PRODUCT

Product Name: MOBIL DTE OIL BB
Product Description: Base Oil and Additives
Product Code: 600221-00, 970905
Intended Use: Circulating/gear oil

COMPANY IDENTIFICATION

Supplier: EXXON MOBIL CORPORATION
3225 GALLOWS RD.
FAIRFAX, VA. 22037 USA

24 Hour Health Emergency	609-737-4411
Transportation Emergency Phone	800-424-9300
ExxonMobil Transportation No.	281-834-3296
MSDS Requests	713-613-3661
Product Technical Information	800-662-4525, 800-947-9147
MSDS Internet Address	http://www.exxon.com, http://www.mobil.com

SECTION 2 COMPOSITION / INFORMATION ON INGREDIENTS

No Reportable Hazardous Substance(s) or Complex Substance(s).

SECTION 3 HAZARDS IDENTIFICATION

This material is not considered to be hazardous according to regulatory guidelines (see (M)SDS Section 15).

POTENTIAL HEALTH EFFECTS

Low order of toxicity. Excessive exposure may result in eye, skin, or respiratory irritation. High-pressure injection under skin may cause serious damage.

NFPA Hazard ID:	Health:	0	Flammability:	1	Reactivity:	0
HMIS Hazard ID:	Health:	0	Flammability:	1	Reactivity:	0

NOTE: This material should not be used for any other purpose than the intended use in Section 1 without expert advice. Health studies have shown that chemical exposure may cause potential human health risks which may vary from person to person.

SECTION 4 FIRST AID MEASURES

INHALATION

Remove from further exposure. For those providing assistance, avoid exposure to yourself or others. Use adequate respiratory protection. If respiratory irritation, dizziness, nausea, or unconsciousness occurs, seek immediate medical assistance. If breathing has stopped, assist ventilation with a mechanical device or use

mouth-to-mouth resuscitation.

SKIN CONTACT

Wash contact areas with soap and water. If product is injected into or under the skin, or into any part of the body, regardless of the appearance of the wound or its size, the individual should be evaluated immediately by a physician as a surgical emergency. Even though initial symptoms from high pressure injection may be minimal or absent, early surgical treatment within the first few hours may significantly reduce the ultimate extent of injury.

EYE CONTACT

Flush thoroughly with water. If irritation occurs, get medical assistance.

INGESTION

First aid is normally not required. Seek medical attention if discomfort occurs.

SECTION 5 FIRE FIGHTING MEASURES

EXTINGUISHING MEDIA

Appropriate Extinguishing Media: Use water fog, foam, dry chemical or carbon dioxide (CO2) to extinguish flames.

Inappropriate Extinguishing Media: Straight Streams of Water

FIRE FIGHTING

Fire Fighting Instructions: Evacuate area. Prevent runoff from fire control or dilution from entering streams, sewers, or drinking water supply. Firefighters should use standard protective equipment and in enclosed spaces, self-contained breathing apparatus (SCBA). Use water spray to cool fire exposed surfaces and to protect personnel.

Unusual Fire Hazards: Pressurized mists may form a flammable mixture.

Hazardous Combustion Products: Aldehydes, Oxides of carbon, Incomplete combustion products, Sulfur oxides, Smoke, Fume

FLAMMABILITY PROPERTIES

Flash Point [Method]: >234C (453F) [ASTM D-92]
Flammable Limits (Approximate volume % in air): LEL: 0.9 UEL: 7.0
Autoignition Temperature: N/D

SECTION 6 ACCIDENTAL RELEASE MEASURES

NOTIFICATION PROCEDURES

In the event of a spill or accidental release, notify relevant authorities in accordance with all applicable regulations. In the event of a spill or accidental release, notify relevant authorities in accordance with all applicable regulations. US regulations require reporting releases of this material to the environment which exceed the applicable reportable quantity or oil spills which could reach any waterway including intermittent dry creeks. The National Response Center can be reached at (800)424-8802.

SPILL MANAGEMENT

Land Spill: Stop leak if you can do it without risk. Recover by pumping or with suitable absorbent.

Water Spill: Stop leak if you can do it without risk. Confine the spill immediately with booms. Warn other shipping. Remove from the surface by skimming or with suitable absorbents. Seek the advice of a specialist before using dispersants.

Water spill and land spill recommendations are based on the most likely spill scenario for this material; however, geographic conditions, wind, temperature, (and in the case of a water spill) wave and current direction and speed may greatly influence the appropriate action to be taken. For this reason, local experts should be consulted. Note: Local regulations may prescribe or limit action to be taken.

ENVIRONMENTAL PRECAUTIONS

Large Spills: Dike far ahead of liquid spill for later recovery and disposal. Prevent entry into waterways, sewers, basements or confined areas.

SECTION 7 HANDLING AND STORAGE

HANDLING

Prevent small spills and leakage to avoid slip hazard.

Static Accumulator: This material is a static accumulator.

STORAGE

Do not store in open or unlabelled containers.

SECTION 8 EXPOSURE CONTROLS / PERSONAL PROTECTION

Exposure limits/standards for materials that can be formed when handling this product: When mists / aerosols can occur, the following are recommended: 5 mg/m³ - ACGIH TLV, 10 mg/m³ - ACGIH STEL, 5 mg/m³ - OSHA PEL.

NOTE: Limits/standards shown for guidance only. Follow applicable regulations.

ENGINEERING CONTROLS

The level of protection and types of controls necessary will vary depending upon potential exposure conditions. Control measures to consider:

No special requirements under ordinary conditions of use and with adequate ventilation.

PERSONAL PROTECTION

Personal protective equipment selections vary based on potential exposure conditions such as applications, handling practices, concentration and ventilation. Information on the selection of protective equipment for use with this material, as provided below, is based upon intended, normal usage.

Respiratory Protection: If engineering controls do not maintain airborne contaminant concentrations at a level which is adequate to protect worker health, an approved respirator may be appropriate. Respirator selection, use, and maintenance must be in accordance with regulatory requirements, if applicable. Types of respirators to be considered for this material include:

No special requirements under ordinary conditions of use and with adequate ventilation.

For high airborne concentrations, use an approved supplied-air respirator, operated in positive pressure mode. Supplied air respirators with an escape bottle may be appropriate when oxygen levels are inadequate, gas/vapor warning properties are poor, or if air purifying filter capacity/rating may be exceeded.

Hand Protection: Any specific glove information provided is based on published literature and glove manufacturer data. Work conditions can greatly affect glove durability; inspect and replace worn or damaged gloves. The types of gloves to be considered for this material include:

No protection is ordinarily required under normal conditions of use.

Eye Protection: If contact is likely, safety glasses with side shields are recommended.

Skin and Body Protection: Any specific clothing information provided is based on published literature or manufacturer data. The types of clothing to be considered for this material include:

No skin protection is ordinarily required under normal conditions of use. In accordance with good industrial hygiene practices, precautions should be taken to avoid skin contact.

Specific Hygiene Measures: Always observe good personal hygiene measures, such as washing after handling the material and before eating, drinking, and/or smoking. Routinely wash work clothing and protective equipment to remove contaminants. Discard contaminated clothing and footwear that cannot be cleaned. Practice good housekeeping.

ENVIRONMENTAL CONTROLS

See Sections 6, 7, 12, 13.

SECTION 9 PHYSICAL AND CHEMICAL PROPERTIES

Typical physical and chemical properties are given below. Consult the Supplier in Section 1 for additional data.

GENERAL INFORMATION

Physical State: Liquid
Color: Brown
Odor: Characteristic
Odor Threshold: N/D

IMPORTANT HEALTH, SAFETY, AND ENVIRONMENTAL INFORMATION

Relative Density (at 15 C): 0.89
Flash Point [Method]: >234C (453F) [ASTM D-92]
Flammable Limits (Approximate volume % in air): LEL: 0.9 UEL: 7.0
Autoignition Temperature: N/D
Boiling Point / Range: > 316C (600F)
Vapor Density (Air = 1): > 2 at 101 kPa
Vapor Pressure: < 0.013 kPa (0.1 mm Hg) at 20 C
Evaporation Rate (n-butyl acetate = 1): N/D
pH: N/A

Log Pow (n-Octanol/Water Partition Coefficient): > 3.5
Solubility in Water: Negligible
Viscosity: 220 cSt (220 mm2/sec) at 40 C
Oxidizing Properties: See Sections 3, 15, 16.

OTHER INFORMATION
Freezing Point: N/D
Melting Point: N/A
Pour Point: -12°C (10°F)
DMSO Extract (mineral oil only), IP-346: < 3 %wt

SECTION 10 STABILITY AND REACTIVITY

STABILITY: Material is stable under normal conditions.

CONDITIONS TO AVOID: Excessive heat. High energy sources of ignition.

MATERIALS TO AVOID: Strong oxidizers

HAZARDOUS DECOMPOSITION PRODUCTS: Material does not decompose at ambient temperatures.

HAZARDOUS POLYMERIZATION: Will not occur.

SECTION 11 TOXICOLOGICAL INFORMATION

ACUTE TOXICITY

Route of Exposure	Conclusion / Remarks
Inhalation	
Toxicity (Rat): LC50 > 5000 mg/m3	Minimally Toxic. Based on assessment of the components.
Irritation: No end point data.	Negligible hazard at ambient/normal handling temperatures. Based on assessment of the components.
Ingestion	
Toxicity (Rat): LD50 > 2000 mg/kg	Minimally Toxic. Based on test data for structurally similar materials.
Skin	
Toxicity (Rabbit): LD50 > 2000 mg/kg	Minimally Toxic. Based on test data for structurally similar materials.
Irritation (Rabbit): Data available.	Negligible irritation to skin at ambient temperatures. Based on assessment of the components.
Eye	
Irritation (Rabbit): Data available.	May cause mild, short-lasting discomfort to eyes. Based on assessment of the components.

CHRONIC/OTHER EFFECTS
Contains:
Base oil severely refined: Not carcinogenic in animal studies. Representative material passes IP-346, Modified Ames test, and/or other screening tests. Dermal and inhalation studies showed minimal effects; lung non-specific infiltration of immune cells, oil deposition and minimal granuloma formation. Not sensitizing in test animals.

Additional information is available by request.

The following ingredients are cited on the lists below: None.

--REGULATORY LISTS SEARCHED--

1 = NTP CARC	3 = IARC 1	5 = IARC 2B
2 = NTP SUS	4 = IARC 2A	6 = OSHA CARC

SECTION 12 ECOLOGICAL INFORMATION

The information given is based on data available for the material, the components of the material, and similar materials.

ECOTOXICITY

Material -- Not expected to be harmful to aquatic organisms.

MOBILITY

Base oil component -- Low solubility and floats and is expected to migrate from water to the land. Expected to partition to sediment and wastewater solids.

PERSISTENCE AND DEGRADABILITY

Biodegradation:

Base oil component -- Expected to be inherently biodegradable

BIOACCUMULATION POTENTIAL

Base oil component -- Has the potential to bioaccumulate, however metabolism or physical properties may reduce the bioconcentration or limit bioavailability.

SECTION 13 DISPOSAL CONSIDERATIONS

Disposal recommendations based on material as supplied. Disposal must be in accordance with current applicable laws and regulations, and material characteristics at time of disposal.

DISPOSAL RECOMMENDATIONS

Product is suitable for burning in an enclosed controlled burner for fuel value or disposal by supervised incineration at very high temperatures to prevent formation of undesirable combustion products.

REGULATORY DISPOSAL INFORMATION

RCRA Information: The unused product, in our opinion, is not specifically listed by the EPA as a hazardous waste (40 CFR, Part 261D), nor is it formulated to contain materials which are listed as hazardous wastes. It does not exhibit the hazardous characteristics of ignitability, corrositivity or reactivity and is not formulated with contaminants as determined by the Toxicity Characteristic Leaching Procedure (TCLP). However, used product may be regulated.

Empty Container Warning Empty Container Warning (where applicable): Empty containers may contain residue and can be dangerous. Do not attempt to refill or clean containers without proper instructions. Empty drums should be completely drained and safely stored until appropriately reconditioned or disposed. Empty containers should be taken

for recycling, recovery, or disposal through suitably qualified or licensed contractor and in accordance with governmental regulations. DO NOT PRESSURISE, CUT, WELD, BRAZE, SOLDER, DRILL, GRIND, OR EXPOSE SUCH CONTAINERS TO HEAT, FLAME, SPARKS, STATIC ELECTRICITY, OR OTHER SOURCES OF IGNITION. THEY MAY EXPLODE AND CAUSE INJURY OR DEATH.

SECTION 14 TRANSPORT INFORMATION

LAND (DOT) : Not Regulated for Land Transport

LAND (TDG) : Not Regulated for Land Transport

SEA (IMDG) : Not Regulated for Sea Transport according to IMDG-Code

AIR (IATA) : Not Regulated for Air Transport

SECTION 15 REGULATORY INFORMATION

OSHA HAZARD COMMUNICATION STANDARD: When used for its intended purposes, this material is not classified as hazardous in accordance with OSHA 29 CFR 1910.1200.

NATIONAL CHEMICAL INVENTORY LISTING: TSCA, AICS, PICCS, ENCS, DSL, EINECS, IECSC, KECI

EPCRA: This material contains no extremely hazardous substances.

SARA (311/312) REPORTABLE HAZARD CATEGORIES: None.

SARA (313) TOXIC RELEASE INVENTORY: This material contains no chemicals subject to the supplier notification requirements of the SARA 313 Toxic Release Program.

The Following Ingredients are Cited on the Lists Below: None.

--REGULATORY LISTS SEARCHED--

1 = ACGIH ALL	6 = TSCA 5a2	11 = CA P65 REPRO	16 = MN RTK
2 = ACGIH A1	7 = TSCA 5e	12 = CA RTK	17 = NJ RTK
3 = ACGIH A2	8 = TSCA 6	13 = IL RTK	18 = PA RTK
4 = OSHA Z	9 = TSCA 12b	14 = LA RTK	19 = RI RTK
5 = TSCA 4	10 = CA P65 CARC	15 = MI 293	

Code key: CARC=Carcinogen; REPRO=Reproductive

SECTION 16 OTHER INFORMATION

N/D = Not determined, N/A = Not applicable

THIS SAFETY DATA SHEET CONTAINS THE FOLLOWING REVISIONS:
No revision information is available.

The information and recommendations contained herein are, to the best of ExxonMobil's knowledge and belief, accurate and reliable as of the date issued. You can contact ExxonMobil to insure that this document is the most current available from ExxonMobil. The information and recommendations are offered for the user's consideration and examination. It is the user's responsibility to satisfy itself that the product is suitable for the intended use. If buyer repackages this product, it is the user's responsibility to insure proper health, safety and other necessary information is included with and/or on the container. Appropriate warnings and safe-handling procedures should be provided to handlers and users. Alteration of this document is strictly prohibited. Except to the extent required by law, re-publication or retransmission of this document, in whole or in part, is not permitted. The term, "ExxonMobil" is used for convenience, and may include any one or more of ExxonMobil Chemical Company, Exxon Mobil Corporation, or any affiliates in which they directly or indirectly hold any interest.

Internal Use Only
MHC: 0, 0, 0, 0, 0, 0 PPEC: A

DGN: 2007132XUS (546634)

ATTACHMENT I: EMISSIONS UNIT TABLE

RULE 13 AIR PERMIT APPLICATION

NATRIUM EXTRACTION AND FRACTIONATION PROCESSING PLANT

BLUE RACER MIDSTREAM, LLC

Attachment I

Emission Units Table

(includes all emission units and air pollution control devices that will be part of this permit application review, regardless of permitting status)

Emission Unit ID[1]	Emission Point ID[2]	Emission Unit Description	Year Installed/ Modified	Design Capacity	Type[3] and Date of Change	Control Device[4]
S001	P001	Hot Oil Heater (216.7 MMBtu/hr)	2014	216.7 MMBtu/hr	Modification - 2014	None
S004A	P004A	Ground Flare	2015	N/A	New	Flare (C004A)
S004	P004	Main Flare	2013	N/A	Removal - 2015	Flare (C004)
S021	P021	Emergency Flare	2014	N/A	New	(C021)
S007	P004A	Slop Tank TK-906	2011	500 BBL	Existing	C005, C004A
S011	P005	Ethane Amine Regenerator	2011	29 MMscf/day	Modification - 2014	None
S014	P006	Ethane Amine Regenerator	2014	100 MMscf/day	New	None
S005	P001	Natural Gasoline Storage Tank	2011	17,000 BBL	Modification - 2014	C001
S023	P001	Natural Gasoline Storage Tank	2014	38,788 BBL	New	C001
S016	P016	Hot Oil Heater (61.6 MMBtu/hr)	2014	61.6 MMBtu/hr	New	None
S017	P017	Hot Oil Heater (61.6 MMBtu/hr)	2014	61.6 MMBtu/hr	New	None
S018	P018	Hot Oil Heater (61.6 MMBtu/hr)	2014	61.6 MMBtu/hr	New	None
S019	P019	Hot Oil Heater (61.6 MMBtu/hr)	2014	61.6 MMBtu/hr	New	None
S020	P020	Glycol Reboiler (3.0 MMBtu/hr)	2014	3.0 MMBtu/hr	New	None
ROADS (S010)	ROADS	Unpaved Roads	2011	N/A	Modification - 2014	None

FUG AREA 2	FUG AREA 2	Fugitives	2014	N/A	New	None
S006	P001	Glycol Dehydration System	2011	460 MMCFD	Increasing gas throughput	C001
S008	P008	Product Loading – closed loop	2011	35,000 gpm (Truck, Rail and Barge)	Modification - 2014	Vapor Return to Tank
S022	P022	Regen Gas Heater (9.7 MMBtu/hr)	2014	9.7 MMBtu/hr	New	None
S012	P012	Regen Gas Heater (9.7 MMBtu/hr)	2013	9.7 MMBtu/hr	Existing	None
S013	P013	Cryo HMO Heater (26.3 MMBtu/hr)	2013	26.3 MMBtu/hr	Existing	None
S002	P002	Fire Pump #1	2011	700 HP	Existing	None
S003	P003	Fire Pump #2	2011	700 HP	Existing	None
FUG AREA 1 (S009)	FUG AREA 1	Fugitives – Equipment Leaks	2011	N/A	Existing	None
N/A	Flare (Emergency only)	Four (4) Pressurized Butane Bullet Tank	2014	90,000 gal	New	None
NA	Flare (Emergency only)	Horizontal Propane Storage Tank (US-800)	2011	51,000 BBL	Modification	Pressure Tank
NA	Flare (Emergency only)	Horizontal Isobutane Storage Tank (US-801)	2011	20,600 BBL	Modification	Pressure Tank
NA	Flare (Emergency only)	Horizontal Normal Butane Storage Tank (US-804)	2011	20,600 BBL	Modification	Pressure Tank
NA	Flare (Emergency only)	Horizontal Natural Gas Liquid Storage Tank (US-805)	2011	20,600 BBL	Modification	Pressure Tank
NA	Flare (Emergency only)	Miscellaneous Storage Tanks (See Attachment G, Table 1)	2011	Varies	Modification	None

[1] For Emission Units (or Sources) use the following numbering system:1S, 2S, 3S,... or other appropriate designation.
[2] For Emission Points use the following numbering system:1E, 2E, 3E, ... or other appropriate designation.
[3] New, modification, removal
[4] For Control Devices use the following numbering system: 1C, 2C, 3C,... or other appropriate designation.

ATTACHMENT J: EMISSION POINTS DATA SUMMARY SHEET

RULE 13 AIR PERMIT APPLICATION

NATRIUM EXTRACTION AND FRACTIONATION PROCESSING PLANT

BLUE RACER MIDSTREAM, LLC

Attachment J

EMISSION POINTS DATA SUMMARY SHEET

Table 1: Emissions Data

Emission Point ID No. *(Must match Emission Units Table-& Plot Plan)*	Emission Point Type[1]	Emission Unit Vented Through This Point *(Must match Emission Units Table & Plot Plan)*		Air Pollution Control Device *(Must match Emission Units Table & Plot Plan)*		Vent Time for Emission Unit *(chemical processes only)*		All Regulated Pollutants - Chemical Name/CAS[3] *(Speciate VOCs & HAPS)*	Maximum Potential Uncontrolled Emissions [4]		Maximum Potential Controlled Emissions [5]		Emission Form or Phase *(At exit conditions, Solid, Liquid or Gas/Vapor)*	Est. Method Used [6]	Emission Concentration [7] (ppmv or mg/m^4)
		ID No.	Source	ID No.	Device Type	Short Term[2]	Max (hr/yr)		lb/hr	ton/yr	lb/hr	ton/yr			
P001	Vertical Stack	S001	Hot Oil Heater	N/A	N/A	C	N/A	NO_x	5.63	24.68	5.63	24.68	Gas	EE	N/A
								CO	3.25	14.24	3.25	14.24	Gas		
								VOC	0.37	1.61	0.37	1.61	Gas		
								PM	1.61	7.07	1.61	7.07	Gas		
								SO_2	0.16	0.69	0.16	0.69	Gas		
								CO_{2e} (1)	--	111,058	--	111,058	Gas		
								HAPs	(2)	(2)	(2)	(2)	Gas		
P004A	Vertical	S004A	Ground Flare	N/A	N/A	C	N/A	NO_X	1.19	0.65	1.19	0.65	Gas	EE	N/A
								CO	2.39	1.30	2.39	1.30	Gas		
								VOC	0.61	0.06	0.61	0.06	Gas		
								PM	0.06	0.03	0.06	0.03	Gas		
								SO_2	--	--	--	--	Gas		
								CO_{2e} (1)	--	565	--	565	Gas		
								HAPs	(2)	(2)	(2)	(2)	Gas		
P021	Vertical	S021	Emergency Flare	N/A	N/A	C	N/A	NO_X	0.03	0.11	0.03	0.11	Gas	EE	N/A
								CO	0.14	0.60	0.14	0.60	Gas		
								VOC	0.05	0.23	0.05	0.23	Gas		
								PM	0.001	0.01	0.001	0.01	Gas		
								SO_2	--	--	--	--	Gas		
								CO_{2e} (1)	--	103	--	103	Gas		
								HAPs	(2)	(2)	(2)	(2)	Gas		
P004A	Vertical	S007	Slop Tank TK-906	N/A	Natural Gas Blanket and VRU to Flare	N/A	N/A	--	--	--	--	--	Gas	N/A	N/A

P005, P006	Vertical Stack	S011, S014	Ethane Amine Regenerator(s)	N/A	N/A	C	N/A	VOC	0.16	0.71	0.16	0.71	Gas	EE	N/A
								CO_2	5,820	25,492	5,820	25,492	Gas		
								CH_4	0.28	1.25	0.28	1.25	Gas		
								CO_{2e} (1)	5,827	25,523	5,827	25,523	Gas		
								HAPs	(2)	(2)	(2)	(2)	Gas		
P001	Vertical	S005	Natural Gas Storage Tank TK-802	C001	Natural Gas Blanket and VRU	N/A	N/A	--	--	--	--	--	Gas	N/A	N/A
P001	Vertical	S023	Natural Gas Storage Tank TK-803	C001	Natural Gas Blanket and VRU	N/A	N/A	--	--	--	--	--	Gas	N/A	N/A
P016, P017, P018, P019	Vertical Stack	S016, S017, S018, S019	Hot Oil Heater(s)	N/A	N/A	C	N/A	NO_x	1.48	6.47	1.48	6.47	Gas	EE	N/A
								CO	3.63	15.91	3.63	15.91	Gas		
								VOC	0.33	1.45	0.33	1.45	Gas		
								PM	0.46	2.01	0.46	2.01	Gas		
								SO_2	0.04	0.20	0.04	0.20	Gas		
								CO_{2e} (1)	--	31,560	--	31,560	Gas		
								HAPs	(2)	(2)	(2)	(2)			
P020	Vertical	S020	Glycol Reboiler	N/A	N/A	C	N/A	NO_x	0.29	1.29	0.29	1.29	Gas	EE	N/A
								CO	0.25	1.08	0.25	1.08	Gas		
								VOC	0.02	0.07	0.02	0.07	Gas		
								PM	0.02	0.10	0.02	0.10	Gas		
								SO_2	0.002	0.01	0.002	0.01	Gas		
								CO_{2e} (1)	--	--	--	--	Gas		
								HAPs	(2)	(2)	(2)	(2)			
ROADS	Fugitive	ROADS	Unpaved Roads	N/A	WT/WC	N/A	N/A	PM	--	15.20	--	15.20	Solid	AP-42	N/A
								PM_{10}	--	4.05	--	4.05	Solid		
								$PM_{2.5}$	--	0.41	--	0.41	Solid		
FUG AREA2	N/A	FUG AREA2	Fugitives	N/A	N/A	C	N/A	VOC	1.19	5.22	1.19	5.22	Gas	EE	N/A
								CO_2	--	0.56	--	0.56	Gas		
								CH_4	--	1.21	--	1.21	Gas		
								CO_{2e} (1)	--	31	--	31	Gas		
								HAPs	(2)	(2)	(2)	(2)	Gas		

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P022	Vertical Stack	S022	Regen Gas Heater	N/A	N/A	C	N/A	NO_x	0.95	4.17	0.95	4.17	Gas	EE	N/A
								CO	0.80	3.50	0.80	3.50	Gas		
								VOC	0.05	0.23	0.05	0.23	Gas		
								PM	0.07	0.32	0.07	0.32	Gas		
								SO_2	0.01	0.03	0.01	0.03	Gas		
								CO_{2e}	--	4,971	--	4,971	Gas		
								HAPs	(2)	(2)	(2)	(2)	Gas		
P012	Vertical Stack	S012	Regen Gas Heater	N/A	N/A	C	N/A	NO_x	0.94	4.13	0.94	4.13	Gas	EE	N/A
								CO	0.79	3.47	0.79	3.47	Gas		
								VOC	0.05	0.23	0.05	0.23	Gas		
								PM	0.07	0.31	0.07	0.31	Gas		
								SO_2	0.01	0.02	0.006	0.02	Gas		
								CO_{2e}	--	4,971	--	4,971	Gas		
								HAPs	(2)	(2)	(2)	(2)	Gas		
P013	Vertical Stack	S013	Cyro HMO Heater	N/A	N/A	C	N/A	NO_x	2.56	11.19	2.56	11.19	Gas	EE	N/A
								CO	2.15	9.40	2.15	9.40	Gas		
								VOC	0.14	0.62	0.14	0.62	Gas		
								PM	0.19	0.85	0.19	0.85	Gas		
								SO_2	0.015	0.07	0.015	0.07	Gas		
								CO_{2e}	--	13,478	--	13,478	Gas		
								HAPs	(2)	(2)	(2)	(2)	Gas		
P002	Vertical Stack	S002	Fire Pump #1	N/A	N/A	C	N/A	NO_x	5.31	0.27	5.31	0.27	Gas	EE	N/A
								CO	2.18	0.11	2.18	0.11	Gas		
								VOC	0.08	0.004	0.08	0.004	Gas		
								PM	0.03	0.02	0.03	0.02	Gas		
								SO_2	0.01	0.01	0.01	0.01	Gas		
								CO_{2e}	--	41	--	41	Gas		
								HAPs	(2)	(2)	(2)	(2)	Gas		
P003	Vertical Stack	S003	Fire Pump #2	N/A	N/A	C	N/A	NO_x	5.31	0.27	5.31	0.27	Gas	EE	N/A
								CO	2.18	0.11	2.18	0.11	Gas		
								VOC	0.08	0.004	0.08	0.004	Gas		
								PM	0.03	0.02	0.03	0.02	Gas		
								SO_2	0.01	0.01	0.01	0.01	Gas		
								CO_{2e}	--	41	--	41	Gas		
								HAPs	(2)	(2)	(2)	(2)	Gas		

FUG AREA1	N/A	FUG AREA1	Fugitives	N/A	N/A	C	N/A	VOC	--	28.80	--	28.80	Gas	EE	N/A
								CO_2	--	0.05	--	0.05	Gas		
								CH_4	--	15.50	--	15.50	Gas		
								CO_{2e} (1)	--	387	--	387	Gas		
								HAPs	(2)	(2)	(2)	(2)			

Notes:

(1) Hourly emissions could not be quantified. CO_2e emissions include CO_2, CH_4, and N_2O, taking into account the Global Warming Potential of each.

(2) Individual HAPs are provided in Attachment N.

The EMISSION POINTS DATA SUMMARY SHEET provides a summation of emissions by emission unit. Note that uncaptured process emission unit emissions are not typically considered to be fugitive and must be accounted for on the appropriate EMISSIONS UNIT DATA SHEET and on the EMISSION POINTS DATA SUMMARY SHEET. Please note that total emissions from the source are equal to all vented emissions, all fugitive emissions, plus all other emissions (e.g. uncaptured emissions). Please complete the FUGITIVE EMISSIONS DATA SUMMARY SHEET for fugitive emission activities.

[1] Please add descriptors such as upward vertical stack, downward vertical stack, horizontal stack, relief vent, rain cap, etc.

[2] Indicate by "C" if venting is continuous. Otherwise, specify the average short-term venting rate with units, for intermittent venting (ie., 15 min/hr). Indicate as many rates as needed to clarify frequency of venting (e.g., 5 min/day, 2 days/wk).

[3] List all regulated air pollutants. Speciate VOCs, including all HAPs. Follow chemical name with Chemical Abstracts Service (CAS) number. **LIST** Acids, CO, CS_2, VOCs, H_2S, Inorganics, Lead, Organics, O_3, NO, NO_2, SO_2, SO_3, all applicable Greenhouse Gases (including CO_2 and methane), etc. **DO NOT LIST** H_2, H_2O, N_2, O_2, and Noble Gases.

[4] Give maximum potential emission rate with no control equipment operating. If emissions occur for less than 1 hr, then record emissions per batch in minutes (e.g. 5 lb VOC/20 minute batch).

[5] Give maximum potential emission rate with proposed control equipment operating. If emissions occur for less than 1 hr, then record emissions per batch in minutes (e.g. 5 lb VOC/20 minute batch).

[6] Indicate method used to determine emission rate as follows: MB = material balance; ST = stack test (give date of test); EE = engineering estimate; O = other (specify).

[7] Provide for all pollutant emissions. Typically, the units of parts per million by volume (ppmv) are used. If the emission is a mineral acid (sulfuric, nitric, hydrochloric or phosphoric) use units of milligram per dry cubic meter (mg/m^3) at standard conditions (68 °F and 29.92 inches Hg) (see 45CSR7). If the pollutant is SO_2, use units of ppmv (See 45CSR10).

Attachment J
EMISSION POINTS DATA SUMMARY SHEET

Table 2: Release Parameter Data								
Emission Point ID No. *(Must match Emission Units Table)*	Inner Diameter (ft.)	Exit Gas			Emission Point Elevation (ft)		UTM Coordinates (km)	
		Temp. (°F)	Volumetric Flow [1] (acfm) *at operating conditions*	Velocity (fps)	Ground Level *(Height above mean sea level)*	Stack Height [2] *(Release height of emissions above ground level)*	Northing	Easting
						Facility Coordinates	440.82608	512.10631
P001	10.75	670	81,551	N/A	655 ft	60 ft	440.09092	511.97901
P004A	N/A	N/A	N/A	N/A	655 ft	N/A	440.08144	511.92532
P021	N/A	N/A	N/A	N/A	655 ft	N/A	440.82608	512.10631
P005		120	131		655 ft		440.10716	511.83455
P023		120	131		655 ft		440.10716	511.83455
P006		120	438		655 ft		440.10716	511.83455
P016	4.0	670	23,182	102	655 ft	26 ft	440.09433	512.01931
P017	4.0	670	23,182	102	655 ft	26 ft	440.09242	512.02482
P018	4.0	670	23,182	102	655 ft	26 ft	440.09414	512.01261
P019	4.0	670	23,182	102	655 ft	26 ft	440.09225	512.01773
P020	1.0	800	1,273	27	655 ft	20 ft	440.82608	512.10631
ROADS	N/A	N/A	Not Applicable				440.09919	511.86586
FUG AREA 2	N/A	N/A	Not Applicable				440.10907	511.91575
P002	~0.5	~950	~1,300	N/A	655 ft	N/A	440.82608	512.10631
P003	~0.5	~950	~1,300	N/A	655 ft	N/A	440.82608	512.10631
P022	~0.5	~950	~1,300	N/A	655 ft	N/A	440.82608	512.10631
P012	2.5	550	8,500	30	655 ft	20	440.11979	511.97605
P013	4.0	225	6,068	10	655 ft	20	440.11971	511.96864

FUG AREA 1	N/A	N/A	Not Applicable					

[1] Give at operating conditions. Include inerts. [2] Release height of emissions above ground level.

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ATTACHMENT K: FUGITIVE EMISSIONS DATA SUMMARY SHEET

RULE 13 AIR PERMIT APPLICATION

NATRIUM EXTRACTION AND FRACTIONATION PROCESSING PLANT

BLUE RACER MIDSTREAM, LLC

Attachment K

FUGITIVE EMISSIONS DATA SUMMARY SHEET

The FUGITIVE EMISSIONS SUMMARY SHEET provides a summation of fugitive emissions. Fugitive emissions are those emissions which could not reasonably pass through a stack, chimney, vent or other functionally equivalent opening. Note that uncaptured process emissions are not typically considered to be fugitive, and must be accounted for on the appropriate EMISSIONS UNIT DATA SHEET and on the EMISSION POINTS DATA SUMMARY SHEET.

Please note that total emissions from the source are equal to all vented emissions, all fugitive emissions, plus all other emissions (e.g. uncaptured emissions).

APPLICATION FORMS CHECKLIST - FUGITIVE EMISSIONS
1.) Will there be haul road activities? ☒ Yes ☐ No ☒ If YES, then complete the HAUL ROAD EMISSIONS UNIT DATA SHEET.
2.) Will there be Storage Piles? ☐ Yes ☒ No ☐ If YES, complete Table 1 of the NONMETALLIC MINERALS PROCESSING EMISSIONS UNIT DATA SHEET.
3.) Will there be Liquid Loading/Unloading Operations? ☒ Yes (insignificant source) ☐ No ☒ If YES, complete the BULK LIQUID TRANSFER OPERATIONS EMISSIONS UNIT DATA SHEET.
4.) Will there be emissions of air pollutants from Wastewater Treatment Evaporation? ☐ Yes ☒ No ☐ If YES, complete the GENERAL EMISSIONS UNIT DATA SHEET.
5.) Will there be Equipment Leaks (e.g. leaks from pumps, compressors, in-line process valves, pressure relief devices, open-ended valves, sampling connections, flanges, agitators, cooling towers, etc.)? ☒ Yes ☐ No ☒ If YES, complete the LEAK SOURCE DATA SHEET section of the CHEMICAL PROCESSES EMISSIONS UNIT DATA SHEET.
6.) Will there be General Clean-up VOC Operations? ☐ Yes ☒ No ☐ If YES, complete the GENERAL EMISSIONS UNIT DATA SHEET.
7.) Will there be any other activities that generate fugitive emissions? ☐ Yes ☒ No ☐ If YES, complete the GENERAL EMISSIONS UNIT DATA SHEET or the most appropriate form.
If you answered "NO" to all of the items above, it is not necessary to complete the following table, "Fugitive Emissions Summary."

FUGITIVE EMISSIONS SUMMARY	All Regulated Pollutants - Chemical Name/CAS [1]	Maximum Potential Uncontrolled Emissions [2]		Maximum Potential Controlled Emissions [3]		Est. Method Used [4]
		lb/hr	ton/yr	lb/hr	ton/yr	
Haul Road/Road Dust Emissions Paved Haul Roads	Not Applicable					
Unpaved Haul Roads	PM PM10 PM2.5	Does not apply	15.20 4.05 0.41	Does not apply	15.20 4.05 0.41	AP-42
Storage Pile Emissions	Not Applicable					
Loading/Unloading Operations	Not Applicable, Insignificant Activity					
Wastewater Treatment Evaporation & Operations	Not Applicable					
Equipment Leaks	VOC (Refer to Attachment N for emission speciation)	Does not apply	Area 1: 28.80 Area 2: 5.22	Does not apply	Area 1: 28.80 Area 2: 5.22	EPA Factors
General Clean-up VOC Emissions	Not Applicable					
Other	Not Applicable					

[1] List all regulated air pollutants. Speciate VOCs, including all HAPs. Follow chemical name with Chemical Abstracts Service (CAS) number. LIST Acids, CO, CS_2, VOCs, H_2S, Inorganics, Lead, Organics, O_3, NO, NO_2, SO_2, SO_3, all applicable Greenhouse Gases (including CO_2 and methane), etc. DO NOT LIST H_2, H_2O, N_2, O_2, and Noble Gases.

[2] Give rate with no control equipment operating. If emissions occur for less than 1 hr, then record emissions per batch in minutes (e.g. 5 lb VOC/20 minute batch).

[3] Give rate with proposed control equipment operating. If emissions occur for less than 1 hr, then record emissions per batch in minutes (e.g. 5 lb VOC/20 minute batch).

[4] Indicate method used to determine emission rate as follows: MB = material balance; ST = stack test (give date of test); EE = engineering estimate; O = other (specify).

ATTACHMENT L: EMISSIONS UNIT DATA SHEETS

RULE 13 AIR PERMIT APPLICATION

NATRIUM EXTRACTION AND FRACTIONATION PROCESSING PLANT

BLUE RACER MIDSTREAM, LLC

Attachment L
EMISSIONS UNIT DATA SHEET
CHEMICAL PROCESS

For chemical processes please fill out this sheet and all supplementary forms (see below) that apply. Please check all supplementary forms that have been completed.

☐ *Emergency Vent Summary Sheet*
☒ *Leak Sources Data Sheet*
☐ *Toxicology Data Sheet*
☐ *Reactor Data Sheet*
☐ *Distillation Column Data Sheet*

1. Chemical process area name and equipment ID number (as shown in *Equipment List Form*)
   Fugitives FUG AREA 1 and FUG AREA 2

2. Standard Industrial Classification Codes (SICs) for process(es)
   1321

3. List raw materials and ☐ attach MSDSs
   Natural Gas

4. List Products and Maximum Production and ☐ attach MSDSs

Description and CAS Number	Maximum Hourly (lb/hr)	Maximum Annual (ton/year)
Ethane	402,767	1,764,119

5. Complete the *Emergency Vent Summary Sheet* for all emergency relief devices.

6. Complete the *Leak Source Data Sheet* and describe below or attach to application the leak detection or maintenance program to minimize fugitive emissions. Include detection instruments, calibration gases or methods, planned inspection frequency, and record-keeping, and similar pertinent information. If subject to a rule requirement (e.g. 40CFR60, Subpart VV), please list those here.
   Refer to Attachment N fugitive calculations for control efficiency claimed for Leak Detection and Repair (LDAR) program. The new equipment is subject to NSPS OOOO, and will comply with the requirements of this rule regarding monitoring, leak definitions, recordkeeping, and reporting.

7. Clearly describe below or attach to application Accident Procedures to be followed in the event of an accidental spill or release.

8A. Complete the *Toxicology Data Sheet* or attach to application a toxicology report (an up-to-date material safety data sheets (MSDS) may be used) outlining the currently known acute and chronic health effects of each compound or chemical entity emitted to the air. If these compounds have already been listed in Item 3, then a duplicate MSDS sheet is not required. Include data such as the OSHA time weighted average (TWA) or mutagenicity, teratogenicity, irritation, and other known or suspected effects should be addressed. Indicate where these are unknown, and provide references.

8B. Describe any health effects testing or epidemiological studies on these compounds that are being or may be conducted by the company or required under TSCA, RCRA or other federal regulations. Discuss the persistence in the environment of any emission (e.g. pesticides, etc.).

9. **Waste Products** - Waste products status: (If source is subject to RCRA or 45CSR25, please contact the Hazardous Waste Section of WVDEP, OAQ at (304) 926-3647.)

