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061-00217

**NORTHEAST NATURAL
ENERGY, LLC**

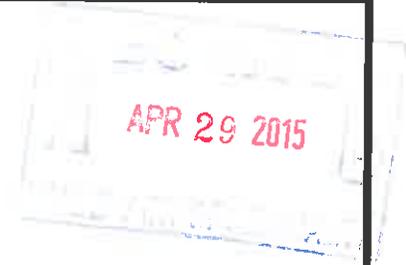
**APPLICATION FOR
GENERAL PERMIT**

**Beach Well Pad Production Facility
Monongalia County, West Virginia**



98 Vanadium Road
Bridgeville, PA 15017
(412) 221-1100

COPY



**NORTHEAST NATURAL
ENERGY, LLC**

**APPLICATION FOR
GENERAL PERMIT**

**Beach Well Pad Production Facility
Monongalia County, West Virginia**



98 Vanadium Road
Bridgeville, PA 15017
(412) 221-1100

APPLICATION FOR G70-A GENERAL PERMIT

Northeast Natural Energy, LLC

Beach Well Pad Production Facility

Monongalia County, West Virginia

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SECTION I

Application Form



WEST VIRGINIA
 DEPARTMENT OF ENVIRONMENTAL PROTECTION
 DIVISION OF AIR QUALITY
 601 57th Street, SE
 Charleston, WV 25304
 Phone: (304) 926-0475 • www.dep.wv.gov/daq

APPLICATION FOR GENERAL PERMIT REGISTRATION
 CONSTRUCT, MODIFY, RELOCATE OR ADMINISTRATIVELY UPDATE
 A STATIONARY SOURCE OF AIR POLLUTANTS

- CONSTRUCTION MODIFICATION RELOCATION CLASS I ADMINISTRATIVE UPDATE
 CLASS II ADMINISTRATIVE UPDATE

CHECK WHICH TYPE OF GENERAL PERMIT REGISTRATION YOU ARE APPLYING FOR:

- | | |
|---|---|
| <input type="checkbox"/> G10-D – Coal Preparation and Handling | <input type="checkbox"/> G40-C – Nonmetallic Minerals Processing |
| <input type="checkbox"/> G20-B – Hot Mix Asphalt | <input type="checkbox"/> G50-B – Concrete Batch |
| <input type="checkbox"/> G30-D – Natural Gas Compressor Stations | <input type="checkbox"/> G60-C – Class II Emergency Generator |
| <input type="checkbox"/> G33-A – Spark Ignition Internal Combustion Engines | <input type="checkbox"/> G65-C – Class I Emergency Generator |
| <input type="checkbox"/> G35-A – Natural Gas Compressor Stations (Flare/Glycol Dehydration Unit) | <input checked="" type="checkbox"/> G70-A – Class II Oil and Natural Gas Production Facility |

SECTION I. GENERAL INFORMATION

1. Name of applicant (as registered with the WV Secretary of State's Office): Northeast Natural Energy, LLC		2. Federal Employer ID No. (FEIN): 270945493	
3. Applicant's mailing address: 48 Donley Street Suite 601 Morgantown, WV 26501		4. Applicant's physical address: 48 Donley Street Suite 601 Morgantown, WV 26501	
5. If Applicant is a subsidiary corporation, please provide the name of parent corporation. N/A			
WV BUSINESS REGISTRATION. Is the applicant a resident of the State of West Virginia? <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO IF YES, provide a copy of the Certificate of Incorporation/ Organization / Limited Partnership (one page) including any name change amendments or other Business Registration Certificate as Attachment A. IF NO, provide a copy of the Certificate of Authority / Authority of LLC / Registration (one page) including any name change amendments or other Business Certificate as Attachment A.			

SECTION II. FACILITY INFORMATION

7. Type of plant or facility (stationary source) to be constructed, modified, relocated or administratively updated (e.g., coal preparation plant, primary crusher, etc.): Natural Gas Well Pad Production Facility	8a. Standard Industrial Classification (SIC) code: 1311	AND	8b. North American Industry System (NAICS) code: 211111
9. DAQ Plant ID No. (for existing facilities only):	10. List all current 45CSR13 and other General Permit numbers associated with this process (for existing facilities only): _____ _____		

A: PRIMARY OPERATING SITE INFORMATION

11A. Facility name of primary operating site: Beach Well Pad Production Facility _____ _____	12A. Address of primary operating site: Mailing: None _____ Physical: _____ _____	
13A. Does the applicant own, lease, have an option to buy, or otherwise have control of the proposed site? <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO → IF YES, please explain: <u>Applicant has a lease agreement with the land owner for installation of the Well Pad and associated equipment</u> _____ → IF NO, YOU ARE NOT ELIGIBLE FOR A PERMIT FOR THIS SOURCE.		
14A → For Modifications or Administrative Updates 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 F. From I-79, take exit 155. Merge onto CHAPLIN HILL RD/CR 19/24 N toward US 19/WV 7/STAR CITY. If traveling from the south, this will be a right. If from the north, this will be a left off the exit. After 0.8 miles, turn left at light onto US-19/WV-7. Continue on US-19/WV-7 for 1.7 miles. Turn left on WV-7 and continue on route for 8.8 miles. Turn left onto Mooresville Rd. Well site access road will be on the right-hand side of the road after 0.8 miles.		
15A. Nearest city or town:	16A. County: Monongalia	17A. UTM Coordinates: Northing (KM): <u>4395134.4</u> Easting (KM): <u>573913.7</u> Zone: <u>17</u>
18A. Briefly describe the proposed new operation or change (s) to the facility: Natural gas production and separation of liquids.		19A. Latitude & Longitude Coordinates (NAD83, Decimal Degrees to 5 digits): Latitude: <u>39.702866</u> Longitude: <u>-80.137823</u>

B: 1ST ALTERNATE OPERATING SITE INFORMATION (only available for G20, G40, & G50 General Permits)

11B. Name of 1 st alternate operating site: _____ _____	12B. Address of 1 st alternate operating site: Mailing: _____ Physical: _____ _____	
13B. Does the applicant own, lease, have an option to buy, or otherwise have control of the proposed site? <input type="checkbox"/> YES <input type="checkbox"/> NO → IF YES, please explain: _____ _____ → IF NO, YOU ARE NOT ELIGIBLE FOR A PERMIT FOR THIS SOURCE.		

<p>14B. → For Modifications or Administrative Updates at an existing facility, please provide directions to the present location of the facility from the nearest state road;</p> <p>→ For Construction or Relocation permits, please provide directions to the proposed new site location from the nearest state road. Include a MAP as Attachment F.</p> <p>_____</p> <p>_____</p>		
<p>15B. Nearest city or town:</p>	<p>16B. County:</p>	<p>17B. UTM Coordinates:</p> <p>Northing (KM): _____</p> <p>Easting (KM): _____</p> <p>Zone: _____</p>
<p>18B. Briefly describe the proposed new operation or change (s) to the facility:</p>		<p>19B. Latitude & Longitude Coordinates (NAD83, Decimal Degrees to 5 digits):</p> <p>Latitude: _____</p> <p>Longitude: _____</p>

C: 2ND ALTERNATE OPERATING SITE INFORMATION (only available for G20, G40, & G50 General Permits):

<p>11C. Name of 2nd alternate operating site:</p> <p>_____</p>	<p>12C. Address of 2nd alternate operating site:</p> <p>Mailing: _____ Physical: _____</p>	
<p>13C. Does the applicant own, lease, have an option to buy, or otherwise have control of the proposed site? <input type="checkbox"/> YES <input type="checkbox"/> NO</p> <p>→ IF YES, please explain: _____</p> <p>→ IF NO, YOU ARE NOT ELIGIBLE FOR A PERMIT FOR THIS SOURCE.</p>		
<p>14C. → For Modifications or Administrative Updates at an existing facility, please provide directions to the present location of the facility from the nearest state road;</p> <p>→ For Construction or Relocation permits, please provide directions to the proposed new site location from the nearest state road. Include a MAP as Attachment F.</p> <p>_____</p> <p>_____</p>		
<p>15C. Nearest city or town:</p>	<p>16C. County:</p>	<p>17C. UTM Coordinates:</p> <p>Northing (KM): _____</p> <p>Easting (KM): _____</p> <p>Zone: _____</p>
<p>18C. Briefly describe the proposed new operation or change (s) to the facility:</p>		<p>19C. Latitude & Longitude Coordinates (NAD83, Decimal Degrees to 5 digits):</p> <p>Latitude: _____</p> <p>Longitude: _____</p>

<p>20. Provide the date of anticipated installation or change:</p> <p style="text-align: center;"><u>5 / 15 / 15</u></p> <p>If this is an After-The-Fact permit application, provide the date upon which the proposed change did happen: :</p> <p style="text-align: center;">_ / _ / _</p>	<p>21. Date of anticipated Start-up if registration is granted:</p> <p style="text-align: center;"><u>5/ 20 / 15</u></p>
<p>22. Provide maximum projected Operating Schedule of activity/activities outlined in this application if other than 8760 hours/year. (Note: anything other than 24/7/52 may result in a restriction to the facility's operation).</p> <p>Hours per day <u>24</u> Days per week <u>7</u> Weeks per year <u>52</u> Percentage of operation <u>100</u></p>	

SECTION III. ATTACHMENTS AND SUPPORTING DOCUMENTS

<p>23. Include a check payable to WVDEP – Division of Air Quality with the appropriate application fee (per 45CSR22 and 45CSR13).</p>
<p>24. Include a Table of Contents as the first page of your application package.</p>
<p>All of the required forms and additional information can be found under the Permitting Section (General Permits) of DAQ's website, or requested by phone.</p>
<p>25. Please check all attachments included with this permit application. Please refer to the appropriate reference document for an explanation of the attachments listed below.</p> <ul style="list-style-type: none"> <input checked="" type="checkbox"/> ATTACHMENT A : CURRENT BUSINESS CERTIFICATE <input checked="" type="checkbox"/> ATTACHMENT B: PROCESS DESCRIPTION <input checked="" type="checkbox"/> ATTACHMENT C: DESCRIPTION OF FUGITIVE EMISSIONS <input checked="" type="checkbox"/> ATTACHMENT D: PROCESS FLOW DIAGRAM <input checked="" type="checkbox"/> ATTACHMENT E: PLOT PLAN <input checked="" type="checkbox"/> ATTACHMENT F: AREA MAP <input checked="" type="checkbox"/> ATTACHMENT G: EQUIPMENT DATA SHEETS AND REGISTRATION SECTION APPLICABILITY FORM <input checked="" type="checkbox"/> ATTACHMENT H: AIR POLLUTION CONTROL DEVICE SHEETS <input checked="" type="checkbox"/> ATTACHMENT I: EMISSIONS CALCULATIONS <input checked="" type="checkbox"/> ATTACHMENT J: CLASS I LEGAL ADVERTISEMENT <input type="checkbox"/> ATTACHMENT K: ELECTRONIC SUBMITTAL <input checked="" type="checkbox"/> ATTACHMENT L: GENERAL PERMIT REGISTRATION APPLICATION FEE <input type="checkbox"/> ATTACHMENT M: SITING CRITERIA WAIVER <input checked="" type="checkbox"/> ATTACHMENT N: MATERIAL SAFETY DATA SHEETS (MSDS) <input checked="" type="checkbox"/> ATTACHMENT O: EMISSIONS SUMMARY SHEETS <input checked="" type="checkbox"/> OTHER SUPPORTING DOCUMENTATION NOT DESCRIBED ABOVE (Equipment Drawings, Aggregation Discussion, etc.) <p>Please mail an original and two copies of the complete General Permit Registration Application with the signature(s) to the DAQ Permitting Section, at the address shown on the front page of this application. Please DO NOT fax permit applications. For questions regarding applications or West Virginia Air Pollution Rules and Regulations, please refer to the website shown on the front page of the application or call the phone number also provided on the front page of the application.</p>

SECTION IV. CERTIFICATION OF INFORMATION

This General Permit Registration Application shall be signed below by a Responsible Official. A Responsible Official is a President, Vice President, Secretary, Treasurer, General Partner, General Manager, a member of a Board of Directors, or Owner, depending on business structure. A business may certify an Authorized Representative who shall have authority to bind the Corporation, Partnership, Limited Liability Company, Association, Joint Venture or Sole Proprietorship. Required records of daily throughput, hours of operation and maintenance, general correspondence, Emission Inventory, Certified Emission Statement, compliance certifications and all required notifications must be signed by a Responsible Official or an Authorized Representative. If a business wishes to certify an Authorized Representative, the official agreement below shall be checked off and the appropriate names and signatures entered. Any administratively incomplete or improperly signed or unsigned Registration Application will be returned to the applicant.

FOR A CORPORATION (domestic or foreign)

I certify that I am a President, Vice President, Secretary, Treasurer or in charge of a principal business function of the corporation

FOR A PARTNERSHIP

I certify that I am a General Partner

FOR A LIMITED LIABILITY COMPANY

I certify that I am a General Partner or General Manager

FOR AN ASSOCIATION

I certify that I am the President or a member of the Board of Directors

FOR A JOINT VENTURE

I certify that I am the President, General Partner or General Manager

FOR A SOLE PROPRIETORSHIP

I certify that I am the Owner and Proprietor

I hereby certify that (please print or type) _____ is an Authorized Representative and in that capacity shall represent the interest of the business (e.g., Corporation, Partnership, Limited Liability Company, Association Joint Venture or Sole Proprietorship) and may obligate and legally bind the business. If the business changes its Authorized Representative, a Responsible Official shall notify the Director of the Office of Air Quality immediately, and/or,

I hereby certify that all information contained in this General Permit Registration Application and any supporting documents appended hereto is, to the best of my knowledge, true, accurate and complete, and that all reasonable efforts have been made to provide the most comprehensive information possible

Signature

(please use blue ink)

Responsible Official

4/24/15

Date

Name & Title **Brett Loflin Vice President Regulatory Affairs**

(please print or type)

Signature

(please use blue ink)

Authorized Representative (if applicable)

Date

Applicant's Name

Phone & Fax

304/241-5752

Phone

304/414-7061

Fax

Email

bloflin@nne-llc.com

**General Permit G70-A Registration
Section Applicability Form**

General Permit G70-A was developed to allow qualified applicants to seek registration for a variety of sources. These sources include natural gas well affected facilities, storage tanks, natural gas-fired compressor engines (RICE), natural gas producing units, natural gas-fired in-line heaters, pneumatic controllers, heater treaters, tank truck loading, glycol dehydration units, completion combustion devices, flares, enclosed combustion devices, and vapor recovery systems. All registered facilities will be subject to Sections 1.0, 2.0, 3.0, and 4.0.

General Permit G70-A allows the registrant to choose which sections of the permit they are seeking registration under. Therefore, please mark which additional sections that you are applying for registration under. If the applicant is seeking registration under multiple sections, please select all that apply. Please keep in mind, that if this registration is approved, the issued registration will state which sections will apply to your affected facility.

Section 5	Natural Gas Well Affected Facility	<input checked="" type="checkbox"/>
Section 6	Storage Vessels*	<input checked="" type="checkbox"/>
Section 7	Gas Producing Units, In-Line Heaters, Heater Treaters, and Glycol Dehydration Reboilers	<input checked="" type="checkbox"/>
Section 8	Pneumatic Controllers Affected Facility(NSPS, Subpart OOOO)	<input type="checkbox"/>
Section 9	<i>Reserved</i>	<input type="checkbox"/>
Section 10	Natural gas-fired Compressor Engine(s) (RICE)**	<input checked="" type="checkbox"/>
Section 11	Tank Truck Loading Facility ***	<input checked="" type="checkbox"/>
Section 12	Standards of Performance for Storage Vessel Affected Facilities (NSPS, Subpart OOOO)	<input type="checkbox"/>
Section 13	Standards of Performance for Stationary Spark Ignition Internal Combustion Engines (NSPS, Subpart JJJJ)	<input checked="" type="checkbox"/>
Section 14	Control Devices not subject to NSPS, Subpart OOOO	<input checked="" type="checkbox"/>
Section 15	National Emissions Standards for Hazardous Air Pollutants for Stationary Reciprocating Internal Combustion Engines (40CFR63, Subpart ZZZZ)	<input type="checkbox"/>
Section 16	Glycol Dehydration Units	<input type="checkbox"/>
Section 17	Dehydration Units With Exemption from NESHAP Standard, Subpart HH § 63.764(d) (40CFR63, Subpart HH)	<input type="checkbox"/>
Section 18	Dehydration Units Subject to NESHAP Standard, Subpart HH and Not Located Within an UA/UC (40CFR63, Subpart HH)	<input type="checkbox"/>
Section 19	Dehydration Units Subject to NESHAP Standard, Subpart HH and Located Within an UA/UC (40CFR63, Subpart HH)	<input type="checkbox"/>

* Applicants that are subject to Section 6 may also be subject to Section 12 if the applicant is subject to the NSPS, Subpart OOOO control requirements or the applicable control device requirements of Section 14.

** Applicants that are subject to Section 10 may also be subject to the applicable RICE requirements of Section 13 and/or Section 15.

*** Applicants that are subject to Section 11 may also be subject to control device requirements of Section 14.

SECTION II

Attachments

ATTACHMENT A

Business Registration

State of West Virginia



Certificate

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

NORTHEAST NATURAL ENERGY LLC

Control Number: 99GX5

a limited liability company, organized under the laws of the State of Delaware has filed its "Application for Certificate of Authority" in my office according to the provisions of West Virginia Code §31B-10-1002. I hereby declare the organization to be registered as a foreign limited liability company from its effective date of October 9, 2009, until a certificate of cancellation is filed with our office.

Therefore, I hereby issue this

CERTIFICATE OF AUTHORITY OF A FOREIGN LIMITED LIABILITY COMPANY

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



Given under my hand and the Great Seal of the State of West Virginia on this day of October 9, 2009

Natalie E. Tennant

Secretary of State

Natale E. Tennant
Secretary of State
State Capitol Building
1900 Kanawha Blvd. East
Charleston, WV 25305-0770

www.wvsos.com

**WEST VIRGINIA
APPLICATION FOR
CERTIFICATE OF AUTHORITY
OF LIMITED LIABILITY COMPANY**

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

Control # 99AX5

****A certificate of existence from your home state of organization, dated during the current tax year, must be included with this application.****

1. The name of the company as registered in its home state is: Northeast Natural Energy LLC
and the state or country of organization is: Delaware

2. The name to be used in West Virginia will be:
[The name must contain one of the required terms such as "limited liability company" or abbreviations such as L.L.C. or "P.L.L.C." See instructions for complete list of acceptable terms and requirements for use of trade name (DBA).]
 Home state name as listed above, if available in W. Va.
 DBA name _____

3. The company will be a: [See instructions for limitations on professions which may form P.L.L.C. in W.Va. All members must have WV professional license.]
 regular L.L.C.
 professional L.L.C. for the profession of _____

4. The address of the designated office of the company in WV, if any, will be: [need not be a place of the company's business]
Street/Box: 707 Virginia Street, East Suite 1400
City/State/Zip: Charleston, WV 25301

5. The street address of the principal office is:
Street/Box: 707 Virginia Street, East Suite 1400
City/State/Zip: Charleston, WV 25301

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

FILED
OCT 09 2009
**IN THE OFFICE OF
SECRETARY OF STATE**

6. The name and address of the initial agent of process, if any, is:
Name: Jo Ellen Yeary
Street: 707 Virginia Street, East Suite 1400
City/State/Zip: Charleston, WV 25301

The mailing address of the above agent of process, if different, is:
Street/Box: _____
City/State/Zip: _____

7. The company is:
 an at-will company, for an indefinite period.
 a term company, for the term of _____ years,
which will expire on _____

8. The Company is:

- member-managed. [List the names and addresses of all members who have signature authority, attach extra page if needed]
- manager-managed. [List the names and addresses of all managers who have signature authority, attach extra page if needed]

Name

Jo Ellen Yeary

Mark A. Williams

Address

707 Virginia Street, East, Suite 1400, Charleston, WV 25301

707 Virginia Street, East, Suite 1400, Charleston, WV 25301

9. All or specified members of a limited liability company are liable in their capacity as members for all or specified debts, obligations or liabilities of the company.

- NO -- All debts, obligations and liabilities are those of the company.
- YES -- Those persons who are liable in their capacity as members for all debts, obligations or liability of the company have consented in writing to the adoption of the provision or to be bound by the provision.

10. The purpose for which this limited liability company is formed are as follows:

(Describe the type(s) of business activity which will be conducted, for example, "real estate," "construction of residential and commercial buildings," "commercial printing," "professional practice of architecture.")

Energy

11. The number of pages attached and included in this application is zero.

12. The requested date for the establishment of the limited liability company in West Virginia is:

- the date & time of filing
- the following date _____ and time _____
[Requested date may not be earlier than filing nor later than 90 days after filing.]

