

November 2, 2015

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



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

**RE: Application for G70 A General Permit Modification  
T1-03 Well Pad Production Facility  
Jay-Bee Oil & Gas, Inc.  
Tyler County, West Virginia  
Registration No. G70-A049  
Facility ID No. 095-00038**

To Whom It May Concern:

On behalf of our client, Jay-Bee Oil & Gas, we are pleased to submit three copies of the Application for Modification of the G70-A General Permit registration for its T1-03 Well Pad Production Facility in Tyler County. Jay-Bee is seeking to install an enclosed combustor as a backup for the Vapor Recovery Unit (VRU) used to control emissions from condensate and produced water tanks at this facility. This modification will ensure control of tank vapors during time periods when the VRU is not available, such as during routine maintenance. No other changes are being sought at this time.

An application fee in the amount of \$500 (\$500 Permit Modification Fee only) was determined to be applicable. A check, payable to WVDEP – Division of Air Quality in the amount of \$500 is included in the pocket in the application with the original signature.

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, x 1628 or [rdhonau@se-env.com](mailto:rdhonau@se-env.com) and we will provide any needed clarification or additional information immediately.

Sincerely,

**SE TECHNOLOGIES, LLC**

A handwritten signature in black ink that reads "Roger A. Dhonau".

Roger A. Dhonau, PE, QEP  
Principal

Enclosures

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

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



**SE Technologies, LLC** 01/01  
Building D, 2nd Floor  
98 Vanadium Road  
Bridgeville, PA 15017  
412-221-1100

**FIRST NATIONAL BANK OF PA**  
Pittsburgh, PA 15222  
60-1809/433

8511

11/3/2015

PAY TO THE ORDER OF WV DEP - Division of Air Quality

\$ **\*\*500.00**

Five Hundred and 00/100\*\*\*\*\* DOLLARS

**PROTECTED AGAINST FRAUD**

WV DEP - Division of Air Quality  
601 57th Street SE  
Charleston, WV 25304

Void after 90 days.



MEMO

*Patricia A. Besseck* MP

⑈008511⑈ ⑆043318092⑆ 95⑈04858⑈7⑈

Date	Type	Reference	Original Amt.	Balance Due	Discount	Payment
11/3/2015	Bill	214054-14	500.00	500.00		500.00
					Check Amount	500.00

8511

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# **JAY-BEE OIL & GAS, INC.**

## **APPLICATION FOR GENERAL PERMIT MODIFICATION**

**T1-03 Well Pad Production Facility  
Tyler County, West Virginia**



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

# **APPLICATION FOR G70-A GENERAL PERMIT MODIFICATION**

**Jay-Bee Oil & Gas, Inc.**

**T1-03 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 57<sup>th</sup> Street, SE  
 Charleston, WV 25304  
 Phone: (304) 926-0475 • www.dep.wv.gov/daq

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

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

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

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

**SECTION I. GENERAL INFORMATION**

1. Name of applicant (as registered with the WV Secretary of State's Office):  <b>Jay-Bee Oil &amp; Gas, Inc.</b>	2. Federal Employer ID No. (FEIN):  <b>55-073-8862</b>
3. Applicant's mailing address:  <b>3570 Shields Hill Rd Cairo, WV 26337</b>	4. Applicant's physical address:  <b>3570 Shields Hill Rd Cairo, WV 26337</b>
5. If Applicant is a subsidiary corporation, please provide the name of parent corporation. <b>N/A</b>	

**WV BUSINESS REGISTRATION.** Is the applicant a resident of the State of West Virginia?  **YES**     **NO**

IF **YES**, provide a copy of the Certificate of **Incorporation / Organization / Limited Partnership** (one page) including any name change amendments or other Business Registration Certificate as **Attachment A**.

IF **NO**, provide a copy of the **Certificate of Authority / Authority of LLC / Registration** (one page) including any name change amendments or other Business Certificate as **Attachment A**.

**SECTION II. FACILITY INFORMATION**

7. Type of plant or facility (stationary source) to be constructed, modified, relocated or administratively updated (e.g., coal preparation plant, primary crusher, etc.):  <b>Natural Gas Well Pad Production Facility</b>	8a. Standard Industrial Classification Classification (SIC) code: <b>1311</b>	AND	8b. North American Industry System (NAICS) code: <b>211111</b>
9. DAQ Plant ID No. (for existing facilities only):  <b>095-00038</b>	10. List all current 45CSR13 and other General Permit numbers associated with this process (for existing facilities only): <b>G70-A049</b> _____ _____		

**A: PRIMARY OPERATING SITE INFORMATION**

11A. Facility name of primary operating site: <b>T1-03 Well Pad Production Facility</b> _____ _____	12A. Address of primary operating site:  Mailing: <b>None</b> _____ Physical: _____ _____	
13A. Does the applicant own, lease, have an option to buy, or otherwise have control of the proposed site? <span style="float:right"><input checked="" type="checkbox"/> YES <input type="checkbox"/> NO</span> —> IF YES, please explain: <b>Applicant has a lease agreement with the land owner for installation of the Well Pad and associated equipment</b> _____  —> IF NO, YOU ARE NOT ELIGIBLE FOR A PERMIT FOR THIS SOURCE.		
14A —> For <b>Modifications or Administrative Updates</b> at an existing facility, please provide directions to the present location of the facility from the nearest state road; —> For Construction or Relocation permits, please provide directions to the proposed new site location from the nearest state road. Include a <b>MAP</b> as <b>Attachment F</b> .  _____ From Middlebourne, proceed south/east 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 0.9 miles. Turn left onto CR40 heading north for 0.63 miles. Well pad entrance is on the right. _____ _____		
15A. Nearest city or town:  <b>Alma</b>	16A. County:  <b>Tyler</b>	17A. UTM Coordinates: Northing (KM): <b>4366.57454</b> Easting (KM): <b>517.05481</b> Zone: <b>17</b>
18A. Briefly describe the proposed new operation or change (s) to the facility: <b>Natural gas production and separation of liquids.</b>		19A. Latitude & Longitude Coordinates (NAD83, Decimal Degrees to 5 digits): Latitude: <b>39.448561</b> Longitude: <b>-80.801766</b>

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

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

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

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

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

<p>20. Provide the date of anticipated installation or change:</p> <p><u>01 / 06 / 16</u></p> <p>If this is an <b>After-The-Fact</b> permit application, provide the date upon which the proposed change did happen: :</p> <p>____/____/____</p>	<p>21. Date of anticipated Start-up if registration is granted:</p> <p><u>01/ 06/ 16</u></p>
<p>22. Provide maximum projected <b>Operating Schedule</b> of activity/activities outlined in this application if other than 8760 hours/year. (Note: anything other than 24/7/52 may result in a restriction to the facility's operation).</p> <p>Hours per day <u>24</u> Days per week <u>7</u> Weeks per year <u>52</u> Percentage of operation <u>100</u></p>	

**SECTION III. ATTACHMENTS AND SUPPORTING DOCUMENTS**

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

SECTION IV. CERTIFICATION OF INFORMATION

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

FOR A CORPORATION (domestic or foreign)

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

FOR A PARTNERSHIP

I certify that I am a General Partner

FOR A LIMITED LIABILITY COMPANY

I certify that I am a General Partner or General Manager

FOR AN ASSOCIATION

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

FOR A JOINT VENTURE

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

FOR A SOLE PROPRIETORSHIP

I certify that I am the Owner and Proprietor

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

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

Signature \_\_\_\_\_

(please use blue ink)



Responsible Official

10-30-2015

Date

Name & Title Shane Dowell, Office Manager

(please print or type)

Signature \_\_\_\_\_

(please use blue ink)

Authorized Representative (if applicable)

Date

Applicant's Name \_\_\_\_\_

Phone & Fax

304/628-3119

Phone

304/628-3119

Fax

Email

sdowell@jaybeeoil.com

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## **SECTION II**

### **Attachments**

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**ATTACHMENT A**

**Business Registration**

Attached Current WV 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 § 11-1-12.*

*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 transferrable 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 cancelled 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.

all.008 v.1  
L1388180484

SCANNED

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REC'D 4 2 10  
WV

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# **ATTACHMENT B**

## **Process Description**

**Jay-Bee Oil & Gas, Incorporated**  
**T1-03 Well Pad Production Facility**  
**Attachment B**  
**Process Description**

Natural gas and Produced Fluids (condensate and water) are received from four wells at this location at approximately 1200 psi and pass through Gas Processing Units (one per well) to avoid ice formation during subsequent pressure drops. These materials then pass through a three-way separator where gas, condensate and water are separated. The gas is routed to a gathering pipeline owned and operated by others.

Both the condensate and Produced Water are accumulated in six 210 BBL tanks (three for Condensate and three for Produced Water), pending truck transportation by others. The Condensate is transported to a regional processing facility and the Produced Water to a regional disposal facility. Flash, working and breathing losses from these tanks is currently routed to a Vapor Recovery Unit (VRU) with the captured vapors routed back to the raw gas discharge line. In accordance with the G70-A permit registration a maximum capture and control efficiency of only 95% is claimed for the VRU.

Jay-Bee is seeking approval for installation of an enclosed combustor as a back-up for the VRU to capture and destroy tank emissions for those times when the VRU is not available (e.g. engine and compressor maintenance). Jay-Bee is also seeking to reduce the allowable amounts of condensate and water production for this well pad to better reflect current and projected production. Thus, both tank emissions and truck loading emissions are reduced.

**No other changes are being requested at this time.**

A Process Flow Diagram depicting the new and existing features is provided in Attachment D.

There are no gas-fired compressor engines, other than a single engine for the vapor recovery unit (VRU), or dehydration units proposed for this facility.

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

The proposed change to the tank emissions control methodology will actually control the tank emissions to a greater degree than the VRU, actually reduce overall VOC and HAPs emissions. However, the presence of a permanent combustor warrants the modification being through a Modification rather than a Class II Administrative Update. It is also our understanding that in order for both control devices to be addressed within the confines of the G70-A permit registration, the application must show the emissions for both control units as if they were the only control. Thus, for permitting purposes, the enclosed application shows 2% of the potential tank emissions as un-captured/uncontrolled emissions from the combustor in addition to the 5% of potential uncaptured/uncontrolled tank emissions from the current VRU.