9A. Types and amounts of wastes to be disposed:

9B. Method of disposal and location of waste disposal facilities:

Carrier: Phone:

9C. Check here if approved USEPA/State Hazardous Waste Landfill will be used ☐

10. Maximum and Projected Typical Operating Schedule for process or project as a whole (circle appropriate units).

circle units:	(hrs/day) (hr/batch)	(days), (batches/day), (batches/week)	(days/yr), (weeks/year)
10A. Maximum	24 hrs/day	7 days/week	365 days/year
10B. Typical	24 hrs/day	7 days/week	365 days/year

11. Complete a *Reactor Data Sheet* for each reactor in this chemical process.

12. Complete a *Distillation Column Data Sheet* for each distillation column in this chemical process.

13. **Proposed Monitoring, Recordkeeping, Reporting, and Testing**
Please propose monitoring, recordkeeping, and reporting in order to demonstrate compliance with the proposed operating parameters. Please propose testing in order to demonstrate compliance with the proposed emissions limits.

MONITORING	RECORDKEEPING
See Attachment O-1	See Attachment O-1
REPORTING	**TESTING**
See Attachment O-1	See Attachment O-1

MONITORING. Please list and describe the process parameters and ranges that are proposed to be monitored in order to demonstrate compliance with the operation of this process equipment operation or air pollution control device.

RECORDKEEPING. Please describe the proposed recordkeeping that will accompany the monitoring.

REPORTING. Please describe the proposed frequency of reporting of the recordkeeping.

TESTING. Please describe any proposed emissions testing for this process equipment or air pollution control device.

14. Describe all operating ranges and maintenance procedures required by Manufacturer to maintain warranty
N/A

INFORMATION REQUIRED FOR CHEMICAL PROCESSES

The notes listed below for chemical processes are intended to help the applicant submit a complete application to the OAQ; these notes are not intended to be all inclusive. The requirements for a complete application for a permit issued under 45CSR13 are designed to provided enough information for a permit reviewer to begin a technical review. Additional information beyond that identified may be required to complete the technical review of any individual application.

Process Description

Please keep these points in mind when completing your process description as part of this permit application.

1. Provide a general process overview. This brief, but complete, process description should include chemical or registered trademark names of chemical products, intermediates, and/or raw materials to be produced or consumed, and the ultimate use(s) of the product(s). A list of the various chemical compounds is helpful.
2. Describe each process step. Include the process chemistry and stoichiometrically balanced reaction equation or material mass balance on all components.
3. Describe the methods and equipment used to receive, store, handle, and charge raw materials.
4. Describe the methods and equipment used to handle, store, or package final products and intermediates.
5. Provide process flow diagrams or equipment layout drawings which clearly show the process flow relationships among all pieces of process and control equipment. Identify all air emission discharge points. Discuss instrumentation and controls for the process.
6. Discuss the possibilities of process upsets, the duration and frequency of upsets, and consequences (including air emissions) of these upsets. Include a description of rupture discs, pressure relief valves, and secondary containment systems.
7. Discuss any fugitive emissions and the methods used to minimize them.
8. Include the following plans for the process if available:
   a. preventative maintenance and malfunction abatement plan (recommended for all control equipment).
   b. continuous emissions (in-stack) monitoring plan
   c. ambient monitoring plan
   d. emergency response plan

Regulatory Discussion

The following state and federal air pollution control regulations may be applicable to your chemical process. You should review these regulations carefully to determine if they apply to your process. Please summarize the results of your review in your permit application along with any other regulations you believe are applicable.

- Title 45 Legislative Rule Division of Environmental Protection, Office of Air Quality contains West Virginia's air pollution control regulations, including the following promulgated rules which may require emissions reductions or control technologies for your chemical process:
  a. 45CSR27 - Best Available Technology (BAT) for Toxic Air Pollutants (TAPs)
  b. 45CSR21 - VOC emissions controls for ozone maintenance in Kanawha, Cabell, Putnam, Wayne, and Wood counties.
  c. 45CSR13 (Table 45-13A) - plantwide emission thresholds for permitting for certain pollutants.
- Federal Guidelines for case-by-case MACT determinations under section 112(g) of the 1990 CAAA for individual and total HAPs greater than 10 and 25 tons per year, respectively.
- There are also subparts of the federal Standards of Performance for New Stationary Sources (NSPS), 40CFR60 60, and the National Emission Standards for Hazardous Air Pollutants (NESHAP) at 40CFR61 and 40CFR63, which apply to various chemical and nonchemical processes. These subparts are too numerous to list here, but these areas of the federal regulations should be consulted carefully to determine applicability to your process.

Emissions Summary and Calculations

Please keep these points in mind when submitting your emissions calculations as part of this permit application.

1. For each pollutant, provide the basis for the emissions estimate and for all emission reduction(s) or control efficiency(ies) claimed.
2. For all batch processes provide the following
   a. Emissions of each pollutant in pound(s) per batch, from each process step
   b. Annual emissions based on number of batches requested per year
   c. The total time for each process step and the duration of the emissions during the process step
   d. Total batch time, total emissions per batch (or per day), and annual emissions based on the number of batches requested per year.

EMERGENCY VENT SUMMARY SHEET

List below all emergency relief devices, rupture disks, safety relief valves, and similar openings that will vent only under abnormal conditions.

Emission Point ID[1]	Equipment to Relief Vent (type, ID if available)[2]	Relief Vents (type) & Set Pressure (psig)	Name of Chemical(s) or Pollutants Controlled	Worst Case Emission per Release Event (lbs)

All routine vents (non-emergency) should be listed on the *Emission Points Data Summary Sheet.*

[1] Indicate the emission point, if any, to which source equipment normally vents. Do not assign emission point ID numbers to each emergency relief vent or device.

[2] List all emergency relief devices next to the piece of equipment from which they control releases.

LEAK SOURCE DATA SHEET

Source Category	Pollutant	Number of Source Components[1]	Number of Components Monitored by Frequency[2]	Average Time to Repair (days)[3]	Estimated Annual Emission Rate (lb/yr)[4]
Pumps[5]	light liquid VOC[6,7]	See Attachment N for approximate component counts and service.	FUG AREA 1 – as required by NSPS subparts KKK and VV. FUG AREA 2 – as required by NSPS subpart OOOO.	FUG AREA 1 – as required by NSPS subparts KKK and VV. FUG AREA 2 – as required by NSPS subpart OOOO	See Attachment N for estimated emissions.
	heavy liquid VOC[8]				
	Non-VOC[9]				
Valves[10]	Gas VOC				
	Light Liquid VOC				
	Heavy Liquid VOC				
	Non-VOC				
Safety Relief Valves[11]	Gas VOC				
	Non VOC				
Open-ended Lines[12]	VOC				
	Non-VOC				
Sampling Connections[13]	VOC				
	Non-VOC				
Compressors	VOC				
	Non-VOC				
Flanges	VOC				
	Non-VOC				
Other	VOC				
	Non-VOC				

[1 - 13] See notes on the following page.

Notes for Leak Source Data Sheet

1. For VOC sources include components on streams and equipment that contain greater than 10% w/w VOC, including feed streams, reaction/separation facilities, and product/by-product delivery lines. Do not include certain leakless equipment as defined below by category.

2. By monitoring frequency, give the number of sources routinely monitored for leaks, using a portable detection device that measures concentration in ppm. Do not include monitoring by visual or soap-bubble leak detection methods. "M/Q(M)/Q/SA/A/O" means the time period between inspections as follows:

   Monthly/Quarterly, with Monthly follow-up of repaired leakers/Quarterly/Semi-annual/Annually/Other (specify time period)

   If source category is not monitored, a single zero in the space will suffice. For example, if 50 gas-service valves are monitored quarterly, with monthly follow-up of those repaired, 75 are monitored semi-annually, and 50 are checked bimonthly (alternate months), with non checked at any other frequency, you would put in the category "valves, gas service:" 0/50/0/75/0/50 (bimonthly).

3. Give the average number of days, after a leak is discovered, that an attempt will be made to repair the leak.

4. Note the method used: MB - material balance; EE - engineering estimate; EPA - emission factors established by EPA (cite document used); O - other method, such as in-house emission factor (specify).

5. Do not include in the equipment count sealless pumps (canned motor or diaphragm) or those with enclosed venting to a control device. (Emissions from vented equipment should be included in the estimates given in the Emission Points Data Sheet.)

6. Volatile organic compounds (VOC) means the term as defined in 40 CFR □51.100 (s).

7. A light liquid is defined as a fluid with vapor pressure equal to or greater than 0.04 psi (0.3 Kpa) at 20°C. For mixtures, if 20% w/w or more of the stream is composed of fluids with vapor pressures greater than 0.04 psi (0.3 Kpa) at 20 °C, then the fluid is defined as a light liquid.

8. A heavy liquid is defined as a fluid with a vapor pressure less than 0.04 psi (0.3 Kpa) at 20°C. For mixtures, if less than 20% w/w of the stream is composed of fluids with vapor pressures greater than 0.04 psi (0.3 Kpa) at 20 °C, then the fluid is defined as a heavy liquid.

9. LIST CO, H_2S, mineral acids, NO, NO_2, SO_3, etc. DO NOT LIST CO_2, H_2, H_2O, N_2, O_2, and Noble Gases.

10. Include all process valves whether in-line or on an open-ended line such as sample, drain and purge valves. Do not include safety-relief valves, or leakless valves such as check, diaphragm, and bellows seal valves.

11. Do not include a safety-relief valve if there is a rupture disk in place upstream of the valve, or if the valve vents to a control device.

12 Open-ended lines include purge, drain and vent lines. Do not include sampling connections, or lines sealed by plugs, caps, blinds or second valves.

13. Do not include closed-purge sampling connections.

TOXICOLOGY DATA SHEET[1]

Descriptor Name/CAS Number	OSHA Limits[2]		Acute[3] TC_{LO} - Animal LC_{LO} - Animal LC_{50} - Animal	Chronic[4]	Irritation[5]	References
	TWA	CL				

[1] Indicate by "ND" where no data exists, in company's knowledge.
[2] Time Weighted Average, Ceiling Limit, or other, with units.
[3] If inhalation data is not available, provide other data as available.
[4] Relying on animal or human studies, indicate if any data suggests: C = carcinogenicity, M = mutagenicity, T = teratogenecity, O = oncogenicity.
[5] Indicate if there are dermal or eye irritation effects and whether they are considered to be low, moderate, or severe.

REACTOR DATA SHEET

Provide the following information for <u>each</u> piece of equipment that is a potential or actual source of emissions as shown on the *Equipment List Form* and other parts of application.

Identification Number (as shown on *Equipment List Form*):

1. Name and type of equipment (e.g. CSTR, plug flow, batch, etc.)

2. Type of operation ☐ Batch ☐ Continuous ☐ Semi-batch

3. Projected Actual Equipment Operating Schedule (complete appropriate lines):

hrs/day	days/week	weeks/year
hrs/batch	batches/day, weeks (Circle one)	day,weeks/yr (Circle one)

4. Feed Data Flow In = gal/hr, or gal/batch

Material Name & CAS No.	Phase[a]	Specific Gravity	Vapor Pressure[b]	Charge Rate			Fill Time (min/batch, run)[c]
				Normal	Max	Units	

a. S = Solid, L = Liquid, G = gas or vapor
b. At feed conditions
c. Total time that equipment is filling per batch or run (start-up), for tank or vessel-type equipment.

5. Provide all **chemical reactions** that will be involved (if applicable), including the residence time and any side reactions that may occur as well as gases that may be generated during these reactions. Indicate if the reaction(s) are exothermic or endothermic.

6. Maximum Temperature	7A. Maximum Pressure 7B. Max. Set Pressure for venting	
°C	mmHg	mmHg
°F	psig	psig

8. Output Data Flow Out = gal/hr or gal/batch

Material Name and CAS No.	Phase	Specific Gravity	Vapor Pressure	Hourly or Batch Output Rate		
				Normal	Maximum	Units

9. Complete the following emission data for equipment connected to a header exhaust system, giving emissions levels before entering header system (i.e. before control equipment).

☐ Check here if not applicable

Emission Point ID (exhaust point of header system):

Material Name and CAS No.	Maximum Potential Emission Rate (lb/hr)	Method **

** MB - material balance: EE - Engineering Estimate: TM - Test Measurement (submit test data): O - other (Explain)

10. Provide the following information pertaining to each condenser that may be attached to this reactor. Attach additional pages as necessary if more than one condenser is used for this reactor. Complete the Condenser Air Pollution Control Device Sheet if necessary.

☐ Check here if not applicable

10A. Cooling material

10B. Minimum and Maximum flowrate of cooling material (gal/hr)

10C. Inlet temperature of cooling material (°F)

10D. Outlet temperature of cooling material (°F)

10E. Pressure drop of gas to be condensed from inlet to outlet (psig)

10F. Inlet temperature of gas stream (°F)

10G. Outlet temperature of gas stream (°F)

10H. Number of passes

10I. Cooling surface area

11. Provide the following pertaining to auxiliary equipment that burns fuel (heaters, dryers, etc.):

☐ Check here if not applicable

11A. Type of fuel and maximum fuel burn rate, per hour:

11B. Provide maximum percent sulfur (S), ash content of fuel, and the energy content using appropriate units:

%S % Ash BTU/lb, std. ft^3/day, gal

(circle one)

11C. Theoretical combustion air requirement in SCFD per unit of fuel (circle appropriate unit) @ 70°F and 14.7 PSIA:

SCFD/lb, SCFD, gal (circle one)

11D. Percent excess air: %

11E. Type, amount, and BTU rating of burners and all other firing equipment that are planned to be used:

11F. Total maximum design heat input: $\times 10^6$ BTU/hr.

12. **Proposed Monitoring, Recordkeeping, Reporting, and Testing**
Please propose monitoring, recordkeeping, and reporting in order to demonstrate compliance with the proposed operating parameters. Please propose testing in order to demonstrate compliance with the proposed emissions limits.

MONITORING	RECORDKEEPING
REPORTING	TESTING

MONITORING. PLEASE LIST AND DESCRIBE THE PROCESS PARAMETERS AND RANGES THAT ARE PROPOSED TO BE MONITORED IN ORDER TO DEMONSTRATE COMPLIANCE WITH THE OPERATION OF THIS PROCESS EQUIPMENT OPERATION OR AIR POLLUTION CONTROL DEVICE.

RECORDKEEPING. PLEASE DESCRIBE THE PROPOSED RECORDKEEPING THAT WILL ACCOMPANY THE MONITORING.

REPORTING. PLEASE DESCRIBE THE PROPOSED FREQUENCY OF REPORTING OF THE RECORDKEEPING.

TESTING. PLEASE DESCRIBE ANY PROPOSED EMISSIONS TESTING FOR THIS PROCESS EQUIPMENT OR AIR POLLUTION CONTROL DEVICE.

13. Describe all operating ranges and maintenance procedures required by Manufacturer to maintain warranty

NOTE: An *AIR POLLUTION CONTROL DEVICE SHEET* must be completed for any air pollution device(s) (except emergency relief devices) used to control emissions from this reactor.

DISTILLATION COLUMN DATA SHEET

Identification Number (as assigned on *Equipment List Form*):

1. Name and type of equipment

#. Projected actual equipment operating schedule (complete appropriate lines):

hrs/day	days/week	weeks/year
hrs/batch	batches/day, batches/week (circle one)	days/yr, weeks/yr (circle one)

2. Number of stages (plates), excluding condenser

3. Number of feed plates and stage location

4. Specify details of any reheating, recycling, or stage conditioning along with the stage locations

5. Specify reflux ratio, R (where R is defined as the ratio of the reflux to the overhead product, given symbolically as R=L/D, where L = liquid down column, D = distillation product)

6. Specify the fraction of feed which is vaporized, f (where f is the molal fraction of the feed that leaves the feed plate continuously as vapor).

7A. Type of condenser used: ☐ total ☐ partial ☐ multiple ☐ other

7B. For each condenser provide process operating details including all inlet and outlet temperatures, pressures, and compositions.

8. Feed Characteristics
   A. Molar composition
   B. Individual vapor pressure of each component
   C. Total feed stage pressure
   D. Total feed stage temperature
   E. Total mass flow rate of each stream into the system

9. Overhead Product
   A. Molar composition of components
   B. Vapor pressure of components
   C. Total mass flow rate of all streams leaving the system as overhead products

10. Bottom Product
   A. Molar composition of all components
   B. Total mass flow rate of all steams leaving the system as bottom products

11. General Information
    A. Distillation column diameter
    B. Distillation column height
    C. Type of plates
    D. Plate spacing
    E. Murphree plate efficiency
    F. Any other information necessary of describe the operation of this distillation column.

12. **Proposed Monitoring, Recordkeeping, Reporting, and Testing**
    Please propose monitoring, recordkeeping, and reporting in order to demonstrate compliance with the proposed operating parameters. Please propose testing in order to demonstrate compliance with the proposed emissions limits.

MONITORING	RECORDKEEPING
REPORTING	TESTING

MONITORING. PLEASE LIST AND DESCRIBE THE PROCESS PARAMETERS AND RANGES THAT ARE PROPOSED TO BE MONITORED IN ORDER TO DEMONSTRATE COMPLIANCE WITH THE OPERATION OF THIS PROCESS EQUIPMENT OPERATION OR AIR POLLUTION CONTROL DEVICE.

RECORDKEEPING. PLEASE DESCRIBE THE PROPOSED RECORDKEEPING THAT WILL ACCOMPANY THE MONITORING.

REPORTING. PLEASE DESCRIBE THE PROPOSED FREQUENCY OF REPORTING OF THE RECORDKEEPING.

TESTING. PLEASE DESCRIBE ANY PROPOSED EMISSIONS TESTING FOR THIS PROCESS EQUIPMENT OR AIR POLLUTION CONTROL DEVICE.

13. Describe all operating ranges and maintenance procedures required by Manufacturer to maintain warranty

NOTE: An *AIR POLLUTION CONTROL DEVICE SHEET* must be completed for any air pollution device(s) (except emergency relief devices) used to control emissions from this distillation column.

Attachment L
FUGITIVE EMISSIONS FROM UNPAVED HAULROADS

UNPAVED HAULROADS (including all equipment traffic involved in process, haul trucks, endloaders, etc.)

		PM	PM-10
k =	Particle size multiplier	0.80	0.36
s =	Silt content of road surface material (%)	6.0	6.0
p =	Number of days per year with precipitation >0.01 in.	150	150

Item Number	Description	Number of Wheels	Mean Vehicle Weight (tons)	Mean Vehicle Speed (mph)	Miles per Trip	Maximum Trips per Hour	Maximum Trips per Year	Control Device ID Number	Control Efficiency (%)
1	Average NGL Truck	18	15	5	0.4	8	21,900	N/A	N/A
2									
3									
4									
5									
6									
7	Note: the equation below has been superceded by latest version of AP-42. Newest equation has been used for calculations. See attached spreadsheet.								
8									

Source: *AP-42 Fifth Edition – 13.2.2 Unpaved Roads*

$E = k \times 5.9 \times (s \div 12) \times (S \div 30) \times (W \div 3)^{0.7} \times (w \div 4)^{0.5} \times ((365 - p) \div 365) =$ lb/Vehicle Mile Traveled (VMT)

Where:

		PM	PM-10
k =	Particle size multiplier	0.80	0.36
s =	Silt content of road surface material (%)	6.0	6.0
S =	Mean vehicle speed (mph)	5	5
W =	Mean vehicle weight (tons)	15	15
w =	Mean number of wheels per vehicle	18	18
p =	Number of days per year with precipitation >0.01 in.	150	150

For lb/hr: [lb ÷ VMT] × [VMT ÷ trip] × [Trips ÷ Hour] = lb/hr

For TPY: [lb ÷ VMT] × [VMT ÷ trip] × [Trips ÷ Hour] × [Ton ÷ 2000 lb] = Tons/year

SUMMARY OF UNPAVED HAULROAD EMISSIONS

Item No.	PM				PM-10			
	Uncontrolled		Controlled		Uncontrolled		Controlled	
	lb/hr	TPY	lb/hr	TPY	lb/hr	TPY	lb/hr	TPY
1	--	15.20	--	15.20	--	4.05	--	4.05
2								
3								
4								
5								
6								
7								
8								
TOTALS		15.20		15.20		4.05		4.05

FUGITIVE EMISSIONS FROM PAVED HAULROADS

INDUSTRIAL PAVED HAULROADS (including all equipment traffic involved in process, haul trucks, endloaders, etc.)

I =	Industrial augmentation factor (dimensionless)	
n =	Number of traffic lanes	
s =	Surface material silt content (%)	
L =	Surface dust loading (lb/mile)	

Item Number	Description	Mean Vehicle Weight (tons)	Miles per Trip	Maximum Trips per Hour	Maximum Trips per Year	Control Device ID Number	Control Efficiency (%)
1							
2							
3							
4							
5							
6							
7							
8							

Source: *AP-42 Fifth Edition – 11.2.6 Industrial Paved Roads*

$E = 0.077 \times I \times (4 \div n) \times (s \div 10) \times (L \div 1000) \times (W \div 3)^{0.7}$ = lb/Vehicle Mile Traveled (VMT)

Where:

I =	Industrial augmentation factor (dimensionless)	
n =	Number of traffic lanes	
s =	Surface meterial silt content (%)	
L =	Surface dust loading (lb/mile)	
W =	Average vehicle weight (tons)	

For lb/hr: [lb ÷ VMT] × [VMT ÷ trip] × [Trips ÷ Hour] = lb/hr

For TPY: [lb ÷ VMT] × [VMT ÷ trip] × [Trips ÷ Hour] × [Ton ÷ 2000 lb] = Tons/year

SUMMARY OF PAVED HAULROAD EMISSIONS

Item No.	Uncontrolled		Controlled	
	lb/hr	TPY	lb/hr	TPY
1				
2				
3				
4				
5				
6				
7				
8				
TOTALS				

Attachment L
Emission Unit Data Sheet
(INDIRECT HEAT EXCHANGER)

Control Device ID No. (must match List Form): N/A

Equipment Information

1. Manufacturer: Heatec or equivalent	2. Model No. TBD Serial No. TBD
3. Number of units: 2	4. Use
5. Rated Boiler Horsepower: N/A hp	6. Boiler Serial No.: TBD
7. Date constructed: TBD	8. Date of last modification and explain: N/A
9. Maximum design heat input per unit: 9.7 $\times 10^6$ BTU/hr	10. Peak heat input per unit: 9.7 $\times 10^6$ BTU/hr
11. Steam produced at maximum design output: N/A LB/hr psig	12. Projected Operating Schedule: Hours/Day 24 Days/Week 7 Weeks/Year 52
13. Type of firing equipment to be used: ☐ Pulverized coal ☐ Spreader stoker ☐ Oil burners ☒ Natural Gas Burner ☐ Others, specify	14. Proposed type of burners and orientation: ☐ Vertical ☐ Front Wall ☐ Opposed ☐ Tangential ☐ Others, specify
15. Type of draft: ☒ Forced ☐ Induced	16. Percent of ash retained in furnace: 0 %
17. Will flyash be reinjected? ☐ Yes ☒ No	18. Percent of carbon in flyash: N/A %

Stack or Vent Data

19. Inside diameter or dimensions: 2.5 ft.	20. Gas exit temperature: 550 °F
21. Height: 20 ft.	22. Stack serves: ☒ This equipment only ☐ Other equipment also (submit type and rating of all other equipment exhausted through this stack or vent)
23. Gas flow rate: 8,500 ft^3/min	
24. Estimated percent of moisture: %	

Fuel Requirements

25.	Type	Fuel Oil No.	Natural Gas	Gas (other, specify)	Coal, Type:	Other:
	Quantity (at Design Output)	gph@60°F	9,424 scf/hr (based on max hourly heat rate)	ft^3/hr	TPH	
	Annually	$\times 10^3$ gal	82.6 million scf	$\times 10^6$ ft^3/hr	tons	
	Sulfur	Maximum: wt. % Average: wt. %	negligible gr/100 ft^3	gr/100 ft^3	Maximum: wt. %	
	Ash (%)		N/A		Maximum	
	BTU Content	BTU/Gal. Lbs/Gal.@60°F	1,029 BTU/ft^3	BTU/ft^3	BTU/lb	
	Source		Plant Residue			
	Supplier		N/A			
	Halogens (Yes/No)		No			
	List and Identify Metals		N/A			

26. Gas burner mode of control:
☐ Manual ☐ Automatic hi-low
☐ Automatic full modulation ☐ Automatic on-off

27. Gas burner manufacture:

28. Oil burner manufacture: N/A

29. If fuel oil is used, how is it atomized? ☐ Oil Pressure ☐ Steam Pressure ☐ Compressed Air ☐ Rotary Cup ☐ Other, specify

30. Fuel oil preheated: ☐ Yes ☐ No

31. If yes, indicate temperature: °F

32. Specify the calculated theoretical air requirements for combustion of the fuel or mixture of fuels described above actual cubic feet (ACF) per unit of fuel:
@ °F, PSIA, % moisture

33. Emission rate at rated capacity: See Attachment N lb/hr

34. Percent excess air actually required for combustion of the fuel described: %

Coal Characteristics

35. Seams:

36. Proximate analysis (dry basis): % of Fixed Carbon: % of Sulfur:
% of Moisture: % of Volatile Matter:
% of Ash:

Emissions Stream

37. What quantities of pollutants will be emitted from the boiler before controls?

Pollutant	Pounds per Hour lb/hr	grain/ACF	@ °F	PSIA
CO	0.80			
Hydrocarbons				
NO_x	0.95			
Pb				
PM_{10}	0.07			
SO_2	0.01			
VOCs	0.05			
Other (specify)				

38. What quantities of pollutants will be emitted from the boiler after controls?

Pollutant	Pounds per Hour lb/hr	grain/ACF	@ °F	PSIA
CO	0.80			
Hydrocarbons				
NO_x	0.95			
Pb				
PM_{10}	0.07			
SO_2	0.01			
VOCs	0.05			
Other (specify)				

39. How will waste material from the process and control equipment be disposed of?
N/A

40. Have you completed an *Air Pollution Control Device Sheet(s)* for the control(s) used on this Emission Unit. N/A

41. Have you included the ***air pollution rates*** on the Emissions Points Data Summary Sheet? Yes

42. **Proposed Monitoring, Recordkeeping, Reporting, and Testing**
Please propose monitoring, recordkeeping, and reporting in order to demonstrate compliance with the proposed operating parameters. Please propose testing in order to demonstrate compliance with the proposed emissions limits.

MONITORING PLAN: Please list (1) describe the process parameters and how they were chosen (2) the ranges and how they were established for monitoring to demonstrate compliance with the operation of this process equipment operation or air pollution control device.
Monitor and record actual fuel usage on a monthly basis. Actual fuel consumption will be used to ensure compliance with the potential annual emissions.

TESTING PLAN: Please describe any proposed emissions testing for this process equipment or air pollution control device.
N/A

RECORDKEEPING: Please describe the proposed recordkeeping that will accompany the monitoring.
Maintain records of the monthly fuel usage and calculate a 12 month rolling total.

REPORTING: Please describe the proposed frequency of reporting of the recordkeeping.
N/A

43. Describe all operating ranges and maintenance procedures required by Manufacturer to maintain warranty.
N/A

Attachment L
Emission Unit Data Sheet
(INDIRECT HEAT EXCHANGER)

Control Device ID No. (must match List Form): N/A

Equipment Information

1. Manufacturer: Heatec or equivalent	2. Model No. TBD Serial No. TBD
3. Number of units: 1	4. Use
5. Rated Boiler Horsepower: N/A hp	6. Boiler Serial No.: TBD
7. Date constructed: TBD	8. Date of last modification and explain: N/A
9. Maximum design heat input per unit: 26.3 $\times 10^6$ BTU/hr	10. Peak heat input per unit: 26.3 $\times 10^6$ BTU/hr
11. Steam produced at maximum design output: N/A LB/hr psig	12. Projected Operating Schedule: Hours/Day 24 Days/Week 7 Weeks/Year 52
13. Type of firing equipment to be used: ☐ Pulverized coal ☐ Spreader stoker ☐ Oil burners ☒ Natural Gas Burner ☐ Others, specify	14. Proposed type of burners and orientation: ☐ Vertical ☐ Front Wall ☐ Opposed ☐ Tangential ☐ Others, specify
15. Type of draft: ☒ Forced ☐ Induced	16. Percent of ash retained in furnace: 0 %
17. Will flyash be reinjected? ☐ Yes ☒ No	18. Percent of carbon in flyash: N/A %

Stack or Vent Data

19. Inside diameter or dimensions: 4 ft.	20. Gas exit temperature: 255 °F
21. Height: 20 ft.	22. Stack serves: ☒ This equipment only ☐ Other equipment also (submit type and rating of all other equipment exhausted through this stack or vent)
23. Gas flow rate: 6,068 ft^3/min	
24. Estimated percent of moisture: %	

Fuel Requirements

25.						
	Type	Fuel Oil No.	Natural Gas	Gas (other, specify)	Coal, Type:	Other:
	Quantity (at Design Output)	gph@60°F	25,551 scf/hr (based on max hourly heat rate)	ft^3/hr	TPH	
	Annually	$\times 10^3$ gal	223.8 million scf	$\times 10^6$ ft^3/hr	tons	
	Sulfur	Maximum: wt. % Average: wt. %	negligible gr/100 ft^3	gr/100 ft^3	Maximum: wt. %	
	Ash (%)		N/A		Maximum	
	BTU Content	BTU/Gal. Lbs/Gal.@60°F	1,029 BTU/ft^3	BTU/ft^3	BTU/lb	
	Source		Plant Residue			
	Supplier		N/A			
	Halogens (Yes/No)		No			
	List and Identify Metals		N/A			

26. Gas burner mode of control:
☐ Manual ☐ Automatic hi-low
☐ Automatic full modulation ☐ Automatic on-off

27. Gas burner manufacture:

28. Oil burner manufacture: N/A

29. If fuel oil is used, how is it atomized? ☐ Oil Pressure ☐ Steam Pressure ☐ Compressed Air ☐ Rotary Cup ☐ Other, specify

30. Fuel oil preheated: ☐ Yes ☐ No

31. If yes, indicate temperature: °F

32. Specify the calculated theoretical air requirements for combustion of the fuel or mixture of fuels described above actual cubic feet (ACF) per unit of fuel:
@ °F, PSIA, % moisture

33. Emission rate at rated capacity: See Attachment N lb/hr

34. Percent excess air actually required for combustion of the fuel described: %

Coal Characteristics

35. Seams:

36. Proximate analysis (dry basis): % of Fixed Carbon: % of Sulfur:
% of Moisture: % of Volatile Matter:
% of Ash:

Emissions Stream

37. What quantities of pollutants will be emitted from the boiler before controls?

Pollutant	Pounds per Hour lb/hr	grain/ACF	@ °F	PSIA
CO	2.15			
Hydrocarbons				
NO_x	2.56			
Pb				
PM_{10}	0.19			
SO_2	0.015			
VOCs	0.14			
Other (specify)				

38. What quantities of pollutants will be emitted from the boiler after controls?

Pollutant	Pounds per Hour lb/hr	grain/ACF	@ °F	PSIA
CO	2.15			
Hydrocarbons				
NO_x	2.56			
Pb				
PM_{10}	0.19			
SO_2	0.015			
VOCs	0.14			
Other (specify)				

39. How will waste material from the process and control equipment be disposed of?
N/A

40. Have you completed an *Air Pollution Control Device Sheet(s)* for the control(s) used on this Emission Unit. N/A

41. Have you included the ***air pollution rates*** on the Emissions Points Data Summary Sheet? Yes

42. **Proposed Monitoring, Recordkeeping, Reporting, and Testing**
Please propose monitoring, recordkeeping, and reporting in order to demonstrate compliance with the proposed operating parameters. Please propose testing in order to demonstrate compliance with the proposed emissions limits.

MONITORING PLAN: Please list (1) describe the process parameters and how they were chosen (2) the ranges and how they were established for monitoring to demonstrate compliance with the operation of this process equipment operation or air pollution control device.
Monitor and record actual fuel usage on a monthly basis. Actual fuel consumption will be used to ensure compliance with the potential annual emissions.

TESTING PLAN: Please describe any proposed emissions testing for this process equipment or air pollution control device.
N/A

RECORDKEEPING: Please describe the proposed recordkeeping that will accompany the monitoring.
Maintain records of the monthly fuel usage and calculate a 12 month rolling total.

REPORTING: Please describe the proposed frequency of reporting of the recordkeeping.
N/A

43. Describe all operating ranges and maintenance procedures required by Manufacturer to maintain warranty.
N/A

Attachment L
Emission Unit Data Sheet
(INDIRECT HEAT EXCHANGER)

Control Device ID No. (must match List Form): N/A

Equipment Information

1. Manufacturer: Heatec, Inc	2. Model No. Serial No.
3. Number of units: 1	4. Use Provide hot oil for natural gas processing.
5. Rated Boiler Horsepower: N/A hp	6. Boiler Serial No.: N/A
7. Date constructed: 2011	8. Date of last modification and explain: N/A
9. Maximum design heat input per unit: 216.7 ×10^6 BTU/hr	10. Peak heat input per unit: 216.7 ×10^6 BTU/hr
11. Steam produced at maximum design output: N/A LB/hr psig	12. Projected Operating Schedule: Hours/Day 24 Days/Week 7 Weeks/Year 52
13. Type of firing equipment to be used: ☐ Pulverized coal ☐ Spreader stoker ☐ Oil burners ☒ Natural Gas Burner ☐ Others, specify	14. Proposed type of burners and orientation: ☐ Vertical ☐ Front Wall ☐ Opposed ☐ Tangential ☒ Others, specify TBD
15. Type of draft: ☐ Forced ☐ Induced	16. Percent of ash retained in furnace: N/A %
17. Will flyash be reinjected? ☐ Yes ☒ No	18. Percent of carbon in flyash: N/A %

Stack or Vent Data

19. Inside diameter or dimensions: 10.75 ft.	20. Gas exit temperature: 670 °F
21. Height: 60 ft.	22. Stack serves: ☒ This equipment only ☐ Other equipment also (submit type and rating of all other equipment exhausted through this stack or vent)
23. Gas flow rate: 81,551 ft^3/min	
24. Estimated percent of moisture: N/A %	

Fuel Requirements

25.	Type	Fuel Oil No.	Natural Gas	Gas (other, specify)	Coal, Type:	Other:
	Quantity (at Design Output)	gph@60°F	210,531 ft^3/hr	ft^3/hr	TPH	
	Annually	$\times 10^3$ gal	1,844 $\times 10^6$ ft^3/yr	$\times 10^6$ ft^3/hr	tons	
	Sulfur	Maximum: wt. % Average: wt. %	0.25 gr/100 ft^3	gr/100 ft^3	Maximum: wt. %	
	Ash (%)		N/A		Maximum	
	BTU Content	BTU/Gal. Lbs/Gal.@60°F	1,027 BTU/ft^3	BTU/ft^3	BTU/lb	
	Source		Plant Residue			
	Supplier		N/A			
	Halogens (Yes/No)		No			
	List and Identify Metals		N/A			

26. Gas burner mode of control:
☐ Manual ☐ Automatic hi-low
☐ Automatic full modulation ☐ Automatic on-off

27. Gas burner manufacture: TBD

28. Oil burner manufacture: N/A

29. If fuel oil is used, how is it atomized? ☐ Oil Pressure ☐ Steam Pressure ☐ Compressed Air ☐ Rotary Cup ☐ Other, specify

30. Fuel oil preheated: ☐ Yes ☐ No

31. If yes, indicate temperature: °F

32. Specify the calculated theoretical air requirements for combustion of the fuel or mixture of fuels described above actual cubic feet (ACF) per unit of fuel:
38,907 scfm @ 70 °F, 14.7 PSIA, N/A % moisture

33. Emission rate at rated capacity: See Attachment N lb/hr

34. Percent excess air actually required for combustion of the fuel described: 15 %

Coal Characteristics

35. Seams:

36. Proximate analysis (dry basis): % of Fixed Carbon: % of Sulfur:
% of Moisture: % of Volatile Matter:
% of Ash:

Emissions Stream

37. What quantities of pollutants will be emitted from the boiler before controls?

Pollutant	Pounds per Hour lb/hr	grain/ACF	@ °F	PSIA
CO	3.25			
Hydrocarbons				
NO_x	5.63			
Pb				
PM_{10}	1.61			
SO_2	0.16			
VOCs	0.37			
Other (specify)				

38. What quantities of pollutants will be emitted from the boiler after controls?

Pollutant	Pounds per Hour lb/hr	grain/ACF	@ °F	PSIA
CO	3.25			
Hydrocarbons				
NO_x	5.63			
Pb				
PM_{10}	1.61			
SO_2	0.16			
VOCs	0.37			
Other (specify)				

39. How will waste material from the process and control equipment be disposed of?
N/A

40. Have you completed an *Air Pollution Control Device Sheet(s)* for the control(s) used on this Emission Unit. N/A

41. Have you included the ***air pollution rates*** on the Emissions Points Data Summary Sheet? Yes

42. **Proposed Monitoring, Recordkeeping, Reporting, and Testing**
Please propose monitoring, recordkeeping, and reporting in order to demonstrate compliance with the proposed operating parameters. Please propose testing in order to demonstrate compliance with the proposed emissions limits.

MONITORING PLAN: Please list (1) describe the process parameters and how they were chosen (2) the ranges and how they were established for monitoring to demonstrate compliance with the operation of this process equipment operation or air pollution control device.
See Attachment O-1

TESTING PLAN: Please describe any proposed emissions testing for this process equipment or air pollution control device.
See Attachment O-1

RECORDKEEPING: Please describe the proposed recordkeeping that will accompany the monitoring.
See Attachment O-1

REPORTING: Please describe the proposed frequency of reporting of the recordkeeping.
See Attachment O-1

43. Describe all operating ranges and maintenance procedures required by Manufacturer to maintain warranty.
TBD

Attachment L
Emission Unit Data Sheet
(INDIRECT HEAT EXCHANGER)

Control Device ID No. (must match List Form): N/A

Equipment Information

1. Manufacturer: Heatec, Inc	2. Model No. Serial No.
3. Number of units: 4	4. Use Provide hot oil for natural gas processing.
5. Rated Boiler Horsepower: hp	6. Boiler Serial No.:
7. Date constructed: 2014	8. Date of last modification and explain: N/A
9. Maximum design heat input per unit: 61.6 ×10^6 BTU/hr	10. Peak heat input per unit: 61.6 ×10^6 BTU/hr
11. Steam produced at maximum design output: N/A LB/hr psig	12. Projected Operating Schedule: Hours/Day 24 Days/Week 7 Weeks/Year 52
13. Type of firing equipment to be used: ☐ Pulverized coal ☐ Spreader stoker ☐ Oil burners ☒ Natural Gas Burner ☐ Others, specify	14. Proposed type of burners and orientation: ☐ Vertical ☐ Front Wall ☐ Opposed ☐ Tangential ☐ Others, specify
15. Type of draft: ☒ Forced ☐ Induced	16. Percent of ash retained in furnace: N/A %
17. Will flyash be reinjected? ☐ Yes ☒ No	18. Percent of carbon in flyash: N/A %

Stack or Vent Data

19. Inside diameter or dimensions: 4.0 ft.	20. Gas exit temperature: 670 °F
21. Height: 26 ft.	22. Stack serves: ☒ This equipment only ☐ Other equipment also (submit type and rating of all other equipment exhausted through this stack or vent)
23. Gas flow rate: 23,182 ft^3/min	
24. Estimated percent of moisture: %	

Fuel Requirements

25.	Type	Fuel Oil No.	Natural Gas	Gas (other, specify)	Coal, Type:	Other:
	Quantity (at Design Output)	gph@60°F	66,523 ft^3/hr	ft^3/hr	TPH	
	Annually	$\times 10^3$ gal	582.74 $\times 10^6$ ft^3/yr	$\times 10^6$ ft^3/hr	tons	
	Sulfur	Maximum: wt. % Average: wt. %	0.25 gr/100 ft^3	gr/100 ft^3	Maximum: wt. %	
	Ash (%)		N/A		Maximum	
	BTU Content	BTU/Gal. Lbs/Gal.@60°F	1,027 BTU/ft^3	BTU/ft^3	BTU/lb	
	Source		Plant Residue			
	Supplier		N/A			
	Halogens (Yes/No)		No			
	List and Identify Metals		N/A			

26. Gas burner mode of control:
☐ Manual ☐ Automatic hi-low
☐ Automatic full modulation ☐ Automatic on-off

27. Gas burner manufacture: TBD

28. Oil burner manufacture: N/A

29. If fuel oil is used, how is it atomized? ☐ Oil Pressure ☐ Steam Pressure ☐ Compressed Air ☐ Rotary Cup ☐ Other, specify

30. Fuel oil preheated: ☐ Yes ☐ No

31. If yes, indicate temperature: °F

32. Specify the calculated theoretical air requirements for combustion of the fuel or mixture of fuels described above actual cubic feet (ACF) per unit of fuel:
11,060 scfm @ 70 °F, 14.7 PSIA, N/A % moisture

33. Emission rate at rated capacity: See Attachment N lb/hr

34. Percent excess air actually required for combustion of the fuel described: 15 %

Coal Characteristics

35. Seams:

36. Proximate analysis (dry basis): % of Fixed Carbon: % of Sulfur:
% of Moisture: % of Volatile Matter:
% of Ash:

Emissions Stream

37. What quantities of pollutants will be emitted from the boiler before controls?

Pollutant	Pounds per Hour lb/hr	grain/ACF	@ °F	PSIA
CO	3.63			
Hydrocarbons				
NO_x	1.48			
Pb				
PM_{10}	0.46			
SO_2	0.04			
VOCs	0.33			
Other (specify)				

38. What quantities of pollutants will be emitted from the boiler after controls?

Pollutant	Pounds per Hour lb/hr	grain/ACF	@ °F	PSIA
CO	3.63			
Hydrocarbons				
NO_x	1.48			
Pb				
PM_{10}	0.46			
SO_2	0.04			
VOCs	0.33			
Other (specify)				

39. How will waste material from the process and control equipment be disposed of?
N/A

40. Have you completed an *Air Pollution Control Device Sheet(s)* for the control(s) used on this Emission Unit. N/A

41. Have you included the ***air pollution rates*** on the Emissions Points Data Summary Sheet? Yes

42. **Proposed Monitoring, Recordkeeping, Reporting, and Testing**
Please propose monitoring, recordkeeping, and reporting in order to demonstrate compliance with the proposed operating parameters. Please propose testing in order to demonstrate compliance with the proposed emissions limits.

