

July 27, 2016

West Virginia Dept. of Environmental Protection
Division of Air Quality – Permitting Section
601 57th Street, SE
Charleston, WV 25304



98 VANADIUM ROAD
BUILDING D, 2nd FLOOR
BRIDGEVILLE, PA 15017
(412) 221-1100
(412) 257-6103 (FAX)
<http://www.se-env.com>

**RE: Application for G70-C General Permit
Dopey Well Pad Production Facility
Jay-Bee Oil & Gas, Inc.
Tyler County, West Virginia**

Entire Document
NON-CONFIDENTIAL



To Whom It May Concern:

On behalf of our client, Jay-Bee Oil & Gas, we are pleased to submit one hard copy and two electronic copies of the Application of the G70-C General Permit registration for its Dopey Well Pad Production Facility in Tyler County. This equipment is needed to allow proper management of liquid and natural gas produced by the wells prior to injection into nearby gathering lines.

An application fee in the amount of \$4,000 (\$500 Permit Fee + \$1,000 NSPS + \$2,500 NESHAP) was determined to be applicable. Two recent applications submitted were withdrawn for the Dopey Site, resulting in excess payments to WVDEP in the amount of \$5,500. The withdrawal letters are also attached to this application. Jay-Bee wishes to apply \$4,000 of these excess payments to this application.

Jay-Bee is eager to begin operation of this additional control equipment at the earliest practical date. Consequently, if there are any questions or concerns regarding this application, please contact me at 412-221-1100, Ext. 202 or rdhonau@se-env.com and we will provide any needed clarification or additional information immediately.

Sincerely,

SE TECHNOLOGIES, LLC

Roger A. Dhonau, PE, QEP
Principal

Id. No. 095-00070 Reg. G70-C210
Company Jay Bee
Facility Dopey Region II
Initials RFK

Enclosures

Cc: Jay-Bee Oil & Gas, Inc. – Shane Dowell



west virginia department of environmental protection

Division of Air Quality
601 57th Street SE
Charleston, WV 25304
Phone (304) 926-0475 • FAX: (304) 926-0479

Earl Ray Tomblin, Governor
Randy C. Huffman, Cabinet Secretary
www.dep.wv.gov

July 6, 2016

Shane Dowell
3570 Shields Hill Road
Cairo, WV 26337

Re: Withdrawal of Permit Application
Jay-Bee Oil & Gas, Inc.
Dopey Well Pad
Permit Application R13-3320
Plant ID No. 095-00070

Dear Mr. Dowell:

In accordance with your letter received on July 6, 2016, this Division hereby acknowledges the withdrawal of your company's application for a permit to construct a natural gas well pad at your Dopey facility located near Middlebourne, Tyler County, WV.

No further action will be taken by this Division regarding the construction proposed within Permit Application R13-3320.

Sincerely,

William F. Durham
Director, Division of Air Quality

WFD/rfk

cc: Roy F. Kees, P.E.
Engineer - NSR Permitting

Roger Dhonau - SE Technologies



west virginia department of environmental protection

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www.dep.wv.gov

July 6, 2016

Shane Dowell
3130 Grants Lake Blvd., Suite 18859
Sugarland, TX 77496

Re: Withdrawal of Permit Application
Icon Midstream Pipeline, LLC
Dopey Dehy Facility
Permit Application R13-3321
Plant ID No. 095-00070

Dear Mr. Dowell:

In accordance with your letter received on July 6, 2016, this Division hereby acknowledges the withdrawal of your company's application for a permit to construct a natural gas dehydration unit at your Dopey facility located near Middlebourne, Tyler County, WV.

No further action will be taken by this Division regarding the construction proposed within Permit Application R13-3321.

Sincerely,

William F. Durham
Director, Division of Air Quality

WFD/rfk

cc: Roy F. Kees, P.E.
Engineer - NSR Permitting

Roger Dhonau - SE Technologies

JAY-BEE OIL & GAS, INC.

APPLICATION FOR GENERAL PERMIT

**Dopey Well Pad Production Facility
Tyler County, West Virginia**



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

APPLICATION FOR G70-C GENERAL PERMIT

Jay-Bee Oil & Gas, Inc.

Dopey Well Pad Production Facility

Tyler 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 25 4
Phone (304) 926-0475
Fax (304) 926-0479
www.dep.wv.gov

G70-C GENERAL PERMIT REGISTRATION APPLICATION

PREVENTION AND CONTROL OF AIR POLLUTION IN REGARD TO THE CONSTRUCTION, MODIFICATION,
RELOCATION, ADMINISTRATIVE UPDATE AND OPERATION OF
NATURAL GAS PRODUCTION FACILITIES LOCATED AT THE WELL SITE

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

SECTION 1. GENERAL INFORMATION

Name of Applicant (as registered with the WV Secretary of State's Office): Jay-Bee Oil & Gas, Inc.

Federal Employer ID No. (FEIN): 55-073-8862

Applicant's Mailing Address: 3570 Shields Hill Rd

City: Cairo

State: WV

ZIP Code: 26337

Facility Name: Dopey Well Pad Production Facility

Operating Site Physical Address: Off Indian Creek Rd
If none available, list road, city or town and zip of facility.

City: Middlebourne

Zip Code: 26149

County: Tyler

Latitude & Longitude Coordinates (NAD83, Decimal Degrees to 5 digits):

Latitude: 39.43806

Longitude: -80.77255

SIC Code: 1311

DAQ Facility ID No. (For existing facilities)

NAICS Code: 211111

CERTIFICATION OF INFORMATION

This G70-C 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 the 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, 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 G70-C Registration Application will be returned to the applicant. Furthermore, if the G70-C forms are not utilized, the application will be returned to the applicant. No substitution of forms is allowed.

I hereby certify that 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 Division of Air Quality immediately.

I hereby certify that all information contained in this G70-C 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.

Responsible Official Signature:

Name and Title: Office Manager

Email: sdowell@jaybeeoil.com

Phone: 304/628-3119

Fax:

Date: 7-22-16

If applicable:

Authorized Representative Signature:

Name and Title:

Phone:

Fax:

Email:

Date:

If applicable:

Environmental Contact

Name and Title:

Phone:

Fax:

Email:

Date:

OPERATING SITE INFORMATION

Briefly describe the proposed new operation and/or any change(s) to the facility:
Natural gas production and separation of liquids. Then, the facility will dehydrate the gas and inject it into a gather line owned and operated by others. There is no compression at this time.

Directions to the facility:

From Middlebourne, proceed southeast on State Route 18 (Main Street) out of town. Proceed approximately 5.8 miles to the junction with CR 1/3 (Indian Creek Road) on the left. From WV 18 and Indian Creek (CR13) intersection, take Indian Creek Rd east for 4.4 miles. Turn right onto lease road and follow north for 0.2 miles to well pad entrance.

ATTACHMENTS AND SUPPORTING DOCUMENTS

I have enclosed the following required documents:

Check payable to WVDEP – Division of Air Quality with the appropriate application fee (per 45CSR13 and 45CSR22).

Check attached to front of application.

I wish to pay by electronic transfer. Contact for payment (incl. name and email address):

I wish to pay by credit card. Contact for payment (incl. name and email address):

\$500 (Construction, Modification, and Relocation)

\$300 (Class II Administrative Update)

\$1,000 NSPS fee for 40 CFR60, Subpart IIII, JJJJ and/or OOOO ¹

\$2,500 NESHAP fee for 40 CFR63, Subpart ZZZZ and/or HH ²

¹ Only one NSPS fee will apply.

² Only one NESHAP fee will apply. The Subpart ZZZZ NESHAP fee will be waived for new engines that satisfy requirements by complying with NSPS, Subparts IIII and/or JJJJ.

NSPS and NESHAP fees apply to new construction or if the source is being modified.

Responsible Official or Authorized Representative Signature (if applicable)

Single Source Determination Form (**must be completed in its entirety**) – Attachment A

Siting Criteria Waiver (if applicable) – Attachment B

Current Business Certificate – Attachment C

Process Flow Diagram – Attachment D

Process Description – Attachment E

Plot Plan – Attachment F

Area Map – Attachment G

G70-C Section Applicability Form – Attachment H

Emission Units/ERD Table – Attachment I

Fugitive Emissions Summary Sheet – Attachment J

Gas Well Affected Facility Data Sheet (if applicable) – Attachment K

Storage Vessel(s) Data Sheet (include gas sample data, USEPA Tanks, simulation software (e.g. ProMax, E&P Tanks, HYSYS, etc.), etc. where applicable) – Attachment L

Natural Gas Fired Fuel Burning Unit(s) Data Sheet (GPUs, Heater Treaters, In-Line Heaters if applicable) – Attachment M

Internal Combustion Engine Data Sheet(s) (include manufacturer performance data sheet(s) if applicable) – Attachment N

Tanker Truck Loading Data Sheet (if applicable) – Attachment O

Glycol Dehydration Unit Data Sheet(s) (include wet gas analysis, GRI- GLYCalc™ input and output reports and information on reboiler if applicable) – Attachment P

Pneumatic Controllers Data Sheet – Attachment Q

Air Pollution Control Device/Emission Reduction Device(s) Sheet(s) (include manufacturer performance data sheet(s) if applicable) – Attachment R

Emission Calculations (please be specific and include all calculation methodologies used) – Attachment S

Facility-wide Emission Summary Sheet(s) – Attachment T

Class I Legal Advertisement – Attachment U

One (1) paper copy and two (2) copies of CD or DVD with pdf copy of application and attachments

All attachments must be identified by name, divided into sections, and submitted in order.

SECTION II

Attachments

ATTACHMENT A

Single Source Determination Form

ATTACHMENT A - SINGLE SOURCE DETERMINATION FORM

Classifying multiple facilities as one “stationary source” under 45CSR13, 45CSR14, and 45CSR19 is based on the definition of Building, structure, facility, or installation as given in §45-14-2.13 and §45-19-2.12. The definition states:

“Building, Structure, Facility, or Installation” means all of the pollutant-emitting activities which belong to the same industrial grouping, are located on one or more contiguous or adjacent properties, and are under the control of the same person (or persons under common control). Pollutant-emitting activities are a part of the same industrial grouping if they belong to the same “Major Group” (i.e., which have the same two (2)-digit code) as described in the Standard Industrial Classification Manual, 1987 (United States Government Printing Office stock number GPO 1987 0-185-718:QL 3).

Is there a facility owned by or associated with the natural gas industry located within one (1) mile of the proposed facility? Yes No

If Yes, please complete the questionnaire on the following page (Attachment A).

Please provide a source aggregation analysis for the proposed facility below:

The closest Jay-Bee facility to the Dopey Well Pad Production Facility is its Doc Well Pad Production Facility. This under the same SIC code and may, from time to time, have a sharing of staff. However, these two well pads are approximately 4100 feet (0.78 miles) apart, and 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.

ATTACHMENT A - SINGLE SOURCE DETERMINATION FORM

Answer each question with a detailed explanation to determine contiguous or adjacent properties which are under a common control and any support facilities. This section must be completed in its entirety.

Provide a map of contiguous or adjacent facilities (production facilities, compressor stations, dehydration facilities, etc.) which are under common control and those facilities that are not under common control but are support facilities. Please indicate the SIC code, permit number (if applicable), and the distance between facilities in question on the map.

Are the facilities owned by the same parent company or a subsidiary of the parent company? Provide the owners identity and the percentage of ownership of each facility. Jay-Bee Oil & Gas owns 100%	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>
Does an entity such as a corporation have decision making authority over the operation of a second entity through a contractual agreement or voting interest? Please explain.	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>
Is there a contract for service relationship between the two (2) companies or, a support/dependency relationship that exists between the two (2) companies? Please explain. Jay-Bee Oil & Gas owns both.	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>
Do the facilities share common workforces, plant managers, security forces, corporate executive officers or board executives?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>
Will managers or other workers frequently shuttle back and forth to be involved actively at both facilities?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>
Do the facilities share common payroll activities, employee benefits, health plans, retirement funds, insurance coverage, or other administrative functions? Please explain. Jay-Bee Oil & Gas owns and operates both facilities.	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>
Does one (1) facility operation support the operation of the other facility?	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>
Is one (1) facility dependent on the other? If one (1) facility shuts down, what are the limitations on the other to pursue outside business? Please explain. No limitations on either facility if the other were to shutdown.	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>
Are there any financial arrangements between the two (2) entities? Jay-Bee Oil & Gas owns and operates both facilities.	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>
Are there any legal or lease agreements between the two (2) facilities? Jay-Bee Oil & Gas owns and operates both facilities.	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>
Do the facilities share products, byproducts, equipment, or other manufacturing or air pollution control device equipment? Please explain. Well pads operate independently.	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>
Do all the pollutant-emitting activities at the facilities belong to the same SIC Code? Please provide the SIC Codes. 1311	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>
Was the location of the new facility chosen primarily because of its proximity to the existing facility to integrate the operation of the two (2) facilities? Please explain.	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>
Will materials be routinely transferred between the two (2) facilities? Please explain the amount of transfer and how often the transfers take place and what percentages go to the various entities.	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>
Does the facility influence production levels or compliance with environmental regulations at other facilities? Who accepts the responsibility for compliance with air quality requirements? Please explain. No, facilities operate independently. Jay-Bee Oil & Gas Office Manager is responsible for Air Quality Requirements for both facilities.	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>

ATTACHMENT C

Current Business Certificate

**WEST VIRGINIA
STATE TAX DEPARTMENT
BUSINESS REGISTRATION
CERTIFICATE**

ISSUED TO:
**JAY-BEE OIL & GAS INC
RR 1 BOX 5
CAIRO, WV 26337-9701**

BUSINESS REGISTRATION ACCOUNT NUMBER 1043-4424

This certificate is issued on 06/11/2010

This certificate is issued by
the West Virginia State Tax Commissioner
in accordance with W.Va. Code § 11-2-2

The person or organization identified on this certificate is registered
to conduct business in the State of West Virginia at the location above.

This certificate is not transferable and must be displayed at the location for which issued.

This certificate shall be permanent until cessation of the business for which the certificate of registration was granted or until it is suspended, revoked or annulled by the Tax Commissioner.

Change in name or change of location shall be considered a cessation of the business and a new certificate shall be required.

TRAVELING STREET VENDORS: Must carry a copy of this certificate in every vehicle operated by them.
CONTRACTORS, DRILLING OPERATORS, TIMBER LOGGING OPERATIONS: Must have a copy of this certificate displayed at every job site within West Virginia.

sl008 v.1
L1388190464

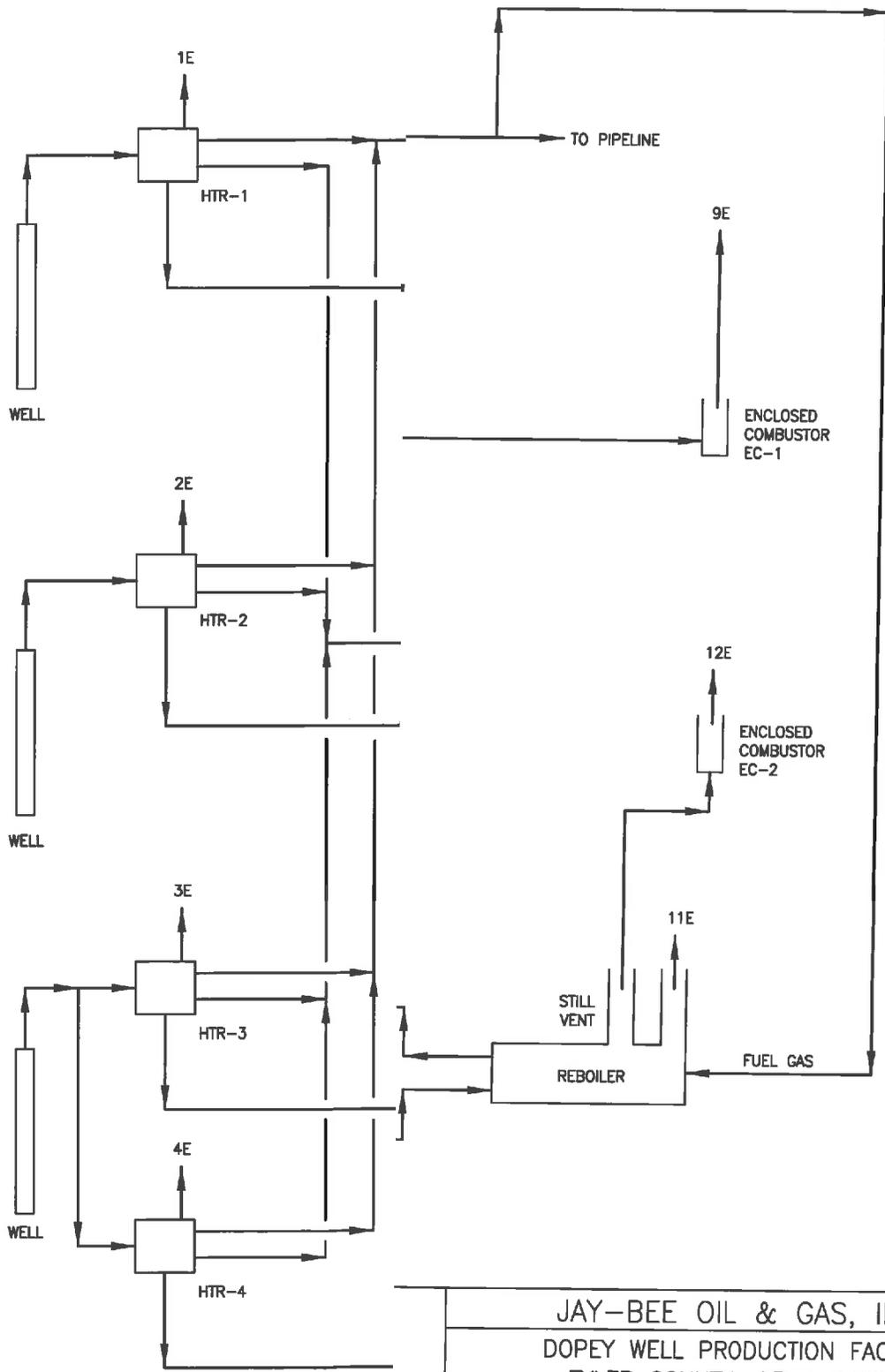
SCANNED

06/11/10

06/11/10
11:11 AM
JAY-BEE OIL & GAS INC

ATTACHMENT D

Process Flow Diagram



JAY-BEE OIL & GAS, INC.	
DOPEY WELL PRODUCTION FACILITY TYLER COUNTY, WEST VIRGINIA PROCESS FLOW DIAGRAM	
DRAWING NAME	FIGURE 3
REV.	2

ATTACHMENT E

Process Description

Jay-Bee Oil & Gas, Incorporated
Dopey Well Pad Production Facility
Attachment E
Process Description

At this facility, Natural gas and Produced Fluids (condensate and water) will be received from three wells and passed through Gas Processing Units (one per Marcellus well and two per Utica well) to avoid ice formation during subsequent pressure drops. These materials will then pass through a three-way separator where gas, condensate and water are separated. All gas fired equipment will use natural gas produced at the site as fuel. The Facility will then dehydrate the gas and then injected into a gathering pipeline owned and operated by others.

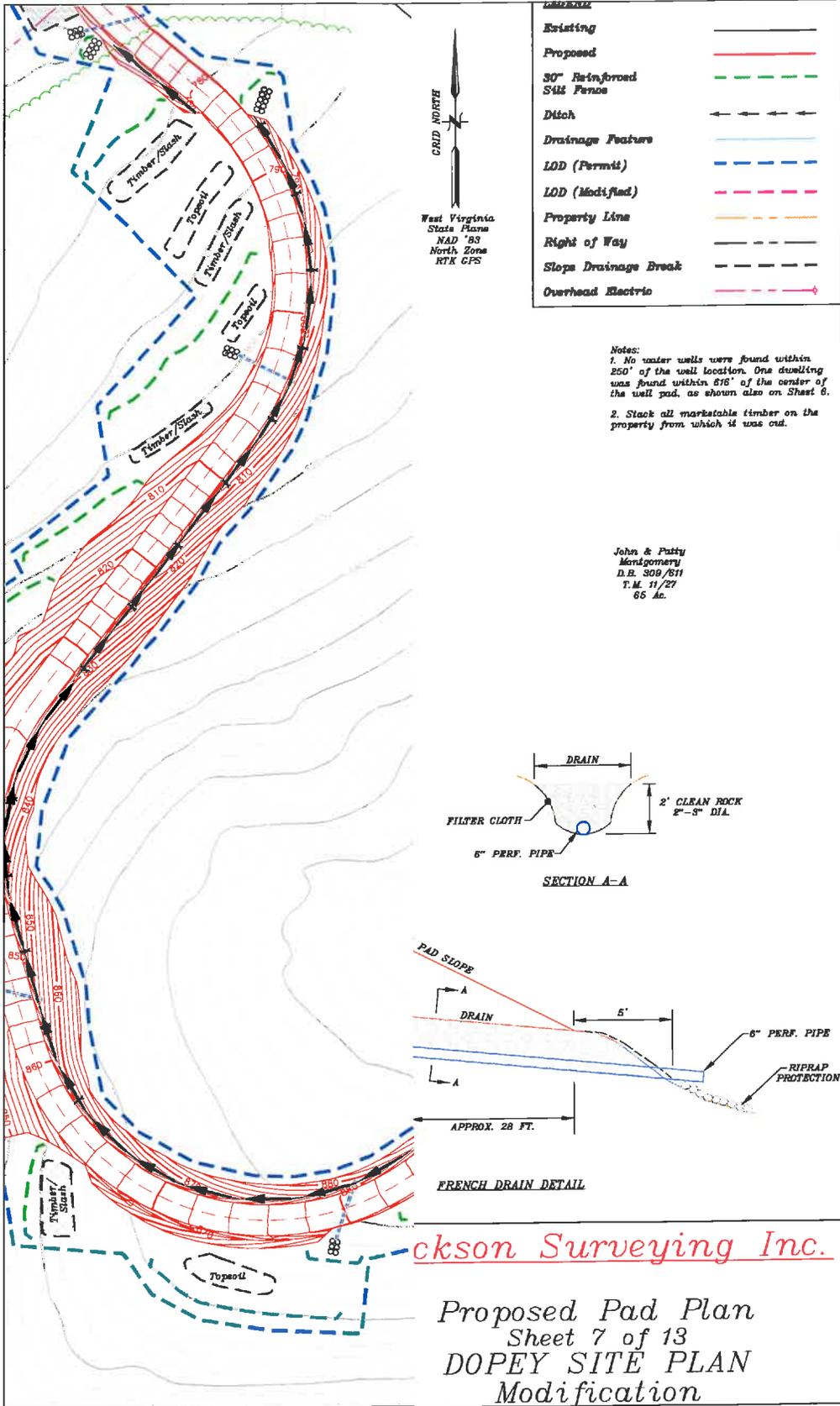
Both Condensate and Produced Water will be accumulated in six (6) 210 BBL tanks (three for Condensate and three for Produced Water), pending truck transportation by others. The Condensate will be transported to a regional processing facility and the Produced Water will be transported to a regional disposal facility. Flash, working and breathing losses from these tanks will be routed to a Vapor Recovery Unit (VRU) with the captured vapors routed back to the raw gas discharge line. An enclosed combustor will be utilized as a backup control device for times when the VRU is not available, and will also be utilized if a large slug of condensate production generates flash gas in excess of the capacity of the VRU. A capture and control efficiency of 98% is being claimed for this overall combination of controls.

The dehydration unit will generate emissions from the still vent and re-boiler. There is no flash tank. Vapors from the still vent will be comprised of water and various low molecular weight hydrocarbons. Still vent vapors will be routed to an enclosed combustor. A capture and control efficiency of 98% is being claimed for the combustor. Although needs are anticipated to be minimal, supplemental re-boiler fuel is available from the dehydrated gas stream prior to injection into the sales line. Any water condensing in the still vent column will be routed to the wastewater tanks.

Lastly, Jay-Bee is seeking approval for installation of a Thermo-electric generator to meet the minor electric demands for various monitoring and data tracking equipment.

ATTACHMENT F

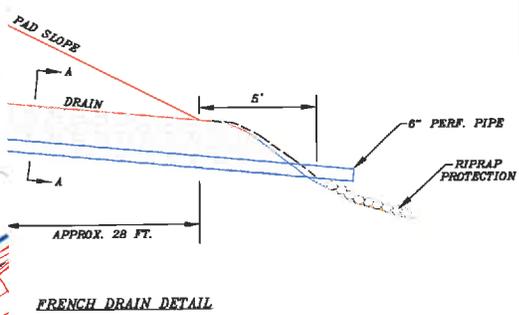
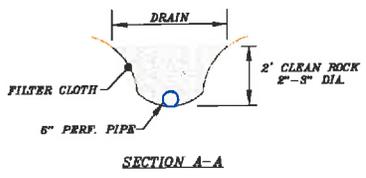
Plot Plan



Existing	—
Proposed	—
30" Reinforced Steel Fence	—
Ditch	—
Drainage Feature	—
LDD (Permit)	—
LDD (Modified)	—
Property Line	—
Right of Way	—
Slope Drainage Break	—
Overhead Electric	—

Notes:
 1. No water wells were found within 250' of the well location. One dwelling was found within 616' of the center of the well pad, as shown also on Sheet 6.
 2. Stack all marketable timber on the property from which it was cut.