## Emission Units Table

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

Emission Unit ID <sup>1</sup>	Emission Point ID <sup>2</sup>	Emission Unit Description	Year Installed/ Modified	Design Capacity	Type <sup>3</sup> and Date of Change	Control Device <sup>4</sup>
1S	GPU-1	Gas Processing Unit	2014	1.5 MMBTU/Hr	EXIST	None
2S	GPU-2	Gas Processing Unit	2014	1.5 MMBTU/Hr	EXIST	None
3S	GPU-3	Gas Processing Unit	2014	1.5 MMBTU/Hr	EXIST	None
4S	GPU-4	Gas Processing Unit	2014	1.5 MMBTU/Hr	EXIST	None
7S	TNK1	Condensate Tank	2014	210 BBL	EXIST	VRU-1/ EC-1
8S	TNK2	Condensate Tank	2014	210 BBL	EXIST	VRU-1/ EC-1
9S	TNK3	Condensate Tank	2014	210 BBL	EXIST	VRU-1/ EC-1
10S	TNK4	Produced Water Tank	2014	210 BBL	EXIST	VRU-1/ EC-1
11S	TNK5	Produced Water Tank	2014	210 BBL	EXIST	VRU-1/ EC-1
12S	TNK6	Produced Water Tank	2014	210 BBL	EXIST	VRU-1/ EC-1
5S	TLU1	Condensate Truck Loading	2014	10,710 BBL./Yr.	EXIST	None
13S	TLU2	Produced Water Loading	2014	16,600 BBL./Yr.	EXIST	None
6S	VRU-1	VRU Driver (Cummins G5.9)	2014	84 Hp	EXIST	1C
<b>14S</b>	<b>EC-1</b>	<b>Enclosed Combustor</b>	<b>Upon Receipt of Permit</b>	<b>10.0 MMBTU/Hr</b>	<b>NEW</b>	<b>N/A</b>
---	---	Fugitive VOC Emissions – Fittings and Connections	Pending Permit	N/A	EXIST	None
---	---	Haul Roads	Pending Permit	2 Trucks per day max.	EXIST	None

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

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

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

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

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# **ATTACHMENT C**

## **Description of Fugitive Emissions**

**Jay-Bee Oil & Gas, Inc.**  
**T1-03 Well Pad Production Facility**  
**Attachment C**  
**Fugitive Emissions Data**

**Equipment Fugitive Emissions**

As noted in the process description, Jay Bee plans to install an enclosed combustor at its T1-03 Well Pad Production Facility. This equipment will contain a variety of piping containing natural gas and tank vapors. During the normal course of operation minor leaks from valves, pressure release devices and various fittings associated with this piping may occur. The number of valves, flanges, etc. has been revised to reflect the inclusion of additional equipment that will be installed with this modification. A new potential emission rate of 0.5 tpy of VOCs and 17 tpy CO<sub>2</sub>e has been estimated.

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

**Pigging Emission Estimates**

There are no pigging operations in association with this facility.

**Facility Blowdown Emission Estimates**

The proposed modification will not result in any changes to the blowdown emissions at this facility. The numbers presented in the following Fugitive Emissions Summary Sheet for blowdowns has not changed from the original application.

**Storage Tank and Haul Road Fugitive Emissions**

Produced Fluids (water and condensate) received by this facility are accumulated in six 210-BBL tanks (three condensate and three water) prior to off-site shipment. In this modification application, emissions from these tanks were determined by using flash gas measurements from pressurized condensate produced at an area Jay-Bee well pad and working/breathing losses using AP-42 methods using condensate vapor data from this same condensate. Uncontrolled emissions from these tanks are now determined to be a maximum of 210.4 tons per year of VOCs. These vapors are routed to a VRU with a minimum capture and control efficiency of 95%. Emission calculations are presented in Attachment I. Emissions associated with the proposed Enclosed Combustor are also presented in the calculations in Attachment I.

As noted in the Project Description (Attachment B), there are no changes to emissions from the VRU driver being requested at this time.

Emissions from Truck Loading Operations have been correspondingly reduced to match the lowered maximum produced water and condensate production.

## FUGITIVE EMISSIONS DATA SUMMARY SHEET

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

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

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

FUGITIVE EMISSIONS SUMMARY	All Regulated Pollutants - Chemical Name/CAS <sup>1</sup>	Maximum Potential Uncontrolled Emissions <sup>2</sup>		Maximum Potential Controlled Emissions <sup>3</sup>		Est. Method Used <sup>4</sup>
		lb/hr	ton/yr	lb/hr	ton/yr	
Haul Road/Road Dust Emissions Paved Haul Roads						
Unpaved Haul Roads	PM	2.93	1.60	2.93	1.60	EE
Loading/Unloading Operations	VOCs	22.46	1.20	22.46	1.20	EE
	Total HAPs	1.53	0.08	1.53	0.08	EE
Equipment Leaks	VOCs	Does Not Apply	0.54	Does Not Apply	0.54	EE
	Total HAPs	Does Not Apply	0.04	Does Not Apply	0.04	EE
Blowdowns	VOCs	N/A	0.01	N/A	0.01	EE
	Total HAPs	N/A	<0.01	N/A	<0.01	EE
Other:						

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

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

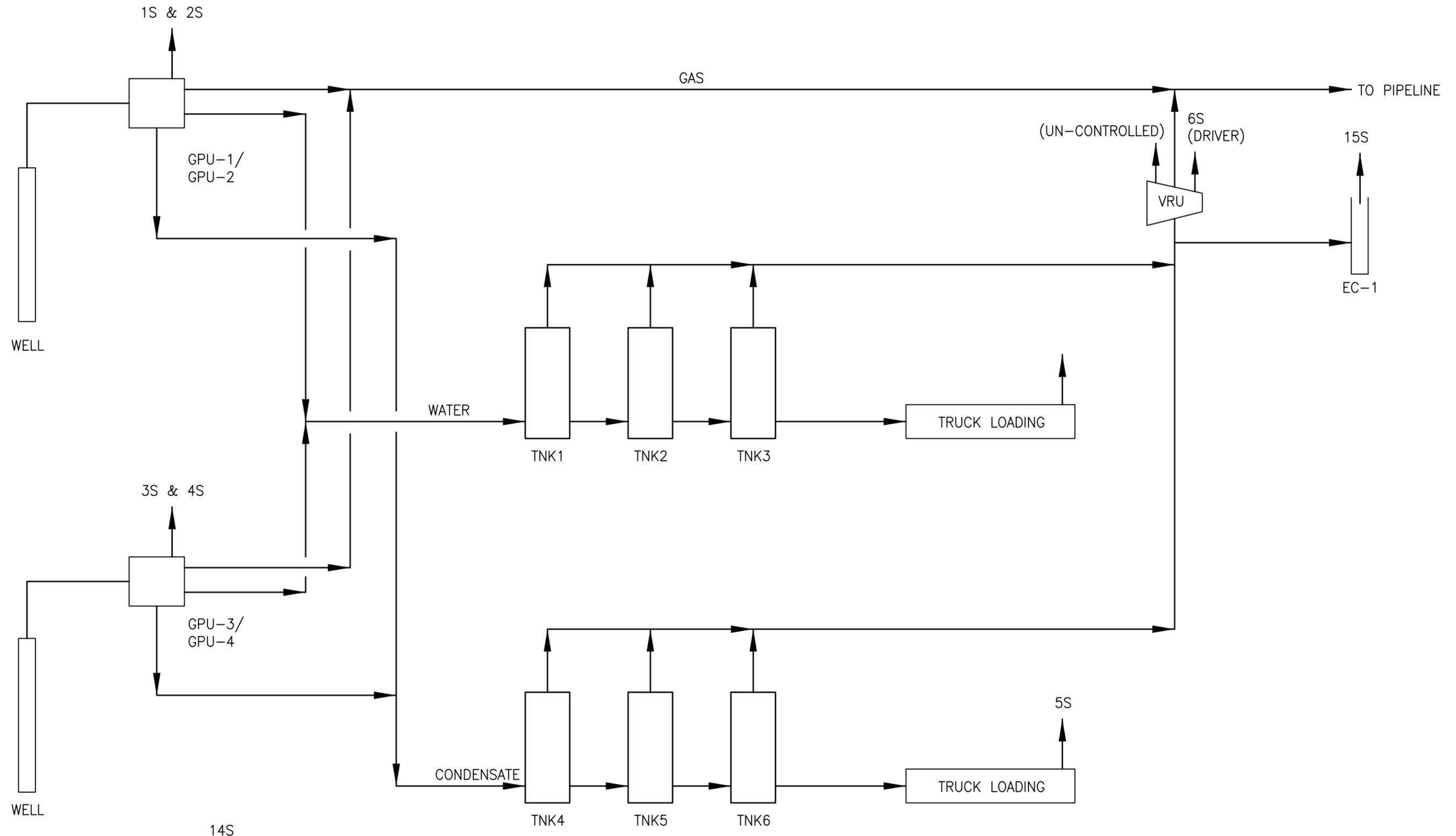
<sup>3</sup> Give rate with proposed control equipment operating. If emissions occur for less than 1 hr, then record emissions per batch in minutes (e.g. 5 lb VOC/20 minute batch).

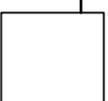
<sup>4</sup> Indicate method used to determine emission rate as follows: MB = material balance; ST = stack test (give date of test); EE = engineering estimate; O = other (specify).

---

# **ATTACHMENT D**

## **Process Flow Diagram**



14S  
  
 THERMO-ELECTRIC GENERATOR

DRAWN BY	DJF
DATE	10/26/15
CHECKED BY	RAD
SET JOB NO.	214054-14
SET DWG FILE	T1-03b01.dwg
DRAWING SCALE	N.T.S.