13. Enter the number of acres the company desires to hold in West Virginia. If your company holds more than 10,000 acres of land, you must submit a fee of 5¢ for each acre over 10,000. none currently owned and amount to be owned is unknown

14. Contact and Signature Information:

a. Contact person to reach in case there is a problem with filing: Mark D. Clark

Phone # (304) 340-3876

b. Signature of manager of a manager-managed company, member of a member-managed company, person organizing the company, if the company has not been formed or attorney-in-fact for any of the above

Jo Ellen Yeary
Name [print or type]

Member
Title/Capacity

Jo Ellen Yeary
Signature

Delaware

PAGE 1

The First State

I, JEFFREY W. BULLOCK, SECRETARY OF STATE OF THE STATE OF DELAWARE, DO HEREBY CERTIFY "NORTHEAST NATURAL ENERGY LLC" IS DULY FORMED UNDER THE LAWS OF THE STATE OF DELAWARE AND IS IN GOOD STANDING AND HAS A LEGAL EXISTENCE SO FAR AS THE RECORDS OF THIS OFFICE SHOW, AS OF THE NINTH DAY OF OCTOBER, A.D. 2009.

AND I DO HEREBY FURTHER CERTIFY THAT THE SAID "NORTHEAST NATURAL ENERGY LLC" WAS FORMED ON THE SEVENTEENTH DAY OF SEPTEMBER, A.D. 2009.

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

4713590 8300

090925479

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




Jeffrey W. Bullock, Secretary of State
AUTHENTICATION: 7576152

DATE: 10-09-09

ATTACHMENT B

Process Description

Emission Units Table

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

Emission Unit ID ¹	Emission Point ID ²	Emission Unit Description	Year Installed/ Modified	Design Capacity	Type ³ and Date of Change	Control Device ⁴
HTR-1	1E	Gas Processing Unit	Pending Permit	1.0 MMBTU/Hr	NEW	None
HTR-2	2E	Gas Processing Unit	Pending Permit	1.0 MMBTU/Hr	NEW	None
HTR-3	3E	Gas Processing Unit	Pending Permit	1.0 MMBTU/Hr	NEW	None
HTR-4	4E	Gas Processing Unit	Pending Permit	1.0 MMBTU/Hr	NEW	None
CE-1	5E	CAT 3516B	Pending Permit	1380 HP	NEW	1C
T01	6E	Produced Water Tank	Pending Permit	210 BBL	NEW	None
T02	7E	Produced Water Tank	Pending Permit	400 BBL	NEW	None
T03	8E	Produced Water Tank	Pending Permit	400 BBL	NEW	None
T04	9E	Produced Water Tank	Pending Permit	400 BBL	NEW	None
TL-1	10E	Produced Water Loading	Pending Permit	175,200 BBL/Yr.	NEW	None

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

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

³ New, modification, removal

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

Northeast Natural Energy, LLC
Beach Well Pad Production Facility
Attachment B
Process Description

Natural gas and Produced Fluids (water) is received from four wells on this location at approximately 600 psi and pass through Gas Processing Units (one per well) to avoid ice and methane hydrate formation during subsequent pressure drops. These materials will then pass through a separator where gas and water are separated. The gas will be routed to a gathering pipeline owned and operated by others.

The Produced Water will be accumulated in three 400 and one 210 BBL tanks, pending truck transportation by others. Produced water will be re-used at subsequent wells or disposed of at a regional disposal facility. Flash, working and breathing losses from these tanks have been determined to be nominal, based on measurements at a nearby Northeast Energy Well Pad, and will be allowed to vent to atmosphere. *There is no condensate generated at this facility.*

A Process Flow Diagram depicting these features is provided in Attachment D.

There will be a single gas-fired compressor engine used to boost the pressure of the production gas to a pressure suitable for injection into the gathering line owned by others. No dehydration units are proposed for this facility. It is important to note that this compressor and engine are anticipated to operate only for a limited time period (approximately 12-18 months) pending construction and operation of a compressor station by the company providing midstream services for Northeast Energy.

All natural gas fired equipment (GPUs and the compressor engine) use natural gas produced at the site as fuel.

While emissions at this facility are generally below the thresholds triggering the need for a permit, the presence of an engine subject to the testing requirements of 40 CFR 60, Subpart JJJJ necessitates operation under a permit issued by WVDEP, Division of Air Quality. Additionally, annual formaldehyde emissions exceed the permitting threshold, again warranting the acquisition of a permit from the WVDEP, Division of Air Quality.

40 CFR 60, Subpart OOOO requires that VOC emissions from each "storage vessel affected facility" installed after April 12, 2013 (GROUP 2) must be controlled by at least 95% by April 15, 2014 or within 60 days of installation when the VOC uncontrolled emissions exceed 6 tpy. VOC emissions from the tanks described above will be well below the 6 tpy limit. Thus, the tanks at this facility will not be regulated under 40 CFR 60, Subpart OOOO.

ATTACHMENT C

Description of Fugitive Emissions

Northeast Natural Energy, LLC
Beach Well Pad
Attachment C – Fugitive Emissions Data

Storage Tank and Haul Road Fugitive Emissions

Haul Road Fugitive Emissions for unpaved roads are calculated and presented in Attachment I. PM is estimated to be less than 5 tons per and PM-10 to be 0.65 tons per year.

Produced Fluids received by this facility is accumulated in a four tanks prior to off-site shipment. Emissions from these tanks were determined by using direct measurements from produced water tanks at a nearby Northeast well pad. Uncontrolled emissions from these tanks were determined to be 0.25 tons per year of VOCs. There is no control on these emissions. *There is no condensate at this facility.*

Emissions from these sources are summarized in the following fugitive emissions form and the calculations are included in the emissions summary in Attachment I.

Equipment Fugitive Emissions

As noted in the process description, Northeast plans to install various additional equipment at its Beach Well Pad. This equipment will contain a variety of piping containing natural gas and separated liquids under pressure. During the normal course of operation minor leaks from valves, pressure release devices and various fittings associated with this piping may occur. A potential emission rate of less than 0.01 tpy of VOCs and 34.3 tpy CO_{2e} has been estimated.

Estimates of these emissions are included in the calculations (Attachment I) and summarized on the form included in this section. These calculations are based on emission factors accepted by the American Petroleum Institute and EPA.

Pigging Emission Estimates

There will be no pigging operations in association with this planned facility modification.

Facility Blowdown Emission Estimates

There will be one gas compressors at this facility that will require blowdowns to allow for routine maintenance. The volume of natural gas released per blowdown event from this unit and associated inlet separator and piping is approximately 1570 cubic feet of gas at STP (see attached calculations). There will be a maximum of 24 blow downs per compressor per year. Thus, there is a potential for 37,680 cubic feet of gas emitted from blowdowns per year.

The density of this gas at STP is 0.046 pounds per cubic foot (see the Inlet Gas spreadsheet in the calculations). Thus, the mass of gas released per year is 1,733 pounds (37,680 cf x 0.046). As the percentage of VOCs in the gas (by weight) is 0.68 percent (see Inlet Gas spreadsheet in the calculations), the VOC (non-methane/non-ethane) emissions from blowdown operations are estimated at approximately 12.0 lbs (1,733 x 0.0068) or less than 0.006 tons per year. As the methane concentration in this gas is 93.1 % (by weight), methane emissions will be 1,613 pounds (1,733 x 0.931) per year. Using a GHG factor of 25, methane emissions from blowdowns in CO_{2e} will be 20 tons CO_{2e} (1,613 x 25[GHG factor] /2000).

FUGITIVE EMISSIONS DATA SUMMARY SHEET

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

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

APPLICATION FORMS CHECKLIST - FUGITIVE EMISSIONS

1.) Will there be haul road activities?

Yes No

If YES, then complete the HAUL ROAD EMISSIONS UNIT DATA SHEET.

2.) Will there be Storage Piles?

Yes No

If YES, complete Table 1 of the NONMETALLIC MINERALS PROCESSING EMISSIONS UNIT DATA SHEET.

3.) Will there be Liquid Loading/Unloading Operations?

Yes No

If YES, complete the BULK LIQUID TRANSFER OPERATIONS EMISSIONS UNIT DATA SHEET.

4.) Will there be emissions of air pollutants from Wastewater Treatment Evaporation?

Yes No

If YES, complete the GENERAL EMISSIONS UNIT DATA SHEET.

5.) Will there be Equipment Leaks (e.g. leaks from pumps, compressors, in-line process valves, pressure relief devices, open-ended valves, sampling connections, flanges, agitators, cooling towers, etc.)?

Yes No

If YES, complete the LEAK SOURCE DATA SHEET section of the CHEMICAL PROCESSES EMISSIONS UNIT DATA SHEET.

6.) Will there be General Clean-up VOC Operations?

Yes No

If YES, complete the GENERAL EMISSIONS UNIT DATA SHEET.

7.) Will there be any other activities that generate fugitive emissions?

Yes No

If YES, complete the GENERAL EMISSIONS UNIT DATA SHEET or the most appropriate form.

If you answered "NO" to all of the items above, it is not necessary to complete the following table, "Fugitive Emissions Summary."

FUGITIVE EMISSIONS SUMMARY		All Regulated Pollutants - Chemical Name/CAS 1	Maximum Potential Uncontrolled Emissions 2		Maximum Potential Controlled Emissions 3		Est. Method Used 4
			lb/hr	ton/yr	lb/hr	ton/yr	
Haul Road/Road Dust Emissions Paved Haul Roads							
Unpaved Haul Roads		PM	NA	5	NA	5	EE
		PM-10	NA	0.65	NA	0.65	EE
Loading and Unloading Produced Water		VOCs	NA	<0.01	NA	<0.01	EE
Equipment Leaks		VOCs	Does Not Apply	<0.01	Does Not Apply	<0.01	EE
		CO2e	Does Not Apply	34.3	Does Not Apply	34.3	EE
Blowdowns		VOCs	N/A	<0.01	N/A	<0.01	EE
		CO2e	N/A	20	N/A	20	EE
Other:							

1 List all regulated air pollutants. Speciate VOCs, including all HAPs. Follow chemical name with Chemical Abstracts Service (CAS) number. LIST Acids, CO, CS2, VOCs, H2S, Inorganics, Lead, Organics, O3, NO, NO2, SO2, SO3, all applicable Greenhouse Gases (including CO2 and methane), etc. DO NOT LIST H2, H2O, N2, O2, and Noble Gases.

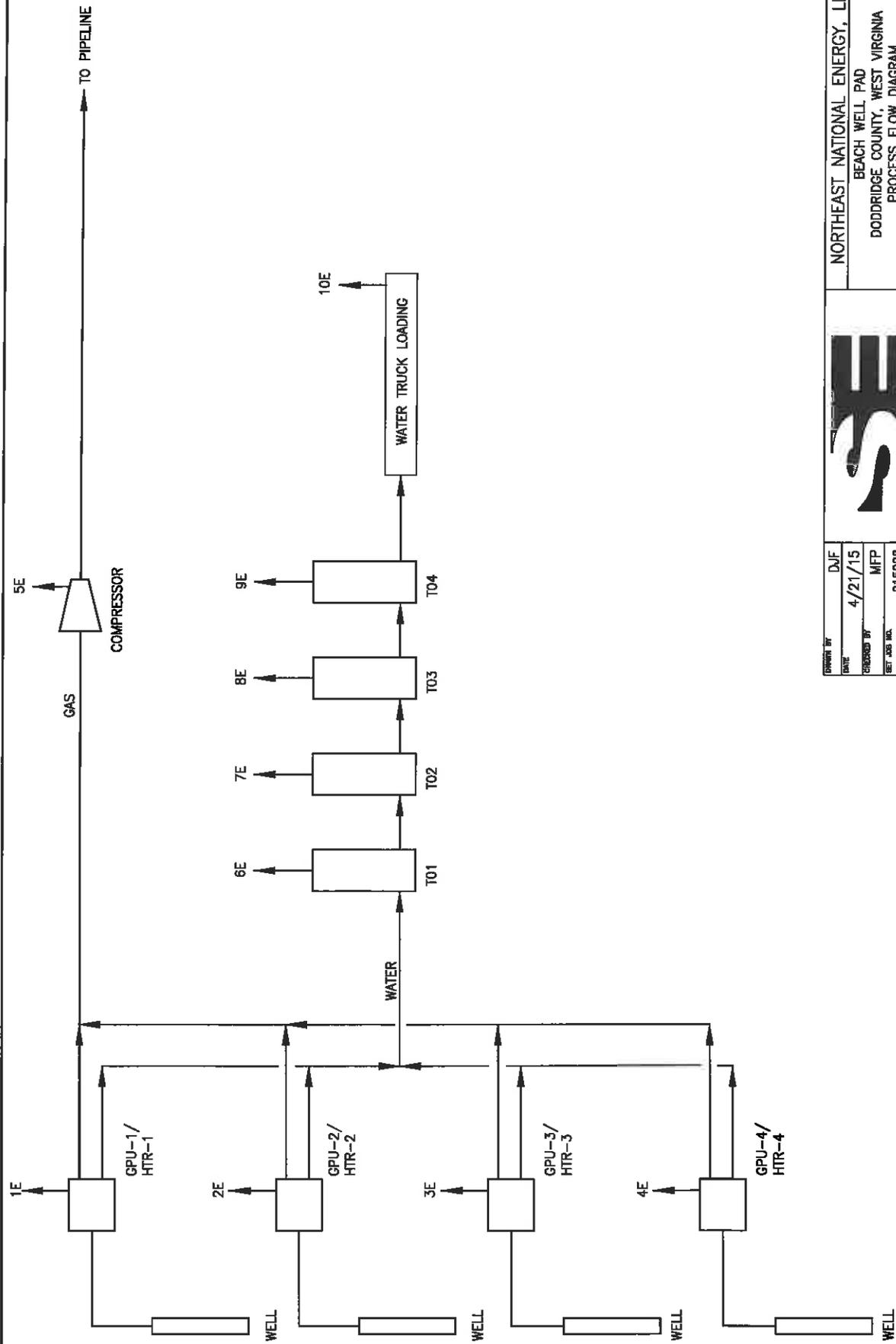
2 Give rate with no control equipment operating. If emissions occur for less than 1 hr, then record emissions per batch in minutes (e.g. 5 lb VOC/20 minute batch).

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

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

ATTACHMENT D

Process Flow Diagram



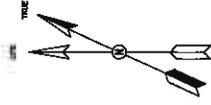
DESIGNED BY	DJF
DATE	4/21/15
CHECKED BY	MFP
EST. JOB NO.	215028
EST. DWG. FILE	FB01.dwg
DESIGNER SCALE	N.T.S.



NORTHEAST NATIONAL ENERGY, LLC
 BEACH WELL PAD
 DODDRIDGE COUNTY, WEST VIRGINIA
 PROCESS FLOW DIAGRAM
 FIGURE 2
 REV. 0

ATTACHMENT E

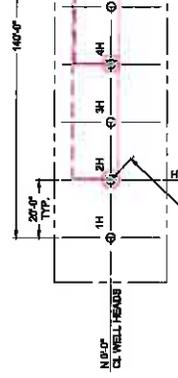
Plot Plan



EDGE OF LOCATION

TRUCK PAD
10' x 10'

(4) EXISTING 2" SCH. 100 FLOW LINES



(1) 2" WELL CASING VENT LINE
(1) 80" INSTRUMENT GAS

PROPOSED 3018 COMPRESSOR

DISCHARGE

3-VALVE BYPASS

M3 METER

EDGE OF LOCATION

(1) 8" PAD SALES OUTLET FOR PRODUCTION AREA
DETAIL SEE DWG P-108

(1) 8" SALES LINE
(1) 2" SAND TRAP BLOW DOWN LINE
(1) 80" INSTRUMENT GAS LINE

PROD. TANK OFFSET

FOR FLUID TANK AREA
DETAIL SEE DWG P-109

TANK BATTERY WITH (1) 210 BBL. TANK AND (2) 400 BBL. TANK

PLAN VIEW
BEACH WELL PAD

(1) 2" SALES LINE BURIED DEEP OR TAKE OTHER PRECAUTIONS TO PROTECT LINE FROM TRAFFIC



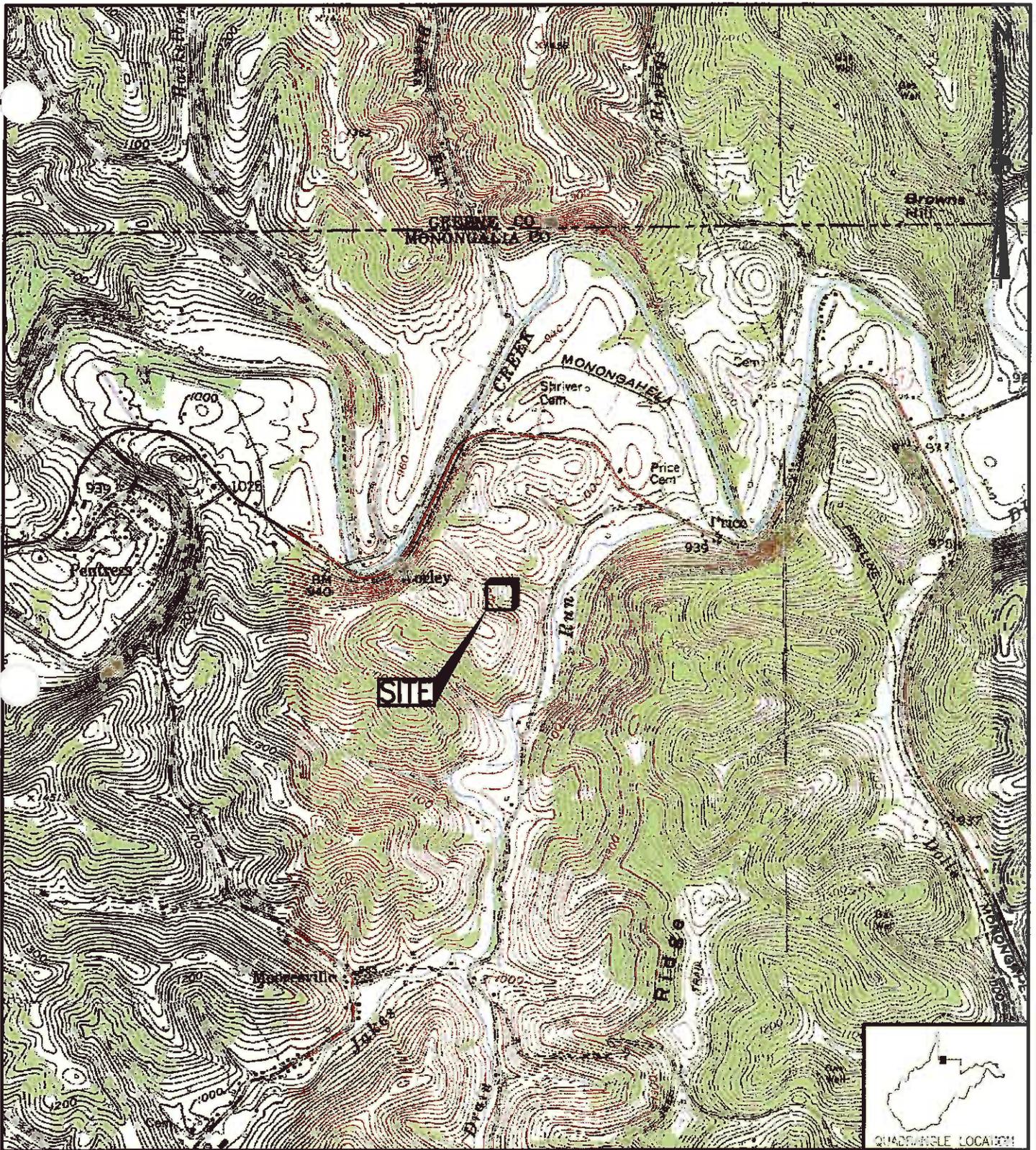
SCALE 1"=30'

1 2 3 4 5 6 7 8 9

A B C D E

ATTACHMENT F

Area Map



REFERENCE: USGS 7.5' QUADRANGLE MAP OF: BLACKSVILLE, WEST VIRGINIA; DATED 1958, PHOTOREVISED 1976, PHOTOINSPECTED 1988.

DRAWN BY	DJF
DATE	4/24/15
CHECKED BY	MFP
JOB NO.	215028
SET DWG FILE	BEACHm01.dwg
DRAWING SCALE	1"=2000'



98 Vanadium Road Bridgeville, PA 15017 (412) 221-1100

NORTHEAST NATIONAL ENERGY, LLC

BEACH WELL PAD
DODDRIDGE COUNTY, WEST VIRGINIA
SITE LOCATION MAP

DRAWING NO.

FIGURE 1

REV.

0

ATTACHMENT G

**Equipment Data Sheets and
Registration Section Applicability Form**

NATURAL GAS WELL AFFECTED FACILITY DATA SHEET

Complete this data sheet if you are the owner or operator of a gas well affected facility for which construction, modification, or reconstruction commenced after August 23, 2011. This form must be completed for natural gas well affected facilities regardless of when flowback operations occur (or have occurred).

Please provide the API number(s) for each NG well at this facility:	
047-061-01665	
047-061-01666	
047-061-01668	
047-061-01669	

Note: This is the same API well number(s) provided in the well completion notification and as provided to the WVDEP, Office of Oil and Gas for the well permit. The API number may be provided on the application without the state code (047).

Every oil and gas well permitted in West Virginia since 1929 has been issued an API (American Petroleum Institute) number. This API is used by agencies to identify and track oil and gas wells.