John & Patty
 Montgomery
 D.B. 309/611
 T.M. 11/27
 66 Ac.

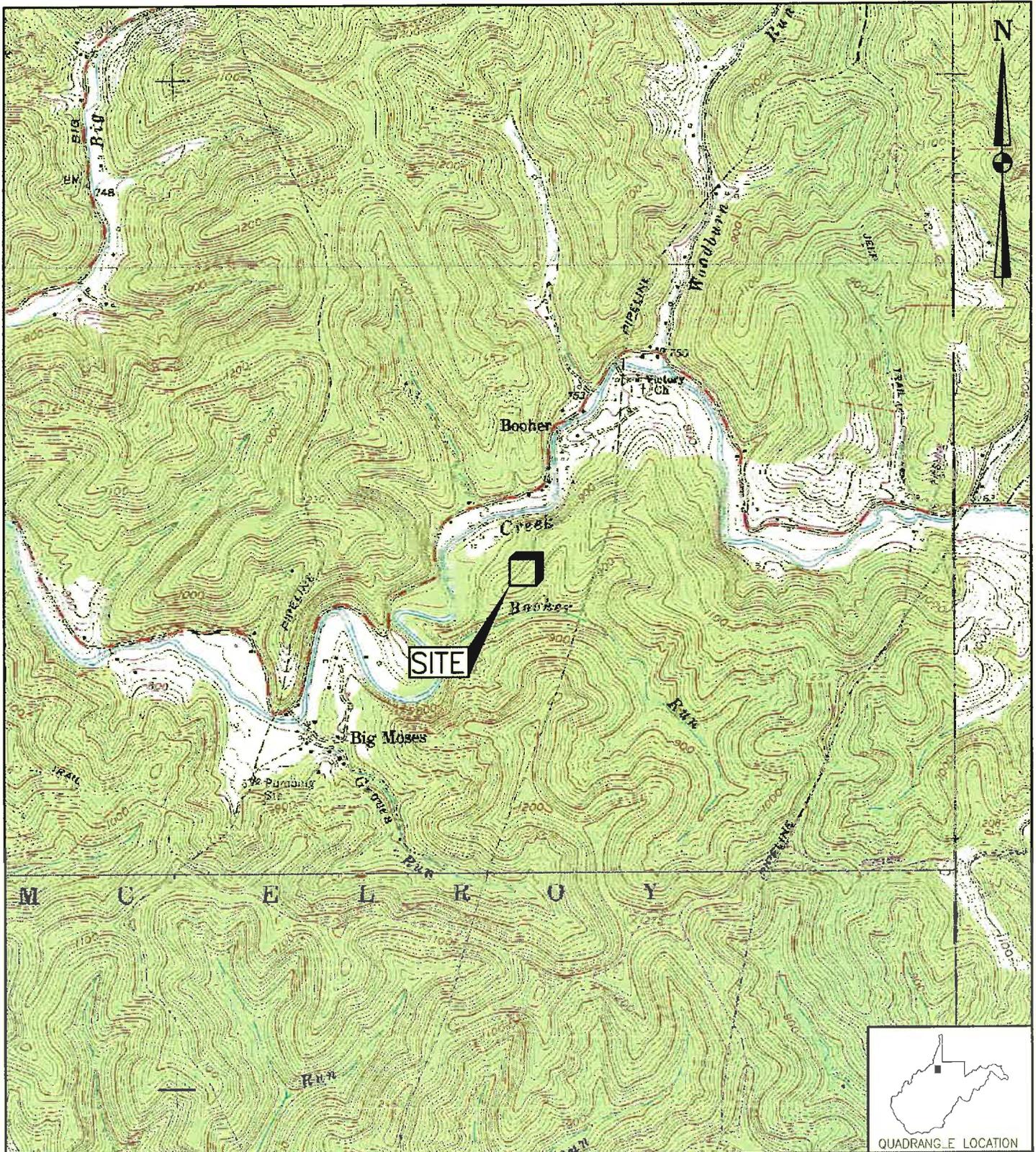


Jackson Surveying Inc.

Proposed Pad Plan
 Sheet 7 of 13
 DOPEY SITE PLAN
 Modification

ATTACHMENT G

Area Map



REFERENCE: USGS 7.5' QUADRANGLE MAP OF: SHIRLEY, WEST VIRGINIA; DATED 1961, PHOTOREVISED 1989

DRAWN BY	DJF
DATE	5/10/16
CHECKED BY	RAD
SET JOB NO.	214054-17
SET DWG FILE	DOPEYm01.dwg
DRAWING SCALE	1"=2000'

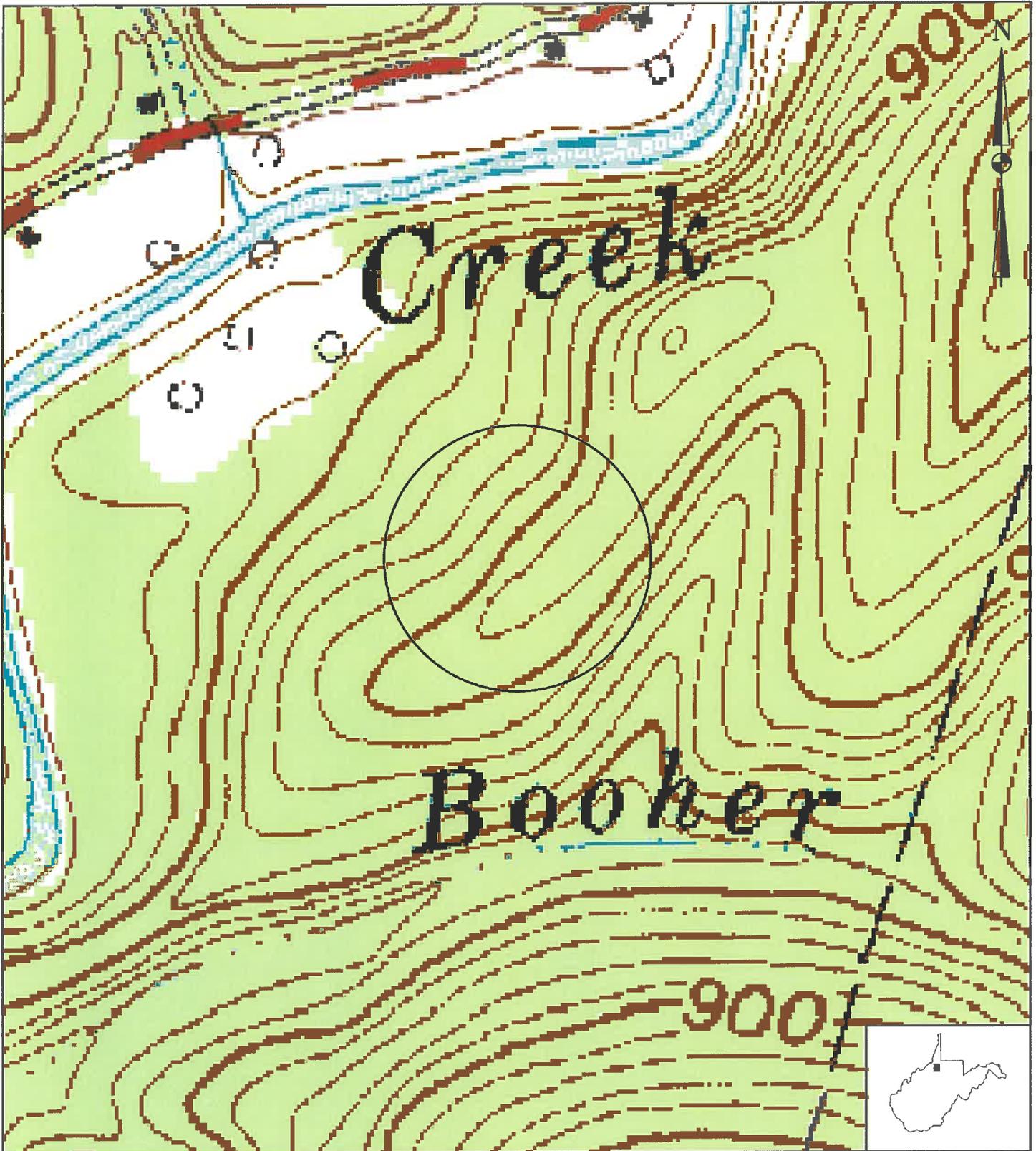


98 Vanadium Road Bridgeville, PA 15017 (412) 221-1100

JAY-BEE OIL & GAS, INC.

DOPEY WELL PRODUCTION FACILITY
TYLER COUNTY, WEST VIRGINIA
SITE LOCATION MAP

DRAWING NO.	FIGURE 1	REV.	0
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REFERENCE: USGS 7.5' QUADRANGLE MAP OF: SHIRLEY, WEST VIRGINIA; DATED 1961, PHOTOREVISED 1989

DRAWN BY	DJF
DATE	7/26/16
CHECKED BY	RAD
SET JOB NO.	214054-17
SET DWG FILE	DOPEY 300 RADm01.dwg
DRAWING SCALE	1"=300'



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

JAY-BEE OIL & GAS, INC.

DOPEY WELL PRODUCTION FACILITY
TYLER COUNTY, WEST VIRGINIA
SITE LOCATION MAP
300' RADIUS MAP

DRAWING NO.	FIGURE 1A	REV.	0
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ATTACHMENT H

G-70C Section Applicability Form

ATTACHMENT H – G70-C SECTION APPLICABILITY FORM

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

General Permit G70-C was developed to allow qualified applicants to seek registration for a variety of sources. These sources include gas well affected facilities, storage vessels, gas production units, in-line heaters, heater treaters, glycol dehydration units and associated reboilers, pneumatic controllers, centrifugal compressors, reciprocating compressors, reciprocating internal combustion engines (RICEs), tank truck loading, fugitive emissions, 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-C 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.

GENERAL PERMIT G70-C APPLICABLE SECTIONS	
<input checked="" type="checkbox"/> Section 5.0	Gas Well Affected Facility (NSPS, Subpart OOOO)
<input checked="" type="checkbox"/> Section 6.0	Storage Vessels Containing Condensate and/or Produced Water ¹
<input type="checkbox"/> Section 7.0	Storage Vessel Affected Facility (NSPS, Subpart OOOO)
<input checked="" type="checkbox"/> Section 8.0	Control Devices and Emission Reduction Devices not subject to NSPS Subpart OOOO and/or NESHAP Subpart HH
<input checked="" type="checkbox"/> Section 9.0	Small Heaters and Reboilers not subject to 40CFR60 Subpart Dc
<input type="checkbox"/> Section 10.0	Pneumatic Controllers Affected Facility (NSPS, Subpart OOOO)
<input type="checkbox"/> Section 11.0	Centrifugal Compressor Affected Facility (NSPS, Subpart OOOO) ²
<input checked="" type="checkbox"/> Section 12.0	Reciprocating Compressor Affected Facility (NSPS, Subpart OOOO) ²
<input checked="" type="checkbox"/> Section 13.0	Reciprocating Internal Combustion Engines, Generator Engines, Microturbines
<input checked="" type="checkbox"/> Section 14.0	Tanker Truck Loading ³
<input checked="" type="checkbox"/> Section 15.0	Glycol Dehydration Units ⁴

- ¹ Applicants that are subject to Section 6 may also be subject to Section 7 if the applicant is subject to the NSPS, Subpart OOOO control requirements or the applicable control device requirements of Section 8.
- ² Applicants that are subject to Section 11 and 12 may also be subject to the applicable RICE requirements of Section 13.
- ³ Applicants that are subject to Section 14 may also be subject to control device and emission reduction device requirements of Section 8.
- ⁴ Applicants that are subject to Section 15 may also be subject to the requirements of Section 9 (reboilers). Applicants that are subject to Section 15 may also be subject to control device and emission reduction device requirements of Section 8.

ATTACHMENT I

Emissions Units/ERD Table

ATTACHMENT I – EMISSION UNITS / EMISSION REDUCTION DEVICES (ERD) TABLE

Include ALL emission units and air pollution control devices/ERDs that will be part of this permit application review. Do not include fugitive emission sources in this table. Derris storage tanks shall be listed in the Attachment L table. This information is required for all sources regardless of whether it is a construction, modification, or administrative update.

Emission Unit ID ¹	Emission Point ID ²	Emission Unit Description	Year Installed	Manufac. Date ³	Design Capacity	Type ⁴ and Date of Change	Control Device(s) ⁵	ERD(s) ⁶
HTR-1	1E	Gas Processing Unit	TBD		1.5 MMBTU/hr	NEW	None	None
HTR-2	2E	Gas Processing Unit	TBD		1.5 MMBTU/hr	NEW	None	None
HTR-3	3E	Gas Processing Unit	TBD		1.5 MMBTU/hr	NEW	None	None
HTR-4	4E	Gas Processing Unit	TBD		1.5 MMBTU/hr	NEW	None	None
T01	7E/9E	Condensate Tank	TBD		210 BBL	NEW	EC-1	VRU-1
T02	7E/9E	Condensate Tank	TBD		210 BBL	NEW	EC-1	VRU-1
T03	7E/9E	Condensate Tank	TBD		210 BBL	NEW	EC-1	VRU-1
T04	7E/9E	Produce Water Tank	TBD		210 BBL	NEW	EC-1	VRU-1
T05	7E/9E	Produce Water Tank	TBD		210 BBL	NEW	EC-1	VRU-1
T06	7E/9E	Produce Water Tank	TBD		210 BBL	NEW	EC-1	VRU-1
TL-1	5E	Condensate Truck Loading	TBD		30,000 BBL/yr	NEW	None	None
TL-2	6E	Produce Water Truck Loading	TBD		63,600 BBL/yr	NEW	None	None
VRU-1	7E	VRU Driver	TBD	3/19/12	84 HP	NEW	1C	None
TEG-1	8E	Thermoelectric Generator	TBD		4.4 KW/hr	NEW	None	None
EC-1	9E	Enclosed Combustor	TBD		10.0 MMBTU/hr	NEW	N/A	None
HTR-5	10E	Line Heater	TBD		0.5 MMBTU/hr	NEW	None	None
RBV-1	11E	Dehydration Unit Re-boiler Vent	TBD		0.500 MMBTU/hr	NEW	None	None
RSV-1	12E	Dehydration Unit Still Vent	TBD		40 MMSCFD	NEW	EC-2	None
EC-2	12E	Enclosed Combustor	TBD		10.0 MMBTU/hr	NEW	None	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 When required by rule

⁴ New, modification, removal, existing

⁵ For Control Devices use the following numbering system: 1C, 2C, 3C,... or other appropriate designation.

⁶ For ERDs use the following numbering system: 1D, 2D, 3D,... or other appropriate designation.

ATTACHMENT J

Fugitive Emissions Summary Sheet

ATTACHMENT J – FUGITIVE EMISSIONS SUMMARY SHEET

Sources of fugitive emissions may include loading operations, equipment leaks, blowdown emissions, etc.

Source/Equipment:

Component Type	Leak Detection Method Used	Audible, visual, and olfactory (AVO) inspections		Count	Source of Leak Factors (EPA, other (specify))	Infrared (FLIR) cameras	Other (please describe)	Estimated Emissions (tpy)		
		<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No					VOC	HAP	GHG (CO ₂ e)
Pumps	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No			1	API			0.01	<0.01	0.30
Valves	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No			44	EPA			0.31	0.01	2.57
Safety Relief Valves	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No			3	EPA			0.01	<0.01	0.44
Open Ended Lines	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No			20	EPA			0.1	0.02	4.46
Sampling Connections	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No			17	TECQ			1.31	0.07	20.735
Connections (Not sampling)	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No			180	EPA			0.15	<0.01	1.32
Compressors	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No			1	API			0.024	<0.01	1.11
Flanges	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No			120	API			0.12	0.014	3.93
Other ¹	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No			16	n/a			0.04	<0.01	0.14

¹ Other equipment types may include compressor seals, relief valves, diaphragms, drains, meters, etc.

Please provide an explanation of the sources of fugitive emissions (e.g. pigging operations, equipment blowdowns, pneumatic controllers, etc.):

Blowdowns

Please indicate if there are any closed vent bypasses (include component):

No

Specify all equipment used in the closed vent system (e.g. VRU, ERD, thief hatches, tanker truck loading, etc.)

Thief Hatch, VRU and Enclosed Combustors

ATTACHMENT K

Gas Well Affected Facility Data Sheet

ATTACHMENT L

Storage Vessels Data Sheet(s)

ATTACHMENT L – STORAGE VESSEL DATA SHEET

Complete this data sheet if you are the owner or operator of a storage vessel that contains condensate and/or produced water. This form must be completed for *each* new or modified bulk liquid storage vessel(s) that contains condensate and/or produced water. (If you have more than one (1) identical tank (i.e. 4-400 bbl condensate tanks), then you can list all on one (1) data sheet). **Include gas sample analysis, flashing emissions, working and breathing losses, USEPA Tanks, simulation software (ProMax, E&P Tanks, HYSYS, etc.), and any other supporting documents where applicable.**

The following information is REQUIRED:

- Composition of the representative sample used for the simulation
- For each stream that contributes to flashing emissions:
 - Temperature and pressure (inlet and outlet from separator(s))
 - Simulation-predicted composition
 - Molecular weight
 - Flow rate
- Resulting flash emission factor or flashing emissions from simulation
- Working/breathing loss emissions from tanks and/or loading emissions if simulation is used to quantify those emissions

Additional information may be requested if necessary.

GENERAL INFORMATION (REQUIRED)

1. Bulk Storage Area Name Dopey Tank Farm	2. Tank Name T01-T03
3. Emission Unit ID number N/A Vapors to combustors, emission point 4E	4. Emission Point ID number 4E
5. Date Installed, Modified or Relocated <i>(for existing tanks)</i> Pending Permit Approval Was the tank manufactured after August 23, 2011? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	6. Type of change: <input checked="" type="checkbox"/> New construction <input type="checkbox"/> New stored material <input type="checkbox"/> Other <input type="checkbox"/> Relocation
7A. Description of Tank Modification <i>(if applicable)</i>	
7B. Will more than one material be stored in this tank? <i>If so, a separate form must be completed for each material.</i> <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	
7C. Was USEPA Tanks simulation software utilized? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <i>If Yes, please provide the appropriate documentation and items 8-42 below are not required.</i>	

TANK INFORMATION

8. Design Capacity <i>(specify barrels or gallons)</i> . Use the internal cross-sectional area multiplied by internal height. 210 BBL	
9A. Tank Internal Diameter (ft.) 12.5	9B. Tank Internal Height (ft.) 15
10A. Maximum Liquid Height (ft.) 13	10B. Average Liquid Height (ft.) 8
11A. Maximum Vapor Space Height (ft.) 14	11B. Average Vapor Space Height (ft.) 7
12. Nominal Capacity <i>(specify barrels or gallons)</i> . This is also known as "working volume". 180	
13A. Maximum annual throughput (gal/yr) 200,000	13B. Maximum daily throughput (gal/day) 7,000
14. Number of tank turnovers per year 40	15. Maximum tank fill rate (gal/min) 50
16. Tank fill method <input type="checkbox"/> Submerged <input type="checkbox"/> Splash <input checked="" type="checkbox"/> Bottom Loading	
17. Is the tank system a variable vapor space system? <input type="checkbox"/> Yes <input type="checkbox"/> No	

<input type="checkbox"/> Vapor mounted resilient seal <input type="checkbox"/> Other (describe):			
25C. Is the Floating Roof equipped with a secondary seal? <input type="checkbox"/> Yes <input type="checkbox"/> No			
25D. If yes, how is the secondary seal mounted? (check one) <input type="checkbox"/> Shoe <input type="checkbox"/> Rim <input type="checkbox"/> Other (describe):			
25E. Is the floating roof equipped with a weather shield? <input type="checkbox"/> Yes <input type="checkbox"/> No			
25F. Describe deck fittings:			
26. Complete the following section for Internal Floating Roof Tanks <input checked="" type="checkbox"/> Does not apply			
26A. Deck Type: <input type="checkbox"/> Bolted <input type="checkbox"/> Welded		26B. For bolted decks, provide deck construction:	
26C. Deck seam. Continuous sheet construction: <input type="checkbox"/> 5 ft. wide <input type="checkbox"/> 6 ft. wide <input type="checkbox"/> 7 ft. wide <input type="checkbox"/> 5 x 7.5 ft. wide <input type="checkbox"/> 5 x 12 ft. wide <input type="checkbox"/> other (describe)			
26D. Deck seam length (ft.):	26E. Area of deck (ft ²):	26F. For column supported tanks, # of columns:	26G. For column supported tanks, diameter of column:
27. Closed Vent System with VRU? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No			
28. Closed Vent System with Enclosed Combustor? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No Back-up to VRU			
SITE INFORMATION			
29. Provide the city and state on which the data in this section are based:			
30. Daily Avg. Ambient Temperature (°F):		31. Annual Avg. Maximum Temperature (°F):	
32. Annual Avg. Minimum Temperature (°F):		33. Avg. Wind Speed (mph):	
34. Annual Avg. Solar Insulation Factor (BTU/ft ² -day):		35. Atmospheric Pressure (psia):	
LIQUID INFORMATION			
36. Avg. daily temperature range of bulk liquid (°F): 60	36A. Minimum (°F): 36	36B. Maximum (°F):	
37. Avg. operating pressure range of tank (psig): 0-0.5 pis	37A. Minimum (psig): <0.1 psi	37B. Maximum (psig): 0.8 psi	
38A. Minimum liquid surface temperature (°F): 36		38B. Corresponding vapor pressure (psia): 0.11	
39A. Avg. liquid surface temperature (°F): 65		39B. Corresponding vapor pressure (psia): 0.31	
40A. Maximum liquid surface temperature (°F): 100		40B. Corresponding vapor pressure (psia): 0.95	
41. Provide the following for each liquid or gas to be stored in the tank. Add additional pages if necessary.			
41A. Material name and composition:	Condensate		
41B. CAS number:	68919-39-1		
41C. Liquid density (lb/gal):	5.49		
41D. Liquid molecular weight (lb/lb-mole):	81.3		
41E. Vapor molecular weight (lb/lb-mole):	39.56		
41F. Maximum true vapor pressure (psia):			
41G. Maximum Reid vapor pressure (psia):	5.28		
41H. Months Storage per year. From: Jan To: Dec	12		
42. Final maximum gauge pressure and temperature prior to transfer into tank used as inputs into flashing emission calculations.			

GENERAL INFORMATION (REQUIRED)

1. Bulk Storage Area Name Dopey Tank Farm	2. Tank Name T04-T06
3. Emission Unit ID number N/A Vapors to combustors, emission point 4E	4. Emission Point ID number 4E
5. Date Installed , Modified or Relocated (for existing tanks) Pending Permit Approval Was the tank manufactured after August 23, 2011? <input type="checkbox"/> Yes <input type="checkbox"/> No	6. Type of change: <input checked="" type="checkbox"/> New construction <input type="checkbox"/> New stored material <input type="checkbox"/> Other <input type="checkbox"/> Relocation
7A. Description of Tank Modification (if applicable)	
7B. Will more than one material be stored in this tank? If so, a separate form must be completed for each material. <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	
7C. Was USEPA Tanks simulation software utilized? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	
If Yes, please provide the appropriate documentation and items 8-42 below are not required.	

