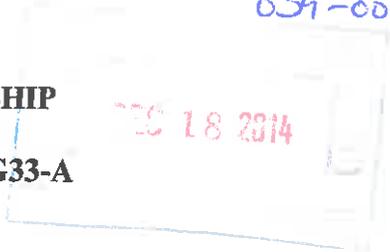


John  
G33-A003A  
039-00612



**REED BROTHERS LIMITED PARTNERSHIP**  
**APPLICATION FOR GENERAL PERMIT G33-A**

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DEC 18 2014



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:**

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

**SECTION I. GENERAL INFORMATION**

1. Name of applicant (as registered with the WV Secretary of State's Office): <u>Reed Brothers Limited Partnership</u>	2. Federal Employer ID No. (FEIN): <u>550740636</u>
3. Applicant's mailing address: <u>1314 Virginia Street East</u> <u>Charleston, WV 25301</u>	4. Applicant's physical address: <u>1314 Virginia St. East</u> <u>Charleston, WV 25301</u>
5. If applicant is a subsidiary corporation, please provide the name of parent corporation: <u>N/A</u>	
6. <b>WV BUSINESS REGISTRATION.</b> Is the applicant a resident of the State of West Virginia? <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO ⇨ IF YES, provide a copy of the Certificate of Incorporation/ Organization / Limited Partnership (one page) including any name change amendments or other Business Registration Certificate as Attachment A. ⇨ IF NO, provide a copy of the Certificate of Authority / Authority of LLC / Registration (one page) including any name change amendments or other Business Certificate as Attachment A.	

**SECTION II. FACILITY INFORMATION**

7. Type of plant or facility (stationary source) to be constructed, modified, relocated or administratively updated (e.g., coal preparation plant, primary crusher, etc.): <u>replacement of NG engine/comp.</u>	8a. Standard Industrial Classification AND 8b. North American Industry Classification (SIC) code: <u>1311</u> System (NAICS) code: <u>211111</u>
9. DAQ Plant ID No. (for existing facilities only): <u>039-00612</u>	10. List all current 45CSR13 and other General Permit numbers associated with this process (for existing facilities only): <u>G33-A003</u>

**A: PRIMARY OPERATING SITE INFORMATION**

<p>11A. Facility name of primary operating site:  <u>Ward Compression Station</u>  <u>(Quick Compressor Station)</u></p>	<p>12A. Address of primary operating site:                  Mailing: <u>1314 Virginia St. E.</u> Physical: <u>Cedar Grove (P.O.)</u>  <u>Charleston, WV 25301</u></p>	
<p>13A. Does the applicant own, lease, have an option to buy, or otherwise have control of the proposed site? <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO                  ⇨ IF YES, please explain: <u>Operator that leases site</u></p> <p>⇨ IF NO, YOU ARE NOT ELIGIBLE FOR A PERMIT FOR THIS SOURCE.</p>		
<p>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 as Attachment F</b></p> <p><b>FROM THE NEAREST STATE ROAD. Take U.S. route 60 east to Cedar Grove; Go left on C.R. 81 (Kelly's Creek Rd) 1.75mi; Turn left up Buff Lick 0.25mi, bear left, continue 0.75mi to top of hill; Take hard right, continue on the strip bench ~ 3 miles, cross Dominion pipeline, continue to top of hill, bear right to compressor site.</b></p>		
<p>15A. Nearest city or town:  <u>Cedar Grove</u></p>	<p>16A. County:  <u>Kanawha</u></p>	<p>17A. UTM Coordinates:                  Northing (KM): <u>4236.577km</u>                  Easting (KM): <u>463.710 km</u>                  Zone: <u>17</u></p>
<p>18A. Briefly describe the proposed new operation or change (s) to the facility:  <u>Replace existing compressor with a new compressor.</u></p>		<p>19A. Latitude &amp; Longitude Coordinates (NAD83, Decimal Degrees to 5 digits):                  Latitude: <u>38.276514</u>                  Longitude: <u>-81.419</u></p>

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

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

14B. ⇨ For **Modifications or Administrative Updates** at an existing facility, please provide directions to the present location of the facility from the nearest state road;  
⇨ For **Construction or Relocation** permits, please provide directions to the proposed new site location from the nearest state road. Include a **MAP as Attachment F.**