The API number has the following format: 047-001-00001

Where,

047 = State code. The state code for WV is 047.

001 = County Code. County codes are odd numbers, beginning with 001 (Barbour) and continuing to 109 (Wyoming).

00001 = Well number. Each well will have a unique well number.

ATTACHMENT H

Air Pollution Control Device Sheets

USA Unit 1324 G3516BLE Engine Emissions

Date of Manufacture	<u>June 28, 2013</u>	Engine Serial Number	<u>JEF02327</u>	Date Modified/Reconstructed	<u>TBD</u>
Driver Rated HP	<u>1380</u>	Rated Speed in RPM	<u>1400</u>	Combustion Type	<u>Spark Ignited 4 Stroke</u>
Number of Cylinders	<u>16</u>	Compression Ratio	<u>8:1</u>	Combustion Setting	<u>Ultra Lean Burn</u>
Total Displacement (in ³)	<u>4230</u>	Fuel Delivery Method	<u>Carburetor</u>	Combustion Air Treatment	<u>T.C./Aftercooled</u>

Raw Engine Emissions (With Customer Fuel Gas with little to no H2S)

Fuel Consumption 7442 LHV BTU/bhp-hr or 8255 HHV BTU/bhp-hr
 Altitude 1200 ft
 Maximum Air Inlet Temp 90 F

	<u>g/bhp-hr¹</u>	<u>lb/MMBTU²</u>	<u>lb/hr</u>	<u>TPY</u>
Nitrogen Oxides (NOx)	0.5		1.52	6.66
Carbon Monoxide (CO)	2.43		7.39	32.38
Volatile Organic Compounds (VOC or NMNEHC excluding CH2O)	0.48		1.46	6.40
Formaldehyde (CH2O)	0.43		1.31	5.73
Particulate Matter (PM) <small>Filterable+Condensable</small>		9.99E-03	1.14E-01	4.98E-01
Sulfur Dioxide (SO2)		5.88E-04	6.70E-03	2.93E-02
	<u>g/bhp-hr¹</u>		<u>lb/hr</u>	<u>Metric Tonne/yr</u>
Carbon Dioxide (CO2)	472		1436	5705
Methane (CH4)	4.04		12.29	48.83

¹ g/bhp-hr are based on Caterpillar Specifications (GERP) assuming customer fuel gas, 1200 ft elevation, and 90 F Max Air Inlet Temperature. Note that g/bhp-hr values are based on 100% Load Operation. For Air Permitting, it is recommended to add a safety margin to CO, VOC, and Formaldehyde to account for variations in fuel gas composition and load.

² Emission Factor obtained from EPA's AP-42, Fifth Edition, Volume I, Chapter 3: Stationary Internal Combustion Sources (Section 3.2 Natural Fired Reciprocating Engines, Table 3.2-2).

Catalytic Converter Emissions

Catalytic Converter Make and Model: DCL, 2DC65-14
 Element Type: Oxidation, 30.75" Round
 Number of Elements in Housing: (2) Full Elements
 Air/Fuel Ratio Control: Caterpillar ADEM3, NOx Feedback

	<u>% Reduction</u>		<u>lb/hr</u>	<u>TPY</u>
Nitrogen Oxides (NOx)	0		1.52	6.66
Carbon Monoxide (CO)	93		0.52	2.27
Volatile Organic Compounds (VOC or NMNEHC)	50	(use 30% DRE for High BTU Fuels)	0.73	3.20
Formaldehyde (CH2O)	90		0.13	0.57
Particulate Matter (PM)	0		1.14E-01	4.98E-01
Sulfur Dioxide (SO2)	0		6.70E-03	2.93E-02
	<u>% Reduction</u>		<u>lb/hr</u>	<u>Metric Tonne/yr</u>
Carbon Dioxide (CO2)	0		1436	5705
Methane (CH4)	0		12.29	48.83



1610 Woodstead Ct, Suite 245, The Woodlands, Texas 77380 USA
 Tel: 877-965-8989 Fax: 281-605-5858 info@dcl-inc.com www.dcl-inc.com

GLOBAL LEADER IN EMISSION CONTROL SOLUTIONS

To:	Chris Magee
Company:	USA Compression
Date:	March 20, 2015

Phone:	814-746-6942
Email	CMagee@usacompression.com
No. Pages:	1

Dear Chris,

We hereby guarantee that our Model DC65-14 specified below with one (2) elements installed as described below, and sized for the following engine:

Engine Data	
Engine Model	Caterpillar G3516B
Power	1380HP
Fuel	PQNG
Exhaust Flow Rate	9127 acfm
Exhaust Temperature	994°F

Catalyst Data	
Catalyst Model	DC65-14
Type	Oxidation- A
# of Elements	2
Cell Density	300 cpsi
Approx Dimensions	See attached drawing
Approx Pressure Drop	4.0" w.c

will perform as follows:

Exhaust Component	Engine Output g/bhp-hr or % reduction	Converter Output g/bhp-hr or % reduction
CO	2.43	93
VOC	0.48	0.25
CH20	0.43	0.05

for a period of 1 year or 8000 hours, whichever comes first, subject to all terms and conditions contained in the attached warranty document being respected and met.

Best Regards,

On behalf of DCL America Inc.

Lisa Barber

416-788-8021

lbarber@dcl-inc.com

G3516B

GAS COMPRESSION APPLICATION

GAS ENGINE SITE SPECIFIC TECHNICAL DATA Northeast Quote 4-10-15



ENGINE SPEED (rpm): 1400
 COMPRESSION RATIO: 8:1
 AFTERCOOLER TYPE: SCAC
 AFTERCOOLER - STAGE 2 INLET (°F): 130
 AFTERCOOLER - STAGE 1 INLET (°F): 201
 JACKET WATER OUTLET (°F): 210
 ASPIRATION: TA
 COOLING SYSTEM: JW+OC+1AC, 2AC
 CONTROL SYSTEM: ADEM3
 EXHAUST MANIFOLD: DRY
 COMBUSTION: LOW EMISSION
 NOx EMISSION LEVEL (g/bhp-hr NOx): 0.5
 SET POINT TIMING: 30

RATING STRATEGY:
 RATING LEVEL:
 FUEL SYSTEM:
SITE CONDITIONS:
 FUEL:
 FUEL PRESSURE RANGE(psig):
 FUEL METHANE NUMBER:
 FUEL LHV (Btu/scf):
 ALTITUDE(ft):
 MAXIMUM INLET AIR TEMPERATURE(°F):
 STANDARD RATED POWER:

STANDARD
 CONTINUOUS
 CAT WIDE RANGE
 WITH AIR FUEL RATIO CONTROL

Northeast 4-10-15
 7.0-40.0
 90.5
 931
 1200
 90
 1380 bhp@1400rpm

RATING	NOTES	LOAD	SITE RATING AT MAXIMUM INLET AIR TEMPERATURE			
			100%	100%	75%	50%
ENGINE POWER (WITHOUT FAN)	(1)	bhp	1380	1380	1035	690
INLET AIR TEMPERATURE		°F	90	90	90	90

ENGINE DATA						
FUEL CONSUMPTION (LHV)	(2)	Btu/bhp-hr	7442	7442	7971	8561
FUEL CONSUMPTION (HHV)	(2)	Btu/bhp-hr	8255	8255	8842	9497
AIR FLOW (@inlet air temp, 14.7 psia)	(3)(4) (WET)	ft ³ /min	3199	3202	2511	1756
AIR FLOW	(3)(4) (WET)	lb/hr	13860	13860	10873	7601
FUEL FLOW (80°F, 14.7 psia)		scfm	184	184	148	106
INLET MANIFOLD PRESSURE	(5)	in Hg(abs)	94.6	94.6	76.8	54.0
EXHAUST TEMPERATURE - ENGINE OUTLET	(6)	°F	992	992	986	1006
EXHAUST GAS FLOW (@engine outlet temp, 14.5 psia)	(7)(4) (WET)	ft ³ /min	9106	9106	7122	5053
EXHAUST GAS MASS FLOW	(7)(4) (WET)	lb/hr	14341	14341	11259	7878

EMISSIONS DATA - ENGINE OUT						
NOx (as NO ₂)	(8)(9)	g/bhp-hr	0.50	0.50	0.50	0.50
CO	(8)(9)	g/bhp-hr	2.43	2.43	2.80	2.55
THC (mol. wt. of 15.84)	(8)(9)	g/bhp-hr	4.75	4.75	5.09	5.17
NMHC (mol. wt. of 15.84)	(8)(9)	g/bhp-hr	0.71	0.71	0.76	0.78
NMNEHC (VOCs) (mol. wt. of 15.84)	(8)(9)(10)	g/bhp-hr	0.48	0.48	0.51	0.52
HCHO (Formaldehyde)	(8)(9)	g/bhp-hr	0.43	0.43	0.43	0.42
CO ₂	(8)(9)	g/bhp-hr	472	472	504	548
EXHAUST OXYGEN	(8)(11)	% DRY	9.0	9.0	8.7	8.3

HEAT REJECTION						
HEAT REJ. TO JACKET WATER (JW)	(12)	Btu/min	23610	23610	21688	20035
HEAT REJ. TO ATMOSPHERE	(12)	Btu/min	6110	6110	5092	4074
HEAT REJ. TO LUBE OIL (OC)	(12)	Btu/min	4475	4475	3978	3363
HEAT REJ. TO A/C - STAGE 1 (1AC)	(12)(13)	Btu/min	11577	11577	9642	3428
HEAT REJ. TO A/C - STAGE 2 (2AC)	(12)(13)	Btu/min	5517	5517	5202	3396

COOLING SYSTEM SIZING CRITERIA			
TOTAL JACKET WATER CIRCUIT (JW+OC+1AC)	(13)(14)	Btu/min	43496
TOTAL AFTERCOOLER CIRCUIT (2AC)	(13)(14)	Btu/min	5793
A cooling system safety factor of 0% has been added to the cooling system sizing criteria.			

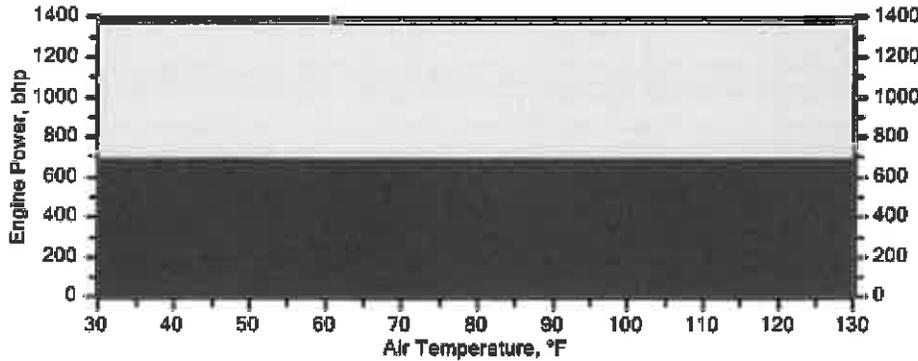
CONDITIONS AND DEFINITIONS

Engine rating obtained and presented in accordance with ISO 3046/1, adjusted for fuel, site altitude and site inlet air temperature. 100% rating at maximum inlet air temperature is the maximum engine capability for the specified fuel at site altitude and maximum site inlet air temperature. Maximum rating is the maximum capability at the specified aftercooler inlet temperature for the specified fuel at site altitude and reduced inlet air temperature. Lowest load point is the lowest continuous duty operating load allowed. No overload permitted at rating shown.

For notes information consult page three.

Engine Power vs. Inlet Air Temperature

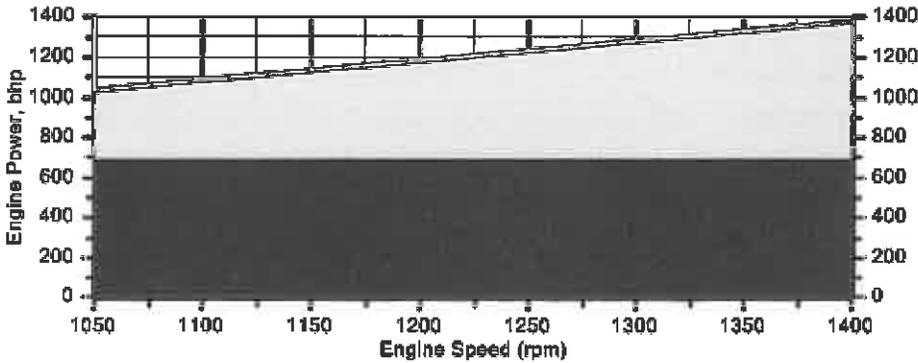
Data represents temperature sweep at 1200 ft and 1400 rpm



- Max Continuous Power vs. Speed Capability for Site Conditions
- No Rating Available Range for Site Conditions
- Continuous Operating Range for Site Conditions
- Low Load Intermittent Operating Range

Engine Power vs. Engine Speed

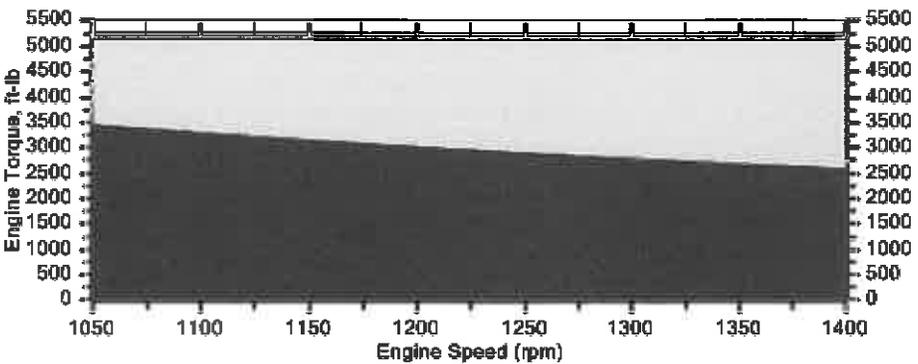
Data represents speed sweep at 1200 ft and 90 °F



- Max Continuous Power vs. Speed Capability for Site Conditions
- No Rating Available Range for Site Conditions
- Continuous Operating Range for Site Conditions
- Low Load Intermittent Operating Range

Engine Torque vs. Engine Speed

Data represents speed sweep at 1200 ft and 90 °F



- Max Continuous Torque vs. Speed Capability for Site Conditions
- No Rating Available Range for Site Conditions
- Continuous Operating Range for Site Conditions
- Low Load Intermittent Operating Range

Note: At site conditions of 1200 ft and 90°F inlet air temp., constant torque can be maintained down to 1050 rpm. The minimum speed for loading at these conditions is 1050 rpm.

NOTES

1. Engine rating is with two engine driven water pumps. Tolerance is $\pm 3\%$ of full load.
2. Fuel consumption tolerance is $\pm 3.0\%$ of full load data.
3. Air flow value is on a 'wet' basis. Flow is a nominal value with a tolerance of $\pm 5\%$.
4. Inlet and Exhaust Restrictions must not exceed A&I limits based on full load flow rates from the standard technical data sheet.
5. Inlet manifold pressure is a nominal value with a tolerance of $\pm 5\%$.
6. Exhaust temperature is a nominal value with a tolerance of (+)83°F, (-)54°F.
7. Exhaust flow value is on a "wet" basis. Flow is a nominal value with a tolerance of $\pm 6\%$.
8. Emissions data is at engine exhaust flange prior to any after treatment.
9. Emission values are based on engine operating at steady state conditions. Fuel methane number cannot vary more than ± 3 . Values listed are higher than nominal levels to allow for instrumentation, measurement, and engine-to-engine variations. They indicate "Not to Exceed" values. THC, NMHC, and NMNEHC do not include aldehydes. An oxidation catalyst may be required to meet Federal, State or local CO or HC requirements.
10. VOCs - Volatile organic compounds as defined in US EPA 40 CFR 60, subpart JJJJ
11. Exhaust Oxygen level is the result of adjusting the engine to operate at the specified NOx level. Tolerance is ± 0.5 .
12. Heat rejection values are nominal. Tolerances, based on treated water, are $\pm 10\%$ for jacket water circuit, $\pm 50\%$ for radiation, $\pm 20\%$ for lube oil circuit, and $\pm 5\%$ for aftercooler circuit.
13. Aftercooler heat rejection includes an aftercooler heat rejection factor for the site elevation and Inlet air temperature specified. Aftercooler heat rejection values at part load are for reference only. Do not use part load data for heat exchanger sizing.
14. Cooling system sizing criteria are maximum circuit heat rejection for the site, with applied tolerances.

Constituent	Abbrev	Mole %	Norm		
Water Vapor	H2O	0.0000	0.0000		
Methane	CH4	96.4087	96.4087	Fuel Makeup:	Northeast 4-10-15
Ethane	C2H6	2.8479	2.8479	Unit of Measure:	English
Propane	C3H8	0.1781	0.1781		
Isobutane	iso-C4H10	0.0055	0.0055	Calculated Fuel Properties	
Norbutane	nor-C4H10	0.0157	0.0157	Caterpillar Methane Number:	90.5
Isopentane	iso-C5H12	0.0013	0.0013		
Norpentane	nor-C5H12	0.0015	0.0015	Lower Heating Value (Btu/scf):	931
Hexane	C6H14	0.0226	0.0226	Higher Heating Value (Btu/scf):	1033
Heptane	C7H16	0.0000	0.0000	WOBBE Index (Btu/scf):	1229
Nitrogen	N2	0.2819	0.2819		
Carbon Dioxide	CO2	0.2368	0.2368	THC: Free Inert Ratio:	191.79
Hydrogen Sulfide	H2S	0.0000	0.0000	Total % Inerts (% N2, CO2, He):	0.52%
Carbon Monoxide	CO	0.0000	0.0000	RPC (%) (To 905 Btu/scf Fuel):	100%
Hydrogen	H2	0.0000	0.0000		
Oxygen	O2	0.0000	0.0000	Compressibility Factor:	0.998
Helium	HE	0.0000	0.0000	Stoich A/F Ratio (Vol/Vol):	9.72
Neopentane	neo-C5H12	0.0000	0.0000	Stoich A/F Ratio (Mass/Mass):	16.94
Octane	C8H18	0.0000	0.0000	Specific Gravity (Relative to Air):	0.574
Nonane	C9H20	0.0000	0.0000	Specific Heat Constant (K):	1.311
Ethylene	C2H4	0.0000	0.0000		
Propylene	C3H6	0.0000	0.0000		
TOTAL (Volume %)		100.0000	100.0000		

CONDITIONS AND DEFINITIONS

Caterpillar Methane Number represents the knock resistance of a gaseous fuel. It should be used with the Caterpillar Fuel Usage Guide for the engine and rating to determine the rating for the fuel specified. A Fuel Usage Guide for each rating is included on page 2 of its standard technical data sheet.

RPC always applies to naturally aspirated (NA) engines, and turbocharged (TA or LE) engines only when they are derated for altitude and ambient site conditions.

Project specific technical data sheets generated by the Caterpillar Gas Engine Rating Pro program take the Caterpillar Methane Number and RPC into account when generating a site rating.

Fuel properties for Btu/scf calculations are at 60F and 14.696 psia.

Caterpillar shall have no liability in law or equity, for damages, consequently or otherwise, arising from use of program and related material or any part thereof.

FUEL LIQUIDS

Field gases, well head gases, and associated gases typically contain liquid water and heavy hydrocarbons entrained in the gas. To prevent detonation and severe damage to the engine, hydrocarbon liquids must not be allowed to enter the engine fuel system. To remove liquids, a liquid separator and coalescing filter are recommended, with an automatic drain and collection tank to prevent contamination of the ground in accordance with local codes and standards.

To avoid water condensation in the engine or fuel lines, limit the relative humidity of water in the fuel to 80% at the minimum fuel operating temperature.

ATTACHMENT I

Emissions Calculations

EMISSIONS SUMMARY

Beach Well Pad
 Northeast Natural Energy
 Wagonmatta County

Source	Description	NOx lb/hr	CO lb/hr	CO2e lb/hr	VOC lb/hr	SO2 lb/hr	PM lb/hr	n-Hexane lb/Hr	benzene lb/hr	formaldehyde lb/hr	Total HAPs lb/hr
CE-1	Compressor Engine #1	1.52	0.52	1743.99	0.730	0.01	0.11	0.00	0.00	0.13	0.290
HTR-1- HTR-4	Four 1.0 MMBTU/Hr GPUs	0.40	0.34	483.15	0.02	0.00	0.03	0.01	0.00	0.00	0.008
---	Haul Road Fugitive Dust										
T01-T04	Produced Water Tanks ²			197.80	0.06						
---	Equipment Fugitive Emissions			7.84	0.00						
---	Blowdowns ¹			N/A	N/A						
Total		1.92	0.85	2,433	0.81	0.01	0.14	0.01	0.00	0.13	0.30

Source	Description	NOx tpy	CO tpy	CO2e tpy	VOC tpy	SO2 tpy	PM tpy	n-Hexane TPY	benzene tpy	formaldehyde tpy	Total HAPs tpy
CE-1	Compressor Engine #1	6.66	2.27	7,639	3.20	0.03	0.50	0.01	0.00	0.58	1.272
HTR-1- HTR-4	Four 1.0 MMBTU/Hr GPUs	1.75	1.47	2,116	0.10	0.01	0.13	0.03	0.00	0.00	0.033
---	Haul Road Fugitive Dust						5.00				
T01-T04	Produced Water Tanks ²			866	0.25						
---	Equipment Fugitive Emissions			34	0.00						
---	Blowdowns ¹			20	0.01						
Total		8.42	3.74	10,675	3.55	0.04	5.63	0.04	0.00	0.58	1.31

¹ See Attachment C for Blowdown Calculations

² Water tank emissions are uncontrolled.