TANK INFORMATION

8. Design Capacity (specify barrels or gallons). Use the internal cross-sectional area multiplied by internal height. 210 BBL	
9A. Tank Internal Diameter (ft.) 10	9B. Tank Internal Height (ft.) 15
10A. Maximum Liquid Height (ft.) 14	10B. Average Liquid Height (ft.) 8
11A. Maximum Vapor Space Height (ft.) 14.5	11B. Average Vapor Space Height (ft.) 7
12. Nominal Capacity (specify barrels or gallons). This is also known as "working volume". 190 BBL	
13A. Maximum annual throughput (gal/yr) 924,000 (each)	13B. Maximum daily throughput (gal/day) 5,000 (each)
14. Number of tank turnovers per year 116 (max)	15. Maximum tank fill rate (gal/min) 50
16. Tank fill method <input type="checkbox"/> Submerged <input checked="" type="checkbox"/> Splash <input type="checkbox"/> Bottom Loading	
17. Is the tank system a variable vapor space system? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No If yes, (A) What is the volume expansion capacity of the system (gal)? (B) What are the number of transfers into the system per year?	
18. Type of tank (check all that apply): <input checked="" type="checkbox"/> Fixed Roof <input checked="" type="checkbox"/> vertical <input type="checkbox"/> horizontal <input type="checkbox"/> flat roof <input type="checkbox"/> cone roof <input type="checkbox"/> dome roof <input type="checkbox"/> other (describe) <input type="checkbox"/> External Floating Roof <input type="checkbox"/> pontoon roof <input type="checkbox"/> double deck roof <input type="checkbox"/> Domed External (or Covered) Floating Roof <input type="checkbox"/> Internal Floating Roof <input type="checkbox"/> vertical column support <input type="checkbox"/> self-supporting <input type="checkbox"/> Variable Vapor Space <input type="checkbox"/> lifter roof <input type="checkbox"/> diaphragm <input type="checkbox"/> Pressurized <input type="checkbox"/> spherical <input type="checkbox"/> cylindrical <input type="checkbox"/> Other (describe)	

PRESSURE/VACUUM CONTROL DATA

19. Check as many as apply:	
<input type="checkbox"/> Does Not Apply	<input type="checkbox"/> Rupture Disc (psig)
<input type="checkbox"/> Inert Gas Blanket of _____	<input type="checkbox"/> Carbon Adsorption ¹
<input checked="" type="checkbox"/> Vent to Vapor Combustion Device ¹ (vapor combustors, flares, thermal oxidizers, enclosed combustors) as back-up to VRU	
<input checked="" type="checkbox"/> Conservation Vent (psig)	<input type="checkbox"/> Condenser ¹
0.4 oz Vacuum Setting 14 oz Pressure Setting	
<input type="checkbox"/> Emergency Relief Valve (psig)	
Vacuum Setting	Pressure Setting
<input checked="" type="checkbox"/> Thief Hatch Weighted <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	
¹ Complete appropriate Air Pollution Control Device Sheet	

20. Expected Emission Rate (submit Test Data or Calculations here or elsewhere in the application).									
Material Name	Flashing Loss		Breathing Loss		Working Loss		Total Emissions Loss		Estimation Method ¹
	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	
VOC	1.34	5.86					1.34	5.86	MB
HAPs	0.112	0.49					0.112	0.49	MB

¹ EPA = EPA Emission Factor, MB = Material Balance, SS = Similar Source, ST = Similar Source Test, Throughput Data, O = Other (specify)
Remember to attach emissions calculations, including TANKS Summary Sheets and other modeling summary sheets if applicable.

TANK CONSTRUCTION AND OPERATION INFORMATION			
21. Tank Shell Construction: <input type="checkbox"/> Riveted <input type="checkbox"/> Gunit lined <input type="checkbox"/> Epoxy-coated rivets <input checked="" type="checkbox"/> Other (describe) Welded			
21A. Shell Color: Blue	21B. Roof Color: Blue	21C. Year Last Painted: 2016	
22. Shell Condition (if metal and unlined): <input checked="" type="checkbox"/> No Rust <input type="checkbox"/> Light Rust <input type="checkbox"/> Dense Rust <input type="checkbox"/> Not applicable			
22A. Is the tank heated? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	22B. If yes, operating temperature:	22C. If yes, how is heat provided to tank?	
23. Operating Pressure Range (psig): 2 oz – 14 oz Must be listed for tanks using VRUs with closed vent system.			
24. Is the tank a Vertical Fixed Roof Tank ? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	24A. If yes, for dome roof provide radius (ft): n/a	24B. If yes, for cone roof, provide slop (ft/ft): n/a	
25. Complete item 25 for Floating Roof Tanks <input type="checkbox"/> Does not apply <input checked="" type="checkbox"/>			
25A. Year Internal Floaters Installed:			
25B. Primary Seal Type (check one): <input type="checkbox"/> Metallic (mechanical) shoe seal <input type="checkbox"/> Liquid mounted resilient seal <input type="checkbox"/> Vapor mounted resilient seal <input type="checkbox"/> Other (describe):			
25C. Is the Floating Roof equipped with a secondary seal? <input type="checkbox"/> Yes <input type="checkbox"/> No			
25D. If yes, how is the secondary seal mounted? (check one) <input type="checkbox"/> Shoe <input type="checkbox"/> Rim <input type="checkbox"/> Other (describe):			
25E. Is the floating roof equipped with a weather shield? <input type="checkbox"/> Yes <input type="checkbox"/> No			
25F. Describe deck fittings:			
26. Complete the following section for Internal Floating Roof Tanks <input checked="" type="checkbox"/> Does not apply			
26A. Deck Type: <input type="checkbox"/> Bolted <input type="checkbox"/> Welded	26B. For bolted decks, provide deck construction:		
26C. Deck seam. Continuous sheet construction: <input type="checkbox"/> 5 ft. wide <input type="checkbox"/> 6 ft. wide <input type="checkbox"/> 7 ft. wide <input type="checkbox"/> 5 x 7.5 ft. wide <input type="checkbox"/> 5 x 12 ft. wide <input type="checkbox"/> other (describe)			
26D. Deck seam length (ft.):	26E. Area of deck (ft ²):	26F. For column supported tanks, # of columns:	26G. For column supported tanks, diameter of column:
27. Closed Vent System with VRU? <input checked="" type="checkbox"/> Yes <input checked="" type="checkbox"/> No			
28. Closed Vent System with Enclosed Combustor? <input checked="" type="checkbox"/> Yes <input checked="" type="checkbox"/> No			
SITE INFORMATION Items 29 through 35 are N/A for Water Tank			
29. Provide the city and state on which the data in this section are based:			
30. Daily Avg. Ambient Temperature (°F):		31. Annual Avg. Maximum Temperature (°F):	

ATTACHMENT M

**Natural Gas Fired Fuel Burning
Units Data Sheet(s)**

ATTACHMENT N

Internal Combustion Engine Data Sheet(s)

ATTACHMENT N – INTERNAL COMBUSTION ENGINE DATA SHEET

Complete this data sheet for each internal combustion engine at the facility. Include manufacturer performance data sheet(s) or any other supporting document if applicable. Use extra pages if necessary. *Generator(s) and microturbine generator(s) shall also use this form.*

Emission Unit ID# ¹		VRU-1					
Engine Manufacturer/Model		Cummins G5.9					
Manufacturers Rated bhp/rpm		84 @ 1800					
Source Status ²		NS					
Date Installed/ Modified/Removed/Relocated ³		Upon Receipt of Permit					
Engine Manufactured /Reconstruction Date ⁴		After 3/1/2013					
Check all applicable Federal Rules for the engine (include EPA Certificate of Conformity if applicable) ⁵		<input checked="" type="checkbox"/> 40CFR60 Subpart JJJ <input type="checkbox"/> JJJJ Certified? <input type="checkbox"/> 40CFR60 Subpart IIII <input type="checkbox"/> IIII Certified? <input type="checkbox"/> 40CFR63 Subpart ZZZZ <input type="checkbox"/> NESHAP ZZZZ/ NSPS JJJ Window <input type="checkbox"/> NESHAP ZZZZ Remote Sources		<input type="checkbox"/> 40CFR60 Subpart JJJ <input type="checkbox"/> JJJJ Certified? <input type="checkbox"/> 40CFR60 Subpart IIII <input type="checkbox"/> IIII Certified? <input type="checkbox"/> 40CFR63 Subpart ZZZZ <input type="checkbox"/> NESHAP ZZZZ/ NSPS JJJ Window <input type="checkbox"/> NESHAP ZZZZ Remote Sources		<input type="checkbox"/> 40CFR60 Subpart JJJ <input type="checkbox"/> JJJJ Certified? <input type="checkbox"/> 40CFR60 Subpart IIII <input type="checkbox"/> IIII Certified? <input type="checkbox"/> 40CFR63 Subpart ZZZZ <input type="checkbox"/> NESHAP ZZZZ/ NSPS JJJ Window <input type="checkbox"/> NESHAP ZZZZ Remote Sources	
		Engine Type ⁶		4SRB			
APCD Type ⁷		NSCR					
Fuel Type ⁸		RG					
H ₂ S (gr/100 scf)		<1					
Operating bhp/rpm		84 @ 1800					
BSFC (BTU/bhp-hr)		7914					
Hourly Fuel Throughput		526.4	ft ³ /hr gal/hr		ft ³ /hr gal/hr		ft ³ /hr gal/hr
Annual Fuel Throughput (Must use 8,760 hrs/yr unless emergency generator)		4.62	MMft ³ /yr gal/yr		MMft ³ /yr gal/yr		MMft ³ /yr gal/yr
Fuel Usage or Hours of Operation Metered		Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	Yes <input type="checkbox"/>	No <input type="checkbox"/>	Yes <input type="checkbox"/>	No <input type="checkbox"/>
Calculation Methodology ⁹	Pollutant ¹⁰	Hourly PTE (lb/hr) ¹¹	Annual PTE (tons/year) ¹¹	Hourly PTE (lb/hr) ¹¹	Annual PTE (tons/year) ¹¹	Hourly PTE (lb/hr) ¹¹	Annual PTE (tons/year) ¹¹
AP	NO _x	0.19	0.81				
AP	CO	0.37	1.62				
AP	VOC	0.04	0.18				
AP	SO ₂	<0.01	<0.01				
AP	PM ₁₀	0.013	0.06				
AP	Formaldehyde	0.015	0.065				
AP	Total HAPs	0.022	0.10				
AP	GHG (CO ₂ e)	89.7	393				

1 Enter the appropriate Source Identification Number for each natural gas-fueled reciprocating internal combustion compressor/generator engine located at the compressor station. Multiple compressor engines should be designated CE-1, CE-2, CE-3 etc. Generator engines should be designated GE-1, GE-2, GE-3 etc. Microturbine generator engines should be designated MT-1, MT-2, MT-3 etc. If more than three (3) engines exist, please use additional sheets.

2 Enter the Source Status using the following codes:

NS	Construction of New Source (installation)	ES	Existing Source
MS	Modification of Existing Source	RS	Relocated Source

REM Removal of Source

- 3 Enter the date (or anticipated date) of the engine's installation (construction of source), modification, relocation or removal.
- 4 Enter the date that the engine was manufactured, modified or reconstructed.
- 5 Is the engine a certified stationary spark ignition internal combustion engine according to 40CFR60 Subpart IIII/JJJJ? If so, the engine and control device must be operated and maintained in accordance with the manufacturer's emission-related written instructions. You must keep records of conducted maintenance to demonstrate compliance, but no performance testing is required. If the certified engine is not operated and maintained in accordance with the manufacturer's emission-related written instructions, the engine will be considered a non-certified engine and you must demonstrate compliance as appropriate.

Provide a manufacturer's data sheet for all engines being registered.

- 6 Enter the Engine Type designation(s) using the following codes:

2SLB	Two Stroke Lean Burn	4SRB	Four Stroke Rich Burn
4SLB	Four Stroke Lean Burn		

- 7 Enter the Air Pollution Control Device (APCD) type designation(s) using the following codes:

A/F	Air/Fuel Ratio	IR	Ignition Retard
HEIS	High Energy Ignition System	SIPC	Screw-in Precombustion Chambers
PSC	Prestratified Charge	LEC	Low Emission Combustion
NSCR	Rich Burn & Non-Selective Catalytic Reduction	OxCat	Oxidation Catalyst
SCR	Lean Burn & Selective Catalytic Reduction		

- 8 Enter the Fuel Type using the following codes:

PQ	Pipeline Quality Natural Gas	RG	Raw Natural Gas /Production Gas	D	Diesel
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- 9 Enter the Potential Emissions Data Reference designation using the following codes. Attach all reference data used.

MD	Manufacturer's Data	AP	AP-42	
GR	GRI-HAPCalc™	OT	Other	(please list)

- 10 Enter each engine's Potential to Emit (PTE) for the listed regulated pollutants in pounds per hour and tons per year. PTE shall be calculated at manufacturer's rated brake horsepower and may reflect reduction efficiencies of listed Air Pollution Control Devices. Emergency generator engines may use 500 hours of operation when calculating PTE. PTE data from this data sheet shall be incorporated in the *Emissions Summary Sheet*.
- 11 PTE for engines shall be calculated from manufacturer's data unless unavailable.

**Engine Air Pollution Control Device
(Emission Unit ID# VRU-1)**

Air Pollution Control Device Manufacturer's Data Sheet included?
Yes No

NSCR SCR Oxidation Catalyst

Provide details of process control used for proper mixing/control of reducing agent with gas stream: N/A

Manufacturer: Miratech	Model #: VXC-1408-04-HSG
Design Operating Temperature: 1000 °F	Design gas volume: 430 + scfm
Service life of catalyst: 2+ years, depending on site conditions	Provide manufacturer data? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
Volume of gas handled: 430 acfm at 1078 °F	Operating temperature range for NSCR/Ox Cat: From 750 °F to 1250 °F
Reducing agent used, if any: None	Ammonia slip (ppm): N/A

Pressure drop against catalyst bed (delta P): **3.0 inches of H₂O**

Provide description of warning/alarm system that protects unit when operation is not meeting design conditions: **Part of the routine maintenance inspection to warn or alert operations of emissions control degradation is a task called the post-PM emissions check.**

Is temperature and pressure drop of catalyst required to be monitored per 40CFR63 Subpart ZZZZ?
 Yes No

How often is catalyst recommended or required to be replaced (hours of operation)?
Because there are so many factors that impact life of a catalyst, the vendor does not recommend "hours of operation prior to replacement." The routine post-PM emissions check task (every 60 days or 1440 hrs of operation, whichever comes first) determines when the catalyst needs to be serviced or replaced.

How often is performance test required?
 Initial
 Annual
 Every 8,760 hours of operation
 Field Testing Required
 No performance test required. If so, why (please list any maintenance required and the applicable sections in NSPS/GACT: **Per 40 CFR 60.4243(a)(iii), an owner or operator of a stationary SI internal combustion engine less than 100 HP, must keep a maintenance plan and records of conducted maintenance to demonstrate compliance and must, to the extent practicable, maintain and operate the engine in a manner consistent with good air pollution control practice for minimizing emissions, but no performance testing is required for an owner or operator**

ATTACHMENT O

Tanker Truck Loading Data Sheet(s)

ATTACHMENT O – TANKER TRUCK LOADING DATA SHEET

Complete this data sheet for each new or modified bulk liquid transfer area or loading rack at the facility. This is to be used for bulk liquid transfer operations to tanker trucks. Use extra pages if necessary.

Truck Loadout Collection Efficiencies

The following applicable capture efficiencies of a truck loadout are allowed:

- For tanker trucks passing the MACT level annual leak test – 99.2%
- For tanker trucks passing the NSPS level annual leak test – 98.7%
- For tanker trucks not passing one of the annual leak tests listed above – 70%

Compliance with this requirement shall be demonstrated by keeping records of the applicable MACT or NSPS Annual Leak Test certification for *every* truck and railcar loaded/unloaded. This requirement can be satisfied if the trucking company provided certification that its entire fleet was compliant. This certification must be submitted in writing to the Director of the DAQ. These additional requirements must be noted in the Registration Application.

Emission Unit ID#: TL-1 & TL-2	Emission Point ID#: 5E & 6E	Year Installed/Modified: TBD
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Emission Unit Description: Condensate Truck Loading

Loading Area Data

Number of Pumps: 2	Number of Liquids Loaded: 2	Max number of trucks loading at one (1) time: 2
--------------------	-----------------------------	---

Are tanker trucks pressure tested for leaks at this or any other location? Yes No Not Required
If Yes, Please describe:

Provide description of closed vent system and any bypasses. None

Are any of the following truck loadout systems utilized? **No**

- Closed System to tanker truck passing a MACT level annual leak test?
- Closed System to tanker truck passing a NSPS level annual leak test?
- Closed System to tanker truck not passing an annual leak test and has vapor return?

Projected Maximum Operating Schedule (for rack or transfer point as a whole)

Time	Jan – Mar	Apr - Jun	Jul – Sept	Oct - Dec
Hours/day	24	24	24	24
Days/week	7	7	7	7

Bulk Liquid Data (use extra pages as necessary)

Liquid Name	Condensate	Produced Water
Max. Daily Throughput (1000 gal/day)	8.40	10.08
Max. Annual Throughput (1000 gal/yr)	1,361	2,772
Loading Method ¹	SUB	SP
Max. Fill Rate (gal/min)	50	50
Average Fill Time (min/loading)	120	120
Max. Bulk Liquid Temperature (°F)	75	75
True Vapor Pressure ²	3.6 psia	n/a
Cargo Vessel Condition ³	U	U
Control Equipment or Method ⁴	None	None
Max. Collection Efficiency (%)	n/a	n/a

Max. Control Efficiency (%)		n/a	n/a
Max. VOC Emission Rate	Loading (lb/hr)	0.86	0.02
	Annual (ton/yr)	1.67	0.07
Max. HAP Emission Rate	Loading (lb/hr)	0.05	<0.01
	Annual (ton/yr)	0.09	0.01
Estimation Method ⁵		EPA	EPA

- 1 BF Bottom Fill SP Splash Fill SUB Submerged Fill
- 2 At maximum bulk liquid temperature
- 3 B Ballasted Vessel C Cleaned U Uncleaned (dedicated service)
O Other (describe)
- 4 List as many as apply (complete and submit appropriate Air Pollution Control Device Sheets)
CA Carbon Adsorption VB Dedicated Vapor Balance (closed system)
ECD Enclosed Combustion Device F Flare
TO Thermal Oxidization or Incineration
- 5 EPA EPA Emission Factor in AP-42 MB Material Balance
TM Test Measurement based upon test data submittal O Other (describe)

ATTACHMENT P

Glycol Dehydration Unit Data Sheet(s)

ATTACHMENT P – GLYCOL DEHYDRATION UNIT DATA SHEET

Complete this data sheet for each Glycol Dehydration Unit, Reboiler, Flash Tank and/or Regenerator at the facility. Include gas sample analysis and GRI- GLYCalc™ input and aggregate report. Use extra pages if necessary.

Manufacturer: Exterran	Model:
Max. Dry Gas Flow Rate: 40 mmscf/day	Reboiler Design Heat Input: 0.500 MMBTU/hr
Design Type: <input checked="" type="checkbox"/> TEG <input type="checkbox"/> DEG <input type="checkbox"/> EG	Source Status ¹ : NS
Date Installed/Modified/Removed ² : TBD	Regenerator Still Vent APCD/ERD ³ : TO
Control Device/ERD ID# ³ : EC-2	Fuel HV (BTU/scf): 1379
H ₂ S Content (gr/100 scf): <0.001%	Operation (hours/year): 8760

Pump Rate (gpm): 7.5

Water Content (wt %) in: Wet Gas: Saturated Dry Gas: 7 lb/MMscf

Is the glycol dehydration unit exempt from 40CFR63 Section 764(d)? Yes No: If Yes, answer the following:

The actual annual average flowrate of natural gas to the glycol dehydration unit is less than 85 thousand standard cubic meters per day, as determined by the procedures specified in §63.772(b)(1) of this subpart. Yes No

The actual average emissions of benzene from the glycol dehydration unit process vent to the atmosphere are less than 0.90 megagram per year (1 ton per year), as determined by the procedures specified in §63.772(b)(2) of this subpart. Yes
 No

Is the glycol dehydration unit located within an Urbanized Area (UA) or Urban Cluster (UC)? Yes No

Is a lean glycol pump optimization plan being utilized? Yes No

Recycling the glycol dehydration unit back to the flame zone of the reboiler.
 Yes No

Recycling the glycol dehydration unit back to the flame zone of the reboiler and mixed with fuel.
 Yes No

What happens when temperature controller shuts off fuel to the reboiler? **Still vent to enclosed combustor.**
 Still vent emissions to the atmosphere.
 Still vent emissions stopped with valve.
 Still vent emissions to glow plug.

Please indicate if the following equipment is present.
 Flash Tank
 Burner management system that continuously burns condenser or flash tank vapors

Control Device Technical Data

Pollutants Controlled	Manufacturer's Guaranteed Control Efficiency (%)
Hydrocarbons	99+% (Note: 98% used for calculations)

Emissions Data

Emission Unit ID / Emission Point ID ⁴	Description	Calculation Methodology ⁵	PTE ⁶	Controlled Maximum Hourly Emissions (lb/hr)	Controlled Maximum Annual Emissions (tpy)
RBV-1 / 11E	Reboiler Vent	AP-42	NO _x	0.05	0.22
		AP-42	CO	0.04	0.18
		AP-42	VOC	<0.01	0.01
		AP-42	SO ₂	<0.01	<0.01
		AP-42	PM ₁₀	<0.01	0.02

		AP-42	GHG (CO ₂ e)	60.4	264.5
RSV-1 / 11E	Glycol Regenerator Still Vent	GRI-GlyCalc™	VOC	2.01	8.80
		GRI-GlyCalc™	Benzene	0.024	0.11
		GRI-GlyCalc™	Toluene	0.21	0.92
		GRI-GlyCalc™	Ethylbenzene	0.03	0.12
		GRI-GlyCalc™	Xylenes	0.19	0.85
		GRI-GlyCalc™	n-Hexane	0.05	0.20
	Glycol Flash Tank	GRI-GlyCalc™	VOC		
		GRI-GlyCalc™	Benzene		
		GRI-GlyCalc™	Toluene		
		GRI-GlyCalc™	Ethylbenzene		
		GRI-GlyCalc™	Xylenes		
		GRI-GlyCalc™	n-Hexane		

- 1 Enter the Source Status using the following codes:
NS Construction of New Source ES Existing Source
MS Modification of Existing Source
- 2 Enter the date (or anticipated date) of the glycol dehydration unit's installation (construction of source), modification or removal.
- 3 Enter the Air Pollution Control Device (APCD)/Emission Reduction Device (ERD) type designation using the following codes and the device ID number:
NA None CD Condenser FL Flare
CC Condenser/Combustion Combination TO Thermal Oxidizer O Other (please list)
- 4 Enter the appropriate Emission Unit ID Numbers and Emission Point ID Numbers for the glycol dehydration unit reboiler vent and glycol regenerator still vent. The glycol dehydration unit reboiler vent and glycol regenerator still vent should be designated RBV-1 and RSV-1, respectively. If the compressor station incorporates multiple glycol dehydration units, a Glycol Dehydration Emission Unit Data Sheet shall be completed for each, using Source Identification RBV-2 and RSV-2, RBV-3 and RSV-3, etc.
- 5 Enter the Potential Emissions Data Reference designation using the following codes:
MD Manufacturer's Data AP AP-42
GR GRI-GLYCalc™ OT Other (please list)
- 6 Enter the Reboiler Vent and Glycol Regenerator Still Vent Potential to Emit (PTE) for the listed regulated pollutants in lbs per hour and tons per year. The Glycol Regenerator Still Vent potential emissions may be determined using the most recent version of the thermodynamic software model GRI-GLYCalc™ (Radian International LLC & Gas Research Institute). **Attach all referenced Potential Emissions Data (or calculations) and the GRI-GLYCalc™ Aggregate Calculations Report (shall include emissions reports, equipment reports, and stream reports) to this Glycol Dehydration Emission Unit Data Sheet(s). Backup pumps do not have to be considered as operating for purposes of PTE.** This PTE data shall be incorporated in the Emissions Summary Sheet.

**ATTACHMENT Q – PNEUMATIC CONTROLLERS
DATA SHEET**

Are there any continuous bleed natural gas driven pneumatic controllers at this facility that commenced construction, modification or reconstruction after August 23, 2011?

Yes No

Please list approximate number.

Are there any continuous bleed natural gas driven pneumatic controllers at this facility with a bleed rate greater than 6 standard cubic feet per hour that are required based on functional needs, including but not limited to response time, safety and positive actuation that commenced construction, modification or reconstruction after August 23, 2011?

Yes No

Please list approximate number.

ATTACHMENT R

Air Pollution Control Device Sheet(s)

**ATTACHMENT R – AIR POLLUTION CONTROL DEVICE /
EMISSION REDUCTION DEVICE SHEETS**

Complete the applicable air pollution control device sheets for each flare, vapor combustor, thermal oxidizer, condenser, adsorption system, vapor recovery unit, BTEX Eliminator, Reboiler with and without Glow Plug, etc. at the facility. Use extra pages if necessary.

Emissions calculations must be performed using the most conservative control device efficiency.

The following five (5) rows are only to be completed if registering an alternative air pollution control device.