JAY-BEE OIL & GAS, INC.	
T1-03 WELL PRODUCTION FACILITY TYLER COUNTY, WEST VIRGINIA PROCESS FLOW DIAGRAM	
DRAWING NAME	FIGURE 2
REV.	1

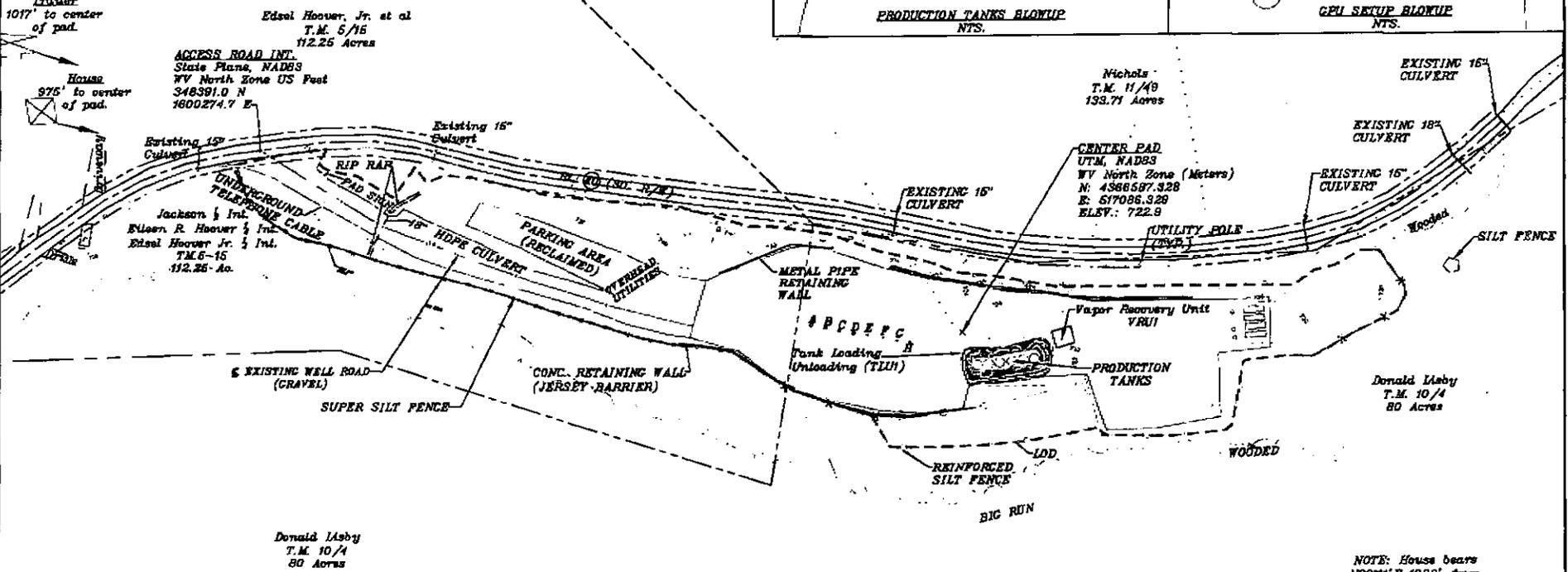
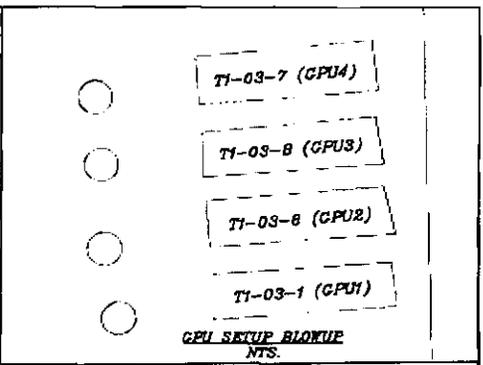
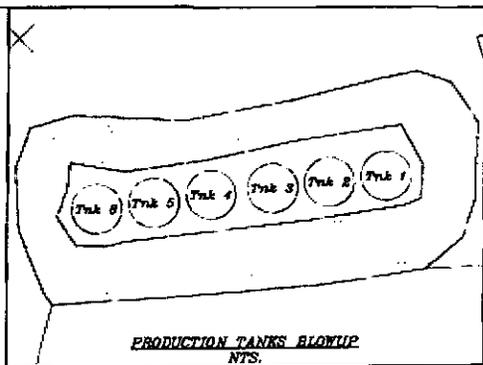
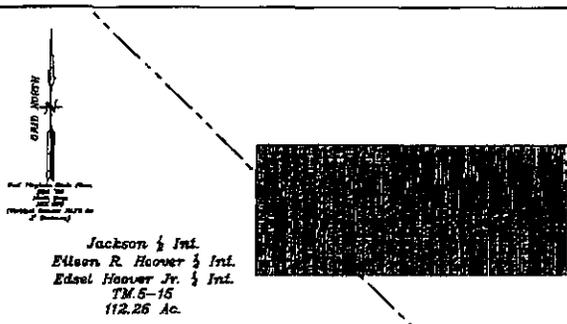
---

**ATTACHMENT E**

**Plot Plan**

**LEGEND**

Existing Contours	---
Super Silt Fence	---X---
Ditch	---
LDD	---
Property Line	---
Stream	---
Right of Way	---
Tree Line	---
Gas Line	---
Overhead Electric	---
Reinforced Silt Fence	---
Tank	○



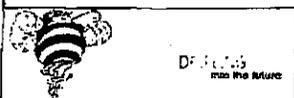
Donald Lashby  
T.M. 10/4  
80 Acres

Date Submitted: April 10, 2014  
Date Drawn: April 09, 2014  
Revisions: April 22, 2014  
Revisions: May 08, 2014  
Blow Up of Production Tanks



NOTE: House bears  
N89°11'E 1023' from  
Center of Pad

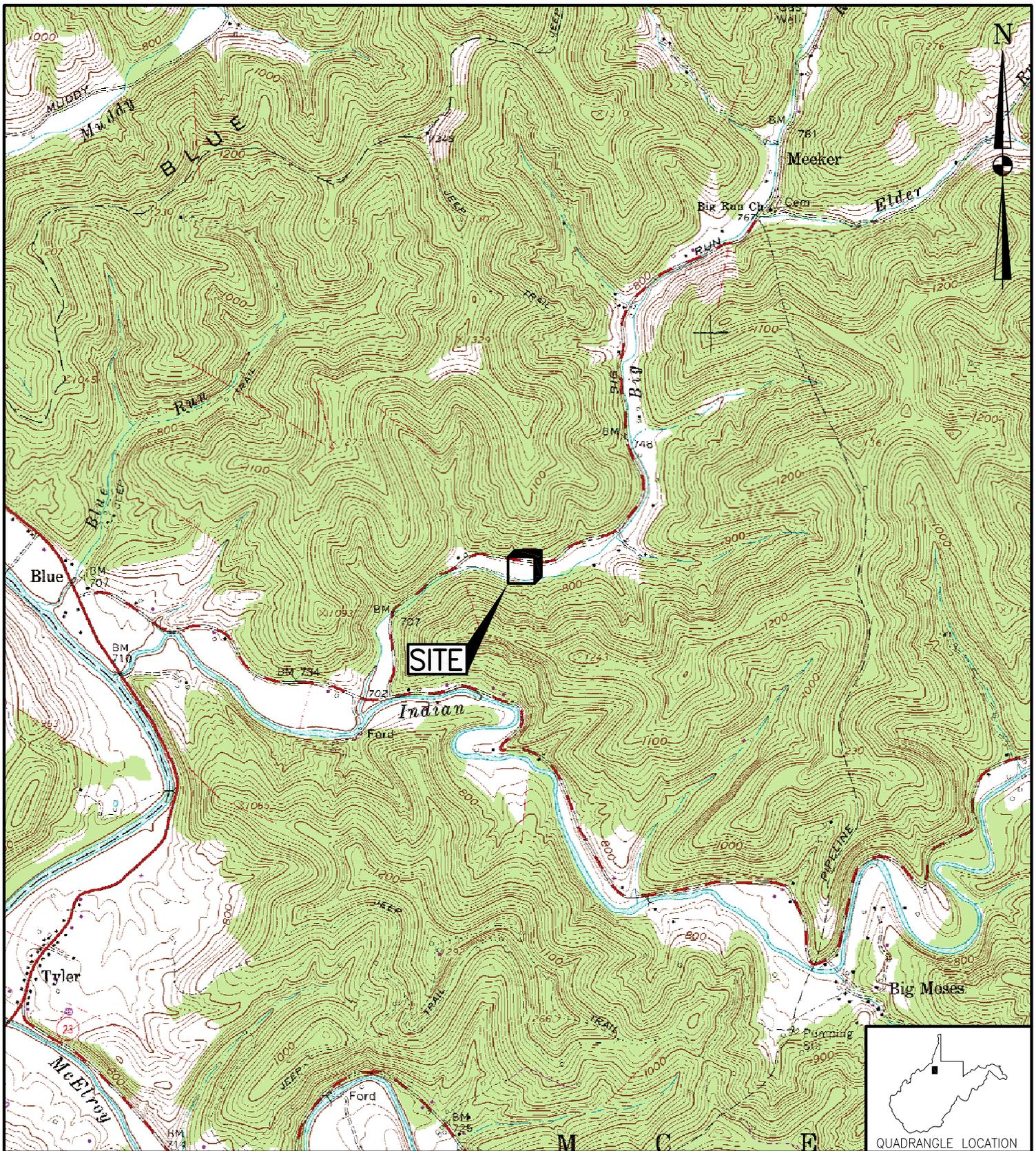
T1-03 SITE PLAN  
ATTACHMENT E



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# **ATTACHMENT F**

## **Area Map**



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

DRAWN BY	DJF
DATE	11/2/15
CHECKED BY	RAD
SET JOB NO.	214054-14
SET DWG FILE	T1-03b01.dwg
DRAWING SCALE	N.T.S.



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

JAY-BEE OIL & GAS, INC.	
T1-03 WELL PRODUCTION FACILITY TYLER COUNTY, WEST VIRGINIA SITE LOCATION MAP	
DRAWING NAME	FIGURE 1
REV.	1

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## **ATTACHMENT G**

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

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

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

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

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

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

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

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

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**ATTACHMENT H**

**Air Pollution Control Device Sheets**

# AIR POLLUTION CONTROL DEVICE

## Vapor Combustion Control Device Sheet

*Complete this vapor combustion control device sheet for each enclosed combustion device, flare, thermal oxidizer, or completion combustion device that is located at the natural gas production pad for the purpose of thermally destructing waste gas to control emissions of regulated pollutants to the atmosphere.*

