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February 8, 2017

Assistant Director for Permitting  
WV Department of Environmental Protection  
Division of Air Quality  
601 57th Street, SE  
Charleston, WV 25304

Re: West Virginia Oil Gathering, LLC  
Nutter (Cairo) Station  
R13 Permit Application

To Whom It May Concern:

West Virginia Oil Gathering, LLC, (WVOG) a subsidiary of Enlink Midstream, LLC, currently operates the above-referenced facility. WVOG submitted a permit determination request for a similar facility and was advised by the West Virginia Department of Environmental Protection that a permit was required for operation of an emission source that is subject to NSPS Subpart Kb (Determination No. PD15-00017). The Nutter Station also has a tank subject to NSPS Subpart Kb; therefore, a permit application is submitted to authorize its operation.

This package contains all the required application forms, supporting backup documentation and a check for \$2,000, which includes \$1,000 for the construction permit fee and \$1,000 for the NSPS Requirements fee. The public notice has been submitted to the *Pennsboro News* in Ritchie County for publication and the Affidavit of Publication will be forwarded to your attention once it is received. If there are any questions or you need further information, please feel to contact me at (405) 602-1874 or [Brandi.Lowry@flatrockenergy.net](mailto:Brandi.Lowry@flatrockenergy.net).

Sincerely,

A handwritten signature in blue ink, appearing to read 'Brandi L.', is written over a faint, larger signature.

Brandi Lowry  
Program Director-Operations

Enclosures (Original, Two Copies on CDs)

ecc: Chris Adams, Enlink Midstream, LLC

**WEST VIRGINIA OIL GATHERING, LLC**

**NUTTER (CAIRO) STATION**

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**REGULATION 13 PERMIT APPLICATION**

**SUBMITTED TO WVDEP DIVISION OF AIR QUALITY  
JANUARY 2017**

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## **INTRODUCTION**

West Virginia Oil Gathering, LLC (WVOG), a subsidiary of EnLink Midstream LLC, submits the enclosed application for an after-the-fact Regulation 13 permit. The facility's emission sources consist of one (1) 188-hp Cummins engine, one (1) 15,000-bbl crude oil tank, loading operations, and fugitives. WVOG submitted a permit determination request for a similar facility and were informed by the WVDEP that a permit would be necessary for the site because the 3,300-bbl crude tank is subject to NSPS Subpart Kb. The tank at Nutter (Cairo) Station is also subject to NSPS Subpart Kb; therefore, this application is submitted to authorize the operation of the facility.

### **Proposed Emissions**

Emissions calculations for the equipment affected by this project are presented in Attachment N. Emissions from the Cummins engine were calculated with manufacturer data when available and AP-42/EPA emissions factors for the remaining pollutants.

Crude oil storage tank loss emissions were calculated by creating a profile in the EPA TANKS 4.0.9d model using oil with RVP 5. Throughput is not expected to exceed 5,475,000 barrels per year. The model includes the use of an internal floating roof (IFR) to reduce tank emissions.

Loading losses were calculated using AP-42 Section 5.2-4 Equation 1 and the characteristics of the liquid as modeled by TANKS 4.0.9d. No loading to trucks should occur under normal operations, but the emission calculations assumed 1% of the crude oil throughput was loaded out by truck as a conservative estimate of emissions.

Supporting documentation is included in Attachment N.

## **WVDEP APPLICATION FOR NSR PERMIT**



WEST VIRGINIA DEPARTMENT OF  
ENVIRONMENTAL PROTECTION  
**DIVISION OF AIR QUALITY**

601 57<sup>th</sup> Street, SE  
Charleston, WV 25304  
(304) 926-0475  
[www.dep.wv.gov/daq](http://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): West Virginia Oil Gathering, LLC		2. Federal Employer ID No. (FEIN): 46-0971147	
3. Name of facility (if different from above): Nutter (Cairo) Station		4. The applicant is the: <input type="checkbox"/> OWNER <input type="checkbox"/> OPERATOR <input checked="" type="checkbox"/> BOTH	
5A. Applicant's mailing address: 2017 SR 821, Building 21A Marietta, OH 45750		5B. Facility's present physical address: 39.24134483, -81.20777119	
6. <b>West Virginia Business Registration.</b> Is the applicant a resident of the State of West Virginia? <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO – If <b>YES</b> , provide a copy of the <b>Certificate of Incorporation/Organization/Limited Partnership</b> (one page) including any name change amendments or other Business Registration Certificate as <b>Attachment A</b> . – If <b>NO</b> , provide a copy of the <b>Certificate of Authority/Authority of L.L.C./Registration</b> (one page) including any name change amendments or other Business Certificate as <b>Attachment A</b> .			
7. If applicant is a subsidiary corporation, please provide the name of parent corporation: Enlink Midstream, LLC			
8. Does the applicant own, lease, have an option to buy or otherwise have control of the <i>proposed site</i> ? <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO – If <b>YES</b> , please explain:    West Virginia Oil Gathering, LLC owns the property at which the facility is located. – If <b>NO</b> , you are not eligible for a permit for this source.			
9. Type of plant or facility (stationary source) to be <b>constructed, modified, relocated, administratively updated</b> or <b>temporarily permitted</b> (e.g., coal preparation plant, primary crusher, etc.):  Crude oil storage tank		10. North American Industry Classification System (NAICS) code for the facility:  424710	
11A. DAQ Plant ID No. (for existing facilities only): 085-00018		11B. List all current 45CSR13 and 45CSR30 (Title V) permit numbers associated with this process (for existing facilities only): N/A	

*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**.

From I-77 exit 176 at Parkersburg and take US Route 50 East. Follow Rt. 50 to intersection with State Route 31 South. Turn right onto SR 31. Facility is immediately on the left.

12B. New site address (if applicable):

See above

12C. Nearest city or town:

Cairo

12D. County:

Ritchie

12E. UTM Northing (KM): 4,343.58

12F. UTM Easting (KM): 482.07

12G. UTM Zone: 17

13. Briefly describe the proposed change(s) at the facility:

N/A – no proposed changes from existing facility.

14A. Provide the date of anticipated installation or change: Immediately upon permit issuance

– If this is an **After-The-Fact** permit application, provide the date upon which the proposed change did happen: **2006**

14B. Date of anticipated Start-Up if a permit is granted:

No new construction activity

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](http://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:

<input checked="" type="checkbox"/> Bulk Liquid Transfer Operations	<input checked="" type="checkbox"/> Haul Road Emissions	<input type="checkbox"/> Quarry
<input checked="" type="checkbox"/> Chemical Processes	<input type="checkbox"/> Hot Mix Asphalt Plant	<input type="checkbox"/> Solid Materials Sizing, Handling and Storage Facilities
<input type="checkbox"/> Concrete Batch Plant	<input type="checkbox"/> Incinerator	<input checked="" type="checkbox"/> Storage Tanks
<input type="checkbox"/> Grey Iron and Steel Foundry	<input type="checkbox"/> Indirect Heat Exchanger	

☒ General Emission Unit, specify: Natural gas internal combustion engine

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

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

<input type="checkbox"/> Absorption Systems	<input type="checkbox"/> Baghouse	<input type="checkbox"/> Flare
<input type="checkbox"/> Adsorption Systems	<input type="checkbox"/> Condenser	<input type="checkbox"/> Mechanical Collector
<input type="checkbox"/> Afterburner	<input type="checkbox"/> Electrostatic Precipitator	<input type="checkbox"/> Wet Collecting System

☐ Other Collectors, specify

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:

<input type="checkbox"/> Authority of Corporation or Other Business Entity	<input type="checkbox"/> Authority of Partnership
<input type="checkbox"/> Authority of Governmental Agency	<input type="checkbox"/> 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 Steve Cornelison  
(Please use blue ink)

DATE: 1-27-17  
(Please use blue ink)

35B. Printed name of signee: Steve Cornelison

35C. Title: Director, Fleet Operations

35D. E-mail: Steve.Cornelison@enlink.com

36E. Phone: (740) 371-5300

36F. FAX:

36A. Printed name of contact person (if different from above): Robert Douglas

36B. Title: Sr. Environmental Specialist

36C. E-mail: Robert.Douglas@enlink.com

36D. Phone: (304) 918-3131

36E. FAX:

**PLEASE CHECK ALL APPLICABLE ATTACHMENTS INCLUDED WITH THIS PERMIT APPLICATION:**

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

**ATTACHMENT A: BUSINESS CERTIFICATE**



## Certificate

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

**WEST VIRGINIA OIL GATHERING, LLC**

was duly authorized under the laws of this state to transact business in West Virginia as a foreign limited liability company on August 29, 2012.

The company is filed as an at-will company, for an indefinite period.

I further certify that the LLC (PLLC) has not been revoked by the State of West Virginia nor has a Certificate of Cancellation been issued.

Therefore, I hereby issue this

## CERTIFICATE OF AUTHORIZATION

**Validation ID:6WV3Q\_8PMGP**

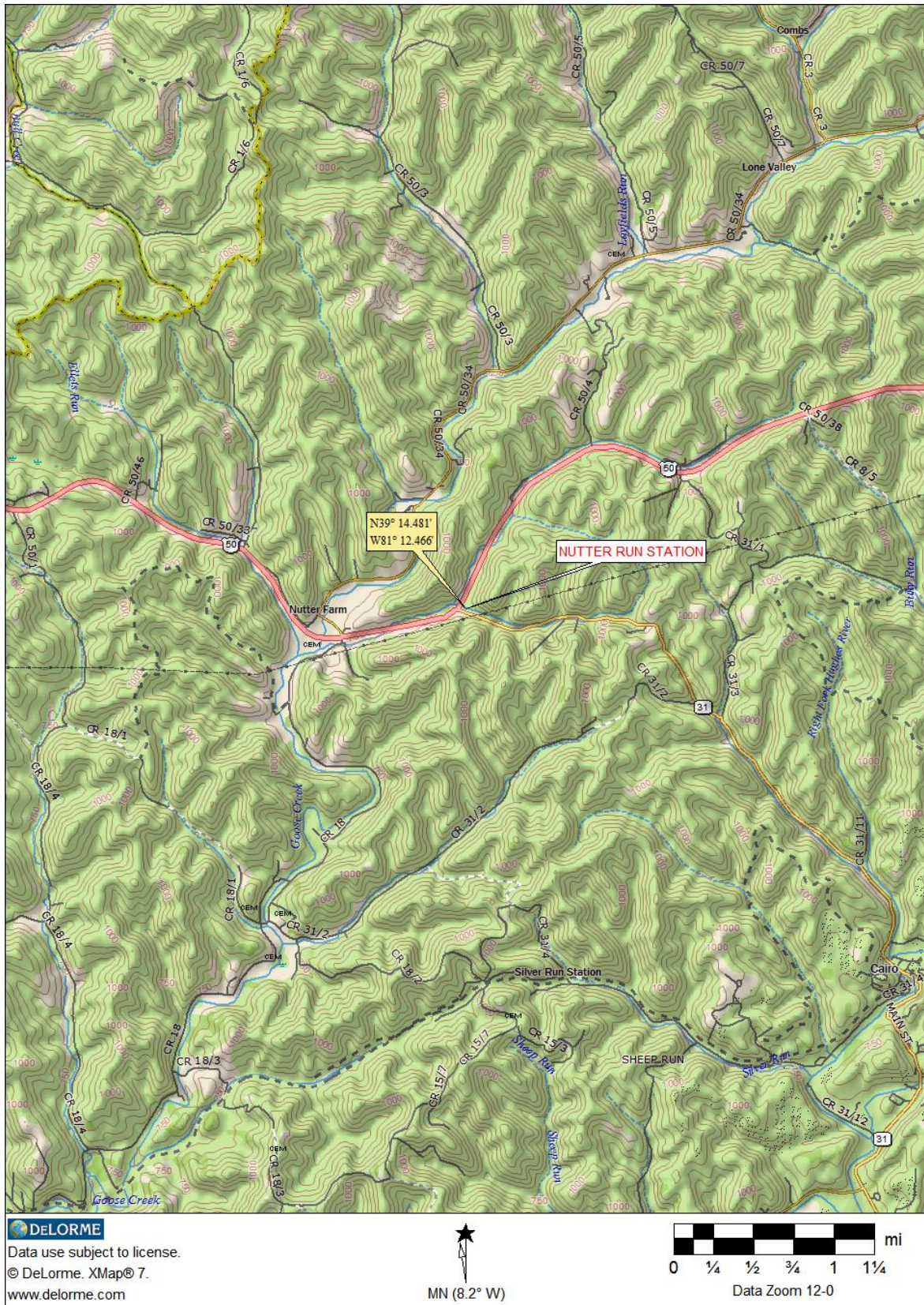


*Given under my hand and the  
Great Seal of the State of  
West Virginia on this day of  
April 22, 2016*

*Natalie E. Tennant*  
Secretary of State

**ATTACHMENT B: MAP**





**West Virginia Oil Gathering, LLC**  
**Nutter (Cairo) Station**  
 Attachment B: Area Map  
 January 2017

## **ATTACHMENT C: INSTALLATION AND START-UP SCHEDULE**

No new construction activities are planned.

## **ATTACHMENT D: REGULATORY DISCUSSION**

### **STATE**

#### **45 CSR 13 - PERMITS FOR CONSTRUCTION, MODIFICATION, RELOCATION AND OPERATION OF STATIONARY SOURCES OF AIR POLLUTANTS, NOTIFICATION REQUIREMENTS, ADMINISTRATIVE UPDATES, TEMPORARY PERMITS, GENERAL PERMITS, AND PROCEDURES FOR EVALUATION:**

VOC and PM emissions associated with the facility are less than the minor source construction permit thresholds of 6 pounds per hour (pph) AND 10 tons per year (tpy) OR 144 pounds per day (ppd) of any regulated air pollutant OR 2 pph OR 5 tpy of aggregated hazardous air pollutants (HAP) OR 45 CSR 27 toxic air pollutant (TAP) (10% increase if above BAT triggers or increase to Best Available Technology (BAT) triggers) but is subject to an applicable Standard or Rule. Therefore, the facility is required to have a permit for the operation of the emission sources.

#### **45 CSR 22 - AIR QUALITY MANAGEMENT FEE PROGRAM:**

The facility will be required to maintain a valid Certificate to Operate on the premises.

#### **45 CSR 30 - REQUIREMENTS FOR OPERATING PERMITS:**

Emissions from the facility do not exceed major source thresholds; therefore, this rule does not apply.

### **FEDERAL**

#### **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**

The affected facility to which this subpart applies is each storage vessel with a capacity greater than or equal to 75 cubic meters (m<sup>3</sup>) that is used to store volatile organic liquids (VOL) for which construction, reconstruction, or modification is commenced after July 23, 1984. The tank at this facility was constructed after the effective date of this subpart, has a capacity greater than 19,812 gallons and stores VOL after custody transfer. Therefore, it is subject to this subpart and complies with the control requirements through the use of an internal floating roof.



**40 CFR PART 60 SUBPART JJJJ - STANDARDS OF PERFORMANCE FOR STATIONARY SPARK IGNITION INTERNAL COMBUSTION ENGINES:**

The Cummins engine has a horsepower rating of 188-hp (between 100-hp and 499-hp) and was manufactured on December 10, 2008 (between July 1, 2008 and January 1, 2011) therefore it is subject to the Stage I emission limits of this subpart.

**40 CFR PART 60 SUBPART OOOO - STANDARDS OF PERFORMANCE FOR CRUDE OIL AND NATURAL GAS PRODUCTION, TRANSMISSION AND DISTRIBUTION**

The emission sources affected by this subpart include well completions, pneumatic controllers, equipment leaks from natural gas processing plants, sweetening units at natural gas processing plants, reciprocating compressors, centrifugal compressors and storage vessels which are constructed, modified or reconstructed after August 23, 2011 and before September 18, 2015. The storage tank was constructed before the effective date of this subpart and has VOC emissions less than 6.0 tpy. Therefore, it is not subject to this subpart.

**40 CFR PART 60 SUBPART OOOOA - STANDARDS OF PERFORMANCE FOR CRUDE OIL AND NATURAL GAS FACILITIES FOR WHICH CONSTRUCTION, MODIFICATION, OR RECONSTRUCTION COMMENCED AFTER SEPTEMBER 18, 2015**

The emission sources affected by this subpart include well completions, centrifugal compressors, reciprocating compressors, pneumatic controllers, storage vessels, fugitive sources at well sites, fugitive sources at compressor stations, pneumatic pumps, equipment leaks from natural gas processing plants and sweetening units at natural gas processing plants which are constructed, modified or reconstructed after September 18, 2015. The storage tank was constructed before the effective date of this subpart and has VOC emissions less than 6.0 tpy. Therefore, it is not subject to this subpart.

**40 CFR PART 63 SUBPART ZZZZ - NATIONAL EMISSION STANDARDS FOR HAZARDOUS AIR POLLUTANTS FOR SOURCE CATEGORIES FROM STATIONARY RECIPROCATING INTERNAL COMBUSTION ENGINES - AREA SOURCE:**

The original rule, published on February 26, 2004, initially affected new (constructed or reconstructed after December 19, 2002) reciprocating internal combustion engines (RICE) with a site-rating greater than 500 brake horsepower located at a major source of HAP emissions. On January 18, 2008, EPA published an amendment that promulgated standards for RICE constructed or reconstructed after June 12, 2006 with a site rating less than or equal to 500-hp located at major sources, and for engines constructed and reconstructed after June 12, 2006

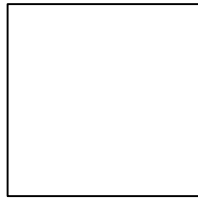
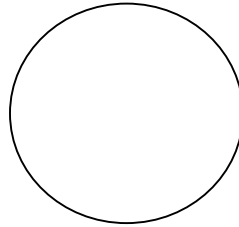


located at area sources. On August 10, 2010, EPA published another amendment that promulgated standards for existing (constructed or reconstructed before June 12, 2006) RICE at area sources and existing RICE (constructed or reconstructed before June 12, 2006) with a site rating of less than or equal to 500-hp at major sources.