Emission Unit ID: T01-T06	Make/Model: Condensate and Produced Water Tanks
Primary Control Device ID: VRU-1	Make/Model: Arrow/WRC2
Control Efficiency (%): 98	APCD/ERD Data Sheet Completed: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
Secondary Control Device ID: EC-1	Make/Model: Hy-Bon CH 10.0
Control Efficiency (%): 98	APCD/ERD Data Sheet Completed: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No

VAPOR COMBUSTION (Including Enclosed Combustors)

General Information

Control Device ID#: EC-1	Installation Date: TBD – Upon Permit <input checked="" type="checkbox"/> New <input type="checkbox"/> Modified <input type="checkbox"/> Relocated	
Maximum Rated Total Flow Capacity scfh	Maximum Design Heat Input (from mfg. spec sheet) 10.0 MMBTU/hr	Design Heat Content BTU/scf

Control Device Information

<input checked="" type="checkbox"/> Enclosed Combustion Device <input type="checkbox"/> Thermal Oxidizer	Type of Vapor Combustion Control? <input type="checkbox"/> Elevated Flare <input type="checkbox"/> Ground Flare
Manufacturer: Hy-Bon Model: CH 10.0	Hours of operation per year? 8760

List the emission units whose emissions are controlled by this vapor control device (Emission Point ID#)

Emission Unit ID#	Emission Source Description	Emission Unit ID#	Emission Source Description
T01-T03	Condensate Tanks		
T04-T06	Produced Water Tanks		

If this vapor combustor controls emissions from more than six (6) emission units, please attach additional pages.

Assist Type (Flares only) <input type="checkbox"/> Steam <input type="checkbox"/> Air <input type="checkbox"/> Pressure <input checked="" type="checkbox"/> Non	Flare Height feet	Tip Diameter feet	Was the design per §60.18? <input type="checkbox"/> Yes <input type="checkbox"/> No Provide determination.
---	----------------------	----------------------	--

Waste Gas Information

Maximum Waste Gas Flow Rate 31.4 (scfm)	Heat Value of Waste Gas Stream 2313 BTU/ft ³	Exit Velocity of the Emissions Stream (ft/s)
--	--	---

Provide an attachment with the characteristics of the waste gas stream to be burned.

Pilot Gas Information

Number of Pilot Lights 1	Fuel Flow Rate to Pilot Flame per Pilot 798 scfh	Heat Input per Pilot 985,100 BTU/hr	Will automatic re-ignition be used? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
-----------------------------	--	--	---

If automatic re-ignition is used, please describe the method. **The unit will try to re-ignite up to 25 times. After that, it will go into manual mode which means someone will need to manually start. Gas flow is shut off if it fails to ignite.**

Is pilot flame equipped with a monitor to detect the presence of the flame? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	If Yes, what type? <input checked="" type="checkbox"/> Thermocouple <input type="checkbox"/> Infrared <input type="checkbox"/> Ultraviolet <input type="checkbox"/> Camera <input type="checkbox"/> Other:
---	---

Describe all operating ranges and maintenance procedures required by the manufacturer to maintain the warranty. *(If unavailable, please indicate).* **Combustor burner, pilot, and air inlet arrester must be checked for foreign debris (dust, sand, etc.) and cleaned at least quarterly.**

Additional information attached? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
--

Please attach copies of manufacturer's data sheets, drawings, flame demonstration per §60.18 or §63.11(b) and performance testing.

VAPOR RECOVERY UNIT

***See Attachment N**

General Information

Emission Unit ID#:

Installation Date:

New

Modified

Relocated

Device Information

Manufacturer:

Model:

List the emission units whose emissions are controlled by this vapor recovery unit (Emission Point ID# _____)

Emission Unit ID#	Emission Source Description	Emission Unit ID#	Emission Source Description
-------------------	-----------------------------	-------------------	-----------------------------

If this vapor recovery unit controls emissions from more than six (6) emission units, please attach additional pages.

Additional information attached? Yes No

Please attach copies of manufacturer's data sheets, drawings, and performance testing.

The registrant may claim a capture and control efficiency of 95 % (which accounts for 5% downtime) for the vapor recovery unit.

The registrant may claim a capture and control efficiency of 98% if the VRU has a backup flare that meet the requirements of Section 8.1.2 of this general permit.

The registrant may claim a capture and control efficiency of 98% if the VRU has a backup VRU.

VAPOR COMBUSTION (Including Enclosed Combustors)

General Information

Control Device ID#: EC-2	Installation Date: TBD – Upon Permit <input checked="" type="checkbox"/> New <input type="checkbox"/> Modified <input type="checkbox"/> Relocated	
Maximum Rated Total Flow Capacity scfh scfd	Maximum Design Heat Input (from mfg. spec sheet) 10.0 MMBTU/hr	Design Heat Content BTU/scf

Control Device Information

Type of Vapor Combustion Control?		
<input checked="" type="checkbox"/> Enclosed Combustion Device	<input type="checkbox"/> Elevated Flare	<input type="checkbox"/> Ground Flare
<input type="checkbox"/> Thermal Oxidizer		
Manufacturer: Hy-Bon Model: CH 10.0	Hours of operation per year? 8760	

List the emission units whose emissions are controlled by this vapor control device (Emission Point ID#)

Emission Unit ID#	Emission Source Description	Emission Unit ID#	Emission Source Description
RBV-1	Dehydration Unit Still Vent		

If this vapor combustor controls emissions from more than six (6) emission units, please attach additional pages.

Assist Type (Flares only)	Flare Height	Tip Diameter	Was the design per §60.18?
<input type="checkbox"/> Steam <input type="checkbox"/> Air <input type="checkbox"/> Pressure <input checked="" type="checkbox"/> Non	feet	feet	<input type="checkbox"/> Yes <input type="checkbox"/> No Provide determination.

Waste Gas Information

Maximum Waste Gas Flow Rate 2.8 (scfm)	Heat Value of Waste Gas Stream 879 BTU/ft ³	Exit Velocity of the Emissions Stream (ft/s)
---	---	---

Provide an attachment with the characteristics of the waste gas stream to be burned.

Pilot Gas Information

Number of Pilot Lights 1	Fuel Flow Rate to Pilot Flame per Pilot 798 scfh	Heat Input per Pilot 985,100 BTU/hr	Will automatic re-ignition be used? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
-----------------------------	--	--	---

If automatic re-ignition is used, please describe the method. The unit will try to re-ignite up to 25 times. After that, it will go into manual mode which means someone will need to manually start. Gas flow is shut off if it fails to ignite.

Is pilot flame equipped with a monitor to detect the presence of the flame? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Is pilot flame equipped with a monitor to detect the presence of the flame? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
---	---

Describe all operating ranges and maintenance procedures required by the manufacturer to maintain the warranty. *(If unavailable, please indicate).* **Combustor burner, pilot, and air inlet arrestor must be checked for foreign debris (dust, sand, etc.) and cleaned at least quarterly.**

Additional information attached? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
Please attach copies of manufacturer's data sheets, drawings, flame demonstration per §60.18 or §63.11(b) and performance testing.

ATTACHMENT S

Emission Calculations

Jay-Bee Oil & Gas, Inc.
EMISSIONS SUMMARY

Dopey Well Pad Production Facility
Tyler County, WV

Emission Unit ID	Description	NOx lb/hr	CO tpy	CO ₂ e tpy	VOC tpy	SO ₂ tpy	PM tpy	Benzene tpy	Ethylbenzene tpy	Xylenes tpy	n-Hexane tpy	Toluene tpy	Formaldehyde tpy	Total HAPs tpy
VRU-1	VRU Compressor	0.19	0.37	89.7	0.04	0.000	0.013	0.001	0.000	0.000	0.000	0.000	0.015	0.022
HTR-1	GPU #1	0.15	0.13	181.1	0.01	0.001	0.011				0.003		0.000	0.003
HTR-2	GPU #2	0.15	0.13	181.1	0.01	0.001	0.011				0.003		0.000	0.003
HTR-3	GPU #3	0.15	0.13	181.1	0.01	0.001	0.011				0.003		0.000	0.003
HTR-4	GPU #4	0.15	0.13	181.1	0.01	0.001	0.011				0.003		0.000	0.003
HTR-5	Line Heater	0.05	0.04	60.4	0.00	0.000	0.004				0.001		0.000	0.001
TEG-1	Thermoelectric Generator	0.00	0.00	1.6	0.00	0.000	0.000				0.000		0.000	0.000
RBV-1	500 MBTU/hr Reboiler	0.05	0.04	60.4	0.003	0.000	0.004				0.001		0.000	0.001
EC-1	Condensate Tanks + Water Tanks ¹	0.39	1.70	639.1	2.91	0.001	0.022				0.005		0.000	0.01
EC-2	Dehydration Unit Combustor	0.34	1.41	538.6	2.01	0.001	0.009	0.024	0.03	0.19	0.05	0.210	0.000	0.50
TL-1	Truck Loading - Condensate ²				0.86						0.05			0.05
TL-2	Truck Loading - Produced Water ²				0.02						0.00			0.00
---	Truck Traffic Fugitive Dust						13.41							0.00
---	Fugitive Emissions			8.0	0.47									
Total		1.62	4.06	2,122	6.36	0.01	13.51	0.03	0.03	0.19	0.11	0.21	0.02	0.62

Emission Unit ID	Description	NOx tpy	CO tpy	CO ₂ e tpy	VOC tpy	SO ₂ tpy	PM tpy	Benzene tpy	Ethylbenzene tpy	Xylenes tpy	n-Hexane tpy	Toluene tpy	Formaldehyde tpy	Total HAPs tpy
VRU-1	VRU Compressor	0.81	1.62	393	0.18	0.002	0.06	0.005	0.000	0.001		0.002	0.065	0.10
HTR-1	GPU #1	0.66	0.55	793	0.04	0.004	0.05				0.01		0.000	0.01
HTR-2	GPU #2	0.66	0.55	793	0.04	0.004	0.05				0.01		0.000	0.01
HTR-3	GPU #3	0.66	0.55	793	0.04	0.004	0.05				0.01		0.000	0.01
HTR-4	GPU #4	0.66	0.55	793	0.04	0.004	0.05				0.01		0.000	0.01
HTR-5	Line Heater	0.22	0.18	264	0.01	0.001	0.02				0.00		0.000	0.00
TEG-1	Thermoelectric Generator	0.01	0.00	7	0.00	0.000	0.00				0.00		0.000	0.00
RBV-1	500 MBTU/hr Reboiler	0.22	0.18	264.5	0.01	0.001	0.017				0.004		0.000	0.004
EC-1	Condensate Tanks + Water Tanks ¹	1.73	7.43	2799	0.66	0.00	0.10				0.01		0.001	0.02
EC-2	Dehydration Unit Combustor	1.50	6.17	2559.0	8.82	0.003	0.038	0.11	0.12	0.85	0.21	0.92	0.000	2.20
TL-1	Truck Loading - Condensate ²				1.67						0.09			0.09
TL-2	Truck Loading - Produced Water ²				0.07						0.01			0.01
---	Truck Traffic Fugitive Dust			35.00	2.06		4.12							0.01
---	Fugitive Emissions			8.0	0.47									
Total		7.11	17.80	9,295	13.63	0.03	4.55	0.11	0.12	0.85	0.37	0.92	0.07	2.60

¹ Condensate and water tank emissions are currently controlled by a VRU + Enclosed Combustor at 98%. This line represents the un-controlled 2%.

² Truck loading is un-controlled.

Jay-Bee Oil & Gas ,LLC

Dopey Well Pad Production Facility Tyler County, WV

Controlled Emission Rates

Source VRU-1

Engine Data:

Engine Manufacturer	Cummins
Engine Model	G5.9
Type (Rich-burn or Low Emission)	Rich Burn
Aspiration (Natural or Turbocharged)	Natural

Manufacturer Rating	84	hp
Speed at Above Rating	1,800	rpm
Configuration (In-line or Vee)	In-line	
Number of Cylinders	6	
Engine Bore	4.020	inches
Engine Stroke	4.720	inches

Engine Displacement	359	cu. in.
Engine BMEP	103	psi
Fuel Consumption (HHV)	7,914	Btu/bhp-hr

Emission Rates:

	g/bhp-hr	lb/hr	tpy	g/hr	lb/day	AP-42 4strokeinch lb/MMBtu
Oxides of Nitrogen, NOx	1.000	0.19	0.81	84	4.44	
Carbon Monoxide CO	2.000	0.37	1.62	168	8.89	
VOC (NMNEHC)	0.220	0.04	0.18	18	0.98	
CO2	449	83	364	37,716	1,996	
CO2e		90	393			

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

Total Annual Hours of Operation

Total Annual Hours of Operation	8,760					
SO2		0.0004	0.0017			0.0006
PM2.5		0.00632	0.0277			0.0095
PM (Condensable)		0.00659	0.0289			0.00991
CH4		0.12623	0.5529			0.0022
N2O		0.01148	0.0503			0.0002
acrolein		0.00175	0.0077			0.00263
acetaldehyde		0.00185	0.0081			0.00279
formaldehyde	0.080	0.0148	0.0649			
benzene		0.00105	0.0046			0.00158
toluene		0.00037	0.0016			0.000558
ethylbenzene		1.6E-05	0.0001			0.0000248
xylenes		0.00013	0.0006			0.000195
methanol		0.00203	0.0089			0.00306
Total HAPs		0.02202	0.0964			

Factor From 40 CFR 98, Table C-2
 Factor From 40 CFR 98, Table C-2
 Per Mfg.

Exhaust Parameters:

Exhaust Gas Temperature	1,078	deg. F
Exhaust Gas Mass Flow Rate		lb/hr
Exhaust Gas Mass Flow Rate	430	acfm

Exhaust Stack Height	96	inches
	8.00	feet

Exhaust Stack Inside Diameter	4	inches
	0.333	feet

Exhaust Stack Velocity	82.1	ft/sec
	4,927.4	ft/min

Jay-Bee Oil & Gas, LLC

**Dopey Well Pad Production Facility
Tyler County, WV**

Potential Emission Rates

Source HTR-1 Through HTR-4

***Emissions shown below are for each Gas Processing Unit**

Burner Duty Rating	1500.0 Mbtu/hr
Burner Efficiency	98.0 %
Gas Heat Content (HHV)	1379.1 Btu/scf
Total Gas Consumption	26,635.8 scfd
H2S Concentration	0.000 Mole %
Hours of Operation	8760

NOx	0.1501	lb/hr	0.657	tpy
CO	0.1261	lb/hr	0.552	tpy
CO2	180.1	lb/hr	788.7	tpy
CO2e	181	lb/hr	793	tpy
VOC	0.0083	lb/hr	0.036	tpy
SO2	0.0009	lb/hr	0.004	tpy
H2S	0.0000	lb/hr	0.000	tpy
PM10	0.0114	lb/hr	0.050	tpy
CHOH	0.0001	lb/hr	0.000	tpy
Benzene	0.0000	lb/hr	0.000	tpy
N-Hexane	0.0027	lb/hr	0.012	tpy
Toluene	0.0000	lb/hr	0.000	tpy
Total HAPs	0.0028	lb/hr	0.012	tpy

AP-42 Factors Used

NOx	100 lb/MMCF	
CO	84 lb/MMCF	
CO₂	120,000 lb/MMCF	Global Warming Potential = 1
VOC	5.5 lb/MMCF	
PM	7.6 lb/MMCF	
SO₂	0.6 lb/MMCF	
CH₄	2.3 lb/MMCF	Global Warming Potential = 25
N₂O	2.2 lb/MMCF	Global Warming Potential = 298
HCOH	0.075 lb/MMCF	
Benzene	0.0021 lb/MMCF	
n-Hexane	1.8 lb/MMCF	
Toluene	0.0034 lb/MMCF	

Jay-Bee Oil & Gas, LLC

**Dopey Well Pad Production Facility
Tyler County, WV**

Potential Emission Rates

Source HTR-5 Line Heater

Burner Duty Rating	500.0 Mbtu/hr
Burner Efficiency	98.0 %
Gas Heat Content (HHV)	1379.1 Btu/scf
Total Gas Consumption	8,878.6 scfd
H2S Concentration	0.000 Mole %
Hours of Operation	8760

NOx	0.0500	lb/hr	0.219	tpy
CO	0.0420	lb/hr	0.184	tpy
CO2	60.0	lb/hr	262.9	tpy
CO2e	60	lb/hr	264	tpy
VOC	0.0028	lb/hr	0.012	tpy
SO2	0.0003	lb/hr	0.001	tpy
H2S	0.0000	lb/hr	0.000	tpy
PM10	0.0038	lb/hr	0.017	tpy
CHOH	0.0000	lb/hr	0.000	tpy
Benzene	0.0000	lb/hr	0.000	tpy
N-Hexane	0.0009	lb/hr	0.004	tpy
Toluene	0.0000	lb/hr	0.000	tpy
Total HAPs	0.0009	lb/hr	0.004	tpy

AP-42 Factors Used

NOx	100 lb/MMCF	
CO	84 lb/MMCF	
CO₂	120,000 lb/MMCF	Global Warming Potential = 1
VOC	5.5 lb/MMCF	
PM	7.6 lb/MMCF	
SO₂	0.6 lb/MMCF	
CH₄	2.3 lb/MMCF	Global Warming Potential = 25
N₂O	2.2 lb/MMCF	Global Warming Potential = 298
HCOH	0.075 lb/MMCF	
Benzene	0.0021 lb/MMCF	
n-Hexane	1.8 lb/MMCF	
Toluene	0.0034 lb/MMCF	

Jay-Bee Oil & Gas, LLC

Dopey Well Pad Production Facility Tyler County, WV

Potential Emission Rates

Source TEG-1

Burner Duty Rating	13.0 Mbtu/hr
Burner Efficiency	98.0 %
Gas Heat Content (HHV)	1379.1 Btu/scf
Total Gas Consumption	230.8 scfd
H2S Concentration	0.000 Mole %
Hours of Operation	8760

NOx	0.0013	lb/hr	0.006	tpy
CO	0.0011	lb/hr	0.005	tpy
CO2	1.6	lb/hr	6.8	tpy
CO2e	2	lb/hr	7	tpy
VOC	0.0001	lb/hr	0.000	tpy
SO2	0.0000	lb/hr	0.000	tpy
H2S	0.0000	lb/hr	0.000	tpy
PM10	0.0001	lb/hr	0.000	tpy
CHOH	0.0000	lb/hr	0.000	tpy
Benzene	0.0000	lb/hr	0.000	tpy
N-Hexane	0.0000	lb/hr	0.000	tpy
Toluene	0.0000	lb/hr	0.000	tpy
Total HAPs	0.0000	lb/hr	0.000	tpy

AP-42 Factors Used

NOx	100 lb/MMCF	
CO	84 lb/MMCF	
CO ₂	120,000 lb/MMCF	Global Warming Potential = 1
VOC	5.5 lb/MMCF	
PM	7.6 lb/MMCF	
SO ₂	0.6 lb/MMCF	
CH ₄	2.3 lb/MMCF	Global Warming Potential = 25
N ₂ O	2.2 lb/MMCF	Global Warming Potential = 298
HCOH	0.075 lb/MMCF	
Benzene	0.0021 lb/MMCF	
n-Hexane	1.8 lb/MMCF	
Toluene	0.0034 lb/MMCF	

Jay-Bee Oil & Gas, LLC

**Dopey Well Pad Production Facility
Tyler County, WV**

Potential Emission Rates

Source EC-1 Enclosed Combustor Pilot

Burner Duty Rating	985.1 Mbtu/hr
Burner Efficiency	98.0 %
Gas Heat Content (HHV)	1379.1 Btu/scf
Total Gas Consumption	17492.6 scfd
H2S Concentration	0.000 Mole %
Hours of Operation	8760

NOx	0.0985	lb/hr	0.432	tpy
CO	0.0828	lb/hr	0.363	tpy
CO2	118.3	lb/hr	518.0	tpy
CO2e	119	lb/hr	521	tpy
VOC	0.0054	lb/hr	0.024	tpy
SO2	0.0006	lb/hr	0.003	tpy
H2S	0.0000	lb/hr	0.000	tpy
PM10	0.0075	lb/hr	0.033	tpy
CHOH	0.0001	lb/hr	0.000	tpy
Benzene	0.0000	lb/hr	0.000	tpy
N-Hexane	0.0018	lb/hr	0.008	tpy
Toluene	0.0000	lb/hr	0.000	tpy
Total HAPs	0.0019	lb/hr	0.008	tpy

AP-42 Factors Used (Tables 1.4.1-1.4.3)

NOx	100 lb/MMCF	
CO	84 lb/MMCF	
CO ₂	120,000 lb/MMCF	Global Warming Potential = 1
VOC	5.5 lb/MMCF	
PM	7.6 lb/MMCF	
SO ₂	0.6 lb/MMCF	
CH ₄	2.3 lb/MMCF	Global Warming Potential = 25
N ₂ O	2.2 lb/MMCF	Global Warming Potential = 298
HCOH	0.075 lb/MMCF	
Benzene	0.0021 lb/MMCF	
n-Hexane	1.8 lb/MMCF	
Toluene	0.0034 lb/MMCF	

Jay-Bee Oil & Gas, LLC

Dopey Well Pad Production Facility Tyler County, WV

Potential Emission Rates

Source EC-1 Enclosed Vapor Combustor - Control of Tank Emissions

Destruction Efficiency	98.0 %		
Gas Heat Content (HHV)	2313.1 Btu/scf		
Max Flow to T-E	0.045 MMSCFD	16.508 MMSCF/yr	
Max BTUs to Flare	4.359 MMBTU/hr	38,185 MMBTU/yr	

NOx	0.30	lb/hr	1.30	tpy
CO	1.61	lb/hr	7.06	tpy
CO2	509.53	lb/hr	2,231.73	tpy
CO2e	520.10	lb/hr	2,278.05	tpy
VOC	2.91	lb/hr	0.64	tpy
CH4	0.41	lb/hr	0.09	tpy
N2O	0.0010	lb/hr	0.0042	tpy
PM	0.0143	lb/hr	0.0627	tpy
CHOH	0.0001	lb/hr	0.0006	tpy
Benzene	0.0000	lb/hr	0.0000	tpy
n-Hexane	0.0034	lb/hr	0.0149	tpy
Toluene	0.0000	lb/hr	0.0000	tpy
Total HAP	0.0035	lb/hr	0.0155	tpy

Notes: VOC, Total HAP, N-Hexane and CH4 emissions are taken from the Condensate and Produced Water Tank Emissions

Factors Used

AP-42 Table 13.5-1	NOx	0.068 lb/MMBTU	
AP-42 Table 13.5-1	CO	0.37 lb/MMBTU	
40 CFR 98 Table C-1	CO2	116.89 lb/MMBTU	Global Warming Potential = 1
40 CFR 98 Table C-2	CH4	0.0022 lb/MMBTU	Global Warming Potential = 25
40 CFR 98 Table C-2	N2O	0.00022 lb/MMBTU	Global Warming Potential = 298
AP-42 Table 1.4-2	PM	7.6 lb/MMSCF	
AP-42 Table 1.4-3	Benzene	0.0021 lb/MMSCF	
AP-42 Table 1.4-3	Toluene	0.0034 lb/MMSCF	
AP-42 Table 1.4-3	Hexane	1.8 lb/MMSCF	
AP-42 Table 1.4-3	CHOH	0.075 lb/MMSCF	

Jay-Bee Oil & Gas, LLC

**Dopey Well Pad Production Facility
Tyler County, WV**

Source RBV-1

Burner Duty Rating	500.0 Mbtu/hr
Burner Efficiency	98.0 %
Gas Heat Content (HHV)	1379.1 Btu/scf
Total Gas Consumption	8,879 scfd
H2S Concentration	0.000 Mole %
Hours of Operation	8760

NOx	0.0500	lb/hr	0.219	tpy
CO	0.0420	lb/hr	0.184	tpy
CO2	60.0	lb/hr	262.9	tpy
CO2e	60	lb/hr	264	tpy
VOC	0.0028	lb/hr	0.012	tpy
SO2	0.0003	lb/hr	0.001	tpy
H2S	0.0000	lb/hr	0.000	tpy
PM10	0.0038	lb/hr	0.017	tpy
CHOH	0.0000	lb/hr	0.000	tpy
Benzene	0.0000	lb/hr	0.000	tpy
N-Hexane	0.0009	lb/hr	0.004	tpy
Toluene	0.0000	lb/hr	0.000	tpy
Total HAPs	0.0009	lb/hr	0.004	tpy

AP-42 Factors Used

NOx	100 lb/MMCF	
CO	84 lb/MMCF	
CO ₂	120,000 lb/MMCF	Global Warming Potential = 1
VOC	5.5 lb/MMCF	
PM	7.6 lb/MMCF	
SO ₂	0.6 lb/MMCF	
CH ₄	2.3 lb/MMCF	Global Warming Potential = 25
N ₂ O	2.2 lb/MMCF	Global Warming Potential = 298
HCOH	0.075 lb/MMCF	
Benzene	0.0021 lb/MMCF	
n-Hexane	1.8 lb/MMCF	
Toluene	0.0034 lb/MMCF	

Jay-Bee Oil & Gas, LLC

Dopey Well Pad Production Facility Tyler County, WV

Potential Emission Rates

Source EC-2 Enclosed Combustor Pilot

Burner Duty Rating	985.1 Mbtu/hr
Burner Efficiency	98.0 %
Gas Heat Content (HHV)	1379.1 Btu/scf
Total Gas Consumption	17492.6 scfd
H2S Concentration	0.000 Mole %
Hours of Operation	8760