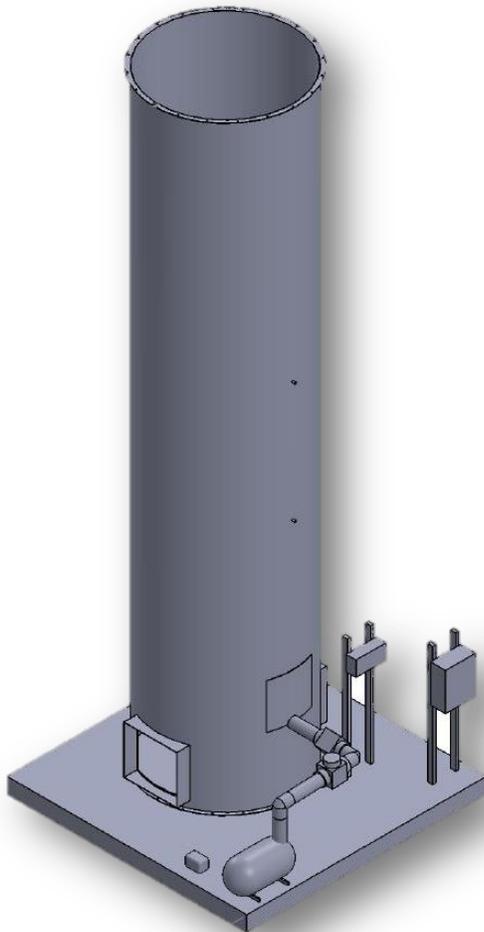
<b>IMPORTANT: READ THE INSTRUCTIONS ACCOMPANYING THIS FORM BEFORE COMPLETING.</b>			
<b>General Information</b>			
1. Control Device ID#: <b>EC-1</b>		2. Installation Date: <b>Upon receipt of Permit</b> <input checked="" type="checkbox"/> New	
3. Maximum Rated Total Flow Capacity: No limit. Only limit on total BTU/Hr	4. Maximum Design Heat Input: <b>10.0 MMBtu/hr</b>	5. Design Heat Content: No limit. Only limit on total BTU/hr	
<b>Control Device Information</b>			
6. Select the type of vapor combustion control device being used: <input checked="" type="checkbox"/> Enclosed Combustion Device  <input type="checkbox"/> Elevated Flare <input type="checkbox"/> Ground Flare <input type="checkbox"/> Thermal Oxidizer <input type="checkbox"/> Completion Combustion Device			
7. Manufacturer: <b>Hy-Bon Engineering, Inc.</b> Model No. <b>CH 10.0</b>		8. Hours of operation per year: <b>8760 Potential.</b>	
9. List the emission units whose emissions are controlled by this vapor combustion control device: (Emission Point ID#: 7E)			
10. Emission Unit ID#	Emission Source Description:	Emission Unit ID#	Emission Source Description:
<b>T01</b>	<b>Produced Water Tank</b>	<b>T04</b>	<b>Condensate Tank</b>
<b>T02</b>	<b>Produced Water Tank</b>	<b>T05</b>	<b>Condensate Tank</b>
<b>T03</b>	<b>Produced Water Tank</b>	<b>T06</b>	<b>Condensate Tank</b>
<i>If this vapor combustor controls emissions from more than six emission units, please attach additional pages.</i>			
11. Assist Type		12. Flare Height	13. Tip Diameter
<input type="checkbox"/> Steam - <input type="checkbox"/> Air - <input type="checkbox"/> Pressure - <input checked="" type="checkbox"/> Non -		<b>11 ft</b>	<b>0.25 ft</b>
			14. Was the design per §60.18? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
<b>Waste Gas Information</b>			
15. Maximum waste gas flow rate (scfm):	16. Heat value of waste gas stream (BTU/ft <sup>3</sup> )	17. Temperature of the emissions stream (°F)	18. Exit Velocity of the emissions stream (ft/s)
<b>20</b>	<b>1257-2345</b>	<b>1400-2100</b>	<b>78.4 (at max flow)</b>
19. Provide an attachment with the characteristics of the waste gas stream to be burned. <b>See Calculations (Tank Emissions) in Attachment I - Calculations</b>			

Pilot Information				
20. Type/Grade of pilot fuel:	21. Number of pilot lights:	22. Fuel flow rate to pilot flame per pilot (scf/hr):	23. Heat input per pilot (BTU/hr):	24. Will automatic re-ignition be used?
Natural Gas	1	63	80,000	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
25. If automatic re-ignition will be used, describe the method: <b>The unit will try to reignite up to 25 times. After that it will go into manual mode which means someone will need to come out and start it up again.</b>				
26. Describe the method of controlling flame: <b>Ignition module located in the combustor control panel</b>				
27. Is pilot flame equipped with a monitor to detect the presence of the flame?  <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No		28. If yes, what type? <input checked="" type="checkbox"/> Thermocouple <input type="checkbox"/> Infra-Red <input type="checkbox"/> Ultra Violet  <input type="checkbox"/> Camera with monitoring control room <input type="checkbox"/> Other, describe:		

29. Pollutant(s) Controlled	30. % Capture Efficiency	31. Manufacturer's Guaranteed Control Efficiency (%)
Tank VOCs	>99% (hard piped)	99%
<b>For Permitting Purposes a capture and control efficiency of only 98% is claimed.</b>		
32. Has the control device been tested by the manufacturer and certified? <b>Yes</b>		
33. Describe all operating ranges and maintenance procedures required by the manufacturer to maintain warranty: <b>Combustor burner, pilot, and air inlet arrestor must be checked for foreign debris (dust, sand, etc.) and cleaned at least quarterly.</b>		
34. Additional Information Attached? <input checked="" type="checkbox"/> <b>YES</b> <input type="checkbox"/> <b>NO</b>		
<i>Please attach a copy of manufacturer's data sheet.</i> <i>Please attach a copy of manufacturer's drawing.</i> <i>Please attach a copy of the manufacturer's performance testing.</i>		

**If any of the requested information is not available, please contact the manufacturer.**

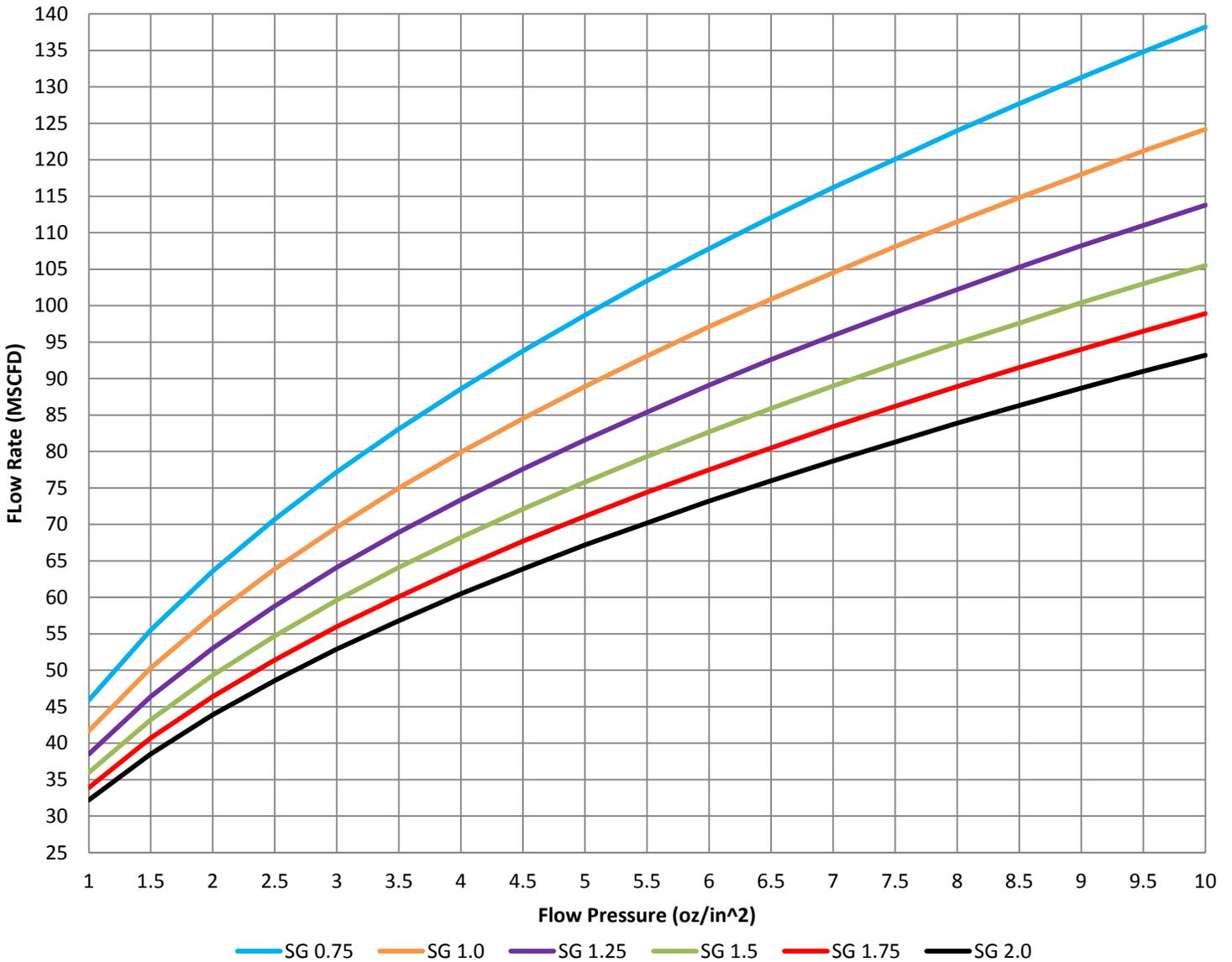
With the fairly recent publication of the NSPS OOOO emission standard, all storage tank facilities constructed on or after August 23, 2011 will be allowed to emit 6 Tons or less of VOC's per year. This regulation not only forces companies to monitor and control their emissions, but it also forces the *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 REQUIRMENTS	Minimum 0.5 oz/in <sup>2</sup> (~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**



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**ATTACHMENT I**

**Emissions Calculations**

Jay-Bee Oil & Gas, Inc.