MONITORING PLAN: Please list (1) describe the process parameters and how they were chosen (2) the ranges and how they were established for monitoring to demonstrate compliance with the operation of this process equipment operation or air pollution control device.
See Attachment O-1

TESTING PLAN: Please describe any proposed emissions testing for this process equipment or air pollution control device.
See Attachment O-1

RECORDKEEPING: Please describe the proposed recordkeeping that will accompany the monitoring.
See Attachment O-1

REPORTING: Please describe the proposed frequency of reporting of the recordkeeping.
See Attachment O-1

43. Describe all operating ranges and maintenance procedures required by Manufacturer to maintain warranty.
TBD

Attachment L
Emission Unit Data Sheet
(INDIRECT HEAT EXCHANGER)

Control Device ID No. (must match List Form): N/A

Equipment Information

1. Manufacturer:	2. Model No. Serial No.
3. Number of units: 1	4. Use Provide heat for dehydration unit.
5. Rated Boiler Horsepower: hp	6. Boiler Serial No.:
7. Date constructed: 2014	8. Date of last modification and explain: N/A
9. Maximum design heat input per unit: 3.0 ×10^6 BTU/hr	10. Peak heat input per unit: 3.0 ×10^6 BTU/hr
11. Steam produced at maximum design output: N/A LB/hr psig	12. Projected Operating Schedule: Hours/Day 24 Days/Week 7 Weeks/Year 52
13. Type of firing equipment to be used: ☐ Pulverized coal ☐ Spreader stoker ☐ Oil burners ☒ Natural Gas Burner ☐ Others, specify	14. Proposed type of burners and orientation: ☐ Vertical ☐ Front Wall ☐ Opposed ☐ Tangential ☐ Others, specify
15. Type of draft: ☒ Forced ☐ Induced	16. Percent of ash retained in furnace: N/A %
17. Will flyash be reinjected? ☐ Yes ☒ No	18. Percent of carbon in flyash: N/A %

Stack or Vent Data

19. Inside diameter or dimensions: 1.0 ft.	20. Gas exit temperature: 800 °F
21. Height: 20 ft.	22. Stack serves: ☒ This equipment only ☐ Other equipment also (submit type and rating of all other equipment exhausted through this stack or vent)
23. Gas flow rate: 1,273 ft^3/min	
24. Estimated percent of moisture: %	

Fuel Requirements

25.	Type	Fuel Oil No.	Natural Gas	Gas (other, specify)	Coal, Type:	Other:
	Quantity (at Design Output)	gph@60°F	2,921 ft^3/hr	ft^3/hr	TPH	
	Annually	$\times 10^3$ gal	25.59 $\times 10^6$ ft^3/yr	$\times 10^6$ ft^3/hr	tons	
	Sulfur	Maximum: wt. % Average: wt. %	0.25 gr/100 ft^3	gr/100 ft^3	Maximum: wt. %	
	Ash (%)		N/A		Maximum	
	BTU Content	BTU/Gal. Lbs/Gal.@60°F	1,027 BTU/ft^3	BTU/ft^3	BTU/lb	
	Source		Plant Residue			
	Supplier		N/A			
	Halogens (Yes/No)		No			
	List and Identify Metals		N/A			

26. Gas burner mode of control:
☐ Manual ☐ Automatic hi-low
☐ Automatic full modulation ☐ Automatic on-off

27. Gas burner manufacture: TBD

28. Oil burner manufacture: N/A

29. If fuel oil is used, how is it atomized? ☐ Oil Pressure ☐ Steam Pressure ☐ Compressed Air ☐ Rotary Cup ☐ Other, specify

30. Fuel oil preheated: ☐ Yes ☐ No

31. If yes, indicate temperature: °F

32. Specify the calculated theoretical air requirements for combustion of the fuel or mixture of fuels described above actual cubic feet (ACF) per unit of fuel:
535 scfm @ 70 °F, 14.7 PSIA, N/A % moisture

33. Emission rate at rated capacity: See Attachment N lb/hr

34. Percent excess air actually required for combustion of the fuel described: 15 %

Coal Characteristics

35. Seams:

36. Proximate analysis (dry basis): % of Fixed Carbon: % of Sulfur:
% of Moisture: % of Volatile Matter:
% of Ash:

Emissions Stream

37. What quantities of pollutants will be emitted from the boiler before controls?

Pollutant	Pounds per Hour lb/hr	grain/ACF	@ °F	PSIA
CO	0.25			
Hydrocarbons				
NO_x	0.29			
Pb				
PM_{10}	0.02			
SO_2	0.002			
VOCs	0.02			
Other (specify)				

38. What quantities of pollutants will be emitted from the boiler after controls?

Pollutant	Pounds per Hour lb/hr	grain/ACF	@ °F	PSIA
CO	0.25			
Hydrocarbons				
NO_x	0.29			
Pb				
PM_{10}	0.02			
SO_2	0.002			
VOCs	0.02			
Other (specify)				

39. How will waste material from the process and control equipment be disposed of?
N/A

40. Have you completed an *Air Pollution Control Device Sheet(s)* for the control(s) used on this Emission Unit. N/A

41. Have you included the ***air pollution rates*** on the Emissions Points Data Summary Sheet? Yes

42. **Proposed Monitoring, Recordkeeping, Reporting, and Testing**
Please propose monitoring, recordkeeping, and reporting in order to demonstrate compliance with the proposed operating parameters. Please propose testing in order to demonstrate compliance with the proposed emissions limits.

MONITORING PLAN: Please list (1) describe the process parameters and how they were chosen (2) the ranges and how they were established for monitoring to demonstrate compliance with the operation of this process equipment operation or air pollution control device.
See Attachment O-1

TESTING PLAN: Please describe any proposed emissions testing for this process equipment or air pollution control device.
See Attachment O-1

RECORDKEEPING: Please describe the proposed recordkeeping that will accompany the monitoring.
See Attachment O-1

REPORTING: Please describe the proposed frequency of reporting of the recordkeeping.
See Attachment O-1

43. Describe all operating ranges and maintenance procedures required by Manufacturer to maintain warranty.
TBD

Attachment L
EMISSIONS UNIT DATA SHEET
STORAGE TANKS

See attached data following this EUDS for all information on the Natural Gas Liquids (NGL), propane, butane, and isobutene storage tanks.

Provide the following information for each new or modified bulk liquid storage tank as shown on the *Equipment List Form* and other parts of this application. A tank is considered modified if the material to be stored in the tank is different from the existing stored liquid.

IF USING US EPA'S TANKS EMISSION ESTIMATION PROGRAM (AVAILABLE AT **www.epa.gov/tnn/tanks.html**), APPLICANT MAY ATTACH THE SUMMARY SHEETS IN LIEU OF COMPLETING SECTIONS III, IV, & V OF THIS FORM. HOWEVER, SECTIONS I, II, AND VI OF THIS FORM MUST BE COMPLETED. US EPA'S AP-42, SECTION 7.1, "ORGANIC LIQUID STORAGE TANKS," MAY ALSO BE USED TO ESTIMATE VOC AND HAP EMISSIONS (**http://www.epa.gov/tnn/chief/**).

I. GENERAL INFORMATION (required)

1. Bulk Storage Area Name	2. Tank Name
3. Tank Equipment Identification No. (as assigned on *Equipment List Form*)	4. Emission Point Identification No. (as assigned on *Equipment List Form*)
5. Date of Commencement of Construction (for existing tanks)	
6. Type of change ☐ New Construction ☐ New Stored Material ☐ Other Tank Modification	
7. Description of Tank Modification (if applicable)	
7A. Does the tank have more than one mode of operation? (e.g. Is there more than one product stored in the tank?) ☐ Yes ☐ No	
7B. If YES, explain and identify which mode is covered by this application (Note: A separate form must be completed for each mode).	
7C. Provide any limitations on source operation affecting emissions, any work practice standards (e.g. production variation, etc.):	

II. TANK INFORMATION (required)

8. Design Capacity (specify barrels or gallons). Use the internal cross-sectional area multiplied by internal height.	
9A. Tank Internal Diameter (ft)	9B. Tank Internal Height (or Length) (ft)
10A. Maximum Liquid Height (ft)	10B. Average Liquid Height (ft)

11A. Maximum Vapor Space Height (ft)	11B. Average Vapor Space Height (ft)
12. Nominal Capacity (specify barrels or gallons). This is also known as “working volume” and considers design liquid levels and overflow valve heights.	

13A. Maximum annual throughput (gal/yr)	13B. Maximum daily throughput (gal/day)
14. Number of Turnovers per year (annual net throughput/maximum tank liquid volume)	
15. Maximum tank fill rate (gal/min)	
16. Tank fill method ☐ Submerged ☐ Splash ☐ Bottom Loading	
17. Complete 17A and 17B for Variable Vapor Space Tank Systems ☐ Does Not Apply	
17A. Volume Expansion Capacity of System (gal)	17B. Number of transfers into system per year

18. Type of tank (check all that apply):
- ☐ Fixed Roof ___ vertical ___ horizontal ___ flat roof ___ cone roof ___ dome roof ___ other (describe)
- ☐ External Floating Roof ___ pontoon roof ___ double deck roof
- ☐ Domed External (or Covered) Floating Roof
- ☐ Internal Floating Roof ___ vertical column support ___ self-supporting
- ☐ Variable Vapor Space ___ lifter roof ___ diaphragm
- ☐ Pressurized ___ spherical ___ cylindrical
- ☐ Underground
- ☐ Other (describe)

III. TANK CONSTRUCTION & OPERATION INFORMATION (optional if providing TANKS Summary Sheets)

19. Tank Shell Construction:
☐ Riveted ☐ Gunite lined ☐ Epoxy-coated rivets ☐ Other (describe)

20A. Shell Color	20B. Roof Color	20C. Year Last Painted

21. Shell Condition (if metal and unlined):
☐ No Rust ☐ Light Rust ☐ Dense Rust ☐ Not applicable

22A. Is the tank heated? ☐ YES ☐ NO

22B. If YES, provide the operating temperature (°F)

22C. If YES, please describe how heat is provided to tank.

23. Operating Pressure Range (psig): to

24. Complete the following section for **Vertical Fixed Roof Tanks** ☐ Does Not Apply

24A. For dome roof, provide roof radius (ft)

24B. For cone roof, provide slope (ft/ft)

25. Complete the following section for **Floating Roof Tanks** ☐ Does Not Apply

25A. Year Internal Floaters Installed:

25B. Primary Seal Type: (check one)
☐ Metallic (Mechanical) Shoe Seal ☐ Liquid Mounted Resilient Seal
☐ Vapor Mounted Resilient Seal ☐ Other (describe):

25C. Is the Floating Roof equipped with a Secondary Seal? ☐ YES ☐ NO

25D. If YES, how is the secondary seal mounted? (check one) ☐ Shoe ☐ Rim ☐ Other (describe):

25E. Is the Floating Roof equipped with a weather shield? ☐ YES ☐ NO

25F. Describe deck fittings; indicate the number of each type of fitting:

ACCESS HATCH		
BOLT COVER, GASKETED:	UNBOLTED COVER, GASKETED:	UNBOLTED COVER, UNGASKETED:

AUTOMATIC GAUGE FLOAT WELL		
BOLT COVER, GASKETED:	UNBOLTED COVER, GASKETED:	UNBOLTED COVER, UNGASKETED:

COLUMN WELL		
BUILT-UP COLUMN – SLIDING COVER, GASKETED:	BUILT-UP COLUMN – SLIDING COVER, UNGASKETED:	PIPE COLUMN – FLEXIBLE FABRIC SLEEVE SEAL:

LADDER WELL	
PIP COLUMN – SLIDING COVER, GASKETED:	PIPE COLUMN – SLIDING COVER, UNGASKETED:

GAUGE-HATCH/SAMPLE PORT	
SLIDING COVER, GASKETED:	SLIDING COVER, UNGASKETED:

ROOF LEG OR HANGER WELL		
WEIGHTED MECHANICAL ACTUATION, GASKETED:	WEIGHTED MECHANICAL ACTUATION, UNGASKETED:	SAMPLE WELL-SLIT FABRIC SEAL (10% OPEN AREA)

VACUUM BREAKER	
WEIGHTED MECHANICAL ACTUATION, GASKETED:	WEIGHTED MECHANICAL ACTUATION, UNGASKETED:

RIM VENT	
WEIGHTED MECHANICAL ACTUATION GASKETED:	WEIGHTED MECHANICAL ACTUATION, UNGASKETED:

DECK DRAIN (3-INCH DIAMETER)	
OPEN:	90% CLOSED:

STUB DRAIN
1-INCH DIAMETER:

OTHER (DESCRIBE, ATTACH ADDITIONAL PAGES IF NECESSARY)

26. Complete the following section for Internal Floating Roof Tanks ☐ Does Not Apply	
26A. Deck Type: ☐ Bolted ☐ Welded	
26B. For Bolted decks, provide deck construction:	
26C. Deck seam: ☐ Continuous sheet construction 5 feet wide ☐ Continuous sheet construction 6 feet wide ☐ Continuous sheet construction 7 feet wide ☐ Continuous sheet construction 5 × 7.5 feet wide ☐ Continuous sheet construction 5 × 12 feet wide ☐ Other (describe)	
26D. Deck seam length (ft)	26E. Area of deck (ft^2)
For column supported tanks: 26F. Number of columns:	26G. Diameter of each column:

IV. SITE INFORMANTION (optional if providing TANKS Summary Sheets)

27. Provide the city and state on which the data in this section are based.
28. Daily Average Ambient Temperature (°F)
29. Annual Average Maximum Temperature (°F)
30. Annual Average Minimum Temperature (°F)
31. Average Wind Speed (miles/hr)
32. Annual Average Solar Insulation Factor (BTU/(ft^2·day))
33. Atmospheric Pressure (psia)

V. LIQUID INFORMATION (optional if providing TANKS Summary Sheets)

34. Average daily temperature range of bulk liquid:	
34A. Minimum (°F)	34B. Maximum (°F)
35. Average operating pressure range of tank:	
35A. Minimum (psig)	35B. Maximum (psig)
36A. Minimum Liquid Surface Temperature (°F)	36B. Corresponding Vapor Pressure (psia)
37A. Average Liquid Surface Temperature (°F)	37B. Corresponding Vapor Pressure (psia)
38A. Maximum Liquid Surface Temperature (°F)	38B. Corresponding Vapor Pressure (psia)

39. Provide the following for <u>each</u> liquid or gas to be stored in tank. Add additional pages if necessary.

39A. Material Name or Composition			
39B. CAS Number			
39C. Liquid Density (lb/gal)			
39D. Liquid Molecular Weight (lb/lb-mole)			
39E. Vapor Molecular Weight (lb/lb-mole)			

Maximum Vapor Pressure 39F. True (psia) 39G. Reid (psia)			
Months Storage per Year 39H. From 39I. To			

VI. EMISSIONS AND CONTROL DEVICE DATA (required)

40. Emission Control Devices (check as many as apply): ☐ Does Not Apply

- ☐ Carbon Adsorption[1]
- ☐ Condenser[1]
- ☐ Conservation Vent (psig)
  - Vacuum Setting Pressure Setting
- ☐ Emergency Relief Valve (psig)
- ☐ Inert Gas Blanket of
- ☐ Insulation of Tank with
- ☐ Liquid Absorption (scrubber)[1]
- ☐ Refrigeration of Tank
- ☐ Rupture Disc (psig)
- ☐ Vent to Incinerator[1]
- ☐ Other[1] (describe):

[1] Complete appropriate Air Pollution Control Device Sheet.

41. Expected Emission Rate (submit Test Data or Calculations here or elsewhere in the application).

Material Name & CAS No.	Breathing Loss (lb/hr)	Working Loss		Annual Loss (lb/yr)	Estimation Method[1]
		Amount	Units		

[1] EPA = EPA Emission Factor, MB = Material Balance, SS = Similar Source, ST = Similar Source Test, Throughput Data, O = Other (specify)

☐ Remember to attach emissions calculations, including TANKS Summary Sheets if applicable.

EMISSIONS UNIT DATA SHEET - STORAGE TANKS

FOR NATURAL GAS LIQUID (NGL), PROPANE, BUTANE, ISOBUTANE AND GASOLINE

AIR PERMIT APPLICATION

NATRIUM EXTRACTION AND FRACTIONATION PROCESSING PLANT

BLUE RACER MIDSTREAM, LLC

I. General Information

Tank Name	Tank Equipment ID No.	Emission Point ID No.	Control Device ID No.	Date of Construction	Type of Change	Does the tank have more than one mode of operation?	Limitations
Propane Storage Tank[1]	US-800	NA	C004	2012	Existing	No	None
Isobutane Storage Tank[1]	US-801	NA	C004	2012	Existing	No	None
Butane Storage Tank[1]	US-804	NA	C004	2012	Existing	No	None
Butane Storage Tanks[1] (4)	N/A	NA	C004	2014	New	No	None
NGL Storage Tank[1]	US-805	NA	C004	2012	Existing	No	None
Gasoline Storage Tank	TK-802	P001	C001	2012	Existing	No	None
Gasoline Storage Tank	TK-803	P001	C001	2014	New	No	None
Slop Oil Tank	TK-906	NA	C004	2012	Existing	No	None

Note: [1] Pressurized vessel. Only venting of the tanks is during emergency situations or non-routine maintenance activities.

II. Tank Information

Tank Name	Type of Tank	Fill Method	Capacity (gallons)	Tank Diameter (ft)	Tank Length (ft)	Truck Loading (gpm)	Rail Loading (gpm)	Barge Loading (gpm)
Propane	Horizontal, Pressurized, Cylindrical	Bottom	2,142,000	81	49	3,600	4,000	3,000
Isobutane	Horizontal, Pressurized, Cylindrical	Bottom	865,200	60.5	36	3,600	4,000	
Butane	Horizontal, Pressurized, Cylindrical	Bottom	865,200	60.5	36	3,600	4,000	
NGL	Horizontal, Pressurized, Cylindrical	Bottom	865,200	60.5	36	3,600		
Gasoline TK-802	Atmospheric, Cylindrical, Dome Roof	Top/Bottom	714,000	59	39.75	600	2,000	3,000
Gasoline TK-803	Atmospheric, Cylindrical, Dome Roof	Top/Bottom	1,629,096	TBD	TBD	N/A	N/A	N/A
Slop Oil	Atmospheric, Cylindrical, Dome Roof	Top/Bottom	20,000	12	24.75	NA	NA	NA

III. Tank Construction and Operation

Tank Name	Tank Shell Construction	Shell/ Roof Color	Operating Pressure (psig)	Is Tank Heated?
Propane	Welded	White	180	Yes
Isobutane	Welded	White	78	Yes
Butane	Welded	White	46	Yes
NGL	Welded	White	181	Yes
Gasoline	Welded	White	0	No
Slop Oil	Welded	White	0	No

EMISSIONS UNIT DATA SHEET - STORAGE TANKS

FOR NATURAL GAS LIQUID (NGL), PROPANE, BUTANE, ISOBUTANE AND GASOLINE

AIR PERMIT APPLICATION

NATRIUM EXTRACTION AND FRACTIONATION PROCESSING PLANT

BLUE RACER MIDSTREAM, LLC

LIQUID INFORMATION

Tank Name	CAS #	Liquid Density (lb/gal)	Liquid Molecular Weight (lb/lb-mole)	Vapor Molecular Weight (lb/lb-mole)	True Vapor Pressure (psia)	Reid Vapor Pressure (psia)
Propane	74-98-6	4.24	44.096	44.096	126.15	190
Isobutane	75-28-5	4.58	58.12	58.12	45	71
Butane	106-97-8	4.84	58.12	58.12	33.5	52.4
NGL	64741-48-6	4.26	52.29	52.29	132.4	124.6
Gasoline	8006-61-9	6.17	62	60	13.5	12
Slop Oil	Assume same as gasoline					

EMISSIONS DATA

Tank Name	Type of Tank	Emissions
Propane	Horizontal, Pressurized, Cylindrical[1]	There are no emissions for these pressure vessels, except during emergency or upset conditions, or non-routine maintenance in which emissions will be vented through a pressure relief valve (PRV) to the Flare.
Isobutane	Horizontal, Pressurized, Cylindrical[1]	
Butane	Horizontal, Pressurized, Cylindrical[1]	
NGL	Horizontal, Pressurized, Cylindrical[1]	
Gasoline	Atmospheric, Cylindrical, Dome Roof	The VOC emissions from this tanks are vented to the flare.
Slop Oil	Atmospheric, Cylindrical, Dome Roof	The VOC emissions from this tank are vented to the flare.

Note: [1] Pressurized vessel. Only venting of the tanks is during emergency situations or non-routine maintenance activities.

Attachment L
EMISSIONS UNIT DATA SHEET
GENERAL

To be used for affected sources other than asphalt plants, foundries, incinerators, indirect heat exchangers, and quarries.

Identification Number (as assigned on *Equipment List Form*): S011

1. Name or type and model of proposed affected source:

   Carbon dioxide will be removed from the ethane product in an amine unit contacting system. The total ethane product is contacted with a diethylamide (DEA) solution in the Amine Contactor where the CO2 in the ethane product is removed to less than 500 ppmw. The rich amine from the Contactor is regenerated in the Amine Regenerator where heat input is used to drive the CO2 and water overhead and vented to atmosphere. The lean amine from the bottom of the regenerator is then recycled back to the Amine Contactor. The main emissions from the amine system are CO2 and water.

2. On a separate sheet(s), furnish a sketch(es) of this affected source. If a modification is to be made to this source, clearly indicated the change(s). Provide a narrative description of all features of the affected source which may affect the production of air pollutants.

3. Name(s) and maximum amount of proposed process material(s) charged per hour:

   1.20 MMscf/hr ethane product (~18,000 bbl/day)

4. Name(s) and maximum amount of proposed material(s) produced per hour:

   1.20 MMscf/hr ethane product (~18,000 bbl/day)

5. Give chemical reactions, if applicable, that will be involved in the generation of air pollutants:

   N/A

* The identification number which appears here must correspond to the air pollution control device identification number appearing on the *List Form*.

6. Combustion Data (if applicable):

(a) Type and amount in appropriate units of fuel(s) to be burned:

N/A

(b) Chemical analysis of proposed fuel(s), excluding coal, including maximum percent sulfur and ash:

(c) Theoretical combustion air requirement (ACF/unit of fuel):

@ °F and psia.

(d) Percent excess air:

(e) Type and BTU/hr of burners and all other firing equipment planned to be used:

(f) If coal is proposed as a source of fuel, identify supplier and seams and give sizing of the coal as it will be fired:

(g) Proposed maximum design heat input: $\times 10^6$ BTU/hr.

7. Projected operating schedule:

Hours/Day	24	Days/Week	7	Weeks/Year	52

8. Projected amount of pollutants that would be emitted from this affected source if no control devices were used:

@ °F and psia

a.	NO_X		lb/hr	grains/ACF
b.	SO_2		lb/hr	grains/ACF
c.	CO		lb/hr	grains/ACF
d.	PM_{10}		lb/hr	grains/ACF
e.	Hydrocarbons	6.92	lb/hr	grains/ACF
f.	VOCs	0.04	lb/hr	grains/ACF
g.	Pb		lb/hr	grains/ACF
h.	Specify other(s)			
	Carbon Dioxide	1302.78	lb/hr	grains/ACF
			lb/hr	grains/ACF
			lb/hr	grains/ACF
			lb/hr	grains/ACF

NOTE: (1) An Air Pollution Control Device Sheet must be completed for any air pollution device(s) used to control emissions from this affected source.

(2) Complete the Emission Points Data Sheet.

9. Proposed Monitoring, Recordkeeping, Reporting, and Testing
Please propose monitoring, recordkeeping, and reporting in order to demonstrate compliance with the proposed operating parameters. Please propose testing in order to demonstrate compliance with the proposed emissions limits.

MONITORING	RECORDKEEPING
See Attachment O-1	See Attachment O-1
REPORTING	TESTING
See Attachment O-1	See Attachment O-1

MONITORING. PLEASE LIST AND DESCRIBE THE PROCESS PARAMETERS AND RANGES THAT ARE PROPOSED TO BE MONITORED IN ORDER TO DEMONSTRATE COMPLIANCE WITH THE OPERATION OF THIS PROCESS EQUIPMENT OPERATION/AIR POLLUTION CONTROL DEVICE.

RECORDKEEPING. PLEASE DESCRIBE THE PROPOSED RECORDKEEPING THAT WILL ACCOMPANY THE MONITORING.

REPORTING. PLEASE DESCRIBE THE PROPOSED FREQUENCY OF REPORTING OF THE RECORDKEEPING.

TESTING. PLEASE DESCRIBE ANY PROPOSED EMISSIONS TESTING FOR THIS PROCESS EQUIPMENT/AIR POLLUTION CONTROL DEVICE.

10. Describe all operating ranges and maintenance procedures required by Manufacturer to maintain warranty
N/A

Attachment L
EMISSIONS UNIT DATA SHEET
GENERAL

To be used for affected sources other than asphalt plants, foundries, incinerators, indirect heat exchangers, and quarries.

Identification Number (as assigned on *Equipment List Form*): S014

1. Name or type and model of proposed affected source:

   Carbon dioxide will be removed from the ethane product in an amine unit contacting system. The total ethane product is contacted with a diethylamide (DEA) solution in the Amine Contactor where the CO2 in the ethane product is removed to less than 500 ppmw. The rich amine from the Contactor is regenerated in the Amine Regenerator where heat input is used to drive the CO2 and water overhead and vented to atmosphere. The lean amine from the bottom of the regenerator is then recycled back to the Amine Contactor. The main emissions from the amine system are CO2 and water.

2. On a separate sheet(s), furnish a sketch(es) of this affected source. If a modification is to be made to this source, clearly indicated the change(s). Provide a narrative description of all features of the affected source which may affect the production of air pollutants.

3. Name(s) and maximum amount of proposed process material(s) charged per hour:

   4.17 MMscf/hr ethane product (~62,000 bbl/day)

4. Name(s) and maximum amount of proposed material(s) produced per hour:

   4.17 MMscf/hr ethane product (~62,000 bbl/day)

5. Give chemical reactions, if applicable, that will be involved in the generation of air pollutants:

   N/A

* The identification number which appears here must correspond to the air pollution control device identification number appearing on the *List Form*.

6. Combustion Data (if applicable):

(a) Type and amount in appropriate units of fuel(s) to be burned:

N/A

(b) Chemical analysis of proposed fuel(s), excluding coal, including maximum percent sulfur and ash:

(c) Theoretical combustion air requirement (ACF/unit of fuel):

@ °F and psia.

(d) Percent excess air:

(e) Type and BTU/hr of burners and all other firing equipment planned to be used:

(f) If coal is proposed as a source of fuel, identify supplier and seams and give sizing of the coal as it will be fired:

(g) Proposed maximum design heat input: $\times 10^6$ BTU/hr.

7. Projected operating schedule:

Hours/Day	24	Days/Week	7	Weeks/Year	52

8. Projected amount of pollutants that would be emitted from this affected source if no control devices were used:

@ °F and psia

a.	NO_X		lb/hr	grains/ACF
b.	SO_2		lb/hr	grains/ACF
c.	CO		lb/hr	grains/ACF
d.	PM_{10}		lb/hr	grains/ACF
e.	Hydrocarbons	21.45	lb/hr	grains/ACF
f.	VOCs	0.12	lb/hr	grains/ACF
g.	Pb		lb/hr	grains/ACF
h.	Specify other(s)			
	Carbon Dioxide	4517.25	lb/hr	grains/ACF
			lb/hr	grains/ACF
			lb/hr	grains/ACF
			lb/hr	grains/ACF

NOTE: (1) An Air Pollution Control Device Sheet must be completed for any air pollution device(s) used to control emissions from this affected source.

(2) Complete the Emission Points Data Sheet.

9. Proposed Monitoring, Recordkeeping, Reporting, and Testing
Please propose monitoring, recordkeeping, and reporting in order to demonstrate compliance with the proposed operating parameters. Please propose testing in order to demonstrate compliance with the proposed emissions limits.

MONITORING	RECORDKEEPING
See Attachment O-1	See Attachment O-1
REPORTING	TESTING
See Attachment O-1	See Attachment O-1

MONITORING. PLEASE LIST AND DESCRIBE THE PROCESS PARAMETERS AND RANGES THAT ARE PROPOSED TO BE MONITORED IN ORDER TO DEMONSTRATE COMPLIANCE WITH THE OPERATION OF THIS PROCESS EQUIPMENT OPERATION/AIR POLLUTION CONTROL DEVICE.

RECORDKEEPING. PLEASE DESCRIBE THE PROPOSED RECORDKEEPING THAT WILL ACCOMPANY THE MONITORING.

REPORTING. PLEASE DESCRIBE THE PROPOSED FREQUENCY OF REPORTING OF THE RECORDKEEPING.

TESTING. PLEASE DESCRIBE ANY PROPOSED EMISSIONS TESTING FOR THIS PROCESS EQUIPMENT/AIR POLLUTION CONTROL DEVICE.

10. Describe all operating ranges and maintenance procedures required by Manufacturer to maintain warranty
N/A

Attachment L
EMISSIONS UNIT DATA SHEET
GENERAL

To be used for affected sources other than asphalt plants, foundries, incinerators, indirect heat exchangers, and quarries.

Identification Number (as assigned on *Equipment List Form*): S006

1. Name or type and model of proposed affected source:

   A glycol dehydration system is used to dry the incoming gas. The emission vent from this system will be routed to the fuel gas system and combusted in the hot oil burner.

2. On a separate sheet(s), furnish a sketch(es) of this affected source. If a modification is to be made to this source, clearly indicated the change(s). Provide a narrative description of all features of the affected source which may affect the production of air pollutants.

3. Name(s) and maximum amount of proposed process material(s) charged per hour:

4. Name(s) and maximum amount of proposed material(s) produced per hour:

5. Give chemical reactions, if applicable, that will be involved in the generation of air pollutants:

   N/A

* The identification number which appears here must correspond to the air pollution control device identification number appearing on the *List Form*.

6. Combustion Data (if applicable):

(a) Type and amount in appropriate units of fuel(s) to be burned:

N/A

(b) Chemical analysis of proposed fuel(s), excluding coal, including maximum percent sulfur and ash:

(c) Theoretical combustion air requirement (ACF/unit of fuel):

@ °F and psia.

(d) Percent excess air:

(e) Type and BTU/hr of burners and all other firing equipment planned to be used:

(f) If coal is proposed as a source of fuel, identify supplier and seams and give sizing of the coal as it will be fired:

(g) Proposed maximum design heat input: $\times 10^6$ BTU/hr.

7. Projected operating schedule:

Hours/Day	24	Days/Week	7	Weeks/Year	52

8. Projected amount of pollutants that would be emitted from this affected source if no control devices were used:

@ °F and psia

a.	NO_X	N/A	lb/hr	grains/ACF
b.	SO_2	N/A	lb/hr	grains/ACF
c.	CO	N/A	lb/hr	grains/ACF
d.	PM_{10}	N/A	lb/hr	grains/ACF
e.	Hydrocarbons	N/A	lb/hr	grains/ACF
f.	VOCs	N/A	lb/hr	grains/ACF
g.	Pb	N/A	lb/hr	grains/ACF
h.	Specify other(s)			
			lb/hr	grains/ACF
			lb/hr	grains/ACF
			lb/hr	grains/ACF
			lb/hr	grains/ACF

NOTE: (1) An Air Pollution Control Device Sheet must be completed for any air pollution device(s) used to control emissions from this affected source.

(2) Complete the Emission Points Data Sheet.

9. Proposed Monitoring, Recordkeeping, Reporting, and Testing
Please propose monitoring, recordkeeping, and reporting in order to demonstrate compliance with the proposed operating parameters. Please propose testing in order to demonstrate compliance with the proposed emissions limits.

MONITORING	RECORDKEEPING
None.	The unit is only subject to the emission determinations and recordkeeping requirements of §63.774(d)(1) or the initial notification requirements of §63.764(d)(2)(iii).
REPORTING	TESTING
None.	None.

MONITORING. PLEASE LIST AND DESCRIBE THE PROCESS PARAMETERS AND RANGES THAT ARE PROPOSED TO BE MONITORED IN ORDER TO DEMONSTRATE COMPLIANCE WITH THE OPERATION OF THIS PROCESS EQUIPMENT OPERATION/AIR POLLUTION CONTROL DEVICE.

RECORDKEEPING. PLEASE DESCRIBE THE PROPOSED RECORDKEEPING THAT WILL ACCOMPANY THE MONITORING.

REPORTING. PLEASE DESCRIBE THE PROPOSED FREQUENCY OF REPORTING OF THE RECORDKEEPING.

TESTING. PLEASE DESCRIBE ANY PROPOSED EMISSIONS TESTING FOR THIS PROCESS EQUIPMENT/AIR POLLUTION CONTROL DEVICE.

10. Describe all operating ranges and maintenance procedures required by Manufacturer to maintain warranty
N/A

Attachment L
EMISSIONS UNIT DATA SHEET
GENERAL

To be used for affected sources other than asphalt plants, foundries, incinerators, indirect heat exchangers, and quarries.

Identification Number (as assigned on *Equipment List Form*): S002 and S003

1. Name or type and model of proposed affected source: Emergency Fire Pump Engine - Model C18, 700 hp @ 1,750 rpm
2. On a separate sheet(s), furnish a sketch(es) of this affected source. If a modification is to be made to this source, clearly indicated the change(s). Provide a narrative description of all features of the affected source which may affect the production of air pollutants.
3. Name(s) and maximum amount of proposed process material(s) charged per hour: Diesel Fuel Consumption ~ 35.9 gal/hr
4. Name(s) and maximum amount of proposed material(s) produced per hour: Combustion of Diesel fuel, where combustion gases push piston through cylinder to produce power.
5. Give chemical reactions, if applicable, that will be involved in the generation of air pollutants: Combustion of Diesel fuel, where combustion gases push piston through cylinder to produce power.

* The identification number which appears here must correspond to the air pollution control device identification number appearing on the *List Form*.

6. Combustion Data (if applicable):

(a) Type and amount in appropriate units of fuel(s) to be burned:

Diesel Fuel Consumption ~ 35.9 gal/hr

(b) Chemical analysis of proposed fuel(s), excluding coal, including maximum percent sulfur and ash:

(c) Theoretical combustion air requirement (ACF/unit of fuel):

@ °F and psia.

(d) Percent excess air:

(e) Type and BTU/hr of burners and all other firing equipment planned to be used:

(f) If coal is proposed as a source of fuel, identify supplier and seams and give sizing of the coal as it will be fired:

(g) Proposed maximum design heat input: $\times 10^6$ BTU/hr.

7. Projected operating schedule:

Hours/Day	24	Days/Week	7	Weeks/Year	52

8. Projected amount of pollutants that would be emitted from this affected source if no control devices were used:

@ °F and psia

a.	NO_X	5.31	lb/hr	grains/ACF
b.	SO_2	0.01	lb/hr	grains/ACF
c.	CO	2.18	lb/hr	grains/ACF
d.	PM_{10}	0.30	lb/hr	grains/ACF
e.	Hydrocarbons		lb/hr	grains/ACF
f.	VOCs	0.08	lb/hr	grains/ACF
g.	Pb		lb/hr	grains/ACF
h.	Specify other(s)			
	Negligible HAP emissions, as shown in Attachment N		lb/hr	grains/ACF
			lb/hr	grains/ACF
			lb/hr	grains/ACF
			lb/hr	grains/ACF

NOTE: (1) An Air Pollution Control Device Sheet must be completed for any air pollution device(s) used to control emissions from this affected source.

(2) Complete the Emission Points Data Sheet.

9. Proposed Monitoring, Recordkeeping, Reporting, and Testing
Please propose monitoring, recordkeeping, and reporting in order to demonstrate compliance with the proposed operating parameters. Please propose testing in order to demonstrate compliance with the proposed emissions limits.

MONITORING	RECORDKEEPING
The fire pump is regulated per 40CFR60 Subpart IIII and will follow those requirements as discussed in Attachment D.	The fire pump is regulated per 40CFR60 Subpart IIII and will follow those requirements as discussed in Attachment D.
REPORTING	**TESTING**
The fire pump is regulated per 40CFR60 Subpart IIII and will follow those requirements as discussed in Attachment D.	The fire pump is regulated per 40CFR60 Subpart IIII and will follow those requirements as discussed in Attachment D.

MONITORING. PLEASE LIST AND DESCRIBE THE PROCESS PARAMETERS AND RANGES THAT ARE PROPOSED TO BE MONITORED IN ORDER TO DEMONSTRATE COMPLIANCE WITH THE OPERATION OF THIS PROCESS EQUIPMENT OPERATION/AIR POLLUTION CONTROL DEVICE.

RECORDKEEPING. PLEASE DESCRIBE THE PROPOSED RECORDKEEPING THAT WILL ACCOMPANY THE MONITORING.

REPORTING. PLEASE DESCRIBE THE PROPOSED FREQUENCY OF REPORTING OF THE RECORDKEEPING.

TESTING. PLEASE DESCRIBE ANY PROPOSED EMISSIONS TESTING FOR THIS PROCESS EQUIPMENT/AIR POLLUTION CONTROL DEVICE.

10. Describe all operating ranges and maintenance procedures required by Manufacturer to maintain warranty

N/A

Attachment L
EMISSIONS UNIT DATA SHEET
GENERAL

To be used for affected sources other than asphalt plants, foundries, incinerators, indirect heat exchangers, and quarries.

Identification Number (as assigned on *Equipment List Form*): S021

1. Name or type and model of proposed affected source:

   Flare will control VOC emissions from emergency activities (i.e. process upset conditions) that are vented to the flare on an as-needed basis.

2. On a separate sheet(s), furnish a sketch(es) of this affected source. If a modification is to be made to this source, clearly indicated the change(s). Provide a narrative description of all features of the affected source which may affect the production of air pollutants.