NOx	0.0985	lb/hr	0.432	tpy
CO	0.0828	lb/hr	0.363	tpy
CO2	118.3	lb/hr	518.0	tpy
CO2e	119	lb/hr	521	tpy
VOC	0.0054	lb/hr	0.024	tpy
SO2	0.0006	lb/hr	0.003	tpy
H2S	0.0000	lb/hr	0.000	tpy
PM10	0.0075	lb/hr	0.033	tpy
CHOH	0.0001	lb/hr	0.000	tpy
Benzene	0.0000	lb/hr	0.000	tpy
N-Hexane	0.0018	lb/hr	0.008	tpy
Toluene	0.0000	lb/hr	0.000	tpy
Total HAPs	0.0019	lb/hr	0.008	tpy

AP-42 Factors Used (Tables 1.4.1-1.4.3)

NOx	100 lb/MMCF	
CO	84 lb/MMCF	
CO₂	120,000 lb/MMCF	Global Warming Potential = 1
VOC	5.5 lb/MMCF	
PM	7.6 lb/MMCF	
SO₂	0.6 lb/MMCF	
CH₄	2.3 lb/MMCF	Global Warming Potential = 25
N₂O	2.2 lb/MMCF	Global Warming Potential = 298
HCOH	0.075 lb/MMCF	
Benzene	0.0021 lb/MMCF	
n-Hexane	1.8 lb/MMCF	
Toluene	0.0034 lb/MMCF	

Jay-Bee Oil & Gas, LLC

**Dopey Well Pad Production Facility
Tyler County, WV**

Potential Emission Rates

Source EC-2 Enclosed Vapor Combustor

Destruction Efficiency	98.0 %	
Gas Heat Content (HHV)	879.0 Btu/scf	
Max Flow to T-E	0.00408 MMSCFD	35.741 MMSCF/yr
Max BTUs to Flare	3.59 MMBTU/hr	31,414 MMBTU/yr

NOx	0.24	lb/hr	1.07	tpy
CO	1.33	lb/hr	5.81	tpy
CO2	419.18	lb/hr	1,836.02	tpy
CO2e	419.61	lb/hr	1,837.91	tpy
VOC	2.01	lb/hr	8.80	tpy
CH4	0.01	lb/hr	0.0346	tpy
N2O	0.001	lb/hr	0.0035	tpy
PM	0.001	lb/hr	0.006	tpy
Benzene	0.024	lb/hr	0.107	tpy
CHOH	0.000	lb/hr	0.000	tpy
n-Hexane	0.045	lb/hr	0.198	tpy
Ethylbenzene	0.028	lb/hr	0.122	tpy
Toluene	0.210	lb/hr	0.922	tpy
Xylenes	0.193	lb/hr	0.847	tpy
Total HAPs	0.501	lb/hr	2.195	tpy

Factors Used

AP-42 Table 13.5-1	NOx	0.068 lb/MMBTU	
AP-42 Table 13.5-1	CO	0.37 lb/MMBTU	
40 CFR 98 Table C-1	CO2	116.89 lb/MMBTU	Global Warming Potential = 1
40 CFR 98 Table C-2	CH4	0.0022 lb/MMBTU	Global Warming Potential = 25
40 CFR 98 Table C-2	N2O	0.00022 lb/MMBTU	Global Warming Potential = 298
AP-42 Table 1.4-2	PM	7.6 lb/MMSCF	
AP-42 Table 1.4-3	CHOH	0.075 lb/MMSCF	

Jay-Bee Oil & Gas, LLC

Dopey Well Pad Production Facility
Tyler County, WV

TL-1 Truck Loading - Condensate

Per AP-42, Chapter 5.2.2.1.1, the uncontrolled loading loss emission factor LL can be estimated as follows:

$$L_L = 12.46 * (SPM/T)$$

Where,

Loading Loss	$L_L =$	3.459 lb/1000 gallons
Saturation Factor	S=	0.6
True Vapor Pressure	P=	3.6 psia
Molecular Weight of Vapors	M=	66.84 lb/lb-mol
Temperature	T=	520 deg R

Maximum Daily Loading	200	BBL/day
	8,400	gpd
Hours of Loading	24	hr

Total VOC	20.6	lb/day	0.86	lb/hr
Total HAP	1.1	lb/day	0.05	lb/hr

Maximum Annual Loading	32,400	BBL/yr
	1,360,800	gpy

Total VOC	3345.2	lb/yr	1.67	tpy
Total HAP	180.8	lb/yr	0.09	tpy

Emissions

Total VOC	71.059	%
Total HAP	3.841	%

Jay-Bee Oil & Gas, LLC

**Dopey Well Pad Production Facility
Tyler County, WV**

TL-2 Truck Loading - Produced Water

Per AP-42, Chapter 5.2.2.1.1, the uncontrolled loading loss emission factor LL can be estimated as follows:

$$L_L = 12.46 * (SPM/T)$$

Where,

Loading Loss		L _L = 0.132 lb/1000 gallons
Saturation Factor		S = 0.6
True Vapor Pressure		P = 0.3 psia
Molecular Weight of Vapors		M = 30.68 lb/lb-mol
Temperature		T = 520 deg R

Maximum Daily Loading	240	BBL/day
	10,080	gpd
Hours of Loading	24	hr

Total VOC	0.5 lb/day	0.02 lb/hr
Total HAP	0.1 lb/day	0.002 lb/hr

Maximum Annual Loading	66,000	BBL/yr
	2,772,000	gpy

Total VOC	133.4 lb/yr	0.07 tpy
Total HAP	14.7 lb/yr	0.01 tpy

Emissions

Total VOC	36.376	%
Total HAP	4.009	%

Truck Loading
Fugitive Dust

Item Number	Description	Number of Wheels	Mean Vehicle Weight (tons)	Mean Vehicle Speed (mph)	Miles per Trip	Maximum Trips per Hour	Truck Capacity (pbl/truck)	Maximum Trips per Year	Control	Control Efficiency (%)
1	Produced Water Transportation Trucks	18	27	10	0.78	1	80	325	None	---
2	Condensate Transportation Trucks	18	27	10	0.78	1	80	405	None	---

	PM	PM-10
R = Particle size multiplier	0.8	0.36
S = Silt content of road surface material (%)	10	3
W = Mean vehicle weight (tons)	10	10
W = Mean vehicle weight (tons)	27	27
p = Number of days per year with precipitation >0.01 in.	18	27
	157	157

$$E (\text{lb/vehicle mile traveled}) = k \times 5.9 \times (s + 12) \times (S + 30) \times (W + 3)^{0.7} \times (w + 4)^{0.5} \times ((365 - p) + 365)$$

Item 1 - Produced Water	PM	PM-10
E lb/vmt	7.37804126	1.22001589
E (lb + VMT) x [Trips + Hour] = lb/hr	5.756	0.852
E (lb + VMT) x [Trips + Hour] x [Ton + 2000 lb] = tpy	2.374	0.383

Item 2 - Condensate	PM	PM-10
E lb/vmt	7.37804126	1.22001589
E (lb + VMT) x [Trips + Hour] = lb/hr	5.756	0.852
E (lb + VMT) x [Trips + Hour] x [Ton + 2000 lb] = tpy	1.95	0.183

Jay-Bee Oil & Gas - Dopey

Flash Emission Calculations - Condensate

Using Gas-Oil Ratio Method

Un-Controlled

Site specific data

Gas-Oil-ratio	=	500 scf/bbl	Using Actual GOR from RPT-8
Throughput	=	32,400 bbl/yr	
Stock tank gas molecular weight	=	39.56 g/mole	

Conversions

1 lb	=	453.6 g
1 mole	=	22.4 L
1 scf	=	28.32 L
1 ton	=	2000 lb

Equations

$$E_{TOT} = Q \frac{(bbl)}{(yr)} \times R \frac{(scf)}{(bbl)} \times \frac{28.32(L)}{1(scf)} \times \frac{1(mole)}{22.4(L)} \times MW \frac{(g)}{(mole)} \times \frac{1(lb)}{453.6(g)} \times \frac{1(ton)}{2000(lb)}$$

E_{TOT} = Total stock tank flash emissions (TPY)

R = Measured gas-oil ratio (scf/bbl)

Q = Throughput (bbl/yr)

MW = Stock tank gas molecular weight (g/mole)

$$E_{spec} = E_{TOT} \times X_{spec}$$

E_{spec} = Flash emission from constituent

X_{spec} = Weight fraction of constituent in stock tank gas

Flash Emissions

Constituent	TPY
Total	893.1276
VOC	626.6987
Nitrogen	2.23E-01
Carbon Dioxide	1.40E+00
Methane	8.87E+01
Ethane	1.76E+02
Propane	2.31E+02
Isobutane	6.26E+01
n-Butane	1.44E+02
2,2 Dimethylpropane	1.76E+00
Isopentane	4.93E+01
n-Pentane	5.17E+01
2,2 Dimethylbutane	1.87E+00
Cyclopentane	0.00E+00
2,3 Dimethylbutane	2.71E+00
2 Methylpentane	1.44E+01
3 Methylpentane	8.58E+00
n-Hexane	1.88E+01
Methylcyclopentane	1.37E+00
Benzene	3.22E-01
Cyclohexane	1.94E+00
2-Methylhexane	4.16E+00
3-Methylhexane	4.09E+00
2,2,4 Trimethylpentane	0.00E+00
Other C7's	3.89E+00
n-Heptane	6.02E+00
Methylcyclohexane	3.74E+00
Toluene	7.32E-01
Other C8's	6.12E+00
n-Octane	2.04E+00
Ethylbenzene	4.47E-02
M & P Xylenes	5.27E-01
O-Xylene	7.15E-02
Other C9's	2.54E+00
n-Nonane	6.07E-01
Other C10's	9.56E-01
n-Decane	1.25E-01
Undecanes (11)	1.34E-01

E_{TOT}
Sum of C3+

HAP

HAP

HAP

HAP

HAP

HAP

Jay-Bee Oil & Gas - Dopey

Flash Emission Calculations - Produced Water

Using Gas-Water Ratio Method

Un-Controlled

Site specific data

Gas-Water-ratio	=	4.06 scf/bbl	Using GOW from comparable well pa
Throughput	=	66,000 bbl/yr	
Stock tank gas molecular weight	=	30.68 g/mole	

Conversions

1 lb	=	453.6 g
1 mole	=	22.4 L
1 scf	=	28.32 L
1 ton	=	2000 lb

Equations

$$E_{TOT} = Q \frac{(bbl)}{(yr)} \times R \frac{(scf)}{(bbl)} \times \frac{28.32(L)}{1(scf)} \times \frac{1(mole)}{22.4(L)} \times MW \frac{(g)}{(mole)} \times \frac{1(lb)}{453.6(g)} \times \frac{1(ton)}{2000(lb)}$$

E_{TOT} = Total stock tank flash emissions (TPY)

R = Measured gas-oil ratio (scf/bbl)

Q = Throughput (bbl/yr)

MW = Stock tank gas molecular weight (g/mole)

$$E_{spec} = E_{TOT} \times X_{spec}$$

E_{spec} = Flash emission from constituent

X_{spec} = Weight fraction of constituent in stock tank gas

Flash Emissions

Constituent	TPY
Total	11.4569
VOC	5.8596
Nitrogen	1.91E-01
Carbon Dioxide	1.72E-01
Methane	3.39E+00
Ethane	1.84E+00
Propane	1.32E+00
Isobutane	3.29E-01
n-Butane	9.28E-01
2,2 Dimethylpropane	1.46E-02
Isopentane	4.66E-01
n-Pentane	6.48E-01
2,2 Dimethylbutane	2.42E-02
Cyclopentane	0.00E+00
2,3 Dimethylbutane	4.66E-02
2 Methylpentane	2.60E-01
3 Methylpentane	1.67E-01
n-Hexane	4.52E-01
Methylcyclopentane	4.22E-02
Benzene	8.25E-03
Cyclohexane	5.81E-02
2-Methylhexane	1.26E-01
3-Methylhexane	1.31E-01
2,2,4 Trimethylpentane	0.00E+00
Other C7's	1.21E-01
n-Heptane	2.20E-01
Methylcyclohexane	1.17E-01
Toluene	1.81E-02
Other C8's	2.00E-01
n-Octane	6.28E-02
Ethylbenzene	1.26E-03
M & P Xylenes	1.03E-02
O-Xylene	1.15E-03
Other C9's	6.07E-02
n-Nonane	1.13E-02
Other C10's	1.33E-02
n-Decane	2.29E-03
Undecanes (11)	2.18E-03

E_{TOT}
Sum of C3+

HAP

HAP

HAP

HAP

HAP

HAP

Jay-Bee Oil & Gas, Inc.
FUGITIVE EMISSIONS

Dopey Well Pad Production Facility
Tyler County, WV

Fugitive VOC Emissions

Volatile Organic Compounds, NMNEHC from gas analysis: 28.05 weight percent
 Methane from gas analysis: 52.15 weight percent
 Carbon Dioxide from gas analysis: 0.30 weight percent
 HAPs from gas analysis: 4.61 weight percent
 Hexane 0.0640 lb/scf
 Gas Density: 0.0640 lb/scf

Emission Source:	Count	Oil & Gas Production*	VOC %	VOC (lb/hr)	VOC (tpy)	CO2 (lb/hr)	CO2 (tpy)	CH4 (lb/hr)	CH4 (tpy)	CO2e (tpy)	Hexane (tpy)
Pump Seals:											
Gas:	1	0.00529 lb/hr	28.0	0.001	0.006	0.000	0.000	0.003	0.0121	0.302	0.001
Valves:											
Gas/Vapor:	26	0.02700 scf/hr	28.0	0.013	0.055	0.000	0.001	0.023	0.1026	2.566	0.009
Light Liquid:	18	0.05000 scf/hr	100.0	0.058	0.252						
Low Bleed Pneumatic	-	1.39000 scf/hr	28.0	0.000	0.000	0.000	0.000	0.000	0.0000	0.000	0.000
Relief Valves:	3	0.04000 scf/hr	28.0	0.002	0.009	0.000	0.000	0.004	0.0175	0.439	0.002
Open-ended Lines, gas:	20	0.06100 scf/hr	28.0	0.022	0.096	0.000	0.001	0.041	0.1783	4.459	0.016
Sampling Connectors:											
Gas:	11	0.03300 lb/hr	28.0	0.102	0.446	0.001	0.005	0.189	0.8292	20.735	0.073
Light Liquid:	6	0.03300 lb/hr	100.0	0.198	0.867						
Connectors:											
Gas:	120	0.00300 scf/hr	28.0	0.006	0.028	0.000	0.000	0.012	0.0526	1.316	0.005
Light Liquid:	60	0.00700 scf/hr	100.0	0.027	0.118						
Compressor Seals, Gas:	1	0.01940 lb/hr	28.0	0.005	0.024	0.000	0.000	0.010	0.0443	1.108	0.004
Flanges:											
Gas:	80	0.00086 lb/hr	28.0	0.019	0.085	0.000	0.001	0.036	0.1572	3.930	0.014
Light Liquid:	40	0.00300 scf/hr	100.0	0.008	0.034						

Blowdowns:

	Pressure (psig)	Internal Volume (scf)	Projected Blowdown Events (per year)	Gas Released Per Year (scf)	Gas Released Per Year (lbs)	Composition of Gas (% by volume)	Released (lb/hr)	Released (tpy)	CO2e (tpy)
VOC	300	65	16	1040	116.3	0.70	0.0093	0.0408	
CH4	300	65	16	1040	116.3	0.10	0.0013	0.0058	0.1443
HAPs	300	65	16	1040	116.3	0.02	0.0003	0.0013	

Fugitive Calculations:

	lb/hr	tpy
VOC	0.471	2.061
CH4	0.320	1.400
CO2	0.002	0.008
CO2e	7.990	34.998
HAPs	0.028	0.125

Notes:

Factors are from 40 CFR 98, Table W-1A (scf/hr), where available. Remaining are API (lb/hr)
 Sampling Connectors are from TECQ. Remaining are API (lb/hr)

Jay-Bee Oil & Gas, Inc.
GAS ANALYSIS INFORMATION

Dopey Well Pad Production Facility
Tyler County, WV

Inlet 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	0.353	0.099	0.003	0.429			-		0.0035	
Carbon Dioxide, CO2	0.159	0.070	0.002	0.304			-		0.0016	
Hydrogen Sulfide, H2S	-	-	-	-			-		-	
Helium, He	-	-	-	-			-		-	
Oxygen, O2	0.001	0.000	0.000	0.001			-		0.0000	
Methane, CH4	74.743	11.991	0.414	52.153	679.7	754.9	7.123		0.7459	
Ethane, C2H6	14.580	4.384	0.151	19.068	236.0	258.0	2.432		0.1446	3.878
Propane	4.693	2.069	0.071	9.001	108.6	118.1	1.118	9.001	0.0461	1.286
Iso-Butane	0.607	0.353	0.012	1.533	18.2	19.7	0.188	1.533	0.0059	0.197
Normal Butane	1.173	0.682	0.024	2.966	35.3	38.3	0.363	2.966	0.0113	0.368
Iso Pentane	0.301	0.217	0.008	0.946	11.1	12.1	0.115	0.946	0.0030	0.110
Normal Pentane	0.352	0.254	0.009	1.105	13.0	14.1	0.134	1.105	0.0035	0.127
Hexane	1.231	1.061	0.037	4.613	54.2	58.5	0.557	4.613	0.0122	0.503
Heptane	1.809	1.812	0.063	7.882	92.2	99.5	0.948	7.882	0.0180	0.830
	100.000	22.992	0.794		1,248.5	1,373.2	12.978	28.045	0.9957	7.299

Gas Density (STP) = 0.064

Ideal Gross (HHV)	1,373.2
Ideal Gross (sat'd)	1,350.0
GPM	-
Real Gross (HHV)	1,379.1
Real Net (LHV)	1,253.9

Jay-Bee Oil & Gas, Inc.
GAS ANALYSIS INFORMATION

Dopey Well Pad Production Facility
Tyler County, WV

Condensate Tank Flash Vapor Composition Information:

	Fuel Gas mole %	Fuel M.W. lb/lb-mole	Fuel S.G.	Fuel Wt. %	LHV, dry Btu/scf	HHV, dry Btu/scf	APR vol/vol	VOC NM / NE	Z Factor	GPM
Nitrogen, N2	0.036	0.009	0.000	0.022			-		0.0003	
Carbon Dioxide, CO2	0.141	0.041	0.001	0.103			-		0.0009	
Hydrogen Sulfide, H2S	-	0.000	0.000	0.000	0.0	0.0	0.000		0.0000	
Helium, He	-	-	-	-			-		-	
Oxygen, O2	-	-	-	-			-		-	
Methane, CH4	24.485	3.370	0.116	8.458	191.0	212.2	2.002		0.2096	
Ethane, C2H6	25.943	8.112	0.280	20.358	436.7	477.4	4.500		0.2676	7.176
Propane	23.253	11.311	0.391	28.386	593.8	645.4	6.110	28.386	0.2520	7.030
Iso-Butane	4.773	3.064	0.106	7.690	158.2	171.4	1.633	7.690	0.0512	1.715
Normal Butane	10.980	6.916	0.239	17.357	358.3	388.2	3.685	17.357	0.1150	3.731
Iso Pentane	3.135	2.367	0.082	5.941	121.4	131.3	1.250	5.941	0.0328	1.195
Normal Pentane	3.175	2.307	0.080	5.791	118.5	128.2	1.219	5.791	0.0320	1.152
Hexane	2.378	1.531	0.053	3.841	78.2	84.5	0.804	3.841	0.0175	0.726
Heptane	1.701	0.818	0.028	2.052	41.6	44.9	0.428	2.052	0.0081	0.374
	100.000	39.846	1.376		2,097.7	2,283.4	21.630	71.059	0.9872	23.100

Gas Density (STP) = 0.111

Ideal Gross (HHV)	2,283.4
Ideal Gross (sar'd)	2,244.3
GPM	-
Real Gross (HHV)	2,313.1
Real Net (LHV)	2,124.9

Jay-Bee Oil & Gas, Inc.
GAS ANALYSIS INFORMATION

Dopey Well Pad Production Facility
Tyler County, WV

Water Tank Flash Vapor 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	1.821	0.161	0.006	0.652			-		0.0057	
Carbon Dioxide, CO2	1.049	0.705	0.024	2.855			-		0.0160	
Hydrogen Sulfide, H2S	-	0.000	0.000	0.000	0.0	0.0	0.000		0.0000	
Helium, He	-	-	-	-			-		-	
Oxygen, O2	-	-	-	-			-		-	
Methane, CH4	56.602	11.902	0.411	48.188	674.7	749.3	7.070		0.7404	
Ethane, C2H6	16.424	2.946	0.102	11.929	158.6	173.4	1.634		0.0972	2.606
Propane	8.000	1.933	0.067	7.827	101.5	110.3	1.044	7.827	0.0431	1.202
Iso-Butane	1.516	1.070	0.037	4.332	55.2	59.9	0.570	4.332	0.0179	0.599
Normal Butane	4.274	1.187	0.041	4.808	61.5	66.6	0.633	4.808	0.0197	0.641
Iso Pentane	1.784	0.942	0.033	3.812	48.3	52.2	0.497	3.812	0.0131	0.475
Normal Pentane	2.405	0.670	0.023	2.711	34.4	37.2	0.354	2.711	0.0093	0.334
Hexane	2.953	0.990	0.034	4.009	50.6	54.6	0.520	4.009	0.0114	0.470
Heptane	3.172	2.192	0.076	8.877	111.6	120.4	1.147	8.877	0.0218	1.004
	100.000	24.699	0.853		1,296.4	1,424.0	13.469	36.376	0.9954	7.331

Gas Density (STP) = 0.069

Ideal Gross (HHV)	1,424.0
Ideal Gross (sat'd)	1,399.9
GPM	-
Real Gross (HHV)	1,430.5
Real Net (LHV)	1,302.3

Jay-Bee Oil & Gas, Inc.
GAS ANALYSIS INFORMATION

Dopey Dehydration Facility
Tyler County, WV

Still Vent 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	0.145	0.041	0.001	0.166	0.0	0.0	-		0.0014	
Carbon Dioxide, CO2	0.177	0.078	0.003	0.318	0.0	0.0	0.013		0.0018	
Hydrogen Sulfide, H2S	-	-	-	-	0.0	0.0	-		-	
Water	51.800	9.324	0.322	38.103	0.0	0.0	-		0.5183	
Oxygen, O2	-	-	-	-	0.0	0.0	-		-	
Methane, CH4	29.500	4.733	0.163	19.340	268.3	298.0	4.921		0.2944	
Ethane, C2H6	7.480	2.249	0.078	9.192	121.1	132.4	1.782		0.0742	1.990
Propane	3.240	1.429	0.049	5.839	75.0	81.5	1.003	5.839	0.0318	0.888
Iso-Butane	0.507	0.295	0.010	1.204	15.2	16.5	0.157	1.204	0.0049	0.165
Normal Butane	1.230	0.715	0.025	2.922	37.0	40.1	0.469	2.922	0.0119	0.386
Iso Pentane	0.347	0.250	0.009	1.023	12.8	13.9	0.113	1.023	0.0035	0.126
Normal Pentane	0.423	0.305	0.011	1.247	15.7	17.0	0.133	1.247	0.0042	0.152
Hexane	0.781	0.673	0.023	2.750	34.4	37.1	0.197	2.750	0.0077	0.319
Heptane	4.370	4.379	0.151	17.895	222.9	240.5	1.310	17.895	0.0435	2.005
	100.000	24.470	0.845		802.4	876.9	10.097	32.880	0.9977	6.032

Gas Density (STP) = 0.068

Ideal Gross (HHV)	876.9
Ideal Gross (sat'd)	862.4
GPM	-
Real Gross (HHV)	879.0
Real Net (LHV)	804.3

Jay-Bee Oil & Gas, Inc.
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:

0 grains H2S/100 scf	=	0.00000 mole % H2S
		0.0 ppmv H2S
0 mole % H2S	=	0 grains H2S/100 scf
		0.0 ppmv H2S
0 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

MIRATECH Emissions Control Equipment Specification Summary

Proposal Number: TJ-14-0081 Rev(1)

Engine Data

Number of Engines: 1
 Application: Gas Compression
 Engine Manufacturer: Cummins
 Model Number: G 5.9
 Power Output: 84 bhp
 Lubrication Oil: 0.6 wt% sulfated ash or less
 Type of Fuel: Natural Gas
 Exhaust Flow Rate: 430 acfm (cfm)
 Exhaust Temperature: 1,078°F

System Details

Housing Model Number: VXC-1408-04-HSG
 Element Model Number: VX-RE-08XC
 Number of Catalyst Layers: 1
 Number of Spare Catalyst Layers: 1
 System Pressure Loss: 3.0 inches of WC (Fresh)
 Sound Attenuation: 28-32 dBA insertion loss
 Exhaust Temperature Limits: 750 – 1250°F (catalyst inlet); 1350°F (catalyst outlet)

NSCR Housing & Catalyst Details

Model Number: VXC-1408-04-XC1
 Material: Carbon Steel
 Approximate Diameter: 14 inches
 Inlet Pipe Size & Connection: 4 inch FF Flange, 150# ANSI standard bolt pattern
 Outlet Pipe Size & Connection: 4 inch FF Flange, 150# ANSI standard bolt pattern
 Overall Length: 53 inches
 Weight Without Catalyst: 152 lbs
 Weight Including Catalyst: 162 lbs
 Instrumentation Ports: 1 inlet/1 outlet (1/2" NPT)

Emission Requirements

Exhaust Gases	Engine Outputs (g/ bhp-hr)	Reduction (%)	Warranted Converter Outputs (g/ bhp-hr)	Requested Emissions Targets
NOx	11.41	91%	1.00	1.00 g/bhp-hr
CO	14.64	86%	2.00	2.00 g/bhp-hr
NMNEHC	0.22	0%	0.70	0.70 g/bhp-hr
CH ₂ O	0.08	0%	1.00	1.00 g/bhp-hr
Oxygen	0.5%			

MIRATECH warrants the performance of the converter, as stated above, per the MIRATECH General Terms and Conditions of Sale.



