AMERICAN ENERGY
MARCELLUS

July 27, 2015

Mr. William F. Durham, Director
West Virginia Department of Environmental Protection
Division of Air Quality
601 57th Street, SE
Charleston, West Virginia, 25304

RE: Request for Class I Administrative Update to Existing G70-A Permit
WJ Criswell 405 Well Pad
American Energy – Marcellus, LLC

Dear Director Durham:

American Energy – Marcellus, LLC (AEM) is pleased to submit this written request for a Class I Administrative Update to an existing G70-A Permit for the WJ Criswell 405 well pad near Wileyville, in Wetzel County, West Virginia. The WJ Criswell 405 well currently operates under permit number G70-A124A, issued on June 30, 2015. An original hard copy and two electronic copies of the complete application package are enclosed.

AEM submits this Class I Administrative Update to correct a typographical error with emission Unit ID ENG-1. ENG-1 is currently permitted as a Caterpillar 4SRB compressor engine with a rating of 118 bhp. With this update, AEM seeks to amend ENG-1 to update the engine as a Cummins 4SRB compressor engine with a rating of 118 bhp. The manufacturer information supplied in the original permit application was in error and this change has no impact on the Federal Regulatory Analysis nor the permitted emissions for emission unit ENG-1.

No other updates are requested with the submittal of this Class I Administrative Update. To aid the WVDEP, Division of Air Quality, an engine specification sheet is being included as an enclosure to this written request.

If you have any questions about the information submitted or if you would like to discuss this project, please do not hesitate to contact Evan Foster, EH&S Air Compliance Specialist, at (405) 418-8094.

Sincerely,

Tim Cummings
Director – Operations, AEM

cc: Grant Morgan, ERM – Grant.morgan@erm.com

Enclosures

USA COMPRESSION

Emissions Report

12/01/2014

USA Compression Unit 6326 G8.3/JGP2

Engine Serial Number :	73622183	Engine Manufactured Date :	01/01/2014
Max HP :	118	Max RPM :	1800
Number of Engine Cylinders :	6	Total Displacement (in3) :	505
Combustion Type & Setting :	4 Stroke Rich Burn	Fuel Delivery Method:	Carburetor
Compression Ratio :	10.5:1	Combustion Air Treatment :	Naturally Aspirated
Engine Modified/Reconstructed? :	Tier 2 - EMD after 1/1/11		
Compressor Frame Serial # :	F44660	Unit Packaged Date :	04/18/2014
Compressor Frame Max RPM :	1800	# of Compressor Throws :	2

AIR ENVIRONMENTAL REGULATIONS

County and State Selected for Quote: Wetzel WV

NSPS JJJJ	NOx	1.00	g/hp-hr	CO	2.0	g/hp-hr	VOC	0.7	g/hp-hr			
Ozone Non-Attainment / General Permit	NOx		g/hp-hr	CO		g/hp-hr	VOC		g/hp-hr	CH2O		g/hp-hr

RAW ENGINE EMISSIONS

(based on assumption of burning 900-970 LHV BTU/SCF or 80-85 Fuel Methane # Fuel Gas with little to no H2S)

Fuel Consumption : 8,924 HHV BTU/bhp-hr

	g/bhp-hr	lb/MMBTU	lb/hr	TPY
Nitrogen Oxides (NOx) :	13.00		3.382	14.813
Carbon Monoxide (CO) :	8.60		2.237	9.798
Volatile Organic Compounds (NMNEHC excluding CH2O) :		0.03	0.031	0.136
Formaldehyde (CH2O) :		0.02	0.022	0.096
Particulate Matter (PM) Filterable+Condensable :		0.0194	0.020	0.090
Sulfur Dioxide (SO2) :		0.0006	0.001	0.003

	g/bhp-hr	lb/MMBTU	lb/hr	Metric Tonne/yr
Carbon Dioxide (CO2) :	452.00		117.58	467.14
Methane (CH4) :		0.23	0.24	0.96

CONTROLLED EMISSIONS

Catalytic Converter Make and Model:	VXC-1408-04-HSG
Catalyst Element Type:	3-Way
Number of Catalyst Elements currently in Housing:	1
Air/Fuel Ratio Control :	Yes
Other Engine Emissions Control Equipment :	None

	% Reduction Required to Comply with JJJJ & Non-Attainment / General Permit Limits	lb/hr	TPY
Nitrogen Oxides (NOx) :	92	0.260	1.139
Carbon Monoxide (CO) :	77	0.520	2.279
Volatile Organic Compounds (NMNEHC excluding CH2O) :	0	0.031	0.136
Formaldehyde (CH2O) :	0	0.022	0.096
Particulate Matter (PM) Filterable+Condensable :	0	0.020	0.090
Sulfur Dioxide (SO2) :	0	0.001	0.003