3. Name(s) and maximum amount of proposed process material(s) charged per hour:

   N/A

4. Name(s) and maximum amount of proposed material(s) produced per hour:

   N/A

5. Give chemical reactions, if applicable, that will be involved in the generation of air pollutants:

   Continuous burning of pilot gas.

* The identification number which appears here must correspond to the air pollution control device identification number appearing on the *List Form*.

6. Combustion Data (if applicable):

(a) Type and amount in appropriate units of fuel(s) to be burned:

3 pilots at 65 scf/hr each of natural gas.

(b) Chemical analysis of proposed fuel(s), excluding coal, including maximum percent sulfur and ash:

See Attachment M design summary.

(c) Theoretical combustion air requirement (ACF/unit of fuel):

@ °F and psia.

(d) Percent excess air: %

(e) Type and BTU/hr of burners and all other firing equipment planned to be used:

3 pilots at 66,885 Btu/hr (65 scf/hr and 1,029 Btu/scf)

(f) If coal is proposed as a source of fuel, identify supplier and seams and give sizing of the coal as it will be fired:

N/A

(g) Proposed maximum design heat input: 22,500 × 10^6 BTU/hr.

7. Projected operating schedule:

Hours/Day	24 (flare pilot)	Days/Week	7 (flare pilot)	Weeks/Year	52 (flare pilot)

8. Projected amount of pollutants that would be emitted from this affected source if no control devices were used:

@ °F and psia

a.	NO_X		lb/hr	grains/ACF
b.	SO_2		lb/hr	grains/ACF
c.	CO		lb/hr	grains/ACF
d.	PM_{10}		lb/hr	grains/ACF
e.	Hydrocarbons		lb/hr	grains/ACF
f.	VOCs	456,809*	lb/hr	grains/ACF
g.	Pb		lb/hr	grains/ACF
h.	Specify other(s)			
			lb/hr	grains/ACF
			lb/hr	grains/ACF
			lb/hr	grains/ACF
			lb/hr	grains/ACF

NOTE: (1) An Air Pollution Control Device Sheet must be completed for any air pollution device(s) used to control emissions from this affected source.

(2) Complete the Emission Points Data Sheet.

* Represents the worst case for an entire hour, which is for plant wide emergency, which is not expected.

9. Proposed Monitoring, Recordkeeping, Reporting, and Testing
Please propose monitoring, recordkeeping, and reporting in order to demonstrate compliance with the proposed operating parameters. Please propose testing in order to demonstrate compliance with the proposed emissions limits.

MONITORING	RECORDKEEPING
Flare is subject to 45CSR6 and 45 CSR10-5. Blue racer will comply with these requirements.	Flare is subject to 45CSR6 and 45 CSR10-5. Blue racer will comply with these requirements.
REPORTING	**TESTING**
Flare is subject to 45CSR6 and 45 CSR10-5. Blue racer will comply with these requirements.	Flare is subject to 45CSR6 and 45 CSR10-5. Blue racer will comply with these requirements.

MONITORING. PLEASE LIST AND DESCRIBE THE PROCESS PARAMETERS AND RANGES THAT ARE PROPOSED TO BE MONITORED IN ORDER TO DEMONSTRATE COMPLIANCE WITH THE OPERATION OF THIS PROCESS EQUIPMENT OPERATION/AIR POLLUTION CONTROL DEVICE.

RECORDKEEPING. PLEASE DESCRIBE THE PROPOSED RECORDKEEPING THAT WILL ACCOMPANY THE MONITORING.

REPORTING. PLEASE DESCRIBE THE PROPOSED FREQUENCY OF REPORTING OF THE RECORDKEEPING.

TESTING. PLEASE DESCRIBE ANY PROPOSED EMISSIONS TESTING FOR THIS PROCESS EQUIPMENT/AIR POLLUTION CONTROL DEVICE.

10. Describe all operating ranges and maintenance procedures required by Manufacturer to maintain warranty
N/A

Attachment L
EMISSIONS UNIT DATA SHEET
GENERAL

To be used for affected sources other than asphalt plants, foundries, incinerators, indirect heat exchangers, and quarries.

Identification Number (as assigned on *Equipment List Form*): S004A

1. Name or type and model of proposed affected source:

   The Ground Flare will control VOC emission maintenance activities and other miscellaneous equipment that are vented to the flare on an as-needed basis.

2. On a separate sheet(s), furnish a sketch(es) of this affected source. If a modification is to be made to this source, clearly indicated the change(s). Provide a narrative description of all features of the affected source which may affect the production of air pollutants.

3. Name(s) and maximum amount of proposed process material(s) charged per hour:

   N/A

4. Name(s) and maximum amount of proposed material(s) produced per hour:

   N/A

5. Give chemical reactions, if applicable, that will be involved in the generation of air pollutants:

   Combustion of waste gas from maintenance venting.

* The identification number which appears here must correspond to the air pollution control device identification number appearing on the *List Form*.

6. Combustion Data (if applicable):

(a) Type and amount in appropriate units of fuel(s) to be burned:

9 pilots at 83 scf/hr each of natural gas, and 117 scf/hr purge gas.

(b) Chemical analysis of proposed fuel(s), excluding coal, including maximum percent sulfur and ash:

See Attachment M design summary.

(c) Theoretical combustion air requirement (ACF/unit of fuel):

@ °F and psia.

(d) Percent excess air: %

(e) Type and BTU/hr of burners and all other firing equipment planned to be used:

9 pilots at 85,000 Btu/hr (83 scf/hr and 1,029 Btu/scf) and 117 scf/hr purge gas.

(f) If coal is proposed as a source of fuel, identify supplier and seams and give sizing of the coal as it will be fired:

N/A

(g) Proposed maximum design heat input: 22,500 × 10^6 BTU/hr.

7. Projected operating schedule:

Hours/Day	24 (flare pilot)	Days/Week	7 (flare pilot)	Weeks/Year	52 (flare pilot)

8. Projected amount of pollutants that would be emitted from this affected source if no control devices were used:

@ °F and psia

a.	NO_X		lb/hr	grains/ACF
b.	SO_2		lb/hr	grains/ACF
c.	CO		lb/hr	grains/ACF
d.	PM_{10}		lb/hr	grains/ACF
e.	Hydrocarbons		lb/hr	grains/ACF
f.	VOCs	456,809*	lb/hr	grains/ACF
g.	Pb		lb/hr	grains/ACF
h.	Specify other(s)			
			lb/hr	grains/ACF
			lb/hr	grains/ACF
			lb/hr	grains/ACF
			lb/hr	grains/ACF

NOTE: (1) An Air Pollution Control Device Sheet must be completed for any air pollution device(s) used to control emissions from this affected source.

(2) Complete the Emission Points Data Sheet.

* Represents the worst case for an entire hour, which is for plant wide emergency, which is not expected.

9. Proposed Monitoring, Recordkeeping, Reporting, and Testing
Please propose monitoring, recordkeeping, and reporting in order to demonstrate compliance with the proposed operating parameters. Please propose testing in order to demonstrate compliance with the proposed emissions limits.

MONITORING	RECORDKEEPING
Flare is subject to 45CSR6 and 45 CSR10-5. Blue racer will comply with these requirements.	Flare is subject to 45CSR6 and 45 CSR10-5. Blue racer will comply with these requirements.
REPORTING	**TESTING**
Flare is subject to 45CSR6 and 45 CSR10-5. Blue racer will comply with these requirements.	Flare is subject to 45CSR6 and 45 CSR10-5. Blue racer will comply with these requirements.

MONITORING. PLEASE LIST AND DESCRIBE THE PROCESS PARAMETERS AND RANGES THAT ARE PROPOSED TO BE MONITORED IN ORDER TO DEMONSTRATE COMPLIANCE WITH THE OPERATION OF THIS PROCESS EQUIPMENT OPERATION/AIR POLLUTION CONTROL DEVICE.

RECORDKEEPING. PLEASE DESCRIBE THE PROPOSED RECORDKEEPING THAT WILL ACCOMPANY THE MONITORING.

REPORTING. PLEASE DESCRIBE THE PROPOSED FREQUENCY OF REPORTING OF THE RECORDKEEPING.

TESTING. PLEASE DESCRIBE ANY PROPOSED EMISSIONS TESTING FOR THIS PROCESS EQUIPMENT/AIR POLLUTION CONTROL DEVICE.

10. Describe all operating ranges and maintenance procedures required by Manufacturer to maintain warranty

N/A

Attachment L
EMISSIONS UNIT DATA SHEET
BULK LIQUID TRANSFER OPERATIONS

Furnish the following information for each new or modified bulk liquid transfer area or loading rack, as shown on the *Equipment List Form* and other parts of this application. This form is to be used for bulk liquid transfer operations such as to and from drums, marine vessels, rail tank cars, and tank trucks.

Identification Number (as assigned on *Equipment List Form*):	
1. Loading Area Name: Product Loading	
2. Type of cargo vessels accommodated at this rack or transfer point (check as many as apply): G Drums ✕ Marine Vessels ✕ Rail Tank Cars ✕ Tank Trucks	
3. Loading Rack or Transfer Point Data:	
Number of pumps	TBD
Number of liquids loaded	4 – Propane, Isobutane, Butane & Natural Gas Liquids (NGL) and Natural Gasoline
Maximum number of marine vessels, tank trucks, tank cars, and/or drums loading at one time	TBD
4. Does ballasting of marine vessels occur at this loading area? G Yes G No ✕ Does not apply	
5. Describe cleaning location, compounds and procedure for cargo vessels using this transfer point:	
6. Are cargo vessels pressure tested for leaks at this or any other location? G Yes G No If YES, describe:	

7. Projected Maximum Operating Schedule (for rack or transfer point as a whole):

Maximum	Jan. - Mar.	Apr. - June	July - Sept.	Oct. - Dec.
hours/day	24	24	24	24

days/week	7	7	7	7
weeks/quarter	13	13	13	7

8. Bulk Liquid Data *(add pages as necessary):*							
Pump ID No.		TBD	TBD	TBD	TBD	TBD	TBD
Liquid Name		Propane	Isobutane	Butane	NGL	Natural Gasoline	
Max. daily throughput (1000 gal/day)							
Max. annual throughput (1000 gal/yr)							
Loading Method [1]		BF	BF	BF	BF	BF	
Max. Fill Rate (gal/min)		10,600	7,600	7,600	3,600	5,600	
Average Fill Time (min/loading)							
Max. Bulk Liquid Temperature (°F)		125	200	200	120	100	
True Vapor Pressure [2]		126.15	45	33.5	132.4	13.5	
Cargo Vessel Condition [3]		C	C	C	C	C	
Control Equipment or Method [4]		VB	VB	VB	VB	VB	
Minimum control efficiency (%)		100	100	100	100	100	
Maximum Emission Rate	Loading (lb/hr)	Negligible	Negligible	Negligible	Negligible	Included in Flare	
	Annual (lb/yr)	Negligible	Negligible	Negligible	Negligible	Included in Flare	
Estimation Method [5]							

[1] BF = Bottom Fill SP = Splash Fill SUB = Submerged Fill

[2] At maximum bulk liquid temperature

[3] B = Ballasted Vessel, C = Cleaned, U = Uncleaned (dedicated service), O = other (describe)

[4] List as many as apply (complete and submit appropriate *Air Pollution Control Device*

Sheets):CA = Carbon Adsorption LOA = Lean Oil AdsorptionCO = Condensation SC = Scrubber (Absorption)CRA = Compressor-Refrigeration-Absorption TO = Thermal Oxidation or Incineration CRC = Compression-Refrigeration-Condensation VB = Dedicated Vapor Balance (closed system) O = other (descibe)
[5] EPA = EPA Emission Factor as stated in AP-42 MB = Material Balance TM = Test Measurement based upon test data submittal O = other (describe)

9. **Proposed Monitoring, Recordkeeping, Reporting, and Testing** Please propose monitoring, recordkeeping, and reporting in order to demonstrate compliance with the proposed operating parameters. Please propose testing in order to demonstrate compliance with the proposed emissions limits.	
MONITORING Refer to Regulatory Discussion in Attachment D	RECORDKEEPING Refer to Regulatory Discussion in Attachment D
REPORTING Refer to Regulatory Discussion in Attachment D	TESTING Refer to Regulatory Discussion in Attachment D

MONITORING. PLEASE LIST AND DESCRIBE THE PROCESS PARAMETERS AND RANGES THAT ARE PROPOSED TO BE MONITORED IN ORDER TO DEMONSTRATE COMPLIANCE WITH THE OPERATION OF THIS	
RECORDKEEPING. PLEASE DESCRIBE THE PROPOSED RECORDKEEPING THAT WILL ACCOMPANY THE MONITORING.	
REPORTING. PLEASE DESCRIBE THE PROPOSED FREQUENCY OF REPORTING OF THE RECORDKEEPING.	
TESTING. PLEASE DESCRIBE ANY PROPOSED EMISSIONS TESTING FOR THIS PROCESS EQUIPMENT/AIR POLLUTION CONTROL DEVICE.	
10. Describe all operating ranges and maintenance procedures required by Manufacturer to maintain warranty N/A	

ATTACHMENT M: AIR POLLUTION CONTROL DEVICE SHEETS

RULE 13 AIR PERMIT APPLICATION

NATRIUM EXTRACTION AND FRACTIONATION PROCESSING PLANT

BLUE RACER MIDSTREAM, LLC

Attachment M
Air Pollution Control Device Sheet
(FLARE SYSTEM)

Control Device ID No. (must match Emission Units Table): C021

Equipment Information

1. Manufacturer: John Zinc Company

   Model No. KMI Model 12-26 Multipoint Tip

2. Method: ☒ Elevated flare ☐ Ground flare ☐ Other Describe

3. Provide diagram(s) of unit describing capture system with duct arrangement and size of duct, air volume, capacity, horsepower of movers. If applicable, state hood face velocity and hood collection efficiency.

4. Method of system used:
   ☐ Steam-assisted ☐ Air-assisted ☒ Pressure-assisted ☐ Non-assisted

5. Maximum capacity of flare:
   scf/min
   19,800,000 scf/hr

6. Dimensions of stack:
   Diameter 4.5 (outer support stack) ft.
   Height 376.5 ft.

7. Estimated combustion efficiency:
   (Waste gas destruction efficiency)
   Estimated: 98 %
   Minimum guaranteed: 99.5 %

8. Fuel used in burners:
   ☒ Natural Gas
   ☐ Fuel Oil, Number
   ☐ Other, Specify:

9. Number of burners: 1
   Rating: 22,500,000,000 BTU/hr

10. Will preheat be used? ☐ Yes ☒ No

11. Describe method of controlling flame:
    Pressure Staging

12. Flare height: 12.5 ft. (The tip is 10' – 0" and the spool piece is 2'-6")

13. Flare tip inside diameter: 2.5 (inner gas riser) ft

14. Natural gas flow rate to flare pilot flame per pilot light: scf/min
    65 scf/hr

15. Number of pilot lights: three (3)
    Total 200,655 BTU/hr

16. Will automatic re-ignition be used?
    ☒ Yes ☐ No

17. If automatic re-ignition will be used, describe the method:
    An auto flame front ignition is used for re-ignition. A thermocouple controller is used to indicate a loss of flame and a signal is sent to open the air/gas mixture at the panel. The panel then begins a series of re-ignitions using the flame front ignition and the necessary pilots.

18. Is pilot flame equipped with a monitor? ☒ Yes ☐ No
    If yes, what type? ☒ Thermocouple ☐ Infra-Red ☐ Ultra Violet ☐ Camera with monitoring control room ☐ Other, Describe:

19. Hours of unit operation per year: Pilots: 8,760 hours Flare: As Needed

Steam Injection

20. Will steam injection be used? ☐ Yes ☒ No	21. Steam pressure PSIG Minimum Expected: Design Maximum:
22. Total Steam flow rate: LB/hr	23. Temperature: °F
24. Velocity ft/sec	25. Number of jet streams
26. Diameter of steam jets: in	27. Design basis for steam injected: LB steam/LB hydrocarbon
28. How will steam flow be controlled if steam injection is used?	

Characteristics of the Waste Gas Stream to be Burned

29.

Name	Quantity Grains of H_2S/100 ft^3	Quantity (LB/hr, ft^3/hr, etc)	Source of Material
See Attached			

30. Estimate total combustible to flare: see attached LB/hr or ACF/hr
(Maximum mass flow rate of waste gas) scfm

31. Estimated total flow rate to flare including materials to be burned, carrier gases, auxiliary fuel, etc.:
See attached LB/hr or ACF/hr

32. Give composition of carrier gases:
See attached

33. Temperature of emission stream: See attached °F Heating value of emission stream: BTU/ft^3 Mean molecular weight of emission stream: MW = lb/lb-mole	34. Identify and describe all auxiliary fuels to be burned. see attached BTU/scf BTU/scf BTU/scf BTU/scf BTU/scf
35. Temperature of flare gas: see attached °F	36. Flare gas flow rate: scf/min
37. Flare gas heat content: see attached BTU/ft^3	38. Flare gas exit velocity: see attached scf/min
39. Maximum rate during emergency for one major piece of equipment or process unit: see attached scf/min	
40. Maximum rate during emergency for one major piece of equipment or process unit: see attached BTU/min	
41. Describe any air pollution control device inlet and outlet gas conditioning processes (e.g., gas cooling, gas reheating, gas humidification):	
42. Describe the collection material disposal system:	
43. Have you included ***Flare Control Device*** in the Emissions Points Data Summary Sheet? Yes	

44. **Proposed Monitoring, Recordkeeping, Reporting, and Testing**
Please propose monitoring, recordkeeping, and reporting in order to demonstrate compliance with the proposed operating parameters. Please propose testing in order to demonstrate compliance with the proposed emissions limits.

MONITORING:	RECORDKEEPING:
Proposed continuous monitoring of the flame presence with a thermocouple. Refer to Attachment O-1 for a description of all monitoring, testing, recordkeeping, and reporting requirements.	Refer to Attachment O-1 for a description of all monitoring, testing, recordkeeping, and reporting requirements.
REPORTING:	TESTING:
Refer to Attachment O-1 for a description of all monitoring, testing, recordkeeping, and reporting requirements.	Refer to Attachment O-1 for a description of all monitoring, testing, recordkeeping, and reporting requirements.

MONITORING:	Please list and describe the process parameters and ranges that are proposed to be monitored in order to demonstrate compliance with the operation of this process equipment or air control device.
RECORDKEEPING:	Please describe the proposed recordkeeping that will accompany the monitoring.
REPORTING:	Please describe any proposed emissions testing for this process equipment on air pollution control device.
TESTING:	Please describe any proposed emissions testing for this process equipment on air pollution control device.

45. Manufacturer's Guaranteed Capture Efficiency for each air pollutant.
N/A

46. Manufacturer's Guaranteed Control Efficiency for each air pollutant.
VOC control = 99.5%

47. Describe all operating ranges and maintenance procedures required by Manufacturer to maintain warranty.

Attachment M
Air Pollution Control Device Sheet
(FLARE SYSTEM)

Control Device ID No. (must match Emission Units Table): C004A

Equipment Information

1. Manufacturer: Callidus

   Model No. CAL-MP staged, multipoint flare system

2. Method: ☐ Elevated flare ☒ Ground flare ☐ Other
   Describe

3. Provide diagram(s) of unit describing capture system with duct arrangement and size of duct, air volume, capacity, horsepower of movers. If applicable, state hood face velocity and hood collection efficiency.

4. Method of system used:
   ☐ Steam-assisted ☐ Air-assisted ☐ Pressure-assisted ☒ Non-assisted

5. Maximum capacity of flare:
   scf/min
   19,800,000 scf/hr

6. Dimensions of stack:
   Diameter 1 ft.
   Height 7 ft.

7. Estimated combustion efficiency:
   (Waste gas destruction efficiency)
   Estimated: 98 %
   Minimum guaranteed: 99.5 %

8. Fuel used in burners:
   ☒ Natural Gas
   ☐ Fuel Oil, Number
   ☐ Other, Specify:

9. Number of burners: 229
   Rating: 22,500,000,000 BTU/hr

10. Will preheat be used? ☐ Yes ☒ No

11. Describe method of controlling flame:
    Pressure Staging

12. Flare height: 7 ft.

13. Flare tip inside diameter: 0.25 (burner riser) ft

14. Natural gas flow rate to flare pilot flame per pilot light:
    scf/min
    83 scf/hr

15. Number of pilot lights: nine (9)
    Total 765,000 BTU/hr

16. Will automatic re-ignition be used?
    ☒ Yes ☐ No

17. If automatic re-ignition will be used, describe the method:
    An auto flame front ignition is used for re-ignition. A thermocouple controller is used to indicate a loss of flame and a signal is sent to open the air/gas mixture at the panel. The panel then begins a series of re-ignitions using the flame front ignition and the necessary pilots.

18. Is pilot flame equipped with a monitor? ☒ Yes ☐ No
    If yes, what type? ☒ Thermocouple ☐ Infra-Red
    ☐ Ultra Violet ☐ Camera with monitoring control room
    ☐ Other, Describe:

19. Hours of unit operation per year: Pilots: 8,760 hours Flare: As Needed

Steam Injection

20. Will steam injection be used? ☐ Yes ☒ No	21. Steam pressure PSIG Minimum Expected: Design Maximum:
22. Total Steam flow rate: LB/hr	23. Temperature: °F
24. Velocity ft/sec	25. Number of jet streams
26. Diameter of steam jets: in	27. Design basis for steam injected: LB steam/LB hydrocarbon
28. How will steam flow be controlled if steam injection is used?	

Characteristics of the Waste Gas Stream to be Burned

29.

Name	Quantity Grains of H_2S/100 ft^3	Quantity (LB/hr, ft^3/hr, etc)	Source of Material
See Attached			

30. Estimate total combustible to flare: see attached LB/hr or ACF/hr (Maximum mass flow rate of waste gas) scfm	
31. Estimated total flow rate to flare including materials to be burned, carrier gases, auxiliary fuel, etc.: See attached LB/hr or ACF/hr	
32. Give composition of carrier gases: See attached	
33. Temperature of emission stream: See attached °F Heating value of emission stream: BTU/ft^3 Mean molecular weight of emission stream: MW = lb/lb-mole	34. Identify and describe all auxiliary fuels to be burned. see attached BTU/scf BTU/scf BTU/scf BTU/scf
35. Temperature of flare gas: see attached °F	36. Flare gas flow rate: scf/min
37. Flare gas heat content: see attached BTU/ft^3	38. Flare gas exit velocity: see attached scf/min
39. Maximum rate during emergency for one major piece of equipment or process unit: see attached scf/min	
40. Maximum rate during emergency for one major piece of equipment or process unit: see attached BTU/min	
41. Describe any air pollution control device inlet and outlet gas conditioning processes (e.g., gas cooling, gas reheating, gas humidification):	
42. Describe the collection material disposal system:	
43. Have you included ***Flare Control Device*** in the Emissions Points Data Summary Sheet? Yes	

44. **Proposed Monitoring, Recordkeeping, Reporting, and Testing**
Please propose monitoring, recordkeeping, and reporting in order to demonstrate compliance with the proposed operating parameters. Please propose testing in order to demonstrate compliance with the proposed emissions limits.

MONITORING:	RECORDKEEPING:
Proposed continuous monitoring of the flame presence with a thermocouple. Refer to Attachment O-1 for a description of all monitoring, testing, recordkeeping, and reporting requirements.	Refer to Attachment O-1 for a description of all monitoring, testing, recordkeeping, and reporting requirements.
REPORTING:	TESTING:
Refer to Attachment O-1 for a description of all monitoring, testing, recordkeeping, and reporting requirements.	Refer to Attachment O-1 for a description of all monitoring, testing, recordkeeping, and reporting requirements.

MONITORING:	Please list and describe the process parameters and ranges that are proposed to be monitored in order to demonstrate compliance with the operation of this process equipment or air control device.
RECORDKEEPING:	Please describe the proposed recordkeeping that will accompany the monitoring.
REPORTING:	Please describe any proposed emissions testing for this process equipment on air pollution control device.
TESTING:	Please describe any proposed emissions testing for this process equipment on air pollution control device.

45. Manufacturer's Guaranteed Capture Efficiency for each air pollutant.
N/A

46. Manufacturer's Guaranteed Control Efficiency for each air pollutant.
VOC control = 99.5%

47. Describe all operating ranges and maintenance procedures required by Manufacturer to maintain warranty.

Attachment M
Air Pollution Control Device Sheet
(OTHER COLLECTORS)

Control Device ID No. (must match Emission Units Table):

Equipment Information

1. Manufacturer: TBD Model No.	2. Control Device Name: Vapor Recovery Unit Type: Electric Compressor
3. Provide diagram(s) of unit describing capture system with duct arrangement and size of duct, air volume, capacity, horsepower of movers. If applicable, state hood face velocity and hood collection efficiency.	
4. On a separate sheet(s) supply all data and calculations used in selecting or designing this collection device.	
5. Provide a scale diagram of the control device showing internal construction.	
6. Submit a schematic and diagram with dimensions and flow rates.	
7. Guaranteed minimum collection efficiency for each pollutant collected:	
8. Attached efficiency curve and/or other efficiency information.	
9. Design inlet volume: SCFM	10. Capacity:
11. Indicate the liquid flow rate and describe equipment provided to measure pressure drop and flow rate, if any. N/A	
12. Attach any additional data including auxiliary equipment and operation details to thoroughly evaluate the control equipment.	
13. Description of method of handling the collected material(s) for reuse of disposal. N/A	

Gas Stream Characteristics

14. Are halogenated organics present?	☐ Yes	☒ No
Are particulates present?	☐ Yes	☒ No
Are metals present?	☐ Yes	☒ No

15. Inlet Emission stream parameters:	**Maximum**	**Typical**
Pressure (mmHg):		
Heat Content (BTU/scf):		
Oxygen Content (%):		
Moisture Content (%):		
Relative Humidity (%):		

16. Type of pollutant(s) controlled: ☐ SO_x ☐ Odor ☐ Particulate (type): ☒ Other VOC	
17. Inlet gas velocity: ft/sec	18. Pollutant specific gravity:
19. Gas flow into the collector: ACF @ °F and PSIA	20. Gas stream temperature: Inlet: °F Outlet: °F
21. Gas flow rate: Design Maximum: ACFM Average Expected: ACFM	22. Particulate Grain Loading in grains/scf: Inlet: Outlet:

23. Emission rate of each pollutant (specify) into and out of collector:

Pollutant	IN Pollutant		Emission Capture Efficiency %	OUT Pollutant		Control Efficiency %
	lb/hr	grains/acf		lb/hr	grains/acf	
A						
B						
C						
D						
E						

24. Dimensions of stack: Height ft. Diameter ft.

25. Supply a curve showing proposed collection efficiency versus gas volume from 25 to 130 percent of design rating of collector.

Particulate Distribution

26. Complete the table:	Particle Size Distribution at Inlet to Collector	Fraction Efficiency of Collector
Particulate Size Range (microns)	**Weight % for Size Range**	**Weight % for Size Range**
0 – 2		
2 – 4		
4 – 6		
6 – 8		
8 – 10		
10 – 12		
12 – 16		
16 – 20		
20 – 30		
30 – 40		
40 – 50		
50 – 60		
60 – 70		
70 – 80		
80 – 90		
90 – 100		
>100		

27. Describe any air pollution control device inlet and outlet gas conditioning processes (e.g., gas cooling, gas reheating, gas humidification):

28. Describe the collection material disposal system:
Vapors from the gasoline and slop oil tanks will be compressed and sent back to process.

29. Have you included ***Other Collectores Control Device*** in the Emissions Points Data Summary Sheet?

30. **Proposed Monitoring, Recordkeeping, Reporting, and Testing**
Please propose monitoring, recordkeeping, and reporting in order to demonstrate compliance with the proposed operating parameters. Please propose testing in order to demonstrate compliance with the proposed emissions limits.

MONITORING: In accordance with operating plan per §60.113b(c).	RECORDKEEPING:
REPORTING:	TESTING: N/A

MONITORING:	Please list and describe the process parameters and ranges that are proposed to be monitored in order to demonstrate compliance with the operation of this process equipment or air control device.
RECORDKEEPING:	Please describe the proposed recordkeeping that will accompany the monitoring.
REPORTING:	Please describe any proposed emissions testing for this process equipment on air pollution control device.
TESTING:	Please describe any proposed emissions testing for this process equipment on air pollution control device.

31. Manufacturer's Guaranteed Control Efficiency for each air pollutant.

32. Manufacturer's Guaranteed Control Efficiency for each air pollutant.

33. Describe all operating ranges and maintenance procedures required by Manufacturer to maintain warranty.

ATTACHMENT N: SUPPORTING EMISSIONS CALCULATIONS

RULE 13 AIR PERMIT APPLICATION

NATRIUM EXTRACTION AND FRACTIONATION PROCESSING PLANT

BLUE RACER MIDSTREAM, LLC

TABLE N-1
SUMMARY OF SITE-WIDE AIR POLLUTANT EMISSION RATES
AIR PERMIT APPLICATION
NATRIUM EXTRACTION AND FRACTIONATION PROCESSING PLANT
BLUE RACER MIDSTREAM, LLC

Emission Unit ID	Control Device ID	Emission Point ID	Description	Potential to Emit																			
				NO_X		CO		VOC		PM		PM_{10}		$PM_{2.5}$		SO_2		CO_2		CH_4		CO_2e	
				Hourly (lb/hr)	Annual (T/yr)	Hourly (lb/hr)	Annual (T/yr)	Hourly (lb/hr)	Annual (T/yr)	Hourly (lb/hr)	Annual (T/yr)	Hourly (lb/hr)	Annual (T/yr)	Hourly (lb/hr)	Annual (T/yr)	Hourly (lb/hr)	Annual (T/yr)	Hourly (lb/hr)	Annual (T/yr)	Hourly (lb/hr)	Annual (T/yr)	Hourly (lb/hr)	Annual (T/yr)
PROJECT-AFFECTED SOURCE																							
S004A	N/A	P004A	Ground Flare	1.19	0.65	2.39	1.30	0.61	0.06	0.06	0.03	0.06	0.03	0.06	0.03	0.001	0.002	--	--	--	--	--	565
EXISTING/UNMODIFIED SOURCES																							
S001	N/A	P001	Hot Oil Heater (216.7 MMBtu/hr)	5.63	24.68	3.25	14.24	0.37	1.61	1.61	7.07	1.61	7.07	1.61	7.07	0.16	0.69	--	--	--	--	--	111,058
S016	N/A	P016	Hot Oil Heater (61.6 MMBtu/hr)	1.48	6.47	3.63	15.91	0.33	1.45	0.46	2.01	0.46	2.01	0.46	2.01	0.04	0.20	--	--	--	--	--	31,560
S017	N/A	P017	Hot Oil Heater (61.6 MMBtu/hr)	1.48	6.47	3.63	15.91	0.33	1.45	0.46	2.01	0.46	2.01	0.46	2.01	0.04	0.20	--	--	--	--	--	31,560
S018	N/A	P018	Hot Oil Heater (61.6 MMBtu/hr)	1.48	6.47	3.63	15.91	0.33	1.45	0.46	2.01	0.46	2.01	0.46	2.01	0.04	0.20	--	--	--	--	--	31,560
S019	N/A	P019	Hot Oil Heater (61.6 MMBtu/hr)	1.48	6.47	3.63	15.91	0.33	1.45	0.46	2.01	0.46	2.01	0.46	2.01	0.04	0.20	--	--	--	--	--	31,560
S020	N/A	P020	Glycol Reboiler (3.0 MMBtu/hr)	0.29	1.29	0.25	1.08	0.02	0.07	0.02	0.10	0.02	0.10	0.02	0.10	0.002	0.01	--	--	--	--	--	1,537
S022	N/A	P022	Regen Gas Heater (9.7 MMBtu/hr)	0.95	4.17	0.80	3.50	0.05	0.23	0.07	0.32	0.07	0.32	0.07	0.32	0.01	0.03	--	--	--	--	--	4,971
S021	N/A	P021	Emergency Flare	0.03	0.11	0.14	0.60	0.05	0.23	0.001	0.01	0.001	0.01	0.001	0.01	3.8E-05	0.0002	--	--	--	--	--	103
S007	N/A	P004A	Slop Tank TK-906, with Natural Gas Blanket and VRU to Flare (insignificant intermittent source)	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
S011, S014	N/A	P005, P006	Ethane Amine Regenerators	--	--	--	--	0.16	0.71	--	--	--	--	--	--	--	--	5,820	25,492	0.28	1.25	5,827	25,523
S005	C001	P001	Natural Gasoline Storage Tank TK-802, with Natural Gas Blanket and VRU to Hot Oil Heater (insignificant intermittent source)	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
S023	C001	P001	Natural Gasoline Storage Tank TK-803, with Natural Gas Blanket and VRU to Hot Oil Heater (insignificant intermittent source)	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
S008	N/A	P008	Propane, i-Butane ,Butanes, and Natural Gasoline Loading (Truck, Railcar, and Barge)	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
ROADS	N/A	ROADS	Unpaved Roads	--	--	--	--	--	--	--	15.20	--	4.05	--	0.41	--	--	--	--	--	--	--	--
FUG AREA 2	N/A	FUG AREA 2	Fugitives	--	--	--	--	1.19	5.22	--	--	--	--	--	--	--	--	--	0.56	--	1.21	--	31
S012	N/A	P012	Regen Gas Heater (9.7 MMBtu/hr)	0.94	4.13	0.79	3.47	0.05	0.23	0.07	0.31	0.07	0.31	0.07	0.31	0.01	0.02	--	--	--	--	--	4,971
S013	N/A	P013	Cryo HMO Heater (26.3 MMBtu/hr)	2.56	11.19	2.15	9.40	0.14	0.62	0.19	0.85	0.19	0.85	0.19	0.85	0.02	0.07	--	--	--	--	--	13,478
S002	N/A	P002	Fire Pump #1 (700 hp)	5.31	0.27	2.18	0.11	0.08	0.004	0.30	0.02	0.30	0.02	0.30	0.02	0.01	0.01	--	--	--	--	--	41
S003	N/A	P003	Fire Pump #2 (700 hp)	5.31	0.27	2.18	0.11	0.08	0.004	0.30	0.02	0.30	0.02	0.30	0.02	0.01	0.01	--	--	--	--	--	41
FUG AREA 1	N/A	FUG AREA 1	Fugitives	--	--	--	--	--	28.80	--	--	--	--	--	--	--	--	--	0.05	--	15.50	--	387
			Total (PTE excluding fugitives)[a]:	**28.13**	**72.63**	**28.65**	**97.45**	**2.94**	**9.58**	**4.48**	**16.76**	**4.48**	**16.76**	**4.48**	**16.76**	**0.38**	**1.63**	**5820.03**	**25491.74**	**0.28**	**1.25**	**5,827**	**288,527**
			Site Total (PTE including fugitives)[b]:	**28.13**	**72.63**	**28.65**	**97.45**	**4.13**	**43.60**	**4.48**	**31.97**	**4.48**	**20.81**	**4.48**	**17.17**	**0.38**	**1.63**	**5820.03**	**25492.35**	**0.28**	**17.95**	**5,827**	**288,945**
			PSD Major Source Threshold (excludes fugitives):		**250**		**250**		**250**		**250**		**250**		**250**		**250**						**100,000**

[a] Fugitive emissions are excluded for the purpose of determining major source status under 40 CFR §52.21.

[b] Unmodified GHG pollutant totals were revised to account for the updated Global Warming Potential for methane and nitrous oxides effective January 1, 2014.

GROUND FLARE POTENTIAL TO EMIT

AIR PERMIT APPLICATION

NATRIUM EXTRACTION AND FRACTIONATION PROCESSING PLANT

BLUE RACER MIDSTREAM, LLC

Emission Unit ID **S004A**

Process Streams to Flare

Annual Emissions (for tpy)

Pilot Emissions- Continual

Pilot Fuel consumption	743.44	scf/hr
Pilot heat input rating	0.765	MMBtu/hr
Fuel gas HHV	1,029	Btu/ft^3
Annual operating hours	8,760	hr/yr

Purge Gas- Continual

Purge Gas consumption	117	scf/hr
Pruge Gas input rating	0.120	MMBtu/hr
Fuel gas HHV	1,029	Btu/ft^3
Annual operating hours	8,760	hr/yr

Total (Maintenance and Blowdowns)

Total annual heat input to flare	929	MMBtu/yr
Total annual gas volume to flare	1	MMcf/yr
Total annual VOC to flare	2	ton VOC/yr
Total annual CH4 to flare	13	ton CH4/yr
Total annual HAP to flare	0	ton HAP/yr

Total (Pressure Revief Value Leaks)

Total annual heat input to flare	735	MMBtu/yr
Total hourly heat input to flare	0.08	MMBtu/hr
Total hourly consumption to flare	81.5	scf/hr
Total annual gas volume to flare	0.6	MMcf/yr
Total Hourly VOC to flare	1.1	lb/hr VOC
Total annual VOC to flare	5	ton VOC/yr
Total annual CH4 to flare	3	ton CH4/yr
Total annual HAP to flare	0.1	ton HAP/yr

Maximum Short-Term Emissions

Max short-term VOC to flare (Case 13)	112	lb/hr
Max short-term CH4 to flare (Case 12)	260	lb/hr
Max short-term HAP to flare	0	lb/hr
Max short-term heat input (Case 11)	8	MMBtu/hr
Total consumption to flare	7472.2	scf/hr

Flare control efficiency 99.5%

Pollutant	CAS	REF	Emission Factor	Units	Potential Emissions lb/hr	Potential Emissions tons/yr
Pilot						
Criteria Pollutants						
NOx	N/A	1	0.138	lb/MMBtu	0.11	0.46
CO	630-08-0	1	0.2755	lb/MMBtu	0.21	0.92
VOC	N/A	3	5.5	lb/MMscf	0.004	0.02
PM-10	N/A	3	7.6	lb/MMscf	0.006	0.02
PM-2.5	N/A	3	7.6	lb/MMscf	0.006	0.02
SO2	7446-09-5	2	4.0	ppm	0.001	0.002
Greenhouse Gases						
Carbon dioxide	124-38-9	4	53.02	kg/MMBtu	89.42	391.66
Methane	74-82-8	5	1.0E-03	kg/MMBtu	0.0017	0.01
Nitrous oxide	10024-97-2	5	1.0E-04	kg/MMBtu	0.00017	0.001
CO_2e	N/A	6	---	---	89.51	392.06
Purge Gas						
Criteria Pollutants						
NOx	N/A	1	0.138	lb/MMBtu	0.02	0.07
CO	630-08-0	1	0.2755	lb/MMBtu	0.03	0.15
VOC	N/A	3	5.5	lb/MMscf	0.001	0.003
PM-10	N/A	3	7.6	lb/MMscf	0.001	0.004
PM-2.5	N/A	3	7.6	lb/MMscf	0.001	0.004
SO2	7446-09-5	2	4.0	ppm	0.0001	0.0003
Greenhouse Gases						
Carbon dioxide	124-38-9	4	53.02	kg/MMBtu	14.07	61.64
Methane	74-82-8	5	1.0E-03	kg/MMBtu	0.0003	0.001
Nitrous oxide	10024-97-2	5	1.0E-04	kg/MMBtu	0.00003	0.0001
CO_2e	N/A	6	---	---	14.09	61.70
Flare						
Criteria Pollutants						
NOx	N/A	1	0.138	lb/MMBtu	1.07	0.11
CO	630-08-0	1	0.2755	lb/MMBtu	2.14	0.23
VOC - combustion	N/A	3	5.5	lb/MMscf	0.04	0.004
VOC - controlled process stream	N/A	---	113	lb/hr	0.57	0.04
PM-10	N/A	3	7.6	lb/MMscf	0.06	0.01
PM-2.5	N/A	3	7.6	lb/MMscf	0.06	0.01
HAP - controlled process stream	N/A	---	0	lb/hr	0.00	0.00
TOTAL						
Criteria Pollutants						
NOx	N/A	---	---	---	1.19	0.65
CO	630-08-0	---	---	---	2.39	1.30
VOC	N/A	---	---	---	0.61	0.06
PM-10	N/A	---	---	---	0.06	0.03
PM-2.5	N/A	---	---	---	0.06	0.03
SO2	7446-09-5	---	---	---	0.001	0.003

Notes:

1. CO and NO_x are based upon TNRCC Guidance Document for Flares (dated 10/00) for non-assisted high-BTU flares.

2. SO_2 is estimated using a mass balance approach and the actual sulfur content of the gas.
3. AP-42 Table 1.4-2
4. 40 CFR 98 Table C-1
5. 40 CFR 98 Table C-2
6. 40 CFR 98 Table A-1

Waste gas GHG combustion emissions calculated in accordance with 40 CFR 98 Subpart W.