Engine Performance Data
Cummins Inc

Columbus, Indiana 47202-3005
<http://www.cummins.com>

Industrial

G5.9

FR 9961

84 BHP (63 kW) @ 1800 RPM
245 lb-ft (332 N-m) @ 1800 RPM

Configuration
D491010CX02

CPL Code
8655

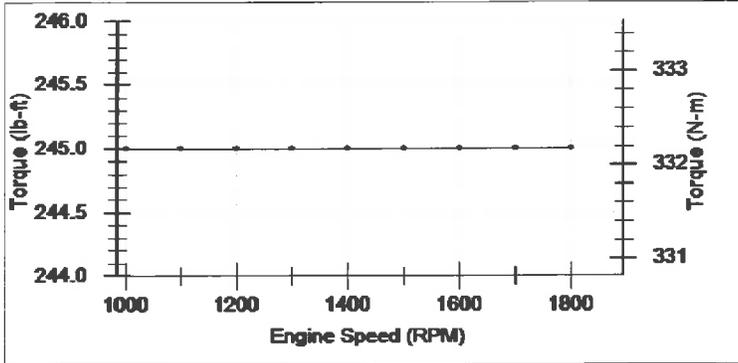
Revision
12-May-2011

Compression Ratio: **10.5:1**
 Fuel System: **Field Gas, Dry Processed Nat Gas**
 Emission Certification: **Non-certified**

Displacement: **359 in3 (5.9 L)**
 Aspiration: **Naturally Aspirated**

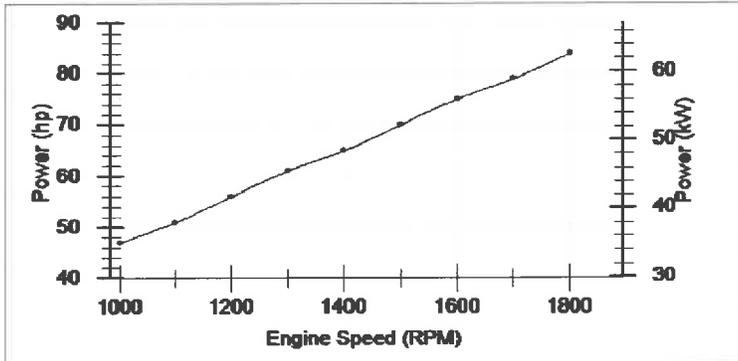
All data is based on the engine operating with fuel system, water pump, and 7 in H₂O (1.74 kPa) inlet air restriction with 3.5 in (89 mm) inner diameter, and with 1 in Hg (3 kPa) exhaust restriction with 3 in (76 mm) inner diameter; not included are alternator, fan, optional equipment and driven components. Coolant flows and heat rejection data based on coolants as 50% ethylene glycol/50% water. All data is subject to change without notice.

Rating Type: Continuous/WMR



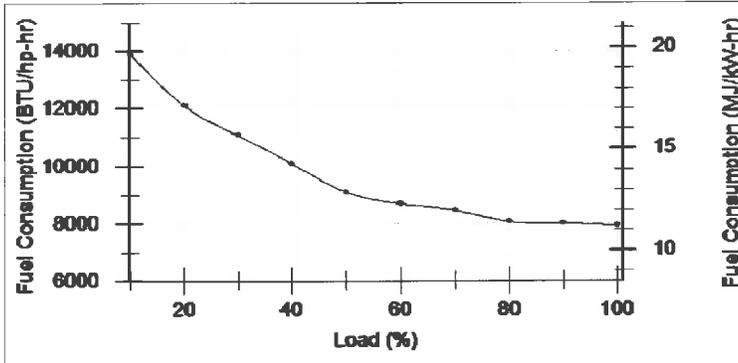
Torque Output

RPM	lb-ft	N-m
1,000	245	332
1,100	245	332
1,200	245	332
1,300	245	332
1,400	245	332
1,500	245	332
1,600	245	332
1,700	245	332
1,800	245	332



Power Output

RPM	hp	kW
1,000	47	35
1,100	51	38
1,200	56	42
1,300	61	45
1,400	65	48
1,500	70	52
1,600	75	56
1,700	79	59
1,800	84	63



Fuel Consumption @ 1,800 RPM

hp	kW	% Load	BTU/hp-hr	MJ/kW-hr
84	63	100	7,914	11.2
76	57	90	7,987	11.3
67	50	80	8,056	11.4
59	44	70	8,452	11.96
50	37	60	8,689	12.29
42	31	50	9,094	12.87
34	25	40	10,083	14.27
25	19	30	11,069	15.66
17	13	20	12,116	17.14
8	6	10	13,889	19.65

Data represents gross engine capabilities obtained and corrected in accordance with SAE J1995 using dry processed natural gas fuel with 905 BTU per standard cubic foot lower heating value. Deration may be required due to altitude, temperature and type of fuel. Consult Cummins Customer Engineering for operation above this altitude.

STATUS FOR CURVES AND DATA: Limited-(measured data)
TOLERANCE: Within +/- 5 %

CHIEF ENGINEER:
Alfred S Weber

Bold entries revised after 1-Mar-2010

Intake Air System

Maximum allowable air temperature rise over ambient at Intake Manifold (Naturally Aspirated Engines) or Turbo Compressor inlet (Turbo-charged Engines): (This parameter impacts emissions, LAT and/or altitude capability)

15 delta deg F 8.3 delta deg C

Cooling System

Maximum coolant temperature for engine protection controls

215 deg F 102 deg C

Maximum coolant operating temperature at engine outlet (max. top tank temp):

212 deg F 100 deg C

Exhaust System

Maximum exhaust back pressure:

2 in-Hg 7 kPa

Recommended exhaust piping size (inner diameter):

3 in 76 mm

Lubrication System

Nominal operating oil pressure

@ minimum low idle

10 psi 69 kPa

@ maximum rated speed

50 psi 345 kPa

Minimum engine oil pressure for engine protection devices

@ minimum low idle

10 psi 69 kPa

Fuel System

Maximum fuel inlet pressure:

1 psi 5 kPa

Performance Data

Engine low idle speed:

900 RPM

Maximum low idle speed:

1,800 RPM

Minimum low idle speed:

800 RPM

Engine high idle speed

1,800 RPM

Governor break speed:

Maximum torque available at closed throttle low idle speed:

50 lb-ft 68 N-m

	100% Load		75% Load		50% Load	
Engine Speed	1,800 RPM		1,800 RPM		1,800 RPM	
Output Power	84 hp	63 kW	63 hp	47 kW	42 hp	31 kW
Torque	245 lb-ft	332 N-m	184 lb-ft	249 N-m	123 lb-ft	167 N-m
Intake Manifold Pressure	-1 in-Hg	-3 kPa	-5 in-Hg	-17 kPa	-9 in-Hg	-30 kPa
Inlet Air Flow	121 ft ³ /min	57 L/s	101 ft ³ /min	48 L/s	82 ft ³ /min	39 L/s
Exhaust Gas Flow	430 ft ³ /min	203 L/s	360 ft ³ /min	170 L/s	292 ft ³ /min	138 L/s
Exhaust Gas Temperature	1,078 deg F	581 deg C	999 deg F	537 deg C	902 deg F	483 deg C
Heat Rejection to Coolant	3,824 BTU/min	67 kW	3,244 BTU/min	57 kW	2,596 BTU/min	46 kW
Heat Rejection to Ambient	1,194 BTU/min	21 kW	784 BTU/min	14 kW	613 BTU/min	11 kW
Heat Rejection to Exhaust	2,523 BTU/min	44 kW	1,916 BTU/min	34 kW	1,371 BTU/min	24 kW
Fuel Consumption	7,914 BTU/hp-hr	11 MJ/kW-hr	8,214 BTU/hp-hr	12 MJ/kW-hr	9,094 BTU/hp-hr	13 MJ/kW-hr
Air Fuel Ratio (dry)	16.52 vol/vol		16.51 vol/vol		16.52 vol/vol	
Ignition timing (BTDC)	26 deg	26 deg	26 deg	26 deg	26 deg	26 deg
Total Hydrocarbons	1.48 g/hp-hr		1.3 g/hp-hr		1.62 g/hp-hr	
VOC ppm w/o Catalyst						
VOC ppm with Catalyst						
NOx	11.41 g/hp-hr	15.3 g/kW-hr	13.7 g/hp-hr	18.37 g/kW-hr	12.85 g/hp-hr	17.23 g/kW-hr
NOx ppm w/o Catalyst						
NOx ppm with Catalyst						
CO	14.64 g/hp-hr	19.63 g/kW-hr	0.82 g/hp-hr	1.1 g/kW-hr	1.38 g/hp-hr	1.85 g/kW-hr
CO ppm w/o Catalyst						
CO ppm with Catalyst						
CO ₂	449 g/hp-hr	602 g/kW-hr	489 g/hp-hr	656 g/kW-hr	540 g/hp-hr	724 g/kW-hr
O ₂	0.45 %		1.66 %		3.67 %	

Bold entries revised after 1-Mar-2010

Cranking System (Cold Starting Capability)

Unaided Cold Start:

Minimum cranking speed 250 RPM
 Cold starting aids available Block Heater, Oil Pan Heater
 Maximum parasitic load at 10 deg F @

Noise Emissions

Top 89.9 dBa
 Right Side 90.1 dBa
 Left Side 89.8 dBa
 Front 90.5 dBa
 Exhaust noise emissions 103.1 dBa

Estimated Free Field Sound Pressure Level at 3.28ft (1m) and Full-Load Governed Speed
 (Excludes Noise from Intake, Exhaust, Cooling System and Driven Components)

Aftercooler Heat Rejection - Heat Load on Aftercooler
 BTU/min (kW)

		Ambient Temp deg F (deg C)					
		120 (49)	110 (43)	100 (38)	90 (32)	80 (27)	70 (21)
Altitude ft (m)	0 (0)	(.0)	(.0)	(.0)	(.0)	(.0)	(.0)
	1000 (305)	(.0)	(.0)	(.0)	(.0)	(.0)	(.0)
	2000 (610)	(.0)	(.0)	(.0)	(.0)	(.0)	(.0)
	3000 (914)	(.0)	(.0)	(.0)	(.0)	(.0)	(.0)
	4000 (1219)	(.0)	(.0)	(.0)	(.0)	(.0)	(.0)
	5000 (1524)	(.0)	(.0)	(.0)	(.0)	(.0)	(.0)
	6000 (1829)	(.0)	(.0)	(.0)	(.0)	(.0)	(.0)
	7000 (2134)	(.0)	(.0)	(.0)	(.0)	(.0)	(.0)
	8000 (2438)	(.0)	(.0)	(.0)	(.0)	(.0)	(.0)
	9000 (2743)	(.0)	(.0)	(.0)	(.0)	(.0)	(.0)
	10000 (3048)	(.0)	(.0)	(.0)	(.0)	(.0)	(.0)

End of Report

Bold entries revised after 1-Mar-2010

	Gas/Site Analysis & Engine Selection/Derate Cummins Stationary Natural Gas Engines Date: 4/10/2014		Industrial G5.9 Available FR Number(s) From Selection: FR9936, FR9961	NG 84 HP (63 kW) @1800 RPM & 10.5:1 Compression Ratio Catalyst Fuel Rating Industrial Continuous
	Engine (as entered by user) Application: Industrial Fuel Type: NG Engine: G5.9 Fuel Rating: Catalyst Compression Ratio: 10.5:1 RPM: 1800 HP (Natural Gas): 84 HP (63 kW) HP (Propane): NA HP (NA kW)			
Site (as entered by user) Ambient Air Temperature: 90° F Relative Humidity: 30% Altitude: 1200 ft Cooling Fan Load: 8 HP Generator Efficiency: 93% Vapor Pressure (Calculated from Site Conditions Entered): 0.427 inHg Dew Point (Calculated from Site Conditions Entered): 54.4° F Dry Barometer (Calculated from Site Conditions Entered): 28.22 inHg				
Derate (Natural Gas) Advertised NG Rating: 84 HP (63 kW) Engine Derate Due to Site Altitude and Temperature: 2% Engine Derate Due to Gas Composition: Derate Due to Low BTU Fuel: 0% Derate Due to Methane Number: 0% Total Power Available (%) After All Applicable Derates: 98% of rated Total Site Derate due to Altitude, Temperature, and Gas Composition: 2 HP (1 kW) Total Available Horsepower from Selected Engine Running on Specified Fuel Composition at Specified Site (includes 8 HP reduction for for cooling fan load): 74 HP (55 kW)				 The sample percentage for "Name Sample" is 99.991%. Results are based on the input sample normalized to 100%.
Derate (Propane) Advertised Propane Rating: NA HP (NA kW) Engine Derate Due to Site Altitude and Temperature: NA% Total Power Available (%) After All Applicable Derates: NA% of rated Total Site Derate due to Altitude and Temperature: NA HP (NA kW) Total Available Horsepower from Selected Engine Running on Propane at Specified Site (includes 8 HP reduction for for cooling fan load): NA HP (NA kW)				
Intake Manifold Requirements for Turbocharged Engines Maximum Allowed Intake Manifold Temperature for Selected Engine is na °F with a Maximum Aftercooler Water Inlet (CAC air inlet) of na °F based on FR9936				
Factory Set Points Engine Speed Target: Spark Plug Gap: Excess Oxygen Target-PV: Propane Engine Timing Target: Propane Gas over air Press at Carb Low: Propane Gas Press at Sec Reg Target: Excess Oxygen Target-NG: Natural Gas Engine Timing Target: Natural Gas over air Press at Carb Target: Natural Gas Press at Sec Reg Target:		Factory Supplied 1800 rpm 0.020 in na %O2 na °BTDC na inH2O na inH2O 0.45% O ₂ Factory: 26 °BTDC 5 inH2O 15 inH2O	Recommended  NOTICE: A Change to Ignition Timing Is Recommended Due to Methane Number of Fuel Recommended Timing: 25 ° BTDC	

FR9936 Created/Revised On: 4/30/2013. Data Files Updated On: 12/12/2013

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Gas Sample Analysis			
		 The sample percentage for "Name Sample" is 99.991%. Results are based on the input sample normalized to 100%.	
Sample Name: Name Sample			
Gas Compound:		Volume Fraction % (User Input)	Mass Fraction % (Calculated)
Methane:		77.09	59.36
Ethane:		14.83	21.41
Propane:		4.97	10.51
i-Butane:		0.62	1.72
n-Butane:		1.21	3.38
i-Pentane:		0.27	0.92
n-Pentane:		0.26	0.91
n-Hexane:		0.15	0.62
n-Heptane:		0.04	0.2
n-Octane:		0.02	0.09
n-Nonane:		0	0
n-Decane:		0	0.02
Hydrogen:		0	0
Hydrogen Sulfide (H ₂ S):		0 ppm	0 ppm
Carbon Dioxide:		0.15	0.32
Carbon Monoxide:		0	0
Nitrogen:		0.39	0.53
Oxygen:		0	0
Total Percent: (Sample Input Percentage: 99.991%)		Normalized Percentage: 100%	
Performance Parameters:		Standard Units	Metric Units
Lower Heating Value (LHV): Standard Conditions (60F/14.696psia)	by volume	1140.6 Btu/scf	42.5 MJ/scm
	by mass	20776 Btu/lbm	48.326 MJ/kg
Higher Heating Value (HHV): Standard Conditions (60F/14.696psia)	by volume	1257.5 Btu/scf	46.85 MJ/scm
	by mass	22906 Btu/lbm	53.280 MJ/kg
Methane Number:		56.1	56.1
Specific Gravity (SG):		0.7193	0.7193
Wobbe Index :	LHV/√ SG	1345 Btu/scf	50.11 MJ/scm
	HV/√ SG	1483 Btu/scf	55.24 MJ/scm
Molecular Weight:		20.83 g/mol	20.83 g/mol
Specific Heat (Cp):		0.473 BTU/lbm-R	1.979 kJ/kg-K
Specific Heat Ratio (Cp/Cv):		1.253	1.253
Ideal Gas Density:		0.0549 lbm/ft ³	0.8788 kg/m ³ std
H/C Ratio:		3.492	3.492
Gas Constant (R _{GAS}):		95.3 BTU/lbm-°R	399.1 kJ/kg-°K
Stoich Air Fuel Ratio (Dry):		16.54	16.54
Fuel Flow Data			
BTU/HP-HR:		7914	
Maximum Fuel Flow (SCFH):		583	
<i>Maximum Fuel Flow Calculation is Based on 100% Continuous Rating of 84 HP at 1800 RPM and 10.5:1 Compression Ratio from FR9936</i>			
Gas Regulator Details			
The Industrial G5.9 uses a Maxitrol Regulator			Notes:

FR Differences for Selected Engine		
Description of FR Differences for Selected Engine		
	FR9936	FR9961
Exhaust Manifold	Dry	Wet
Exhaust Stack Temp High	1300	1220

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Model 5120 Thermoelectric Generators



Global Thermoelectric's Model 5120 Thermoelectric Generator contains no moving parts. It is a reliable, low maintenance source of DC electrical power for any application where regular utilities are unavailable or unreliable.

Power Specifications

Power Rating at 20°C
120 Watts at 6.7 Volts
108 Watts at 12 Volts
108 Watts at 24 Volts
108 Watts at 48 Volts

Electrical

Adjustment:	6.7V	up to 11 Volts
	12 V	12 - 18 Volts
	24 V	24 - 30 Volts
	48 V	48 - 60 Volts

Reverse current protection included.

Output: Terminal block which accepts up to 8 AWG wire. Opening for 3/4" conduit in the base of the cabinet.

Fuel

Natural Gas:	8.8 m ³ /day (311 ft ³ /day) of Std. 1000 BTU/SCF (37.7 MJ/SM ³) gas
Propane:	11.4 l/day (3.0 US gal/day)
Max. Supply Pressure:	1724 kPa (250 psi)
Min. Supply Pressure:	103 kPa (15 psi)
Fuel Connection:	1/4" MNPT

Environmental

Ambient Operation Temperature: Max. 55°C (130°F) Min. -55°C (-67°F)
Operating Conditions: Unsheltered operation

Materials of Construction

Cabinet:	304 SS
Cooling Type:	Natural Convection
Thermopile:	Hermetically Sealed Lead Tin-Telluride (PbSnTe)
Burner:	Meeker Type/Inconel 600
Fuel System:	Brass, Aluminum & SS

Standard Features

- Automatic Spark Ignition (SI)
- Fuel Filter
- Low Voltage Alarm Contacts (VSR)
- Volt & Amp Meter

Optional Features

- Cathodic Protection Interface
- Pole Mount or bench stand
- Automatic Fuel Shut-off (SO)
- Corrosive Environmental Fuel System
- Flame Arrestor

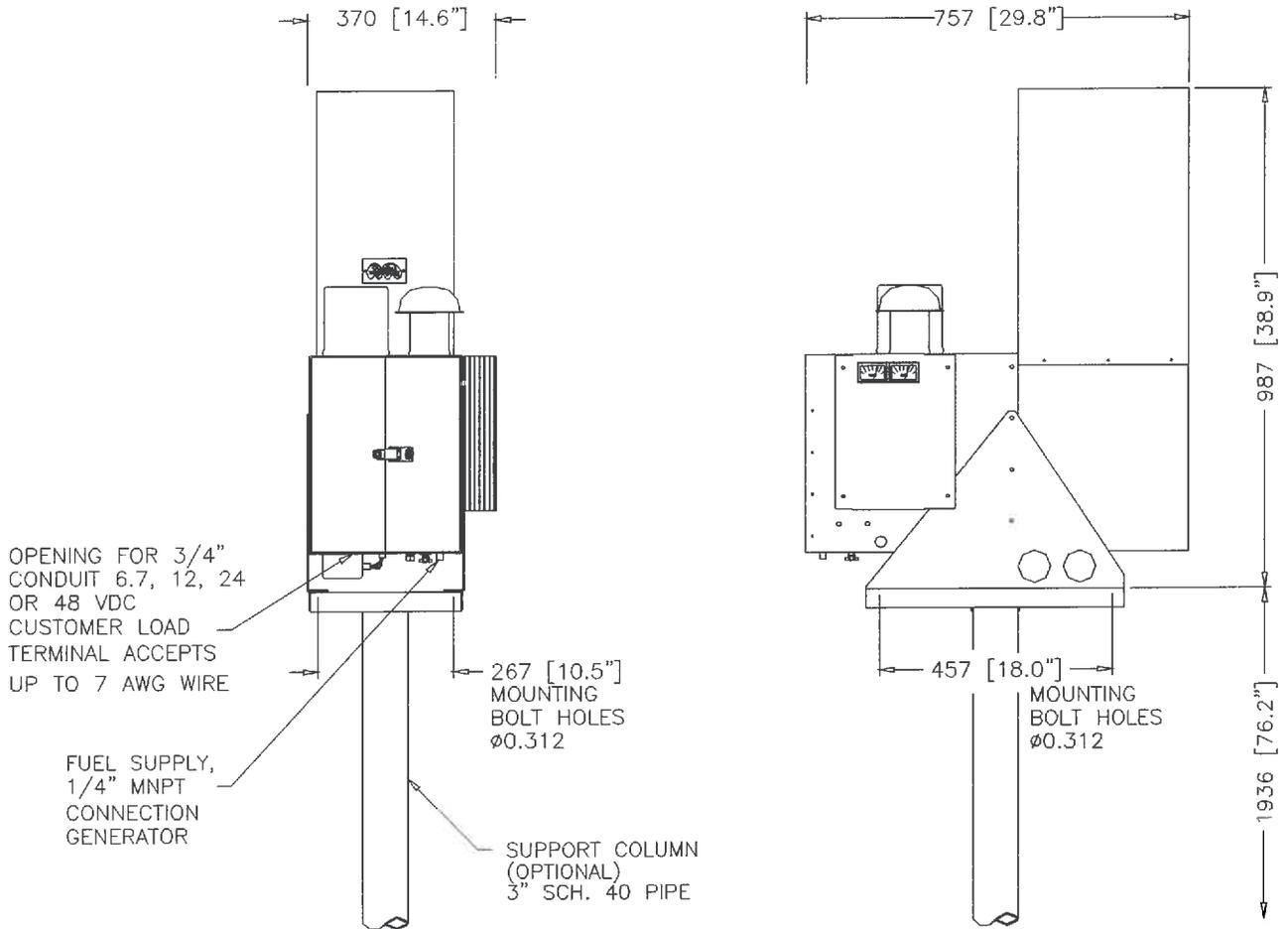
Note: Specifications shown are for standard configurations. Global Thermoelectric's Applications Engineering Department is available to design custom voltages, fuel supply systems and non-standard operating temperatures.



Power where you need it.



Typical Installation



- NOTES:
 1. GENERATOR WEIGHT: 60 kg [132 lb].
 2. DIMENSIONS IN mm [INCHES].



Power where you need it.

