ENERVEST

12/17/2015
WEST VIRGINIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION
DIVISION OF AIR QUALITY
601 57th Street, SE
Charleston, WV 25304

Subject: EnerVest Operating Compression Project at Clear Fork Compressor Station (G35-A016A). CLASS II UPDATE Request

Dear Sir or Madame,

On October 23 2015 a modification was approved by WV DEP for the Clear fork facility. Shortly after that approval Enervest agreed to take additional gas from another operator and this was going to require us to add additional unit to the facility. In an effort to save mobilization cost 30,000-40,000 per trip Enervest has decided to wait to get all 3 new units approved for installation before removing the 2 older and larger units. At this time Enervest is **requesting** an **Administrative Class II update** for the addition of a 400 HP F18GL Waukesha engine to the Clear fork station because its emissions pre control are lower than 6lbs/hr and 10 tons/yr thus not triggering a modification. Since 2 of the units were approved on October 23, 2015 we are just waiting on the approval of this admin Class II update to move forward with this project. If you need further clarification please call me at 304-414-8171 or email me at mdearing@enervest.net .

Sincerely,

Michael Dearing
Air Emissions Supervisor

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

APPLICATION FOR GENERAL PERMIT REGISTRATION

CONSTRUCT, MODIFY, RELOCATE OR ADMINISTRATIVELY UPDATE

A STATIONARY SOURCE OF AIR POLLUTANTS

9 CONSTRUCTION 9 MODIFICATION 9 RELOCATION 9 CLASS I ADMINISTRATIVE UPDATE
9 CLASS II ADMINISTRATIVE UPDATE

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

9 **G10-D – Coal Preparation and Handling**
9 **G20-B – Hot Mix Asphalt**
9 **G30-D – Natural Gas Compressor Stations**
9 **G33-A – Spark Ignition Internal Combustion Engines**
9 **G35-A – Natural Gas Compressor Stations (Flare/Glycol Dehydration Unit)**
9 **G40-C – Nonmetallic Minerals Processing**
9 **G50-B – Concrete Batch**
9 **G60-C - Class II Emergency Generator**
9 **G65-C – Class I Emergency Generator**
9 **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):
Enervest Operating Eastern Division

2. Federal Employer ID No. **(FEIN): 76-0460809**

3. Applicant's mailing address:
300 Capitol Street, suite 200, Charleston WV 25301

4. Applicant's physical address:
300 Capitol Street, suite 200, Charleston WV 25301

5. If applicant is a subsidiary corporation, please provide the name of parent corporation:

6. **WV BUSINESS REGISTRATION.** Is the applicant a resident of the State of West Virginia? 9 **YES** 9 **NO**

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

SECTION II. FACILITY INFORMATION

7. Type of plant or facility (stationary source) to be constructed, modified, relocated or administratively updated (e.g., coal preparation plant, primary crusher, etc.): Natural Gas compressor station

8a. Standard Industrial Classification Classification (SIC) code: 1311

AND

8b. North American Industry System (NAICS) code:211111

9. DAQ Plant ID No. (for existing facilities only):
G 3 5 - A 0 1 6 A

10. List all current 45CSR13 and other General Permit numbers associated with this process (for existing facilities only):

A: PRIMARY OPERATING SITE INFORMATION

11A. Facility name of primary operating site:	12A. Address of primary operating site:
___Clear Fork Compressor Station_____	Mailing:_ 300 Capitol Street, suite 200, Charleston WV 25301 Physical:_____NA_____

13A. Does the applicant own, lease, have an option to buy, or otherwise have control of the proposed site? 9 YES 9 NO

- IF YES, please explain: ___Site is lease from land owner
- IF NO, YOU ARE NOT ELIGIBLE FOR A PERMIT FOR THIS SOURCE.

14A. – For **Modifications or Administrative Updates** at an existing facility, please provide directions to the present location of the facility from the nearest state road;

– For Construction or Relocation permits, please provide directions to the proposed new site location from the nearest state road. Include a **MAP as Attachment F.**

_Driving north on 85 for 2 miles from oceana you will arrive at toney fork make a right on to clear fork road drive for appx 5 miles then you will arrive at station

15A. Nearest city or town:	16A. County:wyoming	17A. UTM Coordinates:
Crany		Northing (KM): __4177.095 Easting (KM): __455.318 Zone: ___17S

18A. Briefly describe the proposed new operation or change (s) to the facility: We are adding one compression unit to the facility . Unit is identified as CE-3	19A. Latitude & Longitude Coordinates (NAD83, Decimal Degrees to 5 digits): Latitude: __37.74005 Longitude: ___-81.50712

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

11B. Name of 1st alternate operating site:	12B. Address of 1st alternate operating site:
	Mailing:_____ Physical:_____

13B. Does the applicant own, lease, have an option to buy, or otherwise have control of the proposed site? 9 YES 9 NO

- IF YES, please explain:
- IF NO, YOU ARE NOT ELIGIBLE FOR A PERMIT FOR THIS SOURCE.

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.**

_____

_____

_____

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

11C. Name of 2nd alternate operating site: _____ _____	12C. Address of 2nd alternate operating site: Mailing:_____ Physical:_____ _____

13C. Does the applicant own, lease, have an option to buy, or otherwise have control of the proposed site? 9 YES 9 NO

– IF YES, please explain: _____

_____

– IF NO, YOU ARE NOT ELIGIBLE FOR A PERMIT FOR THIS SOURCE.