HEATERS POTENTIAL TO EMIT

AIR PERMIT APPLICATION

NATRIUM EXTRACTION AND FRACTIONATION PROCESSING PLANT

BLUE RACER MIDSTREAM, LLC

Emission Unit ID	Description	Maximum Hourly Heat Input (MMBtu/hr)	Maximum Annual Heat Input (MMBtu/yr)	Annual Operating Hours (hr/yr)	VOC			NO_X			CO			PM[d]			SO_2[e]		
					Emission Factor [a] (lb/MMBtu)	PTE		Emission Factor [a] (lb/MMBtu)	PTE		Emission Factor [a] (lb/MMBtu)	PTE		Emission Factor [a] (lb/MMBtu)	PTE		Emission Factor [a] (ppm S)	PTE	
						Hourly[b] (lb/hr)	Annual[c] (T/yr)		Hourly[b] (lb/hr)	Annual[c] (T/yr)		Hourly[b] (lb/hr)	Annual[c] (T/yr)		Hourly[b] (lb/hr)	Annual[c] (T/yr)		Hourly (lb/hr)	Annual[c] (T/yr)
S016	Hot Oil Heater	61.58	539,441	8,760	0.0054	0.33	1.45	0.024	1.48	6.47	0.059	3.63	15.91	0.00745	0.46	2.01	4.0	0.04	0.20
S017	Hot Oil Heater	61.58	539,441	8,760	0.0054	0.33	1.45	0.024	1.48	6.47	0.059	3.63	15.91	0.00745	0.46	2.01	4.0	0.04	0.20
S018	Hot Oil Heater	61.58	539,441	8,760	0.0054	0.33	1.45	0.024	1.48	6.47	0.059	3.63	15.91	0.00745	0.46	2.01	4.0	0.04	0.20
S019	Hot Oil Heater	61.58	539,441	8,760	0.0054	0.33	1.45	0.024	1.48	6.47	0.059	3.63	15.91	0.00745	0.46	2.01	4.0	0.04	0.20
S001	Hot Oil Heater	216.70	1,898,292	8,760	0.0017	0.37	1.61	0.026	5.63	24.68	0.015	3.25	14.24	0.00745	1.61	7.07	4.0	0.16	0.69
S020	Glycol Reboiler	3.0	26,280	8,760	0.0054	0.02	0.07	0.098	0.29	1.29	0.082	0.25	1.08	0.00745	0.02	0.10	4.0	0.002	0.01
S022	Regen Gas Heater	9.7	84,972	8,760	0.0054	0.05	0.23	0.098	0.95	4.17	0.082	0.80	3.50	0.00745	0.07	0.32	4.0	0.007	0.03

[a] CO and NO_X emission factors are from vendor commitments. VOC emission factor for unit ID S001 is from vendor commitment. All other emission factors are from AP-42 Table 1.4-2 (dated 7/98), converted to lb/MMBtu by dividing by 1,020 Btu/scf.

[b] An hourly VOC emission calculation example follows:

VOC (lb/hr) = (Maximum Heat Input, MMBtu/hr)*(Emission Factor, lb/MMBtu)

VOC (lb/hr) = (61.6 MMBtu/hr)*(0.0054 lb/MMBtu)

VOC (lb/hr) = 0.33 lb/hr VOC

[c] An annual VOC emission calculation example follows:

VOC (T/yr) = (Hourly PTE, lb/hr)*(Annual Operating Hours, hr/yr)/(2,000 lb/T)

VOC (T/yr) = (0.33 lb/hr)*(8,760 hr/yr)/(2,000 lb/T)

VOC (T/yr) = 1.45 T/yr VOC

[d] All PM is assumed to be less than 2.5 microns in diameter per footnote "c" of AP-42 Table 1.4-2.

[e] A material balance approach was used to estimate the SO_2 emission rates using the maximum sulfur concentration in the natural gas.

An example calculation for hourly PTE SO_2 follows:

SO_2 (lb/hr) = (Maximum Heat Input, MMBtu/hr)/(Fuel Heating Value, Btu/scf)*(Sulfur Content, ppm)*(1 lb-mol/379 scf)*(64.06 lb SO_2/lb-mol S)

SO_2 (lb/hr) = (61.6 MMBtu/hr)/(926 Btu/scf)*(4.0 lb-mol S/MMlb-mol gas)*(1 lb-mol/379 scf)*(64.06 lb SO2/lb-mol S)

= 0.04 lb/hr SO_2

[f] Because the emission factor for S001 differs from the factor for S016 - S020 and S022, the annual emissions are estimated by maximizing the annual utilization of the unit(s) with the higher emission factor and assuming the reduced annual operations all occur at the lower emitting unit(s).

COMBUSTION SOURCES POTENTIAL TO EMIT (SPECIATED)

AIR PERMIT APPLICATION

NATRIUM EXTRACTION AND FRACTIONATION PROCESSING PLANT

BLUE RACER MIDSTREAM, LLC

				PROJECT-AFFECTED OPERATIONS							
				Hot Oil Heater S016, S017, S018, S019		Hot Oil Heater S001		Glycol Reboiler S020		Regen Gas Heater S022	
	Emission Factor			Emission Rate, Per Heater		Emission Rate, Per Heater		Emission Rate, Per Heater		Emission Rate, Per Heater	
	AP-42 Section 1.4 07/98 - Natural Gas Combustion - Heaters			Hourly[d]	Annual[e]	Hourly[d]	Annual[e]	Hourly[d]	Annual[e]	Hourly[d]	Annual[e]
Pollutant	(lb/10^6scf)	(lb/MMBtu)[c]	Rating	(lb/hr)	(T/yr)	(lb/hr)	(T/yr)	(lb/hr)	(T/yr)	(lb/hr)	(T/yr)
Number of Units				4		1		1		1	
Maximum Heat Input, MMBtu/hr:				61.6		216.7		3.0		9.7	
Maximum Operating Hours, hrs/yr:				8,760		8,760		8,760		8,760	
Engine Rating, hp:											
VOC Emission Rate (Vendor Data)				0.33		0.37		0.02		0.05	
VOC Emission Rate (AP-42)	5.50E+00	5.39E-03	C	0.33		1.17		0.02		0.05	
Ratio Applied to HAPs Factor [b]				100.0%		31.5%		100.0%		100.0%	
Formaldehyde Emission Rate (Vendor Data)											
Formaldehyde Emission Rate (AP-42)											
Ratio Applied to Acetaldehyde Factor:											
1,1,2,2-Tetrachloroethane				0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
1,1,2-Trichloroethane				0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
1,3-Butadiene				0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
1,3-Dichloropropene				0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
2-Methylnaphthalene	2.40E-05	2.35E-08	D	5.80E-06	2.54E-05	1.61E-06	7.04E-06	7.06E-08	3.09E-07	2.28E-07	1.00E-06
2,2,4-Trimethylpentane				0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
3-Methylchloranthrene	1.80E-06	1.76E-09	E	4.35E-07	1.90E-06	1.21E-07	5.28E-07	5.29E-09	2.32E-08	1.71E-08	7.50E-08
7,12-Dimethylbenz(a)anthracene	1.60E-05	1.57E-08	E	3.86E-06	1.69E-05	1.07E-06	4.69E-06	4.71E-08	2.06E-07	1.52E-07	6.66E-07
[a] Acenaphthene	1.80E-06	1.76E-09	E	4.35E-07	1.90E-06	1.21E-07	5.28E-07	5.29E-09	2.32E-08	1.71E-08	7.50E-08
[a] Acenaphthylene	1.80E-06	1.76E-09	E	4.35E-07	1.90E-06	1.21E-07	5.28E-07	5.29E-09	2.32E-08	1.71E-08	7.50E-08
Acetaldehyde				0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Acrolein				0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
[a] Anthracene	2.40E-06	2.35E-09	E	5.80E-07	2.54E-06	1.61E-07	7.04E-07	7.06E-09	3.09E-08	2.28E-08	1.00E-07
[a] Benz(a)anthracene	1.80E-06	1.76E-09	E	4.35E-07	1.90E-06	1.21E-07	5.28E-07	5.29E-09	2.32E-08	1.71E-08	7.50E-08
Benzene	2.10E-03	2.06E-06	B	5.07E-04	2.22E-03	1.41E-04	6.16E-04	6.18E-06	2.71E-05	2.00E-05	8.75E-05
[a] Benzo(a)pyrene	1.20E-06	1.18E-09	E	2.90E-07	1.27E-06	8.04E-08	3.52E-07	3.53E-09	1.55E-08	1.14E-08	5.00E-08
[a] Benzo(b)flouoranthene	1.80E-06	1.76E-09	E	4.35E-07	1.90E-06	1.21E-07	5.28E-07	5.29E-09	2.32E-08	1.71E-08	7.50E-08
[a] Benzo(e)pyrene				0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
[a] Benzo(g,h,i)perylene	1.20E-06	1.18E-09	E	2.90E-07	1.27E-06	8.04E-08	3.52E-07	3.53E-09	1.55E-08	1.14E-08	5.00E-08
[a] Benzo(k)fluoranthene	1.80E-06	1.76E-09	E	4.35E-07	1.90E-06	1.21E-07	5.28E-07	5.29E-09	2.32E-08	1.71E-08	7.50E-08
Biphenyl				0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Carbon Tetrachloride				0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Chlorobenzene				0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Chloroform				0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
[a] Chrysene	1.80E-06	1.76E-09	E	4.35E-07	1.90E-06	1.21E-07	5.28E-07	5.29E-09	2.32E-08	1.71E-08	7.50E-08
[a] Dibenzo(a,h)anthracene	1.20E-06	1.18E-09	E	2.90E-07	1.27E-06	8.04E-08	3.52E-07	3.53E-09	1.55E-08	1.14E-08	5.00E-08
Dichlorobenzene	1.20E-03	1.18E-06	E	2.90E-04	1.27E-03	8.04E-05	3.52E-04	3.53E-06	1.55E-05	1.14E-05	5.00E-05
Ethylbenzene				0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Ethylene Dibromide				0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
[a] Fluoranthene	3.00E-06	2.94E-09	E	7.24E-07	3.17E-06	2.01E-07	8.80E-07	8.82E-09	3.86E-08	2.85E-08	1.25E-07
[a] Fluorene	2.80E-06	2.75E-09	E	6.76E-07	2.96E-06	1.88E-07	8.21E-07	8.24E-09	3.61E-08	2.66E-08	1.17E-07
Formaldehyde	7.50E-02	7.35E-05	B	1.81E-02	7.93E-02	5.02E-03	2.20E-02	2.21E-04	9.66E-04	7.13E-04	3.12E-03
[f] n-Hexane		2.74E-04		6.75E-02	2.96E-01	1.87E-02	8.20E-02	8.22E-04	3.60E-03	2.66E-03	1.16E-02
[a] Indeno(1,2,3-cd)pyrene	1.80E-06	1.76E-09	E	4.35E-07	1.90E-06	1.21E-07	5.28E-07	5.29E-09	2.32E-08	1.71E-08	7.50E-08
Methanol				0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Methylene Chloride				0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
[a] Naphthalene	6.10E-04	5.98E-07	E	1.47E-04	6.45E-04	4.09E-05	1.79E-04	1.79E-06	7.86E-06	5.80E-06	2.54E-05
PAHs	6.56E-04	6.44E-07		1.59E-04	6.94E-04	4.40E-05	1.93E-04	1.93E-06	8.46E-06	6.24E-06	2.73E-05
[a] Phenanathrene	1.70E-05	1.67E-08	D	4.11E-06	1.80E-05	1.14E-06	4.99E-06	5.00E-08	2.19E-07	1.62E-07	7.08E-07
Phenol				0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
[a] Pyrene	5.00E-06	4.90E-09	E	1.21E-06	5.29E-06	3.35E-07	1.47E-06	1.47E-08	6.44E-08	4.75E-08	2.08E-07
Tetrachloroethane				0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Toluene	3.40E-03	3.33E-06	C	8.21E-04	3.60E-03	2.28E-04	9.97E-04	1.00E-05	4.38E-05	3.23E-05	1.42E-04
Vinyl Chloride				0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Xylene				0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Arsenic	2.00E-04	1.96E-07	E	4.83E-05	2.12E-04	1.34E-05	5.87E-05	5.88E-07	2.58E-06	1.90E-06	8.33E-06
Barium	4.40E-03	4.31E-06	D	1.06E-03	4.65E-03	2.95E-04	1.29E-03	1.29E-05	5.67E-05	4.18E-05	1.83E-04
Beryllium	1.20E-05	1.18E-08	E	2.90E-06	1.27E-05	8.04E-07	3.52E-06	3.53E-08	1.55E-07	1.14E-07	5.00E-07
Cadmium	1.10E-03	1.08E-06	D	2.66E-04	1.16E-03	7.37E-05	3.23E-04	3.24E-06	1.42E-05	1.05E-05	4.58E-05
Chromium	1.40E-03	1.37E-06	D	3.38E-04	1.48E-03	9.38E-05	4.11E-04	4.12E-06	1.80E-05	1.33E-05	5.83E-05
Cobalt	8.40E-05	8.24E-08	D	2.03E-05	8.88E-05	5.63E-06	2.46E-05	2.47E-07	1.08E-06	7.99E-07	3.50E-06
Copper	8.50E-04	8.33E-07	C	2.05E-04	8.99E-04	5.69E-05	2.49E-04	2.50E-06	1.10E-05	8.08E-06	3.54E-05
Lead	5.00E-04	4.90E-07	D	1.21E-04	5.29E-04	3.35E-05	1.47E-04	1.47E-06	6.44E-06	4.75E-06	2.08E-05
Manganese	3.80E-04	3.73E-07	D	9.18E-05	4.02E-04	2.55E-05	1.11E-04	1.12E-06	4.90E-06	3.61E-06	1.58E-05
Mercury	2.60E-04	2.55E-07	D	6.28E-05	2.75E-04	1.74E-05	7.63E-05	7.65E-07	3.35E-06	2.47E-06	1.08E-05
Molybdenum	1.10E-03	1.08E-06	D	2.66E-04	1.16E-03	7.37E-05	3.23E-04	3.24E-06	1.42E-05	1.05E-05	4.58E-05
Nickel	2.10E-03	2.06E-06	C	5.07E-04	2.22E-03	1.41E-04	6.16E-04	6.18E-06	2.71E-05	2.00E-05	8.75E-05
Selenium	2.40E-05	2.35E-08	E	5.80E-06	2.54E-05	1.61E-06	7.04E-06	7.06E-08	3.09E-07	2.28E-07	1.00E-06
Vanadium	2.30E-03	2.25E-06	D	5.55E-04	2.43E-03	1.54E-04	6.75E-04	6.76E-06	2.96E-05	2.19E-05	9.58E-05
Zinc	2.90E-02	2.84E-05	E	7.00E-03	3.07E-02	1.94E-03	8.51E-03	8.53E-05	3.74E-04	2.76E-04	1.21E-03
AP-42 Natural Gas Heating Value	1,020 Btu/scf (HHV)										

(a) PAH, so summed in PAH total.

(b) AP-42 emission factors have been adjusted by the ratio of the proposed VOC emission rate to the VOC emission rate calculated with AP-42 emission factors.

(c) Emission Factor (lb/MMBtu) = (Emission Factor, lb/10^6 scf) / (HHV Btu/scf).

(d) Hourly Emission Rate (lb/hr) = [Heat Input (MMBtu/hr) * Emission Factor (lb/MMBtu)] * VOC Ratio

(e) Annual Emission Rate (T/yr) = (Hourly Emission Rate, lb/hr) * (Annual Hours of Operation, hr/yr) / (2,000 lb/T)

(f) The hexane emission factor for industrial boilers is the average of the test data of boilers > 80 MW in the MACT DDDDD background information document.

Natrium Natural Gas Extraction and Fractionation Processing Plant

Potential Emission Worksheet for Two New Combustion Units

Item	Regen Gas Heater (P006)	Cryo HMO Heater (P007)	Units
Max Heat Input Rating	9.7	26.3	MMBtu/hr
Heat Content of Fuel	1,029	1,029	Btu/scf
Hourly Fuel Usage	9,424	25,551	scf/hr
Annual Hours of Operation	8,760	8,760	
Annual Fuel Usage	82.6	223.8	MMscf/yr
Annual Fuel Usage	84,972	230,388	MMBtu/yr

					Regen Gas Heater		Cryo HMO Heater		Combined Units
Pollutant	**CAS**	**REF**	**Emission Factor**	**Units**	**lb/hr**	**TPY**	**lb/hr**	**TPY**	**TPY**
Criteria Pollutants									
NOx	N/A	1	100	lb/MMscf	0.94	4.13	2.56	11.19	15.32
CO	630-08-0	1	84	lb/MMscf	0.79	3.47	2.15	9.40	12.87
VOC	N/A	1	5.5	lb/MMscf	0.05	0.23	0.14	0.62	0.84
PM-10	N/A	1	7.6	lb/MMscf	0.07	0.31	0.19	0.85	1.16
PM-2.5	N/A	1	7.6	lb/MMscf	0.07	0.31	0.19	0.85	1.16
SO2	7446-09-5	1	0.6	lb/MMscf	0.006	0.02	0.015	0.07	0.09
Greenhouse Gases									
Carbon dioxide	124-38-9	2	53.02	kg/MMBtu	1,134	4,966	3,074	13,465	18,431
Methane	74-82-8	3	1.0E-03	kg/MMBtu	2.1E-02	0.09	5.8E-02	0.25	0.35
Nitrous oxide	10024-97-2	3	1.0E-04	kg/MMBtu	2.1E-03	0.01	5.8E-03	0.03	0.03
CO_2e	N/A	4	---	---	1,135	4,971	3,077	13,478	18,449
Hazardous Air Pollutants									
Benzene	71-43-2	5	2.1E-03	lb/MMscf	1.98E-05	8.67E-05	5.37E-05	2.35E-04	3.22E-04
Dichlorobenzene	25321-22-6	5	1.2E-03	lb/MMscf	1.13E-05	4.95E-05	3.07E-05	1.34E-04	1.84E-04
Formaldehyde	50-00-0	5	7.5E-02	lb/MMscf	7.07E-04	3.10E-03	1.92E-03	8.39E-03	1.15E-02
Hexane	110-54-3	5	1.8E+00	lb/MMscf	1.70E-02	7.43E-02	4.60E-02	2.01E-01	2.76E-01
Naphthalene	91-20-3	5	6.1E-04	lb/MMscf	5.75E-06	2.52E-05	1.56E-05	6.83E-05	9.34E-05
Toluene	108-88-3	5	3.4E-03	lb/MMscf	3.20E-05	1.40E-04	8.69E-05	3.81E-04	5.21E-04
POM									
2-Methylnaphthalene	91-57-6	5	2.4E-05	lb/MMscf	2.26E-07	9.91E-07	6.13E-07	2.69E-06	3.68E-06
3-Methylchloranthrene	56-49-5	5	1.8E-06	lb/MMscf	1.70E-08	7.43E-08	4.60E-08	2.01E-07	2.76E-07
7,12-Dimethylbenz(a)anthracene	N/A	5	1.6E-05	lb/MMscf	1.51E-07	6.60E-07	4.09E-07	1.79E-06	2.45E-06
Acenaphthene	83-32-9	5	1.8E-06	lb/MMscf	1.70E-08	7.43E-08	4.60E-08	2.01E-07	2.76E-07
Acenaphthylene	203-96-8	5	1.8E-06	lb/MMscf	1.70E-08	7.43E-08	4.60E-08	2.01E-07	2.76E-07
Anthracene	120-12-7	5	2.4E-06	lb/MMscf	2.26E-08	9.91E-08	6.13E-08	2.69E-07	3.68E-07
Benz(a)anthracene	56-55-3	5	1.8E-06	lb/MMscf	1.70E-08	7.43E-08	4.60E-08	2.01E-07	2.76E-07
Benzo(a)pyrene	50-32-8	5	1.2E-06	lb/MMscf	1.13E-08	4.95E-08	3.07E-08	1.34E-07	1.84E-07
Benzo(b)fluoranthene	205-99-2	5	1.8E-06	lb/MMscf	1.70E-08	7.43E-08	4.60E-08	2.01E-07	2.76E-07
Benzo(g,h,i)perylene	191-24-2	5	1.2E-06	lb/MMscf	1.13E-08	4.95E-08	3.07E-08	1.34E-07	1.84E-07
Benzo(k)fluoranthene	205-82-3	5	1.8E-06	lb/MMscf	1.70E-08	7.43E-08	4.60E-08	2.01E-07	2.76E-07
Chrysene	218-01-9	5	1.8E-06	lb/MMscf	1.70E-08	7.43E-08	4.60E-08	2.01E-07	2.76E-07
Dibenzo(a,h)anthracene	53-70-3	5	1.2E-06	lb/MMscf	1.13E-08	4.95E-08	3.07E-08	1.34E-07	1.84E-07
Fluoranthene	206-44-0	5	3.0E-06	lb/MMscf	2.83E-08	1.24E-07	7.67E-08	3.36E-07	4.60E-07
Fluorene	86-73-7	5	2.8E-06	lb/MMscf	2.64E-08	1.16E-07	7.15E-08	3.13E-07	4.29E-07
Ideno(1,2,3-cd)pyrene	193-39-5	5	1.8E-06	lb/MMscf	1.70E-08	7.43E-08	4.60E-08	2.01E-07	2.76E-07
Phenanthrene	85-01-8	5	1.7E-05	lb/MMscf	1.60E-07	7.02E-07	4.34E-07	1.90E-06	2.60E-06
Pyrene	129-00-0	5	5.0E-06	lb/MMscf	4.71E-08	2.06E-07	1.28E-07	5.60E-07	7.66E-07
Total POM	N/A	5	8.8E-05	lb/MMscf	8.31E-07	3.64E-06	2.25E-06	9.87E-06	1.35E-05
Metals									
Arsenic	7440-38-2	6	2.4E-04	lb/MMscf	2.26E-06	9.91E-06	6.13E-06	2.69E-05	3.68E-05
Beryllium	7440-41-7	6	1.2E-05	lb/MMscf	1.13E-07	4.95E-07	3.07E-07	1.34E-06	1.84E-06
Cadmium	7440-43-9	6	1.1E-03	lb/MMscf	1.04E-05	4.54E-05	2.81E-05	1.23E-04	1.69E-04
Chromium	7440-47-3	6	1.4E-03	lb/MMscf	1.32E-05	5.78E-05	3.58E-05	1.57E-04	2.14E-04
Cobalt	7440-48-4	6	8.4E-05	lb/MMscf	7.92E-07	3.47E-06	2.15E-06	9.40E-06	1.29E-05
Manganese	7439-96-5	6	3.8E-04	lb/MMscf	3.58E-06	1.57E-05	9.71E-06	4.25E-05	5.82E-05
Mercury	7439-97-6	6	2.6E-04	lb/MMscf	2.45E-06	1.07E-05	6.64E-06	2.91E-05	3.98E-05
Nickel	7440-02-0	6	2.1E-03	lb/MMscf	1.98E-05	8.67E-05	5.37E-05	2.35E-04	3.22E-04
Selenium	7782-49-2	6	2.4E-05	lb/MMscf	2.26E-07	9.91E-07	6.13E-07	2.69E-06	3.68E-06

Total HAPs:	**0.29**	**tons/yr**

Notes: 1. AP-42 Table 1.4-2 (7/98)
2. 40 CFR 98 Table C-1
3. 40 CFR 98 Table C-2
4. 40 CFR 98 Table A-1
5. AP-42 Table 1.4-3 (7/98)
6. AP-42 Table 1.4-4 (7/98)

COMBUSTION SOURCES POTENTIAL TO EMIT GREENHOUSE GASES

AIR PERMIT APPLICATION

NATRIUM EXTRACTION AND FRACTIONATION PROCESSING PLANT

BLUE RACER MIDSTREAM, LLC

Combustion-Related Greenhouse Gas Emissions

Combustion Source Emission Unit ID	Combustion Source Description	HP	Btu/hp-hr	MMBtu/hr	Annual Operating Hours	Fuel Usage MMBtu/yr	CO_2 [a] Emissions short T/yr	CH_4 [a] Emissions short T/yr	N_2O [a] Emissions short T/yr	CO_2e[a] short T/yr	GHG Mass[a] short T/yr
S016	Hot Oil Heater	---	---	61.6	8,760	539,440.80	31,527.05	0.5946	0.0595	31,559.63	31,527.70
S017	Hot Oil Heater	---	---	61.6	8,760	539,440.80	31,527.05	0.5946	0.0595	31,559.63	31,527.70
S018	Hot Oil Heater	---	---	61.6	8,760	539,440.80	31,527.05	0.5946	0.0595	31,559.63	31,527.70
S019	Hot Oil Heater	---	---	61.6	8,760	539,440.80	31,527.05	0.5946	0.0595	31,559.63	31,527.70
S001	Hot Oil Heater	---	---	216.7	8,760	1,898,292.00	110,943.68	2.0925	0.2092	111,058.34	110,945.98
S020	Glycol Reboiler	---	---	3.0	8,760	26,280.00	1,535.91	0.0290	0.0029	1,537.49	1,535.94
S022	Regen Gas Heater	---	---	9.7	8,760	84,972.00	4,966.10	0.0937	0.0094	4,971.23	4,966.20

[a]Sample calculations:

CO_2, CH_4, or N_2O = Fuel * HHV * EF (Eq. C-1, §98.33(a)(1)(i) and C-8, §98.33(c)(1))

Where:

CO_2, CH_4, or N_2O = Annual emissions from combustion in kilograms

Fuel = volume combusted, scfy

HHV = High heat value of fuel, MMBtu/scf

EF = Emission Factors from Tables C-1 and C-2 of 40 CFR 98, Subpart C are as follows:

CO_2 = 53.02 kg/MMBtu

CH_4 = 0.001 kg/MMBtu

N_2O = 0.0001 kg/MMBtu

The heater design rating in MMBtu/hr was substituted for Fuel and HHV in Equation C-1 and a conversion from metric tons to short tons was applied in the following sample calculation for Emissions Unit ID S016:

CO_2 (short T/yr) = (0.001 metric T/kg)*(Fuel usage, MMBtu/yr))*[CO_2 EF, kg/MMBtu] * (2,204.6 lb/metric T) / (2,000 lb/short T)

= 31,527.05 short T/yr

An example calculation for CO_2e in using Eq. A-1 and global warming potential factors found in Table A-1:

CO_2e (short T/yr) = (CO2 Emission, short T/yr) + 25 * (CH4 Emission, short T/yr) + 298 * (N2O Emission, short T/yr)

= 31,559.63 short T/yr

An example calculation for GHG Mass in short T/yr for Emission Unit ID S016 follows:

GHG Mass (short T/yr) = (CO2 Emission, short T/yr) + (CH4 Emission, short T/yr) + (N2O Emission, short T/yr)

= 31,527.70 short T/yr

[b]Waste gas combustion GHG emissions from the flare is calculated on the following sheets.

FUGITIVE AREA 2 POTENTIAL TO EMIT

AIR PERMIT APPLICATION

NATRIUM EXTRACTION AND FRACTIONATION PROCESSING PLANT

BLUE RACER MIDSTREAM, LLC

Component/Stream	Number of Components	Emission Factors [a] (kg/hr-component)	Operating Hours (hr/yr)	Maximum VOC Content (%)	Maximum CO_2 Content (%)	Maximum CH_4 Content (%)	Uncontrolled PTE VOC Hourly [b] (lb/hr)	Uncontrolled PTE VOC Annual [c] (T/yr)	Reduction Credit [a] (%)	PTE VOC Hourly [b] (lb/hr)	PTE VOC Annual [c] (T/yr)	PTE CO2 Annual [c] (T/yr)	PTE Methane Annual [c] (T/yr)	PTE CO2e Annual [c] (T/yr)
Valves														
Gas (Natural Gas)	56	0.0045	8,760	1%	1%	95%	0.0056	0.0243	97%	0.0002	0.0007	0.0007	0.0694	1.73
Gas (Ethane)	903	0.0045	8,760	1%	1%	2%	0.0896	0.3924	0%	0.0896	0.3924	0.3924	0.7848	20.01
Gas (Propane)	662	0.0045	8,760	100%	0%	0%	6.5676	28.7659	97%	0.1970	0.8630	0.0000	0.0000	0.00
Gas (Butane)	454	0.0045	8,760	100%	0%	0%	4.5040	19.7277	97%	0.1351	0.5918	0.0000	0.0000	0.00
Light Liquid (Methanol)	11	0.0025	8,760	100%	0%	0%	0.0606	0.2655	97%	0.0018	0.0080	0.0000	0.0000	0.00
Light Liquid (Natural Gasoline)	520	0.0025	8,760	100%	0%	0%	2.8660	12.5531	97%	0.0860	0.3766	0.0000	0.0000	0.00
Light Liquid (NGL)	1,106	0.0025	8,760	60%	1%	2%	3.6575	16.0197	97%	0.1097	0.4806	0.0080	0.0160	0.41
Water/Oil	96	0.000098	8,760	100%	0%	0%	0.0207	0.0908	0%	0.0207	0.0908	0.0000	0.0000	0.00
Heavy Liquid	1,002	0.0000084	8,760	100%	0%	0%	0.0186	0.0813	0%	0.0186	0.0813	0.0000	0.0000	0.00
Relief Valves [d]														
Gas (Natural Gas)	4	0.0088	8,760	1%	1%	95%	0.0008	0.0034	100%	0.0000	0.0000	0.0000	0.0000	0.00
Gas (Ethane)	4	0.0088	8,760	1%	1%	2%	0.0008	0.0034	100%	0.0000	0.0000	0.0000	0.0000	0.00
Gas (Propane)	2	0.0088	8,760	100%	0%	0%	0.0388	0.1699	100%	0.0000	0.0000	0.0000	0.0000	0.00
Gas (Butane)	3	0.0088	8,760	100%	0%	0%	0.0582	0.2549	100%	0.0000	0.0000	0.0000	0.0000	0.00
Light Liquid (Methanol)	0	0.0075	8,760	100%	0%	0%	0.0000	0.0000	100%	0.0000	0.0000	0.0000	0.0000	0.00
Light Liquid (Natural Gasoline)	8	0.0075	8,760	100%	0%	0%	0.1323	0.5794	100%	0.0000	0.0000	0.0000	0.0000	0.00
Light Liquid (NGL)	29	0.0075	8,760	60%	1%	2%	0.2877	1.2601	100%	0.0000	0.0000	0.0000	0.0000	0.00
Water/Oil	2	0.014	8,760	100%	0%	0%	0.0617	0.2704	100%	0.0000	0.0000	0.0000	0.0000	0.00
Heavy Liquid	23	0.000032	8,760	100%	0%	0%	0.0016	0.0071	100%	0.0000	0.0000	0.0000	0.0000	0.00
Compressor Seals														
Gas (Natural Gas)	0	0.0088	8,760	1%	1%	0%	0.0000	0.0000	95%	0.0000	0.0000	0.0000	0.0000	0.00
Pump Seals [e]														
Gas (Ethane)	11	0.024	8,760	1%	1%	2%	0.0058	0.0255	0%	0.0058	0.0255	0.0255	0.0510	1.30
Gas (Propane)	6	0.024	8,760	100%	0%	0%	0.3175	1.3905	93%	0.0222	0.0973	0.0000	0.0000	0.00
Gas (Butane)	10	0.024	8,760	100%	0%	0%	0.5291	2.3175	93%	0.0370	0.1622	0.0000	0.0000	0.00
Light Liquid (Methanol)	2	0.013	8,760	100%	0%	0%	0.0573	0.2511	93%	0.0040	0.0176	0.0000	0.0000	0.00
Light Liquid (Natural Gasoline)	6	0.013	8,760	100%	0%	0%	0.1720	0.7532	93%	0.0120	0.0527	0.0000	0.0000	0.00
Light Liquid (NGL)	7	0.013	8,760	60%	1%	2%	0.1204	0.5272	93%	0.0084	0.0369	0.0006	0.0012	0.03
Water/Oil	2	0.000024	8,760	100%	0%	0%	0.0001	0.0005	0%	0.0001	0.0005	0.0000	0.0000	0.00
Heavy Liquid	13	0.00051	8,760	100%	0%	0%	0.0147	0.0643	0%	0.0147	0.0643	0.0000	0.0000	0.00
Connectors [f]														
Gas (Natural Gas)	87	0.0002	8,760	1%	1%	95%	0.0004	0.0017	97%	0.0000	0.0001	0.0001	0.0048	0.12
Gas (Ethane)	2,304	0.0002	8,760	1%	1%	2%	0.0102	0.0445	0%	0.0102	0.0445	0.0445	0.0890	2.27
Gas (Propane)	1,902	0.0002	8,760	100%	0%	0%	0.8386	3.6732	97%	0.0252	0.1102	0.0000	0.0000	0.00
Gas (Butane)	1,218	0.0002	8,760	100%	0%	0%	0.5370	2.3523	97%	0.0161	0.0706	0.0000	0.0000	0.00
Light Liquid (Methanol)	75	0.00021	8,760	100%	0%	0%	0.0347	0.1521	97%	0.0010	0.0046	0.0000	0.0000	0.00
Light Liquid (Natural Gasoline)	1,143	0.00021	8,760	100%	0%	0%	0.5292	2.3178	97%	0.0159	0.0695	0.0000	0.0000	0.00
Light Liquid (NGL)	2,350	0.00021	8,760	60%	1%	2%	0.6528	2.8592	97%	0.0196	0.0858	0.0014	0.0029	0.07
Water/Oil	123	0.00011	8,760	100%	0%	0%	0.0298	0.1306	30%	0.0209	0.0915	0.0000	0.0000	0.00
Heavy Liquid	2,146	0.0000075	8,760	100%	0%	0%	0.0355	0.1554	30%	0.0248	0.1088	0.0000	0.0000	0.00
Other [g]														
Gas (Natural Gas)	5	0.0088	8,760	1%	1%	95%	0.0010	0.0042	97%	0.0000	0.0001	0.0001	0.0121	0.30
Gas (Ethane)	101	0.0088	8,760	1%	1%	2%	0.0196	0.0858	0%	0.0196	0.0858	0.0858	0.1716	4.38
Gas (Propane)	77	0.0088	8,760	100%	0%	0%	1.4939	6.5431	97%	0.0448	0.1963	0.0000	0.0000	0.00
Gas (Butane)	44	0.0088	8,760	100%	0%	0%	0.8536	3.7389	97%	0.0256	0.1122	0.0000	0.0000	0.00
Light Liquid (Methanol)	0	0.0075	8,760	100%	0%	0%	0.0000	0.0000	0%	0.0000	0.0000	0.0000	0.0000	0.00
Light Liquid (Natural Gasoline)	49	0.0075	8,760	100%	0%	0%	0.8102	3.5487	97%	0.0243	0.1065	0.0000	0.0000	0.00
Light Liquid (NGL)	74	0.0075	8,760	60%	1%	2%	0.7341	3.2155	97%	0.0220	0.0965	0.0016	0.0032	0.08
Water/Oil	5	0.014	8,760	100%	0%	0%	0.1543	0.6759	0%	0.1543	0.6759	0.0000	0.0000	0.00
Heavy Liquid	51	0.000032	8,760	100%	0%	0%	0.0036	0.0158	0%	0.0036	0.0158	0.0000	0.0000	0.00
									TOTAL:	**1.19**	**5.22**	**0.56**	**1.21**	**30.71**

[a] Fugitive Emission Factors are per EPA document EPA-453/R-95-017; dated November 1995; pp.2-15 and TCEQ Emission Factors for Equiment Leak Fugitive Components, dated January 2005. Reduction Credits are per TCEQ Control Efficiencies for TCEQ Leak Detection and Repair Programs Revised 07/11 (APDG 6129v2) and TCEQ Technical Guidance Document for Equipment Leak Fugitives, dated July 2011. The emission factors are for total hydrocarbon. Reduction credit is for a 28LAER monitoring program.

[b] Hourly VOC emissions are calculated as follows:

(56 components) * (0.0045 kg/hr-component) * (1 lb/ 0.454 kg) * (100% VOC) * (100% - 97% reduction credit) = 0.0002 lb/hr

[c] Annual VOC emission rates are calculated as follows:

(0.0002 lb/hr) * (8760 hr/yr) / (2,000 lb/T) = 0.0007 T/yr

[d] All gas and light liquid relief valves are vented to the Flare S004. Thererefore, any leaks are routed to flare, and not to atmosphere as fugitive emissions (i.e., 100% control is taken). The Flare PTE calculation includes these potential leaks.

[e] Leakless pumps are not included in the pump count.

[f] Sampling connections are included in this category, because all sampling utilizes inline analyzers (i.e., closed loop sampling), such that additional emissions per sample do not occur.

[g] "Other" includes diaphragms, dump arms, hatches, instruments, meters, and polished rods and are assumed to have same control efficiency as valves.