T1-03 Well Pad Production Facility  
Tyler County, WV

Source	Description	NOx lb/hr	CO lb/hr	CO2e lb/hr	VOC lb/hr	SO2 lb/hr	PM lb/hr	n-Hexane lb/hr	benzene lb/hr	formaldehyde lb/hr	Total HAPs lb/hr
VRU-1	VRU Compressor <sup>4</sup>	0.19	0.37	89.36	0.05	0.000	0.013		0.001	0.017	0.024
GPU-1 to GPU-4	GPU's	0.60	0.50	724.73	0.03	0.004	0.046	0.011	0.002	0.000	0.011
---	Blowdowns <sup>1</sup>			N/A	N/A						
TNK1-TNK6	Condensate Tanks + Water Tanks <sup>2</sup>			8.75	2.40			0.070			0.080
EC-1	Condensate Tanks + Water Tanks <sup>5</sup>	0.11	0.54	181.65	0.96	0.000	0.005	0.130	0.000		0.030
TLU1	Truck Loading <sup>3</sup>				22.46						1.530
---	Truck Traffic Fugitive Dust						2.93				
---	Fittings Fugitive Emissions			3.84	0.12						
<b>Total</b>		<b>0.89</b>	<b>1.41</b>	<b>1,008</b>	<b>26.02</b>	<b>0.00</b>	<b>2.99</b>	<b>0.21</b>	<b>0.00</b>	<b>0.02</b>	<b>1.68</b>

Source	Description	NOx tpy	CO tpy	CO2e tpy	VOC tpy	SO2 tpy	PM tpy	n-Hexane TPY	benzene tpy	formaldehyde tpy	Total HAPs tpy
RU-1	VRU Compressor <sup>4</sup>	0.81	1.62	391	0.21	0.002	0.06		0.00	0.07	0.11
GPU-1 to GPU-4	GPU's	2.63	2.21	3,174	0.14	0.016	0.20	0.05	0.00	0.00	0.05
---	Blowdowns <sup>1</sup>			1	0.01						
TNK1-TNK6	Condensate Tanks + Water Tanks <sup>2</sup>			38.25	10.51			0.31			0.35
EC-1	Condensate Tanks + Water Tanks <sup>5</sup>	0.46	2.36	794	4.22	0.00	0.02	0.13	0.00		0.13
TLU1	Truck Loading <sup>3</sup>				1.20						0.08
---	Truck Traffic Fugitive Dust						1.60				
---	Fittings Fugitive Emissions			17	0.54						
<b>Total</b>		<b>3.90</b>	<b>6.19</b>	<b>4,416</b>	<b>16.83</b>	<b>0.02</b>	<b>1.88</b>	<b>0.49</b>	<b>0.00</b>	<b>0.08</b>	<b>0.72</b>
<b>Existing Permit Registration</b>		<b>2.95</b>	<b>3.44</b>	<b>3,760</b>	<b>88.01</b>	<b>0.01</b>	<b>1.86</b>	<b>0.75</b>	<b>0.00</b>	<b>0.08</b>	<b>1.88</b>
<b>Increase</b>		<b>0.95</b>	<b>2.75</b>	<b>656</b>	<b>-71.18</b>	<b>0.01</b>	<b>0.02</b>	<b>-0.26</b>	<b>0.00</b>	<b>0.00</b>	<b>-1.16</b>

<sup>1</sup> See Attachment C for Blowdown Calculations

<sup>2</sup> Condensate and water tank emissions are currently controlled by a VRU at 95% . This entry represents the un-controlled 5%.

<sup>3</sup> This represents un-captured truck loading emissions.

<sup>4</sup>Emission presented herein for VOCs and Formaldehyde represent un-controlled Mfg. specs. + 15%. The Catalyst Warranty had 0% reduction for these parameters

<sup>5</sup> Condensate and water tank emissions are alternately controlled by an Enclosed Combustor at 98%. The entries for VOC, n-hexane, HAPs and CO2e represents emissions of organics based on a 98% capture and control efficiency.

**Jay-Bee Oil & Gas ,LLC**  
ENGINE EMISSIONS

**T1-03 Well Pad Production Facility**  
**Tyler County, WV**

**Controlled Emission Rates**

**Source CE-1**  
**Flash Gas Compressor**

**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:**

	<u>g/bhp-hr</u>	<u>lb/hr</u>	<u>tons/year</u>	<u>g/hr</u>	<u>lb/day</u>	<u>AP-42 4strokerich lb/mmbtu</u>
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)	0.253	0.05	0.21	21	1.12	
CO2	449	83	364	37,716	1,996	
CO2e		89	391			

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

**Total Annual Hours of Operation**

<b>Total Annual Hours of Operation</b>	<b>8,760</b>					
SO2		0.0004	0.0017			0.0006
PM2.5		0.0063	0.0277			0.0095
PM (Condensable)		0.0066	0.0289			0.00991
CH <sub>4</sub>		0.1262	0.5529			0.0022
N <sub>2</sub> O		0.0115	0.0503			0.0002
acrolein		0.0017	0.0077			0.00263
acetaldehyde		0.0019	0.0081			0.00279
formaldehyde	0.092	0.0170	0.0746			
benzene		0.0011	0.0046			0.00158
toluene		0.0004	0.0016			0.000558
ethylbenzene		2E-05	0.0001			2.48E-05
xylene s		0.0001	0.0006			0.000195
methanol		0.002	0.0089			0.00306
total HAPs		0.0242	0.1062			

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

### T1-03 Well Pad Production Facility Tyler County, WV

#### Potential Emission Rates

#### Source HTR-1

Burner Duty Rating	6000.0 Mbtu/hr	4 GPU's at 1500 MBTU/Hr Each
Burner Efficiency	98.0 %	
Gas Heat Content (HHV)	1269.7 Btu/scf	
Total Gas Consumption	115726.5 scfd	
H2S Concentration	0.000 Mole %	
Hours of Operation	8760	

NOx	0.6002	lbs/hr	2.629	TPY
CO	0.5042	lbs/hr	2.208	TPY
CO2	720.3	lbs/hr	3154.9	TPY
CO2e	725	lbs/hr	3,174	tpy
VOC	0.0330	lbs/hr	0.145	TPY
SO2	0.0036	lbs/hr	0.016	TPY
H2S	0.0000	lbs/hr	0.000	TPY
PM10	0.0456	lbs/hr	0.200	TPY
CHOH	0.0005	lbs/hr	0.002	TPY
Benzene	0.0000	lbs/hr	0.000	TPY
N-Hexane	0.0108	lbs/hr	0.047	TPY
Toluene	0.0000	lbs/hr	0.000	TPY
Total HAPs	0.0113	lbs/hr	0.049	TPY

#### AP-42 Factors Used

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

**T1-03 Well Pad Production Facility  
Tyler County, WV**

**Potential Emission Rate**

**Enclosed Combustor Pilot**

Burner Duty Rating 80.0 Mbtu/hr  
 Burner Efficiency 99.0 %  
 Gas Heat Content (HHV) 1269.7 Btu/scf  
 Total Gas Consumption 1527.4 scfd  
 H2S Concentration 0.000 Mole %  
 Hours of Operation 8760

NOx	0.0079	lbs/hr	0.035	TPY
CO	0.0067	lbs/hr	0.029	TPY
CO2	9.5	lbs/hr	41.6	TPY
CO2e	10	lbs/hr	42	TPY
VOC	0.0004	lbs/hr	0.002	TPY
SO2	0.0000	lbs/hr	0.000	TPY
H2S	0.0000	lbs/hr	0.000	TPY
PM10	0.0006	lbs/hr	0.003	TPY
CHOH	0.0000	lbs/hr	0.000	TPY
Benzene	0.0000	lbs/hr	0.000	TPY
N-Hezane	0.0001	lbs/hr	0.001	TPY
Toluene	0.0000	lbs/hr	0.000	TPY
Total HAPs	0.0001	lbs/hr	0.001	TPY

**AP-42 Factors Used (Tables 1.4.1-1.4.3)**

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

**T1-03 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) 2290.5 Btu/scf  
 Max Flow to T-E 0.015 MMSCFD 5.500 MMCF/Yr  
 Max BTUs to Flare 1.439 MMBTU/Hr 12,598 MMBTU/Yr

NOx	0.10	lbs/hr	0.43	tpy
CO	0.53	lbs/hr	2.33	tpy
CO2	168.23	lbs/hr	736.3	tpy
CO2e	172.08	lb/hr	752.0	tpy
VOC	0.96	lb/hr	4.22	tpy
CH4	0.14	lbs/hr	0.6100	tpy
N2O	0.0003	lbs/hr	0.0014	tpy
PM	0.0048	lb/hr	0.0209	tpy
Benzene	0.0000	lb/hr	0.0000	tpy
CHOH	0.0000	lb/hr	0.0002	tpy
n-Hexane	0.0300	lb/hr	0.1300	tpy
Toluene	0.0000	lb/hr	0.0000	tpy
Total HAP	0.0300	lb/hr	0.1300	tpy

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

**Factors Used**

AP-42 Table 13.5-1	NOx	0.068 Lbs/MMBTU
AP-42 Table 13.5-1	CO	0.37 Lbs/MMBTU
40 CFR 98 Table C-1	CO2	116.89 Lbs/MMBTU
40 CFR 98 Table C-2	CH4	0.0022 Lbs/MMBTU
40 CFR 98 Table C-2	N2O	0.00022 Lbs/MMBTU
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, Inc.**  
FUGITIVE EMISSIONS

**T1-03 Well Pad Production Facility**  
**Tyler County, WV**

**Fugitive VOC Emissions**

Volatile Organic Compounds, NMNEHC from gas analysis:	19.00	weight percent
Methane from gas analysis:	59.08	weight percent
Carbon Dioxide from gas analysis:	0.29	weight percent
Gas Density	0.0583	lb/scf

Emission Source:	Number	Oil & Gas Production*	VOC %	VOC, lb/hr	VOC TPY	CO2 lb/Hr	CO2 TPY	CH4 lb/hr	CH4 TPY	CO2e
<b>Valves:</b>										
Gas/Vapor:	12	0.02700 scf/hr	19.0	0.004	0.016	0.000	0.000	0.011	0.0489	1.222
Light Liquid:	24	0.05000 scf/hr	100.0	0.070	0.306					0.000
Heavy Liquid (Oil):	-	0.00050 scf/hr	100.0	0.000	0.000					0.000
Low Bleed Pneumatic	2	1.39000 scf/hr	19.0	0.031	0.135	0.096	0.419	0.096	0.4195	10.906
<b>Relief Valves:</b>	16	0.04000 scf/hr	19.0	0.007	0.031	0.000	0.000	0.022	0.0966	2.415
<b>Open-ended Lines, gas:</b>	2	0.06100 scf/hr	19.0	0.001	0.006					0.000
<b>Open-ended Lines, liquid:</b>	-	0.05000 lb/hr	100.0	0.000	0.000					0.000
<b>Pump Seals:</b>										0.000
Gas:	-	0.00529 lb/hr	19.0	0.000	0.000	0.000	0.000	0.000	0.0000	0.000
Light Liquid:	-	0.02866 lb/hr	100.0	0.000	0.000					0.000
Heavy Liquid (Oil):	-	0.00133 lb/hr	100.0	0.000	0.000					0.000
<b>Compressor Seals, Gas:</b>	1	0.01940 lb/hr	19.0	0.004	0.016	0.000	0.000	0.001	0.0029	0.073
<b>Connectors:</b>										0.000
Gas:	16	0.00300 scf/hr	19.0	0.001	0.002	0.000	0.000	0.002	0.0072	0.181
Light Liquid:	4	0.00700 scf/hr	100.0	0.028	0.123					0.000
Heavy Liquid (Oil):	-	0.00030 scf/hr	100.0	0.000	0.000					0.000
<b>Flanges:</b>										0.000
Gas:	36	0.00086 lb/hr	19.0	0.006	0.026	0.000	0.000	0.018	0.0801	2.003
Light Liquid:	12	0.00300 scf/hr	100.0	0.002	0.009					0.000
Heavy Liquid:		0.0009 scf/hr	100.0	0.000	0.000					0.000