14C. – For **Modifications or Administrative Updates** at an existing facility, please provide directions to the present location of the facility from the nearest state road;

– 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.**

_____

_____

_____

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: _____

20. Provide the date of anticipated installation or change:	21. Date of anticipated Start-up if registration is granted:
__2___/___1__/__2016___ ☐ If this is an **After-The-Fact** permit application, provide the date upon which the proposed change did happen: : _____/_____/_____	___2___/__1____/__2016____

22. Provide maximum projected **Operating Schedule** of activity/activities outlined in this application if other than 8760 hours/year. (Note: anything other than 24/7/52 may result in a restriction to the facility's operation).

Hours per day___24_____ Days per week ___7_____ Weeks per year __52_____ Percentage of operation __100_____

SECTION III. ATTACHMENTS AND SUPPORTING DOCUMENTS

23. Include a check payable to WVDEP – Division of Air Quality with the appropriate **application fee** (per 45CSR22 and 45CSR13).

24. Include a **Table of Contents** as the first page of your application package.

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.

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.

9 ATTACHMENT A : CURRENT BUSINESS CERTIFICATE

9 ATTACHMENT B: PROCESS DESCRIPTION

9 ATTACHMENT C: DESCRIPTION OF FUGITIVE EMISSIONS

9 ATTACHMENT D: PROCESS FLOW DIAGRAM

9 ATTACHMENT E: PLOT PLAN

9 ATTACHMENT F: AREA MAP

9 ATTACHMENT G: EQUIPMENT DATA SHEETS AND REGISTRATION SECTION APPLICABILITY FORM

9 ATTACHMENT H: AIR POLLUTION CONTROL DEVICE SHEETS

9 ATTACHMENT I: EMISSIONS CALCULATIONS

9 ATTACHMENT J: CLASS I LEGAL ADVERTISEMENT

9 ATTACHMENT K: ELECTRONIC SUBMITTAL na

9 ATTACHMENT L: GENERAL PERMIT REGISTRATION APPLICATION FEE

9 ATTACHMENT M: SITING CRITERIA WAIVER NA

9 ATTACHMENT N: MATERIAL SAFETY DATA SHEETS (MSDS) NA

9 ATTACHMENT O: EMISSIONS SUMMARY SHEETS

9 OTHER SUPPORTING DOCUMENTATION NOT DESCRIBED ABOVE (Equipment Drawings, Aggregation Discussion, etc.)

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.

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)

G 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

G I certify that I am a General Partner

FOR A LIMITED LIABILITY COMPANY

G I certify that I am a General Partner or General Manager

FOR AN ASSOCIATION

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

FOR A JOINT VENTURE

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

FOR A SOLE PROPRIETORSHIP

G I certify that I am the Owner and Proprietor

G *I hereby certify that* (please print or type) *James McKinney*__________
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 __________ 12/18/15
(please use blue ink) Responsible Official Date

Name & Title Sr. Vice President and General Manager EVOC__________
(please print or type)

Signature xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx
(please use blue ink) Authorized Representative (if applicable) Date

Applicant's Name __________

Phone & Fax __________
Phone Fax

Email __________

NATURAL GAS COMPRESSOR/GENERATOR ENGINE DATA SHEET

Source Identification Number[1]						CE-3	
Engine Manufacturer and Model						Waukesha - F18GL	
Manufacturer's Rated bhp/rpm						400/1800	
Source Status[2]						NS	
Date Installed/Modified/Removed[3]						When approved	
Engine Manufactured/Reconstruction Date[4]						01/31/2003	
Is this a Certified Stationary Spark Ignition Engine according to 40CFR60 Subpart JJJJ? (Yes or No)[5]						NO	
Engine, Fuel and Combustion Data	Engine Type[6]					LB4S	
	APCD Type[7]					SCR	
	Fuel Type[8]					RG	
	H_2S (gr/100 scf)					0	
	Operating bhp/rpm					400/1800	
	BSFC (Btu/bhp-hr)					7000	
	Fuel throughput (ft^3/hr)					2800	
	Fuel throughput ($MMft^3$/yr)					24.52	
	Operation (hrs/yr)					8760	
Reference[9]	Potential Emissions[10]					lbs/hr	tons/yr
MF/MF/MF	NO_X					1.764	7.725
MF/MF/MF	CO					0.08	0.35
MF/MF/AP-42	VOC					0.33	1.45
AP-42/AP-42/AP-42	SO_2					0.00	0.01
AP-42/AP-42/AP-42	PM_{10}					0.00	0.00
AP-42/AP-42/AP-42	Formaldehyde					0.15	0.65

Attachment A - Current Business Certificate

WEST VIRGINIA
STATE TAX DEPARTMENT
BUSINESS REGISTRATION CERTIFICATE

ISSUED TO:
ENERVEST OPERATING LLC EASTERN DIVISION
300 CAPITOL ST 200
CHARLESTON, WV 25301-1794

BUSINESS REGISTRATION ACCOUNT NUMBER: **1051-6031**

This certificate is issued on: 05/27/2011

This certificate is issued by
the West Virginia State Tax Commissioner
in accordance with Chapter 11, Article 12, of the West Virginia Code