FUGITIVES POTENTIAL TO EMIT (SPECIATED)

AIR PERMIT APPLICATION

NATRIUM EXTRACTION AND FRACTIONATION PROCESSING PLANT

BLUE RACER MIDSTREAM, LLC

Stream	PTE Total VOC		Methane		Ethane		Propane		N-Butane		Isobutane		N-Pentane		Isopentane		n-Hexane		Other Hexanes		Benzene		Heptane		Octane		Toluene		Ethylbenzene		Xylene		Methanol	
	Hourly (lb/hr)	Annual (T/yr)	% in Stream	Hourly (lb/hr)	% in Stream	Hourly (lb/hr)	% in VOC	Hourly[a] (lb/hr)	% in VOC	Hourly[a] (lb/hr)	% in VOC	Hourly[a] (lb/hr)	% in VOC	Hourly[a] (lb/hr)	% in VOC	Hourly[a] (lb/hr)	% in VOC	Hourly[a] (lb/hr)	% in VOC	Hourly[a] (lb/hr)	% in VOC	Hourly[a] (lb/hr)	% in VOC	Hourly[a] (lb/hr)	% in VOC	Hourly[a] (lb/hr)	% in VOC	Hourly[a] (lb/hr)	% in VOC	Hourly[a] (lb/hr)	% in VOC	Hourly[a] (lb/hr)
Gas (Natural Gas)	**0.0002**	**0.0009**	93.65%	0.0002	5.42%	0.00001	100.00%	0.0002	0.00%	0.0000	0.00%	0.0000	0.00%	0.0000	0.00%	0.0000	0.00%	0.0000	0.00%	0.0000	0.00%	0.0000	0.00%	0.0000	0.00%	0.0000	0.00%	0.0000	0.00%	0.0000	0.00%	0.0000	0.00%	0.0000
Gas (Ethane)	**0.1252**	**0.5482**	1.34%	0.0017	98.34%	0.1231	100.00%	0.1252	0.00%	0.0000	0.00%	0.0000	0.00%	0.0000	0.00%	0.0000	0.00%	0.0000	0.00%	0.0000	0.00%	0.0000	0.00%	0.0000	0.00%	0.0000	0.00%	0.0000	0.00%	0.0000	0.00%	0.0000	0.00%	0.0000
Gas (Propane)	**0.2892**	**1.2668**	0.00%	0.0000	1.32%	0.0038	97.70%	0.2826	0.49%	0.0014	1.81%	0.0052	0.00%	0.0000	0.00%	0.0000	0.00%	0.0000	0.00%	0.0000	0.00%	0.0000	0.00%	0.0000	0.00%	0.0000	0.00%	0.0000	0.00%	0.0000	0.00%	0.0000	0.00%	0.0000
Gas (Butane)	**0.2139**	**0.9368**	0.00%	0.0000	0.00%	0.0000	0.00%	0.0000	98.78%	0.2113	0.43%	0.0009	0.01%	0.0000	0.78%	0.0017	0.01%	0.0000	0.00%	0.0000	0.00%	0.0000	0.00%	0.0000	0.00%	0.0000	0.00%	0.0000	0.00%	0.0000	0.00%	0.0000	0.00%	0.0000
Light Liquid (Methanol)	**0.0069**	**0.0301**	0.00%	0.0000	0.00%	0.0000	0.00%	0.0000	0.00%	0.0000	0.00%	0.0000	0.00%	0.0000	0.00%	0.0000	0.00%	0.0000	0.00%	0.0000	0.00%	0.0000	0.00%	0.0000	0.00%	0.0000	0.00%	0.0000	0.00%	0.0000	0.00%	0.0000	100.00%	0.0069
Light Liquid (Natural Gasoline)	**0.1382**	**0.6053**	0.00%	0.0000	0.00%	0.0000	0.00%	0.0000	0.91%	0.0013	0.18%	0.0002	35.91%	0.0496	29.95%	0.0414	4.72%	0.0065	20.36%	0.0281	0.96%	0.0013	2.55%	0.0035	3.16%	0.0044	0.97%	0.0013	0.06%	0.0001	0.28%	0.0004	0.00%	0.0000
Light Liquid (NGL)	**0.1598**	**0.6997**	1.00%	0.0016	46.99%	0.0751	57.14%	0.0913	20.20%	0.0323	8.15%	0.0130	6.33%	0.0101	5.80%	0.0093	0.34%	0.0005	1.46%	0.0023	0.07%	0.0001	0.18%	0.0003	0.23%	0.0004	0.07%	0.0001	0.00%	0.0000	0.02%	0.0000	0.00%	0.0000
Water/Oil	**0.1961**	**0.8587**	0.00%	0.0000	0.00%	0.0000	0.00%	0.0000	0.00%	0.0000	0.00%	0.0000	0.00%	0.0000	0.00%	0.0000	0.00%	0.0000	0.00%	0.0000	0.00%	0.0000	0.00%	0.0000	0.00%	0.0000	0.00%	0.0000	0.00%	0.0000	0.00%	0.0000	0.00%	0.0000
Heavy Liquid	**0.0617**	**0.2702**	0.00%	0.0000	0.00%	0.0000	0.00%	0.0000	0.00%	0.0000	0.00%	0.0000	0.00%	0.0000	0.00%	0.0000	0.00%	0.0000	0.00%	0.0000	0.00%	0.0000	0.00%	0.0000	0.00%	0.0000	0.00%	0.0000	0.00%	0.0000	0.00%	0.0000	0.00%	0.0000
Total (lb/hr):	**1.19**			**0.0035**		**0.2020**		**0.4992**		**0.2462**		**0.0194**		**0.0598**		**0.0523**		**0.0071**		**0.0305**		**0.0014**		**0.0038**		**0.0047**		**0.0015**		**0.0001**		**0.0004**		**0.0069**
Total (T/yr):	**5.22**			**0.0152**		**0.8846**		**2.1865**		**1.0785**		**0.0851**		**0.2617**		**0.2291**		**0.0310**		**0.1335**		**0.0063**		**0.0167**		**0.0207**		**0.0064**		**0.0004**		**0.0019**		**0.0301**

[a] An example calculation for propane follows:

Propane (lb/hr) = (PTE Total VOC, lb/hr) * (% Propane in VOC)

Propane (lb/hr) = (0.0002 lb/hr Total VOC) * (100.00% Propane)

Propane (lb/hr) = 0.0002 lb/hr Propane

FUG AREA 2 PRESSURE RELIEF VALVE EQUIPMENT LEAKS TO FLARE

AIR PERMIT APPLICATION

NATRIUM EXTRACTION AND FRACTIONATION PROCESSING PLANT

BLUE RACER MIDSTREAM, LLC

Stream	Uncontrolled VOC to Flare			Methane		Ethane		Propane		N-Butane		Isobutane		N-Pentane		Isopentane		n-Hexane		Other Hexanes		Benzene		Heptane		Octane		Ethylbenzene		Toluene		Xylene	
	% in Stream	Hourly (lb/hr)	Annual (T/yr)	% in Stream	Hourly[a] (lb/hr)	% in Stream	Hourly[a] (lb/hr)	% in VOC	Hourly[b] (lb/hr)	% in VOC	Hourly[b] (lb/hr)	% in VOC	Hourly[b] (lb/hr)	% in VOC	Hourly[b] (lb/hr)	% in VOC	Hourly[b] (lb/hr)	% in VOC	Hourly[b] (lb/hr)	% in VOC	Hourly[b] (lb/hr)	% in VOC	Hourly[b] (lb/hr)	% in VOC	Hourly[b] (lb/hr)	% in VOC	Hourly[b] (lb/hr)	% in VOC	Hourly[b] (lb/hr)	% in VOC	Hourly[b] (lb/hr)	% in VOC	Hourly[b] (lb/hr)
Gas (Natural Gas)	1%	0.0008	0.0034	93.65%	0.0727	5.42%	0.0042	100.00%	0.0008	0.00%	0.0000	0.00%	0.0000	0.00%	0.0000	0.00%	0.0000	0.00%	0.0000	0.00%	0.0000	0.00%	0.0000	0.00%	0.0000	0.00%	0.0000	0.00%	0.0000	0.00%	0.0000	0.00%	0.0000
Gas (Ethane)	1%	0.0008	0.0034	1.34%	0.0010	98.34%	0.0763	100.00%	0.0008	0.00%	0.0000	0.00%	0.0000	0.00%	0.0000	0.00%	0.0000	0.00%	0.0000	0.00%	0.0000	0.00%	0.0000	0.00%	0.0000	0.00%	0.0000	0.00%	0.0000	0.00%	0.0000	0.00%	0.0000
Gas (Propane)	100%	0.0388	0.1699	0.00%	0.0000	1.32%	0.0005	97.70%	0.0379	0.49%	0.0002	1.81%	0.0007	0.00%	0.0000	0.00%	0.0000	0.00%	0.0000	0.00%	0.0000	0.00%	0.0000	0.00%	0.0000	0.00%	0.0000	0.00%	0.0000	0.00%	0.0000	0.00%	0.0000
Gas (Butane)	100%	0.0582	0.2549	0.00%	0.0000	0.00%	0.0000	0.00%	0.0000	98.78%	0.0575	0.43%	0.0002	0.01%	0.0000	0.78%	0.0005	0.01%	0.0000	0.00%	0.0000	0.00%	0.0000	0.00%	0.0000	0.00%	0.0000	0.00%	0.0000	0.00%	0.0000	0.00%	0.0000
Light Liquid (Natural Gasoline)	100%	0.1323	0.5794	0.00%	0.0000	0.00%	0.0000	0.00%	0.0000	0.91%	0.0012	0.18%	0.0002	35.91%	0.0475	29.95%	0.0396	4.72%	0.0062	20.36%	0.0269	0.96%	0.0013	2.55%	0.0034	3.16%	0.0042	0.06%	0.0001	0.97%	0.0013	0.28%	0.0004
Light Liquid (NGL)	60%	0.2877	1.2601	1.00%	0.0048	46.99%	0.2253	57.14%	0.1644	20.20%	0.0581	8.15%	0.0234	6.33%	0.0182	5.80%	0.0167	0.34%	0.0010	1.46%	0.0042	0.07%	0.0002	0.18%	0.0005	0.23%	0.0007	0.00%	0.0000	0.07%	0.0002	0.02%	0.0001
Water/Oil	100%	0.0617	0.2704	0.00%	0.0000	0.00%	0.0000	0.00%	0.0000	0.00%	0.0000	0.00%	0.0000	0.00%	0.0000	0.00%	0.0000	0.00%	0.0000	0.00%	0.0000	0.00%	0.0000	0.00%	0.0000	0.00%	0.0000	0.00%	0.0000	0.00%	0.0000	0.00%	0.0000
Heavy Liquid	100%	0.0016	0.0071	0.00%	0.0000	0.00%	0.0000	0.00%	0.0000	0.00%	0.0000	0.00%	0.0000	0.00%	0.0000	0.00%	0.0000	0.00%	0.0000	0.00%	0.0000	0.00%	0.0000	0.00%	0.0000	0.00%	0.0000	0.00%	0.0000	0.00%	0.0000	0.00%	0.0000
Total (lb/hr):		**0.58**			**0.0785**		**0.3063**		**0.2038**		**0.1170**		**0.0246**		**0.0657**		**0.0568**		**0.0072**		**0.0311**		**0.0015**		**0.0039**		**0.0048**		**0.0001**		**0.0015**		**0.0004**
Total (T/yr):		**2.55**			**0.3439**		**1.3417**		**0.8928**		**0.5125**		**0.1079**		**0.2879**		**0.2486**		**0.0316**		**0.1364**		**0.0064**		**0.0171**		**0.0212**		**0.0004**		**0.0065**		**0.0019**

[a] An example calculation of the PRV emission rate to flare for methane and ethane follows:

Methane (lb/hr) = (Uncontrolled VOC to Flare, lb/hr) / (% VOC in Stream) * (% Methane in Stream)

Methane (lb/hr) = (0.0008 lb/hr VOC) / (1% VOC) * (93.65% Methane)

Methane (lb/hr) = 0.0727 lb/hr Methane

[b] An example calculation of the PRV emission rate to flare for VOC constituents follows:

Propane (lb/hr) = (Uncontrolled VOC to Flare, lb/hr) * (% Propane in VOC)

Propane (lb/hr) = (0.0008 lb/hr VOC) * (100.00% Propane)

Propane (lb/hr) = 0.0008 lb/hr Propane

PRESSURE RELIEF VALVES POTENTIAL TO EMIT

AIR PERMIT APPLICATION

NATRIUM EXTRACTION AND FRACTIONATION PROCESSING PLANT

BLUE RACER MIDSTREAM, LLC

Component/Stream	Number of Components	Emission Factors [a] (kg/hr-component)	Operating Hours (hr/yr)	Maximum VOC Content (%)	Uncontrolled PTE VOC Hourly [b] (lb/hr)	Uncontrolled PTE VOC Annual [c] (T/yr)	Reduction Credit [a] (%)	PTE VOC Hourly [b] (lb/hr)	PTE VOC Annual [c] (T/yr)
Relief Valves[d]									
Gas (Natural Gas)	36	0.0088	8,760	1%	0.0070	0.0306	100%	0.0000	0.0000
Gas (Ethyl mercaptan)	1	0.0088	8,760	100%	0.0194	0.0850	100%	0.0000	0.0000
Gas (Ethane)	10	0.0088	8,760	1%	0.0019	0.0085	100%	0.0000	0.0000
Gas (Propane)	10	0.0088	8,760	100%	0.1940	0.8497	100%	0.0000	0.0000
Gas (Butane)	4	0.0088	8,760	100%	0.0776	0.3399	100%	0.0000	0.0000
Gas (isoButane)	9	0.0088	8,760	100%	0.1746	0.7648	100%	0.0000	0.0000
Light Liquid (Natural Gasoline)	5	0.0075	8,760	100%	0.0827	0.3621	100%	0.0000	0.0000
Light Liquid (NGL)	1	0.0075	8,760	60%	0.0099	0.0435	100%	0.0000	0.0000
Water/Oil	1	0.014	8,760	100%	0.0309	0.1352	100%	0.0000	0.0000
Heavy Liquid	5	0.000032	8,760	100%	0.0004	0.0015	100%	0.0000	0.0000
							TOTAL:	**0.00**	**0.00**

[a] Fugitive Emission Factors are per EPA document EPA-453/R-95-017; dated November 1995; pp.2-15 and TCEQ Emission Factors for Equiment Leak Fugitive Components, dated January 2005. Reduction Credits are per TCEQ Control Efficiencies for TCEQ Leak Detection and Repair Programs Revised 07/11 (APDG 6129v2) and TCEQ Technical Guidance Document for Equipment Leak Fugitives, dated July 2011. The emission factors are for total hydrocarbon. Reduction credit is for a 28LAER monitoring program.

[b] Hourly VOC emissions are calculated as follows:

(36 components) * (0.0088 kg/hr-component) * (1 lb/ 0.454 kg) * (100% VOC) * (100% - 100% reduction credit) = 0.0000 lb/hr

[c] Annual VOC emission rates are calculated as follows:

(0.0000 lb/hr) * (8760 hr/yr) / (2,000 lb/T) = 0.0000 T/yr

[d] All gas and light liquid relief valves are vented to the Flare. Thererefore, any leaks are routed to flare, and not to atmosphere as fugitive emissions (i.e., 100% control is taken). The Flare PTE calculation includes these potential leaks.

PLANT PRESSURE RELIEF VALVE EQUIPMENT LEAKS TO FLARE

AIR PERMIT APPLICATION

NATRIUM EXTRACTION AND FRACTIONATION PROCESSING PLANT

BLUE RACER MIDSTREAM, LLC

Stream	Uncontrolled VOC to Flare			Methane		Ethane		Propane		N-Butane		Isobutane		N-Pentane		Isopentane		n-Hexane		Other Hexanes		Benzene		Ethyl mercaptan		Heptane		Octane		Ethylbenzene		Toluene		Xylene	
	% in Stream	Hourly (lb/hr)	Annual (T/yr)	% in Stream	Hourly[a] (lb/hr)	% in Stream	Hourly[a] (lb/hr)	% in VOC	Hourly[b] (lb/hr)	% in VOC	Hourly[b] (lb/hr)	% in VOC	Hourly[b] (lb/hr)	% in VOC	Hourly[b] (lb/hr)	% in VOC	Hourly[b] (lb/hr)	% in VOC	Hourly[b] (lb/hr)	% in VOC	Hourly[b] (lb/hr)	% in VOC	Hourly[b] (lb/hr)	% in VOC	Hourly[b] (lb/hr)	% in VOC	Hourly[b] (lb/hr)	% in VOC	Hourly[b] (lb/hr)	% in VOC	Hourly[b] (lb/hr)	% in VOC	Hourly[b] (lb/hr)	% in VOC	Hourly[b] (lb/hr)
Gas (Natural Gas)	1%	0.0070	0.0306	93.65%	0.6541	5.42%	0.0378	100.00%	0.0070	0.00%	0.0000	0.00%	0.0000	0.00%	0.0000	0.00%	0.0000	0.00%	0.0000	0.00%	0.0000	0.00%	0.0000	0.00%	0.0000	0.00%	0.0000	0.00%	0.0000	0.00%	0.0000	0.00%	0.0000	0.00%	0.0000
Gas (Ethane)	1%	0.0194	0.0850	1.34%	0.0260	98.34%	1.9078	100.00%	0.0194	0.00%	0.0000	0.00%	0.0000	0.00%	0.0000	0.00%	0.0000	0.00%	0.0000	0.00%	0.0000	0.00%	0.0000	0.00%	0.0000	0.00%	0.0000	0.00%	0.0000	0.00%	0.0000	0.00%	0.0000	0.00%	0.0000
Gas (Ethyl mercaptan)	100%	0.0019	0.0085	0.00%	0.0000	0.00%	0.0000	0.00%	0.0000	0.00%	0.0000	0.00%	0.0000	0.00%	0.0000	0.00%	0.0000	0.00%	0.0000	0.00%	0.0000	0.00%	0.0000	100.00%	0.0019	0.00%	0.0000	0.00%	0.0000	0.00%	0.0000	0.00%	0.0000	0.00%	0.0000
Gas (Propane)	100%	0.1940	0.8497	0.00%	0.0000	1.32%	0.0026	97.70%	0.1895	0.49%	0.0010	1.81%	0.0035	0.00%	0.0000	0.00%	0.0000	0.00%	0.0000	0.00%	0.0000	0.00%	0.0000	0.00%	0.0000	0.00%	0.0000	0.00%	0.0000	0.00%	0.0000	0.00%	0.0000	0.00%	0.0000
Gas (Butane)	100%	0.0776	0.3399	0.00%	0.0000	0.00%	0.0000	0.00%	0.0000	98.78%	0.0767	0.43%	0.0003	0.01%	0.0000	0.78%	0.0006	0.01%	0.0000	0.00%	0.0000	0.00%	0.0000	0.00%	0.0000	0.00%	0.0000	0.00%	0.0000	0.00%	0.0000	0.00%	0.0000	0.00%	0.0000
Gas (iButane)	100%	0.1746	0.7648	0.00%	0.0000	0.00%	0.0000	1.81%	0.0032	1.54%	0.0027	96.65%	0.1688	0.00%	0.0000	0.00%	0.0000	0.00%	0.0000	0.00%	0.0000	0.00%	0.0000	0.00%	0.0000	0.00%	0.0000	0.00%	0.0000	0.00%	0.0000	0.00%	0.0000	0.00%	0.0000
Light Liquid (Natural Gasoline)	100%	0.0827	0.3621	0.00%	0.0000	0.00%	0.0000	0.00%	0.0000	0.91%	0.0008	0.18%	0.0001	35.91%	0.0297	29.95%	0.0248	4.72%	0.0039	20.36%	0.0168	0.96%	0.0008	0.00%	0.0000	2.55%	0.0021	3.16%	0.0026	0.06%	0.00005	0.97%	0.0008	0.28%	0.0002
Light Liquid (NGL)	60%	0.0099	0.0435	1.00%	0.0002	46.99%	0.0078	57.14%	0.0057	20.20%	0.0020	8.15%	0.0008	6.33%	0.0006	5.80%	0.0006	0.34%	0.0000	1.46%	0.0001	0.07%	0.0000	0.00%	0.0000	0.18%	0.0000	0.23%	0.0000	0.00%	0.0000	0.07%	0.0000	0.02%	0.0000
Water/Oil	100%	0.0309	0.1352	0.00%	0.0000	0.00%	0.0000	0.00%	0.0000	0.00%	0.0000	0.00%	0.0000	0.00%	0.0000	0.00%	0.0000	0.00%	0.0000	0.00%	0.0000	0.00%	0.0000	0.00%	0.0000	0.00%	0.0000	0.00%	0.0000	0.00%	0.0000	0.00%	0.0000	0.00%	0.0000
Heavy Liquid	100%	0.0004	0.0015	0.00%	0.0000	0.00%	0.0000	0.00%	0.0000	0.00%	0.0000	0.00%	0.0000	0.00%	0.0000	0.00%	0.0000	0.00%	0.0000	0.00%	0.0000	0.00%	0.0000	0.00%	0.0000	0.00%	0.0000	0.00%	0.0000	0.00%	0.0000	0.00%	0.0000	0.00%	0.0000
Total (lb/hr):		**0.60**			**0.6802**		**1.9560**		**0.2247**		**0.0831**		**0.1736**		**0.0303**		**0.0259**		**0.0039**		**0.0170**		**0.0008**		**0.0019**		**0.0021**		**0.0026**		**0.00005**		**0.0008**		**0.0002**
Total (T/yr):		**2.62**			**2.9795**		**8.5671**		**0.9844**		**0.3639**		**0.7602**		**0.1328**		**0.1136**		**0.0172**		**0.0744**		**0.0035**		**0.0085**		**0.0093**		**0.0115**		**0.0002**		**0.0035**		**0.0010**

[a] An example calculation of the PRV emission rate to flare for methane and ethane follows:

Methane (lb/hr) = (Uncontrolled VOC to Flare, lb/hr) / (% VOC in Stream) * (% Methane in Stream)

Methane (lb/hr) = (0.0070 lb/hr VOC) / (1% VOC) * (93.65% Methane)

Methane (lb/hr) = 0.6541 lb/hr Methane

[b] An example calculation of the PRV emission rate to flare for VOC constituents follows:

Propane (lb/hr) = (Uncontrolled VOC to Flare, lb/hr) * (% Propane in VOC)

Propane (lb/hr) = (0.0070 lb/hr VOC) * (100.00% Propane)

Propane (lb/hr) = 0.0070 lb/hr Propane

PRESSURE RELIEF VALVES TO FLARE POTENTIAL TO EMIT

AIR PERMIT APPLICATION

NATRIUM EXTRACTION AND FRACTIONATION PROCESSING PLANT

BLUE RACER MIDSTREAM, LLC

Emission Point ID	Flare	P004

Component	Component LHV (Btu/lb)	Uncontrolled Emissions From Area 2 Pressure Relief Valve Equipment Leaks[a] Hourly (lb/hr)	Annual (T/yr)	Flare DRE (%)	Potential to Emit[c] Hourly (lb/hr)	Annual (T/yr)
Methane	21,502	0.0785	0.3439	99%	0.0008	0.0034
Ethane	20,416	0.3063	1.3417	99%	0.0031	0.0134
Propane	19,929	0.2038	0.8928	99%	0.0020	0.0089
i-Butane	19,614	0.0246	0.1079	98%	0.0005	0.0022
n-Butane	19,665	0.1170	0.5125	98%	0.0023	0.0103
i-Pentane	19,451	0.0568	0.2486	98%	0.0011	0.0050
n-Pentane	19,499	0.0657	0.2879	98%	0.0013	0.0058
n-Hexane	19,391	0.0072	0.0316	98%	0.0001	0.0006
Other Hexanes	19,147	0.0311	0.1364	98%	0.0006	0.0027
Benzene	18,000	0.0015	0.0064	98%	0.0000	0.0001
Heptane	19,163	0.0039	0.0171	98%	0.0001	0.0003
Octane	19,104	0.0048	0.0212	98%	0.0001	0.0004
Toluene	18,501	0.0015	0.0065	98%	0.00003	0.0001
Ethlybenzene	17,780	0.0001	0.0004	98%	0.000002	0.00001
Xylene	18,410	0.0004	0.0019	98%	0.00001	0.00004
TOTAL:	**20,081**	**0.90**	**3.96**		**0.01**	**0.05**
TOTAL VOC:		**0.52**	**2.27**		**0.01**	**0.04**
TOTAL HAPs:		**0.01**	**0.05**		**0.0002**	**0.0009**

Component	Component LHV (Btu/lb)	Uncontrolled Emissions From Plant Relief Valve Equipment Leaks[b] Hourly (lb/hr)	Annual (T/yr)	Flare DRE (%)	Potential to Emit[c] Hourly (lb/hr)	Annual (T/yr)
Methane	21,502	0.6802	2.9795	99%	0.0068	0.0298
Ethane	20,416	1.9560	8.5671	99%	0.0196	0.0857
Propane	19,929	0.2247	0.9844	99%	0.0022	0.0098
i-Butane	19,614	0.1736	0.7602	98%	0.0035	0.0152
n-Butane	19,665	0.0831	0.3639	98%	0.0017	0.0073
i-Pentane	19,451	0.0259	0.1136	98%	0.0005	0.0023
n-Pentane	19,499	0.0303	0.1328	98%	0.0006	0.0027
n-Hexane	19,391	0.0039	0.0172	98%	0.0001	0.0003
Other Hexanes	19,147	0.0170	0.0744	98%	0.0003	0.0015
Benzene	18,000	0.0008	0.0035	98%	0.0000	0.0001
Ethyl Mercaptan	20,416	0.0019	0.0085	98%	0.0000	0.0002
Heptane	19,163	0.0021	0.0093	98%	0.0000	0.0002
Octane	19,104	0.0026	0.0115	98%	0.0001	0.0002
Toluene	18,501	0.0008	0.0035	98%	0.0000	0.0001
Ethlybenzene	17,780	0.00005	0.0002	98%	0.0000	0.0000
Xylene	18,410	0.0002	0.0010	98%	0.0000	0.0000
TOTAL:	**20,522**	**3.20**	**14.03**		**0.04**	**0.16**
TOTAL VOC:		**0.57**	**2.48**		**0.01**	**0.04**
TOTAL HAPs:		**0.01**	**0.03**		**0.0001**	**0.0005**

[a] Please refer to the calculation sheet "Fug Area 2 Pressure Relief Valve Equipment Leaks to Flare."

[b] Please refer to the calculation sheet "Plant Pressure Relief Valve Equipment Leaks to Flare."

[c] An example calculation for Potential to Emit Ethane follows:

Ethane PTE (lb/hr) = (Uncontrolled PRV Equipment Leaks, lb/hr) * (1 - Flare DRE, wt%)

Ethane PTE (lb/hr) = [(0.3063 lb/hr)] * (1 - 99% wt%)

Ethane PTE (lb/hr) = 0.0031

EMERGENCY FLARE POTENTIAL TO EMIT

AIR PERMIT APPLICATION

NATRIUM EXTRACTION AND FRACTIONATION PROCESSING PLANT

BLUE RACER MIDSTREAM, LLC

Emission Unit ID **S021**

Process Streams to Flare

Annual Emissions (for tpy)

Pilot Emissions- Continual

Pilot fuel consumption	195	scf/hr
Pilot heat input rating	0.201	MMBtu/hr
Fuel gas HHV	1,029	Btu/ft^3
Annual operating hours	8,760	hr/yr

Flare control efficiency 99.5%

Pollutant	CAS	REF	Emission Factor	Units	Potential Emissions lb/hr	Potential Emissions tons/yr
Pilot						
Criteria Pollutants						
NOx	N/A	1	0.025	lb/hr	0.03	0.11
CO	630-08-0	1	0.1366	lb/hr	0.14	0.60
VOC	N/A	1	0.0516	lb/hr	0.05	0.23
PM-10	N/A	2	7.6	lb/MMcf	0.001	0.006
PM-2.5	N/A	2	7.6	lb/MMcf	0.001	0.006
SO2	7446-09-5	1	3.78E-05	lb/hr	0.00004	0.00017
Greenhouse Gases						
Carbon dioxide	124-38-9	4	53.02	kg/MMBtu	23.45	102.73
Methane	74-82-8	5	1.0E-03	kg/MMBtu	0.0004	0.0019
Nitrous oxide	10024-97-2	5	1.0E-04	kg/MMBtu	0.00004	0.00019
CO_2e	N/A	6	---	---	23.48	102.84
TOTAL						
Criteria Pollutants						
NOx	N/A	---	---	---	0.03	0.11
CO	630-08-0	---	---	---	0.14	0.60
VOC	N/A	---	---	---	0.05	0.23
PM-10	N/A	---	---	---	0.001	0.006
PM-2.5	N/A	---	---	---	0.001	0.006
SO2	7446-09-5	---	---	---	0.00004	0.00017

Notes:

1. Vendor
2. AP-42 Table 1.4-2
3. AP-42 Tables 13.5-1 and -2
4. 40 CFR 98 Table C-1
5. 40 CFR 98 Table C-2
6. 40 CFR 98 Table A-1

CALCULATION OF GREENHOUSE GAS EMISSIONS FROM FLARE WASTE GAS COMBUSTION

AIR PERMIT APPLICATION

NATRIUM EXTRACTION AND FRACTIONATION PROCESSING PLANT

BLUE RACER MIDSTREAM, LLC

CO_2 Combustion Emissions

	Number of	Molecular	Pressure Relief Vents (Area 2) [a]		Pressure Relief Vents (Plant) [a]		Maintenance and Blowdowns		Total Emissions		Total CO_2 Emissions	
	Carbon	Weight	Hourly	Annual	Hourly	Annual	Hourly	Annual	Hourly	Annual	CO_2 Hourly	CO_2 Annual
Compound	Atoms	lb/lbmol	(lb/hr)	(T/yr)	(lb/hr)	(T/yr)	(lb/hr)	(T/yr)	(lb/hr)	(T/yr)	(lb/hr)	(T/yr)
Methane	1	16.043	0.0785	0.3439	0.6802	2.9795	260.3405	13.3676	261.0993	16.6911	708.9376	45.3196
Ethane	2	30.07	0.3063	1.3417	1.9579	8.5756	274.7789	4.1295	277.0431	14.0469	802.6603	40.6972
Propane	3	44.097	0.2038	0.8928	0.2247	0.9844	60.8592	1.2764	61.2878	3.1536	181.6243	9.3456
i-Butane	4	58.123	0.0246	0.1079	0.1736	0.7602	9.9553	0.2088	10.1535	1.0769	30.1305	3.1956
n-Butane	4	58.123	0.1170	0.5125	0.0831	0.3639	24.3563	0.5108	24.5564	1.3872	72.8711	4.1166
i-Pentane	5	72.15	0.0568	0.2486	0.0259	0.1136	6.8754	0.1442	6.9581	0.5064	20.7923	1.5132
n-Pentane	5	72.15	0.0657	0.2879	0.0303	0.1328	7.6338	0.1601	7.7298	0.5808	23.0984	1.7355
n-Hexane	6	86.172	0.0384	0.1681	0.0209	0.0916	2.3859	0.0500	2.4452	0.3097	7.3413	0.9299
Heptane	7	100.198	0.0039	0.0171	0.0021	0.0093	0.0000	0.0000	0.0060	0.0264	0.0181	0.0795
Benzene	6	78.00	0.0015	0.0064	0.0008	0.0035	0.0000	0.0000	0.0023	0.0099	0.0075	0.0328
Toluene	7	92.13	0.0015	0.0065	0.0008	0.0035	0.0000	0.0000	0.0023	0.0101	0.0075	0.0330
Ethylbenzene	8	106.165	0.0001	0.0004	0.0000	0.0002	0.0000	0.0000	0.0001	0.0006	0.0004	0.0019
Xylene	8	106.165	0.0004	0.0019	0.0002	0.0010	0.0000	0.0000	0.0007	0.0029	0.0022	0.0095
Octane	8	114.224	0.0048	0.0212	0.0026	0.0115	0.0000	0.0000	0.0075	0.0327	0.0225	0.0987
									Total CO_2 Emissions:		**1,847.5140**	**107.1084**

Sample calculation CO_2 combustion (using methane):

CO_2 Hourly= (Total Waste Gas Flow, lb/hr)*(0.99 destruction efficiency)*(No. of C, lbmol C/lbmol CH_4)*(44 lb CO2/lbmol C)/(MW, lb CH_4/lbmol CH_4)
= (261.10 lb/hr) * (0.99) * (1 lbmol C/lbmol CH4) * (44 lb CO2/lbmol C) / (16.04 lb CH4/lbmol CH4)
= 708.9376 lb/hr

CO_2 Annual = (Total Waste Gas Flow, T/yr)*(0.99 destruction efficiency)*(No. of C, lbmol C/lbmol CH_4)*(44 lb CO2/lbmol C)/(MW, lb CH_4/lbmol CH_4)
= (16.69 T/yr) * (0.99) * (1 lbmol C/lbmol CH4) * (44 lb CO2/lbmol C) / (16.04 lb CH4/lbmol CH4)
= 45.3196 T/yr

N_2O = Fuel * HHV * 0.0001 (Eq. W-40, §98.233(z)(6))
Where:
N_2O = Annual emissions from combustion in kilograms
Fuel = volume combusted, scfy
HHV = High heat value of fuel, MMBtu/scf

N_2O Combustion Emissions

	Pressure Relief Vents (Area 2) [a]	Pressure Relief Vents (Plant) [a]	Maintenance and Blowdowns
Waste Gas Flow (scf/yr)	81,424.10	394,127.73	775,247.40
Heating Value (Btu/scf)	1,951.73	1,136.03	1245.24
N_2O Emissions (T/yr)	**0.00002**	**0.00005**	**0.0001**

Sample Calculation for Tank and Loading Emissions:
N_2O = (0.0001 kg N_2O/MMBtu) * (Waste Gas Flow, scf/yr) * (Heating Value, Btu/scf) / (10^6 Btu/MMBtu) / (0.4536 kg/lb) / (2000 lb/T)
= (0.0001 kg N2O/MMBtu) * (81,424.10 scf/yr) * (1,951.73 Btu/scf) (10^6 Btu/MMBtu) / (0.4536 kg/lb) / (2000 lb/T)
= 0.00002 T/yr

Emission Summary:

	Pressure Relief Vents (Area 2) [a]		Pressure Relief Vents (Plant) [a]		Maintenance and Blowdowns		Total Emissions		**Combustion CO_2**	**Combustion N_2O**	**CO_2e [b]**
	Uncombusted CO_2 (T/yr)	Uncombusted CH_4 (T/yr)	Uncombusted CO_2 (T/yr)	Uncombusted CH_4 (T/yr)	Uncombusted CO_2 (T/yr)	Uncombusted CH_4 (T/yr)	Uncombusted CO_2 (T/yr)	Uncombusted CH_4 (T/yr)	**(T/yr)**	**(T/yr)**	**(T/yr)**
	0.00	0.003	0.00	0.03	0.04	0.13	0.04	0.17	107.11	0.0002	111.37

[a] Pressure relief vents from Area 2 and Plant were taken from Pressure Relief Valves To Flare Potential To Emit worksheet.

[b] Total GHG emissions from flare waste gas combustion are calculated as follows:
(0.04 T/yr Uncombusted CO2) + (107.11 T/yr Combustion CO2) + ((0.17 T/yr Methane) * 25) + ((0.0002 T/yr N2O) * 298) = 111.37 T/yr CO2e

UNPAVED ROADS POTENTIAL TO EMIT

AIR PERMIT APPLICATION

NATRIUM EXTRACTION AND FRACTIONATION PROCESSING PLANT

BLUE RACER MIDSTREAM, LLC

Emission Unit ID **Unpaved Roads** **ROADS**

Input Parameters

Input	Symbol	Value	Units
Total Daily Delivery and Haulout Trips[a]	n	60	trips/day
Road-to-Plant Distance (one way)	d	1,000	ft
Delivery Days	D	365	days/yr
Days with Precipitation > 0.01 "	P	150	days/yr
Empty Truck Weight	W_e	10	ton
Full Truck Weight	W_f	20	ton
Average Truck Weight	W	15	ton
Surface Material Silt Content	s	6.0	%

[a] Includes NGL deliveries, product, slop oil, produced water, and used oil loadouts.

Calculation of Emission Factor, E (lb/VMT)

		k	s	W	a	b	E
		(unitless)	(%)	(tons)	(unitless)	(unitless)	(lb/VMT)
Average NGL Truck	PM	4.9	6.0	15	0.7	0.45	6.22
Average NGL Truck	PM-10	1.5	6.0	15	0.9	0.45	1.66
Average NGL Truck	PM-2.5	0.15	6.0	15	0.9	0.45	0.17

$E = k\,(s/12)^a(W/3)^b$ AP-42 Chapter 13.2.2, Eq. 1a, November 2006

Calculation of Emissions (tpy)

		E	E_{ext}	VMT	Emissions
		(lb/VMT)	(lb/VMT)	(miles/yr)	(tpy)
Average NGL Truck	PM	6.22	3.67	8,295	15.20
Average NGL Truck	PM-10	1.66	0.98	8,295	4.05
Average NGL Truck	PM-2.5	0.17	0.10	8,295	0.41

$E_{ext} = E[(365 - P)/365]$ AP-42 Chapter 13.2.2, Eq. 2, November 2006

AMINE PLANT VENT POTENTIAL TO EMIT

AIR PERMIT APPLICATION

NATRIUM EXTRACTION AND FRACTIONATION PROCESSING PLANT

BLUE RACER MIDSTREAM, LLC

Emission Unit ID **Amine Plant Vent** **S011, S014**

Values are full plant operation at 460 MMSCFD

Amine Unit 1:

Total Exhaust	1,347.6926	lb/hr
Total Exhaust	31.9434	lbmol/hr

	Mole Fraction	Flow (lbmol/hr)	Flow (lb/hr)	Flow (tons/yr)
Methane	0.0138%	0.0044	0.07	0.31
Ethane	0.7088%	0.2264	6.81	29.82
Propane	0.0029%	0.0009	0.04	0.18
Water	6.6048%	2.1098	38.01	166.48
CO2	92.6700%	29.6019	1302.78	5706.18

Amine Unit 2:

Total Exhaust	4,670.3300	lb/hr
Total Exhaust	110.6695	lbmol/hr

	Mole Fraction	Flow (lbmol/hr)	Flow (lb/hr)	Flow (tons/yr)
Methane	0.0121%	0.0133	0.21	0.94
Ethane	0.6346%	0.7023	21.12	92.50
Propane	0.0025%	0.0028	0.12	0.53
Water	6.6049%	7.3096	131.68	576.78
CO2	92.7459%	102.6414	4517.25	19785.55

Amine unit vent emissions taken from Promax simulation reports.