<i>Fugitive Calculations:</i>		
	lb/hr	t/y
VOC	0.122	0.535
CH4	0.054	0.236
CO2	0.000	0.001
CO2e	3.836	16.80

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

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

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**T1-03 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	0.382	0.107	0.004	0.511			-		0.0038	
Carbon Dioxide, CO2	0.138	0.061	0.002	0.290			-		0.0014	
Hydrogen Sulfide, H2S	0.000	0.000	0.000	0.000	0.0	0.0	0.000		0.0000	
Helium, He	-	-	-	-			-		-	
Oxygen, O2	-	-	-	-			-		-	
Methane, CH4	77.158	12.378	0.427	59.077	701.7	779.3	7.353		0.7700	
Ethane, C2H6	14.716	4.425	0.153	21.119	238.2	260.4	2.455		0.1460	3.915
Propane	4.832	2.131	0.074	10.169	111.9	121.6	1.151	10.169	0.0475	1.324
Iso-Butane	0.627	0.364	0.013	1.739	18.8	20.4	0.194	1.739	0.0061	0.204
Normal Butane	1.131	0.657	0.023	3.137	34.1	36.9	0.350	3.137	0.0109	0.355
Iso Pentane	0.279	0.201	0.007	0.961	10.3	11.2	0.106	0.961	0.0028	0.102
Normal Pentane	0.266	0.192	0.007	0.916	9.9	10.7	0.101	0.916	0.0027	0.096
Hexane	0.258	0.222	0.008	1.061	11.4	12.3	0.117	1.061	0.0025	0.106
Heptane	0.213	0.213	0.007	1.019	10.9	11.7	0.112	1.019	0.0021	0.098
	100.000	20.953	0.723		1,147.0	1,264.4	11.939	19.003	0.9958	6.198

**Gas Density (STP) = 0.058**

Ideal Gross (HHV)	1,264.4
Ideal Gross (sat'd)	1,243.1
GPM	-
Real Gross (HHV)	1,269.7
Real Net (LHV)	1,151.8

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

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**T1-03 Well Pad Production Facility**  
**Tyler County County, WV**

**Condensate Tank 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	0.036	0.010	0.000	0.026			-		0.0004	
Carbon Dioxide, CO2	0.141	0.062	0.002	0.157			-		0.0014	
Hydrogen Sulfide, H2S	0.000	0.000	0.000	0.000	0.0	0.0	0.000		0.0000	
Helium, He	-	-	-	-			-		-	
Oxygen, O2	-	-	-	-			-		-	
Methane, CH4	24.485	3.928	0.136	9.947	222.7	247.3	2.333		0.2444	
Ethane, C2H6	25.943	7.801	0.269	19.754	419.9	459.1	4.327		0.2573	6.901
Propane	23.253	10.254	0.354	25.965	538.3	585.1	5.539	25.965	0.2285	6.373
Iso-Butane	4.773	2.774	0.096	7.025	143.2	155.2	1.478	7.025	0.0464	1.553
Normal Butane	10.980	6.382	0.220	16.161	330.6	358.2	3.401	16.161	0.1061	3.443
Iso Pentane	3.135	2.262	0.078	5.728	116.0	125.4	1.195	5.728	0.0314	1.141
Normal Pentane	3.175	2.291	0.079	5.801	117.7	127.3	1.210	5.801	0.0318	1.144
Hexane	2.570	2.215	0.076	5.608	113.2	122.2	1.163	5.608	0.0254	1.051
Heptane	1.509	1.512	0.052	3.829	77.0	83.0	0.791	3.829	0.0150	0.692
	100.000	39.491	1.364		2,078.5	2,262.8	21.437	70.116	0.9879	22.299

**Gas Density (STP) = 0.110**

Ideal Gross (HHV)	2,262.8
Ideal Gross (sat'd)	2,224.1
GPM	-
Real Gross (HHV)	2,290.5
Real Net (LHV)	2,103.9



## Condensate Truck Loading Lost Emissions Per AP-42

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

$$L_L = 12.46[SPM/T]$$

Where:

$L_L$  = uncontrolled loading loss in pounds per 1000 gallons of liquid loaded

S= saturation factor (0.6)

P=true vapor pressure of liquid loaded: 5.28 psia (see attached condensate analysis report)

M= Molecular weight of vapor in lb/lb-mole 70.79 (see attached condensate analysis report)

T= temperature of bulk liquid loaded in deg R or 460+deg F (70 Deg F)

Thus,  $L_L = 12.46[0.6 \times 5.28 \times 70.79]/[460+60]$

$L_L = 5.37$  lb/1000 gallons loaded

Based on sample data of breathing vapor (attached), these emissions are 99.6% VOCs. It is assumed that vapor composition from truck loading is the same as that from the tank breathing vapors.

Given a maximum loading of 100 BBL (4200 gallons) a day, uncontrolled VOC emissions are estimated at 22.46 lb of VOC per day [ $4.2 \times 5.37 \times .996$ ]. There is no control on tank truck loading. With all daily loading taking place within 1 hour, the average hourly un-controlled emission rate is therefore estimated at 22.46 lb/hr.

Maximum annual throughput is 449,820 gallons (10,710 barrels) per year. Thus, un-captured/un-controlled VOC emissions are conservatively estimated at 2406 pounds per year [ $449.8 \times 5.37 \times .996$ ] or 1.20 tons per year.

Based on the attached analysis of a representative tank's breathing emissions, HAPs represent 6.8 percent of the emissions. Thus, daily HAPs emissions equal  $4.20 \times 5.37 \times 0.068$  or 1.53 lb/hr. Annual maximum HAPs emissions are estimated at 164 lb/yr [ $449.8 \times 5.37 \times 0.068$ ] or 0.08 tpy.

There are no significant VOC or HAP emissions anticipated from the loading of produced water.

**Jay-Bee Oil & Gas, Incorporated**  
**T1-03 Well Pad Production Facility**  
**Condensate and Produced Water Tank Emissions**

Utilizing direct measurements of the Gas to Oil (GOR) ratio and flash gas composition from a nearby Jay-Bee well pad, the attached calculation spreadsheet was used to determine uncontrolled VOC and HAP emissions from the Condensate tanks of 207.2 tpy and 6.7 tpy respectively for the revised maximum annual throughput of 10,710 BBL/Yr. In a similar manner, emissions from the Produced Water tanks were projected to be 3.2 tpy of VOCs and 0.10 tpy of HAPs. Thus, total uncontrolled tank emissions are projected to be 210.4 tpy of VOCs and 6.8 tpy of HAPs. As emissions from these tanks are anticipated to be continuous, this is equivalent to 48.0 pounds per hour VOCs and 1.55 pounds per hour HAPs.

The largest component to the HAPs is Hexane. Using the process described above, potential uncontrolled n-Hexane emissions were determined to be 6.3 tons per year or 1.44 pounds per hour.

Methane is also be emitted at a maximum rate of 29.3 tpy from the condensate tanks and 0.45 tpy from the produced water tanks for a total of 29.8 tpy of Methane (6.80 lbs/hr). Using the GHG factor of 25 for Methane, the CO<sub>2e</sub> uncontrolled emission rate is 745 tpy. This is equivalent to 170 lb/hr of CO<sub>2e</sub>

During operation of the VRU, emissions are controlled at a minimum of 95%. Actual control efficiency is anticipated to be much higher, but only 95% is claimed as allowed under the G70-A General Permit. Thus, when in operation, emissions will be controlled to 2.40 pounds per hour of VOCs and 0.08 pounds per hour of HAPs. Methane emissions will be controlled to 0.34 lb/hr while n-Hexane will be controlled to 0.07 pounds per hour.

The proposed Enclosed Combustor will control organic vapor emissions to at least 98%. Actual control efficiency is anticipated to be higher, but only 98% is claimed as allowed under the G70-A General Permit. Thus, when in operation, organic emissions from the combustor will be controlled to 0.96 pounds per hour of VOCs and 0.03 pounds per hour of HAPs. Methane emissions will be controlled to 0.14 lb/hr while n-Hexane will be controlled to 0.03 pounds per hour.

**VRU Emissions**

The VRU is permitted to operate continuously, except for brief intervals for preventive maintenance. Additionally, time must be allotted for potential equipment failures and emergency repairs. Thus, it is conservatively estimated that the VRU will capture and control 95% of potential emissions. Thus, total potential tank emissions are calculated as follows:

$$\begin{array}{l} \text{VOCs} \\ 2.40 \text{ lb/hr (Controlled)} \times 8760 \qquad = 21,024 \text{ lb/yr or } 10.51 \text{ tpy} \end{array}$$

HAPs

$$0.08 \text{ lb/Hr (Controlled)} \times 8760 = 701 \text{ lb/yr or } 0.35 \text{ tpy}$$

n-Hexane

$$0.07 \text{ lb/Hr (Controlled)} \times 8760 = 613 \text{ lb/yr or } .31 \text{ tons per year}$$

Methane

$$0.35 \text{ lb/Hr (Controlled)} \times 8760 = 3066 \text{ lb/yr or } 1.53 \text{ tons per year}$$

**Enclosed Combustor Emissions**

In order to include the enclosed combustor into the G70-A permit, it is assumed that the combustor will operate full time. Thus, it is conservatively estimated that the combustor will capture and control 98% of potential emissions. Total potential tank emissions via the combustor are therefore calculated as follows:

VOCs

$$0.96 \text{ lb/hr (Controlled)} \times 8760 = 8,438 \text{ lb/yr or } 4.22 \text{ tpy}$$

HAPs

$$0.03 \text{ lb/Hr (Controlled)} \times 8760 = 263 \text{ lb/yr or } 0.13 \text{ tpy}$$

n-Hexane

$$0.03 \text{ lb/Hr (Controlled)} \times 8760 = 263 \text{ lb/yr or } 0.13 \text{ tpy}$$

Methane

$$0.14 \text{ lb/Hr (Controlled)} \times 8760 = 1,226 \text{ lb/yr or } 0.61 \text{ tpy}$$

**Gas Flow to Combustor**

Total gas flow to the combustor is derived from the condensate and produced water flash calculation spreadsheets [295.23 tpy (condensate tanks) + 4.58 tpy (produced water tanks) plus working and breathing losses for the condensate tanks (three tanks at a total of 5,664 lb/yr or 2.83 tpy ) for a total of 302.64 tpy. Using the density of the condensate vapor shown in the Excel spreadsheet (0.110 lb/scf), an annual gas flow to the combustor of 5.5 MMSCF/yr or 15,075 scfd was determined.