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.

atL006 v.4
L1745620096

Attachment B - Process Description

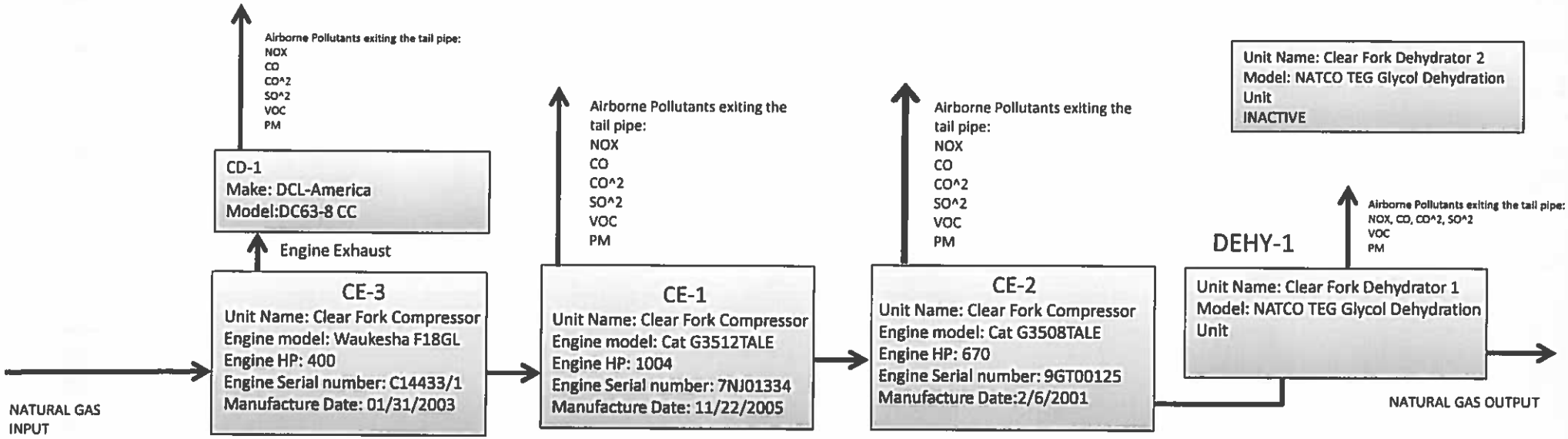
Natural gas is transported from Coal bed methane and conventional vertical wells via pipeline to the clear fork station. Once at the Clear Fork station three natural gas fueled SI RICE are used to power compressors which compresses the gas to increase the pressure. After the gas is compressed the gas is then processed in a Glycol Dehydrator to remove excess water and to meet the pipeline standards. After gas is processed is transported off facility to another pipeline.

At this time I am only requesting that the 400 HP Waukesha engine be added to this facility

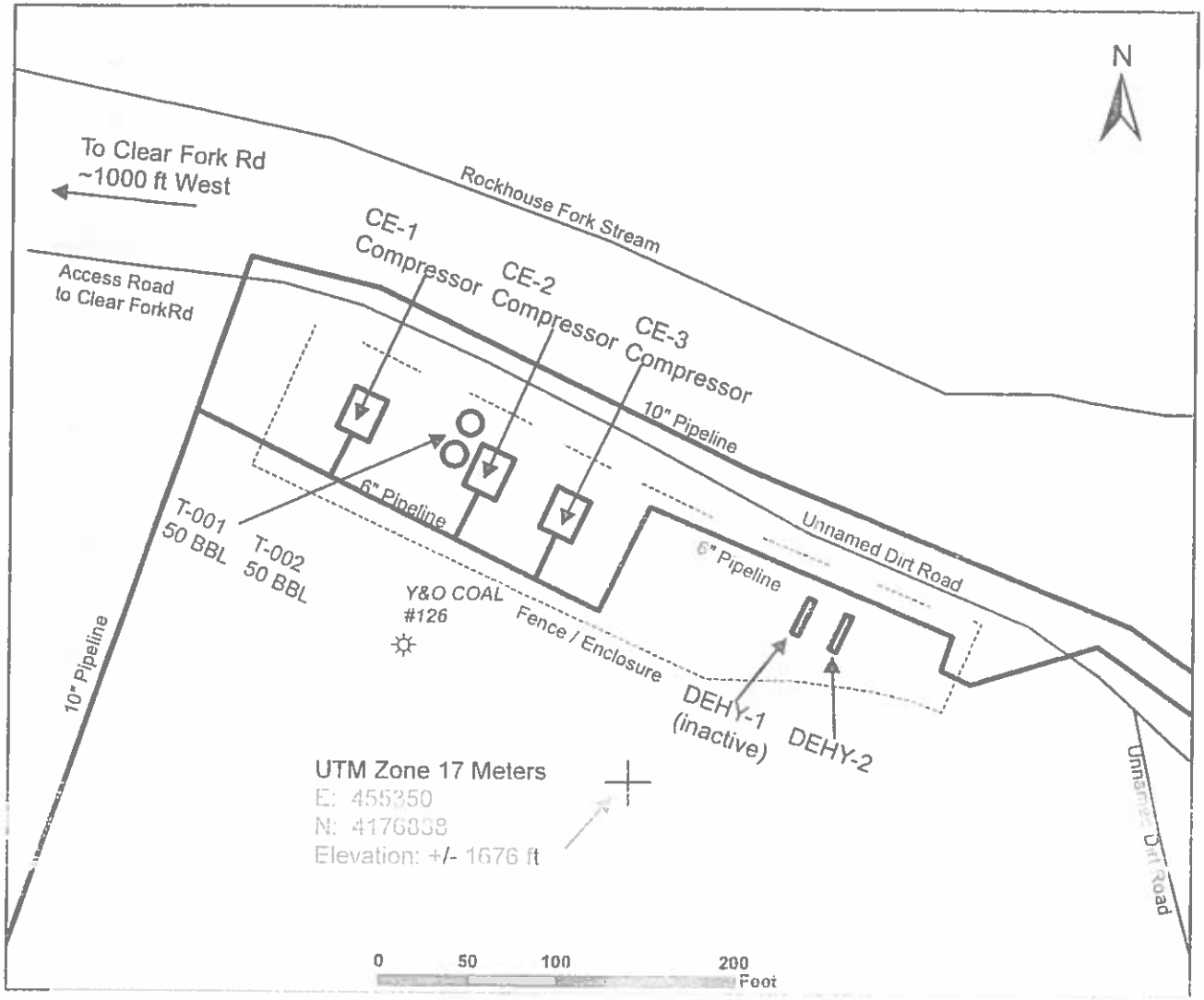
Attachment C – Description of Fugitive Emissions