ENGINE EMISSIONS

**Beach Well Pad
Northeast Natural Energy
Monongalia County**

Proposed Emission Rates

Source CE-1

Engine Data:

Engine Manufacturer	CAT	
Engine Model	3516B	
Type (Rich-burn or Low Emission)	Low Emissions	
Aspiration (Natural or Turbocharged)	Natural	
Turbocharge Cooler Temperature	130	deg. F
Manufacturer Rating	1,380	hp
Speed at Above Rating	1,400	rpm
Configuration (In-line or Vee)	V-16	
Number of Cylinders	16	
Engine Bore	6.700	Inches
Engine Stroke	7.500	inches
Fuel Heat Content	931	BTU/scf
Engine Displacement	4,231	cu. In.
Fuel Consumption (HHV)	8,255	Btu/bhp-hr

Emission Rates:

	g/bhp-hr	lb/hr	tons/year	g/hr	lb/day
Oxides of Nitrogen, NOx	0.50	1.52	6.68	690	36.5
Carbon Monoxide CO	0.17	0.52	2.27	235	12.42
VOC (NMNEHC)	0.24	0.73	3.20	331	17.52
CO _{2e}	472	1435	6289.70	651,360	34,491.10

AP-42
4 strokes
4 strokes

Comment
453.59 grams = 1 pound
2,000 pounds = 1 ton

Total Annual Hours of Operation

Total Annual Hours of Operation	8,760		
SO ₂		0.0067	0.0293
PM (Condensable+ Filterable)		0.1138	0.4985
CH ₄ as CO _{2e}	4.04	307.28	1345.9
N ₂ O as CO _{2e}		0.7063	3.0936
acrolein		0.0586	0.2585
acetaldehyde		0.0952	0.4171
formaldehyde	0.043	0.1314	0.5757
biphenyl		0.0002	0.0010
benzene		0.0005	0.0021
toluene		0.0004	0.0019
ethylbenzene		4E-05	0.0002
xylene		0.0002	0.0009
methanol		0.0027	0.0118
n-hexane		0.0012	0.0052
total HAPs		0.2905	1.2723

0.000589
0.009989

Mfg. Spec Used
Mfg. Spec Used
0.0002 Factor From 40 CFR 98, Table C-2

0.00512
0.00836
0.0526
0.000212
0.00044
0.000406
3.97E-05
0.00018
0.0025
0.0011
0.007109

Mfg. Spec Used

Exhaust Parameters:

Exhaust Gas Temperature	992	deg. F
Exhaust Gas Flow Rate	9216	acfm
Total Exhaust Gas Volume Flow, wet	9,216	acfm
Total Exhaust Gas Volume Flow, dry	153.6	acf per sec
Exhaust Stack Height	260	inches
	21.67	feet
Exhaust Stack Inside Diameter	20	inches
	1.667	feet
Exhaust Stack Velocity	70.4	ft/sec
	4,224.3	ft/min

$$3.1416 \times \frac{4}{(stack\ diameter)^2} \times acfm$$

**Beach Well Pad
Northeast Natural Energy
Monongalia County**

Potential Emission Rates

Sources HTR-1 to HTR-4

Burner Duty Rating	4000.0 Mbtu/hr	Four Units at 1.0 Mbtu/Hr Each
Burner Efficiency	98.0 %	
Gas Heat Content (HHV)	1032.8 Btu/scf	
Total Gas Consumption	94849.6 scfd	
H2S Concentration	0.000 Mole %	
Hours of Operation	8760	

NOx	0.4002	lbs/hr	1.753	TPY
CO	0.3361	lbs/hr	1.472	TPY
CO2	480.2	lbs/hr	2103.2	TPY
CO2e	483	lbs/hr	2,116	tpy
VOC	0.0220	lbs/hr	0.096	TPY
SO2	0.0024	lbs/hr	0.011	TPY
H2S	0.0000	lbs/hr	0.000	TPY
PM10	0.0304	lbs/hr	0.133	TPY
CHOH	0.0003	lbs/hr	0.001	TPY
Benzene	0.0000	lbs/hr	0.000	TPY
N-Hezane	0.0072	lbs/hr	0.032	TPY
Toluene	0.0000	lbs/hr	0.000	TPY
Total HAPs	0.0075	lbs/hr	0.033	TPY

AP-42 Factors Used

NOx	100 Lbs/MMCF	
CO	84 Lbs/MMCF	
CO ₂	120,000 Lbs/MMCF	Global Warming Potential = 1
VOC	5.5 Lbs/MMCF	
PM	7.6 Lbs/MMCF	
SO ₂	0.6 Lbs/MMCF	
CH ₄	2.3 Lbs/MMCF	Global Warming Potential = 25
N ₂ O	2.2 Lbs/MMCF	Global Warming Potential =310
HCOH	0.075 Lbs/MMCF	
Benzene	0.0021 Lbs/MMCF	
n-Hexane	1.8 Lbs/MMCF	
Toluene	0.0034 Lbs/MMCF	

FUGITIVE EMISSIONS

**Beach Well Pad
Northeast Natural Energy
Monongalia County**

Fugitive VOC Emissions

Volatile Organic Compounds, NMNEHC from gas analysis:	0.68	weight percent
Methane from gas analysis:	93.07	weight percent
Carbon Dioxide from gas analysis:	0.63	weight percent
Gas Density	0.0462	lb/scf

Emission Source:	Number	Oil & Gas Production*	VOC %	VOC, lb/hr	VOC TPY	CO2 lb/Hr	CO2 TPY	CH4 lb/hr	CH4 TPY	CO2e
Valves:										
Gas/Vapor:	24	0.02700 scf/hr	0.7	0.000	0.001	0.000	0.001	0.028	0.1222	3.055
Light Liquid:	-	0.05000 scf/hr	100.0	0.000	0.000					0.000
Heavy Liquid (Oil):	-	0.00050 scf/hr	100.0	0.000	0.000					0.000
Low Bleed Pneumatic	4	1.39000 scf/hr	0.7	0.002	0.008	0.239	1.048	0.239	1.0482	27.254
Relief Valves:	8	0.04000 scf/hr	0.7	0.000	0.000	0.000	0.000	0.014	0.0603	1.509
Open-ended Lines, gas:	-	0.06100 scf/hr	0.7	0.000	0.000					0.000
Open-ended Lines, liquid:	-	0.05000 lb/hr	100.0	0.000	0.000					0.000
Pump Seals:										0.000
Gas:	-	0.00529 lb/hr	0.7	0.000	0.000	0.000	0.000	0.000	0.0000	0.000
Light Liquid:	-	0.02866 lb/hr	100.0	0.000	0.000					0.000
Heavy Liquid (Oil):	-	0.00133 lb/hr	100.0	0.000	0.000					0.000
Compressor Seals, Gas:	2	0.01940 lb/hr	0.7	0.000	0.001	0.000	0.001	0.002	0.0073	0.184
Connectors:										0.000
Gas:	16	0.00300 scf/hr	0.7	0.000	0.000	0.000	0.000	0.002	0.0090	0.226
Light Liquid:	0	0.00700 scf/hr	100.0	0.000	0.000					0.000
Heavy Liquid (Oil):	-	0.00030 scf/hr	100.0	0.000	0.000					0.000
Flanges:										0.000
Gas:	24	0.00086 lb/hr	0.7	0.000	0.001	0.000	0.001	0.019	0.0841	2.104
Light Liquid:	0	0.00300 scf/hr	100.0	0.000	0.000					0.000
Heavy Liquid:		0.0009 scf/hr	100.0	0.000	0.000					0.000

<i>Fugitive Calculations:</i>		
	lb/hr	t/y
VOC	0.001	0.003
CH4	0.065	0.283
CO2	0.001	0.003
CO2e	7.838	34.33

Notes: *Factors are from 40 CFR 98, Table W-1A (scf/hr), where available. Remaining are API (lb/hr)

GAS ANALYSIS INFORMATION

**Beach Well Pad
Northeast Natural Energy
Monongalia County**

Fuel Gas Composition Information:

	Fuel Gas mole %	Fuel M.W. lb/lb-mole	Fuel S.G.	Fuel Wt. %	LHV, dry Btu/scf	HHV, dry Btu/scf	AFR vol/vol	VOC NM / NE	Z Factor	GPM
Nitrogen, N2	0.2819	0.079	0.003	0.475			-		0.0028	
Carbon Dioxide, CO2	0.2368	0.104	0.004	0.627			-		0.0024	
Hydrogen Sulfide, H2S		-	-	-			-		-	
Helium, He		-	-	-			-		-	
Oxygen, O2		-	-	-			-		-	
Methane, CH4	96.4067	15.467	0.534	93.067	876.7	973.7	9.188		0.9622	
Ethane, C2H6	2.8479	0.856	0.030	5.153	46.1	50.4	0.475		0.0282	0.758
Propane	0.1761	0.079	0.003	0.473	4.1	4.5	0.042	0.473	0.0017	0.049
Iso-Butane	0.0055	0.003	0.000	0.019	0.2	0.2	0.002	0.019	0.0001	0.002
Normal Butane	0.0157	0.009	0.000	0.055	0.5	0.5	0.005	0.055	0.0002	0.005
Iso Pentane	0.0013	0.001	0.000	0.006	0.0	0.1	0.000	0.006	0.0000	0.000
Normal Pentane	0.0015	0.001	0.000	0.007	0.1	0.1	0.001	0.007	0.0000	0.001
Hexane	0.0200	0.017	0.001	0.104	0.9	1.0	0.009	0.104	0.0002	0.008
Heptane	0.0026	0.003	0.000	0.016	0.1	0.1	0.001	0.016	0.0000	0.001
	100.000	16.619	0.574		928.7	1,030.5	9.723	0.678	0.9978	0.823

Gas Density (STP) = 0.046

Ideal Gross (HHV) 1,030.5
 Ideal Gross (sat'd) 1,013.3
 GPM -
 Real Gross (HHV) 1,032.8
 Real Net (LHV) 930.8

Gas Analytical

Report Date: Mar 25, 2015 9:43a

Client:	Northeast Natural Energy	Date Sampled:	Mar 20, 2015
Site:	Beach 6H	Analysis Date:	Mar 23, 2015 2:28p
Field No:		Collected By:	
Meter:		Date Effective:	Mar 1, 2015 12:00a
Source Laboratory	Clarksburg (Bridgeport), WV	Sample Pressure (PSI):	939.0
Lab File No:	X_CH1-2124.CHR	Sample Temp (°F):	
Sample Type:	Spot	Field H2O (lb/MMSCFD):	No Test
Reviewed By:		Field H2S (PPM):	No Test

Component	Mol %	Gal/MSCF
Methane	96.4087	
Ethane	2.8479	0.76
Propane	0.1781	0.05
I-Butane	0.0055	0.00
N-Butane	0.0157	0.00
I-Pentane	0.0013	0.00
N-Pentane	0.0015	0.00
Nitrogen	0.2819	
Oxygen	<MDL	
CO2	0.2368	
Hexanes+	0.0226	0.01
TOTAL	100.0000	0.82

Analytical Results at Base Conditions (Real)	
BTU/SCF (Dry):	1,034.7950 BTU/ft ³
BTU/SCF (Saturated):	1,017.6626 BTU/ft ³
PSIA:	14.730 PSI
Temperature (°F):	60.00 °F
Z Factor (Dry):	0.99789
Z Factor (Saturated):	0.99754

Analytical Results at Contract Conditions (Real)	
BTU/SCF (Dry):	1,034.7950 BTU/ft ³
BTU/SCF (Saturated):	1,017.6626 BTU/ft ³
PSIA:	14.730 PSI
Temperature (°F):	60.00 °F
Z Factor (Dry):	0.99789
Z Factor (Saturated):	0.99754

Calculated Specific Gravities		
Ideal Gravity:	0.5738	Real Gravity: 0.5748
Molecular Wt:	16.6198 lb/lbmol	

Gross Heating Values are Based on:
GPA 2145-09, 2186
Compressibility is Calculated using AGA-8.

Source	Date	Notes
Gas Analytical	Mar 23, 2015	results to RWarner@NNE-LLC.com

Gas Data

GAS DATA INFORMATION

Specific Gravity of Air, @ 29.92 in. Hg and 60 -F, 28.9625
 One mole of gas occupies, @ 14.696 psia & 32 -F 359.2 cu ft. per lb-mole
 One mole of gas occupies, @ 14.696 psia & 60 -F 379.64 cu ft. per lb-mole

Hydrogen Sulfide (H2S) conversion chart:

Q grains H2S/100 scf	=	0.00000 mole % H2S
	=	0.0 ppmv H2S
Q mole % H2S	=	Q grains H2S/100 scf
	=	0.0 ppmv H2S
Q ppmv H2S	=	0.000 grains H2S/100 scf
	=	0.00000 mole % H2S

Ideal Gas at 14.696 psia and 60°F

		MW lb/mol	Specific Gravity	Lb per Cu Ft	Cu Ft per Lb	LHV, dry Btu/scf	HHV, dry Btu/scf	LHV Btu/lb	HHV Btu/lb	cu ft of air / 1 cu ft of gas	Z factor
Nitrogen	N2	28.013	0.9672	0.0738	13.552	0	0	0	0	0	0.9997
Carbon Dioxide	CO2	44.010	1.5196	0.1159	8.626	0	0	0	0	0	0.9964
Hydrogen Sulfide	H2S	34.076	1.1766	0.0898	11.141	587	637	6,545	7,100	7.15	0.9846
Water	H2O	18.000	0.6215	0.0474	21.091	0	0	0	0	0	1.0006
Oxygen	O2	31.999	1.1048	0.0843	11.864	0	0	0	0	0	0.9992
Methane	CH4	16.043	0.5539	0.0423	23.664	909.4	1,010.0	21,520	23,879	9.53	0.9980
Ethane	C2H6	30.070	1.0382	0.0792	12.625	1,618.7	1,769.6	20,432	22,320	16.68	0.9919
Propane	C3H8	44.097	1.5226	0.1162	8.609	2,314.9	2,516.1	19,944	21,661	23.82	0.9825
Iso-Butane	C4H10	58.124	2.0069	0.1531	6.532	3,000.4	3,251.9	19,629	21,257	30.97	0.9711
Normal Butane	C4H10	58.124	2.0069	0.1531	6.532	3,010.8	3,262.3	19,680	21,308	30.97	0.9667
Iso Pentane	C5H12	72.151	2.4912	0.1901	5.262	3,699.0	4,000.9	19,478	21,052	38.11	1.0000
Normal Pentane	C5H12	72.151	2.4912	0.1901	5.262	3,706.9	4,008.9	19,517	21,091	38.11	1.0000
Hexane	C6H14	86.178	2.9755	0.2270	4.405	4,403.8	4,755.9	19,403	20,940	45.26	0.9879
Heptane	C7H16	100.205	3.4598	0.2639	3.789	5,100.0	5,502.5	22,000	23,000	52.41	0.9947

Real Gas at 14.696 psia and 60°F

		MW lb/mol	Specific Gravity	Lb per Cu Ft	Cu Ft per Lb	LHV, dry Btu/scf	HHV, dry Btu/scf	LHV Btu/lb	HHV Btu/lb	cu ft of air / 1 cu ft of gas	Gal/Mole
Nitrogen	N2	28.013	0.9672	0.0738	13.552	0	0	0	0	0	4.1513
Carbon Dioxide	CO2	44.010	1.5196	0.1159	8.626	0	0	0	0	0	6.4532
Hydrogen Sulfide	H2S	34.076	1.1766	0.0898	11.141	621	672	6,545	7,100	7.15	5.1005
Water	H2O	18.000	0.6215	0.0474	21.091						3.8376
Oxygen	O2	31.999	1.1048	0.0843	11.864	0	0	0	0	0	3.3605
Methane	CH4	16.043	0.5539	0.0423	23.664	911	1,012	21,520	23,879	9.53	6.4172
Ethane	C2H6	30.070	1.0382	0.0792	12.625	1,631	1,783	20,432	22,320	16.68	10.126
Propane	C3H8	44.097	1.5226	0.1162	8.609	2,353	3,354	19,944	21,661	23.82	10.433
Iso-Butane	C4H10	58.124	2.0069	0.1531	6.532	3,101	3,369	19,629	21,257	30.97	12.386
Normal Butane	C4H10	58.124	2.0069	0.1531	6.532	3,094	3,370	19,680	21,308	30.97	11.937
Iso Pentane	C5H12	72.151	2.4912	0.1901	5.262	3,709	4,001	19,478	21,052	38.11	13.86
Normal Pentane	C5H12	72.151	2.4912	0.1901	5.262	3,698	4,009	19,517	21,091	38.11	13.713
Hexane	C6H14	86.178	2.9755	0.2270	4.405	4,404	4,756	19,403	20,940	45.26	15.566
Heptane	C7H16	100.205	3.4598	0.2639	3.789	5,101	5,503	22,000	23,000	52.41	17.468

16.3227
17.468

Northeast Natural Energy, LLC
Beach Well Pad
Produced Water Tank Emissions

Utilizing direct measurements of tank vent emissions from Produced Water Tanks at nearby well pad (attached), gas emissions were determined to be 120 scfd at a water production rate of 13 BBL/day. Thus, with an anticipated maximum water production rate at the Beach Well Pad being 20 BBL/hr, an emission rate of 4431 SCFD is anticipated. $[120 \times 20/13 \times 24]$. The natural gas constituents were forced into solution in the Produced Water by the high pressures in the gas production zone. As they are not soluble in water, they are quickly released as the pressure on the water is released as it progresses from the well to the atmospheric pressure tank (flash gas). Consequently, working and breathing emissions are nominal.

The composition of the flash gas is assumed to be very similar to that of the production gas. Given that the density of the production gas is calculated to be 0.046 lb/scf, a flash gas rate of 4431 scfd equates to 203.8 lb/day. This gas is very dry, containing only 0.68% VOCs. Thus, potential VOC emissions from the tanks are estimated at 1.39 lb/day or 0.06 lb/hr. Annual VOC emissions are projected to be 505.8 pounds $[203.8 \times 365 \times 0.68\%]$ or 0.25 tpy.

Methane comprises approximately 93.1% of the gas. Thus, methane emissions are projected to be 7.91 lb/hr $[203.8/24 \times .931]$ or 34.6 tpy. Using a GHG factor of 25, potential CO_{2e} emissions will be 197.8 lb/hr or 865.7 tpy

Attachment I FUGITIVE EMISSIONS FROM UNPAVED HAULROADS

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

		PM	PM-10
k =	Particle size multiplier	0.80	0.36
s =	Silt content of road surface material (%)	10	3
p =	Number of days per year with precipitation >0.01 in.	157	157

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	Produced Water Tanker Truck	14	27	10	1.2	1	1490	None	0
2									
3									
4									
5									
6									
7									
8									

Source: AP-42 Fifth Edition – 13.2.2 Unpaved Roads

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

Where:

		PM	PM-10
k =	Particle size multiplier	0.80	0.36
s =	Silt content of road surface material (%)	10	3
S =	Mean vehicle speed (mph)	10	10
W =	Mean vehicle weight (tons)	27	27
w =	Mean number of wheels per vehicle	18	18
p =	Number of days per year with precipitation >0.01 in.	157	157

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 lb/hr	Controlled TPY						
1	NA	5	NA	5	NA	0.65	NA	0.65
2								
3								
4								
5								
6								
7								
8								
TOTALS	NA	5	NA	5	NA	0.65	NA	.065

FUGITIVE EMISSIONS FROM PAVED HAULROADS

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

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

Item Number	Description	Mean Vehicle Weight (tons)	Miles per Trip	Maximum Trips per Hour	Maximum Trips per Year	Control Device ID Number	Control Efficiency (%)
1	None						
2							
3							
4							
5							
6							
7							
8							

Source: AP-42 Fifth Edition – 11.2.6 Industrial Paved Roads

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

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

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 PAVED HAULROAD EMISSIONS

Item No.	Uncontrolled		Controlled	
	lb/hr	TPY	lb/hr	TPY
1				
2				
3				
4				
5				
6				
7				
8				
TOTALS				

ATTACHMENT J

Class I Legal Advertisement

**Affidavit Notice Will Be Submitted
Upon Receipt**

TITLES:

Title: Dominion Post | Class: 101 Legals
Start Date: 4/24/2015 | Stop Date: 4/24/2015
Insertions: 1 | Lines: 34.26 ag

AD COPY PROOF:

Not Shown Actual Size

010062447

April 24

AIR QUALITY PERMIT NOTICE

Notice of Application

Notice is given that Northeast Natural Energy LLC has applied to the West Virginia Department of Environmental Protection, Division of Air Quality, for a G70A General Permit Registration for its Beach Well Pad Production Facility located off of Mooresville Road in Monongalia County, West Virginia (Lat.39.702866, Long.-80.137823).