Owners and operators of new or reconstructed engines at area sources must meet the requirements of Subpart ZZZZ by complying with either 40 CFR Part 60 Subpart IIII (for CI engines) or 40 CFR Part 60 Subpart JJJJ (for SI engines). Based on emission calculations, this facility is a minor source of HAP. The engine is subject to NSPS Subpart JJJJ and complies with MACT Subpart ZZZZ by complying with the requirements of NSPS Subpart JJJJ.

## **ATTACHMENT E: PLOT PLAN**

Crude Oil Tank

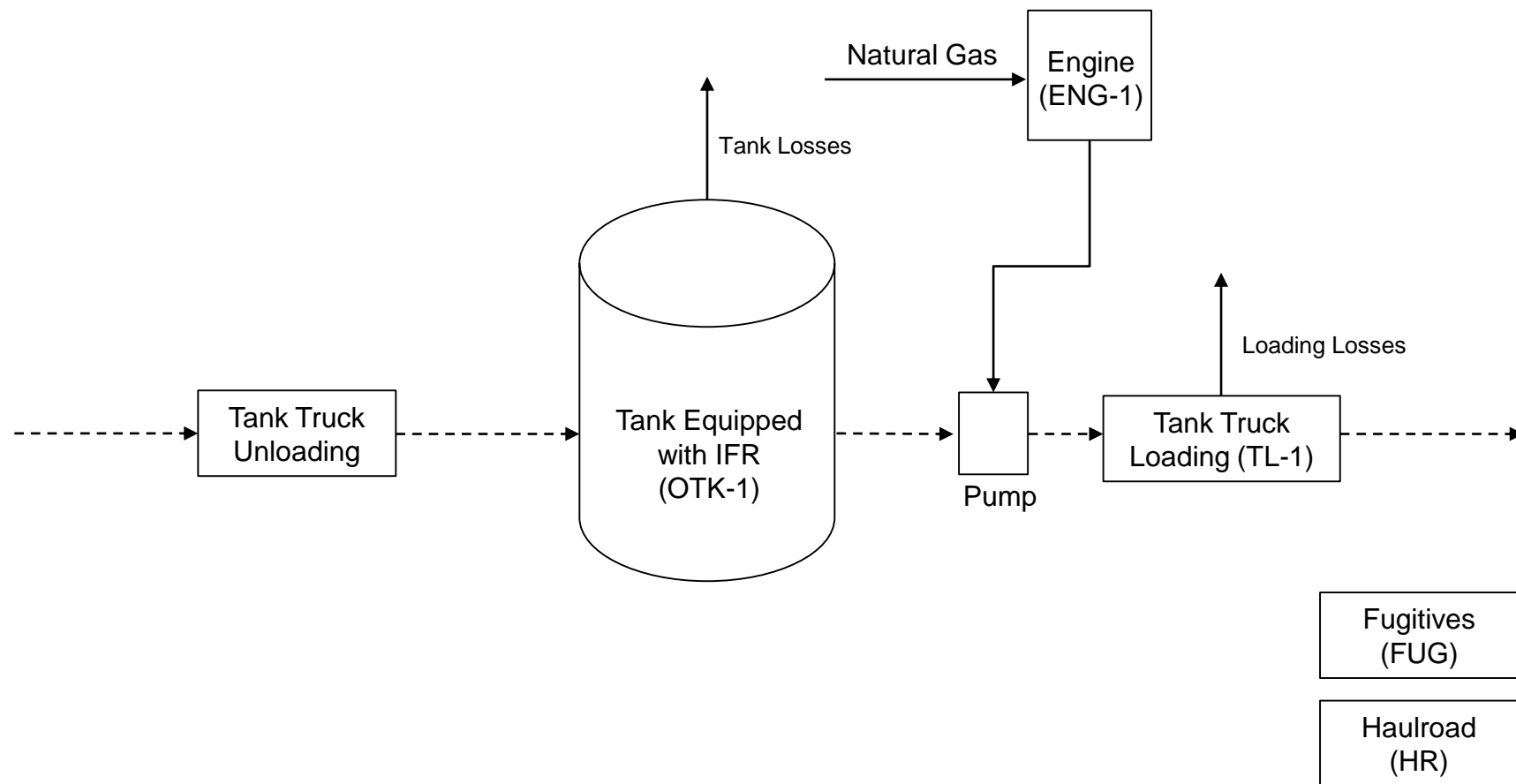


Engine

Loading  
Area

**West Virginia Oil Gathering, LLC.**  
**Nutter (Cairo) Station**  
Attachment E: Plot Plan  
January 2017

## **ATTACHMENT F: PROCESS FLOW DIAGRAM**



———— Gas/Vapor  
 ..... Liquids (Oil)

*Note: The liquids are removed from the facility by pipeline under normal operations and truck loading is only shown as the worst-case scenario.*

**West Virginia Oil Gathering, LLC  
 Nutter (Cairo) Station**  
 Attachment F: Process Flow Diagram  
 January 2017

## **ATTACHMENT G: PROCESS DESCRIPTION**

The Nutter (Cairo) Station receives crude oil from surrounding gas and oil wells via tanker truck and pipeline. The fluids are stored in the 15,000-bbl crude oil storage tank (OTK-1) equipped with an internal floating roof. The 15,000-bbl crude tank, constructed in 2006, is subject to the compliance requirements of NSPS Subpart Kb. There is also one de minimis diesel fuel tank located at the site.

Oil is trucked or piped into the facility at a rate expected not to exceed 5,475,000 barrels per year. Typically, fluids are removed from the facility via pipeline. In the event there is an issue with the pipeline, fluids can be loaded back onto tanker trucks from the tanks (TL-1). Trucks leaving or entering the facility drive on a short haul road (HR).

A natural gas fueled internal combustion engine (ENG-1) is used to supply power to the pump. Since the facility began operation, electrical service has not been completely reliable. Therefore, the natural gas engine is employed as a more reliable power source.

A process flow diagram reflecting facility operations is shown in Attachment F.

## **ATTACHMENT H: MATERIAL SAFETY DATA SHEETS**

### SECTION 1: Identification of the substance/mixture and of the company/undertaking

#### 1.1. Product identifier

Product form : Mixture  
 Product name : Petroleum Crude Oil Solution  
 Other means of identification : Earth oil, petroleum oil, rock oil

#### 1.2. Relevant identified uses of the substance or mixture and uses advised against

Use of the substance/mixture : Fuel

#### 1.3. Details of the supplier of the safety data sheet

Enlink Midstream  
 2501 Cedar Springs Road  
 Suite 100  
 Dallas, TX 75201  
[www.enlink.com](http://www.enlink.com)

#### 1.4. Emergency telephone number

Emergency number : 866-394-9839  
 CHEMTREC: 1-800-824-9300

### SECTION 2: Hazards identification

#### 2.1. Classification of the substance or mixture

##### GHS-US classification

Simple Asphy H380  
 Flam. Liq. 2 H225  
 Skin Irrit. 2 H315  
 Muta. 1B H340  
 Carc. 1A H350  
 Repr. 2 H361  
 STOT SE 3 H336  
 STOT RE 1 H372  
 Asp. Tox. 1 H304  
 Aquatic Acute 2 H401  
 Aquatic Chronic 2 H411

Full text of H-phrases: see section 16

#### 2.2. Label elements

##### GHS-US labelling

Hazard pictograms (GHS-US)



Signal word (GHS-US)

: Danger

Hazard statements (GHS-US)

: H225 - Highly flammable liquid and vapor  
 H304 - May be fatal if swallowed and enters airways  
 H315 - Causes skin irritation  
 H336 - May cause drowsiness or dizziness  
 H340 - May cause genetic defects (Dermal, Inhalation, oral)  
 H350 - May cause cancer (Dermal, Inhalation, oral)  
 H361 - lung/respiratory system, Skin (Dermal, Inhalation)  
 H372 - Causes damage to organs (eye, lung/respiratory system, Skin) through prolonged or repeated exposure (Dermal, Inhalation, oral)  
 H380 - May displace oxygen and cause rapid suffocation  
 H401 - Toxic to aquatic life  
 H411 - Toxic to aquatic life with long lasting effects

Precautionary statements (GHS-US)

: P201 - Obtain special instructions before use  
 P202 - Do not handle until all safety precautions have been read and understood  
 P210 - Keep away from heat, hot surfaces, open flames, sparks. - No smoking  
 P233 - Keep container tightly closed



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P240 - Ground/bond container and receiving equipment  
P241 - Use explosion-proof electrical, ventilating equipment  
P242 - Use only non-sparking tools  
P243 - Take precautionary measures against static discharge  
P260 - Do not breathe vapor, mist, fume  
P261 - Avoid breathing vapor, fume, mist  
P264 - Wash hands, forearms and face, clothing thoroughly after handling  
P270 - Do not eat, drink or smoke when using this product  
P271 - Use only outdoors or in a well-ventilated area  
P273 - Avoid release to the environment  
P280 - Wear protective gloves, protective clothing, eye protection  
P301 + P310 - If swallowed: Immediately call doctor, POISON CENTER  
P302 + P352 - If on skin: Wash with plenty of water  
P303 + P361 + P353 - If on skin (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower  
P304 + P340 - If inhaled: Remove person to fresh air and keep comfortable for breathing  
P308 + P313 - If exposed or concerned: Get medical advice/attention  
P312 - Call doctor, POISON CENTER if you feel unwell  
P314 - Get medical advice/attention if you feel unwell  
P321 - Specific treatment (See Section four (4) of this document on this label)  
P331 - Do NOT induce vomiting  
P332+P313 - If skin irritation occurs: Get medical advice/attention  
P362 - Take off contaminated clothing and wash before reuse  
P370+P378 - In case of fire: Use carbon dioxide (CO<sub>2</sub>), dry extinguishing powder, foam to extinguish  
P391 - Collect spillage  
P403+P233 - Store in a well-ventilated place. Keep container tightly closed  
P403+P235 - Store in a well-ventilated place. Keep cool  
P405 - Store locked up  
P501 - Dispose of contents/container to a licensed hazardous-waste disposal contractor or collection site except for empty clean containers which can be disposed of as non-hazardous waste

### 2.3. Other hazards

Other hazards not contributing to the classification

: Product contains Dimethylpentanes mixture in a weight % ranging from 1-3%. This material can contain toxic levels of hydrogen sulfide vapor that accumulate in the vapor spaces of storage and transport compartments. Hydrogen sulfide vapor can cause eye, skin and respiratory tract irritation.

### 2.4. Unknown acute toxicity (GHS-US)

Not applicable

## SECTION 3: Composition/information on ingredients

### 3.1. Substance

Not applicable

### 3.2. Mixture

Name	Product identifier	%	GHS-US classification
Crude Oil	(CAS No) 8002-05-9	<= 100	Flam. Liq. 2, H225 Aquatic Acute 2, H401
n-decane	(CAS No) 872-05-9	4 - 10	Flam. Liq. 3, H226 Skin Irrit. 2, H315 Asp. Tox. 1, H304
n-Pentane	(CAS No) 109-66-0	2 - 7	Simple Asphy, H380 Flam. Liq. 2, H225 Acute Tox. 4 (Oral), H302 STOT SE 3, H336 Aquatic Acute 2, H401 Aquatic Chronic 2, H411

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Name	Product identifier	%	GHS-US classification
n-Hexane	(CAS No) 110-54-3	1 - 5	Flam. Liq. 2, H225 Skin Irrit. 2, H315 STOT SE 3, H336 STOT RE 2, H373 Asp. Tox. 1, H304 Aquatic Acute 2, H401 Aquatic Chronic 2, H411
n-Heptane	(CAS No) 142-82-5	2 - 5	Flam. Liq. 2, H225 Skin Irrit. 2, H315 STOT SE 3, H336 Asp. Tox. 1, H304 Aquatic Acute 1, H400 Aquatic Chronic 1, H410
Octane	(CAS No) 111-65-9	1 - 5	Flam. Liq. 2, H225 Skin Irrit. 2, H315 STOT SE 3, H336 Asp. Tox. 1, H304 Aquatic Acute 1, H400 Aquatic Chronic 1, H410
Nonane	(CAS No) 111-84-2	1 - 5	Flam. Liq. 3, H226 Acute Tox. 4 (Inhalation:gas), H332 Skin Irrit. 2, H315 STOT SE 3, H336 Asp. Tox. 1, H304 Aquatic Chronic 4, H413
n-Butane	(CAS No) 106-97-8	1 - 5	Simple Asphy, H380 Flam. Gas 1, H220 Liquefied gas, H280
Methylcyclohexane	(CAS No) 108-87-2	1 - 4	Flam. Liq. 2, H225 Skin Irrit. 2, H315 STOT SE 3, H336 Asp. Tox. 1, H304 Aquatic Acute 2, H401 Aquatic Chronic 2, H411
Toluene	(CAS No) 108-88-3	<= 2	Flam. Liq. 2, H225 Skin Irrit. 2, H315 Repr. 2, H361 STOT SE 3, H336 STOT RE 2, H373 Asp. Tox. 1, H304
1,2,4-trimethylbenzene	(CAS No) 95-63-6	<= 2	Flam. Liq. 3, H226 Acute Tox. 4 (Inhalation), H332 Skin Irrit. 2, H315 STOT SE 3, H335 Aquatic Chronic 2, H411
Benzene	(CAS No) 71-43-2	<= 1	Flam. Liq. 2, H225 Skin Irrit. 2, H315 Muta. 1B, H340 Carc. 1A, H350 STOT RE 1, H372 Asp. Tox. 1, H304

Full text of H-phrases: see section 16

## SECTION 4: First aid measures

### 4.1. Description of first aid measures

First-aid measures general	: Ensure that medical personnel are aware of the material(s) involved and take precautions to protect themselves.
First-aid measures after inhalation	: If exposed: Remove person to fresh air. If person is not breathing, provide artificial respiration. If necessary, provide additional oxygen once breathing is restored if trained to do so. Seek medical attention immediately.
First-aid measures after skin contact	: Remove and isolate contaminated clothing and shoes. In case of contact with substance, immediately flush skin or eyes with running water for at least 20 minutes. Wash with plenty of soap and water. In case of burns, immediately cool affected skin for as long as possible with cold water. Do not remove clothing if adhering to skin.
First-aid measures after eye contact	: Flush eyes with lukewarm water for 15 minutes opening and closing eyelids to ensure adequate rinsing. If redness, irritation, pain, or tearing occurs, seek medical attention. Remove contact lenses, if present and easy to do. Continue rinsing.
First-aid measures after ingestion	: Do not induce vomiting because of danger of aspirating liquid into lungs, causing serious damage and chemical pneumonitis. If spontaneous vomiting occurs, keep head below hips to prevent aspiration and monitor for breathing difficulty. Never give anything by mouth to an unconscious person. Keep affected person warm and at rest. Get Immediate Medical Attention.

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### 4.2. Most important symptoms and effects, both acute and delayed

Symptoms/injuries after inhalation	: Volatile components of this product can cause respiratory and nasal irritation, headache, dizziness, drowsiness, nausea and loss of coordination. Significant concentrations of hydrogen sulfide gas can be present in the vapor space of storage tanks and bulk transport compartments. With the loss of highly volatile components, weathered oil does not present an inhalation hazard.
Symptoms/injuries after skin contact	: May cause moderate irritation. Prolonged or repeated exposure can cause dermatitis, folliculitis or oil acne.
Symptoms/injuries after eye contact	: Causes eye irritation.
Symptoms/injuries after ingestion	: Swallowing this material may be harmful. May cause irritation of the mouth, throat and gastrointestinal tract. Symptoms may include salivation, pain, nausea, vomiting and diarrhea. Aspiration into lungs may cause chemical pneumonia and lung damage.

### 4.3. Indication of any immediate medical attention and special treatment needed

No additional information available

## SECTION 5: Firefighting measures

### 5.1. Extinguishing media

Suitable extinguishing media	: For small fires — Class B fire-extinguishing media such as CO <sub>2</sub> , dry chemical, foam (AFFF/ATC) or water spray can be used. Larger fires -water spray, fog or foam (AFFF/ATC) can be used.
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### 5.2. Special hazards arising from the substance or mixture

Fire hazard	: HIGHLY FLAMMABLE: Will be easily ignited by heat, sparks or flames. Vapors may travel to source of ignition and flash back. Most vapor are heavier than air. They will spread along ground and collect in low or confined areas. Runover to sewer may create fire. Many liquids are lighter than water.
Explosion hazard	: Will form explosive mixtures with air. Vapor explosion hazard indoors, outdoors or in sewers. Containers may explode when heated. Runoff to sewer may create fire or explosion hazard.
Reactivity	: Highly flammable liquid and vapor.

### 5.3. Advice for firefighters

Firefighting instructions	: Move containers from fire area if you can do it without risk. Gas fires should not be extinguished unless the gas flow can be stopped immediately. Shut off gas source and allow the fire to burn itself out.
Protection during firefighting	: Wear positive pressure self-contained breathing apparatus (SCBA). Structural firefighters' protective clothing will only provide limited protection. Always wear thermal protective clothing when handling refrigerated/cryogenic liquids.
Other information	: If tank, rail car or tank truck is involved in a fire, ISOLATE for 800 meters (1/2 mile) in all directions; also, consider initial evacuation for 800 meters (1/2 mile) in all directions. Fire involving Tanks or Car/Trailer Loads: Fight fire from maximum distance or use unmanned hose holders or monitor nozzles. Cool containers with flooding quantities of water until well after fire is out. Withdraw immediately in case of rising sound from venting safety devices or discoloration of tank. ALWAYS stay away from tanks engulfed in fire. For massive fire, use unmanned hose holders or monitor nozzles; if this is impossible, withdraw from area and let fire burn.