Fugitive emissions occur at all piping connection and compressor seal points in small amounts and since emissions are low it unreasonable to control them and they have already been accounted for in previous applications.

Attachment D – Process Flow Diagram


Airborne Pollutants exiting the tail pipe:
NOX
CO
CO^2
SO^2
VOC
PM
CD-1
Make: DCL-America
Model:DC63-8 CC
Engine Exhaust
NATURAL GAS INPUT
CE-3
Unit Name: Clear Fork Compressor
Engine model: Waukesha F18GL
Engine HP: 400
Engine Serial number: C14433/1
Manufacture Date: 01/31/2003
Airborne Pollutants exiting the tail pipe:
NOX
CO
CO^2
SO^2
VOC
PM
CE-1
Unit Name: Clear Fork Compressor
Engine model: Cat G3512TALE
Engine HP: 1004
Engine Serial number: 7NJ01334
Manufacture Date: 11/22/2005
Airborne Pollutants exiting the tail pipe:
NOX
CO
CO^2
SO^2
VOC
PM
CE-2
Unit Name: Clear Fork Compressor
Engine model: Cat G3508TALE
Engine HP: 670
Engine Serial number: 9GT00125
Manufacture Date:2/6/2001
Unit Name: Clear Fork Dehydrator 2
Model: NATCO TEG Glycol Dehydration Unit
INACTIVE
DEHY-1
Airborne Pollutants exiting the tail pipe:
NOX, CO, CO^2, SO^2
VOC
PM
Unit Name: Clear Fork Dehydrator 1
Model: NATCO TEG Glycol Dehydration Unit
NATURAL GAS OUTPUT

Attachment E – Plot Plan



EnerVest Operating, LLC

CE-1 , CE-2 , CE-3 Compressors
Wyoming Co. WV

Attachment "E"