N/A

---

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: _____ <b>N/A</b> _____ 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 YES, please explain: _____ _____ ⇨ IF NO, 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 <b>Construction or Relocation</b> permits, please provide directions to the proposed new site location from the nearest state road. Include a <b>MAP as Attachment F.</b>		
N/A		
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>2, 15, 15</u></p> <p><input type="checkbox"/> 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>2, 16, 15</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 type="checkbox"/> ATTACHMENT H: AIR POLLUTION CONTROL DEVICE SHEETS</li> <li><input checked="" type="checkbox"/> ATTACHMENT I: EMISSIONS CALCULATIONS</li> <li><input type="checkbox"/> ATTACHMENT J: CLASS I LEGAL ADVERTISEMENT</li> <li><input 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 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 DO NOT fax permit applications. For questions regarding applications or West Virginia Air Pollution Rules and Regulations, please refer to the website shown on the front page of the application or call the phone number also provided on the front page of the application.</p>

**SECTION IV. CERTIFICATION OF INFORMATION**

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

FOR A CORPORATION (domestic or foreign)

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

FOR A PARTNERSHIP

I certify that I am a General Partner

FOR A LIMITED LIABILITY COMPANY

I certify that I am a General Partner or General Manager

FOR AN ASSOCIATION

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

FOR A JOINT VENTURE

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

FOR A SOLE PROPRIETORSHIP

I certify that I am the Owner and Proprietor

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

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

Signature \_\_\_\_\_ Charles Reed Charles Reed Dec 18 2014  
(please use blue ink) Responsible Official Date

Name & Title \_\_\_\_\_ Charles Reed Partner Dec 18 2014  
(please print or type)

Signature \_\_\_\_\_ Charles Reed  
(please use blue ink) Authorized Representative (if applicable) Date

Applicant's Name \_\_\_\_\_ Charles David Reed

Phone & Fax \_\_\_\_\_ 304 345 3817 304 345 4001  
Phone Fax

Email \_\_\_\_\_ creed@reedbrothers/td.com

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

ISSUED TO:  
**REED BROTHERS LIMITED PARTNERSHIP  
1314 VIRGINIA ST E  
CHARLESTON, WV 25301-3012**

BUSINESS REGISTRATION ACCOUNT NUMBER: **1043-5775**

This certificate is issued on: 06/18/2010

*This certificate is issued by  
the West Virginia State Tax Commissioner  
in accordance with W.Va. Code § 11-12.*

*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.



# CERTIFICATE

*J. Ken Heckler, Secretary of State of the State of West Virginia, hereby certify that*  
**REED BROTHERS LIMITED PARTNERSHIP**

has delivered originals of its

## CERTIFICATE OF LIMITED PARTNERSHIP

to me as required by the provisions of Chapter 47, Article 9, Sections 8 and 13 of the West Virginia Code and the Certificate conforms to law and is filed in my office. I therefore declare the organization to be formed as a limited partnership for the purposes stated in its Certificate and I attach to this certification a duplicate original of its Certificate of Limited Partnership.