## SECTION 6: Accidental release measures

### 6.1. Personal precautions, protective equipment and emergency procedures

General measures	: Eliminate every possible source of ignition.
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#### 6.1.1. For non-emergency personnel

Emergency procedures	: Evacuate unnecessary personnel. Large Spill: Consider initial downwind evacuation for at least 300 meters (1000 feet).
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#### 6.1.2. For emergency responders

Protective equipment	: Equip cleanup crew with proper protection.
Emergency procedures	: As an immediate precautionary measure, isolate spill or leak area for at least 50 meters (150 feet) in all. Keep unauthorized personnel away. Stay upwind. Keep out of low areas. Ventilate closed spaces before entering.

### 6.2. Environmental precautions

Avoid contact of spilled material with soil and prevent runoff entering surface waterways. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil or air). Toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.

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### 6.3. Methods and material for containment and cleaning up

- For containment : ELIMINATE all ignition sources (no smoking, flares, sparks or flames in immediate area). All equipment used when handling the product must be grounded. Do not touch or walk through spilled material. Stop leak if you can do it without risk. If possible, turn leaking containers so that gas escapes rather than liquid. Use water spray to reduce vapor or divert vapor cloud drift. Avoid allowing water runoff to contact spilled.
- Methods for cleaning up : Large Spill: Dike far ahead of liquid spill for later disposal. Water spray may reduce vapor; but may not prevent ignition in closed spaces. Prevent entry into waterways, sewers, basements or confined areas.

## SECTION 7: Handling and storage

### 7.1. Precautions for safe handling

- Additional hazards when processed : In use, may form flammable vapor-air mixture. Keep away from heats; sparks open flames, hot surfaces. - No smoking. Do not pressurize, cut, or weld containers. Handle empty containers with care because residual vapor are flammable.
- Precautions for safe handling : Avoid contact with skin, eyes and clothing. Earth all parts which can be electrically charged. Prevent the build-up of electrostatic charge.
- Hygiene measures : Practice good housekeeping. Wash thoroughly after handling. Change contaminated clothing. Do not reuse until laundered.

### 7.2. Conditions for safe storage, including any incompatibilities

- Technical measures : Ground/bond container and receiving equipment. Store in a segregated, approved and labelled area. Ensure effective ventilation. Vent waste air only via suitable separators or scrubbers. Take precautionary measures against electrostatic discharges.
- Storage conditions : Keep away from heat, sparks and flame surfaces. Keep container tightly closed in a dry and well-ventilated place. Proper grounding procedures to avoid static electricity should be followed. OSHA requires cylinder storage be segregated from oxidizers and other combustible materials by a distance of at least 30 feet.
- Incompatible products : Store away from strong oxidizing materials. Strong acids. Strong bases.
- Incompatible materials : Sources of ignition. Heat sources.

### 7.3. Specific end use(s)

- Use of the substance/mixture : Fuel

## SECTION 8: Exposure controls/personal protection

### 8.1. Control parameters

n-Hexane (110-54-3)		
ACGIH	ACGIH TWA (mg/m <sup>3</sup> )	176 mg/m <sup>3</sup>
ACGIH	ACGIH TWA (ppm)	50 ppm
ACGIH	Remark (ACGIH)	CNS impair; peripheral
OSHA	OSHA PEL (TWA) (mg/m <sup>3</sup> )	1800 mg/m <sup>3</sup>
OSHA	OSHA PEL (TWA) (ppm)	500 ppm

n-Pentane (109-66-0)		
ACGIH	ACGIH TWA (ppm)	1000 ppm
OSHA	OSHA PEL (TWA) (mg/m <sup>3</sup> )	2950 mg/m <sup>3</sup>
OSHA	OSHA PEL (TWA) (ppm)	1000 ppm

Toluene (108-88-3)		
ACGIH	ACGIH TWA (ppm)	20 ppm
ACGIH	Remark (ACGIH)	Visual impair; female repro;
OSHA	OSHA PEL (TWA) (ppm)	200 ppm
OSHA	OSHA PEL (Ceiling) (ppm)	300 ppm
OSHA	Remark (US OSHA)	(2) See Table Z-2.

n-Heptane (142-82-5)		
ACGIH	ACGIH TWA (ppm)	400 ppm

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<b>n-Heptane (142-82-5)</b>		
OSHA	OSHA PEL (TWA) (mg/m³)	2000 mg/m³
OSHA	OSHA PEL (TWA) (ppm)	500 ppm

<b>Octane (111-65-9)</b>		
ACGIH	ACGIH TWA (ppm)	300 ppm
ACGIH	Remark (ACGIH)	URT irr
OSHA	OSHA PEL (TWA) (mg/m³)	2350 mg/m³
OSHA	OSHA PEL (TWA) (ppm)	500 ppm

<b>Nonane (111-84-2)</b>		
ACGIH	ACGIH TWA (ppm)	200 ppm
ACGIH	Remark (ACGIH)	CNS impair
OSHA	Not applicable	

<b>n-Butane (106-97-8)</b>		
ACGIH	ACGIH STEL (ppm)	1000 ppm
OSHA	Not applicable	

<b>Methylcyclohexane (108-87-2)</b>		
ACGIH	ACGIH TWA (ppm)	400 ppm
ACGIH	Remark (ACGIH)	URT irr; CNS impair; liver & kidney
OSHA	OSHA PEL (TWA) (mg/m³)	2000 mg/m³
OSHA	OSHA PEL (TWA) (ppm)	500 ppm

<b>1,2,4-trimethylbenzene (95-63-6)</b>		
ACGIH	ACGIH TWA (mg/m³)	123 mg/m³
ACGIH	ACGIH TWA (ppm)	25 ppm
OSHA	Not applicable	

<b>Benzene (71-43-2)</b>		
ACGIH	ACGIH TWA (mg/m³)	1.6 mg/m³
ACGIH	ACGIH TWA (ppm)	0.50 ppm
ACGIH	ACGIH STEL (mg/m³)	8 mg/m³
ACGIH	ACGIH STEL (ppm)	2.5 ppm
ACGIH	Remark (ACGIH)	Leukemia
OSHA	OSHA PEL (TWA) (ppm)	1 ppm (See 29 CFR 1910.1028) OSHA AL 0.5 ppm TWA
OSHA	OSHA PEL (STEL) (ppm)	5 ppm
OSHA	Remark (US OSHA)	Engineering and work practice controls shall be used to keep exposures below 10 ppm unless it is proven to be not feasible.

<b>n-Decane (872-05-9)</b>		
ACGIH	Not applicable	
OSHA	Not applicable	

<b>Crude Oil (8002-05-9)</b>		
ACGIH	Not applicable	
OSHA	OSHA PEL (TWA) (mg/m³)	2000 mg/m³
OSHA	OSHA PEL (TWA) (ppm)	500 ppm

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### 8.2. Exposure controls

Appropriate engineering controls	: Emergency eye wash fountains and safety showers should be available in the immediate vicinity of any potential exposure. Ensure good ventilation of the work station.
Materials for protective clothing	: Nitrile. Butyl Rubber. Neoprene.
Hand protection	: Chemical-resistant, impervious gloves complying with an approved standard should be worn at all times when handling chemical.
Eye protection	: Use safety glasses and/or full face shield where splashing is possible. Maintain eye wash fountain in work area.
Skin and body protection	: Nitrile rubber gloves.
Respiratory protection	: If exposure limits are exceeded or irritation is experienced, NIOSH approved respiratory protection should be worn.

## SECTION 9: Physical and chemical properties

### 9.1. Information on basic physical and chemical properties

Physical state	: Liquid
Appearance	: Viscous liquid/semi-solid.
Color	: Black;Yellow;Dark green
Odor	: Hydrocarbon
Odor threshold	: No data available
pH	: No data available
Relative evaporation rate (butylacetate=1)	: No data available
Melting point	: No data available
Freezing point	: No data available
Boiling point	: 37.7 - 537.7 °C (100 to 1000°F)
Flash point	: 15.5 - 93.3 °C (60-200°F)
Auto-ignition temperature	: >= 260 °C (500°F)
Decomposition temperature	: No data available
Flammability (solid, gas)	: No data available
Vapor pressure	: <= 724 (0 - 0) mm Hg (at 100°F) (13.9 psi)
Relative vapor density at 20 °C	: 1.5 - 3 (AIR=1)
Relative density	: 0.7 - 1
Density	: 6.6 - 8.2 (Pounds/gallon)
Solubility	: No data available
Log Pow	: No data available
Log Kow	: No data available
Viscosity, kinematic	: No data available
Viscosity, dynamic	: No data available
Explosive properties	: No data available
Oxidising properties	: No data available
Explosive limits	: No data available

## SECTION 10: Stability and reactivity

### 10.1. Reactivity

Highly flammable liquid and vapor.

### 10.2. Chemical stability

Stable at normal temperatures and pressure.

### 10.3. Possibility of hazardous reactions

Hazardous polymerization will not occur.

### 10.4. Conditions to avoid

Heat, sparks, open flame, and other ignition sources.

### 10.5. Incompatible materials

Strong Oxidizers, i.e. chlorates, bromates, peroxides, nitrates, halons.

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### 10.6. Hazardous decomposition products

Combustion may produce carbon monoxide and other harmful substances.

## SECTION 11: Toxicological information

### 11.1. Information on toxicological effects

Acute toxicity : Not classified

<b>n-Hexane (110-54-3)</b>	
LD50 oral rat	25 g/kg Industrial Health. Vol. 32, Pg. 145, 1994.
LC50 inhalation rat (ppm)	48000 ppm/4h

<b>n-Pentane (109-66-0)</b>	
LD50 oral rat	400 mg/kg National Technical Information Service. Vol. OTS0556690,

<b>n-Heptane (142-82-5)</b>	
LC50 inhalation rat (ppm)	25131 ppm/4h (103gm/m <sup>3</sup> /4H ) Gigiena Truda i Professional'nye Zabolevaniya. Labor Hygiene and Occupational Diseases. Vol. 32(10), Pg. 23, 1988.

<b>Octane (111-65-9)</b>	
LC50 inhalation rat (ppm)	25257 ppm/4h (118 g/m <sup>3</sup> ) Gigiena Truda i Professional'nye Zabolevaniya. Labor Hygiene and Occupational Diseases. Vol. 32(10), Pg. 23, 1988.

<b>Nonane (111-84-2)</b>	
LC50 inhalation rat (ppm)	3200 ppm/4h Toxicology and Applied Pharmacology. Vol. 44, Pg. 53, 1978.

<b>n-Butane (106-97-8)</b>	
LC50 inhalation rat (mg/l)	658 mg/l/4h Farmakologiya i Toksikologiya Vol. 30, Pg. 102, 1967.

<b>Methylcyclohexane (108-87-2)</b>	
LD50 oral rat	> 3200 mg/kg National Technical Information Service. Vol. OTS0556685
LC50 inhalation rat (ppm)	82 ppm/1h National Technical Information Service. Vol. OTS0556685

<b>Benzene (71-43-2)</b>	
LD50 oral rat	930 mg/kg
LD50 dermal rabbit	> 9400 µl/kg
LC50 inhalation rat (ppm)	5714 ppm/4h

<b>n-Decane (872-05-9)</b>	
LD50 oral rat	> 10000 mg/kg National Technical Information Service. Vol. OTS0535205,
LD50 dermal rabbit	> 10000 mg/kg National Technical Information Service. Vol. OTS0535205

<b>Crude Oil (8002-05-9)</b>	
LD50 oral rat	> 4300 mg/kg

Skin corrosion/irritation : Causes skin irritation.  
Serious eye damage/irritation : Not classified  
Respiratory or skin sensitisation : Not classified  
Germ cell mutagenicity : May cause genetic defects (Dermal, Inhalation, oral).  
Carcinogenicity : May cause cancer (Dermal, Inhalation, oral).

<b>Toluene (108-88-3)</b>	
IARC group	3 - Not classifiable

<b>Benzene (71-43-2)</b>	
IARC group	1 - Carcinogenic to humans
National Toxicology Program (NTP) Status	2 - Known Human Carcinogens

<b>Crude Oil (8002-05-9)</b>	
IARC group	3 - Not classifiable

Reproductive toxicity : lung/respiratory system, Skin (Dermal, Inhalation).

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Specific target organ toxicity (single exposure)	: May cause drowsiness or dizziness.
Specific target organ toxicity (repeated exposure)	: Causes damage to organs (eye, lung/respiratory system, Skin) through prolonged or repeated exposure (Dermal, Inhalation, oral).
Aspiration hazard	: May be fatal if swallowed and enters airways.
Symptoms/injuries after inhalation	: Volatile components of this product can cause respiratory and nasal irritation, headache, dizziness, drowsiness, nausea and loss of coordination. Significant concentrations of hydrogen sulfide gas can be present in the vapor space of storage tanks and bulk transport compartments. With the loss of highly volatile components, weathered oil does not present an inhalation hazard.
Symptoms/injuries after skin contact	: May cause moderate irritation. Prolonged or repeated exposure can cause dermatitis, folliculitis or oil acne.
Symptoms/injuries after eye contact	: Causes eye irritation.
Symptoms/injuries after ingestion	: Swallowing this material may be harmful. May cause irritation of the mouth, throat and gastrointestinal tract. Symptoms may include salivation, pain, nausea, vomiting and diarrhea. Aspiration into lungs may cause chemical pneumonia and lung damage.

## SECTION 12: Ecological information

### 12.1. Toxicity

Ecology - general	: The product can cause fouling of shoreline and may be harmful to aquatic life in low concentrations.
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n-Hexane (110-54-3)	
LC50 fishes	2500 (≤ 113) µg/l 96 hr Fathead minnow (pimephales promelas)

n-Pentane (109-66-0)	
LC50 fishes	9.87 mg/l mg/l (Exposure time: 96 h - Species: Oncorhynchus mykiss)
EC50 Daphnia	9.74 mg/l mg/l (Exposure time: 48 h - Species: Daphnia magna)
LC50 fish	11.59 mg/l mg/l (Exposure time: 96 h - Species: Pimephales promelas)

n-Heptane (142-82-5)	
LC50 fishes	375 mg/l Ghatak, D.B., M.M. Hossain, and S.K. Konar 1988. Acute Toxicity of n-Heptane and n-Hexane on Worm and Fish. Environ.Ecol. 6(4):943-947

Octane (111-65-9)	
EC50 other aquatic organisms	0.38 Species: water flea)

methylcyclohexane (108-87-2)	
LC50 fishes	5.8 (5.8 - 181000) mg/l

Crude Oil (8002-05-9)	
LC50 fishes	3 mg/l Mayer, F.L.Jr., and M.R. Ellersieck 1986. Manual of Acute Toxicity: Interpretation and Data Base for 410 Chemicals and 66 Species of Freshwater Animals. Resour.Publ.No.160, U.S.Dep.Interior, Fish Wildl.Serv., Washington, DC :505 p. (USGS Data File); Moles, A., S.D. Rice, and S. Korn 1979. Sensitivity of Alaskan Freshwater and Anadromous Fishes to Prudhoe Bay Crude Oil and Benzene. Trans.Am.Fish.Soc. 108(4):408-414
EC50 Daphnia	5.3 ml/l MacLean, M.M., and K.G. Doe 1989. The Comparative Toxicity of Crude and Refined Oils to Daphnia magna and Artemia. Environment Canada, EE-111, Dartmouth, Nova Scotia :64 p.
EC50 Daphnia	1.65 mg/l MacLean, M.M., and K.G. Doe 1989. The Comparative Toxicity of Crude and Refined Oils to Daphnia magna and Artemia. Environment Canada, EE-111, Dartmouth, Nova Scotia :64 p.

### 12.2. Persistence and degradability

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Persistence and degradability	Not established.



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### 12.3. Bioaccumulative potential

Petroleum Crude Oil Solution	
Bioaccumulative potential	This product is not expected to bioaccumulate.
n-Pentane (109-66-0)	
Log Pow	3.39
n-Butane (106-97-8)	
Log Pow	2.89

### 12.4. Mobility in soil

No additional information available

### 12.5. Other adverse effects

Effect on the global warming : No known ecological damage caused by this product.

## SECTION 13: Disposal considerations

### 13.1. Waste treatment methods

Waste disposal recommendations : This product as produced is not specifically listed as an EPA RCRA hazardous waste according to federal regulations (40 CFR 261). However, when discarded or disposed of, it may meet the criteria of a "characteristic" hazardous waste. This product could also contain benzene at >0.5ppm and could exhibit the characteristics of "toxicity" (D018) as determined by the toxicity characteristic leaching procedure (TCLP). This material could become a hazardous waste if mixed or contaminated with hazardous waste or other substance(s). It is the responsibility of the user to determine if disposal material is hazardous according to federal, state and local regulations.