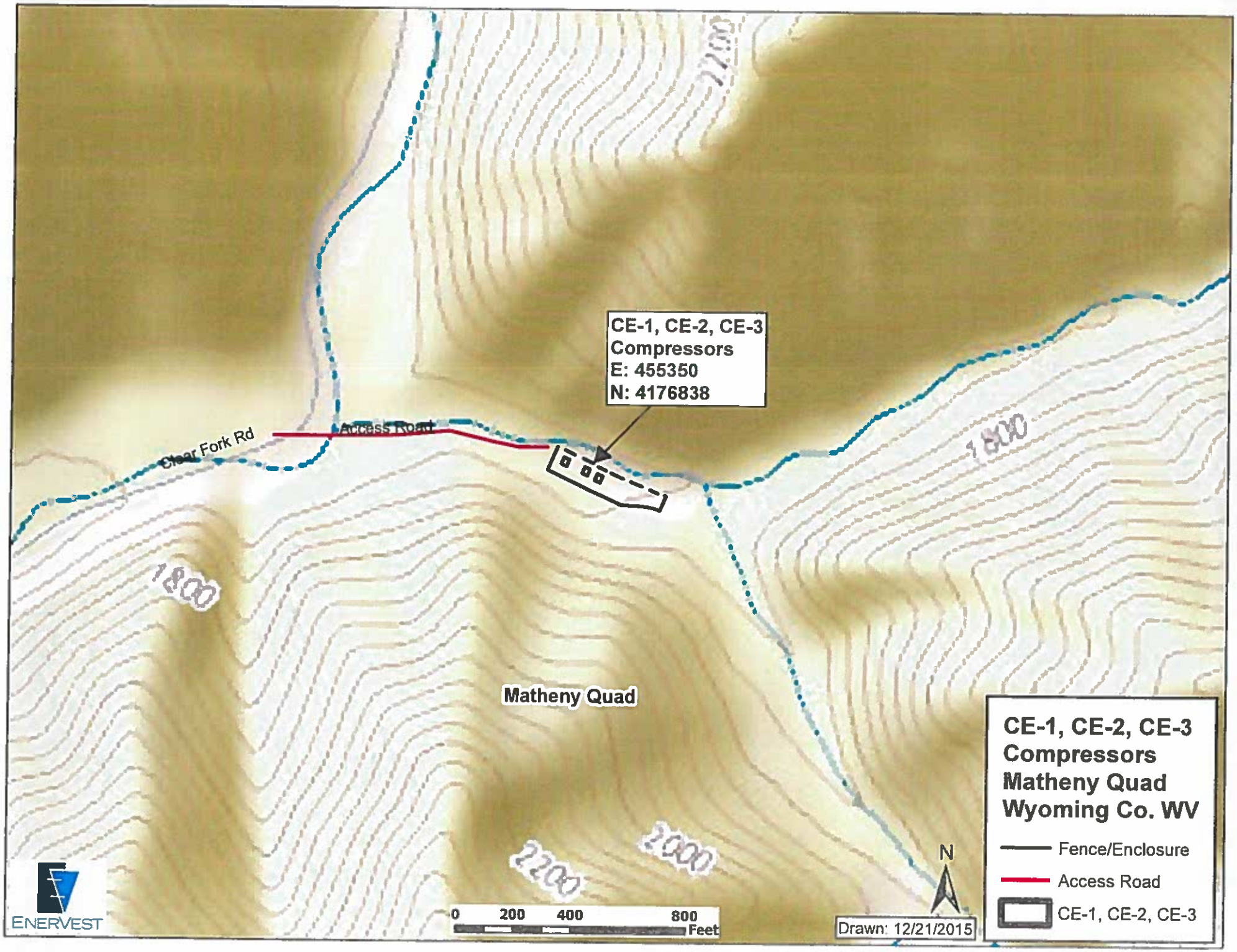
Base Elevation: +/- 1676 ft

Scale: 1in = 100 ft

Drawn:12/21/2015

ENERVEST

Attachment F – Area Map



CE-1, CE-2, CE-3
Compressors
E: 455350
N: 4176838
Clear Fork Rd
Access Road
2200
1800
1800
2000
2200
Matheny Quad
CE-1, CE-2, CE-3
Compressors
Matheny Quad
Wyoming Co. WV
Fence/Enclosure
Access Road
CE-1, CE-2, CE-3
N
0 200 400 800
Feet
Drawn: 12/21/2015
ENERVEST

Attachment G – Affected Source Sheets (Section Applicability Form)

General Permit G35-A Registration
Section Applicability Form

General Permit G35-A was developed to allow qualified registrants to seek registration for a variety of sources. These sources include internal combustion engines, boilers, reboilers, line heaters, tanks, emergency generators, dehydration units not subject to MACT standards, dehydration units not subject to MACT standards and being controlled by a flare control device, dehydration units not subject to MACT standards and being controlled by recycling the dehydration unit back to flame zone of reboiler, dehydration units not subject to MACT standards being controlled by a thermal oxidizer, and permit exemptions including the less than 1 ton/year benzene exemption, the 40CFR63 Subpart HH - Annual Average Flow of Gas Exemption (3 mmscf/day), and the 40CFR63 Subpart HHH - Annual Average Flow of Gas Exemption (10 mmscf/day). All registered facilities will be subject to Sections 1.0, 1.1, 2.0, 3.0, and 4.0.

General Permit G35-A allows the registrant to choose which sections of the permit that they wish to seek registration under. Therefore, please mark which sections that you are applying for registration under. 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	Reciprocating Internal Combustion Engines (R.I.C.E.)*	☒
Section 6	Boilers, Reboilers, and Line Heaters	☐
Section 7	Tanks	☐
Section 8	Emergency Generators	☐
Section 9	Dehydration Units Not Subject to MACT Standards	☐
Section 10	Dehydration Units Not Subject to MACT Standards and being controlled by a flare control device	☐
Section 11	Dehydration Units Not Subject to MACT Standards being controlled by recycling the dehydration unit back to the flame zone of the reboiler	☐
Section 12	Dehydration Units Not Subject to MACT Standards and being controlled by a thermal oxidizer	☐
Section 13	Permit Exemption (Less than 1 ton/year of benzene exemption)	☐
Section 14	Permit Exemption (40CFR63 Subpart HH – Annual average flow of gas exemption (3 mmscf/day))	☐
Section 15	Permit Exemption (40CFR63 Subpart HHH – Annual average flow of gas exemption (10 mmscf/day))	☐
Section 16	Standards of Performance for Stationary Spark Ignition Internal Combustion Engines (40CFR60 Subpart JJJJ)	☐

* **Affected facilities that are subject to Section 5 may also be subject to Section 16. Therefore, if the applicant is seeking registration under both sections, please select both.**

Attachment H - Air Pollution Control Device Data Sheet

DCL America Inc.