The applicant estimates the potential to discharge the following regulated air pollutants:

- 8.42 tons of Nitrogen Oxides per year
- 3.74 tons of Carbon Monoxide per year
- 3.32 tons of Volatile Organics per year
- 0.04 tons of Sulfur Dioxide per year
- 5.63 tons of Particulate Matter per year
- 0.58 tons of Formaldehyde per year
- 0.04 tons of n-Hexane
- 9,845 tons of Greenhouse Gases per year

Startup of operation is planned to begin upon approval of this permit. Written comments will be received by the West Virginia Department of Environmental Protection, Division of Air Quality, 601 57th Street, SE, Charleston, WV 25304, for at least 30 calendar days from the date of publication of this notice.

Any questions regarding this permit application should be directed to the DAQ at (304) 926-0499, extension 1227, during normal business hours.

Dated this the 24th day of April, 2015.

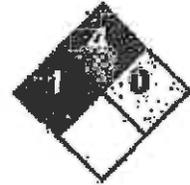
By: Mr. Brett Loflin
Vice President Regulatory Affairs
Northeast Natural Energy, LLC

Nikki Moon
Classifieds Advisor
Dominion Post
1251 Earl L. Core Rd.
Morgantown, WV 26505
T. 304.291.9420

From: Classifieds
Sent: Thursday, April 23, 2015 11:04 AM
To: Nikki Moon
Subject: FW: Northeast Natural Energy Beach Well Notice of Application

ATTACHMENT N

Material Safety Data Sheets



Material Safety Data Sheet

Material Name: Produced Water

Health	1
Environment	4
Reactivity	0
PPE	

*** Section 1 - Chemical Product and Company Identification ***

Product name: Produced Water - Sweet
 Synonyms: Salt Water, H₂O, Oily Water, Formation Water
 Chemical Family: Water
 Formula: Complex mixture

Emergency Phone Number: Chemtrac - 800-424-9300

*** Section 2 - Hazards Identification ***

Emergency Overview

May cause eye, skin, respiratory and gastrointestinal tract irritation.
Potential Health Effects: Eyes
 May cause eye irritation.
Potential Health Effects: Skin
 Contact may cause skin irritation.
Potential Health Effects: Ingestion
 Ingestion may cause irritation of the digestive tract that may result in nausea, vomiting and diarrhea.
Potential Health Effects: Inhalation
 Breathing the mist and vapors may be irritating to the respiratory tract.

HMS Ratings: Health: 1 Fire: 4 HNS Reactivity: 0

Hazard Scale: 0 = Minimal 1 = Slight 2 = Moderate 3 = Serious 4 = Severe * = Chronic hazard

*** Section 3 - Composition / Information on Ingredients ***

Produced water is a mixture of varying amounts of water and oil produced from various exploration and production processes. Produced water may contain an upper layer of flammable liquid and vapor hydrocarbons. Produced water may include small amounts of natural gas condensate, and benzene may be present.

CAS #	Component	Percent
7732-18-5	Water	>99
Not Available	Dissolved Minerals	<32
71-43-2	Benzene	<1
8002-03-9	Petroleum distillates (naphtha)	<1

Normal composition ranges are shown. Exceptions may occur depending on the source of the produced water.

*** Section 4 - First Aid Measures ***

First Aid: Eyes

Flush eyes with clean, low-pressure water for at least 15 minutes, occasionally lifting the eyelids. If pain or redness persists after flushing, obtain medical attention. If eye is exposed to hot liquid, cover eyes with cloth and seek medical attention immediately.

First Aid: Skin

In case of hot liquid exposure, do not remove clothing or treat/wash only unburned area and seek medical attention immediately.

First Aid: Ingestion

Do not induce vomiting. Seek medical attention.

First Aid: Inhalation

Immediately remove person to area of fresh air. For respiratory distress, give oxygen, rescue breathing, or administer CPR if necessary. Obtain prompt medical attention.

Material Safety Data Sheet

Material Name: Produced Water

*** Section 5 - Fire Fighting Measures ***

General Fire Hazards

See Section 9 for Flammability Properties.

May react with strong oxidizing materials and a wide variety of chemicals. Forms explosive mixtures with air.

Hazardous Combustion Products

Not Determined.

Extinguishing Media

Dry chemical, foam, carbon dioxide, or water spray.

Fire-Fighting Equipment/Instructions

Any fire would be associated with any natural gas condensate floating on the surface of the produced water.

Water may be ineffective on flames but should be used to keep fire exposed containers cool. Keep the surrounding areas cool by using water mists. Firefighters should wear self-contained breathing apparatus and full protective clothing.

NFPA Ratings: Health: 1 Fire: 4 Reactivity: 0

Hazard Scale: 0 = Minimal 1 = Slight 2 = Moderate 3 = Serious 4 = Severe

*** Section 6 - Accidental Release Measures ***

Containment Procedures

Stop the source of the leak or release. Clean up releases as soon as possible, observing precautions in Personal Protection Equipment section. Contain liquid to prevent further contamination of soil and surface water.

Clean-Up Procedures

Take up with sand or other oil absorbing materials. Carefully shovel, scoop or sweep up into a waste container for reclamation or disposal. Response and clean-up crews must be properly trained and must utilize proper protective equipment. Where feasible and appropriate, remove contaminated soil or flush with fresh water. Follow prescribed procedures for reporting and responding to larger releases. Advise authorities and the National Response Center (800-424-8802) if the release is to a watercourse.

Evacuation Procedures

Evacuate nonessential personnel and remove or secure all ignition sources. Consider wind direction; stay upwind and uphill, if possible.

Special Procedures

Avoid excessive skin contact with the spilled material.

*** Section 7 - Handling and Storage ***

Handling Procedures

Handle as a flammable liquid. Keep away from heat, sparks, and open flame. Electrical equipment should be approved for classified area. Bond and ground containers during product transfer to reduce the possibility of static-initiated fire or explosion.

Storage Procedures

Keep away from flame, sparks, excessive temperatures and open flame. Use approved vented containers. Keep containers closed and clearly labeled. Empty product containers or vessels may contain explosive vapors. Do not pressurize, cut, heat, weld or expose such containers to sources of ignition. Do not enter storage areas and confined spaces without adequate ventilation. Use appropriate respiratory protection if there is a potential to exceed component exposure limit(s).

*** Section 8 - Exposure Controls / Personal Protection ***

A: Component Exposure Limits

Petroleum distillates (naphtha) (8002-05-9)

OSHA: 800 ppm TWA; 2000 mg/m³ TWA

NIOSH: 350 mg/m³ TWA

1800 mg/m³ Ceiling (15 min)

Material Safety Data Sheet

Material Name: Produced Water

Benzene (71-43-2)

ACGIH: 0.5 ppm TWA
2.5 ppm STEL
Skin - potential significant contribution to overall exposure by the cutaneous route
OSHA: 10 ppm TWA; 25 ppm ceiling; 50 ppm (10 min.)
NIOSH: 0.1 ppm TWA
1 ppm STEL

Engineering Controls

Use adequate ventilation to keep vapor concentrations of this product below occupational exposure and flammability limits, particularly in confined spaces.

PERSONAL PROTECTIVE EQUIPMENT

Personal Protective Equipment: Eyes/Face

Chemical goggles or face shield should be worn when handling product if the possibility of spray exists.

Personal Protective Equipment: Skin

Normal working clothes should be worn. Wash contaminated clothing prior to reuse.

Personal Protective Equipment: Respiratory

Respiratory protection is not required for normal use. At excessive concentrations, wear a NIOSH approved air purifying respirator with organic vapor cartridges.

Personal Protective Equipment: General

A source of clean water should be in the work area for flushing eyes and skin.

*** Section 9 - Physical & Chemical Properties ***

Appearance:	Clear or opaque	Odor:	Salty with a slight hydrocarbon odor.
Physical State:	Liquid	pH:	4.9-5.5
Vapor Pressure:	NA	Vapor Density:	1.2
Boiling Point:	212°F	Melting Point:	ND
Solubility (H ₂ O):	Soluble	Specific Gravity:	>1 @ 0°C
Freezing Point:	<32°F	Evaporation Rate:	ND
VOC:	ND	Octanol/H ₂ O Coeff.:	ND
Flash Point:	ND	Flash Point Method:	ND
		Lower Flammability Limit (LFL):	4.0
		Upper Flammability Limit (UFL):	46.0
		Burning Rate:	ND
		Auto Ignition:	NA

*** Section 10 - Chemical Stability & Reactivity Information ***

Chemical Stability

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

Chemical Stability: Conditions to Avoid

Keep material away from heat, sparks, and open flames.

Incompatibility

Keep away from strong oxidizers.

Hazardous Decomposition

Not Determined.

Possibility of Hazardous Reactions

Will not occur.

Material Safety Data Sheet

Material Name: Produced Water

*** Section 11 - Toxicological Information ***

Acute Dose Effects

Component Analysis - LD50/LC50

Water (7732-18-5)

Oral LD50 Rat: >90 mL/kg

Petroleum distillates (naphtha) (8002-05-9)

Oral LD50 Rat: >4300 mg/kg; Dermal LD50 Rabbit: >2000 mg/kg

Benzene (71-43-2)

Inhalation LC50 Rat: 13050-14380 ppm/4H; Oral LD50 Rat: 1800 mg/kg

Carcinogenicity

Component Carcinogenicity

Petroleum distillates (naphtha) (8002-05-9)

IARC: Monograph 45 [1989] (Group 3 (not classifiable))

Benzene (71-43-2)

ACGIH: A1 - Confirmed Human Carcinogen

OSHA: 10 ppm TWA; 25 ppm ceiling; 50 ppm (10 min.)

NIOSH: potential occupational carcinogen

NTP: Known Human Carcinogen (Select Carcinogen)

IARC: Supplement 7 [1987], Monograph 28 [1982] (Group 1 (carcinogenic to humans))

*** Section 12 - Ecological Information ***

Ecotoxicity

Component Analysis - Ecotoxicity - Aquatic Toxicity

Petroleum distillates (naphtha) (8002-05-9)

Test & Species

96 Hr LC50 *Saimo gairdneri* 258 mg/L [static]

24 Hr EC50 *Daphnia magna* 36 mg/L

Conditions

Benzene (71-43-2)

Test & Species

96 Hr LC50 *Pimephales promelas* 12.6 mg/L [flow-through]

96 Hr LC50 *Oncorhynchus mykiss* 5.3 mg/L [flow-through]

96 Hr LC50 *Lepomis macrochirus* 22 mg/L [static]

96 Hr LC50 *Poecilia reticulata* 28.6 mg/L [static]

72 Hr EC50 *Selenastrum* 29 mg/L

capricornutum

48 Hr EC50 water flea 356 mg/L [Static]

48 Hr EC50 *Daphnia magna* 10 mg/L

Conditions

Material Safety Data Sheet

Material Name: Produced Water

*** Section 13 - Disposal Considerations ***

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 low concentrations and may exhibit the characteristic of "toxicity" (D018) as determined by the toxicity characteristic leaching procedure (TCLP). This material could become a hazardous waste if mixed with or contaminated with a 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 - Transportation Information ***

US DOT Information

Shipping Name: Not Regulated

Additional Info.: This may not apply to all shipping situations. Consult 49CFR 172 for additional information.

*** Section 15 - Regulatory Information ***

US Federal Regulations

Component Analysis

This material may contain one or more of the following chemicals identified under SARA Section 302 (40 CFR 355 Appendix A), SARA Section 313 (40 CFR 372.65) and/or CERCLA (40 CFR 302.4).

Benzene (71-43-2)

SARA 313: 0.1 % de minimis concentration

CERCLA: 10 lb final RQ (received an adjusted RQ of 10 lbs based on potential carcinogenicity in an August 14, 1989 final rule); 4.54 kg final RQ (received an adjusted RQ of 10 lbs based on potential carcinogenicity in an August 14, 1989 final rule)

State Regulations

Component Analysis - State

The following components appear on one or more of the following state hazardous substances lists:

Component	CAS	CA	MA	MIN	NJ	PA	RI
Petroleum distillates (naphtha)	8002-05-9	No	Yes	Yes	Yes	Yes	Yes
Benzene	71-43-2	Yes	Yes	Yes	Yes	Yes	Yes

The following statement(s) are provided under the California Safe Drinking Water and Toxic Enforcement Act of 1986 (Proposition 65):

WARNING! This product contains a chemical known to the state of California to cause cancer.
WARNING! This product contains a chemical known to the state of California to cause reproductive/developmental effects.

Component Analysis - WHMIS IDL

The following components are identified under the Canadian Hazardous Products Act Ingredient Disclosure List:

Component	CAS #	Minimum Concentration
Benzene	71-43-2	0.1 %

Additional Regulatory Information

Material Safety Data Sheet

Material Name: Produced Water

Component Analysis - Inventory

Component	CAS #	TSCA	CAN	EEC
Water	7732-18-5	Yes	DSL	EINECS
Petroleum distillates (naphtha)	8002-05-9	Yes	DSL	EINECS
Benzene	71-43-2	Yes	DSL	EINECS

*** Section 16 - Other Information ***

Other Information

The information presented herein has been compiled from sources considered to be dependable and is accurate and reliable to the best of our knowledge and belief, but is not guaranteed to be so. Since conditions of use are beyond our control, we make no warranties, expressed or implied, except those that may be contained in our written contract of sale or acknowledgement.

Vendor assumes no responsibility for injury to vendee or third persons proximately caused by the material if reasonable safety procedures are not adhered to as stipulated in the data sheet. Additionally, vendor assumes no responsibility for injury to vendee or third persons proximately caused by abnormal use of the material, even if reasonable safety procedures are followed. Furthermore, vendee assumes the risk in their use of the material.

Key/Legend

NA - Not Applicable
ND - Not Determined
ACGIH - American Conference of Governmental Industrial Hygienists
OSHA - Occupational Safety and Health Administration
TLV - Threshold Limit Value
PEL - Permissible Exposure Limit
RQ - Reportable Quantity
TWA - Time Weighted Average
STEL - Short Term Exposure Limit
NTP - National Toxicology Program
IARC - International Agency for Research on Cancer

Shell Chemicals

Material Safety Data Sheet

Ethylene Glycol Antifreeze Grade

MSDS# 9249

Version 17.2

Effective Date 08/01/2012

According to OSHA Hazard Communication Standard, 29 CFR

1910 1200

1. MATERIAL AND COMPANY IDENTIFICATION

Material Name Ethylene Glycol Antifreeze Grade
Uses Chemical intermediate. Advice in this document relates only to product as originally supplied. Other derivative chemicals will have different properties and hazards. Advice should be sought on their safe handling and use.

Product Code U1281
Company Shell Chemical LP
PO Box 2463
HOUSTON TX 77252-2463
USA

MSDS Request 1-800-240-6737
Customer Service 1-855-697-4355

Emergency Telephone Number
Chemtrec Domestic (24 hr) : 1-800-424-9300
Chemtrec International (24 hr) : 1-703-527-3887

2. COMPOSITION/INFORMATION ON INGREDIENTS

Chemical Name	CAS No.	Concentration
Ethylene Glycol	107-21-1	90.00 - 100.00 %
Diethylene glycol	111-46-6	0.01 - 10.00 %

3. HAZARDS IDENTIFICATION

Appearance and Odour **Emergency Overview**
Colourless. Slightly viscous liquid. Mild

Health Hazards Harmful if swallowed.

Health Hazards
Inhalation Vapours expected to be slightly irritating.
Skin Contact May cause moderate irritation to skin.
Eye Contact Moderately irritating to eyes. Vapours may be irritating to the eye.
Ingestion Harmful if swallowed. May cause drowsiness and dizziness.
Other Information Possibility of organ or organ system damage from prolonged exposure; see Chapter 11 for details. Target organ(s):
Kidney.
Intentional abuse, misuse or other massive exposure may cause multiple organ damage and / or death.

Signs and Symptoms Kidney toxicity may be recognized by blood in the urine or increased or decreased urine flow. Other signs and symptoms can include nausea, vomiting, abdominal cramps, diarrhoea,



lumbar pain shortly after ingestion, and possibly narcosis and death. Eye irritation signs and symptoms may include a burning sensation, redness, swelling, and/or blurred vision. Skin irritation signs and symptoms may include a burning sensation, redness, swelling, and/or blisters. Respiratory irritation signs and symptoms may include a temporary burning sensation of the nose and throat, coughing, and/or difficulty breathing.

Aggravated Medical Condition

Pre-existing medical conditions of the following organ(s) or organ system(s) may be aggravated by exposure to this material: Kidney.

4. FIRST AID MEASURES

Inhalation

Remove to fresh air. If rapid recovery does not occur, transport to nearest medical facility for additional treatment.

Skin Contact

Remove contaminated clothing. Flush exposed area with water and follow by washing with soap if available. If persistent irritation occurs, obtain medical attention.

Eye Contact

Immediately flush eyes with large amounts of water for at least 15 minutes while holding eyelids open. Transport to the nearest medical facility for additional treatment.

Ingestion

DO NOT DELAY.
Do not induce vomiting. If victim is alert, rinse mouth and drink 1/2 to 1 glass of water to help dilute the material. Do not give liquids to a drowsy, convulsing, or unconscious person. Transport to nearest medical facility for additional treatment. If vomiting occurs spontaneously, keep head below hips to prevent aspiration.

Advice to Physician

May cause significant renal, respiratory, and CNS toxicity. May cause significant acidosis. Call a doctor or poison control center for guidance.

5. FIRE FIGHTING MEASURES

Flash point

121 °C / 250 °F (ASTM D-93 / PMCC)

Specific Hazards

Material will not burn unless preheated. Carbon monoxide may be evolved if incomplete combustion occurs. Containers exposed to intense heat from fires should be cooled with large quantities of water.

Extinguishing Media

Alcohol-resistant foam, water spray or fog. Dry chemical powder, carbon dioxide, sand or earth may be used for small fires only.

Unsuitable Extinguishing Media

Do not use water in a jet.

Protective Equipment for Firefighters

Wear full protective clothing and self-contained breathing apparatus.

Additional Advice

Evacuate the area of all non-essential personnel. Keep adjacent containers cool by spraying with water.

6. ACCIDENTAL RELEASE MEASURES

Protective measures	Avoid contact with spilled or released material. For guidance on selection of personal protective equipment see Chapter 8 of this Material Safety Data Sheet. Prevent from spreading or entering into drains, ditches or rivers by using sand, earth, or other appropriate barriers. Use appropriate containment to avoid environmental contamination. Ventilate contaminated area thoroughly.
Clean Up Methods	Contain run-off from residue flush and dispose of properly. Soak up residue with an absorbent such as clay, sand or other suitable material. For small liquid spills (< 1 drum), transfer by mechanical means to a labelled, sealable container for product recovery or safe disposal. Allow residues to evaporate or soak up with an appropriate absorbent material and dispose of safely. Remove contaminated soil and dispose of safely. For large liquid spills (> 1 drum), transfer by mechanical means such as vacuum truck to a salvage tank for recovery or safe disposal. Do not flush away residues with water. Retain as contaminated waste. Allow residues to evaporate or soak up with an appropriate absorbent material and dispose of safely. Remove contaminated soil and dispose of safely. Transfer to a salvage tank for recovery or safe disposal. Do not flush away residues with water. Retain as contaminated waste.
Additional Advice	See Chapter 13 for information on disposal. Observe all relevant local regulations. Notify authorities if any exposure to the general public or the environment occurs or is likely to occur. Dike and contain spill water.

7. HANDLING AND STORAGE

General Precautions	Avoid breathing vapours or contact with material. Only use in well ventilated areas. Wash thoroughly after handling. On guidance on selection of personal protective equipment see Chapter 8 of this Material Safety Data Sheet. Use the information in this data sheet as input to a risk assessment of local circumstances to help determine appropriate controls for safe handling, storage and disposal of this material.
Handling	Use local exhaust extraction over processing area. Handle and open container with care in a well-ventilated area. Do not empty into drains. When handling product in drums, safety footwear should be worn and proper handling equipment should be used. Handling Temperature: Ambient. 60 °C maximum
Storage	Tanks must be clean, dry and rust-free. Keep container tightly closed. Must be stored in a diked (bunded) well-ventilated area, away from sunlight, ignition sources and other sources of heat. Cleaning, inspection and maintenance of storage tanks is a specialist operation which requires the implementation of strict procedures and precautions. Drums should be stacked to a maximum of 3 high. Storage Temperature: Ambient. 60 °C maximum
Product Transfer	Keep containers closed when not in use. Do not pressurize drum



**Recommended Materials
Additional Information**

containers to empty.
Stainless steel. Mild steel. Carbon steel
Ensure that all local regulations regarding handling and storage facilities are followed.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Occupational Exposure Limits

Material	Source	Type	ppm	mg/m3	Notation
Ethylene Glycol	OSHA	Celling	50 ppm	125 mg/m3	
	Z1A ACGIH	Ceiling Aerosol.		100 mg/m3	

Biological Exposure Index (BEI)

No biological limit allocated.

Additional Information

Shell has adopted as Interim Standards the OSHA Z1A values that were established in 1989 and later rescinded. Wash hands before eating, drinking, smoking and using the toilet. Launder contaminated clothing before re-use.