## SECTION 14: Transport information

In accordance with DOT

Transport document description : UN1267 Petroleum crude oil, 3, III  
UN-No.(DOT) : UN1267  
Proper Shipping Name (DOT) : Petroleum crude oil  
Department of Transportation (DOT) Hazard Classes : 3 - Class 3 - Flammable and combustible liquid 49 CFR 173.120  
Hazard labels (DOT) : 3 - Flammable liquid



Packing group (DOT) : III - Minor Danger

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DOT Special Provisions (49 CFR 172.102)	: 144 - If transported as a residue in an underground storage tank (UST), as defined in 40 CFR 280.12, that has been cleaned and purged or rendered inert according to the American Petroleum Institute (API) Standard 1604 (IBR, see 171.7 of this subchapter), then the tank and this material are not subject to any other requirements of this subchapter. However, sediments remaining in the tank that meet the definition for a hazardous material are subject to the applicable regulations of this subchapter. 357 - A bulk packaging that emits hydrogen sulfide in sufficient concentration that vapor evolved from the crude oil can present an inhalation hazard must be marked as specified in §172.327 of this part. IB2 - Authorized IBCs: Metal (31A, 31B and 31N); Rigid plastics (31H1 and 31H2); Composite (31HZ1). Additional Requirement: Only liquids with a vapor pressure less than or equal to 110 kPa at 50 C (1.1 bar at 122 F), or 130 kPa at 55 C (1.3 bar at 131 F) are authorized. T4 - 2.65 178.274(d)(2) Normal..... 178.275(d)(3) TP1 - The maximum degree of filling must not exceed the degree of filling determined by the following: Degree of filling = $97 / (1 + a (t_r - t_f))$ Where: $t_r$ is the maximum mean bulk temperature during transport, and $t_f$ is the temperature in degrees celsius of the liquid during filling. TP8 - A portable tank having a minimum test pressure of 1.5 bar (150 kPa) may be used when the flash point of the hazardous material transported is greater than 0 C (32 F).
DOT Packaging Exceptions (49 CFR 173.xxx)	: 150
DOT Packaging Non Bulk (49 CFR 173.xxx)	: 202
DOT Packaging Bulk (49 CFR 173.xxx)	: 242
DOT Quantity Limitations Passenger aircraft/rail (49 CFR 173.27)	: 5 L
DOT Quantity Limitations Cargo aircraft only (49 CFR 175.75)	: 60 L
DOT Vessel Stowage Location	: B - (i) The material may be stowed "on deck" or "under deck" on a cargo vessel and on a passenger vessel carrying a number of passengers limited to not more than the larger of 25 passengers, or one passenger per each 3 m of overall vessel length; and (ii) "On deck only" on passenger vessels in which the number of passengers specified in paragraph (k)(2)(i) of this section is exceeded.

### Additional information

Other information	: No supplementary information available.
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### ADR

No additional information available

### Transport by sea

UN-No. (IMDG)	: 1267
Proper Shipping Name (IMDG)	: PETROLEUM CRUDE OIL
Class (IMDG)	: 3 - Flammable liquids
Packing group (IMDG)	: III - substances presenting low danger

### Air transport

No additional information available

## SECTION 15: Regulatory information

### 15.1. US Federal regulations

<b>Petroleum Crude Oil Solution</b>	
Not listed on the United States TSCA (Toxic Substances Control Act) inventory	
<b>n-Hexane (110-54-3)</b>	
Listed on the United States TSCA (Toxic Substances Control Act) inventory Listed on United States SARA Section 313	
RQ (Reportable quantity, section 304 of EPA's List of Lists) :	5000 lb
<b>Pentane (as n-pentane) (109-66-0)</b>	
Listed on the United States TSCA (Toxic Substances Control Act) inventory Not listed on the United States SARA Section 313	

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<b>Toluene (108-88-3)</b>	
Listed on the United States TSCA (Toxic Substances Control Act) inventory	
Listed on United States SARA Section 313	
RQ (Reportable quantity, section 304 of EPA's List of Lists) :	1000 lb
<b>n-Heptane (142-82-5)</b>	
Listed on the United States TSCA (Toxic Substances Control Act) inventory	
<b>Octane (111-65-9)</b>	
Listed on the United States TSCA (Toxic Substances Control Act) inventory	
<b>Nonane (111-84-2)</b>	
Listed on the United States TSCA (Toxic Substances Control Act) inventory	
<b>n-Butane (106-97-8)</b>	
Listed on the United States TSCA (Toxic Substances Control Act) inventory	
Not listed on the United States SARA Section 313	
<b>methylcyclohexane (108-87-2)</b>	
Listed on the United States TSCA (Toxic Substances Control Act) inventory	
<b>1,2,4-trimethylbenzene (95-63-6)</b>	
Listed on the United States TSCA (Toxic Substances Control Act) inventory	
Listed on United States SARA Section 313	
<b>Benzene (71-43-2)</b>	
Listed on the United States TSCA (Toxic Substances Control Act) inventory	
Listed on United States SARA Section 313	
Not listed on the United States SARA Section 313	
RQ (Reportable quantity, section 304 of EPA's List of Lists) :	10 lb
<b>n-decane (872-05-9)</b>	
Listed on the United States TSCA (Toxic Substances Control Act) inventory	
<b>Crude Oil (8002-05-9)</b>	
Listed on the United States TSCA (Toxic Substances Control Act) inventory	

### 15.2. International regulations

#### CANADA

No additional information available

#### EU-Regulations

No additional information available

#### Classification according to Regulation (EC) No. 1272/2008 [CLP]

#### Classification according to Directive 67/548/EEC [DSD] or 1999/45/EC [DPD]

Not classified

#### 15.2.2. National regulations

<b>Benzene (71-43-2)</b>	
Listed on IARC (International Agency for Research on Cancer)	
Listed as carcinogen on NTP (National Toxicology Program)	

### 15.3. US State regulations

# Petroleum Crude Oil Solution

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<b>Toluene (108-88-3)</b>				
U.S. - California - Proposition 65 - Carcinogens List	U.S. - California - Proposition 65 - Developmental Toxicity	U.S. - California - Proposition 65 - Reproductive Toxicity - Female	U.S. - California - Proposition 65 - Reproductive Toxicity - Male	No significance risk level (NSRL)
No	Yes	Yes	Yes	

<b>Benzene (71-43-2)</b>				
U.S. - California - Proposition 65 - Carcinogens List	U.S. - California - Proposition 65 - Developmental Toxicity	U.S. - California - Proposition 65 - Reproductive Toxicity - Female	U.S. - California - Proposition 65 - Reproductive Toxicity - Male	No significance risk level (NSRL)
Yes	Yes	No	Yes	

<b>n-Hexane (110-54-3)</b>				
U.S. - Delaware - Pollutant Discharge Requirements - Reportable Quantities U.S. - Idaho - Non-Carcinogenic Toxic Air Pollutants - Acceptable Ambient Concentrations U.S. - Maine - Air Pollutants - Hazardous Air Pollutants U.S. - Massachusetts - Right To Know List U.S. - New Jersey - Right to Know Hazardous Substance List U.S. - New York - Reporting of Releases Part 597 - List of Hazardous Substances U.S. - Pennsylvania - RTK (Right to Know) List				

<b>Pentane (as n-pentane) (109-66-0)</b>				
U.S. - Idaho - Non-Carcinogenic Toxic Air Pollutants - Acceptable Ambient Concentrations U.S. - New Jersey - Right to Know Hazardous Substance List U.S. - New York - Reporting of Releases Part 597 - List of Hazardous Substances				

<b>Toluene (108-88-3)</b>				
U.S. - Maine - Air Pollutants - Hazardous Air Pollutants U.S. - Massachusetts - Right To Know List U.S. - Michigan - Critical Materials List U.S. - New Jersey - Right to Know Hazardous Substance List U.S. - New York - Reporting of Releases Part 597 - List of Hazardous Substances U.S. - Pennsylvania - RTK (Right to Know) List				

<b>n-Heptane (142-82-5)</b>				
U.S. - Idaho - Non-Carcinogenic Toxic Air Pollutants - Acceptable Ambient Concentrations U.S. - New Jersey - Right to Know Hazardous Substance List U.S. - New York - Reporting of Releases Part 597 - List of Hazardous Substances				

<b>Octane (111-65-9)</b>				
U.S. - Idaho - Non-Carcinogenic Toxic Air Pollutants - Acceptable Ambient Concentrations U.S. - New Jersey - Right to Know Hazardous Substance List U.S. - New York - Reporting of Releases Part 597 - List of Hazardous Substances				

<b>Nonane (111-84-2)</b>				
U.S. - Idaho - Non-Carcinogenic Toxic Air Pollutants - Acceptable Ambient Concentrations U.S. - New Jersey - Right to Know Hazardous Substance List U.S. - New York - Reporting of Releases Part 597 - List of Hazardous Substances				

<b>n-Butane (106-97-8)</b>				
U.S. - New Jersey - Right to Know Hazardous Substance List U.S. - New York - Reporting of Releases Part 597 - List of Hazardous Substances				

<b>methylcyclohexane (108-87-2)</b>				
U.S. - Idaho - Non-Carcinogenic Toxic Air Pollutants - Acceptable Ambient Concentrations U.S. - New Jersey - Right to Know Hazardous Substance List U.S. - New York - Reporting of Releases Part 597 - List of Hazardous Substances				

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### 1,2,4-trimethylbenzene (95-63-6)

U.S. - New Jersey - Right to Know Hazardous Substance List  
U.S. - New York - Reporting of Releases Part 597 - List of Hazardous Substances

### Crude Oil (8002-05-9)

U.S. - New Jersey - Right to Know Hazardous Substance List  
U.S. - New York - Reporting of Releases Part 597 - List of Hazardous Substances

## SECTION 16: Other information

Revision date : 07/14/2015

Full text of H-phrases::

Acute Tox. 4 (Inhalation)	Acute toxicity (inhal.), Category 4
Acute Tox. 4 (Inhalation:gas)	Acute toxicity (inhalation:gas) Category 4
Acute Tox. 4 (Oral)	Acute toxicity (oral), Category 4
Aquatic Acute 1	Hazardous to the aquatic environment — Acute Hazard, Category 1
Aquatic Acute 2	Hazardous to the aquatic environment — Acute Hazard, Category 2
Aquatic Chronic 1	Hazardous to the aquatic environment — Chronic Hazard, Category 1
Aquatic Chronic 2	Hazardous to the aquatic environment — Chronic Hazard, Category 2
Aquatic Chronic 4	Hazardous to the aquatic environment — Chronic Hazard, Category 4
Asp. Tox. 1	Aspiration hazard, Category 1
Carc. 1A	Carcinogenicity, Category 1A
Flam. Gas 1	Flammable gases, Category 1
Flam. Liq. 2	Flammable liquids, Category 2
Flam. Liq. 3	Flammable liquids, Category 3
Liquefied gas	Gases under pressure : Liquefied gas
Muta. 1B	Germ cell mutagenicity, Category 1B
Repr. 2	Reproductive toxicity, Category 2
Simple Asphy	Simple Asphyxiant
Skin Irrit. 2	Skin corrosion/irritation, Category 2
STOT RE 1	Specific target organ toxicity — Repeated exposure, Category 1
STOT RE 2	Specific target organ toxicity — Repeated exposure, Category 2
STOT SE 3	Specific target organ toxicity — Single exposure, Category 3, Narcosis
STOT SE 3	Specific target organ toxicity — Single exposure, Category 3, Respiratory tract irritation
H220	Extremely flammable gas
H225	Highly flammable liquid and vapor
H226	Flammable liquid and vapor
H280	Contains gas under pressure; may explode if heated
H302	Harmful if swallowed
H304	May be fatal if swallowed and enters airways
H315	Causes skin irritation
H332	Harmful if inhaled

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Full text of H-phrases::

H335	May cause respiratory irritation
H336	May cause drowsiness or dizziness
H340	May cause genetic defects
H350	May cause cancer
H361	Suspected of damaging fertility or the unborn child
H372	Causes damage to organs through prolonged or repeated exposure
H373	May cause damage to organs through prolonged or repeated exposure
H380	May displace oxygen and cause rapid suffocation
H400	Very toxic to aquatic life
H401	Toxic to aquatic life
H410	Very toxic to aquatic life with long lasting effects
H411	Toxic to aquatic life with long lasting effects
H413	May cause long lasting harmful effects to aquatic life

NFPA health hazard

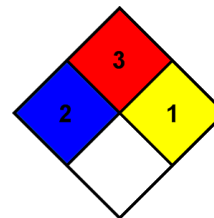
: 2 - Intense or continued exposure could cause temporary incapacitation or possible residual injury unless prompt medical attention is given.

NFPA fire hazard

: 3 - Liquids and solids that can be ignited under almost all ambient conditions.

NFPA reactivity

: 1 - Normally stable, but can become unstable at elevated temperatures and pressures or may react with water with some release of energy, but not violently.



HMIS III Rating

Health

: 2 Moderate Hazard - Temporary or minor injury may occur

Flammability

: 3 Serious Hazard

Physical

: 1 Slight Hazard

SDS US (GHS HazCom 2012)

*The information and recommendations contained herein are based upon tests, data, and information resources believed to be reliable. However, EnLink Midstream, L.P., and its related operations or divisions (EnLink) do not guarantee the accuracy or completeness, nor shall any of this information constitute a warranty, whether expressed or implied, as to the safety of goods, the merchantability of the goods or the fitness of the goods for a particular purpose. Adjustment to conform to actual conditions of usage may be required. EnLink assumes no responsibility for results obtained or for incidental or consequential damages, including lost profits, arising from the use of this data. No warranty against infringement of any patent, copyright or trademark is made or implied*

**ATTACHMENT I: EMISSION UNITS TABLE**

## 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 <sup>1</sup>	Emission Point ID <sup>2</sup>	Emission Unit Description	Year Installed/ Modified	Design Capacity	Type <sup>3</sup> and Date of Change	Control Device <sup>4</sup>
ENG-1	ENG-1	Natural Gas Engine	2008	188-hp	N/A	NSCR
OTK-1	OTK-1	Crude Oil Storage Tank	2006	15,000-bbl	N/A	Internal Floating Roof
TL-1	TL-1	Crude Oil Truck Loading	N/A	229,950,000 gal/yr	N/A	N/A
FUG	FUG	Fugitive Emissions	N/A	N/A	N/A	N/A
HR	HR	Fugitive Haulroad Emissions	N/A	N/A	N/A	N/A

<sup>1</sup> For Emission Units (or Sources) use the following numbering system: 1S, 2S, 3S,... or other appropriate designation.

<sup>2</sup> For Emission Points use the following numbering system: 1E, 2E, 3E, ... or other appropriate designation.

<sup>3</sup> New, modification, removal

<sup>4</sup> For Control Devices use the following numbering system: 1C, 2C, 3C,... or other appropriate designation.



**ATTACHMENT J: EMISSION POINTS DATA SUMMARY SHEET**

**Attachment J**  
**EMISSION POINTS DATA SUMMARY SHEET**

Table 1: Emissions Data															
Emission Point ID No. <i>(Must match Emission Units Table &amp; Plot Plan)</i>	Emission Point Type <sup>1</sup>	Emission Unit Vented Through This Point <i>(Must match Emission Units Table &amp; Plot Plan)</i>		Air Pollution Control Device <i>(Must match Emission Units Table &amp; Plot Plan)</i>		Vent Time for Emission Unit <i>(chemical processes only)</i>		All Regulated Pollutants - Chemical Name/CAS <sup>3</sup>  <i>(Speciate VOCs &amp; HAPS)</i>	Maximum Potential Uncontrolled Emissions <sup>4</sup>		Maximum Potential Controlled Emissions <sup>5</sup>		Emission Form or Phase  <i>(At exit conditions, Solid, Liquid or Gas/Vapor)</i>	Est. Method Used <sup>6</sup>	Emission Concentration <sup>7</sup> (ppmv or mg/m <sup>4</sup> )
		ID No.	Source	ID No.	Device Type	Short Term <sup>2</sup>	Max (hr/yr)		lb/hr	ton/yr	lb/hr	ton/yr			
ENG-1	Vertical stack	ENG-1	Natural Gas Engine	-	NSCR	N/A	N/A	NOx CO VOC SO <sub>2</sub> PM Formaldehyde n-Hexane Benzene Toluene Ethylbenzene Xylenes Carbon Dioxide Methane	2.45 11.07 0.79 <0.01 0.03 0.03 - <0.01 <0.01 <0.01 <0.01 <0.01 189.24 <0.01	10.71 48.47 3.45 <0.01 0.14 0.15 - 0.01 <0.01 <0.01 <0.01 <0.01 828.86 <0.01	0.83 1.66 0.41 <0.01 0.03 0.03 - <0.01 <0.01 <0.01 <0.01 <0.01 189.24 <0.01	3.63 7.26 1.82 <0.01 0.14 0.15 - 0.01 <0.01 <0.01 <0.01 <0.01 828.86 <0.01	Gas/Vapor	O (Manufacturer Data and AP-42)	N/A
OTK-1	Tank vent	OTK-1	Crude Oil Storage Tank	-	Internal Floating Roof	N/A	N/A	VOC n-Hexane Benzene Toluene Ethylbenzene Xylenes	1.08 0.02 0.01 0.01 <0.01 0.01	4.72 0.08 0.04 0.06 <0.01 0.02	N/A	N/A	Gas/Vapor	O (EPA TANKS 4.0.9d)	N/A
TL-1	Fugitive	TL-1	Crude Oil Truck Loading	-	None	N/A	N/A	VOC n-Hexane Benzene Toluene Ethylbenzene Xylenes Carbon Dioxide Methane	N/A	2.25 0.04 0.02 0.03 <0.01 0.01 0.02 0.31	N/A	N/A	Gas/Vapor	O (AP-42)	N/A
FUG	Fugitive	FUG	Fugitive Components	-	None	N/A	N/A	VOC	N/A	0.59	N/A	N/A	Gas/Vapor	O (EPA-453/R-95-017)	N/A

HR	Fugitive	HR	Fugitive Haul Road Emissions	-	None	N/A	N/A	PM <sub>Total</sub> PM <sub>10</sub> PM <sub>2.5</sub>	2.24 0.65 0.07	9.80 2.83 0.29	N/A	N/A	Gas/Vapor	O (AP-42)	N/A
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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.

<sup>1</sup> Please add descriptors such as upward vertical stack, downward vertical stack, horizontal stack, relief vent, rain cap, etc.

<sup>2</sup> 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).