12620 FM 1960 W, Ste A4 Box # 560, Houston, TX 77065
Tel.: 877-897-9759 Fax: 281-605-5858 E-mail: info@dclamerica.com

To	Mark Davis	**Phone**	
	JW	**Fax**	
Date	Sept 23rd 2011	**Email**	

RE: Emissions Guarantee

Mark,

We hereby guarantee that our Quick-Lid™ Model DC63-8 described below, and sized for the following engine:

ENGINE DATA

Engine model	**Wauk F18GL**
Power	400 hp
Fuel	PQNG
Exhaust Flow	2480 acfm
Exhaust Temp	850 F

CATALYST SYSTEM DATA

Catalyst Model	DC63-8 CC
Catalyst Type	Oxidation Q
Number of Elements	1
Cell Density	300 cpsi

Will perform as follows:

EMISSION REQUIREMENTS

Exhaust Gas Component	% Destruction
CO	93
VOC	45
CHOH	90

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.

Regards

Brendan Filby
General Manager
DCL America
925-808-5223

335-22432-00

Attachment I - Emissions Calculations

Lean Burn Engines 4 Stroke AP 42 Table 3.2-1

Emissions Unit ID:	CE-3	BHP	400	BTU Content of Gas:	1000			
Fuel Usage in MMBTU/hr:	2.800	Fuel Consumption BTU/BHP-hr	7000	Date of manufacture:	1/31/2003			
Make:	Waukesha	Model:	F18GL	Serial number:	C14433/1	Post Control		
Pollutants		Emission Factor	lbs./hr	Tons Year	G/bhp-hr	% reduction	lbs-hr	Tons/yr
SOX ton/yr		0.000588	0.002	0.007	0.002	0	0.002	0.007
VOC		0.118000	0.330	1.447	0.375	45	0.182	0.796
PM10 (filterable)		0.000077	0.000	0.001	0.000	0	0.000	0.001
PM Condensable		0.009910	0.028	0.122	0.031	0	0.028	0.122
Formaldehyde(CH2O)		0.052800	0.148	0.648	0.168	90	0.015	0.065
Calculations		EF	MMBTU x EF = lbs/hr	(lbs/hr)/2000	(lbs-hr*453.592)/BPH			

Emissions Calculator Based on Spec sheet Data @ 100% Load

Pollutant	Unit BHP	Emissions g/BHP-Hr	Grams Per hour	lbs-hr	Tons/yr	Post Control % reduction	lbs-hr	Tons/yr
NOX	400	2	800.0	1.764	7.725	0	1.764	7.725
CO	400	1.3	520.0	1.146	5.021	93	0.080248168	0.351486976
Calculations			(BHP*G/HP-hr)*8760	g-hr * 0.00220462	lbs-hr*8760/2000			

Fuel Usage Calculator

Rated BHP	BTU/BHP-Hr	MMBTU/ Hr	BTU Content:	Total BTU/Hr	Total BTU Year
400	7000	2.800	1000	2800000	24528000000
		(Bhp x Btu/Bhp-hr)/1,000,000		Bhp x Btu/Bhp-hr	TBtu/Bhp-hr x 8760
MMBTU/hr	MCF/HOUR	SCF / HOUR	SCF/YR	MCF/YEAR	MMSCF/YR
2.8	2.8	2800	24528000	24528	24.528
	SCF-HR/1000	TBtu HR/ Btu Content	SCF-HR*8760	SCF-YR/1000	SCF-YR/1,000,000

DRESSER Waukesha

F18GL

VGF® Series Gas Engine
310 - 440 BHP (230 - 330 kWb)

Specifications

Cylinders: Inline 6
Piston Displacement: 1096 cu. in. (18 L)
Bore & Stroke: 5.98" x 6.5" (152 x 165 mm)
Compression Ratio: LCR 8.7:1, HCR 11:1
Jacket Water System Capacity: 16 gal. (60 L)
Lube Oil Capacity: 44 gal. (166 L)
Fuel Pressure Range: 25 - 50 psi (1.72 - 3.45 bar)
Starting System: 150 psi max. air/gas 24V DC electric
Dry Weight: 5725 lb. (2600 kg)

Cooling Water Flow at	1500 rpm	1800 rpm
Jacket Water gpm (l/m)	103 (390)	130 (492)
Aux. Water gpm (l/m)	25 (95)	40 (152)

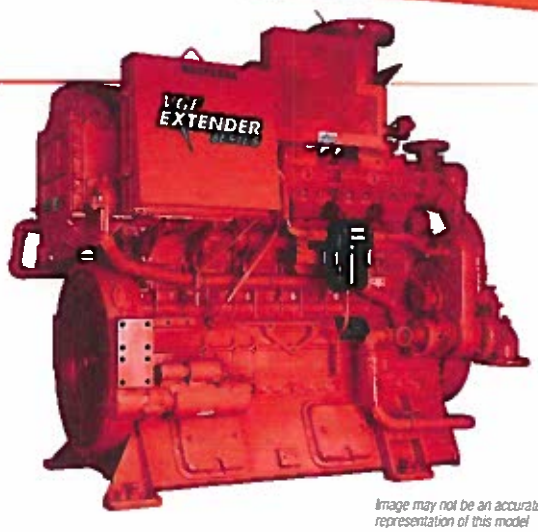


Image may not be an accurate representation of this model

Standard Equipment

AIR CLEANER – Two stage, dry panel type with rain shield and service indicator. Engine mounted.