FIRE PUMP #1 POTENTIAL TO EMIT

AIR PERMIT APPLICATION

NATRIUM EXTRACTION AND FRACTIONATION PROCESSING PLANT

BLUE RACER MIDSTREAM, LLC

Emission Unit ID **Fire Pump #1** **S002**

Item	Value	Units
Rated Horsepower	700	Hp
Max Fuel Consumption rate	35.9	gal/hr
Max Fuel Consumption rate	4.92	MMBtu/hr
Annual Operating Hours	100	hr/yr
Annual Fuel Consumption	3,590	gal/yr
Sulfur Content of Fuel	0.0015	%
Heat Content of Fuel	137,030	Btu/gal

					Potential Emissions	
Pollutant	**CAS**	**REF**	**Emission Factor**	**Units**	**lb/hr**	**tons/yr**
Criteria Pollutants						
NOx	N/A	1	5.31	lb/hr	5.31	0.27
CO	630-08-0	1	2.18	lb/hr	2.18	0.11
VOC	N/A	1	0.08	lb/hr	0.08	0.00
PM-10	N/A	1	0.3	lb/hr	0.30	0.02
PM-2.5	N/A	1	0.3	lb/hr	0.30	0.02
SO2	7446-09-5	2	1.52E-03	lb/MMBtu	0.01	0.000
Hazardous Air Pollutants						
Acetaldehyde	75-07-0	3	2.52E-05	lb/MMBtu	1.2E-04	6.2E-06
Acrolein	107-02-8	3	7.88E-06	lb/MMBtu	3.9E-05	1.9E-06
Benzene	71-43-2	3	7.76E-04	lb/MMBtu	3.8E-03	1.9E-04
Formaldehyde	50-00-0	3	7.89E-05	lb/MMBtu	3.9E-04	1.9E-05
Toluene	108-88-3	3	2.81E-04	lb/MMBtu	1.4E-03	6.9E-05
Xylenes	1330-20-7	3	1.93E-04	lb/MMBtu	9.5E-04	4.7E-05
PAHs						
Acenaphthene	83-32-9	4	4.68E-06	lb/MMBtu	2.3E-05	1.2E-06
Acenaphthylene	208-96-8	4	9.23E-06	lb/MMBtu	4.5E-05	2.3E-06
Anthracene	120-12-7	4	1.23E-06	lb/MMBtu	6.1E-06	3.0E-07
Benzo(a)anthracene	56-55-3	4	6.22E-07	lb/MMBtu	3.1E-06	1.5E-07
Benzo(a)pyrene	50-32-8	4	2.57E-07	lb/MMBtu	1.3E-06	6.3E-08
Benzo(b)fluoranthene	205-99-2	4	1.11E-06	lb/MMBtu	5.5E-06	2.7E-07
Benzo(g,h,l)perylene	191-24-2	4	5.56E-07	lb/MMBtu	2.7E-06	1.4E-07
Benzo(k)fluoranthene	205-82-3	4	2.18E-07	lb/MMBtu	1.1E-06	5.4E-08
Chrysene	218-01-9	4	1.53E-06	lb/MMBtu	7.5E-06	3.8E-07
Dibenz(a,h)anthracene	53-70-3	4	3.46E-07	lb/MMBtu	1.7E-06	8.5E-08
Fluoranthene	206-44-0	4	4.03E-06	lb/MMBtu	2.0E-05	9.9E-07
Fluorene	86-73-7	4	1.28E-05	lb/MMBtu	6.3E-05	3.1E-06
Ideno(1,2,3-cd)pyrene	193-39-5	4	4.14E-07	lb/MMBtu	2.0E-06	1.0E-07
Naphthalene	91-20-3	4	1.30E-04	lb/MMBtu	6.4E-04	3.2E-05
Phenanthrene	85-01-8	4	4.08E-05	lb/MMBtu	2.0E-04	1.0E-05
Pyrene	129-00-0	4	3.71E-06	lb/MMBtu	1.8E-05	9.1E-07
Total PAH	---	4	2.12E-04	lb/MMBtu	1.0E-03	5.2E-05
Greenhouse Gases						
Carbon dioxide	124-38-9	2	165	lb/MMBtu	811.70	40.58
Methane	74-82-8	2	0.0081	lb/MMBtu	0.04	0.00
Nitrous oxide	10024-97-2	---	0	lb/MMBtu	0.00	0.00
CO_2e	N/A	5	---	---	812.69	40.63

Total Criteria :	**0.41**	**tons/yr**
Total HAPs:	**0.0004**	**tons/yr**

Notes: 1. Vendor spec
2. AP-42 Table 3.4-1 (10/96)
3. AP-42 Table 3.4-3 (10/96)
4. AP-42 Table 3.4-4 (10/96)
5. 40 CFR 98 Table A-1

FIRE PUMP #2 POTENTIAL TO EMIT

AIR PERMIT APPLICATION

NATRIUM EXTRACTION AND FRACTIONATION PROCESSING PLANT

BLUE RACER MIDSTREAM, LLC

Emission Unit ID **Fire Pump #2** **S003**

Item	Value	Units
Rated Horsepower	700	Hp
Max Fuel Consumption rate	35.9	gal/hr
Max Fuel Consumption rate	4.92	MMBtu/hr
Annual Operating Hours	100	hr/yr
Annual Fuel Consumption	3,590	gal/yr
Sulfur Content of Fuel	0.0015	%
Heat Content of Fuel	137,030	Btu/gal

					Potential Emissions	
Pollutant	**CAS**	**REF**	**Emission Factor**	**Units**	**lb/hr**	**tons/yr**
Criteria Pollutants						
NOx	N/A	1	5.31	lb/hr	5.31	0.27
CO	630-08-0	1	2.18	lb/hr	2.18	0.11
VOC	N/A	1	0.08	lb/hr	0.08	0.00
PM 10	N/A	1	0.3	lb/hr	0.30	0.02
PM2.5	N/A	1	0.3	lb/hr	0.30	0.02
SO2	7446-09-5	2	1.52E-03	lb/MMBtu	0.01	0.000
Hazardous Air Pollutants						
Acetaldehyde	75-07-0	3	2.52E-05	lb/MMBtu	1.2E-04	6.2E-06
Acrolein	107-02-8	3	7.88E-06	lb/MMBtu	3.9E-05	1.9E-06
Benzene	71-43-2	3	7.76E-04	lb/MMBtu	3.8E-03	1.9E-04
Formaldehyde	50-00-0	3	7.89E-05	lb/MMBtu	3.9E-04	1.9E-05
Toluene	108-88-3	3	2.81E-04	lb/MMBtu	1.4E-03	6.9E-05
Xylenes	1330-20-7	3	1.93E-04	lb/MMBtu	9.5E-04	4.7E-05
PAHs						
Acenaphthylene	208-96-8	4	9.23E-06	lb/MMBtu	4.5E-05	2.3E-06
Acenaphthene	83-32-9	4	4.68E-06	lb/MMBtu	2.3E-05	1.2E-06
Anthracene	120-12-7	4	1.23E-06	lb/MMBtu	6.1E-06	3.0E-07
Benzo(a)anthracene	56-55-3	4	6.22E-07	lb/MMBtu	3.1E-06	1.5E-07
Benzo(a)pyrene	50-32-8	4	2.57E-07	lb/MMBtu	1.3E-06	6.3E-08
Benzo(b)fluoranthene	205-99-2	4	1.11E-06	lb/MMBtu	5.5E-06	2.7E-07
Benzo(g,h,l)perylene	191-24-2	4	5.56E-07	lb/MMBtu	2.7E-06	1.4E-07
Benzo(k)fluoranthene	205-82-3	4	2.18E-07	lb/MMBtu	1.1E-06	5.4E-08
Chrysene	218-01-9	4	1.53E-06	lb/MMBtu	7.5E-06	3.8E-07
Dibenz(a,h)anthracene	53-70-3	4	3.46E-07	lb/MMBtu	1.7E-06	8.5E-08
Fluoranthene	206-44-0	4	4.03E-06	lb/MMBtu	2.0E-05	9.9E-07
Fluorene	86-73-7	4	1.28E-05	lb/MMBtu	6.3E-05	3.1E-06
Ideno(1,2,3-cd)pyrene	193-39-5	4	4.14E-07	lb/MMBtu	2.0E-06	1.0E-07
Naphthalene	91-20-3	4	1.30E-04	lb/MMBtu	6.4E-04	3.2E-05
Phenanthrene	85-01-8	4	4.08E-05	lb/MMBtu	2.0E-04	1.0E-05
Pyrene	129-00-0	4	3.71E-06	lb/MMBtu	1.8E-05	9.1E-07
Total PAH	---	4	2.12E-04	lb/MMBtu	1.0E-03	5.2E-05
Greenhouse Gases						
Carbon dioxide	124-38-9	2	165	lb/MMBtu	811.70	40.58
Methane	74-82-8	2	0.0081	lb/MMBtu	0.04	0.00
Nitrous oxide	10024-97-2	---	0	lb/MMBtu	0.00	0.00
CO_2e	N/A	5	---	---	812.69	40.63

Total Criteria :	**0.41**	**tons/yr**
Total HAPs:	**0.0004**	**tons/yr**

Notes: 1. Vendor spec
2. AP-42 Table 3.4-1 (10/96)
3. AP-42 Table 3.4-3 (10/96)
4. AP-42 Table 3.4-4 (10/96)
5. 40 CFR 98 Table A-1

FUG AREA 1 POTENTIAL TO EMIT

AIR PERMIT APPLICATION

NATRIUM EXTRACTION AND FRACTIONATION PROCESSING PLANT

BLUE RACER MIDSTREAM, LLC

Emission Unit ID		**Fugitives Area 1**	**Fugitives**
Input			
Annual hour of operation	8,760	hr/yr	

Output

	Uncontrolled Emissions				**Control Efficiency[1]**	**Controlled Emissions**			
	VOC (ton/yr)	**HAP[2] (ton/yr)**	**CO2 (ton/yr)**	**CH4 (ton/yr)**	**(%)**	**VOC (ton/yr)**	**HAP[2] (ton/yr)**	**CO2 (ton/yr)**	**CH4 (ton/yr)**
Light Liquids Valve Emissions	56.2	4.9	0.0	0.2	84%	9.0	0.8	0.0	0.0
Vapor Valve Emissions	36.2	0.2	0.1	45.7	87%	4.7	0.0	0.0	5.9
Light Liquid Flange Emissions	5.9	0.5	0.0	0.0		5.9	0.5	0.0	0.0
Vapor Flange Emissions	7.5	0.03	0.0	9.5		7.5	0.0	0.0	9.5
Pump Emissions	5.3	0.3	0.0	0.0	69%	1.6	0.1	0.0	0.0
TOTAL Emissions	**111.1**	**5.9**	**0.2**	**55.4**		**28.8**	**1.4**	**0.1**	**15.5**

1 Table 4.2-2 Control Effectiveness for an LDAR Program at a SOCMI Process Unit from *Preferred and Alternative Methods for Estimating Fugitive Emissions from Equipment Leaks . Volume II: Chapter 4* , November 1996

2 Hexanes+ is used as a surrogate for HAPs

3. Oil and Gas Production Avg. Emission Factors from Table 2-4. Oil and Gas Production Operations Average Emission Factors (kg/hr/source) from *Protocol for Equipment Leak Emission Estimates* , EPA-453/R-95-017, November 1995

Valves and Flanges

Light Liquid Service	**Units**	**Condensate**	**NGL**	**Ethane**	**Propane**	**n-Butane**	**i-Butane**	**Gasoline**	**Mixed Butanes**	**Refrigerant**	**TOTAL**
# of valves	(count)	213	343	245	426	362	391	296	262	213	2,751
Emission Factor[3]	(kg/hr/sources)	2.5E-03	2.5E-03	2.5E-03	2.5E-03	2.5E-03	2.5E-03	2.5E-03	2.5E-03	2.5E-03	---
TOC Emissions from Valves	(lb/hr)	1.2	1.9	1.3	2.3	2.0	2.2	1.6	1.4	1.2	15.1
# of flanges	(count)	511	823	588	1022	869	938	710	629	511	6,601
Emission Factor[3]	(kg/hr/sources)	1.1E-04	1.1E-04	1.1E-04	1.1E-04	1.1E-04	1.1E-04	1.1E-04	1.1E-04	1.1E-04	---
TOC Emissions from Flanges	(lb/hr)	0.1	0.2	0.1	0.2	0.2	0.2	0.2	0.2	0.1	1.6
Annual Operating Hours	(hr/yr)	8,760	8,760	8,760	8,760	8,760	8,760	8,760	8,760	8,760	---
Total TOC Emissions	(lb/hr)	1.3	2.1	1.5	2.6	2.2	2.4	1.8	1.6	1.3	16.7
Total TOC Emissions	(ton/yr)	5.7	9.1	6.5	11.3	9.6	10.4	7.9	7.0	5.7	73.3
Total VOC Emissions	(lb/hr)	1.3	1.1	0.0	2.6	2.2	2.4	1.8	1.6	1.3	14.2
Total VOC Emissions	**(ton/yr)**	**5.7**	**4.7**	**0.0**	**11.2**	**9.6**	**10.4**	**7.9**	**7.0**	**5.6**	**62.2**
Total Hexane+ Emissions	(lb/hr)	0.6	0.0	0.0	0.0	0.0	0.0	0.6	0.0	0.0	1.2
Total Hexane+ Emissions	**(ton/yr)**	**2.7**	**0.1**	**0.0**	**0.0**	**0.0**	**0.0**	**2.5**	**0.0**	**0.0**	**5.4**

Constituent	**Units**	**Condensate**	**NGL**	**Ethane**	**Propane**	**n-Butane**	**i-Butane**	**Gasoline**	**Mixed Butanes**	**Refrigerant**
CO2	(Weight %)	0.00%	0.19%	0.01%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Nitrogen	(Weight %)	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Water	(Weight %)	0.00%	0.00%	0.01%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Methane	(Weight %)	0.00%	1.00%	2.10%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Ethane	(Weight %)	0.00%	47.01%	97.81%	1.32%	0.00%	0.00%	0.00%	0.00%	0.67%
Propane	(Weight %)	0.06%	29.63%	0.07%	96.41%	0.00%	1.81%	0.00%	0.45%	96.39%
i-Butane	(Weight %)	3.64%	4.22%	0.00%	1.79%	1.68%	96.65%	0.18%	25.19%	2.09%
n-Butane	(Weight %)	15.92%	10.47%	0.00%	0.49%	96.57%	1.54%	0.92%	71.61%	0.85%
i-Pentane	(Weight %)	13.14%	3.01%	0.00%	0.00%	1.51%	0.00%	30.30%	1.09%	0.00%
n-Pentane	(Weight %)	19.26%	3.28%	0.00%	0.00%	0.24%	0.00%	36.33%	1.66%	0.00%
C6+	(Weight %)	47.99%	1.19%	0.00%	0.00%	0.00%	0.00%	32.26%	0.00%	0.00%
VOC	(Weight %)	**100.00%**	**51.80%**	**0.07%**	**98.68%**	**100.00%**	**100.00%**	**100.00%**	**100.00%**	**99.33%**

Vapor Service	Units	Residue Gas	Dry Ethane	Wet Inlet	Dry Inlet	Wet Ethane	Propane	Mixed Butanes	i-Butane	Refrigerant	TOTAL
# of valves	(count)	764	179	175	395	107	228	155	155	194	2,352
Emission Factor[3]	(kg/hr/sources)	4.5E-03	4.5E-03	4.5E-03	4.5E-03	4.5E-03	4.5E-03	4.5E-03	4.5E-03	4.5E-03	---
TOC Emissions from Valves	(lb/hr)	7.6	1.8	1.7	3.9	1.1	2.3	1.5	1.5	1.9	23.3
# of flanges	(count)	1,834	430	420	948	257	547	372	372	466	5,646
Emission Factor[3]	(kg/hr/sources)	3.9E-04	3.9E-04	3.9E-04	3.9E-04	3.9E-04	3.9E-04	3.9E-04	3.9E-04	3.9E-04	---
TOC Emissions from Flanges	(lb/hr)	1.6	0.4	0.4	0.8	0.2	0.5	0.3	0.3	0.4	4.8
Annual Operating Hours	(hr/yr)	8,760	8,760	8,760	8,760	8,760	8,760	8,760	8,760	8,760	---
Total TOC Emissions	(lb/hr)	9.1	2.1	2.1	4.7	1.3	2.7	1.9	1.9	2.3	28.1
Total TOC Emissions	(ton/yr)	40.0	9.4	9.2	20.7	5.6	11.9	8.1	8.1	10.2	123.2
Total VOC Emissions	(lb/hr)	0.0	0.0	0.4	0.9	0.0	2.7	1.9	1.9	2.3	10.0
Total VOC Emissions	**(ton/yr)**	**0.0**	**0.0**	**1.8**	**3.7**	**0.0**	**11.8**	**8.1**	**8.1**	**10.1**	**43.7**
Total Hexane+ Emissions	(lb/hr)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Hexane+ Emissions	**(ton/yr)**	**0.0**	**0.0**	**0.1**	**0.1**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.2**

Constituent	Units	Residue Gas	Dry Ethane	Wet Inlet	Dry Inlet	Wet Ethane	Propane	Mixed Butanes	i-Butane	Refrigerant
CO2	(Weight %)	0.23%	0.25%	0.21%	0.21%	0.01%	0.00%	0.00%	0.00%	0.00%
Nitrogen	(Weight %)	0.64%	0.00%	0.40%	3.95%	0.00%	0.00%	0.00%	0.00%	0.00%
Water	(Weight %)	0.00%	0.00%	0.61%	0.00%	0.01%	0.00%	0.00%	0.00%	0.00%
Methane	(Weight %)	93.65%	1.34%	59.10%	58.17%	2.10%	0.00%	0.00%	0.00%	0.00%
Ethane	(Weight %)	5.42%	98.34%	19.99%	19.67%	97.81%	1.32%	0.00%	0.00%	0.67%
Propane	(Weight %)	0.07%	0.07%	10.46%	10.29%	0.07%	96.41%	0.45%	1.81%	96.39%
i-Butane	(Weight %)	0.00%	0.00%	1.53%	1.47%	0.00%	1.79%	25.19%	96.65%	2.09%
n-Butane	(Weight %)	0.00%	0.00%	3.86%	3.64%	0.00%	0.49%	71.61%	1.54%	0.85%
i-Pentane	(Weight %)	0.00%	0.00%	1.21%	1.04%	0.00%	0.00%	1.09%	0.00%	0.00%
n-Pentane	(Weight %)	0.00%	0.00%	1.38%	1.14%	0.00%	0.00%	1.66%	0.00%	0.00%
C6+	(Weight %)	0.00%	0.00%	1.24%	0.41%	0.00%	0.00%	0.00%	0.00%	0.00%
VOC	(Weight %)	**0.07%**	**0.07%**	**19.68%**	**18.00%**	**0.07%**	**98.68%**	**100.00%**	**100.00%**	**99.33%**

Pumps

Light Liquid Service	Units	P-214A/B	P-216A/B	P-404A/B	P-412A/B	P-417A/B	P-442A/B	P-803A/B	P-811A/B	P-812A/B/C/D	P-813A/B
# of pumps	(count)	2	1	2	2	2	2	2	2	4	2
Emission Factor[3]	(kg/hr/sources)	1.3E-02	1.3E-02	1.3E-02	1.3E-02	1.3E-02	1.3E-02	1.3E-02	1.3E-02	1.3E-02	1.3E-02
TOC Emissions from Pumps	(lb/hr)	0.1	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Annual Operating Hours	(hr/yr)	8,760	8,760	8,760	8,760	8,760	8,760	8,760	8,760	8,760	8,760
Total VOC Emissions	(lb/hr)	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Total VOC Emissions	**(ton/yr)**	**0.1**	**0.1**	**0.0**	**0.2**	**0.3**	**0.3**	**0.2**	**0.2**	**0.5**	**0.3**
Total HAP Emissions	(lb/hr)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total HAP Emissions	**(ton/yr)**	**0.0**	**0.1**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**

Constituent	Units	P-214A/B	P-216A/B	P-404A/B	P-412A/B	P-417A/B	P-442A/B	P-803A/B	P-811A/B	P-812A/B/C/D	P-813A/B
CO2	(Weight %)	0.00%	0.00%	0.22%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Nitrogen	(Weight %)	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
H2O	(Weight %)	0.00%	0.00%	0.07%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Oxygen	(Weight %)	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Methane	(Weight %)	1.00%	0.00%	0.71%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Ethane	(Weight %)	47.00%	0.00%	98.85%	1.32%	0.00%	0.00%	1.28%	1.28%	1.28%	0.00%
Propane	(Weight %)	29.62%	0.00%	0.16%	96.41%	0.46%	0.05%	96.05%	96.05%	96.05%	0.00%
i-Butane	(Weight %)	4.22%	0.00%	0.00%	1.79%	25.54%	3.35%	2.11%	2.11%	2.11%	1.76%
n-Butane	(Weight %)	10.47%	0.00%	0.00%	0.49%	72.60%	14.63%	0.56%	0.56%	0.56%	96.44%
i-Pentane	(Weight %)	3.01%	0.00%	0.00%	0.00%	1.11%	12.08%	0.00%	0.00%	0.00%	1.54%
n-Pentane	(Weight %)	3.28%	0.00%	0.00%	0.00%	0.17%	17.70%	0.00%	0.00%	0.00%	0.22%
n-Hexane	(Weight %)	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
n-Heptane	(Weight %)	1.38%	0.00%	0.00%	0.00%	0.00%	51.30%	0.00%	0.00%	0.00%	0.00%
Methanol	(Weight %)	0.00%	100.00%	0.00%	0.00%	0.13%	0.89%	0.00%	0.00%	0.00%	0.04%
Lube Oil	(Weight %)	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
VOC	**(Weight %)**	**51.99%**	**100.00%**	**0.16%**	**98.68%**	**100.00%**	**100.00%**	**98.72%**	**98.72%**	**98.72%**	**100.00%**

Light Liquid Service	Units	P-814A/B	P-815A/B	P-816A/B	P-818A/B	P-819A/B	P-820A/B	P-817A/B	P-902A/B	P-908	P-2214A/B
# of pumps	(count)	2	2	2	2	2	2	2	2	1	2
Emission Factor[3]	(kg/hr/sources)	1.3E-02	1.3E-02	1.3E-02	1.3E-02	1.3E-02	1.3E-02	1.3E-02	1.3E-02	1.3E-02	1.3E-02
TOC Emissions from Pumps	(lb/hr)	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.1
Annual Operating Hours	(hr/yr)	8,760	8,760	8,760	8,760	8,760	8,760	8,760	8,760	8,760	8,760
Total VOC Emissions	(lb/hr)	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.0
Total VOC Emissions	**(ton/yr)**	**0.3**	**0.3**	**0.3**	**0.3**	**0.3**	**0.3**	**0.2**	**0.2**	**0.1**	**0.1**
Total HAP Emissions	(lb/hr)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total HAP Emissions	**(ton/yr)**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**

Constituent	Units	P-814A/B	P-815A/B	P-816A/B	P-818A/B	P-819A/B	P-820A/B	P-817A/B	P-902A/B	P-908	P-2214A/B
CO2	(Weight %)	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.21%
Nitrogen	(Weight %)	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
H2O	(Weight %)	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	14.41%	5.88%	0.00%
Oxygen	(Weight %)	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Methane	(Weight %)	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	1.06%
Ethane	(Weight %)	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	2.32%	0.00%	0.00%	49.60%
Propane	(Weight %)	0.00%	1.83%	1.83%	0.00%	0.00%	0.00%	47.73%	0.00%	0.00%	28.08%
i-Butane	(Weight %)	1.76%	96.89%	96.89%	0.06%	0.06%	0.06%	10.97%	11.63%	2.31%	4.00%
n-Butane	(Weight %)	96.44%	1.28%	1.28%	2.62%	2.62%	2.62%	18.78%	14.54%	2.31%	9.89%
i-Pentane	(Weight %)	1.54%	0.00%	0.00%	28.27%	28.27%	28.27%	7.53%	18.05%	7.36%	2.82%
n-Pentane	(Weight %)	0.22%	0.00%	0.00%	32.77%	32.77%	32.77%	6.12%	18.05%	7.36%	3.07%
n-Hexane	(Weight %)	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	3.50%	10.78%	4.39%	0.00%
n-Heptane	(Weight %)	0.00%	0.00%	0.00%	36.01%	36.01%	36.01%	3.04%	12.54%	5.11%	1.27%
Methanol	(Weight %)	0.04%	0.00%	0.00%	0.27%	0.27%	0.27%	0.00%	0.00%	0.00%	0.00%
Lube Oil	(Weight %)	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	65.28%	0.00%
VOC	**(Weight %)**	**100.00%**	**100.00%**	**100.00%**	**100.00%**	**100.00%**	**100.00%**	**97.68%**	**85.59%**	**94.12%**	**49.13%**

Light Liquid Service	Units	P-2216A/B	P-2404A/B	P-2412A/B	P-2417A/B	P-2908	TOTAL
# of pumps	(count)	1	2	2	2	2	49
Emission Factor[3]	(kg/hr/sources)	1.3E-02	1.3E-02	1.3E-02	1.3E-02	1.3E-02	---
TOC Emissions from Pumps	(lb/hr)	0.0	0.1	0.1	0.1	0.1	1.4
Annual Operating Hours	(hr/yr)	8,760	8,760	8,760	8,760	8,760	---
Total VOC Emissions	(lb/hr)	0.0	0.0	0.1	0.1	0.1	1.2
Total VOC Emissions	**(ton/yr)**	**0.1**	**0.0**	**0.2**	**0.3**	**0.2**	**5.3**
Total HAP Emissions	(lb/hr)	0.0	0.0	0.0	0.0	0.0	0.1
Total HAP Emissions	**(ton/yr)**	**0.1**	**0.0**	**0.0**	**0.0**	**0.0**	**0.3**

Constituent	Units	P-2216A/B	P-2404A/B	P-2412A/B	P-2417A/B	P-2908
CO2	(Weight %)	0.00%	0.22%	0.00%	0.00%	0.00%
Nitrogen	(Weight %)	0.00%	0.00%	0.00%	0.00%	0.00%
H2O	(Weight %)	0.00%	0.00%	0.00%	0.00%	5.88%
Oxygen	(Weight %)	0.00%	0.00%	0.00%	0.00%	0.00%
Methane	(Weight %)	0.00%	0.67%	0.00%	0.00%	0.00%
Ethane	(Weight %)	0.00%	98.97%	1.32%	0.00%	0.00%
Propane	(Weight %)	0.00%	0.14%	96.41%	0.51%	0.00%
i-Butane	(Weight %)	0.00%	0.00%	1.85%	28.49%	2.31%
n-Butane	(Weight %)	0.00%	0.00%	0.43%	69.63%	2.31%
i-Pentane	(Weight %)	0.00%	0.00%	0.00%	1.10%	7.36%
n-Pentane	(Weight %)	0.00%	0.00%	0.00%	0.17%	7.36%
n-Hexane	(Weight %)	0.00%	0.00%	0.00%	0.00%	4.39%
n-Heptane	(Weight %)	0.00%	0.00%	0.00%	0.00%	5.11%
Methanol	(Weight %)	100.00%	0.00%	0.00%	0.09%	0.00%
Lube Oil	(Weight %)	0.00%	0.00%	0.00%	0.00%	65.28%
VOC	**(Weight %)**	**100.00%**	**0.14%**	**98.68%**	**100.00%**	**94.12%**

ATTACHMENT O: MONITORING/RECORDKEEPING/REPORTING/TESTING PLANS

RULE 13 AIR PERMIT APPLICATION

NATRIUM EXTRACTION AND FRACTIONATION PROCESSING PLANT

BLUE RACER MIDSTREAM, LLC

TABLE O-1

AIR PERMIT APPLICATION

NATRIUM EXTRACTION AND FRACTIONATION PROCESSING PLANT

BLUE RACER MIDSTREAM, LLC

Emission Unit ID	Control Device ID	Emission Point ID	Description	Applicable Citation(s)	Limitation/Standard	Monitoring	Testing	Recordkeeping	Reporting
--	--	--	Site-Wide Requirements (Natural Gas Processing Plant)		Wet natural gas throughput: <= 460 MMscf/day			Maintain records of the amount of natural gas processed in the gas processing plant	
S001	--	P001	Hot Oil Heater (216.7 MMBtu/hr)		Maximum heat input: <= 216.7 MMBtu/hr <= 210,531 scf/hr <= 1,844 MMscf/yr	Annual sampling for composition (extended analysis) and heat content of each stream combusted in the boiler, including: Plant residue gas, Glycol Dehydrator flash tank and still vent exit streams, and Gasoline Storage Tank VRU exit stream.		Monthly and rolling 12-month total records of natural gas consumed and hours of operation. Rolling 12-month records of GHG emissions, estimated using the methodology in 40 CFR Part 98, the annual fuel gas sample(s), and the monthly natural gas combustion records.	
				45CSR§2-3.1, 45CSR§2-3.2	10% opacity	At such reasonable time as the Secretary may designate, conduct 40 CFR Part 60, Appendix A, Method 9 opacity observations	Opacity must be determined by 40 CFR Part 60, Appendix A, Method 9 observations or by measurements from a COMS approved by the Director	Maintain records of all opacity observations, per Permit SC 5.4.5.	Any opacity deviation (s), as soon as practicable, but within ten (10) calendar days of the occurrence. Report shall include at least the results of the observation, the cause or suspected cause of the violation(s), and any corrective measures taken or planned. [Permit SC 5.5.3] SSM Excess opacity periods < 30 mins and <= 40% may be reported on a quarterly basis unless otherwise required by the Director. [45CSR§2-9.3.a] If SSM > 30 mins or > 40%, report by telephone, telefax, or e-mail by the end of the next business day after becoming aware of such condition. Then file a certified written report concerning the malfunction with the Director within 30 days providing: a detailed explanation of the factors involved or causes of the malfunction; the date and time of duration (with starting and ending times) of the period of excess emissions; an estimate of the mass of excess emissions discharged during the malfunction period; the maximum opacity measured or observed during the malfunction; immediate remedial actions taken at the time of the malfunction to correct or mitigate the effects of the malfunction; and a detailed explanation of the corrective measures or program that will be implemented to prevent a recurrence of the malfunction and a schedule for such implementation. [45CSR§2-9.3.b]
				NSPS Db	0.32 lb/MMBtu SO_2, in order to qualify for exemption from §60.42b(k)(1) [40CFR§60.42b(k)(2)]	Weekly fuel analysis sampling [§60.47b(f) and §60.49b(r)(2)] NOTE: Can request approval for less frequent sampling.] The owner or operator of an affected facility that only combusts very low sulfur oil, natural gas, or a mixture of these fuels with any other fuels not subject to an SO, standard is not subject to the compliance and performance testing requirements of this section if the owner or operator obtains fuel receipts as described in §60.49b(r). [§60.45b(k)]		Daily fuel type and amount combusted [§60.48b(g)(1)] Obtain and maintain at the affected facility fuel receipts from the fuel supplier that certify that the gaseous fuel meets the definition of natural gas as defined in §60.41b [§60.49b(r)] or perform sampling of fuel gas in accordance with site-specific fuel analysis plan per §60.49b(r)(2).	Site-specific fuel analysis plan no later than 60 days before the date you intend to demonstrate compliance. [§60.49b(r)(2)]
					0.1 lb/MMBtu NO_X [§60.44b(a)(1)(i)]	Install, calibrate, maintain, and operate CEMS for measuring NO_X and O_2 (or CO_2) emissions discharged to the atmosphere, and shall record the output of the system [§60.48b(b)(1)] CEMS shall be operated and data recorded during all periods of operation of the affected facility except for CEMS breakdowns and repairs. Data is recorded during calibration checks, and zero and span adjustments. [§60.48b(c)] In instances of CEMS breakdowns, repairs, calibration checks and zero and span adjustments, emission data will be obtained by using standby monitoring systems, Method 7/7A to provide data for a minimum of 75% of the daily operating hrs, in at least 22 out of 30 successive steam generating unit operating days.	Conduct initial performance test for NO_X using the CEMS to collect 30 days of data [§60.8 and §60.44b(e)(1)] Conduct subsequent performance tests as requested [§60.44b(e)(4)]	Record 1-hr avg NO_X measured by the CEMS, in ng/J or lb/MMBtu heat input, and used that to calculate the avg emission rates under §60.44b. The 1-hour averages shall be calculated using the data points required under §60.13(h)(2). [§60.48b(d)] Keep daily records of all measurements; hourly NO_X emission rates (measured or predicted); rolling 30-day avg NO_X emission rate (ng/J or lb/MMBtu heat input); all calibrations and span checks; excess emissions, with the reasons for such excess emissions as well as a description of corrective actions taken; missing pollutant data, including reasons for not obtaining sufficient data and a description of corrective actions taken; excluded emission data and the reasons for excluding data; "F" factor; out of range times; any modifications to the CEMS that could affect compliance with Perf. Spec.2 or 3; and results of daily CEMS drift tests and quarterly RATAs. [§60.49(g)]	Notice of start of construction and actual startup [§60.7 and §60.49b(a)] Report performance test data from the initial performance test and the performance evaluation of the CEMS using the applicable performance specifications in appendix B of this part. [§60.49b(b)] Semi-annual excess emissions reports [§60.7, §60.49b(h)(2)(i), and §60.49b(i)]
S022	--	P022	Regen Gas Heater (9.7 MMBtu/hr)		Maximum heat input: <= 9.7 MMBtu/hr <= 9,424 scf/hr <= 82.55 MMscf/yr			Monthly and rolling 12-month total records of natural gas consumed and hours of operation.	
				45CSR§2-3.1, 45CSR§2-3.2	10% opacity	At such reasonable time as the Secretary may designate, conduct 40 CFR Part 60, Appendix A, Method 9 opacity observations	Opacity must be determined by 40 CFR Part 60, Appendix A, Method 9 observations or by measurements from a COMS approved by the Director	Maintain records of all opacity observations, per Permit SC 7.4.2.	Any opacity deviation (s), as soon as practicable, but within ten (10) calendar days of the occurrence. Report shall include at least the results of the observation, the cause or suspected cause of the violation(s), and any corrective measures taken or planned. [Permit SC 7.5.1] SSM excess opacity periods < 30 mins and <= 40% may be reported on a quarterly basis unless otherwise required by the Director. [45CSR§2-9.3.a] If SSM > 30 mins or > 40%, report by telephone, telefax, or e-mail by the end of the next business day after becoming aware of such condition. Then file a certified written report concerning the malfunction with the Director within 30 days providing: a detailed explanation of the factors involved or causes of the malfunction; the date and time of duration (with starting and ending times) of the period of excess emissions; an estimate of the mass of excess emissions discharged during the malfunction period; the maximum opacity measured or observed during the malfunction; immediate remedial actions taken at the time of the malfunction to correct or mitigate the effects of the malfunction; and a detailed explanation of the corrective measures or program that will be implemented to prevent a recurrence of the malfunction and a schedule for such implementation. [45CSR§2-9.3.b]
S012	--	P012	Regen Gas Heater (9.7 MMBtu/hr)		Maximum heat input: <= 9.7 MMBtu/hr <= 9,424 scf/hr <= 82.55 MMscf/yr			Monthly and rolling 12-month total records of natural gas consumed and hours of operation.	
				45CSR§2-3.1, 45CSR§2-3.2	10% opacity	At such reasonable time as the Secretary may designate, conduct 40 CFR Part 60, Appendix A, Method 9 opacity observations	Opacity must be determined by 40 CFR Part 60, Appendix A, Method 9 observations or by measurements from a COMS approved by the Director	Maintain records of all opacity observations, per Permit SC 7.4.2.	Any opacity deviation (s), as soon as practicable, but within ten (10) calendar days of the occurrence. Report shall include at least the results of the observation, the cause or suspected cause of the violation(s), and any corrective measures taken or planned. [Permit SC 7.5.1] SSM excess opacity periods < 30 mins and <= 40% may be reported on a quarterly basis unless otherwise required by the Director. [45CSR§2-9.3.a] If SSM > 30 mins or > 40%, report by telephone, telefax, or e-mail by the end of the next business day after becoming aware of such condition. Then file a certified written report concerning the malfunction with the Director within 30 days providing: a detailed explanation of the factors involved or causes of the malfunction; the date and time of duration (with starting and ending times) of the period of excess emissions; an estimate of the mass of excess emissions discharged during the malfunction period; the maximum opacity measured or observed during the malfunction; immediate remedial actions taken at the time of the malfunction to correct or mitigate the effects of the malfunction; and a detailed explanation of the corrective measures or program that will be implemented to prevent a recurrence of the malfunction and a schedule for such implementation. [45CSR§2-9.3.b]

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NATRIUM EXTRACTION AND FRACTIONATION PROCESSING PLANT

BLUE RACER MIDSTREAM, LLC

Emission Unit ID	Control Device ID	Emission Point ID	Description	Applicable Citation(s)	Limitation/Standard	Monitoring	Testing	Recordkeeping	Reporting
S013	--	P013	Cryo HMO Heater (26.3 MMBtu/hr)		Maximum heat input: <= 26.3 MMBtu/hr <= 25,551 scf/hr <= 223.8 MMscf/yr			Monthly and rolling 12-month total records of natural gas consumed and hours of operation.	
				45CSR§2-3.1, 45CSR§2-3.2	10% opacity	At such reasonable time as the Secretary may designate, conduct 40 CFR Part 60, Appendix A, Method 9 opacity observations	Opacity must be determined by 40 CFR Part 60, Appendix A, Method 9 observations or by measurements from a COMS approved by the Director	Maintain records of all opacity observations, per Permit SC 6.4.5.	Any opacity deviation (s), as soon as practicable, but within ten (10) calendar days of the occurrence. Report shall include at least the results of the observation, the cause or suspected cause of the violation(s), and any corrective measures taken or planned. [Permit SC 6.5.2] SSM excess opacity periods < 30 mins and <= 40% may be reported on a quarterly basis unless otherwise required by the Director. [45CSR§2-9.3.a] If SSM > 30 mins or > 40%, report by telephone, telefax, or e-mail by the end of the next business day after becoming aware of such condition. Then file a certified written report concerning the malfunction with the Director within 30 days providing: a detailed explanation of the factors involved or causes of the malfunction; the date and time of duration (with starting and ending times) of the period of excess emissions; an estimate of the mass of excess emissions discharged during the malfunction period; the maximum opacity measured or observed during the malfunction; immediate remedial actions taken at the time of the malfunction to correct or mitigate the effects of the malfunction; and a detailed explanation of the corrective measures or program that will be implemented to prevent a recurrence of the malfunction and a schedule for such implementation. [45CSR§2-9.3.b]
				NSPS Dc		Daily fuel type and amount combusted [§60.48c(g)(1)]		Daily fuel type and amount combusted [§60.48c(g)(1)] -OR- Monthly fuel type and amount combusted [§60.48c(g)(2)] -OR- Monthly fuel delivered to site [§60.48c(g)(3)]	Notice of start of construction and actual startup [§60.7, §60.48c(a)]
S016	--	P016	Hot Oil Heater (61.6 MMBtu/hr)		Maximum heat input: <= 61.6 MMBtu/hr <= 66,523 scf/hr <= 582.74 MMscf/yr			Monthly and rolling 12-month total records of natural gas consumed and hours of operation. Rolling 12-month records of GHG emissions, estimated using the methodology in 40 CFR Part 98, the annual fuel gas sample(s), and the monthly natural gas combustion records.	
				45CSR§2-3.1, 45CSR§2-3.2	10% opacity	At such reasonable time as the Secretary may designate, conduct 40 CFR Part 60, Appendix A, Method 9 opacity observations	Opacity must be determined by 40 CFR Part 60, Appendix A, Method 9 observations or by measurements from a COMS approved by the Director	Maintain records of all opacity observations.	Any opacity deviation (s), as soon as practicable, but within ten (10) calendar days of the occurrence. Report shall include at least the results of the observation, the cause or suspected cause of the violation(s), and any corrective measures taken or planned. [Permit SC 5.5.3] SSM excess opacity periods < 30 mins and <= 40% may be reported on a quarterly basis unless otherwise required by the Director. [45CSR§2-9.3.a] If SSM > 30 mins or > 40%, report by telephone, telefax, or e-mail by the end of the next business day after becoming aware of such condition. Then file a certified written report concerning the malfunction with the Director within 30 days providing: a detailed explanation of the factors involved or causes of the malfunction; the date and time of duration (with starting and ending times) of the period of excess emissions; an estimate of the mass of excess emissions discharged during the malfunction period; the maximum opacity measured or observed during the malfunction; immediate remedial actions taken at the time of the malfunction to correct or mitigate the effects of the malfunction; and a detailed explanation of the corrective measures or program that will be implemented to prevent a recurrence of the malfunction and a schedule for such implementation. [45CSR§2-9.3.b]
				NSPS Dc		Daily fuel type and amount combusted [§60.48c(g)(1)]		Daily fuel type and amount combusted [§60.48c(g)(1)] -OR- Monthly fuel type and amount combusted [§60.48c(g)(2)] -OR- Monthly fuel delivered to site [§60.48c(g)(3)]	Notice of start of construction and actual startup [§60.7, §60.48c(a)]
S017	--	P017	Hot Oil Heater (61.6 MMBtu/hr)		Maximum heat input: <= 61.6 MMBtu/hr <= 66,523 scf/hr <= 582.74 MMscf/yr	Annual sampling for composition (extended analysis) and heat content of each stream combusted in the heater, including: Plant residue gas.		Monthly and rolling 12-month total records of natural gas consumed and hours of operation. Rolling 12-month records of GHG emissions, estimated using the methodology in 40 CFR Part 98, the annual fuel gas sample(s), and the monthly natural gas combustion records.	
				45CSR§2-3.1, 45CSR§2-3.2	10% opacity	At such reasonable time as the Secretary may designate, conduct 40 CFR Part 60, Appendix A, Method 9 opacity observations	Opacity must be determined by 40 CFR Part 60, Appendix A, Method 9 observations or by measurements from a COMS approved by the Director	Maintain records of all opacity observations.	Any opacity deviation (s), as soon as practicable, but within ten (10) calendar days of the occurrence. Report shall include at least the results of the observation, the cause or suspected cause of the violation(s), and any corrective measures taken or planned. [Permit SC 5.5.3] SSM excess opacity periods < 30 mins and <= 40% may be reported on a quarterly basis unless otherwise required by the Director. [45CSR§2-9.3.a] If SSM > 30 mins or > 40%, report by telephone, telefax, or e-mail by the end of the next business day after becoming aware of such condition. Then file a certified written report concerning the malfunction with the Director within 30 days providing: a detailed explanation of the factors involved or causes of the malfunction; the date and time of duration (with starting and ending times) of the period of excess emissions; an estimate of the mass of excess emissions discharged during the malfunction period; the maximum opacity measured or observed during the malfunction; immediate remedial actions taken at the time of the malfunction to correct or mitigate the effects of the malfunction; and a detailed explanation of the corrective measures or program that will be implemented to prevent a recurrence of the malfunction and a schedule for such implementation. [45CSR§2-9.3.b]
				NSPS Dc		Daily fuel type and amount combusted [§60.48c(g)(1)]		Daily fuel type and amount combusted [§60.48c(g)(1)] -OR- Monthly fuel type and amount combusted [§60.48c(g)(2)] -OR- Monthly fuel delivered to site [§60.48c(g)(3)]	Notice of start of construction and actual startup [§60.7, §60.48c(a)]