<sup>3</sup> List all regulated air pollutants. Speciate VOCs, including all HAPs. Follow chemical name with Chemical Abstracts Service (CAS) number. **LIST** Acids, CO, CS<sub>2</sub>, VOCs, H<sub>2</sub>S, Inorganics, Lead, Organics, O<sub>3</sub>, NO, NO<sub>2</sub>, SO<sub>2</sub>, SO<sub>3</sub>, all applicable Greenhouse Gases (including CO<sub>2</sub> and methane), etc. **DO NOT LIST** H<sub>2</sub>, H<sub>2</sub>O, N<sub>2</sub>, O<sub>2</sub>, and Noble Gases.

<sup>4</sup> 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).

<sup>5</sup> 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).

<sup>6</sup> 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).

<sup>7</sup> 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<sup>3</sup>) at standard conditions (68 °F and 29.92 inches Hg) (see 45CSR7). If the pollutant is SO<sub>2</sub>, use units of ppmv (See 45CSR10).

**Attachment J**  
**EMISSION POINTS DATA SUMMARY SHEET**

Table 2: Release Parameter Data								
Emission Point ID No. <i>(Must match Emission Units Table)</i>	Inner Diameter (ft.)	Exit Gas			Emission Point Elevation (ft)		UTM Coordinates (km)	
		Temp. (°F)	Volumetric Flow <sup>1</sup> (acfm) <i>at operating conditions</i>	Velocity (fps)	Ground Level <i>(Height above mean sea level)</i>	Stack Height <sup>2</sup> <i>(Release height of emissions above ground level)</i>	Northing	Easting
ENG-1		1,196	866		750		4,343.58	482.07
OTK-1	0.333	Ambient	N/A	N/A	750	30	4,343.58	482.07
TL-1	N/A	Ambient	N/A	N/A	750	N/A	4,343.58	482.07
FUG	N/A	Ambient	N/A	N/A	750	N/A	4,343.58	482.07
HR	N/A	Ambient	N/A	N/A	750	N/A	4,343.58	482.07
<i>Note: In lieu of equipment UTM coordinates, site UTM coordinates provided.</i>								

<sup>1</sup> Give at operating conditions. Include inerts.

<sup>2</sup> Release height of emissions above ground level.

**ATTACHMENT K: FUGITIVE EMISSIONS DATA SUMMARY SHEET**

## 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? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> If YES, then complete the HAUL ROAD EMISSIONS UNIT DATA SHEET.
2.)	Will there be Storage Piles? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> If YES, complete Table 1 of the NONMETALLIC MINERALS PROCESSING EMISSIONS UNIT DATA SHEET.
3.)	Will there be Liquid Loading/Unloading Operations? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> If YES, complete the BULK LIQUID TRANSFER OPERATIONS EMISSIONS UNIT DATA SHEET.
4.)	Will there be emissions of air pollutants from Wastewater Treatment Evaporation? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> 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.)? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> 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? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> If YES, complete the GENERAL EMISSIONS UNIT DATA SHEET.
7.)	Will there be any other activities that generate fugitive emissions? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> 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 <sup>1</sup>	Maximum Potential Uncontrolled Emissions <sup>2</sup>		Maximum Potential Controlled Emissions <sup>3</sup>		Est. Method Used <sup>4</sup>
		lb/hr	ton/yr	lb/hr	ton/yr	
Haul Road/Road Dust Emissions Paved Haul Roads						
Unpaved Haul Roads	PMTotal PM10 PM2.5	2.24 0.65 0.07	9.80 2.83 0.29	Does not apply	N/A	O – AP-42
Storage Pile Emissions						
Loading/Unloading Operations – Crude Oil	VOC n-Hexane Benzene Toluene Ethylbenzene Xylenes Carbon Dioxide Methane	Does not apply	2.25 0.04 0.02 0.03 <0.01 0.01 0.02 0.35	Does not apply	N/A	O – AP-42 5.2-4 / API 5-12
Wastewater Treatment Evaporation & Operations						
Equipment Leaks	VOC	Does not apply	0.59	Does not apply	N/A	O – EPA- 453/R- 95-017
General Clean-up VOC Emissions						
Other						

<sup>1</sup> List all regulated air pollutants. Speciate VOCs, including all HAPs. Follow chemical name with Chemical Abstracts Service (CAS) number. LIST Acids, CO, CS<sub>2</sub>, VOCs, H<sub>2</sub>S, Inorganics, Lead, Organics, O<sub>3</sub>, NO, NO<sub>2</sub>, SO<sub>2</sub>, SO<sub>3</sub>, all applicable Greenhouse Gases (including CO<sub>2</sub> and methane), etc. DO NOT LIST H<sub>2</sub>, H<sub>2</sub>O, N<sub>2</sub>, O<sub>2</sub>, and Noble Gases.

<sup>2</sup> 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).

<sup>3</sup> 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).

<sup>4</sup> 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: EMISSION UNIT DATA SHEETS**

EUDS – GENERAL: ENGINE

EUDS - STORAGE TANK(S): OIL

EUDS - BULK LIQUID TRANSFER OPERATIONS: OIL

EUDS - CHEMICAL PROCESS (LEAK SOURCES)

EUDS – FUGITIVE EMISSIONS FROM UNPAVED HAULROADS



**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*): See below

1. Name or type and model of proposed affected source:

This form applies to one (1) 188-hp Cummins G855 compressor engine (ENG-1).

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:

Emissions provided in Question 8. Unit will operate a maximum of 8,760 hours per year.

4. Name(s) and maximum amount of proposed material(s) produced per hour:

Emissions provided in Question 8.

5. Give chemical reactions, if applicable, that will be involved in the generation of air pollutants:

Emissions from the combustion of natural 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:  Natural gas is used for fuel (Estimated maximum of 8,605 Btu per horsepower-hour for 8,760 hours per year at maximum horsepower rating, which equals 10.95 million cubic feet per year)			
(b) Chemical analysis of proposed fuel(s), excluding coal, including maximum percent sulfur and ash:       			
(c) Theoretical combustion air requirement (ACF/unit of fuel):  <div style="display: flex; justify-content: space-between; align-items: center;"> <span>@</span> <span>°F and</span> <span>psia</span> </div>			
(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:       <div style="margin-top: 20px;">Not applicable</div>			
(g) Proposed maximum design heat input: <div style="display: flex; justify-content: space-between; align-items: center; margin-top: 10px;"> <span>1.62</span> <span>× 10<sup>6</sup> BTU/hr.</span> </div>			
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:			
@	1,196	°F and	14.7 psia
a.	NO <sub>x</sub>	2.45 lb/hr	grains/ACF
b.	SO <sub>2</sub>	<0.01 lb/hr	grains/ACF
c.	CO	11.07 lb/hr	grains/ACF
d.	PM <sub>10</sub>	0.02 lb/hr	grains/ACF
e.	Hydrocarbons	lb/hr	grains/ACF
f.	VOCs	0.79 lb/hr	grains/ACF
g.	Pb	lb/hr	grains/ACF
h.	Specify other(s)		
	Total HAPs	0.05 lb/hr	grains/ACF
	<i>Note: Speciated HAP and GHG emissions presented in Attachment J</i>	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**

NSPS JJJJ

**RECORDKEEPING**

NSPS JJJJ

**REPORTING**

NSPS JJJJ

**TESTING**

NSPS JJJJ

**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

Not applicable.

## Attachment L

# EMISSIONS UNIT DATA SHEET

## 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](http://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 Nutter (Cairo) Station	2. Tank Name Crude Oil Storage Tank
3. Tank Equipment Identification No. (as assigned on <i>Equipment List Form</i> ) OTK-1	4. Emission Point Identification No. (as assigned on <i>Equipment List Form</i> ) OTK-1
5. Date of Commencement of Construction (for existing tanks) 2006	
6. Type of change <input type="checkbox"/> New Construction <input type="checkbox"/> New Stored Material <input type="checkbox"/> Other Tank Modification	
7. Description of Tank Modification (if applicable) N/A	
7A. Does the tank have more than one mode of operation? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No (e.g. Is there more than one product stored in the tank?)	
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.): Not applicable	

### II. TANK INFORMATION (required)

8. Design Capacity (specify barrels or gallons). Use the internal cross-sectional area multiplied by internal height. <div style="text-align: right;">15,000 bbl</div>	
9A. Tank Internal Diameter (ft) <div style="text-align: center;">53.25</div>	9B. Tank Internal Height (or Length) (ft) <div style="text-align: center;">40</div>
10A. Maximum Liquid Height (ft) <div style="text-align: center;">38 (estimated)</div>	10B. Average Liquid Height (ft) <div style="text-align: center;">20</div>
11A. Maximum Vapor Space Height (ft) <div style="text-align: center;">Unknown</div>	11B. Average Vapor Space Height (ft) <div style="text-align: center;">Unknown</div>
12. Nominal Capacity (specify barrels or gallons). This is also known as "working volume" and considers design liquid levels and overflow valve heights. <div style="text-align: right;">630,000 gallons</div>	

13A. Maximum annual throughput (gal/yr) <div style="text-align: center;">229,950,000</div>	13B. Maximum daily throughput (gal/day) <div style="text-align: center;">630,000</div> *Rolling daily throughput total not to exceed maximum annual throughput.
14. Number of Turnovers per year (annual net throughput/maximum tank liquid volume) <div style="text-align: center;">365</div>	
15. Maximum tank fill rate (gal/min)      600 (est.)	
16. Tank fill method <input type="checkbox"/> Submerged <input type="checkbox"/> Splash <input checked="" type="checkbox"/> Bottom Loading	
17. Complete 17A and 17B for Variable Vapor Space Tank Systems <input checked="" type="checkbox"/> 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): <div style="display: flex; flex-wrap: wrap;"> <div style="width: 50%;"> <input checked="" type="checkbox"/> Fixed Roof    <input checked="" type="checkbox"/> vertical    ___ horizontal    ___ flat roof    <input checked="" type="checkbox"/> cone roof    ___ dome roof                                   ___ other (describe)       </div> <div style="width: 50%;"> <input type="checkbox"/> External Floating Roof    ___ pontoon roof    ___ double deck roof  <input type="checkbox"/> Domed External (or Covered) Floating Roof  <input checked="" type="checkbox"/> Internal Floating Roof    <input checked="" type="checkbox"/> vertical column support    ___ self-supporting  <input type="checkbox"/> Variable Vapor Space    ___ lifter roof    ___ diaphragm  <input type="checkbox"/> Pressurized    ___ spherical    ___ cylindrical  <input type="checkbox"/> Underground  <input type="checkbox"/> Other (describe)       </div> </div>	

**III. TANK CONSTRUCTION & OPERATION INFORMATION** (optional if providing TANKS Summary Sheets)  
**Refer to enclosed TANKS Summary Sheet.**

19. Tank Shell Construction: <input type="checkbox"/> Riveted <input type="checkbox"/> Gunite lined <input type="checkbox"/> Epoxy-coated rivets <input type="checkbox"/> Other (describe)		
20A. Shell Color	20B. Roof Color	20C. Year Last Painted
21. Shell Condition (if metal and unlined): <input type="checkbox"/> No Rust <input type="checkbox"/> Light Rust <input type="checkbox"/> Dense Rust <input type="checkbox"/> Not applicable		
22A. Is the tank heated? <input type="checkbox"/> YES <input type="checkbox"/> 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):		
24. Complete the following section for <b>Vertical Fixed Roof Tanks</b> <input type="checkbox"/> 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 <b>Floating Roof Tanks</b> <input type="checkbox"/> Does Not Apply		
25A. Year Internal Floaters Installed:		
25B. Primary Seal Type: <input type="checkbox"/> Metallic (Mechanical) Shoe Seal <input type="checkbox"/> Liquid Mounted Resilient Seal <input type="checkbox"/> Vapor Mounted Resilient Seal <input type="checkbox"/> Other (describe):		
25C. Is the Floating Roof equipped with a Secondary Seal? <input type="checkbox"/> YES <input type="checkbox"/> NO		

25D. If YES, how is the secondary seal mounted? (check one) <input type="checkbox"/> Shoe <input type="checkbox"/> Rim <input type="checkbox"/> Other (describe):		
25E. Is the Floating Roof equipped with a weather shield? <input type="checkbox"/> YES <input type="checkbox"/> 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		
PIPE 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 <input type="checkbox"/> Does Not Apply	
26A. Deck Type: <input type="checkbox"/> Bolted <input type="checkbox"/> Welded	
26B. For Bolted decks, provide deck construction:	
26C. Deck seam: <input type="checkbox"/> Continuous sheet construction 5 feet wide <input type="checkbox"/> Continuous sheet construction 6 feet wide <input type="checkbox"/> Continuous sheet construction 7 feet wide <input type="checkbox"/> Continuous sheet construction 5 × 7.5 feet wide <input type="checkbox"/> Continuous sheet construction 5 × 12 feet wide <input type="checkbox"/> Other (describe)	
26D. Deck seam length (ft)	26E. Area of deck (ft <sup>2</sup> )
For column supported tanks:	26G. Diameter of each column:
26F. Number of columns:	

**IV. SITE INFORMATION** (optional if providing TANKS Summary Sheets)

27. Provide the city and state on which the data in this section are based. <b>Refer to enclosed TANKS Summary Sheet.</b>
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 <sup>2</sup> ·day))
33. Atmospheric Pressure (psia)

**V. LIQUID INFORMATION** (optional if providing TANKS Summary Sheets)

34. Average daily temperature range of bulk liquid: <b>Refer to enclosed TANKS Summary Sheet.</b>			
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)			





**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 <i>Equipment List Form</i> ): TL-1	
1. Loading Area Name: Crude Oil Truck Loading	
2. Type of cargo vessels accommodated at this rack or transfer point (check as many as apply): <input type="checkbox"/> Drums <input type="checkbox"/> Marine Vessels <input type="checkbox"/> Rail Tank Cars <input checked="" type="checkbox"/> Tank Trucks	
3. Loading Rack or Transfer Point Data:	
Number of pumps	One (1)
Number of liquids loaded	One (1)
Maximum number of marine vessels, tank trucks, tank cars, and/or drums loading at one time	One (1)
4. Does ballasting of marine vessels occur at this loading area? <input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Does not apply	
5. Describe cleaning location, compounds and procedure for cargo vessels using this transfer point:  No cleaning. Tank trucks are in dedicated service.	
6. Are cargo vessels pressure tested for leaks at this or any other location? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No If YES, describe:  Vessel pressure tested in accordance with DOT requirements.	

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	5	5	5	5
weeks/quarter	13	13	13	13

8. Bulk Liquid Data <i>(add pages as necessary)</i> :		
Pump ID No.		P01
Liquid Name		Crude Oil
Max. daily throughput (1000 gal/day)		~6.30
Max. annual throughput (1000 gal/yr)		229,950
Loading Method <sup>1</sup>		BF
Max. Fill Rate (gal/min)		280
Average Fill Time (min/loading)		~20
Max. Bulk Liquid Temperature (°F)		55.00
True Vapor Pressure <sup>2</sup>		2.6947
Cargo Vessel Condition <sup>3</sup>		U
Control Equipment or Method <sup>4</sup>		None
Minimum control efficiency (%)		N/A
Maximum Emission Rate	Loading (lb/hr)	0.51
	Annual (lb/yr)	4,500 (based on 2.25 tons/year)
Estimation Method <sup>5</sup>		EPA

<sup>1</sup> BF = Bottom Fill      SP = Splash Fill      SUB = Submerged Fill
<sup>2</sup> At maximum bulk liquid temperature
<sup>3</sup> B = Ballasted Vessel, C = Cleaned, U = Uncleaned (dedicated service), O = other (describe)
<sup>4</sup> List as many as apply (complete and submit appropriate <i>Air Pollution Control Device Sheets</i> ):         CA = Carbon Adsorption      LOA = Lean Oil Adsorption CO = 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 (describe)
<sup>5</sup> 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**

None proposed.

**RECORDKEEPING**

None proposed.

**REPORTING**

None proposed.

**TESTING**

None proposed.

**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**

Not applicable

# 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*)  
Components in natural gas and light liquid service (EU-FUG)

2. Standard Industrial Classification Codes (SICs) for process(es)  
5171

3. List raw materials and ☒ attach MSDSs  
Crude oil

4. List Products and Maximum Production and ☐ attach MSDSs

Description and CAS Number	Maximum Hourly (lb/hr)	Maximum Annual (ton/year)
Not applicable		

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.

The facility is not a natural gas processing plant (SIC 1321) and is therefore not subject to New Source Performance Standards (NSPS) Subpart KKK or NSPS Subpart OOOO/OOOOa requirements for a leak detection and repair (LDAR) monitoring program. It is also not a production site or compressor station and is not subject to the NSPS OOOOa LDAR monitoring program requirements.

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

In the event of an accidental spill or release, personnel will be protected, emergency response personnel will be notified and immediate steps to stop the spill or release will be implemented.