BARRING DEVICE – Manual.

BREATHER – Crankcase, closed type (mounted).

CARBURETOR – Single natural gas Impco 400 updraft.

COOLING SYSTEM – Jacket water: gear driven jacket water pump, thermostatically controlled, full flow bypass type with nominal 180° F (82° C) outlet temperature. Auxiliary water: thermostatically controlled, gear driven pump supplies water to intercooler and oil cooler circuit.

CONNECTING RODS – Drop forged alloy steel, angle split, serrated joint, oil jet piston pin lubrication.

CRANKCASE – Alloy cast iron, fully ribbed, integral with cylinder frame.

CRANKSHAFT – Drop forged alloy steel, dynamically balanced and fully counterweighted. Viscous vibration dampener.

CYLINDERS – Removable wet type liners of centrifugally cast alloy iron.

CYLINDER HEADS – Six interchangeable, valve–in–head type, with two hard faced intake and two hard faced exhaust valves per cylinder. Replaceable intake and exhaust valve seats. Mechanical valve lifters with pivoted roller followers.

EXHAUST SYSTEM – Water cooled exhaust manifold, Outlet flange for ANSI 8" 125# flange.

FLYWHEEL – With 150 tooth ring gear (for Delco electric and air/gas starters). Flywheel machined to accept SAE 620D, 18" (457 mm) diameter clutch.

FLYWHEEL HOUSING – SAE #0, nodular iron housing. Provision for two magnetic pickups and vertical mounting pads.

GOVERNOR – Woodward SG hydraulic with manual speed control.

IGNITION – Waukesha Custom Engine Control electronic ignition system with coils, cables, hall effect pick up, and spark plugs. Non–shielded. 24V DC power required. Includes emergency stop/service engine protection switch for local override of remote controls.

INTERCOOLER – Air–to–water.

LIFTING EYES – For engine only.

LUBRICATION SYSTEM – Gear type pump, full flow spin–on filters and industrial base type oil pan, 44 gallon (166 litres) capacity, including filters. Engine mounted plate type oil cooler.

MOUNTING – Base type oil pan.

PAINT – Oilfield orange.

PISTONS – Aluminum alloy, three ring, with patented high turbulence combustion bowl. Oil jet cooled with full floating piston pin. Low Compression Ratio (LCR) 8.7:1 for tolerance of low and varying fuel WKI®.

TURBOCHARGER – Exhaust driven, dry type with wastegate. For 1400 – 1800 rpm applications.

POWER RATINGS: F18GL VGF Series Gas Engines

Model	I.C. Water Inlet Temp.	C.R.	Bore & Stroke in. (mm)	Displ. cu. in. (litres)	Brake Horsepower (kWb)							
					1800 RPM		1600 RPM		1500 RPM		1400 RPM	
					C	I	C	I	C	I	C	I
F18GL	130° (54°)	11:1	5.98 x 6.5	1096 (18)	400	440	355	390	335	365	310	340
			(152 x 165)		(300)	(330)	(265)	(290)	(250)	(275)	(230)	(255)
F18GL	130° (54°)	8.6:1	5.98 x 6.5	1096 (18)	400	440	355	390	335	365	310	340
			(152 x 165)		(300)	(330)	(265)	(290)	(250)	(275)	(230)	(255)
F18GL*	130° (54°)	11:1	5.98 x 6.5	1096 (18)	440	—	390	—	365	—	340	—
			(152 x 165)		(330)	—	(290)	—	(275)	—	(255)	—

		1800 rpm		1500 rpm	
		C	I	C	I
	Power bhp (kWb)	400 (300)	440 (330)	335 (250)	365 (275)
	BSFC (LHV) Btu/bhp-hr (kJ/kWh)	7000 (9852)	6900 (9709)	6800 (9619)	6715 (9399)
	Fuel Consumption Btu/hr x 1000 (kW)	2800 (821)	3036 (890)	2278 (668)	2451 (718)
Emissions	NOx g/bhp-hr (mg/nm³ @ 5% O_2)	2.00 (810)	2.00 (822)	2.4 (982)	2.50 (1004)
	CO g/bhp-hr (mg/nm³ @ 5% O_2)	1.30 (535)	1.30 (541)	1.4 (563)	1.30 (519)
	THC g/bhp-hr (mg/nm³ @ 5% O_2)	1.7 (683)	1.60 (650)	2.1 (835)	2.00 (806)
	NMHC g/bhp-hr (mg/nm³ @ 5% O_2)	0.27 (108)	0.26 (105)	0.31 (125)	0.30 (122)
Heat Balance	Heat to Jacket Water Btu/hr x 1000 (kW)	738 (216)	785 (230)	627 (184)	662 (194)
	Heat to Lube Oil Btu/hr x 1000 (kW)	95 (28)	97 (28)	68 (20)	70 (20)
	Heat to Intercooler Btu/hr x 1000 (kW)	169 (49)	197 (58)	113 (33)	134 (39)
	Heat to Radiation Btu/hr x 1000 (kW)	74 (22)	74 (22)	69 (20)	69 (20)
	Total Exhaust Heat Btu/hr x 1000 (kW)	810 (237)	876 (257)	633 (186)	679 (199)
Intake/ Exhaust System	Induction Air Flow scfm (Nm³/hr)	860 (1320)	932 (1432)	699 (1075)	752 (1156)
	Exhaust Flow lb/hr (kg/hr)	3748 (1699)	4063 (1843)	3048 (1383)	3280 (1488)
	Exhaust Temperature °F (°C)	836 (447)	839 (448)	807 (430)	802 (428)

* These power ratings require Price Book Code 1100, and are available continuously when applied per WKI® power and timing curve S7079-19. It is permissible to operate at up to 5% overload for two hours in each 24 hour period.