Exposure Controls

No exposure controls are ordinarily required under normal conditions of use. It is good general industrial hygiene practice to minimize exposure to the material.

**Personal Protective
Equipment
Respiratory Protection**

Personal protective equipment (PPE) should meet recommended national standards. Check with PPE suppliers. If engineering controls do not maintain airborne concentrations to a level which is adequate to protect worker health, select respiratory protection equipment suitable for the specific conditions of use and meeting relevant legislation. Check with respiratory protective equipment suppliers. Where air-filtering respirators are suitable, select an appropriate combination of mask and filter.

Hand Protection

Where hand contact with the product may occur the use of gloves approved to relevant standards (e.g. Europe: EN374, US: F739, AS/NZS:2161) made from the following materials may provide suitable chemical protection: Longer term protection: PVC. Neoprene rubber. Nitrile rubber. Personal hygiene is a key element of effective hand care. Gloves must only be worn on clean hands. After using gloves, hands should be washed and dried thoroughly. Application of a non-perfumed moisturizer is recommended.

Protective Clothing

Skin protection not ordinarily required beyond standard issue work clothes. Chemical resistant gloves/gauntlets, boots, and apron.



Monitoring Methods

Monitoring of the concentration of substances in the breathing zone of workers or in the general workplace may be required to confirm compliance with an OEL and adequacy of exposure controls. For some substances biological monitoring may also be appropriate. Examples of sources of recommended air monitoring methods are given below or contact supplier. Further national methods may be available. National Institute of Occupational Safety and Health (NIOSH), USA: Manual of Analytical Methods,

<http://www.cdc.gov/niosh/nmam/nmammenu.html>.

Occupational Safety and Health Administration (OSHA), USA: Sampling and Analytical Methods

<http://www.osha.gov/dts/sltc/methods/toc.html> Health and

Safety Executive (HSE), UK: Methods for the Determination of Hazardous Substances,

<http://www.hsl.gov.uk/publications/mdhs.aspx>.

Environmental Exposure Controls

The level of protection and types of controls necessary will vary depending upon potential exposure conditions. Select controls based on a risk assessment of local circumstances. Appropriate measures include: Adequate ventilation to control airborne concentrations. Exhaust emission systems should be designed in accordance with local conditions; the air should always be moved away from the source of vapour generation and the person working at this point. Eye washes and showers for emergency use.

9. PHYSICAL AND CHEMICAL PROPERTIES

The physical and chemical property data are typical values and do not constitute a specification

Appearance	Colourless. Slightly viscous liquid.
Odour	Mild.
Boiling point	190 - 240 °C / 374 - 464 °F
Flash point	121 °C / 250 °F (ASTM D-93 / PMCC)
Vapour pressure	< 10 Pa at 20 °C / 68 °F
Specific gravity	1.115
Density	Typical 1,113 kg/m ³ at 20 °C / 68 °F (ASTM D-4052)
Water solubility	Completely Soluble
Solubility in other solvents	Data not available.
Dynamic viscosity	Data not available.
Kinematic viscosity	26 mm ² /s at 20 °C / 68 °F
Vapour density (air=1)	2.1
State of aggregation	Liquid/Solid
Stability	Stable.
Surface tension	Data not available.

10. STABILITY AND REACTIVITY

- Stability** : Stable under normal conditions of use. Reacts with strong oxidising agents.
- Conditions to Avoid** : High Temperature.



Materials to Avoid
Hazardous Decomposition Products

Strong oxidising agents. Strong acids. Strong bases.
Thermal decomposition is highly dependent on conditions. A complex mixture of airborne solids, liquids and gases, including carbon monoxide, carbon dioxide and other organic compounds will be evolved when this material undergoes combustion or thermal or oxidative degradation.

Hazardous Reactions

Data not available.

11. TOXICOLOGICAL INFORMATION

Basis for Assessment

Information given is based on product testing, and/or similar products, and/or components.

Acute Oral Toxicity

Low toxicity: LD50 >2000 mg/kg , Rat (Ethylene Glycol)
Ingestion may cause drowsiness and dizziness.

Acute Dermal Toxicity

Low toxicity: LD50 >2000 mg/kg , Rabbit (Ethylene Glycol)

Acute Inhalation Toxicity

Low toxicity: LC50 >20 mg/l / 1 hours, Rat (Ethylene Glycol)

Skin corrosion/irritation

Moderately irritating to skin (but insufficient to classify).

Serious eye damage/irritation

Moderately irritating to eyes (but insufficient to classify).

Respiratory Irritation

Inhalation of vapours or mists may cause irritation to the respiratory system.

Sensitisation

Not expected to be a sensitiser.

Repeated Dose Toxicity

Kidney: can cause kidney damage.

Germ cell mutagenicity

No evidence of mutagenic activity.

Carcinogenicity

Tumours produced in animals are not considered relevant to humans. (Diethylene glycol)

Material

Ethylene Glycol

Carcinogenicity Classification

ACGIH Group A4: Not classifiable as a human carcinogen.

Reproductive and Developmental Toxicity

May impair fertility based on animal studies. (Ethylene Glycol)

Causes foetotoxicity in animals; considered to be secondary to maternal toxicity. (Ethylene Glycol)

12. ECOLOGICAL INFORMATION

Information given is based on product testing.

Acute Toxicity

Fish

Low toxicity: LC/EC/IC50 > 100 mg/l

Aquatic crustacea

Low toxicity: LC/EC/IC50 > 100 mg/l

Algae/aquatic plants

Low toxicity: LC/EC/IC50 > 100 mg/l

Microorganisms

Low toxicity: LC/EC/IC50 > 100 mg/l

Mobility

Dissolves in water.
If product enters soil, it will be highly mobile and may contaminate groundwater.

Persistence/degradability

Readily biodegradable.

Bioaccumulation

Oxidises rapidly by photo-chemical reactions in air.
Does not bioaccumulate significantly.

Other Adverse Effects Data not available.

13. DISPOSAL CONSIDERATIONS

Material Disposal : Recover or recycle if possible. Waste arising from a spillage or tank cleaning should be disposed of in accordance with prevailing regulations, preferably to a recognised collector or contractor. The competence of the collector or contractor should be established beforehand. Remove all packaging for recovery or waste disposal.
Do not dispose into the environment, in drains or in water courses. Waste product should not be allowed to contaminate soil or water.

Container Disposal Dispose in accordance with prevailing regulations, preferably to a recognised collector or contractor. The competence of the collector or contractor should be established beforehand.

Local Legislation Disposal should be in accordance with applicable regional, national, and local laws and regulations.

14. TRANSPORT INFORMATION**US Department of Transportation Classification (49CFR)**

Identification number	UN 3082
UN proper shipping name	Environmentally hazardous substances, liquid, n.o.s
Technical name	(Ethylene glycol)
Class / Division	9
Packing group	III
Hazardous subst./material RQ	Ethylene glycol (5,000 LB)
Emergency Response Guide No. .	171

IMDG

This material is not classified as dangerous under IMDG regulations.

IATA (Country variations may apply)

This material is either not classified as dangerous under IATA regulations or needs to follow country specific requirements.

Additional Information

This product may be transported under nitrogen blanketing. Nitrogen is an odourless and invisible gas. Exposure to nitrogen may cause asphyxiation or death. Personnel must observe strict safety precautions when involved with a confined space entry.

15. REGULATORY INFORMATION

The regulatory information is not intended to be comprehensive. Other regulations may apply to this material.



Federal Regulatory Status

Notification Status

AICS	Listed		
DSL	Listed		
INV (CN)	Listed		
ENCS (JP)	Listed	(2)-230	
TSCA	Listed		
EINECS	Listed	203-473-3	
KECI (KR)	Listed	KE-13169	
PICCS (PH)	Listed		
ISHL (JP)	Listed	(2)-230	
NZIOC	Listed	HSR001534	HSNO Approved

Comprehensive Environmental Release, Compensation & Liability Act (CERCLA)

Ethylene Glycol Antifreeze Grade (107-21-1) Reportable quantity: 5,000 lbs

Ethylene Glycol (107-21-1) Reportable quantity: 5,000 lbs

SARA Hazard Categories (311/312)

Immediate (Acute) Health Hazard.

SARA Toxic Release Inventory (TRI) (313)

Ethylene Glycol (107-21-1)

State Regulatory Status

California Safe Drinking Water and Toxic Enforcement Act (Proposition 65)

This material does not contain any chemicals known to the State of California to cause cancer, birth defects or other reproductive harm.

New Jersey Right-To-Know Chemical List

Ethylene Glycol (107-21-1) Listed.

Pennsylvania Right-To-Know Chemical List

Ethylene Glycol (107-21-1) Environmental hazard Listed.

Shell Chemicals
Material Safety Data Sheet

Ethylene Glycol Antifreeze Grade
MSDS# 9249
Version 17.2
Effective Date 08/01/2012
According to OSHA Hazard Communication Standard, 29 CFR
1910.1200

Diethylene glycol (111-46-6)

Listed

16. OTHER INFORMATION

HMIS Rating (Health, Fire, Reactivity) 3, 1, 0

NFPA Rating (Health, Fire, Reactivity) 1, 1, 0

MSDS Version Number 17.2

MSDS Effective Date 08/01/2012

MSDS Revisions A vertical bar (|) in the left margin indicates an amendment from the previous version.

MSDS Regulation The content and format of this MSDS is in accordance with the OSHA Hazard Communication Standard, 29 CFR 1910.1200.

Uses and Restrictions Keep out of reach of children and pets.
Do not use in the manufacture or preparation of foods or pharmaceuticals.
Do not use in theatrical fogs or other artificial smoke generator applications.
Do not use in aircraft deicing applications.

MSDS Distribution The information in this document should be made available to all who may handle the product

Disclaimer The information contained herein is based on our current knowledge of the underlying data and is intended to describe the product for the purpose of health, safety and environmental requirements only. No warranty or guarantee is expressed or implied regarding the accuracy of these data or the results to be obtained from the use of the product.

Safety Data Sheet

SECTION 1. IDENTIFICATION OF THE SUBSTANCE/MIXTURE AND OF THE COMPANY/UNDERTAKING

1.1 Product Identifier

Material Name Shell Rimula R3 X 15W-40
Product Code 001C4579

1.2 Relevant Identified uses of the substance or mixture and uses advised against

Product Use : Engine oil.

Uses Advised Against : This product must not be used in applications other than those recommended in Section 1, without first seeking the advice of the supplier.

1.3 Details of the Supplier of the safety data sheet

Manufacturer/Supplier : **Shell UK Oil Products Limited**
Shell Centre
London
SE1 7NA
United Kingdom

Telephone : (+44) 08708500939
Email Contact for Safety Data Sheet : If you have any enquiries about the content of this SDS please email lubricantSDS@shell.com

1.4 Emergency Telephone Number

: +44-(0) 151-350-4595

SECTION 2. HAZARDS IDENTIFICATION

2.1 Classification of the substance or mixture

1999/45/EC

Hazard Characteristics

R-phrase(s)

Not classified as dangerous under EC criteria.;

Sensitiser not sufficient to classify

Contains calcium sulphonate. May produce an allergic reaction.

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2.2 Label Elements

Labeling according to Directive 1999/45/EC

EC Symbols : No Hazard Symbol required

EC Classification Not classified as dangerous under EC criteria.
EC Risk Phrases Not classified.
EC Safety Phrases Not classified.

2.3 Other Hazards

Health Hazards Not expected to be a health hazard when used under normal conditions. Prolonged or repeated skin contact without proper cleaning can clog the pores of the skin resulting in disorders such as oil acne/folliculitis. Used oil may contain harmful impurities.

Safety Hazards Not classified as flammable but will burn

Environmental Hazards Not classified as dangerous for the environment

SECTION 3. COMPOSITION/INFORMATION ON INGREDIENTS

3.1 Substance

Material Name : Not applicable.

3.2 Mixtures

Mixture Description : Highly refined mineral oils and additives.

Hazardous Components

Classification of components according to Regulation (EC) No 1272/2008

Chemical Name	CAS No.	EC Number	REACH Registration No.	Conc.
Polyolefin polyamine succinimide, polyol	Not available	Not available	Not available / Not applicable.	1.00 - 5.00%

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Calcium sulphonate	Not available	Not available	Not available / Not applicable.	1.00 - 3.00%
Zinc alkyl dithiophosphate	68649-42-3	272-028-3	Not available / Not applicable.	1.00 - 2.40%
Calcium sulphonate	Not available	Not available	Not available / Not applicable.	0.10 - 0.90%
Interchangeable low viscosity base oil (<20,5 cSt @40°C) *	*	*	*	0.00 - 90.00%

Chemical Name	Hazard Class & Category	Hazard Statement
Polyolefin polyamine succinimide, polyol	Aquatic Chronic, 4;	H413;
Calcium sulphonate	Aquatic Chronic, 4;	H413;
Zinc alkyl dithiophosphate	Eye Dam., 1; Aquatic Chronic, 2;	H318; H411;
Calcium sulphonate	Skin Sens., 1; Aquatic Chronic, 4;	H317; H413;
Interchangeable low viscosity base oil (<20,5 cSt @40°C) *	Asp. Tox., 1;	H304;

Classification of components according to 67/548/EEC

Chemical Name	CAS No.	EC Number	REACH Registration No.	Symbol(s)	R-phrases(s)	Conc.
Polyolefin polyamine succinimide, polyol	Not available	Not available	Not available / Not applicable.		R53	1.00 - 5.00%
Calcium sulphonate	Not available	Not available	Not available / Not applicable.		R53	1.00 - 3.00%
Zinc alkyl dithiophosphate	68649-42-3	272-028-3	Not available / Not applicable.	Xi N	R41; R51/53	1.00 - 2.40%
Calcium sulphonate	Not available	Not available	Not available / Not applicable.	Xi	R43; R53	0.10 - 0.90%

Additional Information The highly refined mineral oil contains <3% (w/w) DMSO-extract, according to IP348.

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Refer to Ch 16 for full text of R- and H- phrases

* contains one or more of the following CAS-numbers (REACH registration numbers): 64742-53-6 (01-2119480375-34), 64742-54-7 (01-2119484627-25), 64742-55-8 (01-2119487077-29), 64742-56-9 (01-2119480132-48), 64742-65-0 (01-2119471299-27), 68037-01-4 (01-2119486452-34), 72623-86-0 (01-2119474878-16), 72623-87-1 (01-2119474889-13), 8042-47-5 (01-2119487078-27), 848301-69-9 (01-0000020164-80).

This mixture does not contain any REACH registered substances that are assessed to be a PBT or a vPvB

SECTION 4. FIRST AID MEASURES

4.1 Description of First Aid Measures

General Information	Not expected to be a health hazard when used under normal conditions.
Inhalation	No treatment necessary under normal conditions of use. If symptoms persist, obtain medical advice.
Skin Contact	Remove contaminated clothing. Flush exposed area with water and follow by washing with soap if available. If persistent irritation occurs, obtain medical attention.
Eye Contact	Flush eye with copious quantities of water. If persistent irritation occurs, obtain medical attention.
Ingestion	In general no treatment is necessary unless large quantities are swallowed, however, get medical advice.
Self-protection of the first aider	When administering first aid, ensure that you are wearing the appropriate personal protective equipment according to the incident, injury and surroundings.
4.2 Most important symptoms and effects, both acute and delayed	Oil acne/folliculitis signs and symptoms may include formation of black pustules and spots on the skin of exposed areas.
4.3 Indication of any immediate medical attention and special treatment needed	Ingestion may result in nausea, vomiting and/or diarrhoea. Notes to doctor/physician: Treat symptomatically.

SECTION 5. FIRE FIGHTING MEASURES

Clear fire area of all non-emergency personnel.

5.1 Extinguishing Media : Foam, water spray or fog. Dry chemical powder, carbon

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Unsuitable Extinguishing Media	dioxide, sand or earth may be used for small fires only Do not use water in a jet.
5.2 Special hazards arising from the substance or mixture	Hazardous combustion products may include: A complex mixture of airborne solid and liquid particulates and gases (smoke). Carbon monoxide. Unidentified organic and inorganic compounds.
5.3 Advice for firefighters	Proper protective equipment including chemical resistant gloves are to be worn; chemical resistant suit is indicated if large contact with spilled product is expected. Self-Contained Breathing Apparatus must be worn when approaching a fire in a confined space. Select fire fighter's clothing approved to relevant Standards (e.g. Europe: EN469).

SECTION 6. ACCIDENTAL RELEASE MEASURES

Avoid contact with spilled or released material. For guidance on selection of personal protective equipment see Chapter 8 of this Material Safety Data Sheet. Observe the relevant local and international regulations.

6.1 Personal Precautions, Protective Equipment and Emergency Procedures	6.1.1 For non emergency personnel: Avoid contact with skin and eyes. 6.1.2 For emergency responders: Avoid contact with skin and eyes.
6.2 Environmental Precautions	Use appropriate containment to avoid environmental contamination. Prevent from spreading or entering drains, ditches or rivers by using sand, earth, or other appropriate barriers.
6.3 Methods and Material for Containment and Cleaning Up	Slippery when spilt. Avoid accidents, clean up immediately. Prevent from spreading by making a barrier with sand, earth or other containment material. Reclaim liquid directly or in an absorbent. Soak up residue with an absorbent such as clay, sand or other suitable material and dispose of properly.
Additional Advice	Local authorities should be advised if significant spillages cannot be contained.
6.4 Reference to other sections	For guidance on selection of personal protective equipment see Chapter 8 of this Material Safety Data Sheet. For guidance on disposal of spilled material see Chapter 13 of this Material Safety Data Sheet.

SECTION 7. HANDLING AND STORAGE

General Precautions : Use local exhaust ventilation if there is risk of inhalation of

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	<p>vapours, mists or aerosols. Use the information in this data sheet as input to a risk assessment of local circumstances to help determine appropriate controls for safe handling, storage and disposal of this material.</p>
7.1 Precautions for Safe Handling	<p>Avoid prolonged or repeated contact with skin. Avoid inhaling vapour and/or mists. When handling product in drums, safety footwear should be worn and proper handling equipment should be used. Properly dispose of any contaminated rags or cleaning materials in order to prevent fires. Keep container tightly closed and in a cool, well-ventilated place. Use properly labelled and closeable containers.</p>
Product Transfer	<p>This material has the potential to be a static accumulator. Proper grounding and bonding procedures should be used during all bulk transfer operations.</p>
7.2 Conditions for safe storage, including any incompatibilities	<p>Store at ambient temperature.</p>
	<p>Refer to section 15 for any additional specific legislation covering the packaging and storage of this product. The storage of this product may be subject to the Control of Pollution (Oil Storage) (England) Regulations. Further guidance may be obtained from the local environmental agency office.</p>
Recommended Materials	<p>For containers or container linings, use mild steel or high density polyethylene.</p>
Unsuitable Materials	<p>PVC.</p>
7.3 Specific end use(s)	<p>Not applicable</p>
Additional Information	<p>Polyethylene containers should not be exposed to high temperatures because of possible risk of distortion. Exposure to this product should be reduced as low as reasonably practicable. Reference should be made to the Health and Safety Executive's publication "COSHH Essentials"</p>

SECTION 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

If the American Conference of Governmental Industrial Hygienists (ACGIH) value is provided on this document, it is provided for information only.

8.1 Control Parameters

Occupational Exposure Limits

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Oil mist, mineral ACGIH TWA(Inhalable fraction.) 5 mg/m3

Biological Exposure Index (BEI)

Data not available

PNEC related information : Data not available

Monitoring Methods

Monitoring of the concentration of substances in the breathing zone of workers or in the general workplace may be required to confirm compliance with an OEL and adequacy of exposure controls. For some substances biological monitoring may also be appropriate. Validated exposure measurement methods should be applied by a competent person and samples analysed by an accredited laboratory. Examples of sources of recommended exposure measurement methods are given below or contact the supplier. Further national methods may be available.

National Institute of Occupational Safety and Health (NIOSH), USA: Manual of Analytical Methods <http://www.cdc.gov/niosh/>

Occupational Safety and Health Administration (OSHA), USA: Sampling and Analytical Methods <http://www.osha.gov/>

Health and Safety Executive (HSE), UK: Methods for the Determination of Hazardous Substances <http://www.hse.gov.uk/>

Institut für Arbeitsschutz Deutschen Gesetzlichen Unfallversicherung (IFA), Germany. <http://www.dguv.de/inhalt/index.jsp>

L'Institut National de Recherche et de Sécurité, (INRS), France <http://www.inrs.fr/accueil>

8.2 Exposure Controls General Information

The level of protection and types of controls necessary will vary depending upon potential exposure conditions. Select controls

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based on a risk assessment of local circumstances.
Appropriate measures include: Adequate ventilation to control airborne concentrations. Where material is heated, sprayed or mist formed, there is greater potential for airborne concentrations to be generated.

Define procedures for safe handling and maintenance of controls. Educate and train workers in the hazards and control measures relevant to normal activities associated with this product. Ensure appropriate selection, testing and maintenance of equipment used to control exposure, e.g. personal protective equipment, local exhaust ventilation. Drain down system prior to equipment break-in or maintenance. Retain drain downs in sealed storage pending disposal or for subsequent recycle. Always observe good personal hygiene measures, such as washing hands after handling the material and before eating, drinking, and/or smoking. Routinely wash work clothing and protective equipment to remove contaminants. Discard contaminated clothing and footwear that cannot be cleaned. Practice good housekeeping.