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

SECOND day of  
MARCH 1995

*Ken Heckler*

*Secretary of State.*



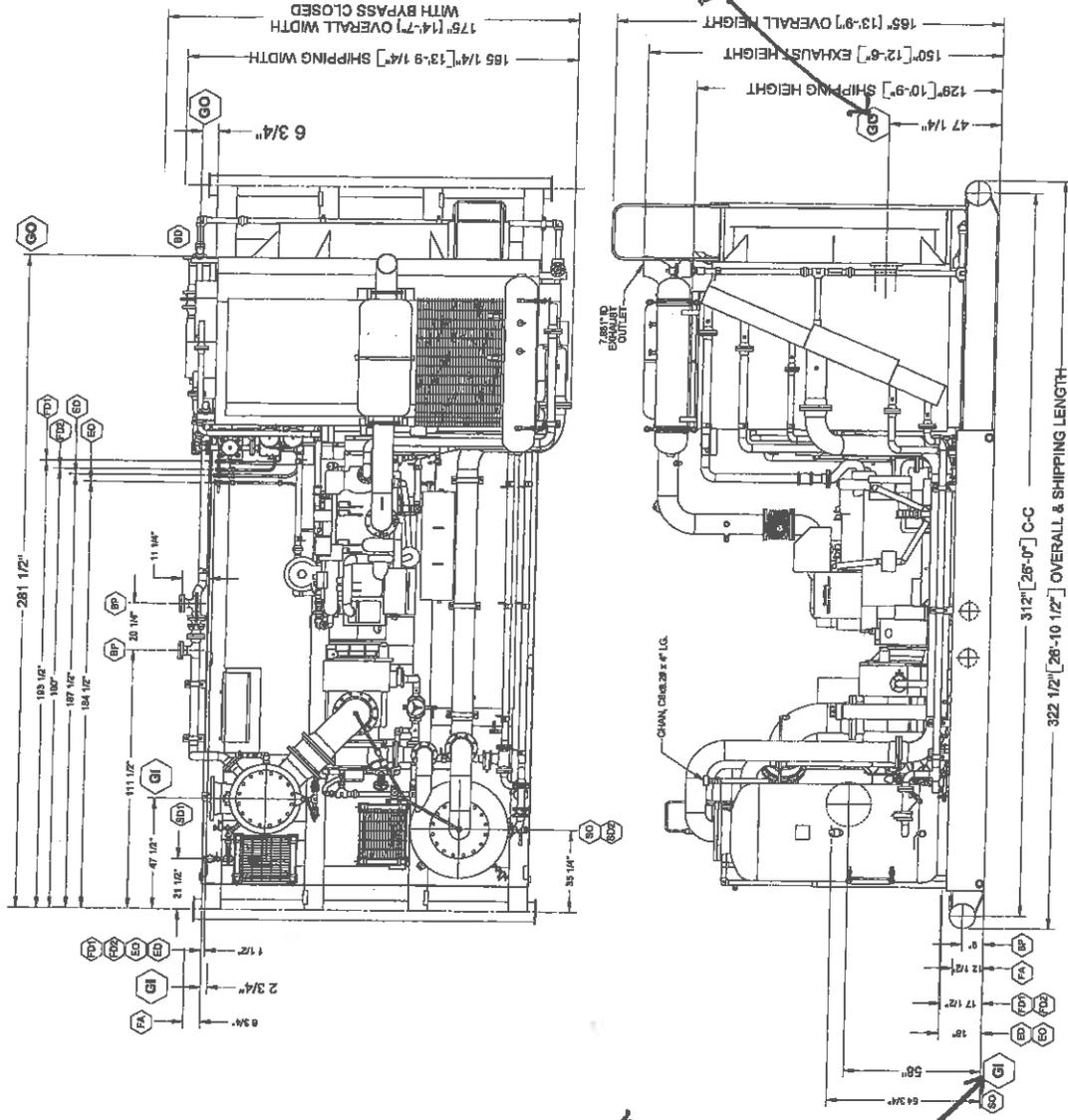
**REED BROTHERS LIMITED PARTNERSHIP  
APPLICATION FOR GENERAL PERMIT REGISTRATION**

**ATTACHMENT B – PROCESS DESCRIPTION**

Natural gas is gathered from gas wells into pipelines that extend into the producing field. The pipelines are designed so diameters generally increase as they get closer to the compressor facility and as the volume of natural gas increases. The gas enters the compressor station and the particulates and free liquids are removed by a separator utilizing velocity drop. The gas then enters compression. After passing through the compressor, the gas stream is regulated, measured via an orifice meter, and then enters a transmission pipeline.

# Process Flow Diagram - Attachment D

DWG NO. 335-15481



*Discharge of natural gas after compression*

*GI - Intake of raw natural gas from field*

J-W MANUFACTURING COMPANY  
FOR REFERENCE ONLY  
Issued for J-W Unit 4812  
06/14/2010

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**J-W POWER COMPANY**  
DISTRICT 11  
LORENSBURG, TENNESSEE, USA

**PLAN & ELEVATION**  
WGDS-400

DATE: 06/14/2010  
SCALE: 1/2"=1'-0"

NO.	DESCRIPTION	BY	DATE	SCALE
1	REVISION	BY	DATE	SCALE
2	REVISION	BY	DATE	SCALE
3	REVISION	BY	DATE	SCALE
4	REVISION	BY	DATE	SCALE
5	REVISION	BY	DATE	SCALE

**TOLERANCE NOTE**  
UNLESS OTHERWISE NOTED:  
1) FRACTIONS = 1/8"  
2) ANGLES = 1°  
3) OVERALL AND SHIPPING DIMENSIONS ARE MAXIMUM

MARK	QTY.	SCHEDULE OF OPENINGS
GI	1	12-1500 RF PROCESS GAS INLET
GO	1	12-1500 RF PROCESS GAS INLET
GA	1	12-1500 RF BLOWDOWN VALVE
GB	1	12-1500 RF SCRUBBER DRAIN
GC	1	12-1500 RF SEPARATOR DRAIN
GD	1	12-1500 RF ENGINE OIL MAKEUP INLET
GE	1	12-1500 RF SEPARATOR DRAIN
GF	1	12-1500 RF ENGINE OIL BYPASS FILTER DRAIN
GG	1	12-1500 RF SEPARATOR DRAIN
GH	1	12-1500 RF BLOWDOWN VALVE