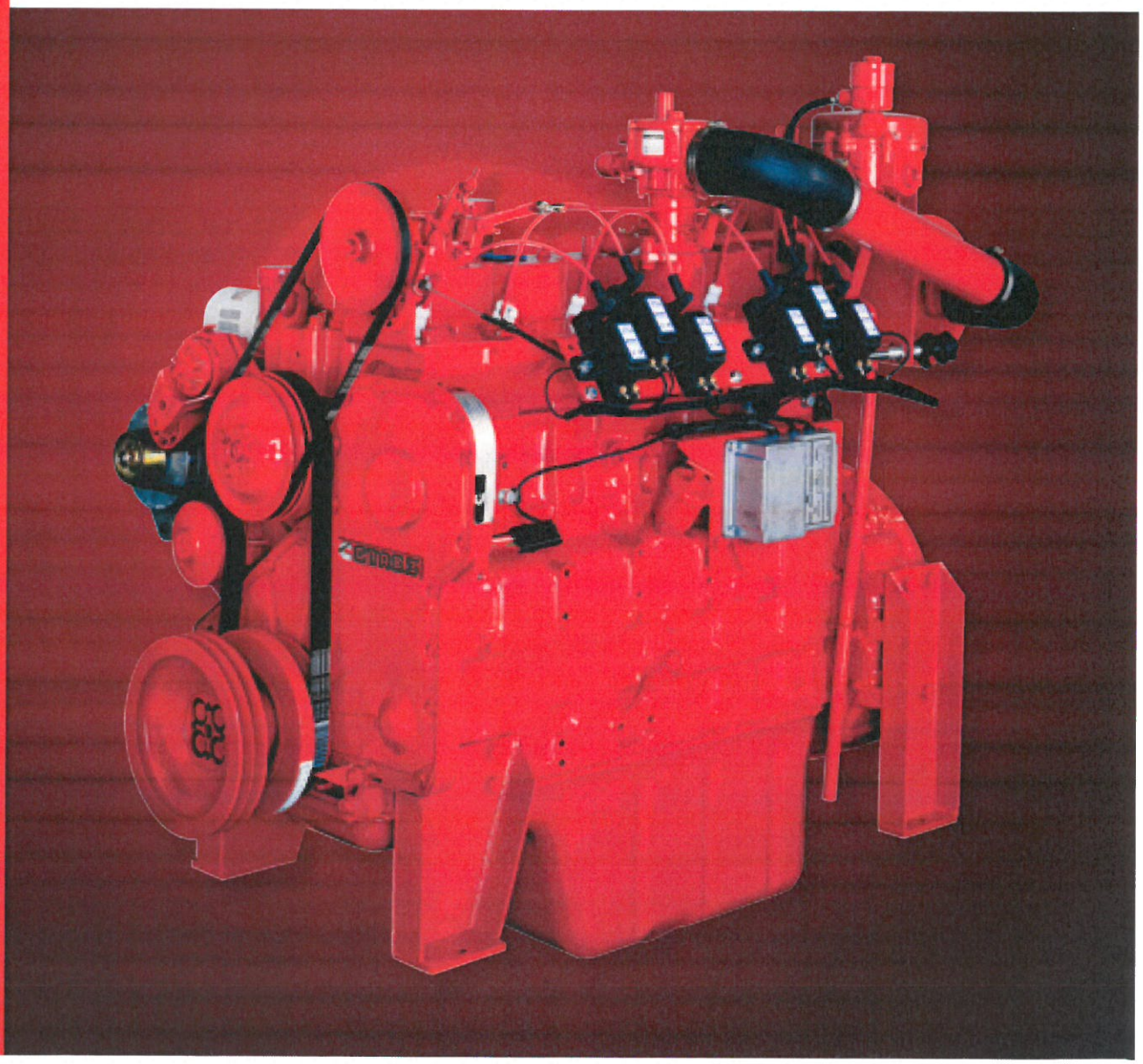
	% Reduction Required to Comply with JJJJ & Non-Attainment / General Permit Limits	lb/hr	Metric Tonne/yr
Carbon Dioxide (CO2) :	0	117.58	467.14
Methane (CH4) :	0	0.24	0.96

1) g/bhp-hr are based on Engine Manufacturer Specifications assuming a "Pipeline Quality" fuel gas composition, 1200 ft elevation, and 100- 110 F Max Air Inlet. Note that g/bhp-hr values are based on 100% engine load operation and some g/hp-hr values are Nominal and are not representative of Not- To-Exceed values. It is recommended to apply safety factor (i.e. increase the value by a nominal percentage) to the g/hp- hr values for Air Permitting to allow for operational flexibility and variations in fuel gas composition .

2) lb/MMBTU emission Factors are based on EPA's AP-42, Fifth Edition, Volume I, Chapter 3: Stationary Internal Combution Sources (Section 3.2 Natural Gas-Fired Reciprocating Engines).