Occupational Exposure Controls

Personal Protective Equipment

The provided information is made in consideration of the PPE directive (Council Directive 89/686/EEC) and the CEN European Committee for Standardisation (CEN) standards. Personal protective equipment (PPE) should meet recommended national standards. Check with PPE suppliers.

Eye Protection

Wear safety glasses or full face shield if splashes are likely to occur. Approved to EU Standard EN166.

Hand Protection

Where hand contact with the product may occur the use of gloves approved to relevant standards (e.g. Europe: EN374, US: F739) made from the following materials may provide suitable chemical protection: PVC, neoprene or nitrile rubber gloves. Suitability and durability of a glove is dependent on usage, e.g. frequency and duration of contact, chemical resistance of glove material, dexterity. Always seek advice from glove suppliers. Contaminated gloves should be replaced. Personal hygiene is a key element of effective hand care. Gloves must only be worn on clean hands. After using gloves, hands should be washed and dried thoroughly. Application of a non-perfumed moisturizer is recommended. For continuous contact we recommend gloves with breakthrough time of more than 240 minutes with preference

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Body protection	for > 480 minutes where suitable gloves can be identified. For short-term/splash protection we recommend the same, but recognise that suitable gloves offering this level of protection may not be available and in this case a lower breakthrough time may be acceptable so long as appropriate maintenance and replacement regimes are followed. Glove thickness is not a good predictor of glove resistance to a chemical as it is dependent on the exact composition of the glove material. Skin protection not ordinarily required beyond standard issue work clothes.
Respiratory Protection	No respiratory protection is ordinarily required under normal conditions of use. In accordance with good industrial hygiene practices, precautions should be taken to avoid breathing of material. If engineering controls do not maintain airborne concentrations to a level which is adequate to protect worker health, select respiratory protection equipment suitable for the specific conditions of use and meeting relevant legislation. Check with respiratory protective equipment suppliers. Where air-filtering respirators are suitable, select an appropriate combination of mask and filter. Select a filter suitable for combined particulate/organic gases and vapours [boiling point >65 °C (149 °F)] meeting EN14387.
Thermal Hazards	Not applicable.
Environmental Exposure Controls	
Environmental exposure control measures	: Minimise release to the environment. An environmental assessment must be made to ensure compliance with local environmental legislation. Information on accidental release measures are to be found in section 6.

SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

9.1 Information on basic physical and chemical properties

Appearance	Amber. Liquid at room temperature.
Odour	Slight hydrocarbon.
Odour threshold	Data not available
pH	Not applicable.
Initial Boiling Point and Boiling Range	> 280 °C / 536 °F estimated value(s)
Pour point	Typical -39 °C / -38 °F
Flash point	Typical 230 °C / 446 °F (COC)
Upper / lower Flammability or Explosion limits	Typical 1 - 10 %(V) (based on mineral oil)

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Auto-ignition temperature	> 320 °C / 608 °F
Vapour pressure	< 0.5 Pa at 20 °C / 68 °F (estimated value(s))
Relative Density	Typical 0.886 at 15 °C / 59 °F
Density	Typical 886 kg/m ³ at 15 °C / 59 °F
Water solubility	Negligible.
Solubility in other solvents	Data not available
n-octanol/water partition coefficient (log Pow)	> 6 (based on information on similar products)
Dynamic viscosity	Data not available
Kinematic viscosity	Typical 105.1 mm ² /s at 40 °C / 104 °F
Vapour density (air=1)	> 1 (estimated value(s))
Evaporation rate (nBuAc=1)	Data not available
Decomposition Temperature	Data not available
Flammability	Data not available
Oxidizing Properties	Data not available
Explosive Properties	Not classified

9.2 Other Information

Electrical conductivity	This material is not expected to be a static accumulator.
Other Information	not a VOC
Volatile organic compound	0 %

SECTION 10. STABILITY AND REACTIVITY

10.1 Reactivity	The product does not pose any further reactivity hazards in addition to those listed in the following sub-paragraph.
10.2 Chemical stability	No hazardous reaction is expected when handled and stored according to provisions.
10.3 Possibility of Hazardous Reactions	Reacts with strong oxidising agents.
10.4 Conditions to Avoid	Extremes of temperature and direct sunlight.
10.5 Incompatible Materials	Strong oxidising agents.
10.6 Hazardous Decomposition Products	Hazardous decomposition products are not expected to form during normal storage.

SECTION 11. TOXICOLOGICAL I

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11.1 Information on Toxicological effects

Basis for Assessment	Information given is based on data on the components and the toxicology of similar products. Unless indicated otherwise, the data presented is representative of the product as a whole, rather than for individual component(s).
Likely Routes of Exposure	Skin and eye contact are the primary routes of exposure although exposure may occur following accidental ingestion.
Acute Oral Toxicity	Expected to be of low toxicity: LD50 > 5000 mg/kg , Rat
Acute Dermal Toxicity	Expected to be of low toxicity: LD50 > 5000 mg/kg , Rabbit
Acute Inhalation Toxicity	Not considered to be an inhalation hazard under normal conditions of use.
Skin corrosion/irritation	Expected to be slightly irritating. Prolonged or repeated skin contact without proper cleaning can clog the pores of the skin resulting in disorders such as oil acne/folliculitis. Expected to be slightly irritating.
Serious eye damage/irritation	
Respiratory Irritation	Inhalation of vapours or mists may cause irritation.
Respiratory or skin sensitisation	For respiratory and skin sensitisation: Not expected to be a sensitiser.
Aspiration Hazard	Not considered an aspiration hazard.
Germ cell mutagenicity	Not considered a mutagenic hazard.
Carcinogenicity	Not expected to be carcinogenic. Product contains mineral oils of types shown to be non-carcinogenic in animal skin-painting studies. Highly refined mineral oils are not classified as carcinogenic by the International Agency for Research on Cancer (IARC).
Material	Carcinogenicity Classification
Highly refined mineral oil (IP346 <3%)	ACGIH Group A4: Not classifiable as a human carcinogen
Highly refined mineral oil (IP346 <3%)	IARC 3: Not classifiable as to carcinogenicity to humans
Highly refined mineral oil (IP346 <3%)	GHS / CLP: No carcinogenicity classification
Reproductive and Developmental Toxicity	Not expected to be a hazard
Summary on evaluation of the CMR properties	
Carcinogenicity	∴ This product does not meet the criteria for classification in categories 1A/1B.,

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Mutagenicity	This product does not meet the criteria for classification in categories 1A/1B.
Reproductive Toxicity (fertility)	This product does not meet the criteria for classification in categories 1A/1B.
Specific target organ toxicity - single exposure	Not expected to be a hazard.
Specific target organ toxicity - repeated exposure	Not expected to be a hazard.
Additional Information	Used oils may contain harmful impurities that have accumulated during use. The concentration of such impurities will depend on use and they may present risks to health and the environment on disposal. ALL used oil should be handled with caution and skin contact avoided as far as possible. Continuous contact with used engine oils has caused skin cancer in animal tests. Classifications by other authorities under varying regulatory frameworks may exist.

SECTION 12. ECOLOGICAL INFORMATION

Basis for Assessment	Ecotoxicological data have not been determined specifically for this product. Information given is based on a knowledge of the components and the ecotoxicology of similar products. Unless indicated otherwise, the data presented is representative of the product as a whole, rather than for individual component(s).
12.1 Toxicity Acute Toxicity	Poorly soluble mixture. May cause physical fouling of aquatic organisms. Expected to be practically non toxic: LL/EL/IL50 > 100 mg/l (to aquatic organisms) LL/EL50 expressed as the nominal amount of product required to prepare aqueous test extract. Mineral oil is not expected to cause any chronic effects to aquatic organisms at concentrations less than 1 mg/l.
12.2 Persistence and degradability	Expected to be not readily biodegradable. Major constituents are expected to be inherently biodegradable, but the product contains components that may persist in the environment.
12.3 Bioaccumulative Potential	Contains components with the potential to bioaccumulate.
12.4 Mobility in Soil	Liquid under most environmental conditions. If it enters soil, it will adsorb to soil particles and will not be mobile. Floats on

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water

12.5 Result of PBT and vPvB assessment

This mixture does not contain any REACH registered substances that are assessed to be a PBT or a vPvB

12.6 Other Adverse Effects

Product is a mixture of non-volatile components, which are not expected to be released to air in any significant quantities. Not expected to have ozone depletion potential, photochemical ozone creation potential or global warming potential.

SECTION 13. DISPOSAL CONSIDERATIONS

13.1 Waste Treatment Methods

Material Disposal

Recover or recycle if possible. It is the responsibility of the waste generator to determine the toxicity and physical properties of the material generated to determine the proper waste classification and disposal methods in compliance with applicable regulations. Do not dispose into the environment, in drains or in water courses.

Container Disposal

Dispose in accordance with prevailing regulations, preferably to a recognised collector or contractor. The competence of the collector or contractor should be established beforehand.

Local Legislation

Disposal should be in accordance with applicable regional, national, and local laws and regulations.
EU Waste Disposal Code (EWC): 13 02 05 mineral-based non-chlorinated engine, gear and lubricating oils. Classification of waste is always the responsibility of the end user.

SECTION 14. TRANSPORT INFORMATION

Land transport (ADR/RID):

ADR

This product is not classified as dangerous for this mode of transport. Therefore 14.1 UN Number, 14.2 UN Proper Shipping name, 14.3 Transport hazard class(es), 14.4 Packing group, 14.5 Environmental hazards, 14.6 Special precautions for user do not apply.

RID

This product is not classified as dangerous for this mode of transport. Therefore 14.1 UN Number, 14.2 UN Proper Shipping name, 14.3 Transport hazard class(es), 14.4 Packing group, 14.5 Environmental hazards, 14.6 Special precautions for user do not apply.

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Inland waterways transport (ADN):

This product is not classified as dangerous for this mode of transport. Therefore 14.1 UN Number, 14.2 UN Proper Shipping name, 14.3 Transport hazard class(es), 14.4 Packing group, 14.5 Environmental hazards, 14.6 Special precautions for user do not apply.

Sea transport (IMDG Code):

This product is not classified as dangerous for this mode of transport. Therefore 14.1 UN Number, 14.2 UN Proper Shipping name, 14.3 Transport hazard class(es), 14.4 Packing group, 14.5 Environmental hazards, 14.6 Special precautions for user do not apply.

Air transport (IATA):

This product is not classified as dangerous for this mode of transport. Therefore 14.1 UN Number, 14.2 UN Proper Shipping name, 14.3 Transport hazard class(es), 14.4 Packing group, 14.5 Environmental hazards, 14.6 Special precautions for user do not apply.

14.7 Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code

Pollution Category : Not applicable.
Ship Type : Not applicable.
Product Name : Not applicable.
Special Precaution : Not applicable.

Additional Information MARPOL Annex 1 rules apply for bulk shipments by sea

SECTION 15. REGULATORY INFORMATION

The regulatory information is not intended to be comprehensive. Other regulations may apply to this material.

15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture

Other regulatory information

Authorisations and/or restrictions on use : Product is not subject to Authorisation under REACH.

Recommended Restrictions on Use (Advice Against)

This product must not be used in applications other than those recommended in Section 1, without first seeking the advice of the supplier.

Chemical Inventory Status

EINECS All components listed or polymer exempt.
TSCA All components

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listed

Other Information

Environmental Protection Act 1990 (as amended).
 Health and Safety at Work etc. Act 1974.
 Consumers Protection Act 1987.
 Pollution Prevention and Control Act 1999.
 Environment Act 1995.
 Factories Act 1961.
 The Carriage of Dangerous Goods and Use of Transportable
 Pressure Equipment (Amendment) Regulations 2011.
 Chemicals (Hazard Information and Packaging for Supply)
 Regulations 2009.
 Control of Substances Hazardous to Health Regulations 2002
 (as amended).
 Merchant Shipping (Dangerous Goods and Marine Pollutants)
 Regulations 1997.
 Reporting of Injuries, Diseases and Dangerous Occurrences
 Regulations 1995 (as amended).
 Personal Protective Equipment Regulations 2002.
 Personal Protective Equipment at Work Regulations 1992.
 Hazardous Waste (England and Wales) Regulations 2005(as
 amended).
 Control of Major Accident Hazards Regulations 1999 (as
 amended).
 Renewable Transport Fuel Obligations Order 2007 (as
 amended).
 Energy Act 2011.
 Environmental Permitting (England and Wales) Regulations
 2010 (as amended).
 Waste (England and Wales) Regulations 2011 (as amended).
 Planning (Hazardous Substances) Act 1990 and associated
 regulations.
 The Environmental Protection (Controls on Ozone-Depleting
 Substances) Regulations 2011.
 No Chemical Safety Assessment has been carried out for this
 substance/mixture by the supplier.

**15.2 Chemical Safety
Assessment****SECTION 16. OTHER INFORMATION****R-phras(e)s**

R41	Not classified Risk of serious damage to eyes.
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- R43 May cause sensitisation by skin contact.
R51/53 Toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.
R53 May cause long-term adverse effects in the aquatic environment.

CLP Hazard Statements

- H304 May be fatal if swallowed and enters airways.
H317 May cause an allergic skin reaction
H318 Causes serious eye damage.
H411 Toxic to aquatic life with long lasting effects.
H413 May cause long lasting harmful effects to aquatic life

Additional Information

No Exposure Scenario annex is attached to this safety data sheet. It is a non-classified mixture containing hazardous substances as detailed in Section 3; relevant information from Exposure Scenarios for the hazardous substances contained have been integrated into the core sections 1-16 of this SDS.

Other Information

Abbreviations and Acronyms

Acute Tox. = Acute toxicity
Asp. Tox. = Aspiration hazard
Aquatic Acute = Acute hazards to the aquatic environment
Aquatic Chronic = Hazardous to the aquatic environment - Long-term Hazard
Eye Dam. = Serious eye damage/eye irritation
Flam. Liq. = Flammable liquids
Skin Corr. = Skin corrosion/irritation
Skin Sens. = Skin sensitizer
STOT SE = Specific target organ toxicity - single exposure
STOT RE = Specific target organ toxicity - repeated exposure

The standard abbreviations and acronyms used in this document can be looked up in reference literature (e.g. scientific dictionaries) and/or websites.

ACGIH = American Conference of Governmental Industrial Hygienists
ADR = European Agreement concerning the International

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Carriage of Dangerous Goods by Road

AICS = Australian Inventory of Chemical Substances

ASTM = American Society for Testing and Materials

BEL = Biological exposure limits

BTEX = Benzene, Toluene, Ethylbenzene, Xylenes

CAS = Chemical Abstracts Service

CEFIC = European Chemical Industry Council

CLP = Classification Packaging and Labelling

COC = Cleveland Open-Cup

DIN = Deutsches Institut für Normung

DMEL = Derived Minimal Effect Level

DNEL = Derived No Effect Level

DSL = Canada Domestic Substance List

EC = European Commission

EC50 = Effective Concentration fifty

ECETOC = European Center on Ecotoxicology and Toxicology
Of Chemicals

ECHA = European Chemicals Agency

EINECS = The European Inventory of Existing Commercial
Chemical Substances

EL50 = Effective Loading fifty

ENCS = Japanese Existing and New Chemical Substances
Inventory

EWC = European Waste Code

GHS = Globally Harmonised System of Classification and
Labelling of Chemicals

IARC = International Agency for Research on Cancer

IATA = International Air Transport Association

IC50 = Inhibitory Concentration fifty

IL50 = Inhibitory Level fifty

IMDG = International Maritime Dangerous Goods

INV = Chinese Chemicals Inventory

IP346 = Institute of Petroleum test method N° 346 for the
determination of polycyclic aromatics DMSO-extractables

KECI = Korea Existing Chemicals Inventory

LC50 = Lethal Concentration fifty

LD50 = Lethal Dose fifty per cent.

LL/EL/IL = Lethal Loading/Effective Loading/Inhibitory loading

LL50 = Lethal Loading fifty

MARPOL = International Convention for the Prevention of
Pollution From Ships

NOEC/NOEL = No Observed Effect Concentration / No
Observed Effect Level

OE_HPVS = Occupational Exposure - High Production Volume

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PBT = Persistent, Bioaccumulative and Toxic
PICCS = Philippine Inventory of Chemicals and Chemical
Substances
PNEC = Predicted No Effect Concentration
REACH = Registration Evaluation And Authorisation Of
Chemicals
RID = Regulations Relating to International Carriage of
Dangerous Goods by Rail
SKIN_DES = Skin Designation
STEL = Short term exposure limit
TRA = Targeted Risk Assessment
TSCA = US Toxic Substances Control Act
TWA = Time-Weighted Average
vPvB = very Persistent and very Bioaccumulative

SDS Distribution

The information in this document should be made available to
all who may handle the product.

SDS Version Number

4.0

SDS Effective Date

17.12.2012

SDS Revisions

SDS Regulation

Regulation 1907/2006/EC as amended by Regulation (EU)
453/2010

Disclaimer

Product Name: MOBIL DTE OIL EXTRA HEAVY
Revision Date: 30 Apr 2012
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MATERIAL SAFETY DATA SHEET

SECTION 1 PRODUCT AND COMPANY IDENTIFICATION

PRODUCT

Product Name: MOBIL DTE OIL EXTRA HEAVY
Product Description: Base Oil and Additives
Product Code: 201560501595, 600205-00, 970010
Intended Use: Circulating oil

COMPANY IDENTIFICATION

Supplier: EXXON MOBIL CORPORATION
3225 GALLOWS RD.
FAIRFAX, VA. 22037 USA
24 Hour Health Emergency 609-737-4411
Transportation Emergency Phone 800-424-9300
ExxonMobil Transportation No. 281-834-3296
Product Technical Information 800-662-4525, 800-947-9147
MSDS Internet Address <http://www.exxon.com>, <http://www.mobil.com>

SECTION 2 COMPOSITION / INFORMATION ON INGREDIENTS

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

SECTION 3 HAZARDS IDENTIFICATION

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

POTENTIAL HEALTH EFFECTS

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

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

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

SECTION 4 FIRST AID MEASURES

INHALATION

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

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

SKIN CONTACT

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

EYE CONTACT

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

INGESTION

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

SECTION 5

FIRE FIGHTING MEASURES

EXTINGUISHING MEDIA

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

Inappropriate Extinguishing Media: Straight Streams of Water

FIRE FIGHTING

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

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

FLAMMABILITY PROPERTIES

Flash Point [Method]: >227°C (441°F) [ASTM D-92]

Flammable Limits (Approximate volume % in air): LEL: 0.9 UEL: 7.0

Autoignition Temperature: N/D

SECTION 6

ACCIDENTAL RELEASE MEASURES

NOTIFICATION PROCEDURES

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

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PROTECTIVE MEASURES

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

SPILL MANAGEMENT

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

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

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

ENVIRONMENTAL PRECAUTIONS

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

SECTION 7

HANDLING AND STORAGE

HANDLING

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

Static Accumulator: This material is a static accumulator.

STORAGE

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

SECTION 8

EXPOSURE CONTROLS / PERSONAL PROTECTION

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

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

ENGINEERING CONTROLS

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

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

PERSONAL PROTECTION

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

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

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

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

Hand Protection: Any specific glove information provided is based on published literature and glove manufacturer data. Glove suitability and breakthrough time will differ depending on the specific use conditions. Contact the glove manufacturer for specific advice on glove selection and breakthrough times for your use conditions. Inspect and replace worn or damaged gloves. The types of gloves to be considered for this material include:

No protection is ordinarily required under normal conditions of use.

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

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

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

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

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ENVIRONMENTAL CONTROLS

Comply with applicable environmental regulations limiting discharge to air, water and soil. Protect the environment by applying appropriate control measures to prevent or limit emissions.

SECTION 9 PHYSICAL AND CHEMICAL PROPERTIES

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

GENERAL INFORMATION

Physical State: Liquid
Form: Clear
Color: Amber
Odor: Characteristic
Odor Threshold: N/D

IMPORTANT HEALTH, SAFETY, AND ENVIRONMENTAL INFORMATION

Relative Density (at 15 °C): 0.89
Flash Point [Method]: >227°C (441°F) [ASTM D-92]
Flammable Limits (Approximate volume % in air): LEL: 0.9 UEL: 7.0
Autoignition Temperature: N/D
Boiling Point / Range: > 316°C (600°F)
Vapor Density (Air = 1): > 2 at 101 kPa
Vapor Pressure: < 0.013 kPa (0.1 mm Hg) at 20 °C
Evaporation Rate (n-butyl acetate = 1): N/D
pH: N/A
Log Pow (n-Octanol/Water Partition Coefficient): > 3.5
Solubility in Water: Negligible
Viscosity: 146.2 cSt (146.2 mm²/sec) at 40 °C | 14.4 cSt (14.4 mm²/sec) at 100°C
Oxidizing Properties: See Hazards Identification Section.

OTHER INFORMATION

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

SECTION 10 STABILITY AND REACTIVITY

STABILITY: Material is stable under normal conditions.

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

MATERIALS TO AVOID: Strong oxidizers

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

HAZARDOUS POLYMERIZATION: Will not occur.