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# **G33-A REGISTRATION APPLICATION FORMS**

**SI ICE DATA SHEET**

Source Identification Number <sup>1</sup>		CE 1					
Engine Manufacturer and Model		Caterpillar G3306					
Manufacturer's Rated bhp/rpm		195					
Source Status <sup>2</sup>		MS					
Date Installed/Modified/Removed <sup>3</sup>		2-15-15					
Engine Manufactured/Reconstruction Date <sup>4</sup>		6-21-89					
Is this a Certified Stationary Spark Ignition Engine according to 40CFR60 Subpart JJJJ? (Yes or No) <sup>5</sup>		no					
Engine, Fuel and Combustion Data	Engine Type <sup>6</sup>	RB4S					
	APCD Type <sup>7</sup>	-					
	Fuel Type <sup>8</sup>	RG					
	H <sub>2</sub> S (gr/100 scf)	20					
	Operating bhp/rpm	195/1800					
	BSFC (Btu/bhp-hr)	7974					
	Fuel throughput (ft <sup>3</sup> /hr)	667					
	Fuel throughput (MMft <sup>3</sup> /yr)	5.84					
Operation (hrs/yr)	8760						
Reference <sup>9</sup>	Potential Emissions <sup>10</sup>	lbs/hr	tons/yr	lbs/hr	tons/yr	lbs/hr	tons/yr
	NO <sub>x</sub>	11.9	52.12				
	CO	0.644	2.82				
	VOC	0.05	0.21				
	SO <sub>2</sub>	0.000588	0.021				
	PM <sub>10</sub>	0.0384	1.136				
	Formaldehyde	0.44	1.93				

1. Enter the appropriate Source Identification Number for each SI ICE.
2. Enter the Source Status using the following codes:  

NS	Construction of New Source (installation)	ES	Existing Source
MS	Modification of Existing Source	RS	Removal of Source
3. Enter the date (or anticipated date) of the engine's installation (construction of source), modification or removal.
4. Enter the date that the engine was manufactured, modified or reconstructed.

**Coccarri, Gene M**

**From:** Coccarri, Gene M  
**Sent:** Tuesday, December 16, 2014 2:01 PM  
**To:** 'awatson@reedbrothersltd.com'  
**Subject:** Emission Calculations for 195 HP NG CAT G3306 engine

Hello-

It was a pleasure to talk with you on Friday. I discussed your situation with Richard Fenton, and he did indeed say that if you changed the engine that it would allow him to close out the NOV when the general permit is issued. I would send him a response as we discussed to be thorough. With the Caterpillar Technical Data Sheet you supplied, I calculated the NOx, CO and VOC emissions using the TM9278-06 model, as it most closely matched your engine's HP, and had the highest emission totals.

For NOx, the g/bhp-hr was listed as 27.71, multiplying by 195 HP and dividing by 454 g/lb yields **11.9 PPH NOx**. To derive a yearly amount, 11.9 PPH multiplied by 8,760 hr/yr and divided by 2,000 lb/ton yields **52.122 TPY NOx**.

For CO, the g/bhp-hr was listed as 1.5, multiplying by 195 HP and dividing by 454 g/lb yields **0.6443 PPH CO**. To derive a yearly amount, 0.6443 PPH multiplied by 8,760 hr/yr and divided by 2,000 lb/ton yields **0.282 TPY CO**.

For VOCs, the g/bhp-hr was listed as 0.11, multiplying by 195 HP and dividing by 454 g/lb yields **0.05 PPH VOCs**. To derive yearly amounts, 0.05 PPH multiplied by 8,760 hr/yr and divided by 2,000 lb/ton yields **0.22 TPY VOCs**.

For the other pollutants listed in the application, you must use emission factors from U.S. EPA's AP-42, a "Compilation of Air Pollutant Emission Factors," 5th edition. Specifically, Chapter 3 outlines factors for "Stationary Internal Combustion Sources" that can be used to quantify emissions for your engine. It is, however, important to realize that the emissions calculated via these factors can be disproportionately larger than if specific information is used. Chapter 3 of AP-42 can be viewed at: <http://www.epa.gov/ttn/chieff/ap42/ch03/index.html>.