<p>8A. Complete the <i>Toxicology Data Sheet</i> 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.</p> <p>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.).</p>															
<p>9. <b>Waste Products</b> - Waste products status: (If source is subject to RCRA or 45CSR25, please contact the Hazardous Waste Section of WVDEP, OAQ at (304) 926-3647.)</p>															
<p>9A. Types and amounts of wastes to be disposed:</p>															
<p>9B. Method of disposal and location of waste disposal facilities:  Carrier: _____ Phone: _____</p>															
<p>9C. Check here if approved USEPA/State Hazardous Waste Landfill will be used <input type="checkbox"/></p>															
<p>10. Maximum and Projected Typical Operating Schedule for process or project as a whole (circle appropriate units).</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 15%;">circle units:</th> <th style="width: 25%;">(hrs/day) (hr/batch)</th> <th style="width: 35%;">(days), (batches/day), (batches/week)</th> <th style="width: 25%;">(days/yr), (weeks/year)</th> </tr> </thead> <tbody> <tr> <td>10A. Maximum</td> <td></td> <td></td> <td></td> </tr> <tr> <td>10B. Typical</td> <td></td> <td></td> <td></td> </tr> </tbody> </table>				circle units:	(hrs/day) (hr/batch)	(days), (batches/day), (batches/week)	(days/yr), (weeks/year)	10A. Maximum				10B. Typical			
circle units:	(hrs/day) (hr/batch)	(days), (batches/day), (batches/week)	(days/yr), (weeks/year)												
10A. Maximum															
10B. Typical															
<p>11. Complete a <i>Reactor Data Sheet</i> for each reactor in this chemical process.</p>															
<p>12. Complete a <i>Distillation Column Data Sheet</i> for each distillation column in this chemical process.</p>															
<p><b>13. Proposed Monitoring, Recordkeeping, Reporting, and Testing</b>  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.</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 50%; vertical-align: top; padding: 5px;"> <p><b>MONITORING</b></p> <p>None proposed</p> </td> <td style="width: 50%; vertical-align: top; padding: 5px;"> <p><b>RECORDKEEPING</b></p> <p>None proposed</p> </td> </tr> <tr> <td style="vertical-align: top; padding: 5px;"> <p><b>REPORTING</b></p> <p>None proposed</p> </td> <td style="vertical-align: top; padding: 5px;"> <p><b>TESTING</b></p> <p>None proposed</p> </td> </tr> </table>				<p><b>MONITORING</b></p> <p>None proposed</p>	<p><b>RECORDKEEPING</b></p> <p>None proposed</p>	<p><b>REPORTING</b></p> <p>None proposed</p>	<p><b>TESTING</b></p> <p>None proposed</p>								
<p><b>MONITORING</b></p> <p>None proposed</p>	<p><b>RECORDKEEPING</b></p> <p>None proposed</p>														
<p><b>REPORTING</b></p> <p>None proposed</p>	<p><b>TESTING</b></p> <p>None proposed</p>														
<p><b>MONITORING.</b> 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.</p> <p><b>RECORDKEEPING.</b> Please describe the proposed recordkeeping that will accompany the monitoring.</p> <p><b>REPORTING.</b> Please describe the proposed frequency of reporting of the recordkeeping.</p> <p><b>TESTING.</b> Please describe any proposed emissions testing for this process equipment or air pollution control device.</p>															
<p>14. Describe all operating ranges and maintenance procedures required by Manufacturer to maintain warranty</p> <p style="margin-left: 40px;">Not applicable</p>															

## LEAK SOURCE DATA SHEET

Source Category	Pollutant	Number of Source Components <sup>1</sup>	Number of Components Monitored by Frequency <sup>2</sup>	Average Time to Repair (days) <sup>3</sup>	Estimated Annual Emission Rate (lb/yr) <sup>4</sup>
Pumps <sup>5</sup>	light liquid VOC <sup>6,7</sup>				
	heavy liquid VOC <sup>8</sup>				
	Non-VOC <sup>9</sup>				
Valves <sup>10</sup>	Gas VOC				
	Light Liquid VOC	20	N/A	N/A	965.61
	Heavy Liquid VOC				
	Non-VOC				
Safety Relief Valves <sup>11</sup>	Gas VOC				
	Non VOC				
Open-ended Lines <sup>12</sup>	VOC	4	N/A	N/A	108.15
	Non-VOC				
Sampling Connections <sup>13</sup>	VOC				
	Non-VOC				
Compressors	VOC				
	Non-VOC				
Flanges	VOC	35	N/A	N/A	112.98
	Non-VOC				
Other	VOC				
	Non-VOC				

<sup>1 - 13</sup> See notes on the following page.

*Note: Component counts taken by equipment type at representative facility.*



## 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<sub>2</sub>S, mineral acids, NO, NO<sub>2</sub>, SO<sub>3</sub>, etc. DO NOT LIST CO<sub>2</sub>, H<sub>2</sub>, H<sub>2</sub>O, N<sub>2</sub>, O<sub>2</sub>, 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.

## Attachment L

### FUGITIVE EMISSIONS FROM UNPAVED HAULROADS

*UNPAVED HAULROADS (including all equipment traffic involved in process, haul trucks, endloaders, etc.)*

k =	Particle size multiplier	4.90	1.50
s =	Silt content of road surface material (%)	3.9	3.9
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	Light Vehicles	4	3.5	10	0.16	2	1,917	N/A	N/A
2	Medium Trucks	10	16.2	10	0.16	1	767	N/A	N/A
3	Heavy Trucks	18	24.3	10	0.16	1	5,366	N/A	N/A
4									
5									
6									
7									
8									

**Source:** AP-42 Fifth Edition – 13.2.2 Unpaved Roads

$$E = k \times 5.9 \times (s \div 12) \times (S \div 30) \times (W \div 3)^{0.7} \times (w \div 4)^{0.5} \times ((365 - p) \div 365) = \text{lb/Vehicle Mile Traveled (VMT)}$$

Where:

k =	Particle size multiplier	4.90	1.50
s =	Silt content of road surface material (%)	9	9
S =	Mean vehicle speed (mph)	10	10
W =	Mean vehicle weight (tons)	15	15
w =	Mean number of wheels per vehicle	9	9
p =	Number of days per year with precipitation >0.01 in.	150	150

For lb/hr:  $[\text{lb} \div \text{VMT}] \times [\text{VMT} \div \text{trip}] \times [\text{Trips} \div \text{Hour}] = \text{lb/hr}$

For TPY:  $[\text{lb} \div \text{VMT}] \times [\text{VMT} \div \text{trip}] \times [\text{Trips} \div \text{Hour}] \times [\text{Ton} \div 2000 \text{ lb}] = \text{Tons/year}$

#### 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	0.19	0.82	-	-	0.05	0.24	-	-
2	1.64	7.18	-	-	0.47	2.07	-	-
3	0.41	1.80	-	-	0.12	0.52	-	-
4								
5								
6								
7								
8								
TOTALS	2.24	9.80	-	-	0.65	2.83	-	-

Note: Minimum one-per-day average pick-up trucks and service trucks even if tanker truck not required every day. Per EPA BID calculations, all emissions based on average trips. Estimated maximum hourly, daily and yearly trips provided for information only.

Revision 03/2007

## FUGITIVE EMISSIONS FROM PAVED HAULROADS – *Not Applicable*

*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

$$E = 0.077 \times I \times (4 \div n) \times (s \div 10) \times (L \div 1000) \times (W \div 3)^{0.7} = \text{lb/Vehicle Mile Traveled (VMT)}$$

Where:

I =	Industrial augmentation factor (dimensionless)	
n =	Number of traffic lanes	
s =	Surface material silt content (%)	
L =	Surface dust loading (lb/mile)	
W =	Average vehicle weight (tons)	

For lb/hr:  $[lb \div VMT] \times [VMT \div trip] \times [Trips \div Hour] = \text{lb/hr}$

For TPY:  $[lb \div VMT] \times [VMT \div trip] \times [Trips \div Hour] \times [Ton \div 2000 lb] = \text{Tons/year}$

### 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 N: SUPPORTING EMISSIONS CALCULATIONS**

### **EXAMPLE CALCULATIONS**

#### **Fugitives:**

TOC Emission Factor (lb/hr/source) \* Number of Sources \* VOC wt% = lb/hr VOC

#### **Tons per Year (TPY) Conversion:**

lb/hr \* Hours/Year \* 1 ton/2000 lb = TPY

Tonnes/Year \* 1.10231131 = TPY

West Virginia Oil Gathering, LLC  
Nutter (Cairo) Station  
Summary of Criteria Air Pollutant Emissions

Equipment	Unit ID	NOx		CO		VOC		SO <sub>2</sub>		PM	
		lb/hr	tons/yr	lb/hr	tons/yr	lb/hr	tons/yr	lb/hr	tons/yr	lb/hr	tons/yr
188-hp Cummins G855 Engine	ENG-1	0.83	3.63	1.66	7.26	0.41	1.82	<0.01	<0.01	0.03	0.14
3,300-bbl Crude Oil Tank	OTK-1	-	-	-	-	1.08	4.72	-	-	-	-
Crude Oil Truck Loading	TL-1	-	-	-	-	0.51	2.25	-	-	-	-
Fugitive Emissions	FUG	-	-	-	-	0.14	0.59	-	-	-	-
Fugitive Haul Road Emissions	HR	-	-	-	-	-	-	-	-	2.24	9.80
<b>Total =</b>		<b>0.83</b>	<b>3.63</b>	<b>1.66</b>	<b>7.26</b>	<b>2.14</b>	<b>9.38</b>	<b>&lt;0.01</b>	<b>&lt;0.01</b>	<b>2.27</b>	<b>9.94</b>

West Virginia Oil Gathering, LLC  
Nutter (Cairo) Station  
Summary of Hazardous Air Pollutants

Equipment	Unit ID	Estimated Emissions (lb/hr)										
		Acetalde- hyde	Acrolein	Benzene	Ethyl- benzene	Formalde- hyde	Methanol	n-Hexane	Toluene	Xylenes	Other HAP	Total HAP
188-hp Cummins G855 Engine	ENG-1	<0.01	<0.01	<0.01	<0.01	0.03	<0.01	-	<0.01	<0.01	<0.01	0.05
3,300-bbl Crude Oil Tank	OTK-1	-	-	0.01	<0.01	-	-	0.02	0.01	0.01	0.01	0.06
Crude Oil Truck Loading	TL-1	-	-	0.30	0.03	-	-	0.54	0.44	0.17	0.30	1.79
Fugitive Emissions	FUG	-	-	-	-	-	-	-	-	-	-	-
<b>Total =</b>		<b>&lt;0.01</b>	<b>&lt;0.01</b>	<b>0.32</b>	<b>0.03</b>	<b>0.03</b>	<b>&lt;0.01</b>	<b>0.56</b>	<b>0.45</b>	<b>0.17</b>	<b>0.32</b>	<b>1.90</b>

Equipment	Unit ID	Estimated Emissions (tons/yr)										
		Acetalde- hyde	Acrolein	Benzene	Ethyl- benzene	Formalde- hyde	Methanol	n-Hexane	Toluene	Xylenes	Other HAP	Total HAP
188-hp Cummins G855 Engine	ENG-1	0.02	0.02	0.01	<0.01	0.15	0.02	-	<0.01	<0.01	0.01	0.23
3,300-bbl Crude Oil Tank	OTK-1	-	-	0.04	<0.01	-	-	0.08	0.06	0.02	0.04	0.25
Crude Oil Truck Loading	TL-1	-	-	0.02	<0.01	-	-	0.04	0.03	0.01	0.02	0.12
Fugitive Emissions	FUG	-	-	-	-	-	-	-	-	-	-	-
<b>Total =</b>		<b>0.02</b>	<b>0.02</b>	<b>0.07</b>	<b>0.01</b>	<b>0.15</b>	<b>0.02</b>	<b>0.11</b>	<b>0.09</b>	<b>0.04</b>	<b>0.07</b>	<b>0.60</b>

West Virginia Oil Gathering, LLC  
Nutter (Cairo) Station  
Summary of Greenhouse Gas Emissions - Metric Tons (Tonnes)

Equipment	Unit ID	Carbon Dioxide (CO <sub>2</sub> )		Methane (CH <sub>4</sub> )		Methane (CH <sub>4</sub> ) as CO <sub>2</sub> Eq.		Total CO <sub>2</sub> + CO <sub>2</sub> Eq.	
		lb/hr	tonnes/yr	lb/hr	tonnes/yr	lb/hr	tonnes/yr	lb/hr	tonnes/yr
188-hp Cummins G855 Engine	ENG-1	189.24	751.93	<0.01	0.01	0.09	0.35	189.43	752.71
Crude Oil Truck Loading	TL-1	0.01	0.02	0.08	0.31	1.97	7.85	1.98	7.87
Fugitive Emissions	FUG	-	-	-	-	-	-	-	-
<b>Total =</b>		<b>189.24</b>	<b>751.95</b>	<b>0.08</b>	<b>0.33</b>	<b>2.06</b>	<b>8.20</b>	<b>191.41</b>	<b>760.58</b>

Per API Compendium (2009) Chapter 5: Most of the CH<sub>4</sub> and CO<sub>2</sub> emissions from storage tanks occur as a result of flashing. No flashing emissions are expected from the storage tanks; therefore, no GHG emissions have been estimated.

West Virginia Oil Gathering, LLC  
Nutter (Cairo) Station  
Summary of Greenhouse Gas Emissions - Short Tons (Tons)

Equipment	Unit ID	Carbon Dioxide (CO <sub>2</sub> )		Methane (CH <sub>4</sub> )		Methane (CH <sub>4</sub> ) as CO <sub>2</sub> Eq.		Total CO <sub>2</sub> + CO <sub>2</sub> Eq.	
		lb/hr	tons/yr	lb/hr	tons/yr	lb/hr	tons/yr	lb/hr	tons/yr
188-hp Cummins G855 Engine	ENG-1	189.24	828.86	<0.01	0.02	0.09	0.39	189.43	829.72
Crude Oil Truck Loading	TL-1	0.01	0.02	0.08	0.35	1.97	8.65	1.98	8.67
Fugitive Emissions	FUG	-	-	-	-	-	-	-	-
<b>Total =</b>		<b>189.24</b>	<b>828.89</b>	<b>0.08</b>	<b>0.36</b>	<b>2.06</b>	<b>9.04</b>	<b>191.41</b>	<b>838.39</b>

Per API Compendium (2009) Chapter 5: Most of the CH<sub>4</sub> and CO<sub>2</sub> emissions from storage tanks occur as a result of flashing. No flashing emissions are expected from the storage tank; therefore, no GHG emissions have been estimated.



West Virginia Oil Gathering, LLC  
Nutter (Cairo) Station  
Engine Emissions Calculations - Criteria Air Pollutants

**Equipment Information**

Unit ID: **ENG-1**  
Make: Cummins  
Model: G855  
Design Class: 4S-RB  
Manufacture Date: 12/10/2008  
Controls: NSCR  
Design Rating (hp): 188  
Fuel Use (Btu/hp-hr): 8,605  
Fuel Use (scfh): 1,251  
Fuel Use (mmBtu/hr): 1.62  
Exhaust Temp (°F): 1,196  
Exhaust Flow (acfm): 866  
Stack Flow Rate (SCFH): 16,567  
Gaseous Fuel Heating Value (Btu/scf): 1,293  
Operating Hours: 8,760

**Uncontrolled Emission Factors<sup>1</sup>**

NOx (g/hp-hr): 5.90  
CO (g/hp-hr): 26.70  
VOC (g/hp-hr): 1.90  
SO<sub>2</sub> (g/hp-hr): AP-42  
PM Total (g/hp-hr): AP-42

**Proposed Emission Factors**

NOx (g/hp-hr): 2.00  
CO (g/hp-hr): 4.00  
VOC (g/hp-hr): 1.00

**Uncontrolled Criteria Air Pollutant Emissions**

Unit ID: **ENG-1**

Pollutant	lb/hr	tons/yr
NOx	2.45	10.71
CO	11.07	48.47
VOC	0.79	3.45
SO <sub>2</sub>	<0.01	<0.01
PM <sub>10/2.5</sub>	0.02	0.07
PM <sub>COND</sub>	0.02	0.07
PM <sub>TOT</sub>	0.03	0.14

West Virginia Oil Gathering, LLC  
 Nutter (Cairo) Station  
 Engine Emissions Calculations - Criteria Air Pollutants  
Proposed Criteria Air Pollutant Emissions

Unit ID: **ENG-1**

Pollutant	lb/hr	tons/yr
NO <sub>x</sub>	0.83	3.63
CO	1.66	7.26
VOC	0.41	1.82
SO <sub>2</sub>	<0.01	<0.01
PM <sub>10/2.5</sub>	0.02	0.07
PM <sub>COND</sub>	0.02	0.07
PM <sub>TOT</sub>	0.03	0.14

AP-42 Emission Factors (lb/mmBtu)<sup>2</sup>

**4S-RB**

Pollutant	3.2-3 (7/00)
SO <sub>2</sub>	5.88E-04
PM <sub>10/2.5</sub>	9.50E-03
PM <sub>COND</sub>	9.91E-03
PM <sub>TOT</sub>	1.94E-02

Notes:

- 1) Emission Factor Source: Manufacturer data. Safety factor may be added for operational flexibility.
- 2) All PM (total, condensable and filterable) resulting from combustion of natural gas is assumed to be <1 micrometer in diameter. All PM is assumed to be <1 micrometer for gasoline-fueled and small diesel units. Total PM is the sum of filterable PM and condensable PM.