SECTION 11 TOXICOLOGICAL INFORMATION

ACUTE TOXICITY

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

CHRONIC/OTHER EFFECTS

Contains:

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

Additional information is available by request.

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

--REGULATORY LISTS SEARCHED--

1 = NTP CARC
 2 = NTP SUS

3 = IARC 1
 4 = IARC 2A

5 = IARC 2B
 6 = OSHA CARC

SECTION 12 ECOLOGICAL INFORMATION

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

ECOTOXICITY

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

MOBILITY

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

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PERSISTENCE AND DEGRADABILITY

Biodegradation:

Base oil component -- Expected to be inherently biodegradable

BIOACCUMULATION POTENTIAL

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

SECTION 13

DISPOSAL CONSIDERATIONS

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

DISPOSAL RECOMMENDATIONS

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

REGULATORY DISPOSAL INFORMATION

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

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

SECTION 14

TRANSPORT INFORMATION

LAND (DOT): Not Regulated for Land Transport

LAND (TDG): Not Regulated for Land Transport

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

AIR (IATA): Not Regulated for Air Transport

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SECTION 15	REGULATORY INFORMATION
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OSHA HAZARD COMMUNICATION STANDARD: When used for its intended purposes, this material is not classified as hazardous in accordance with OSHA 29 CFR 1910.1200.

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

EPCRA: This material contains no extremely hazardous substances.

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

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

The following ingredients are cited on the lists below:

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

--REGULATORY LISTS SEARCHED--

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

Code key: CARC=Carcinogen; REPRO=Reproductive

SECTION 16	OTHER INFORMATION
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N/D = Not determined, N/A = Not applicable

THIS SAFETY DATA SHEET CONTAINS THE FOLLOWING REVISIONS:

Revision Changes:

- Section 06: Notification Procedures - Header was modified.
- Section 13: Disposal Considerations - Disposal Recommendations was modified.
- Section 10 Stability and Reactivity - Header was modified.
- Section 13: Disposal Recommendations - Note was modified.
- Section 09: Phys/Chem Properties Note was modified.
- Section 09: Boiling Point C(F) was modified.
- Section 08: Comply with applicable regulations phrase was modified.
- Section 08: Personal Protection was modified.
- Section 08: Hand Protection was modified.

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Section 09: Vapor Pressure was modified.
Section 07: Handling and Storage - Handling was modified.
Section 07: Handling and Storage - Storage Phrases was modified.
Section 11: Dermal Lethality Test Data was modified.
Section 11: Oral Lethality Test Data was modified.
Section 05: Hazardous Combustion Products was modified.
Section 06: Accidental Release - Spill Management - Water was modified.
Section 09: Relative Density - Header was modified.
Section 09: Flash Point C(F) was modified.
Section 09: Viscosity was modified.
Section 09: Viscosity was modified.
Section 14: Sea (IMDG) - Header was modified.
Section 14: Air (IATA) - Header was modified.
Section 14: LAND (TDG) - Header was modified.
Section 14: LAND (DOT) - Header was modified.
Section 15: List Citation Table - Header was modified.
Section 14: LAND (DOT) - Default was modified.
Section 14: LAND (TDG) Default was modified.
Section 14: Sea (IMDG) - Default was modified.
Section 14: Air (IATA) - Default was modified.
Section 15: National Chemical Inventory Listing - Header was modified.
Section 15: National Chemical Inventory Listing was modified.
Section 16: Code to MHCs was modified.
Section 08: Exposure limits/standards was modified.
Hazard Identification: OSHA - May be Hazardous Statement was modified.
Section 06: Notification Procedures was modified.
Section 09: Oxidizing Properties was modified.
Section 01: Company Contact Methods Sorted by Priority was modified.
Section 06: Protective Measures was added.
Section 06: Accidental Release - Protective Measures - Header was added.

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Internal Use Only

MHC: 0B, 0B, 0, 0, 0, 0

PPEC: A

DGN: 2007114XUS (1013921)

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ATTACHMENT O

Emissions Summary Sheets

G70-A EMISSIONS SUMMARY SHEET

Emission Point ID No.	Emission Point Type ¹	Emission Unit Vented Through This Point		Air Pollution Control Device		All Regulated Pollutants - Chemical Name/CAS ² (Speciate VOCs & HAPs)	Maximum Potential Uncontrolled Emissions ³		Maximum Potential Controlled Emissions ⁴		Emission Form or Phase (At exit conditions, Solid, Liquid or Gas/Vapor)	Est. Method Used ⁵
		ID No.	Source	ID No.	Device Type		lb/hr	ton/yr	lb/hr	ton/yr		
1E	Upward Vertical Stack	HTR-1-4	GPU	None		NOx	0.40	1.75	0.40	1.75	Gas	EE
						CO	0.34	1.47	0.34	1.47	Gas	EE
						VOC	0.02	0.10	0.02	0.10	Gas	EE
						PM	0.03	0.13	0.03	0.13	Solid	EE
						HCOH	<0.01	<0.01	<0.01	<0.01	Gas	EE
						Total HAPs	<0.01	0.03	<0.01	0.03	Gas	EE
						CO2e	483.15	2116	483.15	2116	Gas	EE
2E	Upward Vertical Stack	HTR-2	GPU	None		NOx	0.40	1.75	0.40	1.75	Gas	EE
						CO	0.34	1.47	0.34	1.47	Gas	EE
						VOC	0.02	0.10	0.02	0.10	Gas	EE
						PM	0.03	0.13	0.03	0.13	Solid	EE
						HCOH	<0.01	<0.01	<0.01	<0.01	Gas	EE
						Total HAPs	<0.01	0.03	<0.01	0.03	Gas	EE
						CO2e	483.15	2116	483.15	2116	Gas	EE
3E	Upward Vertical Stack	HTR-3	GPU	None		NOx	0.40	1.75	0.40	1.75	Gas	EE
						CO	0.34	1.47	0.34	1.47	Gas	EE
						VOC	0.02	0.10	0.02	0.10	Gas	EE
						PM	0.03	0.13	0.03	0.13	Solid	EE
						HCOH	<0.01	<0.01	<0.01	<0.01	Gas	EE
						Total HAPs	<0.01	0.03	<0.01	0.03	Gas	EE
						CO2e	483.15	2116	483.15	2116	Gas	EE
4E	Upward Vertical Stack	HTR-3	GPU	None		NOx	0.40	1.75	0.40	1.75	Gas	EE
						CO	0.34	1.47	0.34	1.47	Gas	EE
						VOC	0.02	0.10	0.02	0.10	Gas	EE
						PM	0.03	0.13	0.03	0.13	Solid	EE
						HCOH	<0.01	<0.01	<0.01	<0.01	Gas	EE
						Total HAPs	<0.01	0.03	<0.01	0.03	Gas	EE
						CO2e	483.15	2116	483.15	2116	Gas	EE

G70-A EMISSIONS SUMMARY SHEET

Emission Point ID No.	Emission Point Type ¹	Emission Unit Vented Through This Point	Air Pollution Control Device	All Regulated Pollutants - Chemical Name/CAS ²	Maximum Potential Emissions ³		Maximum Potential Controlled Emissions ⁴		Emission Form or Phase (At exit conditions)	Est. Method Used ⁵
					Uncontrolled	Controlled	Uncontrolled	Controlled		
5E	Upward Vertical Stack	CE-1 Engine	None	NOx	1.52	6.66	1.52	6.66	Gas	EE
				CO	7.39	32.38	0.52	2.27	Gas	EE
				VOC	1.46	6.40	0.73	3.20	Gas	EE
				PM	0.114	0.50	0.114	0.50	Solid	EE
				HCOH	1.31	5.73	0.131	0.57	Gas	EE
				Total HAPs	1.62	7.09	0.290	1.27	Gas	EE
				CO2e	1744	7639	1744	7639	Gas	EE
6E-9E	Fugitive	Produced Water	None	NOx					Gas	EE
				CO					Gas	EE
				VOC	0.06	0.25	0.06	0.25	Gas	EE
				PM					Solid	EE
				HCOH					Gas	EE
				Total HAPs	<0.01	<0.01	<0.01	<0.01	Gas	EE
				CO2e					Gas	EE
10E	Fugitive	Produced Water Truck Loading	None	NOx					Gas	EE
				CO					Gas	EE
				VOC	<0.01	<0.01	<0.01	<0.01	Gas	EE
				PM					Solid	EE
				HCOH					Gas	EE
				Total HAPs	<0.01	<0.01	<0.01	<0.01	Gas	EE
				CO2e					Gas	EE

The EMISSION 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 EMISSIONS SUMMARY SHEET. Please note that total emissions from the source are equal to all vented emissions, all fugitive emissions, plus all other emissions (e.g. uncaptured emissions). Please complete the FUGITIVE EMISSIONS DATA SUMMARY SHEET for fugitive emission activities.

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

² List all regulated air pollutants. Speciate VOCs, including all HAPs. Follow chemical name with Chemical Abstracts Service (CAS) number. LIST Acids, CO, CS₂, VOCs, H₂S, Inorganics, Lead, Organics, O₃, NO, NO₂, SO₂, SO_x, all applicable Greenhouse Gases (including CO₂ and methane), etc. DO NOT LIST H₂, H₂O, N₂, O₂, and Noble Gases

³ 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).

⁴ 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).^{4C}

⁵ Indicate method used to determine emission rate as follows: MB = material balance; ST = stack test (give date of test); EE = engineering estimate; M = modeling; O = other (specify).

ATTACHMENT P

Other Supporting Documentation

Beach Well Pad Attachment P Regulatory Analysis

Both State and Federal environmental regulations governing air emissions apply to the planned Beach Well Pad. The West Virginia Department of Environmental Protection (WVDEP) has been delegated the authority to implement certain federal air quality requirements for the state. Air quality regulations that potentially affect the modification are discussed herein.

1.1 PSD and NSR

The facility will be a minor source with respect to Prevention of Significant Deterioration (PSD) regulations as it will not have the potential to emit more than the annual emission thresholds of any PSD regulated pollutant with the voluntary restrictions (e.g., catalytic converter on the engine).

The facility is within an area designated as attainment for all criteria pollutants. Consequently, the facility is not subject to the New Source Review (NSR) regulations. Consequently, NSR requirements are not applicable to this project.

1.2 Title V Operating Permit Program

West Virginia has incorporated provisions of the federal Title V operating permit program. Thresholds for inclusion under the Title V program are 10 tpy of any single Hazardous Air Pollutant (HAP) or 25 tons of any combination of HAP and/or 100 tpy of all other regulated pollutants. Additionally, facilities regulated under certain New Source Performance Standards (NSPS) require facilities to have Title V permits.

The facility will be a minor source. Additionally, the NSPS regulating this facility does not trigger a Title V permit. Hence, a Title V permit will not be required for the Beach Well Pad Production Facility.

1.3 Aggregation

Source aggregation determinations are typically made based on the following criteria:

- Whether the facilities are under common control,
- Whether the facilities belong to the same Major Group (i.e. the first two digit code) as described in the Standard Industrial Classification Manual, 1972, as amended by the 1977 Supplement;
- Whether the facilities are located on one or more contiguous or adjacent properties; and the distance between all pollutant emitting activities,
- Whether the facilities can operate independently

Only if all criteria are met does a permitting authority aggregate the facilities into a single source.

This Northeast Natural Energy facility will receive and manage raw natural gas and associated produced water from the wells. After separation of the produced water, the gas will be injected into gathering lines for transportation via pipeline owned and operated by others to a facility where it will be compressed, dehydrated and injected into a transmission line for transportation to customers.

The Beach Well Pad and the receiving Compressor Station are under the same general SIC Code. They are not under common ownership and will not have a sharing of staff. Additionally, as the gas can also flow to other compressor stations further away, there is no dependency of the Beach Well Pad on this compressor station. Additionally, operation of this compressor station is not dependent upon the Beach Well Pad as it also receives gas from other well pads. Lastly, the distance between the planned Beach Well Pad and the receiving compressor station does not rise to the definition of contiguous or adjacent. Thus, not all of the criteria for aggregation are met. Hence, emissions from the Beach Well Pad should not be aggregated with those of the receiving compressor station.

The closest Northeast Natural Energy facility to the Beach Well Pad is its Statler Well Pad. This facility is under common ownership, under the same SIC code and may, from time to time, have a sharing of staff. However, these two well pads are approximately 7,400 feet (1.4 miles) apart. Additionally, they are not on contiguous or adjacent parcels. Lastly, there is no interconnection or interdependency between these two facilities. Gas from one well pad does not flow to the other. Accordingly, the operation of one well pad is not dependent upon the operation of the other. Thus, given the lack of dependency and the distance of separation, emissions from these two well pads should not be aggregated.

1.4 New Source Performance Standards

New Source Performance Standards (NSPS) regulations promulgated under 40 CFR 60 require new and reconstructed facilities to control emissions to the level achievable by Best-Available Control Technology (BACT). Specific NSPS requirements potentially applicable to the Well Pad Production Facility are as follows:

- 40 CFR 60, Subpart Dc—Standards of Performance for Small Industrial-Commercial-Institutional Steam Generating Units
- 40 CFR 60, Subpart KKK – Equipment Leaks of VOC from Onshore Natural Gas Processing Stations
- 40 CFR 60, Subpart LLL – Onshore Natural Gas Processing Stations: SO₂ Emissions
- 40 CFR 60, Subpart JJJJ – Stationary Spark Ignition Internal Combustion Engines
- 40 CFR 60, Subpart OOOO - Standards of Performance for Crude Oil and Natural Gas Production, Transmission and Distribution

1.4.1 Subpart Dc

This subpart limits SO₂ and PM emissions from boilers and heaters fired by various fuels. While the primary thrust of this set of regulations is to control SO_x and PM emissions from coal and oil-fired boilers and heaters, natural gas fired units are also covered under this rule. The planned Gas Processing Units have heat inputs that are well below the threshold of coverage for this rule (10 MMBTU/Hr). Thus, this rule does not apply.

1.4.2 Subpart KKK

This subpart limits VOC emissions from equipment at a natural gas processing station. The planned Well Pad does not meet the definition of a processing station under this rule. Hence, this rule does not apply.

1.4.3 Subpart LLL

This set of regulations governs emissions from processes used to remove sulfur gases from the field gas stream (sweetening unit) and subsequent sulfur recovery operations. The field gas that will be extracted at this Well Pad does not contain sufficient sulfur compounds to warrant a sweetening unit. Accordingly, not such equipment will be present. Hence, this rule does not apply.

1.4.4 Subpart IIII

This subpart governs emissions from new compression ignition internal combustion engines (CI ICE) manufactured after July 11, 2005. There will be no compression ignition engines (e.g. diesel-fired emergency generator) at this station. Hence, this rule does not apply.

1.4.5 Subpart JJJJ

This subpart governs emissions from new stationary spark ignition internal combustion engines (SI ICE) manufactured after July 1, 2007. The driver for sole gas compressor at this facility will be SI ICE units manufactured after this date. Accordingly, this rule applies to this engine. More specifically, 60.4233€ stipulates that non-emergency natural gas-fired lean burn engines > 1350 HP must comply with the emission standards of Table 1 of this Subpart. The engine, including the catalytic control unit, will meet this standard.

1.4.6 Subpart OOOO

This subpart governs emissions from a broad spectrum of operations in the oil and natural gas industries, including operations at natural gas well pads. The potentially applicable sections of this rule sets restrictions, recordkeeping and reporting requirements on emissions from storage vessels with potential VOC emissions greater than 6 tons per year, fugitive emissions, reciprocating compressors and pneumatic controllers. This rule applies to the Beach Well Pad Production Facility.

One of the key components to this rule [40 CFR 60.5390(b)] applicable to the Beach Well Pad is the requirement that all pneumatic controllers located between the well head and a processing

plant must have a bleed rate of less than 6 scfh. All pneumatic controllers to be installed at Beach Well Pad will meet these criteria.

This rule also stipulates that storage vessels with VOC emissions equal to or greater than 6 tpy must control those emissions by 95% by October 15, 2013. The Produced Water tanks at the Beach Well Pad will have an estimated *uncontrolled* VOC emission rate well below this threshold. Thus, emissions from these tanks do not fall under NSPS Subpart OOOO.

1.5 National Emission Standards for Hazardous Air Pollutants

National Emission Standards for Hazardous Air Pollutants (NESHAPs) promulgated under 40 CFR 63 regulate the emission of Hazardous Air Pollutants (HAPs) from certain industrial processes. In general, these rules apply to major sources of HAPs with a major source being defined as having the potential to emit more than 10 tpy of any individual HAP or 25 tpy of total HAPs. Emissions standards under these rules have been established as the Maximum Achievable Control Technology (MACT) for each source category. The following NESHAP source category standards are potentially applicable to the planned Beach Well Pad Production Facility:

- 40 CFR 63, Subpart ZZZZ – NESHAP from Stationary Reciprocating Internal Combustion Engines
- 40 CFR 63, Subpart DDDDD – NESHAP for Industrial, Commercial and Institutional Boilers and Process Heaters

1.5.1 Subpart ZZZZ

This Subpart governs emissions from a stationary reciprocating internal combustion engine (RICE) located both at major and area source of HAPs. The facility will not be a major source of HAPs, but will be considered an area source of HAPs. Hence, this rule is potentially applicable to the facility. In accordance with 40 CFR 63.6590(a)(2)(iii), the single engine at the planned Beach Well Pad Production Facility will not be considered an Existing Stationary RICE. Rather, it will be considered “new” engine. Thus, the engine will meet the requirements of this rule by meeting the requirements of NSPS, Subpart JJJJ as described above.

1.5.2 Subpart DDDDD

This Subpart applies to industrial boilers and process heaters of various sizes and fuel types located at facilities that are classified as a major source of HAPs. As the planned facility is not a major source of HAPs, this rule does not apply.

1.6 Chemical Accident Prevention

Subparts B-D of 40 CFR 68 present the requirements for the assessment and subsequent preparation of a Risk Management Plan (RMP) for a facility that stores more than a threshold quantity of a regulated substance listed in 40 CFR 68.130. If a facility stores, handles or

processes one or more regulated substances in an amount greater than its corresponding threshold, the facility must prepare and implement an RMP. The Beach Well Pad will not store more than 10,000 lbs of a flammable mixture comprised of the substances listed in Table 3 in 40 CFR 68.130. Hence, it is not covered under this rule.

1.7 West Virginia State Requirements

1.7.1 45 CSR 2

The purpose of 45CSR2 is to control smoke and particulate matter emissions from fuel burning units. The facility is subject to the opacity requirement of 45 CSR 2. Emissions from the facility cannot exceed 10% over any six minute period.

1.7.2 45 CSR 4

This regulation prohibits the emission of objectionable odors. Northeast Natural Energy is obligated to run the station in a manner that does not produce objectionable odors.

1.7.3 45 CSR 6

This rule establishes emission standards for particulate matter and other requirements for incineration of refuse not subject to or specifically exempted from federal regulation. The GPUs and compressor engine fall under Section 4.1 of this rule. PM emissions from these devices must remain below the allowable limit calculated under this rule.

The emissions must also meet the visible emissions requirements of this rule limiting visible emissions to 20% opacity.

1.7.4 45 CSR 10

This regulation limits emissions of sulfur oxides. As the sulfur content of the Inlet Gas contains no measurable sulfur, emissions of sulfur oxides is negligible. Thus, while parts of this rule are applicable to the planned facility, no actions are required on the part of Northeast Natural Energy to attain compliance. The various non-engine combustion units have a design heat input less than 10 MMBTU/Hr and are therefore exempt from the requirements of this rule.

1.7.5 45 CSR 13

The state regulations applicable to the permitting of the proposed construction are in Title 45 Series 13 of the Code of State Regulations. The proposed Beach Well Pad facility has the potential to emit one regulated pollutant in excess of the thresholds that define a Stationary Source (formaldehyde). Additionally, the presence of a source (the compressor engine) is regulated under NSPS, Subpart JJJJ. As such, a permit is warranted, independent of the exceedance (or lack thereof) of any emission thresholds triggering permitting.

When taking into consideration the voluntary limit to operate the engines equipped with catalysts only when the catalytic converters are properly functioning, the facility's potential to emit is less than the thresholds that would classify the facility as a Major Source under 45 CSR 14.

1.7.6 45 CSR 16

This series of regulations is an incorporation, by reference, of the New Source Performance Standards codified under 40 CFR 60. As discussed under the federal regulations, the Beach Well Pad Production Facility is subject to the emission limitations, monitoring, testing and recordkeeping of Subpart JJJJ. The facility is also subject to Subpart OOOO.

1.7.7 45 CSR 30

The state regulations applicable to Title V operating permits are in Title 45 Series 30. The planned Beach Well Pad Production Facility, as noted above, does not have the potential to emit any regulated pollutant about the threshold that would define it as a major facility. Additionally, although the facility is subject to certain New Source Performance Standards, the NSPS applicable to this facility do not trigger the need to submit a Title V application and obtain a Title V permit. Hence this rule is not applicable.

1.7.8 Other Applicable Requirements

Through Series 34, WVDEP has adopted the National Emission Standards for Hazardous Air Pollutants for Source Categories. Both of these topics have been addressed above.