Corporate Office
 #9, 3700 - 78 Avenue SE
 Calgary, Alberta T2C 2L8
 CANADA
 Phone: (403) 236-5556
 Fax: (403) 236-5575

US Sales
 P.O. Box 38624
 Houston, TX 77238
 Phone: (281) 445-1515
 Fax: (281) 445-6060
 Toll Free: 1 800 848-4113

Model 5120 Thermoelectric Generator

Vapor Combustor Unit (VCU)

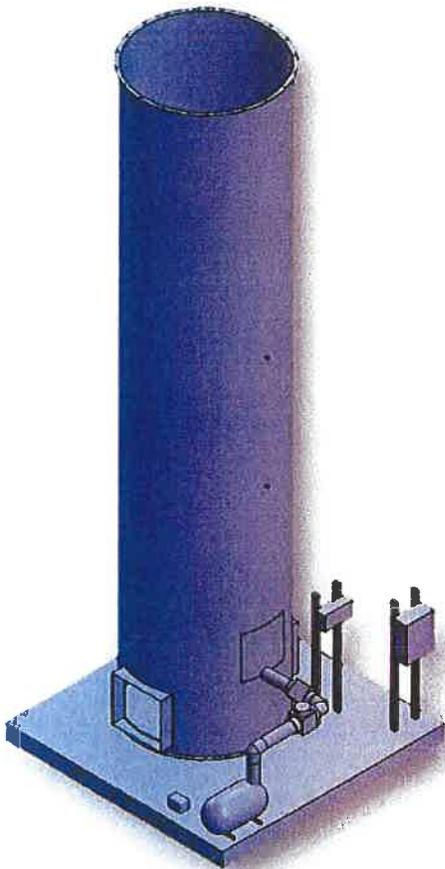
HY-BON/EDI is pleased to provide the CH2.5 and CH10.0 enclosed combustors as an effective solution for eliminating VOC emissions. HY-BON/EDI's insulated combustors are automated and have been successfully tested per EPA 40, CFR 60 guidelines – making it the perfect blend of performance and safety. The combustor comes as a complete, skid mounted package containing the liquid knock-out vessel, liquid transfer pump, flame arrester, bird screen and burner control system. Installation is simple and field performance adjustments can be made as production changes – making it the most flexible solution in the industry.

- EPA 40 CFR 60, Quad O Compliant
List of EPA Approved Combustion Control Devices
- Completely Enclosed Combustion
- 99.99% Destruction Efficiency
- User Friendly Automated System
- Operational and Quad O reporting data can be saved to a USB Key
- RS-232 or RS-485 Communication supports satellite, cellular, or radio
- Modbus Slave Protocol allows it to communicate with SCADA systems and other devices/software

GENERAL PROPERTIES	CH2.5	CH10.0
BURNER SIZE (MMBTU/hr)	2.5	10.0
OUTER DIAMETER (inches)	34	54
HEIGHT (feet)	16	20
INLET PRESSURE (oz/in ²)	≥ 0.5	
DESTRUCTION EFFICIENCY	≥ 99.99%	
SMOKELESS CAPACITY	100%	
TURN DOWN	SCALABLE	



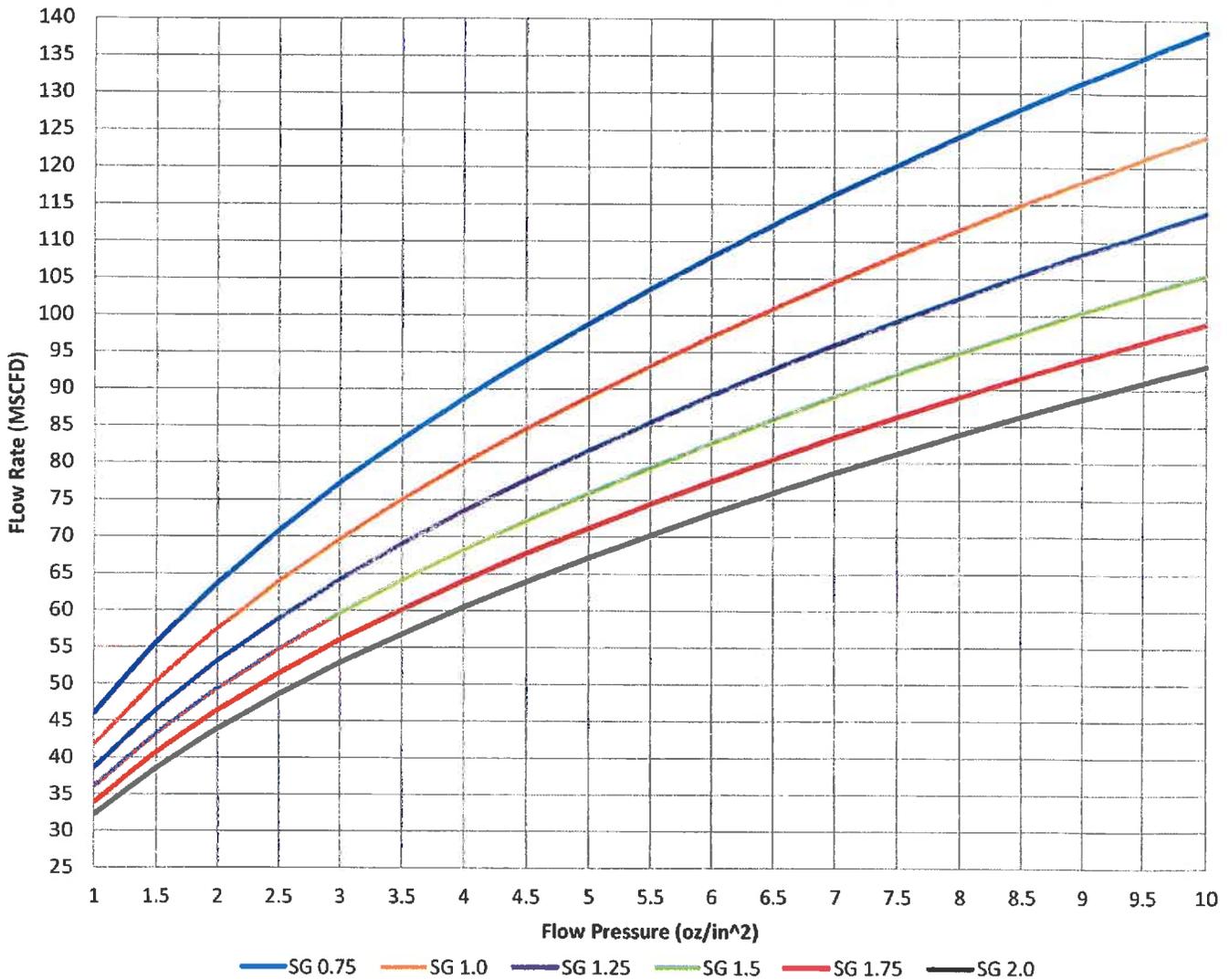
With the fairly recent publication of the NSPS OOOO emission standard, all storage tank facilities constructed on or after August 23, 2011 will be allowed to emit 6 Tons or less of VOC's per year. This regulation not only forces companies to monitor and control their emissions, but it also forces the *means* of emission monitoring and controlling to be more reliable and exact. In response to such a stringent protocol, HY-BON Engineering Company is pleased to offer the **CH10.0** enclosed Vapor Combustor Unit (VCU). Built upon a foundation of 60+ years' experience with tank vapors, the VCU is the solution for reducing residual tank vapor emissions when a Vapor Recovery Unit (VRU) is not sufficient or a viable option.



- EPA 40 CFR 60, Quad O Compliant
- Completely Enclosed Combustion
- 99.99% Destruction Efficiency
- Fully Automated System
- Output Operational Data via Thumb Drive
- Capable of SCADA Integration

GENERAL PROPERTIES	
TYPE	Enclosed Tank Battery Flare
AMBIENT TEMPERATURE	-20 °F to +100 °F
PILOT FUEL REQUIREMENTS	Propane or Site Gas @5psi of natural gas = 13.3 SCFM @5psi of propane = 12.5 SCFM
BURNER SIZE	10.0 million BTU/hr
INLET PRESSURE REQUIREMENTS	Minimum 0.5 oz/in ² (~1.0 inches w.c.)
TURN DOWN RATIO	5:1
DESTRUCTION EFFICIENCY	99.99% DRE
MECHANICAL PROPERTIES	
DESIGN WIND SPEED	100 MPH
AMBIENT TEMPERATURE	-20 °F to +120 °F
ELECTRICAL AREA CLASSIFICATION	General Area Classification (Non-Hazardous)
ELEVATION	up to 3,000ft ASL
PROCESS PROPERTIES	
SMOKELESS CAPACITY	100%
OPERATING TEMPERATURE	800 °F to 2000 °F (1500 °F Nominal)
UTILITIES	
PILOT GAS	Process Gas
ELECTRICITY	1 Phase, 60 Hz, 120V/10A
SOLAR PANEL OPTION AVAILABLE	YES

CH10.0: Flow Rate vs Flow Pressure with Corresponding Specific Gravity



Gas Analytical Services

Good

Charleston, WV

844-445-4207

Customer : 8788 - JayBee Oil & Gas
Station ID : DOC 2H
Cylinder ID : 0379
Producer :
Lease : DOC 2H JayBee
Area : 357 - Union
State :

Date Sampled : 02/02/2016
Date Analyzed : 02/01/2016
Effective Date : 03/01/2016
Cyl Pressure : 1,115
Temp : 0
Cylinder Type : Spot
Sample By : Justin Whipkey

<u>COMPONENT</u>	<u>MOL%</u>	<u>GPM@14.73(PSIA)</u>
Carbon-Dioxide	0.1587	0.000
Oxygen	0.0009	0.000
Nitrogen	0.3525	0.000
Methane	74.7431	0.000
Ethane	14.5795	3.917
Propane	4.6929	1.299
Iso-Butane	0.6066	0.199
N-Butane	1.1732	0.372
Neo-Pentane	0.0105	0.004
Iso-Pentane	0.3013	0.111
N-Pentane	0.3415	0.124
N-Hexane	0.5710	0.369
N-Heptane	0.3362	0.156
N-Octane	0.0627	0.032
N-Nonane	0.0067	0.004
N-Decane	0.0009	0.001
Benzene	0.0106	0.003
Toluene	0.0691	0.023
Ethylbenzene	0.0027	0.001
M-Xylene/P-Xylene	0.0038	0.001
O-Xylene	0.0024	0.001
C6's	0.6464	0.261
C7's	0.7941	0.356
C9's	0.0590	0.031
C10's	0.0051	0.003
C11's	0.0001	0.000
C8's	0.4685	0.238
TOTAL	100.0000	7.506

Compressibility Factor (Z) @ 14.73 @ 60 Deg. F = 0.9952

C5+ GPM : 0.63300

Ideal Gravity: 0.7964

Real Gravity: 0.7999

C5+ Mole % : 3.2756

BTU @ (PSIA)	@14.65	@14.696	@14.73	@15.025
Ideal GPM	7.430	7.453	7.471	7.620
Ideal BTU Dry	1,371.30	1,375.61	1,378.79	1,406.40
Ideal BTU Sat	1,347.30	1,351.61	1,354.79	1,382.40
Real GPM	7.465	7.489	7.506	7.657
Real BTU Dry	1,377.82	1,382.17	1,385.38	1,413.26

Real BTU Sat	1,354.31	1,358.66	1,361.87	1,389.77
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Comments:

Gas Analysis performed in accordance with GPA 2286

Sample Count : 230000010

Analytical Calculations performed in accordance with GPA 2172

COC :

April 23, 2014

FESCO, Ltd.
1100 Fesco Ave. - Alice, Texas 78332

For: Jay-Bee Oil & Gas, Inc.
1720 Route 22 East
Union, New Jersey 07083

Sample: RPT 8-1
Gas Evolved from Hydrocarbon Liquid Flashed
From 340 psig & 65 °F to 0 psig & 70 °F

Date Sampled: 04/07/14

Job Number: 42784.001

CHROMATOGRAPH EXTENDED ANALYSIS - SUMMATION REPORT - GPA 2286

COMPONENT	MOL%	GPM
Hydrogen Sulfide*	< 0.001	
Nitrogen	0.036	
Carbon Dioxide	0.141	
Methane	24.485	
Ethane	25.943	6.993
Propane	23.253	6.457
Isobutane	4.773	1.574
n-Butane	10.980	3.489
2-2 Dimethylpropane	0.108	0.042
Isopentane	3.027	1.116
n-Pentane	3.175	1.180
Hexanes	2.378	0.988
Heptanes Plus	<u>1.701</u>	<u>0.761</u>
Totals	100.000	22.579

Computed Real Characteristics Of Heptanes Plus:

Specific Gravity ----- 3.599 (Air=1)
Molecular Weight ----- 102.69
Gross Heating Value ----- 5488 BTU/CF

Computed Real Characteristics Of Total Sample:

Specific Gravity ----- 1.387 (Air=1)
Compressibility (Z) ----- 0.9850
Molecular Weight ----- 39.56
Gross Heating Value
Dry Basis ----- 2321 BTU/CF
Saturated Basis ----- 2282 BTU/CF

*Hydrogen Sulfide tested in laboratory by: Stained Tube Method (GPA 2377)
Results: <0.013 Gr/100 CF, <0.2 PPMV or <0.001 Mol %

Base Conditions: 14.850 PSI & 60 Deg F

Analyst: MR
Processor: AL
Cylinder ID: ST# 20

Certified: FESCO, Ltd. - Alice, Texas

David Dannhaus 361-661-7015

**CHROMATOGRAPH EXTENDED ANALYSIS
TOTAL REPORT - GPA 2286**

COMPONENT	MOL %	GPM	WT %
Hydrogen Sulfide*	< 0.001		< 0.001
Nitrogen	0.036		0.025
Carbon Dioxide	0.141		0.157
Methane	24.485		9.930
Ethane	25.943	6.993	19.719
Propane	23.253	6.457	25.920
Isobutane	4.773	1.574	7.013
n-Butane	10.980	3.489	16.132
2,2 Dimethylpropane	0.108	0.042	0.197
Isopentane	3.027	1.116	5.521
n-Pentane	3.175	1.160	5.791
2,2 Dimethylbutane	0.096	0.040	0.209
Cyclopentane	0.000	0.000	0.000
2,3 Dimethylbutane	0.139	0.057	0.303
2 Methylpentane	0.736	0.309	1.608
3 Methylpentane	0.441	0.181	0.961
n-Hexane	0.964	0.400	2.100
Methylcyclopentane	0.072	0.025	0.153
Benzene	0.018	0.005	0.036
Cyclohexane	0.102	0.035	0.217
2-Methylhexane	0.184	0.086	0.466
3-Methylhexane	0.181	0.083	0.458
2,2,4 Trimethylpentane	0.000	0.000	0.000
Other C7's	0.174	0.076	0.436
n-Heptane	0.266	0.124	0.674
Methylcyclohexane	0.189	0.068	0.419
Toluene	0.035	0.012	0.082
Other C8's	0.246	0.115	0.665
n-Octane	0.079	0.041	0.228
Ethylbenzene	0.002	0.001	0.005
M & P Xylenes	0.022	0.009	0.059
O-Xylene	0.003	0.001	0.008
Other C9's	0.089	0.046	0.284
n-Nonane	0.021	0.012	0.068
Other C10's	0.030	0.018	0.107
n-Decane	0.004	0.002	0.014
Undecanes (11)	<u>0.004</u>	<u>0.002</u>	<u>0.015</u>
Totals	100.000	22.579	100.000

Computed Real Characteristics Of Total Sample:

Specific Gravity -----	1.387	(Air=1)
Compressibility (Z) -----	0.9850	
Molecular Weight -----	39.56	
Gross Heating Value		
Dry Basis -----	2321	BTU/CF
Saturated Basis -----	2282	BTU/CF

May 2, 2014

FESCO, Ltd.
1100 Fesco Ave. - Alice, Texas 78332

For: Jay-Bee Oil & Gas, Inc.
1720 Route 22 East
Union, New Jersey 07083

Sample: RPT 8-1
Breathing Vapor
From 0 psig & 70 °F to 0 psig & 100 °F

Date Sampled: 04/07/14

Job Number: 42794.011

CHROMATOGRAPH EXTENDED ANALYSIS - SUMMATION REPORT - GPA 2286

COMPONENT	MOL%	GPM
Hydrogen Sulfide*	< 0.001	
Nitrogen	0.185	
Carbon Dioxide	0.018	
Methane	0.000	
Ethane	0.202	0.054
Propane	10.137	2.815
Isobutane	8.852	2.920
n-Butane	30.167	9.586
2-2 Dimethylpropane	0.370	0.142
Isopentane	15.123	5.574
n-Pentane	17.412	6.361
Hexanes	13.160	5.466
Heptanes Plus	4.374	1.881
Totals	100.000	34.799

Computed Real Characteristics Of Heptanes Plus:

Specific Gravity ----- 3.547 (Air=1)
Molecular Weight ----- 98.01
Gross Heating Value ----- 5251 BTU/CF

Computed Real Characteristics Of Total Sample:

Specific Gravity ----- 2.412 (Air=1)
Compressibility (Z) ----- 0.9539
Molecular Weight ----- 66.64
Gross Heating Value
Dry Basis ----- 3921 BTU/CF
Saturated Basis ----- 3853 BTU/CF

*Hydrogen Sulfide tested in laboratory by: Stained Tube Method (GPA 2377)

Results: <0.013 Gr/100 CF, <0.2 PPMV or <0.001 Mol %

Base Conditions: 14.850 PSI & 60 Deg F

Certified: FESCO, Ltd. - Alice, Texas

Analyst: MR
Processor: AL
Cylinder ID: ST# 21

David Dannhaus 361-661-7015

**CHROMATOGRAPH EXTENDED ANALYSIS
TOTAL REPORT - GPA 2286**

COMPONENT	MOL %	GPM	WT %
Hydrogen Sulfide*	< 0.001		< 0.001
Nitrogen	0.185		0.078
Carbon Dioxide	0.018		0.012
Methane	0.000		0.001
Ethane	0.202	0.054	0.091
Propane	10.137	2.815	6.708
Isobutane	8.852	2.920	7.721
n-Butane	30.167	9.586	26.312
2,2 Dimethylpropane	0.370	0.142	0.401
Isopentane	15.123	5.574	16.374
n-Pentane	17.412	6.361	18.852
2,2 Dimethylbutane	0.570	0.240	0.737
Cyclopentane	0.000	0.000	0.000
2,3 Dimethylbutane	0.805	0.332	1.041
2 Methylpentane	4.259	1.782	5.508
3 Methylpentane	2.477	1.019	3.203
n-Hexane	5.049	2.093	6.529
Methylcyclopentane	0.356	0.124	0.450
Benzene	0.078	0.022	0.091
Cyclohexane	0.432	0.148	0.545
2-Methylhexane	0.606	0.284	0.911
3-Methylhexane	0.589	0.261	0.856
2,2,4 Trimethylpentane	0.000	0.000	0.000
Other C7's	0.649	0.285	0.966
n-Heptane	0.658	0.306	0.989
Methylcyclohexane	0.408	0.165	0.601
Toluene	0.071	0.024	0.098
Other C8's	0.379	0.178	0.627
n-Octane	0.082	0.042	0.141
Ethylbenzene	0.002	0.001	0.003
M & P Xylenes	0.020	0.008	0.032
O-Xylene	0.002	0.001	0.003
Other C9's	0.048	0.025	0.091
n-Nonane	0.007	0.004	0.013
Other C10's	0.005	0.003	0.011
n-Decane	0.002	0.001	0.004
Undecanes (11)	<u>0.000</u>	<u>0.000</u>	<u>0.000</u>
Totals	100.000	34.799	100.000

Computed Real Characteristics Of Total Sample:

Specific Gravity -----	2.412	(Air=1)
Compressibility (Z) -----	0.9539	
Molecular Weight -----	66.64	
Gross Heating Value		
Dry Basis -----	3921	BTU/CF
Saturated Basis -----	3853	BTU/CF

September 2, 2015



FESCO, Ltd.
1100 Fesco Avenue - Alice, Texas 78332

For: SE Technologies, LLC
Building D, Second Floor
98 Vanadium Road
Bridgeville, Pennsylvania 15017-3061

Date Sampled: 08/12/15

Date Analyzed: 08/22/15

Sample: [REDACTED] Well B1 2H

Job Number: [REDACTED]

FLASH LIBERATION OF SEPARATOR WATER		
	Separator	Stock Tank
Pressure, psig	540	0
Temperature, °F	78	70
Gas Water Ratio (1)	-----	4.06
Gas Specific Gravity (2)	-----	1.069

(1) - Scf of water saturated vapor per barrel of stock tank water

(2) - Air = 1.000

(3) - Separator volume / Stock tank volume

Analyst: _____ T.G.

Piston No.: WF# 235

Base Conditions: 14.65 PSI & 60 °F

Certified: FESCO, Ltd. Alice, Texas

David Dannhaus 361-661-7015

FESCO, Ltd.
1100 Fesco Ave. - Alice, Texas 78332

For: SE Technologies, LLC
Building D, Second Floor
98 Vanadium Road
Bridgeville, Pennsylvania 15017-3061

Sample: [REDACTED] Well B1 2H
Gas Liberated from Separator Water
From 540 psig & 78 °F to 0 psig & 70 °F

Date Sampled: 08/12/15

Job Number: [REDACTED]

CHROMATOGRAPH EXTENDED ANALYSIS - SUMMATION REPORT - GPA 2286

COMPONENT	MOL%	GPM
Hydrogen Sulfide*	< 0.001	
Nitrogen	1.821	
Carbon Dioxide	1.049	
Methane	56.602	
Ethane	16.424	4.367
Propane	8.000	2.191
Isobutane	1.516	0.493
n-Butane	4.274	1.340
2-2 Dimethylpropane	0.054	0.020
Isopentane	1.730	0.629
n-Pentane	2.405	0.867
Hexanes	2.953	1.209
Heptanes Plus	<u>3.172</u>	<u>1.397</u>
Totals	100.000	12.514

Computed Real Characteristics Of Heptanes Plus:

Specific Gravity ----- 3.549 (Air=1)
Molecular Weight ----- 101.90
Gross Heating Value ----- 5380 BTU/CF

Computed Real Characteristics Of Total Sample:

Specific Gravity ----- 1.069 (Air=1)
Compressibility (Z) ----- 0.9914
Molecular Weight ----- 30.68
Gross Heating Value
Dry Basis ----- 1741 BTU/CF
Saturated Basis ----- 1712 BTU/CF

*Hydrogen Sulfide tested in laboratory by: Stained Tube Method (GPA 2377)
Results: <0.013 Gr/100 CF, <0.2 PPMV or <0.001 Mol %

Base Conditions: 14.650 PSI & 60 Deg F

Sampled By: (16) Gonzalez
Analyst: MR
Processor: OA
Cylinder ID: WF# 10S

Certified: FESCO, Ltd. Alice, Texas
David Dannhaus
David Dannhaus 361-661-7015

**CHROMATOGRAPH EXTENDED ANALYSIS
TOTAL REPORT - GPA 2286**

COMPONENT	MOL %	GPM	WT %
Hydrogen Sulfide*	< 0.001		< 0.001
Nitrogen	1.821		1.663
Carbon Dioxide	1.049		1.505
Methane	56.602		29.592
Ethane	16.424	4.367	16.095
Propane	8.000	2.191	11.497
Isobutane	1.516	0.493	2.872
n-Butane	4.274	1.340	8.096
2,2 Dimethylpropane	0.054	0.020	0.127
Isopentane	1.730	0.629	4.069
n-Pentane	2.405	0.867	5.655
2,2 Dimethylbutane	0.075	0.031	0.211
Cyclopentane	0.000	0.000	0.000
2,3 Dimethylbutane	0.145	0.059	0.407
2 Methylpentane	0.807	0.333	2.268
3 Methylpentane	0.520	0.211	1.461
n-Hexane	1.405	0.575	3.947
Methylcyclopentane	0.134	0.046	0.368
Benzene	0.028	0.008	0.072
Cyclohexane	0.185	0.063	0.507
2-Methylhexane	0.337	0.156	1.102
3-Methylhexane	0.351	0.159	1.145
2,2,4 Trimethylpentane	0.000	0.000	0.000
Other C7's	0.326	0.141	1.054
n-Heptane	0.588	0.270	1.921
Methylcyclohexane	0.318	0.127	1.018
Toluene	0.053	0.018	0.158
Other C8's	0.486	0.225	1.747
n-Octane	0.147	0.075	0.548
Ethylbenzene	0.003	0.001	0.011
M & P Xylenes	0.026	0.010	0.090
O-Xylene	0.003	0.001	0.010
Other C9's	0.129	0.065	0.530
n-Nonane	0.024	0.013	0.099
Other C10's	0.025	0.015	0.116
n-Decane	0.004	0.003	0.020
Undecanes (11)	<u>0.004</u>	<u>0.002</u>	<u>0.019</u>
Totals	100.000	12.514	100.000

Computed Real Characteristics Of Total Sample:

Specific Gravity -----	1.069	(Air=1)
Compressibility (Z) -----	0.9914	
Molecular Weight -----	30.68	
Gross Heating Value		
Dry Basis -----	1741	BTU/CF
Saturated Basis -----	1712	BTU/CF

TANKS 4.0.9d
Emissions Report - Detail Format
Tank Identification and Physical Characteristics

Identification
 User Identification: Dopey Condensate
 City: Huntington
 State: West Virginia
 Company: Jay-Bee Oil & Gas
 Type of Tank: Vertical Fixed Roof Tank
 Description: 210 BBL Condensate Tanks - Emissions from a Single Tank