Using the HHV of 2290 BTU/scf of the condensate tank vapors as a conservative surrogate, this results in a maximum heat loading of 1.44 MMBTU/Hr, well below the maximum 10 MMBTU/Hr limit of the combustor.

## Flash Emission Calculations

Using Gas-Oil Ratio Method

### Un-Controlled

#### Site specific data

Gas-Oil-ratio	=	500 scf/bbl Using Actual GOR from RPT-8
Throughput	=	10,710 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	295.2283
<b>VOC</b>	<b>207.1587</b>
Nitrogen	7.38E-02
Carbon Dioxide	4.64E-01
Methane	2.93E+01
Ethane	5.82E+01
Propane	7.65E+01
Isobutane	2.07E+01
n-Butane	4.76E+01
2,2 Dimethylpropane	5.82E-01
Isopentane	1.63E+01
n-Pentane	1.71E+01
2,2 Dimethylbutane	6.17E-01
Cyclopentane	0.00E+00
2,3 Dimethylbutane	8.95E-01
2 Methylpentane	4.75E+00
3 Methylpentane	2.84E+00
n-Hexane	6.20E+00
Methylcyclopentane	4.52E-01
Benzene	1.06E-01
Cyclohexane	6.41E-01
2-Methylhexane	1.38E+00
3-Methylhexane	1.35E+00
2,2,4 Trimethylpentane	0.00E+00
Other C7's	1.29E+00
n-Heptane	1.99E+00
Methylcyclohexane	1.24E+00
Toluene	2.42E-01
Other C8's	2.02E+00
n-Octane	6.73E-01
Ethylbenzene	1.48E-02
M & P Xylenes	1.74E-01
O-Xylene	2.36E-02
Other C9's	8.38E-01
n-Nonane	2.01E-01
Other C10's	3.16E-01
n-Decane	4.13E-02
Undecanes (11)	4.43E-02

$E_{TOT}$

Sum of C3+



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

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

**Date Sampled:** 04/07/14

**Date Analyzed:** 04/21/14

**Sample:** RPT 8-1

**Job Number:** J42794

<b>FLASH LIBERATION OF HYDROCARBON LIQUID</b>		
	<b>Separator HC Liquid</b>	<b>Stock Tank</b>
Pressure, psig	340	0
Temperature, °F	65	70
Gas Oil Ratio (1)	-----	500
Gas Specific Gravity (2)	-----	1.387
Separator Volume Factor (3)	1.2987	1.000

<b>STOCK TANK FLUID PROPERTIES</b>	
Shrinkage Recovery Factor (4)	0.7700
Oil API Gravity at 60 °F	70.79
Reid Vapor Pressure, psi (5)	5.28

<b>Quality Control Check</b>			
	<b>Sampling Conditions</b>	<b>Test Samples</b>	
Cylinder No.	-----	W-2408*	W-2423
Pressure, psig	340	299	297
Temperature, °F	65	66	66

(1) - Scf of flashed vapor per barrel of stock tank oil

(2) - Air = 1.000

(3) - Separator volume / Stock tank volume

(4) - Fraction of first stage separator liquid

(5) - Absolute pressure at 100 deg F

Analyst:           M. G.          

\* Sample used for flash study

**Base Conditions: 14.85 PSI & 60 °F**

Certified: FESCO, Ltd.    -    Alice, Texas

\_\_\_\_\_  
 David Dannhaus    361-661-7015

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: 42794.001

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	1.160
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	0.738	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	0.169	0.068	0.419
Toluene	0.035	0.012	0.082
Other C8's	0.246	0.115	0.685
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

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	<u>4.374</u>	<u>1.881</u>
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

## Flash Emission Calculations - Produced Water

Using Gas-Water Ratio Method

### Un-Controlled

#### Site specific data

Gas-Water-ratio	=	5 scf/bbl Using GOW from comparable well pad
Throughput	=	16,600 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	4.5759
<b>VOC</b>	<b>3.2109</b>
Nitrogen	1.14E-03
Carbon Dioxide	7.18E-03
Methane	4.54E-01
Ethane	9.02E-01
Propane	1.19E+00
Isobutane	3.21E-01
n-Butane	7.38E-01
2,2 Dimethylpropane	9.01E-03
Isopentane	2.53E-01
n-Pentane	2.65E-01
2,2 Dimethylbutane	9.56E-03
Cyclopentane	0.00E+00
2,3 Dimethylbutane	1.39E-02
2 Methylpentane	7.36E-02
3 Methylpentane	4.40E-02
n-Hexane	9.61E-02
Methylcyclopentane	7.00E-03
Benzene	1.65E-03
Cyclohexane	9.93E-03
2-Methylhexane	2.13E-02
3-Methylhexane	2.10E-02
2,2,4 Trimethylpentane	0.00E+00
Other C7's	2.00E-02
n-Heptane	3.08E-02
Methylcyclohexane	1.92E-02
Toluene	3.75E-03
Other C8's	3.13E-02
n-Octane	1.04E-02
Ethylbenzene	2.29E-04
M & P Xylenes	2.70E-03
O-Xylene	3.66E-04
Other C9's	1.30E-02
n-Nonane	3.11E-03
Other C10's	4.90E-03
n-Decane	6.41E-04
Undecanes (11)	6.86E-04

$E_{TOT}$

Sum of C3+



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

Job Number: [REDACTED]

Sample: [REDACTED] Well B1 2H

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*

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 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:	T1-03 Well Pad
City:	Huntington
State:	West Virginia
Company:	Jay-Bee Oil & Gas
Type of Tank:	Vertical Fixed Roof Tank
Description:	210 BBL Condensate Tank

**Tank Dimensions**

Shell Height (ft):	15.00
Diameter (ft):	10.00
Liquid Height (ft) :	14.00
Avg. Liquid Height (ft):	5.00
Volume (gallons):	8,225.29
Turnovers:	18.24
Net Throughput(gal/yr):	150,000.00
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)	0.10
Slope (ft/ft) (Cone Roof)	0.02

**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**

**T1-03 Well Pad - Vertical Fixed Roof Tank**  
**Huntington, West Virginia**

Mixture/Component	Month	Daily Liquid Surf. Temperature (deg F)			Liquid Bulk Temp (deg F)	Vapor Pressure (psia)			Vapor Mol. Weight	Liquid Mass Fract.	Vapor Mass Fract.	Mol. Weight	Basis for Vapor Pressure Calculations
		Avg.	Min.	Max.		Avg.	Min.	Max.					
Gasoline (RVP 8)	All	61.42	53.10	69.74	57.09	4.1598	3.5157	4.8959	68.0000			92.00	Option 4: RVP=8, ASTM Slope=3

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

**T1-03 Well Pad - Vertical Fixed Roof Tank**  
**Huntington, West Virginia**

Annual Emission Calculations	
Standing Losses (lb):	877.6197
Vapor Space Volume (cu ft):	788.0162
Vapor Density (lb/cu ft):	0.0506
Vapor Space Expansion Factor:	0.1937
Vented Vapor Saturation Factor:	0.3113
Tank Vapor Space Volume:	
Vapor Space Volume (cu ft):	788.0162
Tank Diameter (ft):	10.0000
Vapor Space Outage (ft):	10.0333
Tank Shell Height (ft):	15.0000
Average Liquid Height (ft):	5.0000
Roof Outage (ft):	0.0333
Roof Outage (Cone Roof)	
Roof Outage (ft):	0.0333
Roof Height (ft):	0.1000
Roof Slope (ft/ft):	0.0200
Shell Radius (ft):	5.0000
Vapor Density	
Vapor Density (lb/cu ft):	0.0506
Vapor Molecular Weight (lb/lb-mole):	68.0000
Vapor Pressure at Daily Average Liquid	
Surface Temperature (psia):	4.1598
Daily Avg. Liquid Surface Temp. (deg. R):	521.0866
Daily Average Ambient Temp. (deg. F):	54.8458
Ideal Gas Constant R	
(psia cuft / (lb-mol-deg R)):	10.731
Liquid Bulk Temperature (deg. R):	516.7558
Tank Paint Solar Absorptance (Shell):	0.5400
Tank Paint Solar Absorptance (Roof):	0.5400
Daily Total Solar Insulation	
Factor (Btu/sqft day):	1,246.2101
Vapor Space Expansion Factor	
Vapor Space Expansion Factor:	0.1937
Daily Vapor Temperature Range (deg. R):	33.2847
Daily Vapor Pressure Range (psia):	1.3803
Breather Vent Press. Setting Range (psia):	0.0600
Vapor Pressure at Daily Average Liquid	
Surface Temperature (psia):	4.1598
Vapor Pressure at Daily Minimum Liquid	
Surface Temperature (psia):	3.5157
Vapor Pressure at Daily Maximum Liquid	
Surface Temperature (psia):	4.8959
Daily Avg. Liquid Surface Temp. (deg R):	521.0866
Daily Min. Liquid Surface Temp. (deg R):	512.7654
Daily Max. Liquid Surface Temp. (deg R):	529.4077
Daily Ambient Temp. Range (deg. R):	20.0583
Vented Vapor Saturation Factor	
Vented Vapor Saturation Factor:	0.3113
Vapor Pressure at Daily Average Liquid:	
Surface Temperature (psia):	4.1598
Vapor Space Outage (ft):	10.0333

Working Losses (lb):	1,010.2315
Vapor Molecular Weight (lb/lb-mole):	68.0000
Vapor Pressure at Daily Average Liquid Surface Temperature (psia):	4.1598
Annual Net Throughput (gal/yr.):	150,000.0000
Annual Turnovers:	18.2364
Turnover Factor:	1.0000
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):	1,887.8512

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

**Emissions Report for: Annual**

**T1-03 Well Pad - Vertical Fixed Roof Tank**  
**Huntington, West Virginia**

Components	Losses(lbs)		
	Working Loss	Breathing Loss	Total Emissions
Gasoline (RVP 8)	1,010.23	877.62	1,887.85

per Tank  
x 3 tanks = 5,663.55 lb or  
2.83 tpy

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**ATTACHMENT J**

**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 Modification to the G70-A General Permit Registration for its T1-03 Well Pad Production Facility located off of County Road 40 near Alma, WV in Tyler County, West Virginia (Lat.39.444856, Long. -80.80177)

The applicant estimates an increase in potential emissions of following regulated air pollutants:

- 0.95 tons of Nitrogen Oxides per year
- 2.75 tons of Carbon Monoxide per year
- 0.01 tons of Sulfur Dioxide per year
- 0.02 tons of Particulate Matter per year
- 0.00 tons of Formaldehyde per year
- 656 tons of Greenhouse Gases per year

The applicant also estimates a decrease in potential emissions of the following regulated air pollutants:

- 71.18 tons of Volatile Organics per year
- 1.36 tons of n-Hexane per year

Startup of operation is planned to begin on or about the 6<sup>th</sup> day of January, 2015. Written comments will be received by the West Virginia Department of Environmental Protection, Division of Air Quality, 601 57<sup>th</sup> 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.