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NATRIUM EXTRACTION AND FRACTIONATION PROCESSING PLANT

BLUE RACER MIDSTREAM, LLC

Emission Unit ID	Control Device ID	Emission Point ID	Description	Applicable Citation(s)	Limitation/Standard	Monitoring	Testing	Recordkeeping	Reporting
S018	--	P018	Hot Oil Heater (61.6 MMBtu/hr)		Maximum heat input: <= 61.6 MMBtu/hr <= 66,523 scf/hr <= 582.74 MMscf/yr	Annual sampling for composition (extended analysis) and heat content of each stream combusted in the heater, including: Plant residue gas.		Monthly and rolling 12-month total records of natural gas consumed and hours of operation. Rolling 12-month records of GHG emissions, estimated using the methodology in 40 CFR Part 98, the annual fuel gas sample(s), and the monthly natural gas combustion records.	
				45CSR§2-3.1, 45CSR§2-3.2	10% opacity	At such reasonable time as the Secretary may designate, conduct 40 CFR Part 60, Appendix A, Method 9 opacity observations	Opacity must be determined by 40 CFR Part 60, Appendix A, Method 9 observations or by measurements from a COMS approved by the Director	Maintain records of all opacity observations.	Any opacity deviation (s), as soon as practicable, but within ten (10) calendar days of the occurrence. Report shall include at least the results of the observation, the cause or suspected cause of the violation(s), and any corrective measures taken or planned. [Permit SC 5.5.3] SSM excess opacity periods < 30 mins and <= 40% may be reported on a quarterly basis unless otherwise required by the Director. [45CSR§2-9.3.a] If SSM > 30 mins or > 40%, report by telephone, telefax, or e-mail by the end of the next business day after becoming aware of such condition. Then file a certified written report concerning the malfunction with the Director within 30 days providing: a detailed explanation of the factors involved or causes of the malfunction; the date and time of duration (with starting and ending times) of the period of excess emissions; an estimate of the mass of excess emissions discharged during the malfunction period; the maximum opacity measured or observed during the malfunction; immediate remedial actions taken at the time of the malfunction to correct or mitigate the effects of the malfunction; and a detailed explanation of the corrective measures or program that will be implemented to prevent a recurrence of the malfunction and a schedule for such implementation. [45CSR§2-9.3.b]
				NSPS Dc		Daily fuel type and amount combusted [§60.48c(g)(1)]		Daily fuel type and amount combusted [§60.48c(g)(1)] -OR- Monthly fuel type and amount combusted [§60.48c(g)(2)] -OR- Monthly fuel delivered to site [§60.48c(g)(3)]	Notice of start of construction and actual startup [§60.7, §60.48c(a)]
S019	--	P019	Hot Oil Heater (61.6 MMBtu/hr)		Maximum heat input: <= 61.6 MMBtu/hr <= 66,523 scf/hr <= 582.74 MMscf/yr	Annual sampling for composition (extended analysis) and heat content of each stream combusted in the heater, including: Plant residue gas.		Monthly and rolling 12-month total records of natural gas consumed and hours of operation. Rolling 12-month records of GHG emissions, estimated using the methodology in 40 CFR Part 98, the annual fuel gas sample(s), and the monthly natural gas combustion records.	
				45CSR§2-3.1, 45CSR§2-3.2	10% opacity	At such reasonable time as the Secretary may designate, conduct 40 CFR Part 60, Appendix A, Method 9 opacity observations	Opacity must be determined by 40 CFR Part 60, Appendix A, Method 9 observations or by measurements from a COMS approved by the Director	Maintain records of all opacity observations.	Any opacity deviation (s), as soon as practicable, but within ten (10) calendar days of the occurrence. Report shall include at least the results of the observation, the cause or suspected cause of the violation(s), and any corrective measures taken or planned. [Permit SC 5.5.3] SSM excess opacity periods < 30 mins and <= 40% may be reported on a quarterly basis unless otherwise required by the Director. [45CSR§2-9.3.a] If SSM > 30 mins or > 40%, report by telephone, telefax, or e-mail by the end of the next business day after becoming aware of such condition. Then file a certified written report concerning the malfunction with the Director within 30 days providing: a detailed explanation of the factors involved or causes of the malfunction; the date and time of duration (with starting and ending times) of the period of excess emissions; an estimate of the mass of excess emissions discharged during the malfunction period; the maximum opacity measured or observed during the malfunction; immediate remedial actions taken at the time of the malfunction to correct or mitigate the effects of the malfunction; and a detailed explanation of the corrective measures or program that will be implemented to prevent a recurrence of the malfunction and a schedule for such implementation. [45CSR§2-9.3.b]
				NSPS Dc		Daily fuel type and amount combusted [§60.48c(g)(1)]		Daily fuel type and amount combusted [§60.48c(g)(1)] -OR- Monthly fuel type and amount combusted [§60.48c(g)(2)] -OR- Monthly fuel delivered to site [§60.48c(g)(3)]	Notice of start of construction and actual startup [§60.7, §60.48c(a)]
S020	--	P020	Glycol Reboiler (3.0 MMBtu/hr)		Maximum heat input: <= 3.0 MMBtu/hr <= 2,921 scf/hr <= 25.59 MMscf/yr			Monthly and rolling 12-month total records of natural gas consumed and hours of operation.	
				45CSR§2-3.1, 45CSR§2-3.2	10% opacity	At such reasonable time as the Secretary may designate, conduct 40 CFR Part 60, Appendix A, Method 9 opacity observations	Opacity must be determined by 40 CFR Part 60, Appendix A, Method 9 observations or by measurements from a COMS approved by the Director	Maintain records of all opacity observations, per Permit SC 7.4.2.	Any opacity deviation (s), as soon as practicable, but within ten (10) calendar days of the occurrence. Report shall include at least the results of the observation, the cause or suspected cause of the violation(s), and any corrective measures taken or planned. [Permit SC 7.5.1] SSM excess opacity periods < 30 mins and <= 40% may be reported on a quarterly basis unless otherwise required by the Director. [45CSR§2-9.3.a] If SSM > 30 mins or > 40%, report by telephone, telefax, or e-mail by the end of the next business day after becoming aware of such condition. Then file a certified written report concerning the malfunction with the Director within 30 days providing: a detailed explanation of the factors involved or causes of the malfunction; the date and time of duration (with starting and ending times) of the period of excess emissions; an estimate of the mass of excess emissions discharged during the malfunction period; the maximum opacity measured or observed during the malfunction; immediate remedial actions taken at the time of the malfunction to correct or mitigate the effects of the malfunction; and a detailed explanation of the corrective measures or program that will be implemented to prevent a recurrence of the malfunction and a schedule for such implementation. [45CSR§2-9.3.b]
S004A	--	P004A	Ground Flare		Natural gas firing rate: <= 2.71 MMscf/yr The vent steam pressure shall be used to promote mixing at the burner tip in lieu of air or steam. The ground flare (S004A) will control emissions for maintenance events from multiple operations within the NPP.	Annual sampling for composition (extended) and heat content of each stream combusted in the flare, including: Plant residue gas and flare waste gas stream during normal operations.		Monthly and rolling 12-month total records of fuel gas combusted. Rolling 12-month records of GHG emissions, estimated using the methodology in 40 CFR Part 98, the annual fuel gas sample(s), and the monthly natural gas combustion records.	
				45CSR§6	Pilot flame present at all times when emissions may be vented, except periods of SSM. Combustion efficiency of 98% and destruction efficiency of 99.5%. PM Emissions (lb/hr) = F x Incinerator Capacity (T/hr) Where, F = either 5.43 for an incinerator with a capacity <15,000 lbs/hr or 2.72 for an incinerator with a capacity >=15,000 lbs/hr or greater. 20% opacity, except for up to 8 minutes/startup 40% opacity during startup, not to exceed 8 minutes total No objectionable odors. If unavoidable malfunction of equipment, excess emissions exceeding may be permitted by the Director for <=5 days upon specific application to the Director. Such application shall be made within 24 hrs of the malfunction. In cases of major equipment failure, additional time periods may be granted by the Director provided a corrective program has been submitted by the owner or operator and approved by the Director. Comply with the requirements of Section 2.12 of the permit during emergency operation of the flare.	Continuous monitoring of pilot flame presence, using thermocouple or other equivalent device. The inlet gas flow rate, documenting <= the maximum specified by the manufacturer.	An initial operational assurance test by the flare vendor shall be conducted to ensure flame stability and smokeless operation of the flare. Monthly opacity observations, to demonstrate no visible emissions are observed for more than a total of 5 minutes during any 2 consecutive hour period using 40CFR60 Appendix A Method 22. The visible emission checks shall determine the presence or absence of visible emissions. At a minimum, the observer must be trained and knowledgeable regarding the effects of background contrast, ambient lighting, observer position relative to lighting, wind, and the presence of uncombined water (condensing water vapor) on the visibility of emissions. If the flare fails the visible emissions test, the permittee must follow manufacturer's repair instructions, if available, or best combustion engineering practice as outlined in the unit inspection and maintenance plan, to return the unit to compliant operation. All repairs and maintenance activities for the flare must be recorded in a maintenance and repair log and must be available for inspection. Following return to operation from maintenance or repair activity, each device must pass an EPA Method 22, 40 CFR part 60, appendix A, visual observation. Upon Agency request, conduct PM stack sampling using EPA Method 5 or equivalent.	Monthly throughput to the flare. Records of the times and duration of all periods which the pilot flame was absent. Records of visible emissions tests. All repairs and maintenance activities for the flare must be recorded in a maintenance and repair log and must be available for inspection. A record of the flare design evaluation. The flare design evaluation shall include, net heat value calculations, exit (tip) velocity calculations, and all supporting concentration calculations and other related information requested by the Director. A record of the initial operational assurance test and any other testing performed.	Report any deviation(s) from the allowable visible emission requirement for any emissions discovered during opacity observations in writing as soon as practicable, but <10 calendar days of the occurrence; include at least: the results of the visible determination of opacity of emissions, the cause or suspected cause of the violation(s), and any corrective measures taken or planned. Any deviation(s) from the flare design and operation criteria in Permit SC 13.1.7 and permit application R13-2896C shall be reported in writing to the Director as soon as practicable, but no later than ten (10) calendar days of discovery of such deviation. Report the time, cause of event, estimate of emissions and corrective actions taken when the flare was used for an emergency at the facility. If testing is requested, submit a protocol at >30 days prior to testing and notification of the testing date at least 15 days prior to testing. Submit the testing results within 60 days of testing and provide all supporting calculations and testing data. SSM excess opacity periods < 30 mins and <= 40% may be reported on a quarterly basis unless otherwise required by the Director. [45CSR§2-9.3.a] If SSM > 30 mins or > 40%, report by telephone, telefax, or e-mail by the end of the next business day after becoming aware of such condition. Then file a certified written report within 30 days providing: a detailed explanation of the factors involved or causes of the malfunction; the date and time of duration (with starting and ending times); an estimate of the mass of excess emissions discharged during the malfunction period; the maximum opacity measured or observed during the malfunction; immediate remedial actions taken at the time of the malfunction to correct or mitigate the effects of the malfunction; and a detailed explanation of the corrective measures or program that will be implemented to prevent a recurrence of the malfunction and a schedule for such implementation. [45CSR§2-9.3.b]

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AIR PERMIT APPLICATION

NATRIUM EXTRACTION AND FRACTIONATION PROCESSING PLANT

BLUE RACER MIDSTREAM, LLC

Emission Unit ID	Control Device ID	Emission Point ID	Description	Applicable Citation(s)	Limitation/Standard	Monitoring	Testing	Recordkeeping	Reporting
				§60.18	No visible emissions, except 5 mins in any 2-hr period. Flame present at all times when receiving emissions. Diameter of >=3", nonassisted, H2 content of >=8%vol, and exit velocity <122 fps and < Vmax. [§60.18(c)(3)(i)] -OR- Air Assist: Heat content >=300 Btu/scf and veloc. <Vmax Steam Assist: >= 300 Btu/scf and 60 fps or lesser of Vmax and 400 fps -OR- >1,000 Btu/scf and 60 - 400 fps Nonassist: >= 200 Btu/scf and < 60 fps or lesser of Vmax or 400 fps -OR- > 1,000 Btu/scf and 60 - 400 fps [§60.18(c)(3)(ii), (c)(4)]	Continuous monitoring of pilot flame presence, using thermocouple or other equivalent device. [§60.18(f)(2)]	Visible emissions observations shall be made using EPA Method 22.	Maintain records of all Method 22 observations.	
S021	--	P021	Emergency Flare		Natural gas firing rate: <= 2.71 MMscf/yr The vent steam pressure shall be used to promote mixing at the burner tip in lieu of air or steam. The flare (S021) will control emissions for emergency conditions.	Annual sampling for composition (extended) and heat content of each stream combusted in the flare, including: Plant residue gas and flare waste gas stream during normal operations.		Monthly and rolling 12-month total records of fuel gas combusted. Rolling 12-month records of GHG emissions, estimated using the methodology in 40 CFR Part 98, the annual fuel gas sample(s), and the monthly natural gas combustion records.	
				45CSR§6	Pilot flame present at all times when emissions may be vented, except periods of SSM. Combustion efficiency of 98% and destruction efficiency of 99.5%. PM Emissions (lb/hr) = F x Incinerator Capacity (T/hr) Where, F = either 5.43 for an incinerator with a capacity <15,000 lbs/hr or 2.72 for an incinerator with a capacity >=15,000 lbs/hr or greater. 20% opacity, except for up to 8 minutes/startup 40% opacity during startup, not to exceed 8 minutes total No objectionable odors. If unavoidable malfunction of equipment, excess emissions exceeding may be permitted by the Director for <=5 days upon specific application to the Director. Such application shall be made within 24 hrs of the malfunction. In cases of major equipment failure, additional time periods may be granted by the Director provided a corrective program has been submitted by the owner or operator and approved by the Director. Comply with the requirements of Section 2.12 of the permit during emergency operation of the flare.	Continuous monitoring of pilot flame presence, using thermocouple or other equivalent device. The inlet gas flow rate, documenting <= the maximum specified by the manufacturer.	An initial operational assurance test by the flare vendor shall be conducted to ensure flame stability and smokeless operation of the flare. Monthly opacity observations, to demonstrate no visible emissions are observed for more than a total of 5 minutes during any 2 consecutive hour period using 40CFR60 Appendix A Method 22. The visible emission checks shall determine the presence or absence of visible emissions. At a minimum, the observer must be trained and knowledgeable regarding the effects of background contrast, ambient lighting, observer position relative to lighting, wind, and the presence of uncombined water (condensing water vapor) on the visibility of emissions. If the flare fails the visible emissions test, the permittee must follow manufacturer's repair instructions, if available, or best combustion engineering practice as outlined in the unit inspection and maintenance plan, to return the unit to compliant operation. All repairs and maintenance activities for the flare must be recorded in a maintenance and repair log and must be available for inspection. Following return to operation from maintenance or repair activity, each device must pass an EPA Method 22, 40 CFR part 60, appendix A, visual observation. Upon Agency request, conduct PM stack sampling using EPA Method 5 or equivalent.	Monthly throughput to the flare. Records of the times and duration of all periods which the pilot flame was absent. Records of visible emissions tests. All repairs and maintenance activities for the flare must be recorded in a maintenance and repair log and must be available for inspection. A record of the flare design evaluation. The flare design evaluation shall include, net heat value calculations, exit (tip) velocity calculations, and all supporting concentration calculations and other related information requested by the Director. A record of the initial operational assurance test and any other testing performed.	Report any deviation(s) from the allowable visible emission requirement for any emissions discovered during opacity observations in writing as soon as practicable, but <10 calendar days of the occurrence; include at least: the results of the visible determination of opacity of emissions, the cause or suspected cause of the violation(s), and any corrective measures taken or planned. Any deviation(s) from the flare design and operation criteria in Permit SC 13.1.7 and permit application R13-2896B shall be reported in writing to the Director as soon as practicable, but no later than ten (10) calendar days of discovery of such deviation. Report the time, cause of event, estimate of emissions and corrective actions taken when the flare was used for an emergency at the facility. If testing is requested, submit a protocol at >30 days prior to testing and notification of the testing date at least 15 days prior to testing. Submit the testing results within 60 days of testing and provide all supporting calculations and testing data. SSM excess opacity periods < 30 mins and <= 40% may be reported on a quarterly basis unless otherwise required by the Director. [45CSR§2-9.3.a] If SSM > 30 mins or > 40%, report by telephone, telefax, or e-mail by the end of the next business day after becoming aware of such condition. Then file a certified written report within 30 days providing: a detailed explanation of the factors involved or causes of the malfunction; the date and time of duration (with starting and ending times); an estimate of the mass of excess emissions discharged during the malfunction period; the maximum opacity measured or observed during the malfunction; immediate remedial actions taken at the time of the malfunction to correct or mitigate the effects of the malfunction; and a detailed explanation of the corrective measures or program that will be implemented to prevent a recurrence of the malfunction and a schedule for such implementation. [45CSR§2-9.3.b]
S002	--	P002	Fire Pump #1 (700 hp)		Maximum heat input: <= 35.9 gal/hr <= 3,590 gal/yr Annual operating hours: <= 500 hr/yr		Stack testing at the request of the agency.	Monthly and rolling 12-month total of diesel fuel burned and hours of operation. Records of monitoring information per Permit SC 8.3.2. Maintenance records relating to failure and/or repair of fire pump equipment. In the event of equipment or system failure, these records shall document the permittee's effort to maintain proper and effective operation of such equipment and/or systems.	Submit written reports of all performance tests.
				45CSR§2-3.1, 45CSR§2-3.2	10% opacity	At such reasonable time as the Secretary may designate, conduct 40 CFR Part 60, Appendix A, Method 9 opacity observations	Opacity must be determined by 40 CFR Part 60, Appendix A, Method 9 observations or by measurements from a COMS approved by the Director	Maintain records of all opacity observations, per Permit SC 6.4.5.	Any opacity deviation (s), as soon as practicable, but within ten (10) calendar days of the occurrence. Report shall include at least the results of the observation, the cause or suspected cause of the violation(s), and any corrective measures taken or planned.
				NSPS IIII	Over life of engine: 3.0 g/hp-hr NMHC + NO_X 2.6 g/hp-hr CO 0.15 g/hp-hr PM [§60.4205(c), Table 4, §60.4206] Nonemergency hours (for maintenance checks and readiness testing, etc.) limited to 100/yr. [§60.4211(f)] Fire diesel that meets 40 CFR §80.510(b) for nonroad diesel fuel. [§60.4207(b)] Purchase certified engine and operate per manufacturer's written instructions or procedures developed by the owner or operator that are approved by the engine manufacturer; only change settings allowed by manufacturer; and meet 40 CFR Parts 89, 94, and 1068 as applicable. [§60.4211(a) and (c)]	Install a non-resettable hour meter prior to startup of the engine. [§60.4209(a)] If stationary CI internal combustion engine is equipped with a diesel particulate filter to comply with the emission standards in §60.4204, the diesel particulate filter must be installed with a backpressure monitor that notifies the owner or operator when the high backpressure limit of the engine is approached. [§60.4209(b)]		Maintain manufacturer certification documentation. [§60.4211(c)] Starting with the model years in table 5 to this subpart, if the emergency engine does not meet the standards applicable to non-emergency engines in the applicable model year, the owner or operator must keep records of the operation of the engine in emergency and non-emergency service that are recorded through the non-resettable hour meter. The owner must record the time of operation of the engine and the reason the engine was in operation during that time. [§60.4214(b)] If the stationary CI internal combustion engine is equipped with a diesel particulate filter, the owner or operator must keep records of any corrective action taken after the backpressure monitor has notified the owner or operator that the high backpressure limit of the engine is approached. [§60.4214(c)]	
				MACT ZZZZ	Meet MACT ZZZZ by complying with NSPS IIII.				
S003	--	P003	Fire Pump #2 (700 hp)		Maximum heat input: <= 35.9 gal/hr <= 3,590 gal/yr Annual operating hours: <= 500 hr/yr		Stack testing at the request of the agency.	Monthly and rolling 12-month total of diesel fuel burned and hours of operation. Records of monitoring information per Permit SC 8.3.2. Maintenance records relating to failure and/or repair of fire pump equipment. In the event of equipment or system failure, these records shall document the permittee's effort to maintain proper and effective operation of such equipment and/or systems.	Submit written reports of all performance tests.
				45CSR§2-3.1, 45CSR§2-3.2	10% opacity	At such reasonable time as the Secretary may designate, conduct 40 CFR Part 60, Appendix A, Method 9 opacity observations	Opacity must be determined by 40 CFR Part 60, Appendix A, Method 9 observations or by measurements from a COMS approved by the Director	Maintain records of all opacity observations, per Permit SC 6.4.5.	Any opacity deviation (s), as soon as practicable, but within ten (10) calendar days of the occurrence. Report shall include at least the results of the observation, the cause or suspected cause of the violation(s), and any corrective measures taken or planned.

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BLUE RACER MIDSTREAM, LLC

Emission Unit ID	Control Device ID	Emission Point ID	Description	Applicable Citation(s)	Limitation/Standard	Monitoring	Testing	Recordkeeping	Reporting
				NSPS IIII	Over life of engine: 3.0 g/hp-hr NMHC + NO_X 2.6 g/hp-hr CO 0.15 g/hp-hr PM [§60.4205(c), Table 4, §60.4206] Nonemergency hours limited to 100/yr. [§60.4211(f)] Fire diesel that meets 40 CFR §80.510(b) for nonroad diesel fuel. [§60.4207(b)] Purchase certified engine and operate per manufacturer's written instructions or procedures developed by the owner or operator that are approved by the engine manufacturer; only change settings allowed by manufacturer; and meet 40 CFR Parts 89, 94, and 1068 as applicable. [§60.4211(a) and (c)]	Install a non-resettable hour meter prior to startup of the engine. [§60.4209(a)]		Maintain manufacturer certification documentation. [§60.4211(c)] Starting with the model years in table 5 to this subpart, if the emergency engine does not meet the standards applicable to non-emergency engines in the applicable model year, the owner or operator must keep records of the operation of the engine in emergency and non-emergency service that are recorded through the non-resettable hour meter. The owner must record the time of operation of the engine and the reason the engine was in operation during that time. [§60.4214(b)] If the stationary CI internal combustion engine is equipped with a diesel particulate filter, the owner or operator must keep records of any corrective action taken after the backpressure monitor has notified the owner or operator that the high backpressure limit of the engine is approached. [§60.4214(c)]	
				MACT ZZZZ	Meet MACT ZZZZ by complying with NSPS IIII.				
S006	C001	P001	Glycol Dehydrator Flash Tank, Recycled to Hot Oil Heater Fuel Skid, and Condenser Vent, Routed through Natural Gasoline Tank VRU (for compression) to Hot Oil Heater		Maximum wet natural gas throughput: 460 MMscfd (rolling 12-month average) The vapors/overheads from the still column shall be routed through a closed vent system to the flame zone of the Hot Oil Heater (S001) at all times when there is a potential that vapors (emissions) can be generated from the still column. The vapors may be routed to the inlet of the Natural Gasoline Tank VRU for compression.			Monthly and rolling 12-month total of wet natural gas throughput.	
				MACT HH	Benzene emissions: < 1 T/yr [§63.764(e)] Calculate benzene annual emissions. [§63.772(b)(2)] If actual HAPs >= 5 T/yr of a single HAP or >= 12.5 T/yr of all HAPs, then update major source determination annually , using gas composition data measured during the preceding 12 months. [§63.760(c)]	Operating hours per quarter, Quarterly throughput (MMscf/quarter), Annual daily average (MMscf/day), and Maximum design capacity (MMscf/day). At least once Quarterly: Absorber temp and pressure, lean glycol circulation rate, glycol pump type and max design (gpm), flash tank temp and pressure, stripping gas flow rate, if applicable, wet gas composition , wet gas water content, dry gas water content at a point directly after exiting the dehydration column and before any additional separation points. Can use default GRI-GLYCALC parameters for water contents and lean glycol circulation rate. [§63.772(b)(2)(i), 45 CSR§13-5.11]		For the purpose of documenting compliance with the emission limitations, HAP major source thresholds, as well as the benzene exemption, maintain records of all monitoring data, wet gas sampling, and annual GRI-GLYCALC emission estimates. [45 CSR§13-5.11]	
S011	--	P005	Ethane Amine Regenerator		Maximum gas throughput: 460 MMscfd (rolling 12-month average) Ethane product CO_2 content: < 1 mol%	Annual sampling for composition (C6+) of Amine inlet gas stream. Monthly flow rate of amine unit inlet feed stream.		Monthly and rolling 12-month total of amine unit feed stream. 12-month rolling records of GHG emissions estimated using the methodology in 40 CFR Part 98, the annual gas analysis, and the flow rate records.	
S014	--	P006	Ethane Amine Regenerator		Maximum gas throughput: 460 MMscfd (rolling 12-month average) Ethane product CO_2 content: < 1 mol%	Annual sampling for composition (C6+) of Amine inlet gas stream. Monthly flow rate of amine unit inlet feed stream.		Monthly and rolling 12-month total of amine unit feed stream. 12-month rolling records of GHG emissions estimated using the methodology in 40 CFR Part 98, the annual gas analysis, and the flow rate records.	
S005	C001	P001	Natural Gasoline Storage Tank TK-802, with Natural Gas Blanket and VRU to Hot Oil Heater		Emissions from the Gasoline Storage Tank (S005) shall be controlled by a natural gas blanket and VRU. The VRU shall recover and direct any emissions from the tank (i.e., blanket gas) to the Hot Oil Heater (S001) for use as fuel. The VRU system will employ a vapor return which shall be designed to achieve a minimum guaranteed capture efficiency of 100% for the storage tank (S005). The Gasoline Storage Tank (TK-802) shall be designed and operated in accordance with the information file in permit applications R13-2896 and R13-2896B and in this Rule 13 application.	Monitor the VRU units in accordance with the plans and specifications and manufacturer's recommendations.		Daily records of flow to from the VRU to the Hot Oil Heater. 12-month rolling records of GHG emissions estimated using the methodology in 40 CFR Part 98, the natural gas analysis, and the VRU exit flow records. Maintenance of VRU: VRU equipment inspection and/or preventative maintenance procedures. Malfunctions of VRU: occurrence and duration of any malfunction or operational shutdown of the VRU during which excess emissions occur. For each such case, the following information shall be recorded: the equipment involved; steps taken to minimize emissions during the event; duration of the event; estimated increase in emissions during the event; in case of equipment malfunction, also record the cause of the malfunction and the steps taken to correct the malfunction; and any changes or modifications to equipment or procedures that would help prevent future recurrences of the malfunction.	Upon request by the Director, report deviations within a requested time from of any occurrences when the control device was operated outside of the parameters defined in the monitoring plan.
				NSPS Kb	A closed vent system and control device meeting the following specifications: (i) The closed vent system shall be designed to collect all VOC vapors and gases discharged from the storage vessel and operated with no detectable emissions as indicated by an instrument reading of less than 500 ppm above background and visual inspections, as determined in part 60, subpart VV, § 60.485(b). (ii) The control device shall be designed and operated to reduce inlet VOC emissions by 95% or greater. If a flare is used as the control device, it shall meet the specifications described in the general control device requirements (§ 60.18) of the General Provisions. [§60.112b(a)(3)] Operate the closed vent system and control device and monitor the parameters of the closed vent system and control device in accordance with the operating plan submitted to the Administrator in accordance with paragraph (c)(1) of this section, unless the plan was modified by the Administrator during the review process. In this case, the modified plan applies. [§60.113b(c)]	Monitor parameters as laid out in the monitoring plan. [§60.113b] Storage temperature used to determine the maximum true vapor pressure may be determined below per §60.116b(e).		A copy of the operating plan for the tank, closed vent system, and control device. A record of the measured values of the parameters monitored in accordance with §60.113b(c)(2). [§60.115b(c)] Readily accessible records showing the dimension of the storage vessel and an analysis showing the capacity of the storage vessel. [§60.116b(b)]	Submit an operating plan for the tank, closed vent system, and control device, including: 1) Documentation demonstrating that the control device will achieve the required control efficiency during maximum loading conditions. This documentation is to include a description of the gas stream which enters the control device, including flow and VOC content under varying liquid level conditions (dynamic and static) and manufacturer's design specifications for the control device. If the control device or the closed vent capture system receives vapors, gases, or liquids other than fuels from sources that are not designated sources under this subpart, the efficiency demonstration is to include consideration of all vapors, gases, and liquids received by the closed vent capture system and control device. If an enclosed combustion device with a minimum residence time of 0.75 seconds and a minimum temperature of816 °C is used to meet the 95 percent requirement, documentation that those conditions will exist is sufficient to meet the requirements of this paragraph. 2) A description of the parameter or parameters to be monitored to ensure that the control device will be operated in conformance with its design and an explanation of the criteria used for selection of that parameter (or parameters). [§60.113b]

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BLUE RACER MIDSTREAM, LLC

Emission Unit ID	Control Device ID	Emission Point ID	Description	Applicable Citation(s)	Limitation/Standard	Monitoring	Testing	Recordkeeping	Reporting
S023	C001	P001	Natural Gasoline Storage Tank TK-803, with Natural Gas Blanket and VRU to Hot Oil Heater		Emissions from the Gasoline Storage Tank (S023) shall be controlled by a natural gas blanket and VRU. The VRU shall recover and direct any emissions from the tank (i.e., blanket gas) to the Hot Oil Heater (S001) for use as fuel. The VRU system will employ a vapor return which shall be designed to achieve a minimum guaranteed capture efficiency of 100% for the storage tank (S023). The Gasoline Storage Tank (TK-803) shall be designed and operated in accordance with the information file in permit applications R13-2896 and R13-2896B and in this Rule 13 application.	Monitor the VRU units in accordance with the plans and specifications and manufacturer's recommendations.		Daily records of flow to from the VRU to the Hot Oil Heater. 12-month rolling records of GHG emissions estimated using the methodology in 40 CFR Part 98, the natural gas analysis, and the VRU exit flow records. Maintenance of VRU: VRU equipment inspection and/or preventative maintenance procedures. Malfunctions of VRU: occurrence and duration of any malfunction or operational shutdown of the VRU during which excess emissions occur. For each such case, the following information shall be recorded: the equipment involved; steps taken to minimize emissions during the event; duration of the event; estimated increase in emissions during the event; in case of equipment malfunction, also record the cause of the malfunction and the steps taken to correct the malfunction; and any changes or modifications to equipment or procedures that would help prevent future recurrences of the malfunction.	Upon request by the Director, report deviations within a requested time from of any occurrences when the control device was operated outside of the parameters defined in the monitoring plan.
				NSPS Kb	A closed vent system and control device meeting the following specifications: (i) The closed vent system shall be designed to collect all VOC vapors and gases discharged from the storage vessel and operated with no detectable emissions as indicated by an instrument reading of less than 500 ppm above background and visual inspections, as determined in part 60, subpart VV, § 60.485(b). (ii) The control device shall be designed and operated to reduce inlet VOC emissions by 95% or greater. If a flare is used as the control device, it shall meet the specifications described in the general control device requirements (§ 60.18) of the General Provisions. [§60.112b(a)(3)] Operate the closed vent system and control device and monitor the parameters of the closed vent system and control device in accordance with the operating plan submitted to the Administrator in accordance with paragraph (c)(1) of this section, unless the plan was modified by the Administrator during the review process. In this case, the modified plan applies. [§60.113b(c)]	Monitor parameters as laid out in the monitoring plan. [§60.113b] Storage temperature used to determine the maximum true vapor pressure may be determined below per §60.116b(e).		A copy of the operating plan for the tank, closed vent system, and control device. A record of the measured values of the parameters monitored in accordance with §60.113b(c)(2). [§60.115b(c)] Readily accessible records showing the dimension of the storage vessel and an analysis showing the capacity of the storage vessel. [§60.116b(b)]	Submit an operating plan for the tank, closed vent system, and control device, including: 1) Documentation demonstrating that the control device will achieve the required control efficiency during maximum loading conditions. This documentation is to include a description of the gas stream which enters the control device, including flow and VOC content under varying liquid level conditions (dynamic and static) and manufacturer's design specifications for the control device. If the control device or the closed vent capture system receives vapors, gases, or liquids other than fuels from sources that are not designated sources under this subpart, the efficiency demonstration is to include consideration of all vapors, gases, and liquids received by the closed vent capture system and control device. If an enclosed combustion device with a minimum residence time of 0.75 seconds and a minimum temperature of816 °C is used to meet the 95 percent requirement, documentation that those conditions will exist is sufficient to meet the requirements of this paragraph. 2) A description of the parameter or parameters to be monitored to ensure that the control device will be operated in conformance with its design and an explanation of the criteria used for selection of that parameter (or parameters). [§60.113b]
S007	C005, C004	P004	Slop Tank TK-906, with Natural Gas Blanket and VRU Vented to Flare		Emissions from the Slop Tank (S005) shall be controlled by a natural gas blanket and VRU (C005). The VRU shall direct any tank emissions to the flame zone of the Hot Oil Heater (S001). The VRU system will employ a vapor return which shall be designed to achieve a minimum guaranteed capture efficiency of 100% for the storage tank (S005). The Gasoline Storage Tank (TK-802) shall be designed and operated in accordance with the information file in permit applications R13-2896 and R13-2896B and in this Rule 13 application.	Monitor the VRU units in accordance with the plans and specifications and manufacturer's recommendations.		Maintain daily records of flow to flare. Maintain 12-month rolling records of GHG emissions estimated using the methodology 40 CFR Part 98 and the fuel flow records.	
S004A	C004A	P004A	Compressor Blowdown Vents and Relief Valves to Flare					Maintain daily records of blowdowns and vents to flare, including duration, volume vented, reason for blowdown (i.e., MSS or upset).	
N/A	N/A	N/A	Refrigeration Compressor (Electric)					Maintain daily records of blowdowns and vents to flare, including duration, volume vented, reason for blowdown (i.e., MSS or upset).	
N/A	N/A	N/A	Residue Gas Compressors (4 Electric)					Maintain daily records of blowdowns and vents to flare, including duration, volume vented, reason for blowdown (i.e., MSS or upset).	
N/A	N/A	N/A	Ethane Compressors (Electric)					Maintain daily records of blowdowns and vents to flare, including duration, volume vented, reason for blowdown (i.e., MSS or upset).	
S008	N/A	P008	Propane, Butane, and Natural Gasoline Loading (Truck, Railcar, and Barge)		Maximum throughput limitations listed in Permit SC 15.1.1. Operated in accordance with the plans and specifications filed in Permit Application R13-2896. The system will employ a vapor balance (closed system) to route all vapors back to the tanks, for 100% control of loading emissions.			Maintain 12-month rolling total of product loading throughputs.	
N/A	N/A	N/A	NGL Storage Tank US-805		Maintain sufficient operating pressure to prevent air emissions to atmosphere. Pressure relieve devices shall be vented to flare (C004).				
N/A	N/A	N/A	Propane Storage Tank US-800		Maintain sufficient operating pressure to prevent air emissions to atmosphere. Pressure relieve devices shall be vented to flare (C004).				
N/A	N/A	N/A	Produced Water Tank TK-907		Maintain sufficient operating pressure to prevent air emissions to atmosphere. Pressure relieve devices shall be vented to flare (C004).				
N/A	N/A	N/A	Produced Water Truck Loading		Maintain sufficient operating pressure to prevent air emissions to atmosphere. Pressure relieve devices shall be vented to flare (C004).				
N/A	N/A	N/A	n-Butane Storage Tank US-804		Maintain sufficient operating pressure to prevent air emissions to atmosphere. Pressure relieve devices shall be vented to flare (C004).				
N/A	N/A	N/A	i-Butane Storage Tank US-801		Maintain sufficient operating pressure to prevent air emissions to atmosphere. Pressure relieve devices shall be vented to flare (C004).				
FUG AREA 1	N/A	FUG AREA 1	Fugitives (VOC service)	NSPS KKK	Comply with NSPS KKK for equipment in VOC service, defined as 10%wt VOC. Leak definition: 10,000 ppmv for most components, 500 ppmv for PRVs and closed vent systems. Leaking equipment shall be tagged; tag may be removed after repair. When a leak is detected, repair as soon as practicable, within 15 calendar days, or put on delay of repair list. First repair attempt must be within 5 calendar days. PRVs may not operate > 30 days after pressure release without monitoring. Flares must meet §60.18.	Implement NSPS KKK LDAR.	Implement NSPS KKK LDAR.	Maintain LDAR requirements as follows: 1) leaking equipment shall be tagged 2) tag may be removed after repair 3) for leaks, keep: instrument and operator ID, equipment ID, date detected, date(s) of each attempt to repair the leak, repair methods applied in each attempt to repair the leak, "above 10,000 ppm," repair delayed and reason for delay, if not repaired within 15 calendar days, signature of RO or designate who determined delay was necessary, expected date of repair for delayed repair, date of successful repair, 4) ID numbers for equipment with no detectible emissions 5) documentation proving exemption criteria are met	Semiannual report of LDAR monitoring results and records, including number of PRV leaks and repairs.

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BLUE RACER MIDSTREAM, LLC

Emission Unit ID	Control Device ID	Emission Point ID	Description	Applicable Citation(s)	Limitation/Standard	Monitoring	Testing	Recordkeeping	Reporting
FUG AREA 2	N/A	FUG AREA 2	Fugitives (VOC service)	NSPS OOOO	Comply with NSPS OOOO for equipment in VOC service, defined as 10%wt VOC. Leak definition: 500 ppmv for most components, 2,000 ppmv for light liquid pumps. Leaking equipment shall be tagged; tag may be removed after repair. When a leak is detected, repair as soon as practicable, within 15 calendar days, or put on delay of repair list. First repair attempt must be within 5 calendar days. PRVs may not operate > 30 days after pressure release without monitoring. Flares must meet §60.18.	Implement NSPS OOOO LDAR.	Implement NSPS OOOO LDAR.	Maintain LDAR requirements as follows: 1) leaking equipment shall be tagged 2) tag may be removed after repair 3) for leaks, keep: instrument and operator ID, equipment ID, date detected, date(s) of each attempt to repair the leak, repair methods applied in each attempt to repair the leak, "above 500 ppm," repair delayed and reason for delay, if not repaired within 15 calendar days, signature of RO or designate who determined delay was necessary, expected date of repair for delayed repair, date of successful repair, 4) ID numbers for equipment with no detectible emissions 5) documentation proving exemption criteria are met	Semiannual report of LDAR monitoring results and records, including number of PRV leaks and repairs.
ROADS	N/A	ROADS	Unpaved Roads	45 CSR 17	Maintain PM control of the plant premises, and plant owned, leased or controlled access roads, by paving, application of asphalt, chemical dust suppressants or other suitable dust control measures.				

[a] Included in the Flare Potential to Emit.

[b] Included in the Hot Oil Heater Potential to Emit.

ATTACHMENT P: PUBLIC NOTICE

RULE 13 AIR PERMIT APPLICATION

NATRIUM EXTRACTION AND FRACTIONATION PROCESSING PLANT

BLUE RACER MIDSTREAM, LLC

Notice of Application

Notice is given that Blue Racer Midstream, LLC has applied to the West Virginia Department of Environmental Protection, Division of Air Quality, for a Rule 13 Air Permit for a Modification to the Natrium Natural Gas Extraction and Processing Plant located on 14787 Energy Road, near Proctor, in Marshall County, West Virginia. The latitude and longitude coordinates are: 39° 45' 34.9" N; 80° 51' 42.2" W.

Blue Racer Midstream, LLC estimates the modification will result in the following emissions of Regulated Air Pollutant discharges to the atmosphere of:

Regulated Air Pollutant	**Emissions (T/yr)**
Oxides of Nitrogen (NO_X):	0.08
Carbon Monoxide (CO):	-1.78
Volatile Organic Compounds (VOC):	-0.62
Particulate Matter (PM):	-0.01
PM with an aerodynamic diameter of less than or equal to 10 microns (PM_{10})	-0.02
PM with an aerodynamic diameter of less than or equal to 2.5 microns ($PM_{2.5}$)	-0.01
Sulfur Dioxide (SO_2):	0.00
Greenhouse Gases (CO_2e):	-335

The ground flare operation is planned to begin on or about the 1st day of June, 2015. Written comments will be received by the West Virginia Department of Environmental Protection, Division of Air Quality, 601 57th Street, SE, Charleston, WV 25304, for at least 30 calendar days from the date of publication of this notice.

Any questions regarding this permit application should be directed to the DAQ at (304) 926-0499, extension 1227, during normal business hours.

Dated this the (Day) day of (Month), (Year).

Richard Moncrief
President and COO
5949 Sherry Lane, Suite 1300
Dallas, Texas 75225