West Virginia Oil Gathering, LLC  
Nutter (Cairo) Station  
Engine Emissions Calculations - Hazardous Air Pollutants

**Equipment Information**

Unit ID:	<b><u>ENG-1</u></b>
Make:	Cummins
Model:	G855
Design Class:	4S-RB
Controls:	NSCR
Design Rating (hp):	188
Fuel Use (Btu/hp-hr):	8,605
Fuel Use (scfh):	1,251
Fuel Use (mmBtu/hr):	1.62
Exhaust Temp (°F):	1,196
Exhaust Flow (acfm):	866
Stack Flow Rate (SCFH):	16,567
Gaseous Fuel Heating Value (Btu/scf):	1,293
Operating Hours:	8,760
HAP Control Eff. %	0.00%

**Proposed Hazardous Air Pollutant (HAP) Emissions**

Unit ID: **ENG-1**

Pollutant	lb/hr	tons/yr
Acetaldehyde	<0.01	0.02
Acrolein	<0.01	0.02
Benzene	<0.01	0.01
Ethylbenzene	<0.01	<0.01
Formaldehyde	0.03	0.15
Methanol	<0.01	0.02
n-Hexane	-	-
Toluene	<0.01	<0.01
Xylenes	<0.01	<0.01
Other HAP	<0.01	0.01
<b>Total HAP =</b>	<b>0.05</b>	<b>0.23</b>

West Virginia Oil Gathering, LLC  
Nutter (Cairo) Station  
Engine Emissions Calculations - Hazardous Air Pollutants  
AP-42 Emission Factors (lb/mmBtu)

4S-RB

Pollutant	3.2-3 (7/00)
Acetaldehyde	2.79E-03
Acrolein	2.63E-03
Benzene	1.58E-03
Ethylbenzene	2.48E-05
Formaldehyde	2.05E-02
Methanol	3.06E-03
n-Hexane	NA
Toluene	5.58E-04
Xylenes	1.95E-04
Other HAP	1.08E-03

West Virginia Oil Gathering, LLC  
Nutter (Cairo) Station  
Engine Emissions Calculations - Greenhouse Gases

**Equipment Information**

Unit ID: **ENG-1**  
Make: Cummins  
Model: G855  
Design Class: 4S-RB  
Controls: NSCR  
Design Rating (hp): 188  
Fuel Use (Btu/hp-hr): 8,605  
Fuel Use (scfh): 1,251  
Fuel Use (mmBtu/hr): 1.62  
Exhaust Temp (°F): 1,196  
Exhaust Flow (acfm): 866  
Stack Flow Rate (SCFH): 16,567  
Gaseous Fuel Heating Value (Btu/scf): 1,293  
Operating Hours: 8,760  
Fuel Type: Natural Gas

**Greenhouse Gas (GHG) Emissions - Metric Tons<sup>1</sup>**

Unit ID: **ENG-1**

Pollutant	lb/hr	tonnes/yr
CO <sub>2</sub>	189.24	751.93
CH <sub>4</sub>	<0.01	<0.01
N <sub>2</sub> O	<0.01	<0.01
CH <sub>4</sub> as CO <sub>2</sub> e	0.09	0.35
N <sub>2</sub> O as CO <sub>2</sub> e	0.11	0.42
<b>Total CO<sub>2</sub> + CO<sub>2</sub>e =</b>	<b>189.43</b>	<b>752.71</b>

**Greenhouse Gas (GHG) Emissions - Short Tons<sup>1</sup>**

Unit ID: **ENG-1**

Pollutant	lb/hr	tons/yr
CO <sub>2</sub>	189.24	828.86
CH <sub>4</sub>	<0.01	<0.01
N <sub>2</sub> O	<0.01	<0.01
CH <sub>4</sub> as CO <sub>2</sub> e	0.09	0.39
N <sub>2</sub> O as CO <sub>2</sub> e	0.11	0.47
<b>Total CO<sub>2</sub> + CO<sub>2</sub>e =</b>	<b>189.43</b>	<b>829.72</b>

West Virginia Oil Gathering, LLC  
Nutter (Cairo) Station  
Engine Emissions Calculations - Greenhouse Gases

**40 CFR 98 Tables C-1 and C-2 Emission Factors (kg/mmBtu)**

**Natural Gas**

Carbon Dioxide (CO <sub>2</sub> )	53.06
Methane (CH <sub>4</sub> )	1.00E-03
Nitrous Oxide (N <sub>2</sub> O)	1.00E-04

**40 CFR 98 Table A-1, Global Warming Potential (GWP) Multiplier (100-Year Time Horizon)**

Methane (CH <sub>4</sub> )	25
Nitrous Oxide (N <sub>2</sub> O)	298

Notes:

1) CO<sub>2</sub>e = CO<sub>2</sub> equivalent (Pollutant times GWP multiplier)

**West Virginia Oil Gathering, LLC  
Nutter (Cairo) Station  
Tank Emissions Calculations - Criteria Air Pollutants**

**Equipment Information**

Unit ID:	<b><u>OTK-1</u></b>
Contents:	Crude Oil
Capacity (bbl):	15,000
Capacity (gal):	630,000
Throughput (bbl/yr):	5,475,000
Throughput (gal/yr):	229,950,000
Throughput (bbl/d):	15,000.00
TANKS 4.0.9d Losses (lb/yr):	4,723.00
Control Type:	IFR
Safety Factor:	100%

**Proposed VOC Emissions<sup>1</sup>**

Unit ID: **OTK-1**

<b>Emissions</b>	<b>Avg. lb/hr<sup>2</sup></b>	<b>tons/yr</b>
Losses	1.08	4.72
<b>Total =</b>	<b>1.08</b>	<b>4.72</b>

Notes:

- 1) Losses calculated using EPA TANKS 4.0.9d. A 100% safety factor has been added as a conservative estimate of emissions.
- 2) Due to variable short-term emission rates, average lb/hr based on annual emissions shown for reference only.

West Virginia Oil Gathering, LLC  
Nutter (Cairo) Station  
Tank Emissions Calculations - Hazardous Air Pollutants

**Equipment Information**

Unit ID: **OTK-1**  
Contents: Crude Oil  
Capacity (bbl): 15,000  
Capacity (gal): 630,000  
Throughput (bbl/yr): 5,475,000  
Throughput (gal/yr): 229,950,000  
Throughput (bbl/d): 15,000.00  
Control Type: IFR

**Proposed Hazardous Air Pollutant Emissions<sup>1</sup>**

Unit ID: **OTK-1**

Pollutant	Avg. lb/hr <sup>2</sup>	tons/yr
<b>Total VOC =</b>	<b>1.08</b>	<b>4.72</b>
n-Hexane	0.02	0.08
Benzene	0.01	0.04
Toluene	0.01	0.06
Ethylbenzene	<0.01	<0.01
Xylenes	0.01	0.02
Other HAP	0.01	0.04
<b>Total HAP =</b>	<b>0.06</b>	<b>0.25</b>

**Estimated HAP Composition (% by Weight)<sup>3</sup>**

Pollutant	Wt%
n-Hexane	1.6000%
Benzene	0.9000%
Toluene	1.3000%
Ethylbenzene	0.1000%
Xylenes	0.5000%
Other HAP	0.9000%
<b>Total HAP =</b>	<b>5.3000%</b>

Notes:

- 1) VOC emissions calculated in Criteria Air Pollutant calculations.
- 2) Due to variable short-term emission rates, average lb/hr based on annual emissions shown for reference only.
- 3) Table 11.3-2, "HAP Percent of VOC Emissions," Gasoline Marketing (Stage I and Stage II), EPA Document Revised Final 1/2001.



West Virginia Oil Gathering, LLC  
Nutter (Cairo) Station  
Truck Loading Emissions Calculations - Criteria and Hazardous Air Pollutants

**Equipment Information**

Unit ID: **TL-1**  
Contents Loaded: Crude Oil  
Fill Method: Submerged  
Type of Service: Dedicated  
Mode of Operation: Normal  
Saturation Factor: 0.6  
Annual Throughput (1000 gal)<sup>1</sup>: 2,299.500  
Annual Emission Factor (lb/1000 gal)<sup>2</sup>: 1.96  
Maximum Loading Rate (gal/hr): 16,800

Annual Loading Loss (lb/1000 gal) =  $12.46 * S * P_{AVG} * M/T$ , where:

P = True vapor pressure of liquid loaded (avg. psia)	2.6947
M = Molecular weight of vapor (lb/lb-mol)	50
T = Temperature of bulk liquid loaded (average °F)	55
T = Temperature of bulk liquid loaded ( °F + 460 = °R)	515

**Uncontrolled VOC and HAP Emissions**

Unit ID: **TL-1**

Pollutant	Avg. lb/hr	tons/yr
<b>VOC =</b>	<b>0.51</b>	<b>2.25</b>
n-Hexane	0.01	0.04
Benzene	<0.01	0.02
Toluene	0.01	0.03
Ethylbenzene	<0.01	<0.01
Xylenes	<0.01	0.01
Other HAP	<0.01	0.02
<b>Total HAP =</b>	<b>0.03</b>	<b>0.12</b>

**Estimated HAP Composition (% by Weight)<sup>3</sup>**

Pollutant	Wt%
n-Hexane	1.6000%
Benzene	0.9000%
Toluene	1.3000%
Ethylbenzene	0.1000%
Xylenes	0.5000%
Other HAP	0.9000%
<b>Total HAP =</b>	<b>5.3000%</b>

Notes:

- 1) Crude oil truck loading should not occur during normal operations. One percent of total tank throughput is shown as a conservative estimate of emissions.
- 2) AP-42 5.2-4 Eq.1: Loading Loss (lb/1000 gal) =  $12.46 * S * P * M/T$ . Properties based on EPA TANKS 4.0.9d.
- 3) Table 11.3-2, "HAP Percent of VOC Emissions," Gasoline Marketing (Stage I and Stage II), EPA Document Revised Final 1/2001.

**West Virginia Oil Gathering, LLC  
Nutter (Cairo) Station  
Truck Loading Emissions Calculations - Greenhouse Gases**

**Loading Information**

Unit ID: **TL-1**  
 Contents Loaded: Crude Oil  
 Fill Method: Submerged  
 Type of Service: Dedicated  
 Mode of Operation: Normal  
 Annual Throughput (10<sup>6</sup> gal): 2.300  
 TOC Em. Factor (tonne/10<sup>6</sup> gal): <sup>1</sup> 0.91  
 Maximum Loading Rate (gal/hr): 16,800

API Default =	15.000%
Default =	1.000%

**Proposed Greenhouse Gas Emissions (tonnes) <sup>2,3</sup>**

Unit ID: **TL-1**

Pollutant	Avg. lb/hr	tonnes/yr
CH <sub>4</sub>	0.08	0.31
CH <sub>4</sub> as CO <sub>2</sub> e	1.97	7.85
CO <sub>2</sub>	0.01	0.02
<b>Total CO<sub>2</sub> + CO<sub>2</sub>e =</b>	<b>1.98</b>	<b>7.87</b>

**Proposed Greenhouse Gas Emissions (tons) <sup>2,3</sup>**

Unit ID: **TL-1**

Pollutant	Avg. lb/hr	tons/yr
CH <sub>4</sub>	0.08	0.35
CH <sub>4</sub> as CO <sub>2</sub> e	1.97	8.65
CO <sub>2</sub>	0.01	0.02
<b>Total CO<sub>2</sub> + CO<sub>2</sub>e =</b>	<b>1.98</b>	<b>8.67</b>

Notes:

- 1) API Compendium of Greenhouse Gas Emissions Methodologies for the Oil and Gas Industry, Table 5-12.
- 2) Due to variable short-term emission rates, maximum lb/hr rate shown for reference only.
- 3) CO<sub>2</sub>e = CO<sub>2</sub> equivalent (Pollutant times GWP multiplier)

**40 CFR 98 Table A-1, Global Warming Potential (GWP) Multiplier**

Methane (CH <sub>4</sub> )	25
----------------------------	----

West Virginia Oil Gathering, LLC  
Nutter (Cairo) Station  
Fugitive Emissions Calculations

Equipment Information

Source Type/Service	Number of Sources <sup>1</sup>	Em. Factor (lb/hr/source) <sup>2</sup>	TOC lb/hr	TOC tons/yr	VOC Wt % <sup>3</sup>
Valves - Light Oil	20	5.51E-03	0.110	0.483	100.000%
Connectors - Light Oil	20	4.63E-04	0.009	0.041	100.000%
Flanges - Light Oil	15	2.43E-04	0.004	0.016	100.000%
Open-Ended Lines - Light Oil	4	3.09E-03	0.012	0.054	100.000%
<b>Total TOC (Liquid Components) =</b>			<b>0.135</b>	<b>0.593</b>	-

Proposed Emissions

Source Type/Service	VOC	
	lb/hr	tons/yr
Valves - Light Oil	0.11	0.48
Connectors - Light Oil	0.01	0.04
Flanges - Light Oil	<0.01	0.02
Open-Ended Lines - Light Oil	0.01	0.05
<b>Total (Liquid Components) =</b>	<b>0.14</b>	<b>0.59</b>

Notes:

- 1) Component count estimated based on similar site.
- 2) EPA-453/R-95-017 Emission Factors
- 3) Light Oil/Light Liquid composition conservatively assumed to be 100% VOC.

West Virginia Oil Gathering, LLC  
Nutter (Cairo) Station  
Fugitive Haul Road Emissions Calculations

**Equipment/Operations Information**

Length Access Road (ft): 425  
Total Round Trip Feet: 850

**Facility Data<sup>1</sup>**

Vehicle Type	Light Vehicles (Pick-ups and Cars)	Medium Trucks (Service Trucks)	Heavy Trucks (Tanker Trucks) <sup>2</sup>
Average vehicle weight ((empty + full)/2) (tons)	3.5	16.2	24.3
Number of wheels per vehicle type (w)	4	10	18
Average number of round trips/day/vehicle type <sup>3</sup>	5	48	12
Distance per round trip (miles/trip)	0.16	0.16	0.16
Vehicle miles travelled (miles/day)	0.88	7.72	1.93
Number of days operational (days/yr)	365	365	365
Vehicle miles travelled VMT (miles/yr)	321.97	2,817.23	705.11
Average vehicle speed S (mph)	10	10	10
Average number of round trips/hour/vehicle type	0.23	2.00	0.50
Average number of round trips/year/vehicle type	2,000	17,500	4,380
Est. max. number of round trips/hour/vehicle type	2	1	1
Est. max. number of round trips/day/vehicle type	5	2	14
Est. max. number of round trips/year/vehicle type	1,917	767	5,366

Ratio of Maximum Trips per Day vs. Average Trips per Day<sup>4</sup>:

	Light	Medium	Heavy	Total Weighted Fraction:
Weighted Trips (Maximum Per Vehicle Type/Maximum Total) =	0.24	0.10	0.67	
Adjustment Ratio (Maximum Trips/Average Trips) =	0.91	0.04	1.17	
Weighted Fraction (Weighted Trips * Adjustment Ratio) =	0.22	0.00	0.78	1.00

**West Virginia Oil Gathering, LLC  
Nutter (Cairo) Station  
Fugitive Haul Road Emissions Calculations**

**Formula and Calculation Inputs**

$$E = k(s/12)^a * (W/3)^b * ((365-P) / 365)$$

Reference: AP-42 Section 13.2.2 (11/06), Equation 1a and 2

where:

Days per year

Annual average hours per day of road operations

k = PM Particle Size Multiplier

k = PM<sub>10</sub> Particle Size Multiplier

k = PM<sub>2.5</sub> Particle Size Multiplier

s = Surface Material Silt Content

P = Number of days > 0.01 inch of rain

a = PM Constant

a = PM<sub>10</sub> and PM<sub>2.5</sub> Constant

b = PM, PM<sub>10</sub>, and PM<sub>2.5</sub> Constant

Total hourly fleet vehicle miles travelled (miles/hr)

Total annual fleet vehicle miles travelled (miles/yr)<sup>5</sup>

Average wheels<sup>6</sup>

Average vehicle weight of the fleet (W)<sup>7</sup>

Moisture Ratio

Control Efficiency (CF)

Rate	Units	Comment
365		
24		
4.90	lb/VMT	AP-42 Section 13.2.2 (11/06), Table 13.2.2-2 (PM)
1.50	lb/VMT	AP-42 Section 13.2.2 (11/06), Table 13.2.2-2 (PM <sub>10</sub> )
0.15	lb/VMT	AP-42 Section 13.2.2 (11/06), Table 13.2.2-2 (PM <sub>2.5</sub> )
9.0	%	
150	days/year	
0.70	unitless	AP-42 Section 13.2.2 (11/06), Table 13.2.2-2 (PM)
0.90	unitless	AP-42 Section 13.2.2 (11/06), Table 13.2.2-2 (PM <sub>10</sub> and PM <sub>2.5</sub> )
0.45	unitless	AP-42 Section 13.2.2 (11/06), Table 13.2.2-2
0.44	VMT/hr	
3,844.32	VMT/yr	
11		
16.6	tons	
1.00		Estimated based on 0.2% uncontrolled surface water content assuming no watering EPA - BID Document 13.2.2 - 1998
0.00	%	Based on Moisture Ratio and Figure 13.2.2-2 Control

**Emission Calculations**

Vehicle Type	Emission Factors			Control Efficiency (%)	Total Vehicle Miles Travelled		Uncontrolled Emission Rates			Uncontrolled Emission Rates		
	PM	PM <sub>10</sub>	PM <sub>2.5</sub>		VMT/hr	VMT/yr	Total PM	Total PM <sub>10</sub>	PM <sub>2.5</sub>	Total PM	Total PM <sub>10</sub>	PM <sub>2.5</sub>
	lb/VMT	lb/VMT	lb/VMT				lb/hr	lb/hr	lb/hr	TPY	TPY	TPY
Light Vehicles	5.10	1.47	0.15	0.00	0.04	321.97	0.19	0.05	0.01	0.82	0.24	0.02
Medium Trucks	5.10	1.47	0.15	0.00	0.32	2,817.23	1.64	0.47	0.05	7.18	2.07	0.21
Heavy Trucks	5.10	1.47	0.15	0.00	0.08	705.11	0.41	0.12	0.01	1.80	0.52	0.05
<b>Total =</b>				<b>0.00</b>	<b>0.44</b>	<b>3,844.31</b>	<b>2.24</b>	<b>0.65</b>	<b>0.07</b>	<b>9.80</b>	<b>2.83</b>	<b>0.29</b>
<b>Proposed Maximum Daily Rate (Maximum Pounds Per Day = Total Weighted Fraction * Average lb/hr Rate * 24) =</b>							<b>53.66</b>	<b>15.47</b>	<b>1.58</b>			

**West Virginia Oil Gathering, LLC  
Nutter (Cairo) Station  
Fugitive Haul Road Emissions Calculations**

**Notes:**

- 1) Facility vehicle data based on estimates, GP5.1 and AP-42 13.2.2-2 defaults for industrial unpaved roads
- 2) Tank trucker average vehicle weight as  $(W_{(empty)} + W_{(full)})/2 = (7 + 40)/2 = 23.7$  tons
- 3) Average number of round trips per day for the heavy trucks is a conservative estimate based on the operation of similar facilities.
- 4) Weighted fraction of max. trips per day versus average trips per day determined for each vehicle type. Total weighted fraction used as overall pad adjustment factor to determine max. daily rate in pounds per day.
- 5) Average vehicle miles travelled (VMT/yr) as (No. of round trip/vehicle \* No. of vehicles/type \* Roundtrip miles/trip) \* 365 days/yr \* No. of vehicle type)
- 6) Average wheels calculated as average of (No. of wheels per vehicle type \* No. of vehicle/type)
- 7) Average vehicle fleet calculated as (Average weight of vehicle type \* Percentage of each vehicle type on unpaved surface). Percentage of each vehicle type =  $VMT_{vehicle\ type} / VMT$
- 8) Minimum one-per-day average pick-up trucks and service trucks even if tanker not required every day.
- 9) Per EPA BID calculations, all emissions based on average trips. Estimated maximum hourly, daily and yearly trips provided for information only.