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**ATTACHMENT O**

**Emissions Summary Sheets**

### G70-A EMISSIONS SUMMARY SHEET

Emission Point ID No.	Emission Point Type <sup>1</sup>	Emission Unit Vented Through This Point		Air Pollution Control Device		All Regulated Pollutants - Chemical Name/CAS <sup>2</sup>  (Speciate VOCs & HAPS)	Maximum Potential Uncontrolled Emissions <sup>3</sup>		Maximum Potential Controlled Emissions <sup>4</sup>		Emission Form or Phase  (At exit conditions, Solid, Liquid or Gas/Vapor)	Est. Method Used <sup>5</sup>
		ID No.	Source	ID No.	Device Type		lb/hr	ton/yr	lb/hr	ton/yr		
1S	Upward Vertical Stack	GPU-1	GPU	None		NOx	0.15	0.66	0.15	0.66	Gas	EE
						CO	0.13	0.55	0.13	0.55	Gas	EE
						VOC	0.01	0.04	0.01	0.04	Gas	EE
						PM	0.01	0.05	0.01	0.05	Solid	EE
						HCOH	<0.01	<0.01	<0.01	<0.01	Gas	EE
						Total HAPs	<0.01	0.01	<0.01	0.01	Gas	EE
						CO2e	181.2	794	181.2	794	Gas	EE
2S	Upward Vertical Stack	GPU-2	GPU	None		NOx	0.15	0.66	0.15	0.66	Gas	EE
						CO	0.13	0.55	0.13	0.55	Gas	EE
						VOC	0.01	0.04	0.01	0.04	Gas	EE
						PM	0.01	0.05	0.01	0.05	Solid	EE
						HCOH	<0.01	<0.01	<0.01	<0.01	Gas	EE
						Total HAPs	<0.01	0.01	<0.01	0.01	Gas	EE
						CO2e	181.2	794	181.2	794	Gas	EE
3S	Upward Vertical Stack	GPU-3	GPU	None		NOx	0.15	0.66	0.15	0.66	Gas	EE
						CO	0.13	0.55	0.13	0.55	Gas	EE
						VOC	0.01	0.04	0.01	0.04	Gas	EE
						PM	0.01	0.05	0.01	0.05	Solid	EE
						HCOH	<0.01	<0.01	<0.01	<0.01	Gas	EE
						Total HAPs	<0.01	0.01	<0.01	0.01	Gas	EE
						CO2e	181.2	794	181.2	794	Gas	EE
4S	Upward Vertical Stack	GPU-4	GPU	None		NOx	0.15	0.66	0.15	0.66	Gas	EE
						CO	0.13	0.55	0.13	0.55	Gas	EE
						VOC	0.01	0.04	0.01	0.04	Gas	EE
						PM	0.01	0.05	0.01	0.05	Solid	EE
						HCOH	<0.01	<0.01	<0.01	<0.01	Gas	EE
						Total HAPs	<0.01	0.01	<0.01	0.01	Gas	EE
						CO2e	181.2	794	181.2	794	Gas	EE
5S	Fugitive	TLU1	Condensate Truck Loading	None		NOx	22.46	1.20	22.46	1.20	Gas	EE
						CO					Gas	EE
						VOC					Gas	EE
						PM					Solid	EE
						HCOH					Gas	EE
						Total HAPs					Gas	EE
CO2e	Gas	EE										

## G70-A EMISSIONS SUMMARY SHEET

6S	Upward Vertical Stack	VRU-1	Engine	IC	NSCR	NOx	2.11	9.25	0.19	0.81	Gas	EE
						CO	2.71	11.87	0.37	1.62	Gas	EE
						VOC	0.05	0.21	0.05	0.21	Gas	EE
						PM	0.01	0.06	0.01	0.06	Solid	EE
						HCOH	0.02	0.07	0.02	0.07	Gas	EE
						Total HAPs	0.02	0.11	0.02	0.11	Gas	EE
						CO2e	89.4	391	89.4	391	Gas	EE
7S-12S	Fugitive	VRU-1	Tank Emissions	VRU-1	VRU	NOx					Gas	EE
						CO					Gas	EE
						VOC	48.0	210.4	2.40	10.51	Gas	EE
						PM					Solid	EE
						HCOH					Gas	EE
						Total HAPs	1.55	6.8	0.08	0.35	Gas	EE
						CO2e	170	745	8.75	38	Gas	EE
13S	Fugitive	TLU2	Water Truck Loading	None		NOx					Gas	EE
						CO					Gas	EE
						VOC	<0.01	<0.01	<0.01	<0.01	Gas	EE
						PM					Solid	EE
						HCOH					Gas	EE
						Total HAPs					Gas	EE
						CO2e					Gas	EE
14S	Upward Vertical Stack	T01-T06	Enclosed Combustor	None		NOx			0.11	0.46	Gas	EE
						CO			0.54	2.36	Gas	EE
						VOC	48.0	210.4	0.96	4.22	Gas	EE
						PM			<0.01	0.02	Solid	EE
						HCOH			<0.01	<0.01	Gas	EE
						Total HAPs	1.55	6.8	0.03	0.13	Gas	EE
						CO2e	170	745	182	794	Gas	EE

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

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

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

<sup>3</sup> Give maximum potential emission rate with no control equipment operating. If emissions occur for less than 1 hr, then record emissions per batch in minutes (e.g. 5 lb VOC/20 minute batch).

<sup>4</sup> Give maximum potential emission rate with proposed control equipment operating. If emissions occur for less than 1 hr, then record emissions per batch in minutes (e.g. 5 lb VOC/20 minute batch).4C

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

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**ATTACHMENT P**

**Other Supporting Documentation**

## **T1-03 Well Pad Production Facility Attachment P Regulatory Analysis**

Both State and Federal environmental regulations governing air emissions apply to the planned modification to the T1-03 Well Pad Production Facility. The West Virginia Department of Environmental Protection (WVDEP) has been delegated the authority to implement certain federal air quality requirements for the state. Air quality regulations that potentially affect the modification are discussed herein.

### **1.1 PSD and NSR**

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

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

### **1.2 Title V Operating Permit Program**

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

The expanded facility will remain a minor source. Additionally, the NSPS regulating this facility does not trigger a Title V permit. Hence, a Title V permit will not be required for the T1-03 Well Pad Production Facility.

### **1.3 Aggregation**

The addition of an enclosed combustor at the T1-03 Well Pad will not impact the aggregation analysis completed and submitted with the initial application.

## **1.4 New Source Performance Standards**

New Source Performance Standards (NSPS) regulations promulgated under 40 CFR 60 require new and reconstructed facilities to control emissions to the level achievable by Best-Available Control Technology (BACT). There are no potentially applicable NSPS requirements associated with the installation of the enclosed combustor at the T1-03 Well Pad.

## **1.5 National Emission Standards for Hazardous Air Pollutants**

National Emission Standards for Hazardous Air Pollutants (NESHAPs) promulgated under 40 CFR 63 regulate the emission of Hazardous Air Pollutants (HAPs) from certain industrial processes. In general, these rules apply to major sources of HAPs with a major source being defined as having the potential to emit more than 10 tpy of any individual HAP or 25 tpy of total HAPs. Emissions standards under these rules have been established as the Maximum Achievable Control Technology (MACT) for each source category. There are no NESHAP source category standards which are potentially applicable to the planned installation of a small enclosed combustor at the T1-03 Well Pad Production Facility:

## **1.6 Chemical Accident Prevention**

Subparts B-D of 40 CFR 68 present the requirements for the assessment and subsequent preparation of a Risk Management Plan (RMP) for a facility that stores more than a threshold quantity of a regulated substance listed in 40 CFR 68.130. If a facility stores, handles or processes one or more regulated substances in an amount greater than its corresponding threshold, the facility must prepare and implement an RMP. The T1-03 Well Pad Production Facility stores more than 10,000 lbs of a flammable mixture (condensate) containing several of the substances listed in Table 3 in 40 CFR 68.130. However, an RMP is not required as this facility qualifies for the exclusion provided for remote oil and gas production facilities (40 CFR 68.115).

## **1.7 West Virginia State Requirements**

### **1.7.1 45 CSR 2**

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

### **1.7.2 45 CSR 4**

This regulation prohibits the emission of objectionable odors. Jay-Bee Oil & Gas is obligated to run the station in a manner that does not produce objectionable odors.

### 1.7.3 45 CSR 6

This rule establishes emission standards for particulate matter and other requirements for incineration of refuse not subject to or specifically exempted from federal regulation. The planned combustor falls under this rule and must meet the visible emission requirements as well as the permitting requirements.

### 1.7.4 45 CSR 10

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

### 1.7.5 45 CSR 13

The state regulations applicable to the permitting of the proposed construction are in Title 45 Series 13 of the Code of State Regulations. The proposed modification to the T1-03 Well Pad Production Facility will result in a minor increase in potential emissions several regulated pollutants. Hence, this modification must be integrated into the facility's permit..

### 1.7.6 45 CSR 16

This series of regulations is an incorporation, by reference, of the New Source Performance Standards codified under 40 CFR 60. As discussed under the federal regulations, the T1-03 Well Pad Production Facility will remain subject to the emission limitations, monitoring, testing and recordkeeping of Subpart JJJJ. The facility will also remain subject to Subpart OOOO.

### 1.7.7 45 CSR 30

The state regulations applicable to Title V operating permits are in Title 45 Series 30. The planned modification to the T1-03 Well Pad Production Facility does not result in the facility having the potential to emit any regulated pollutant about the threshold that would define it as a major facility. Additionally, although the facility is subject to certain New Source Performance Standards, the NSPS applicable to this facility do not trigger the need to submit a Title V application and obtain a Title V permit. Hence this rule is not applicable.

### 1.7.8 Other Applicable Requirements

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