Typical heat data is shown, however no guarantee is expressed or implied. Consult your Dresser Waukesha Application Engineering Department for system application assistance.

All natural gas engine ratings are based on a fuel of 900 Btu/ft³ (35.3 MJ/nm³) SLHV, with a 91 WKI®. For conditions or fuels other than standard, consult the Dresser Waukesha Application Engineering Department.

Data based on standard conditions of 77°F (25°C) ambient temperature, 29.53 inches Hg (100kPa) barometric pressure, 30% relative humidity (0.3 inches HG / 1 kPa water vapor pressure).

Fuel consumption based on ISO3046/1-1995 with a tolerance of +5% for commercial quality natural gas having a 900 BTU/ft³ (35.3 MJ/nm³) SLHV.

Heat data based on fuel consumption +2%.

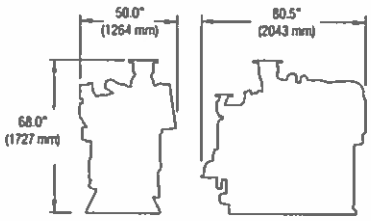
Heat rejection based on cooling exhaust temperature to 77°F (25°C).

Rating Standard: All models - Ratings are based on ISO 3046/1-1986 with mechanical efficiency of 90% and Tcra (clause 10.1) as specified above limited to ± 10° F (5° C). Ratings are also valid for SAE J1349, BS5514, DIN6271 and AP17B-11C standard atmospheric conditions.

C = ISO Standard Power/Continuous Power Rating: The highest load and speed which can be applied 24 hours per day, seven days per week, 365 days per year except for normal maintenance. It is permissible to operate the engine at up to 10% overload, or a maximum load indicated by the intermittent rating, whichever is lower, for two hours in every 24 hour period.

I = Intermittent Service Rating: The highest load and speed that can be applied in variable speed mechanical system application only. Operation at this rating is limited to a maximum of 3500 hours per year.

Consult your local Waukesha representative for system application assistance. The manufacturer reserves the right to change or modify without notice, the design or equipment specifications as herein set forth without incurring any obligation either with respect to equipment previously sold or in the process of construction except where otherwise specifically guaranteed by the manufacturer.



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www.dresser.com/waukesha

Attachment J – Class I Legal Advertisement

AIR QUALITY PERMIT NOTICE

Notice of Application

Notice is given that EnerVest Operating, LLC has applied to the West Virginia Department of Environmental Protection, Division of Air Quality, for a Class II administrative update for a Natural Gas Compressor and Dehydration unit located on Clear Fork Rd, Near Crany, in Wyoming County, West Virginia. The latitude and longitude coordinates are: Lat: 37.740055 Long: -81.507125

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

PM (0.00 TON/YR)
PM10 (0.00 TON/YR)
VOC (0.182 TON/YR)
CO (0.35 TON/YR)
NOx (7.72 TON/YR)
SO2 (0.01 TON/YR)
HAPS (0.07 TON/YR).

Startup of operation is planned to begin on or about the 15 day of February, 2016. Written comments will be received by the West Virginia Department of Environmental Protection, Division of Air Quality, 601 57th Street, SE, Charleston, WV 25304, for at least 30 calendar days from the date of publication of this notice.

Any questions regarding this permit application should be directed to the DAQ at (304) 926- 0499, extension 1250, during normal business hours. Dated this the 18 day of December, 2015.

By: EnerVest Operating, LLC.
James McKinney
Sr. Vice President and General Manager EVOC,
300 Capitol Street, Suite 200
Charleston, WV, 25301

Attachment O – Emissions summery

COMPRESSOR STATION EMISSION SUMMARY SHEET FOR CRITERIA POLLUTANTS

Compressor Station						Registration Number (Agency Use) G35-A				
	Potential Emissions (lbs/hr)					Potential Emissions (tons/yr)				
Source ID No.	NO_X	CO	VOC	SO_2	PM_{10}	NO_X	CO	VOC	SO_2	PM_{10}
CE-3	1.76	0.08	0.18	0.00	0.00	7.72	0.35	0.182	0.01	0.00
Total										

COMPRESSOR STATION EMISSION SUMMARY SHEET FOR HAZARDOUS/TOXIC POLLUTANTS

Compressor Station							Registration Number (Agency Use) G35-A					
	Potential Emissions (lbs/hr)						Potential Emissions (tons/yr)					
Source ID No.	Benzene	Ethyl-benzene	Toluene	Xylenes	n-Hexane	Formalde-hyde	Benzene	Ethyl-benzene	Toluene	Xylenes	n-Hexane	Formalde-hyde
						0.02						0.07
Total												