Section 3.2 gives factors for "Natural Gas-fired Reciprocating Engines," and it distinguishes between 2-cycle (stroke) lean-burn, 4-stroke lean-burn, and 4-stroke rich-burn engines. Therefore, factors from AP-42 representing "uncontrolled emission factors for 4-stroke rich-burn engines" were used, with the factors as follows:

SO<sub>2</sub> = 0.000588 lb/MMBtu\* (fuel input)

PM<sub>10</sub> = 0.0384 lb/MMBtu (fuel input)

Formaldehyde = 0.0552 lb/MMBtu (fuel input)

According to the Technical Data Sheet, the fuel consumption of the device is 7,802 cubic feet per hour at 100% load, which multiplied by 1,020 Btu (which is given as the standard in AP-42, as in "heating value of natural gas - assume 1,020 Btu/scf at 60 degrees F") yields 7,958,040 Btus, or 7.95 MMBtu, so the estimated emissions would be:

SO<sub>2</sub> = **0.0047 PPH** -- To derive yearly amounts, 0.0047 PPH multiplied by 8,760 hr/yr and dividing by 2,000 lb/ton yields **0.021 TPY SO<sub>2</sub>**.

PM<sub>10</sub> = **0.31 PPH** -- To derive yearly amounts, 0.31 PPH multiplied by 8,760 hr/yr and dividing by 2,000 lb/ton yields **1.36 TPY PM<sub>10</sub>**.

Formaldehyde = **0.44 PPH** -- To derive yearly amounts, 0.44 PPH multiplied by 8,760 hr/yr and dividing by 2,000 lb/ton yields **1.93 TPY Formaldehyde**.

Also, remember that one item you need to complete the application is BSFC, which is Btu/bhp-hr. If you have any questions, do not hesitate to contact me. Thank you.

\*The emission factors for all of these engine types are in pounds (lbs) of pollutant per MMBtu of fuel input. AP-42 states: "Emission factors were calculated in units of (lb/MMBtu) based on procedures in EPA Method 19."

**Gene M. Coccari**  
**Environmental Resource Analyst**  
**WV Department of Environmental Protection**  
**Small Business Assistance Program**  
**601 57th Street, SE**  
**Charleston, WV 25304**

**ph: (304) 926-0499 ext. 1245**  
**fax: (304) 926-0479**

**[gene.m.coccari@wv.gov](mailto:gene.m.coccari@wv.gov)**





**J-W POWER COMPANY**  
APPALACHIAN DISTRICT OFFICE  
2200 Georgetowne Dr. Building 1 Ste 301  
Sewickley, PA 15143

Quick Unit (Ward Compressor)  
J-W Unit # 2085  
Engine: Caterpillar G3306 TA/LCR  
Engine Build Date: 6/21/89  
Engine S/N 07Y03054  
Not subject to NSPS



**G3306**

**GAS PETROLEUM ENGINE**

108-164 bkW (145-220 bhp)