**Calculation of Emission Factors (AP-42, 13.2.2)**

Equation 1a:  $EF = k(s/12)^a (W/3)^b$  where  $k$ ,  $a$ , and  $b$  are empirical constants and  
 $EF$  = size-specific emission factor (lb/VMT)  
 $s$  = surface material silt content %  
 $W$  = mean vehicle weight (tons)

Equation 2:  $EF_{ext} = EF * ((365-P)/365)$  where:  
 $EF_{ext}$  = annual size-specific emission factor extrapolated for natural mitigation, lb/VMT  
 $EF$  = emission factor from Equation 1a  
 $P$  = number of days in a year with at least 0.01 inches of precipitation

**Example Calculation**

$E = EF_{ext} * VMT/yr * ((1-CF)/100) * 1 \text{ ton}/2000 \text{ lbs}$  where:  
 $E$  = annual emissions (tons/yr)  
 $EF_{ext}$  = annual size-specific emission factor extrapolated for natural mitigation, lb/VMT  
 $CF$  = control efficiency (%)

# TANKS 4.0.9d

## Emissions Report - Summary Format

### Tank Identification and Physical Characteristics

#### Identification

User Identification:	Nutter Run Station Oil Tank
City:	Ritchie County
State:	West Virginia
Company:	West Virginia Oil Gathering, LLC
Type of Tank:	Internal Floating Roof Tank
Description:	One (1) 15,000-bbl tank storing oil (RVP 5)

#### Tank Dimensions

Diameter (ft):		53.33
Volume (gallons):		630,000.00
Turnovers:		365.00
Self Supp. Roof? (y/n):	N	
No. of Columns:		1.00
Eff. Col. Diam. (ft):		0.70

#### Paint Characteristics

Internal Shell Condition:	Light Rust
Shell Color/Shade:	White/White
Shell Condition	Good
Roof Color/Shade:	White/White
Roof Condition:	Good

#### Rim-Seal System

Primary Seal:	Vapor-mounted
Secondary Seal	Rim-mounted

#### Deck Characteristics

Deck Fitting Category:	Detail	
Deck Type:	Bolted	
Construction:	Sheet	
Deck Seam:	Sheet: 5 Ft Wide	
Deck Seam Len. (ft):		446.75

#### Deck Fitting/Status

	Quantity
Access Hatch (24-in. Diam.)/Bolted Cover, Gasketed	1
Automatic Gauge Float Well/Bolted Cover, Gasketed	1
Column Well (24-in. Diam.)/Pipe Col.-Sliding Cover, Gask.	1
Ladder Well (36-in. Diam.)/Sliding Cover, Gasketed	1
Roof Leg or Hanger Well/Adjustable	26
Sample Pipe or Well (24-in. Diam.)/Slit Fabric Seal 10% Open	1
Stub Drain (1-in. Diameter)/Slit Fabric Seal 10% Open	12
Vacuum Breaker (10-in. Diam.)/Weighted Mech. Actuation, Gask.	1

Meterological Data used in Emissions Calculations: Charleston, West Virginia (Avg Atmospheric Pressure = 14.25 psia)



**TANKS 4.0.9d**  
**Emissions Report - Summary Format**  
**Liquid Contents of Storage Tank**

**Nutter Run Station Oil Tank - Internal Floating Roof Tank**  
**Ritchie County, West Virginia**

Mixture/Component	Month	Daily Liquid Surf. Temperature (deg F)			Liquid Bulk Temp (deg F)	Vapor Pressure (psia)			Vapor Mol. Weight.	Liquid Mass Fract.	Vapor Mass Fract.	Mol. Weight	Basis for Vapor Pressure Calculations
		Avg.	Min.	Max.		Avg.	Min.	Max.					
Crude oil (RVP 5)	All	56.67	51.31	62.04	55.00	2.6947	N/A	N/A	50.0000			207.00	Option 4: RVP=5

**TANKS 4.0.9d**  
**Emissions Report - Summary Format**  
**Individual Tank Emission Totals**

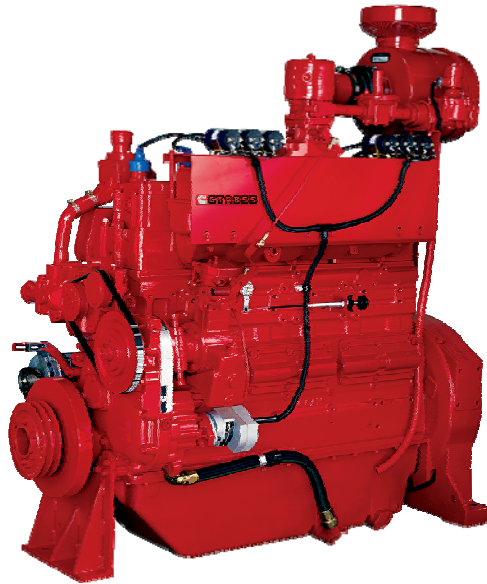
**Emissions Report for: Annual**

**Nutter Run Station Oil Tank - Internal Floating Roof Tank**  
**Ritchie County, West Virginia**

	Losses(lbs)				
Components	Rim Seal Loss	Withdrawl Loss	Deck Fitting Loss	Deck Seam Loss	Total Emissions
Crude oil (RVP 5)	122.82	4,178.28	338.54	83.36	4,723.00

# G855 & GTA855

## Gas Compression Applications



The demands of wellhead and gathering compression applications require an engine that is reliable and durable. For dependable operations and world class support, you need the Cummins G855 and GTA855 – a high-performance natural gas engine that shares the proven heritage of the Cummins diesel engines and many of the same heavy-duty components. You can depend on Cummins engines to keep maintenance costs down and the gas flowing. Every day.

### General Specifications

#### Inline 6-cylinder, 4-Cycle, Natural Gas

Bore	5.5 in (140 mm)
Stroke	6.0 in (152 mm)
Displacement	14.0 L (855 cubic in)
Engine Power*	157-286 hp (117-213 kW)
Compression Ratio	NA: 10:1 TA: 8.5:1
Aspiration	Naturally aspirated or turbocharged aftercooled
Exhaust Type	Watercooled manifold
Weight**	2970 lb (1347 kg)
Coolant Capacity	5.5 gal (20.8 L)
Lube Oil Capacity	15.0 gal (57.0 L)
Rotation	Counterclockwise

\* Rating dependent

\*\* Weight is approximate and varies with options.

### Features

Designed for the oil and gas market, the G855 and GTA855 deliver exceptional dependability and low cost of operation.

**Base Engine** – Most major components, including block, crank, cam, gears and liners are common with the proven N series diesel.

**Emissions** – The G855 and GTA855 have catalyst ratings available to allow the engine to be operated as a rich burn engine and can be customer equipped with an AFR and catalyst to meet NSPS emissions requirements. The GTA855 also has export only ratings available.

**Air Handling** – The naturally aspirated G855 and turbocharged and aftercooled GTA855 deliver reliable performance and life.

**Fuel System** – Impco carburetor provides stable operation and fuel tracking through all load ranges.

**Speed Control** – Adjustable pressure-compensated hydraulic governor provides precise and stable rpm control under all load conditions.

**Ignition System** – Altronic V integral electronic ignition system with easily accessible spark plug location and single coil per cylinder for lower maintenance costs.

**Lubrication System** – High-capacity oil pan and combination full-flow and bypass oil filter reduces maintenance costs and extend service intervals.

**Warranty** – Cummins one year, unlimited hours. Backed by a worldwide distributor network.

# Rating Details.

Model	Curve Number	Rating	Emissions	Combustion
G855	FR-10523	157 hp @ 1500 rpm	(1)	Rich
G855	FR-10526	188 hp @ 1800 rpm	(1)	Rich
GTA855	FR-10688	225 hp @ 1800 rpm	(1)	Rich
GTA855	FR-10533	256 hp @ 1800 rpm	Export Only	Standard
GTA855	FR-10531	281 hp @ 1800 rpm	Export Only	Standard
GTA855	FR-10529	286 hp @ 1800 rpm	Export Only	Standard
GTA855	FR-10539	213 hp @ 1500 rpm	Export Only	Standard
GTA855	FR-10537	234 hp @ 1500 rpm	Export Only	Standard
GTA855E	FR-10535	238 hp @ 1500 rpm	Export Only	Standard

(1) NSPS compliant with customer installed Air-fuel ratio (AFR) controller and catalyst.

\* Requires EPA site validation testing.

## Standard Equipment.

### Air Inlet System

- Factory installed heavy duty air cleaner

### Cooling System

- Two pump / two loop cooling system – GTA855
- Gear driven jacket water pump
- Gear driven auxiliary coolant pump – GTA855
- Thermostat controlled jacket water circuit
- Coolant filter for added corrosion protection
- Auxiliary coolant pump optional for compressor cooling - G855

### Exhaust System

- Watercooled manifold

### Fuel System

- Impco carburetor
- Maxitrol regulator

### Speed Control System

- Gear driven Woodard hydraulic / mechanical governor
- Electronic governor optional

### Ignition System

- Altronic V ignition system
- Altronic III ignition system optional
- Altronic V shielded ignition optional
- Altronic III shielded ignition optional

### Lube Oil System

- Crankcase breather
- High capacity oil pan for extended oil drain intervals
- Combination full flow and bypass oil filter

### Safety Shutoff Protection

- Electric fuel valve

### Mounting Arrangement

- Front and rear engine mounting
- Lift provisions on engine

### Flywheel and Flywheel Housing

- Flywheel SAE #1
- Flywheel housing – SAE #1 Cast-iron, machined to accommodate starter mounting

### Electrical System

- 24-volt alternator

### Starting System

- 24-volt starter
- Gas starter optional

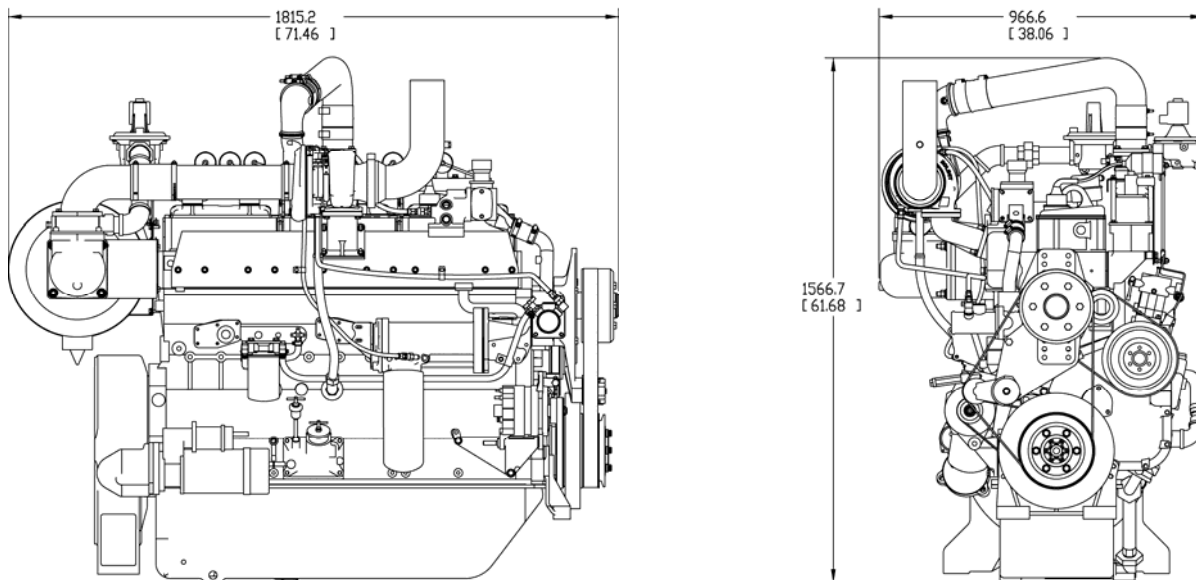
### Power Take-Off

- Front crankshaft pulley

# Engine Technical Data.

Model		G855	GTA855	GTA855
Curve Number		FR-10523 (2)	FR-10688 (2)	FR-10529 (2)
Exhaust Type		Dry Manifold	Wet Manifold	Wet Manifold
Output Power (1)				
100%	HP (kW)	188 (140)	225 (168)	286 (213)
75%	HP (kW)	141 (105)	169 (126)	215 (160)
Engine Speed				
100%	RPM	1800	1800	1800
Max Turn Down	RPM	1350	1350	1350
After-Cooler Water Inlet Temperature				
	°F (°C)	N/A	130 (54.4)	130 (54.4)
Compression Ratio		10:1	8.5:1	8.5:1
Emissions Data – Engine-Out Emissions (1)				
NOx	g/hp-hr (g-kW-hr)	5.9 (7.91)	12.1 (16.23)	7.6 (10.2)
CO	g/hp-hr (g-kW-hr)	26.7 (35.81)	2.9 (3.89)	1.1 (1.48)
NMHC	g/hp-hr			
THC	g/hp-hr	1.90	1.43	0.52
O <sub>2</sub>	%	0.54	0.41	4.20
Fuel Consumption (1)				
100%	BTU/hp-hr (MJ/kW-hr)	8605 (12.2)	8478 (12.0)	8224 (11.6)
75%	BTU/hp-hr (MJ/kW-hr)	9870 (14.0)	9077 (12.8)	8631 (12.2)
Heat Rejection (1)				
Jacket Water	BTU/min (kW)	8154 (143.38)	11445 (201.3)	12677 (223)
After-cooler	BTU/min (kW)	N/A	807 (14.19)	1902 (33.5)
Exhaust	BTU/min (kW)	5674 (99.77)	8137 (143.08)	11792 (207.4)
Exhaust System (1)				
Flow Rate	ft <sup>3</sup> /min (L/s)	866 (409)	945 (446)	1851 (874)
Stack temp	°F (°C)	1196 (647)	1304 (707)	1337 (725)
Max Back Pres.	in-Hg	2	2	2
Intake System (1)				
Flow Rate	ft <sup>3</sup> /min (L/s)	260 (123)	411 (194)	605 (286)
Max Restriction	in-H <sub>2</sub> O	15	15	15
Gas Pressure				
Min - Max	psi	10-20	10-20	10-20

# General Dimensions.



Turbocharged model pictured above

Dimensions*		NA	TA
Length	Inches (mm)	67.7 (1718)	71.5 (1815)
Width	Inches (mm)	35.9 (912)	38.1 (966)
Height	Inches (mm)	53.9 (1368)	61.7 (1567)

\* Dimensions are approximate and vary with options.

## Disclaimers.

(2) All data is based on the engine operating with fuel system, water pump, and 8 in H<sub>2</sub>O (1.991 kPa) inlet air restriction with 5 in (127 mm) inner diameter, and with 1.1 in Hg (4 kPa) exhaust restriction with 4 in (102 mm) inner diameter; not included are alternator, fan, optional equipment and driven components. Coolant flows and heat rejection data based on coolants as 50% ethylene glycol/50% water. All data is subject to change without notice.



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Rev 10/09  
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## ATTACHMENT P: PUBLIC NOTICE

Notice is given that West Virginia Gathering, LLC has applied to the West Virginia Department of Environmental Protection, Division of Air Quality, for a permit for crude oil storage tanks located near Cairo in Ritchie County, West Virginia. From I-77, exit 176 at Parkersburg, and take US Route 50 East. Follow Route 50 to intersection with State Route 31 South. Turn right onto SR 31. Facility is immediately on the left. The latitude and longitude coordinates are: 39.24134483, 81.20777119.

The applicant estimates the potential to discharge the following Regulated Air Pollutants are:

Nitrogen Oxides	3.63 tpy
Carbon Monoxide	7.26 tpy
Volatile Organic Compounds	9.38 tpy
Sulfur Dioxide	<0.01 tpy
Particulate Matter	9.94 tpy
Acetaldehyde	0.02 tpy
Acrolein	0.02 tpy
Benzene	0.07 tpy
Ethylbenzene	0.01 tpy
Formaldehyde	0.15 tpy
Methanol	0.02 tpy
n-Hexane	0.11 tpy
Toluene	0.09 tpy
Xylenes	0.04 tpy
Carbon Dioxide	828.89 tpy
Methane	0.36 tpy
CO2 Equivalent	838.39 tpy

No change in operation is planned. 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 1250, during normal business hours.

Dated this the 4th day of January, 2017.

By: West Virginia Oil Gathering, LLC  
Steve Cornelison  
Director, Fleet Operations  
2501 Cedar Springs Road Suite 100  
Dallas, TX 75201