Tank Dimensions
 Shell Height (ft): 15.00
 Diameter (ft): 10.00
 Liquid Height (ft) : 14.00
 Avg. Liquid Height (ft): 10.00
 Volume (gallons): 8,225.29
 Turnovers: 51.06
 Net Throughput(gal/yr): 453,600.00
 Is Tank Heated (y/n): N

Paint Characteristics
 Shell Color/Shade: Gray/Light
 Shell Condition: Good
 Roof Color/Shade: Gray/Light
 Roof Condition: Good

Roof Characteristics
 Type: Cone
 Height (ft) 0.25
 Slope (ft/ft) (Cone Roof) 0.04

Breather Vent Settings
 Vacuum Settings (psig): -0.03
 Pressure Settings (psig) 0.03

Meteorological Data used in Emissions Calculations: Huntington, West Virginia (Avg Atmospheric Pressure = 14.33 psia)

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

Dopey Condensate - Vertical Fixed Roof Tank
Huntington, West Virginia

Mixture Component	Daily Liquid Surf. Temperature (deg F)			Liquid Bulk Temp (deg F)	Vapor Pressure (psia)			Vapor Mol. Weight	Liquid Mass Fract.	Vapor Mass Fract.	Mol. Weight	Basis for Vapor Pressure Calculations
	Month	Avg.	Min.		Max.	Avg.	Min.					
Gasoline (RVP 6)	All	61.42	53.10	66.74	57.09	3.0220	2.5373	3.5797	66.0000		92.00	Option 4: RVP=6, ASTM Slope=3

TANKS 4.0.9d
Emissions Report - Detail Format
Detail Calculations (AP-42)

Dopey Condensate - Vertical Fixed Roof Tank
Huntington, West Virginia

Annual Emission Calculations	
Standing Losses (lb):	451.6638
Vapor Space Volume (cu ft):	399.2441
Vapor Density (lb/cu ft):	0.0373
Vapor Space Expansion Factor:	0.1508
Vented Vapor Saturation Factor:	0.5512
Tank Vapor Space Volume:	399.2441
Vapor Space Volume (cu ft):	10.0000
Tank Diameter (ft):	5.0833
Vapor Space Outage (ft):	15.0000
Tank Shell Height (ft):	10.0000
Average Liquid Height (ft):	0.0633
Roof Outage (ft):	0.0633
Roof Outage (Cone Roof)	0.0633
Roof Outage (ft):	0.2500
Roof Height (ft):	0.0400
Roof Slope (ft/ft):	5.0000
Shell Radius (ft):	
Vapor Density	0.0373
Vapor Density (lb/cu ft):	69.0000
Vapor Molecular Weight (lb/lb-mole):	
Vapor Pressure at Daily Average Liquid Surface Temperature (psia):	3.0220
Daily Avg. Liquid Surface Temp. (deg. R):	521.0866
Daily Average Ambient Temp. (deg. F):	54.8459
Ideal Gas Constant R	
(psia cuft / (lb-mol-deg R):	10.731
Liquid Bulk Temperature (deg. R):	516.7558
Tank Paint Solar Absorbance (Shell):	0.5400
Tank Paint Solar Absorbance (Roof):	0.5400
Daily Total Solar Insolation Factor (814deg ft day):	1,246.2101
Vapor Space Expansion Factor	0.1508
Vapor Space Expansion Factor:	33.2847
Daily Vapor Temperature Range (deg. R):	1.0425
Daily Vapor Pressure Range (psia):	0.0800
Breather Vent Press. Setting Range(psia):	
Vapor Pressure at Daily Average Liquid Surface Temperature (psia):	3.0220
Vapor Pressure at Daily Minimum Liquid Surface Temperature (psia):	2.5373
Vapor Pressure at Daily Maximum Liquid Surface Temperature (psia):	3.5797
Daily Avg. Liquid Surface Temp. (deg R):	521.0866
Daily Min. Liquid Surface Temp. (deg R):	512.7854
Daily Max. Liquid Surface Temp. (deg R):	529.4077
Daily Ambient Temp. Range (deg. R):	20.0583
Vented Vapor Saturation Factor	0.5512
Vented Vapor Saturation Factor:	
Vapor Pressure at Daily Average Liquid Surface Temperature (psia):	3.0220
Vapor Space Outage (ft):	5.0633

Working Losses (lb):
Vapor Molecular Weight (lb/lb-mole): 1,698.4482
Vapor Pressure at Daily Average Liquid Surface Temperature (psia): 69.0000
Annual Net Throughput (gallyr.): 3.0220
Annual Turnovers: 51,0620
Turnover Factor: 0.7542
Maximum Liquid Volume (gal): 8,225,2880
Maximum Liquid Height (ft): 14.0000
Tank Diameter (ft): 10.0000
Working Loss Product Factor: 1.0000

Total Losses (lb): 2,150,1120

TANKS 4.0.9d
Emissions Report - Detail Format
Individual Tank Emission Totals

Emissions Report for: Annual

Dopey Condensate - Vertical Fixed Roof Tank
Huntington, West Virginia

Components	Losses(lbs)		Total Emissions
	Working Loss	Breathing Loss	
Gasoline (RVP 6)	1,698.45	451.66	2,150.11

x 3 Tanks = 6450 lb/yr or 3.23 tpy

GRI-GLYCalc VERSION 4.0 - SUMMARY OF INPUT VALUES

Case Name: Icon Midstream - Dopey

File Name: C:\Rogers_Files\Misc\Jay-Bee Oil & Gas\Icon Midstream\Dopey\Dopey No Cond DOC 6H.ddf

Date: May 12, 2016

DESCRIPTION:

Description: 40 MMSCFD
 Still as fuel for reboiler with Excess to
 Combustor
 No Flash Tank

Annual Hours of Operation: 8760.0 hours/yr

WET GAS:

Temperature: 85.00 deg. F
 Pressure: 500.00 psig
 Wet Gas Water Content: Saturated

Component	Conc. (vol %)
Carbon Dioxide	0.1691
Nitrogen	0.3727
Methane	76.3707
Ethane	14.8261
Propane	4.9931
Isobutane	0.6331
n-Butane	1.2761
Isopentane	0.3403
n-Pentane	0.3472
n-Hexane	0.1293
Other Hexanes	0.1905
Heptanes	0.1826
Benzene	0.0025
Toluene	0.0125
Ethylbenzene	0.0010
Xylenes	0.0053
C8+ Heavies	0.1465

DRY GAS:

Flow Rate: 40.0 MMSCF/day
 Water Content: 7.0 lbs. H₂O/MMSCF

LEAN GLYCOL:

Glycol Type: TEG
Water Content: 1.5 wt% H₂O
Flow Rate: 7.5 gpm

PUMP:

Glycol Pump Type: Gas Injection
Gas Injection Pump Volume Ratio: 0.080 acfm gas/gpm glycol

REGENERATOR OVERHEADS CONTROL DEVICE:

Control Device: Combustion Device
Destruction Efficiency: 98.0 %
Excess Oxygen: 5.0 %
Ambient Air Temperature: 60.0 deg. F

GRI-GLYCalc VERSION 4.0 - AGGREGATE CALCULATIONS REPORT

Case Name: Icon Midstream - Dopey

File Name: C:\Rogers_Files\Misc\Jay-Bee Oil & Gas\Icon Midstream\Dopey\Dopey No Cond DOC 6H.ddf

Date: May 12, 2016

DESCRIPTION:

Description: 40 MMSCFD
 Still as fuel for reboiler with Excess to
 Combustor
 No Flash Tank

Annual Hours of Operation: 8760.0 hours/yr

EMISSIONS REPORTS:

CONTROLLED REGENERATOR EMISSIONS

Component	lbs/hr	lbs/day	tons/yr
Methane	1.0182	24.437	4.4597
Ethane	0.4844	11.627	2.1219
Propane	0.3076	7.382	1.3471
Isobutane	0.0634	1.522	0.2778
n-Butane	0.1535	3.684	0.6723
Isopentane	0.0539	1.294	0.2362
n-Pentane	0.0658	1.579	0.2881
n-Hexane	0.0453	1.088	0.1986
Other Hexanes	0.0531	1.274	0.2325
Heptanes	0.1360	3.263	0.5956
Benzene	0.0244	0.585	0.1068
Toluene	0.2104	5.049	0.9214
Ethylbenzene	0.0278	0.666	0.1216
Xylenes	0.1933	4.638	0.8465
C8+ Heavies	0.6739	16.175	2.9519
Total Emissions	3.5109	84.262	15.3778

Total Hydrocarbon Emissions	3.5109	84.262	15.3778
Total VOC Emissions	2.0083	48.199	8.7963
Total HAP Emissions	0.5011	12.027	2.1949
Total BTEX Emissions	0.4558	10.938	1.9962

UNCONTROLLED REGENERATOR EMISSIONS

Component	lbs/hr	lbs/day	tons/yr
-----------	--------	---------	---------

Methane	50.9094	1221.825	222.9831
Ethane	24.2225	581.339	106.0944
Propane	15.3783	369.078	67.3568
Isobutane	3.1714	76.113	13.8907
n-Butane	7.6743	184.183	33.6134
Isopentane	2.6959	64.702	11.8081
n-Pentane	3.2888	78.931	14.4049
n-Hexane	2.2673	54.414	9.9306
Other Hexanes	2.6538	63.690	11.6235
Heptanes	6.7988	163.170	29.7786
Benzene	1.2186	29.247	5.3377
Toluene	10.5187	252.450	46.0721
Ethylbenzene	1.3877	33.306	6.0783
Xylenes	9.6630	231.912	42.3239
C8+ Heavies	33.6973	808.736	147.5943

Total Emissions 175.5458 4213.098 768.8904

Total Hydrocarbon Emissions 175.5458 4213.098 768.8904
Total VOC Emissions 100.4139 2409.934 439.8129
Total HAP Emissions 25.0554 601.330 109.7427
Total BTEX Emissions 22.7881 546.915 99.8120

EQUIPMENT REPORTS:

COMBUSTION DEVICE

Ambient Temperature: 60.00 deg. F
Excess Oxygen: 5.00 %
Combustion Efficiency: 98.00 %
Supplemental Fuel Requirement: 7.99e-001 MM BTU/hr

Component	Emitted	Destroyed
Methane	2.00%	98.00%
Ethane	2.00%	98.00%
Propane	2.00%	98.00%
Isobutane	2.00%	98.00%
n-Butane	2.00%	98.00%
Isopentane	2.00%	98.00%
n-Pentane	2.00%	98.00%
n-Hexane	2.00%	98.00%
Other Hexanes	2.00%	98.00%
Heptanes	2.00%	98.00%
Benzene	2.00%	98.00%
Toluene	2.00%	98.00%

Ethylbenzene	2.00%	98.00%
Xylenes	2.00%	98.00%
C8+ Heavies	2.00%	98.00%

ABSORBER

NOTE: Because the Calculated Absorber Stages was below the minimum allowed, GRI-GLYCalc has set the number of Absorber Stages to 1.25 and has calculated a revised Dry Gas Dew Point.

Calculated Absorber Stages: 1.25
 Calculated Dry Gas Dew Point: 3.55 lbs. H2O/MMSCF

Temperature: 85.0 deg. F

Pressure: 500.0 psig

Dry Gas Flow Rate: 40.0000 MMSCF/day

Glycol Losses with Dry Gas: 0.1554 lb/hr

Wet Gas Water Content: Saturated

Calculated Wet Gas Water Content: 63.64 lbs. H2O/MMSCF

Calculated Lean Glycol Recirc. Ratio: 4.48 gal/lb H2O

Component	Remaining in Dry Gas	Absorbed in Glycol
Water	5.58%	94.42%
Carbon Dioxide	99.83%	0.17%
Nitrogen	99.99%	0.01%
Methane	99.99%	0.01%
Ethane	99.96%	0.04%
Propane	99.92%	0.08%
Isobutane	99.89%	0.11%
n-Butane	99.85%	0.15%
Isopentane	99.83%	0.17%
n-Pentane	99.78%	0.22%
n-Hexane	99.62%	0.38%
Other Hexanes	99.71%	0.29%
Heptanes	99.24%	0.76%
Benzene	85.88%	14.12%
Toluene	79.30%	20.70%
Ethylbenzene	70.33%	29.67%
Xylenes	61.00%	39.00%
C8+ Heavies	97.01%	2.99%

REGENERATOR

No Stripping Gas used in regenerator.

Component	Remaining in Glycol	Distilled Overhead
Water	38.63%	61.37%
Carbon Dioxide	0.00%	100.00%
Nitrogen	0.00%	100.00%
Methane	0.00%	100.00%
Ethane	0.00%	100.00%
Propane	0.00%	100.00%
Isobutane	0.00%	100.00%
n-Butane	0.00%	100.00%
Isopentane	0.33%	99.67%
n-Pentane	0.36%	99.64%
n-Hexane	0.41%	99.59%
Other Hexanes	0.78%	99.22%
Heptanes	0.45%	99.55%
Benzene	4.97%	95.03%
Toluene	7.87%	92.13%
Ethylbenzene	10.38%	89.62%
Xylenes	12.89%	87.11%
C8+ Heavies	11.73%	88.27%

STREAM REPORTS:

WET GAS STREAM

Temperature: 85.00 deg. F
 Pressure: 514.70 psia
 Flow Rate: 1.67e+006 scfh

Component	Conc. (vol%)	Loading (lb/hr)
Water	1.34e-001	1.06e+002
Carbon Dioxide	1.69e-001	3.27e+002
Nitrogen	3.72e-001	4.59e+002
Methane	7.63e+001	5.38e+004
Ethane	1.48e+001	1.96e+004
Propane	4.99e+000	9.68e+003
Isobutane	6.32e-001	1.62e+003
n-Butane	1.27e+000	3.26e+003
Isopentane	3.40e-001	1.08e+003
n-Pentane	3.47e-001	1.10e+003
n-Hexane	1.29e-001	4.90e+002
Other Hexanes	1.90e-001	7.21e+002
Heptanes	1.82e-001	8.04e+002

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Benzene 2.50e-003 8.58e+000

Toluene 1.25e-002 5.06e+001

Ethylbenzene 9.99e-004 4.67e+000

Xylenes 5.29e-003 2.47e+001

C8+ Heavies 1.46e-001 1.10e+003

Total Components 100.00 9.42e+004

DRY GAS STREAM

Temperature: 85.00 deg. F

Pressure: 514.70 psia

Flow Rate: 1.67e+006 scfh

Component	Conc. (vol%)	Loading (lb/hr)
-----------	-----------------	--------------------

Water 7.49e-003 5.92e+000

Carbon Dioxide 1.69e-001 3.26e+002

Nitrogen 3.73e-001 4.59e+002

Methane 7.64e+001 5.38e+004

Ethane 1.48e+001 1.96e+004

Propane 4.99e+000 9.67e+003

Isobutane 6.33e-001 1.61e+003

n-Butane 1.27e+000 3.25e+003

Isopentane 3.40e-001 1.08e+003

n-Pentane 3.47e-001 1.10e+003

n-Hexane 1.29e-001 4.88e+002

Other Hexanes 1.90e-001 7.19e+002

Heptanes 1.81e-001 7.98e+002

Benzene 2.15e-003 7.37e+000

Toluene 9.92e-003 4.01e+001

Ethylbenzene 7.04e-004 3.28e+000

Xylenes 3.23e-003 1.51e+001

C8+ Heavies 1.42e-001 1.06e+003

Total Components 100.00 9.40e+004

LEAN GLYCOL STREAM

Temperature: 85.00 deg. F

Flow Rate: 7.49e+000 gpm

Component	Conc. (wt%)	Loading (lb/hr)
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TEG 9.83e+001 4.14e+003

Water 1.50e+000 6.32e+001

Carbon Dioxide 1.35e-012 5.68e-011

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Nitrogen 1.36e-013 5.74e-012
Methane 5.09e-018 2.14e-016

Ethane 8.98e-008 3.78e-006
Propane 7.12e-009 3.00e-007
Isobutane 1.31e-009 5.50e-008
n-Butane 2.93e-009 1.23e-007
Isopentane 2.15e-004 9.06e-003

n-Pentane 2.84e-004 1.19e-002
n-Hexane 2.22e-004 9.35e-003
Other Hexanes 4.93e-004 2.08e-002
Heptanes 7.31e-004 3.08e-002
Benzene 1.51e-003 6.38e-002

Toluene 2.13e-002 8.99e-001
Ethylbenzene 3.81e-003 1.61e-001
Xylenes 3.39e-002 1.43e+000
C8+ Heavies 1.06e-001 4.48e+000

Total Components 100.00 4.21e+003

RICH GLYCOL AND PUMP GAS STREAM

Temperature: 85.00 deg. F

Pressure: 514.70 psia

Flow Rate: 8.07e+000 gpm

NOTE: Stream has more than one phase.

Component	Conc. (wt%)	Loading (lb/hr)
-----------	----------------	--------------------

TEG	9.23e+001	4.14e+003
Water	3.64e+000	1.64e+002
Carbon Dioxide	1.87e-002	8.39e-001
Nitrogen	9.74e-003	4.37e-001
Methane	1.13e+000	5.09e+001

Ethane	5.40e-001	2.42e+001
Propane	3.43e-001	1.54e+001
Isobutane	7.06e-002	3.17e+000
n-Butane	1.71e-001	7.67e+000
Isopentane	6.03e-002	2.70e+000

n-Pentane	7.35e-002	3.30e+000
n-Hexane	5.07e-002	2.28e+000
Other Hexanes	5.96e-002	2.67e+000
Heptanes	1.52e-001	6.83e+000
Benzene	2.86e-002	1.28e+000

Toluene	2.54e-001	1.14e+001
Ethylbenzene	3.45e-002	1.55e+000
Xylenes	2.47e-001	1.11e+001
C8+ Heavies	8.50e-001	3.82e+001

REGENERATOR OVERHEADS STREAM

Temperature: 212.00 deg. F
Pressure: 14.70 psia
Flow Rate: 4.08e+003 scfh

Component	Conc. (vol%)	Loading (lb/hr)
Water	5.18e+001	1.00e+002
Carbon Dioxide	1.77e-001	8.39e-001
Nitrogen	1.45e-001	4.37e-001
Methane	2.95e+001	5.09e+001
Ethane	7.48e+000	2.42e+001
Propane	3.24e+000	1.54e+001
Isobutane	5.07e-001	3.17e+000
n-Butane	1.23e+000	7.67e+000
Isopentane	3.47e-001	2.70e+000
n-Pentane	4.23e-001	3.29e+000
n-Hexane	2.44e-001	2.27e+000
Other Hexanes	2.86e-001	2.65e+000
Heptanes	6.30e-001	6.80e+000
Benzene	1.45e-001	1.22e+000
Toluene	1.06e+000	1.05e+001
Ethylbenzene	1.21e-001	1.39e+000
Xylenes	8.45e-001	9.66e+000
C8+ Heavies	1.84e+000	3.37e+001
Total Components	100.00	2.77e+002

COMBUSTION DEVICE OFF GAS STREAM

Temperature: 1000.00 deg. F
Pressure: 14.70 psia
Flow Rate: 3.91e+001 scfh

Component	Conc. (vol%)	Loading (lb/hr)
Methane	6.16e+001	1.02e+000
Ethane	1.56e+001	4.84e-001
Propane	6.77e+000	3.08e-001
Isobutane	1.06e+000	6.34e-002
n-Butane	2.56e+000	1.53e-001
Isopentane	7.25e-001	5.39e-002
n-Pentane	8.84e-001	6.58e-002
n-Hexane	5.10e-001	4.53e-002

Other Hexanes 5.97e-001 5.31e-002

Heptanes 1.32e+000 1.36e-001

Benzene 3.03e-001 2.44e-002

Toluene 2.21e+000 2.10e-001

Ethylbenzene 2.54e-001 2.78e-002

Xylenes 1.77e+000 1.93e-001

C8+ Heavies 3.84e+000 6.74e-001

Total Components 100.00 3.51e+000

ATTACHMENT T

Facility-wide Emission Summary Sheet(s)

ATTACHMENT T – FACILITY-WIDE CONTROLLED EMISSIONS SUMMARY SHEET

List all sources of emissions in this table. Use extra pages if necessary.

Emission Point ID#	NO _x		CO		VOC		SO ₂		PM ₁₀		PM _{2.5}		GHG (CO ₂ e)	
	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy
1E	0.15	0.66	0.13	0.55	0.01	0.04	<0.01	<0.01	0.01	0.05	0.01	0.05	181.1	793
2E	0.15	0.66	0.13	0.55	0.01	0.04	<0.01	<0.01	0.01	0.05	0.01	0.05	181.1	793
3E	0.15	0.66	0.13	0.55	0.01	0.04	<0.01	<0.01	0.01	0.05	0.01	0.05	181.1	793
4E	0.15	0.66	0.13	0.55	0.01	0.04	<0.01	<0.01	0.01	0.05	0.01	0.05	181.1	793
5E					0.86	1.67								
6E					0.02	0.07								
7E	0.19	0.81	0.37	1.62	0.04	0.18	<0.01	<0.01	0.013	0.06	0.013	0.06	89.7	393
8E	<0.01	0.01											1.6	7
9E	0.39	1.73	1.7	7.43	2.91	0.66	<0.01	<0.01	0.02	0.1	0.02	0.1	639.1	2,799
10E	0.05	0.22	0.04	0.18	<0.01	0.01	<0.01	<0.01	<0.01	0.02	<0.01	0.02	60.4	264
11E	0.05	0.22	0.04	0.18	<0.01	0.01	<0.01	<0.01	<0.01	0.02	<0.01	0.02	60.4	264
12E	0.34	1.50	1.41	6.17	2.01	8.82	<0.01	<0.01	0.01	0.04	0.01	0.04	538.6	2359
TOTAL	1.62	7.11	4.06	17.80	6.36	13.63	0.01	0.03	0.1	0.42	0.1	0.42	2,114	9,260

Annual emissions shall be based on 8,760 hours per year of operation for all emission units except emergency generators. According to 45CSR14 Section 2.43.e, fugitive emissions are not included in the major source determination because it is not listed as one of the source categories in Table 1. Therefore, fugitive emissions shall not be included in the PTE above.

ATTACHMENT T – FACILITY-WIDE HAP CONTROLLED EMISSIONS SUMMARY SHEET

List all sources of emissions in this table. Use extra pages if necessary.

Emission Point ID#	Formaldehyde		Benzene		Toluene		Ethylbenzene		Xylenes		Hexane		Total HAPs	
	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy
1E														
2E														
3E														
4E														
5E														
6E														
7E	0.015	0.065	<0.01	0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.02	0.1
8E													<0.01	<0.01
9E	<0.01	<0.01											0.01	0.02
10E													<0.01	<0.01
11E													<0.01	<0.01
12E	<0.01	<0.01	0.024	0.11	0.21	0.92	0.03	0.12	0.19	0.85	0.05	0.21	0.50	2.20
TOTAL	0.02	0.07	0.03	0.11	0.21	0.92	0.03	0.12	0.19	0.85	0.11	0.378	0.62	2.60

Annual emissions shall be based on 8,760 hours per year of operation for all emission units except emergency generators. According to 45CSR14 Section 2.43.e, fugitive emissions are not included in the major source determination because it is not listed as one of the source categories in Table 1. Therefore, fugitive emissions shall not be included in the PTE above.

ATTACHMENT U

Class I Legal Advertisement

**Affidavit Notice Will Be Submitted
Upon Receipt**

AIR QUALITY PERMIT NOTICE
Notice of Application

Notice is given that Jay-Bee Oil & Gas, Inc. has applied to the West Virginia Department of Environmental Protection, Division of Air Quality, for a G70-C General Permit Registration for a natural gas production facility located off Indian Creek Rd near Middlebourne in Tyler County, West Virginia. The latitude and longitude coordinates are: 39.43806, -80.77255.

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

- 7.11 tons of Nitrogen Oxides per year
- 17.80 tons of Carbon Monoxide per year
- 4.55 tons of Particulate Matter per year
- 13.63 tons of Volatile Organic Compounds per year
- 0.03 tons of Sulfur Dioxide per year
- 0.07 tons of Formaldehyde per year
- 0.11 tons of Benzene per year
- 0.92 tons of Toluene per year
- 0.12 tons of Ethylbenzene per year
- 0.85 tons of Xylenes per year
- 0.37 tons of Hexane per year
- 2.60 tons of Total Hazardous Air Pollutants per year
- 9,295 tons of Greenhouse Gases per year

Startup of operation is planned to begin on or about the 1st day of October, 2016. Written comments will be received by the West Virginia Department of Environmental Protection, Division of Air Quality, 601 57th Street, SE, Charleston, WV 25304, for at least 30 calendar days from the date of publication of this notice.

Any questions regarding this permit application should be directed to the DAQ at (304) 926-0499, extension 1250, during normal business hours.

Dated this the **(Day)** day of **(Month)**, **(Year)**.

By: Mr. Shane Dowell
Office Manager
Jay-Bee Oil & Gas, Inc.
3570 Shields Ave.
Cairo, WV 26337