**TECHNICAL DATA**

**G3306 Gas Petroleum Engine — 1800 rpm**

		TM9278-06	DM5062-05	DM5779-01	DM5211-06	TM9268-06
<b>Engine Power</b>						
@ 100% Load	bkW (bhp)	151 (203)	151 (203)	157 (211)	108 (145)	164 (220)
@ 75% Load	bkW (bhp)	114 (152)	114 (152)	118 (156)	81 (109)	123 (165)
<b>Engine Speed</b>		1800	1800	1800	1800	1800
Max Altitude @ Rated Torque and 38°C (100°F)	m (ft)	0	0	0	0	0
Speed Turndown @ Max Altitude, Rated Torque, and 38°C (100°F)	%	25	22	25	44.4	22
<b>SCAC Temperature</b>		54 (130)	54 (130)	32 (90)	N/A	32 (90)
<b>Emissions*</b>						
NOx	g/bkW-hr (g/bhp-hr)	37.16 (27.71)	30.52 (22.76)	36.91 (27.52)	32.34 (24.11)	30.9 (23.07)
CO	g/bkW-hr (g/bhp-hr)	2.01 (1.5)	1.7 (1.28)	2 (1.52)	1.9 (1.4)	2 (1.6)
CO <sub>2</sub>	g/bkW-hr (g/bhp-hr)	691 (515)	665 (496)	677 (505)	660 (492)	652 (486)
VOC**	g/bkW-hr (g/bhp-hr)	0.15 (0.11)	0.15 (0.11)	0.15 (0.11)	0.21 (0.16)	0.16 (0.12)
<b>Fuel Consumption***</b>						
@ 100% Load	MJ/bkW-hr (Btu/bhp-hr)	11.04 (7802)	10.66 (7532)	10.89 (7694)	10.57 (7471)	10.46 (7396)
@ 75% Load	MJ/bkW-hr (Btu/bhp-hr)	11.85 (8374)	11.39 (8053)	11.67 (8249)	11.3 (7987)	11.34 (8015)
<b>Heat Balance</b>						
<b>Heat Rejection to Jacket Water</b>						
@ 100% Load	bkW (Btu/min)	150 (6557)	140 (7935)	143 (6133)	99.4 (5652)	142 (6095)
@ 75% Load	bkW (Btu/min)	134 (7617)	125 (7088)	127 (7245)	87.3 (4964)	130 (7387)
<b>Heat Rejection to Aftercooler</b>						
@ 100% Load	bkW (Btu/min)	9.78 (557)	9.45 (538)	14.9 (846)	—	15.1 (857)
@ 75% Load	bkW (Btu/min)	4.44 (252)	4.04 (230)	8.3 (475)	—	8.5 (482)
<b>Heat Rejection to Exhaust (LHV to 25°C)</b>						
@ 100% Load	bkW (Btu/min)	114 (6509)	111 (6320)	123 (6976)	84 (4775)	117 (6579)
@ 75% Load	bkW (Btu/min)	89 (5065)	86 (4873)	96 (5479)	64.1 (3644)	93 (5289)
<b>Exhaust System</b>						
<b>Exhaust Gas Flow Rate</b>						
@ 100% Load	m <sup>3</sup> /min (cfm)	27.5 (973)	26.8 (947)	29 (1026)	19.7 (697)	28.2 (997)
@ 75% Load	m <sup>3</sup> /min (cfm)	21.8 (769)	20.8 (733)	23.1 (815)	15.4 (545)	22.3 (791)
<b>Exhaust Stack Temp.</b>						
@ 100% Load	°C (°F)	540 (1004)	535 (998)	561 (1041)	560 (1040)	538 (1000)
@ 75% Load	°C (°F)	522 (972)	530 (985)	548 (1018)	534 (993)	536 (996)
<b>Intake System</b>						
<b>Air Inlet Flow Rate</b>						
@ 100% Load	m <sup>3</sup> /min (scfm)	9 (320)	8.9 (314)	9.3 (330)	6.4 (225)	9.3 (329)
@ 75% Load	m <sup>3</sup> /min (scfm)	7.3 (259)	6.9 (244)	7.5 (266)	5.1 (181)	7.4 (261)
<b>Gas Pressure</b>		83-172 (12-24.9)	83-172 (12-24.9)	83-172 (12-24.9)	10.34-34.47 (1.5-5)	83-172 (12-24.9)

\*at 100% load and speed, all values are listed as not to exceed

\*\*Volatile organic compounds as defined in U.S. EPA 40 CFR 60, subpart JJJJ

\*\*\*ISO 3046/1

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DCL International Inc.

Mailing address: P.O. Box 90, Concord, Ontario, Canada, L4K 1B2  
 Toll free: 1-800-872-1968 Phone: 905-660-6450 Fax: 905-660-6435 E-mail: info@dcl-inc.com

To	Mark Davis	Telephone	903-291-2741
	J-W Operating	Facsimile	903-643-2701
		Email	MDavis@jwoperating.com
Date	October 31, 2008	No. of Pages	1

RE: EMISSIONS GUARANTEE

Mark,

We hereby guarantee that our MINE-X® Model DC48-5 industrial grade catalytic silencer described below:

Catalyst model	DC48
Catalyst coating	NSCR
Outside Diameter of catalyst substrate	11.5"
No. of catalyst substrates	1
Cell Density	300 cpsi

and sized for the following engine:

Engine model	CAT G3306 TA
Power	195 hp @ 1800 rpm
Fuel	Pipeline Quality Natural Gas

will perform as follows:

Emissions	After Catalyst
Nitrogen Oxides (NOx)	0.5 g/bhp-hr
Carbon Monoxide (CO)	1.0 g/bhp-hr
Non-Methane Hydrocarbons (NMHC)	1.0 g/bhp-hr

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

Best regards,  
 DCL International, Inc.

Tawnya VanGroningen  
 Account Manager  
 North American Industrial Catalyst Division

Ref: Quote#6-1207-R2

335-18175-00 p01

MB 1-6-09

J-W POWER COMPANY  
 FOR REFERENCE ONLY  
 Issued for J-W Unit 5408

05/27/2014

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