G8.3 And GTA8.3.

Natural Gas Engines For Gas Compression.



G8.3 And GTA8.3.

Designed specifically for the oil and gas market, the G8.3 and GTA8.3 deliver exceptional dependability and low cost of operation in artificial lift, gas lift and wellhead compression applications. The G8.3 is naturally aspirated for power and responsiveness, with multiple ratings to tailor performance to meet application and environmental needs. The GTA8.3 is turbocharged and aftercooled for enhanced power and better performance at higher elevations.

Standard Features And Benefits.

Base engine – Most major components, including the block, crank, cam, gears and liners, are common with the proven C Series diesel, with over 20 years of proven dependable service in a wide range of industrial applications. Heads and cylinders designed specifically for natural gas operation provide optimal air flow, fuel flow and combustion. Both the G8.3 and GTA8.3 have a factory warranty of 1 year/unlimited hours.

Flywheel and flywheel housing – The SAE flywheel is machined from cast iron. The flywheel housing is machined to accommodate starter-mounting.

Power Take-Off (PTO) – A two-groove front pulley is standard for driving the compressor cooler fan. An optional front stub shaft is available.

Air handling – The turbocharger design delivers maximum performance and life. It includes a factory-installed heavy-duty air cleaner.

Fuel system – An IMPCO® carburetor provides stable operation and fuel tracking across a range of fuel qualities and through all load ranges.

Speed control – A belt-driven governor provides adjustable speed and stable control under all load conditions. Electronic governor options are available.

Ignition system – A capacitive-discharge ignition module delivers dependable spark performance and easy timing adjustment. The easily accessible spark-plug location and a single coil per cylinder improve serviceability.

Starting system – The standard system features a robust Delco Remy® 39MT 24-volt starter with an SAE #3 mounting flange. A gas starter is optional.

Electrical system – Includes a 24-volt alternator.

Lubrication system – A deep, full-length, high-capacity oil pan offers extended drain intervals. Combo full-flow and bypass oil filters reduce maintenance costs while extending service intervals.

Cooling system – A durable gear-driven jacket water pump maintains steady coolant flow through the engine. The integrated coolant filter adds corrosion protection. The GTA8.3 utilizes a separate thermostat-controlled aftercooling circuit to maintain lower intake manifold temperatures.

Exhaust system – The dry exhaust manifold is standard on the G8.3. The water-cooled manifold, which reduces surface heat and exhaust gas temperatures, is standard on the GTA8.3 and optional on the G8.3.

G8.3 And GTA8.3 Specifications. In-Line, 6-Cylinder, 4-Cycle, Natural Gas.

Number of Cylinders	6	
Displacement	505 cu in	8.3 L
Bore and Stroke	4.49 in x 5.32 in	114 mm x 135 mm
Aspiration	Turbocharged and aftercooled	
Oil Pan Capacity	9 U.S. gal	34 L
Coolant Capacity	2.9 U.S. gal	10.9 L
Length	52.5 in	1,334 mm
Width	34.3 in	871 mm
Height	51.8 in	1,315 mm
Weight (Dry)	1,650 lb	748 kg

Ratings Gross Horsepower (Without Fan).

Engine Model	Emissions Capability Note	Continuous Rating hp (kW) @ rpm C/R (Note)	1500	1800	2200
G8.3	1, 3	10.5:1	–	99 (74)	–
		10.5:1	99 (74)	118 (88)	135 (101)
GTA8.3	2	8.5:1	–	175 (130)	–
		8.5:1	–	190 (142)	–

(1) This engine is capable of operating with a Three-Way Catalyst (TWC) at this rating. It is the responsibility of the owner/operator to upgrade the engine with an air/fuel ratio controller and a TWC capable of meeting New Source Performance Standards for spark-ignited engines (SI NSPS) regulations. The owner/operator is required to conduct site compliance testing and submit documentation per Environmental Protection Agency (EPA) SI NSPS requirements.

(2) This engine does not have a catalyst rating, and is not capable of meeting the U.S. EPA SI NSPS. This engine is offered only for use outside the U.S., in regions that do not have low-emissions requirements.

(3) Catalyst rating.

Every Question. Answered.

Your Cummins distributor can provide you with additional details, answer questions and make recommendations for the best configuration of a Cummins G8.3 or GTA8.3 engine for your gas compression needs. See cumminsengines.com to locate the distributor nearest you.

IMPCO is a registered trademark of IMPCO Technologies, Inc. Delco Remy is a registered trademark of General Motors LLC.

Cummins Inc.
Box 3005
Columbus, IN 47202-3005
U.S.A.

Phone: 1-800-DIESELS™ (1-800-343-7357)
Internet: cumminsengines.com

Twitter.com/CumminsEngines
YouTube.com/CumminsEngines

Bulletin 4087340 Printed in U.S.A 12/14
©2014 Cummins Inc.