Table of Contents

TABLE OF CONTENTS	PAGE 1
CLASS I GENERAL REGISTRATION APPLICATION	PAGES 2-6
ATTACHMENT A – CURRENT BUSINESS REGISTRATION CERTIFICATE	PAGE 7
ATTACHMENT F – AREA MAP	PAGE 9
ATTACHMENT G – EQUIPMENT DATA SHEET AND SECTION APPLICABILITY FORM	PAGES 10-11
ATTACHMENT I – EMISSIONS CALCULATIONS	PAGE 12
ATTACHMENT L – GENERAL PERMIT REGISTRATION APPLICATION FEE	PAGE 13
ATTACHMENT O – EMISSIONS SUMMARY SHEET	PAGE 14
OTHER SUPPORTING DOCUMENTATION	

Lee
6165-C551
047-00153

COPY

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

☒ 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

RECEIVED MAR 12 2015 WV DEP / DIV OF AIR QUALITY

SECTION I. GENERAL INFORMATION

1. Name of applicant (as registered with the WV Secretary of State's Office): CITY OF WELCH,WV

2. Federal Employer ID No. (FEIN): 55-6000264

3. Applicant's mailing address: 88 HOWARD ST. WELCH, WV 24801

4. Applicant's physical address: 88 HOWARD ST. WELCH, WV 24801

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? ☒ 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.): WATER TREATMENT PLANT

8a. Standard Industrial Classification Classification (SIC) code: 4941

AND

8b. North American Industry System (NAICS) code: 221310

9. DAQ Plant ID No. (for existing facilities only): ___ - ___

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

A: PRIMARY OPERATING SITE INFORMATION

11A. Facility name of primary operating site:	12A. Address of primary operating site:
WELCH WATER TREATMENT PLANT	Mailing: 88 HOWARD ST WELCH, WV 24801 Physical: CR 7/8 WELCH, WV 24801

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

⇨ IF **YES**, please explain: THE CITY OF WELCH OWNS THE PLANT SITE

⇨ 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.**

TAKE US-52-N TO WELCH VEER RIGHT ONTO VIRGINIA AVE, THEN TURN RIGHT ONTO ELKHORN ST., VEER RIGHT ONTO HOWARD ST.. AFTER 2 MILES TURN RIGHT ONTO WYOMING ST (SR-16) THEN IN 0.4 MILES CONTINUE STRAIGHT ON MCDOWELL ST.(SR-16), CONTINUE STRAIGHT ON MCDOWELL ST.(CR-7). THEN TURN LEFT AT S.TUG ST., THEN CONTINUE ONTO CITY PARK RD. (CR 7/8) FOR 0.2 MILES , VEER RIGHT ONTO UNNAMED ROAD, CONTINUE FOR APPROXIMATELY A MILE AND THE PLANT WILL BE ON YOUR LEFT.

15A. Nearest city or town:	16A. County:	17A. UTM Coordinates:
WELCH	McDOWELL	Northing (KM): 4142917 Easting (KM): 445882 Zone: 17

18A. Briefly describe the proposed new operation or change (s) to the facility:	19A. Latitude & Longitude Coordinates (NAD83, Decimal Degrees to 5 digits):
THE INSTALLATION OF AN EMERGENCY GENERATOR	Latitude: 37.72735 Longitude: 80.64761

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? ☐ YES ☐ 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): 445882 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? ☐ **YES** ☐ **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:
10 / 15 / 15	11 / 01 / 15
If this is an **After-The-Fact** permit application, provide the date upon which the proposed change did happen: : ___/___/___	

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). ~*The generator will operate approximately less than or equal to 500 hours per year.*~

Hours per day_____ Days per week _____ Weeks per year _____ Percentage of operation _____

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.

- ☑ ATTACHMENT A : CURRENT BUSINESS CERTIFICATE
- ☐ ATTACHMENT B: PROCESS DESCRIPTION
- ☐ ATTACHMENT C: DESCRIPTION OF FUGITIVE EMISSIONS
- ☐ ATTACHMENT D: PROCESS FLOW DIAGRAM
- ☐ ATTACHMENT E: PLOT PLAN
- ☑ ATTACHMENT F: AREA MAP
- ☑ ATTACHMENT G: EQUIPMENT DATA SHEETS AND REGISTRATION SECTION APPLICABILITY FORM
- ☐ ATTACHMENT H: AIR POLLUTION CONTROL DEVICE SHEETS
- ☑ ATTACHMENT I: EMISSIONS CALCULATIONS
- ☐ ATTACHMENT J: CLASS I LEGAL ADVERTISEMENT
- ☐ ATTACHMENT K: ELECTRONIC SUBMITTAL
- ☑ ATTACHMENT L: GENERAL PERMIT REGISTRATION APPLICATION FEE
- ☐ ATTACHMENT M: SITING CRITERIA WAIVER
- ☐ ATTACHMENT N: MATERIAL SAFETY DATA SHEETS (MSDS)
- ☑ ATTACHMENT O: EMISSIONS SUMMARY SHEETS
- ☑ 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)

☑ 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 Reba J. Honaker 3-6-2015
(please use blue ink) Responsible Official Date

Name & Title Reba Honaker, Mayor
(please print or type)

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

Applicant's Name City of Welch

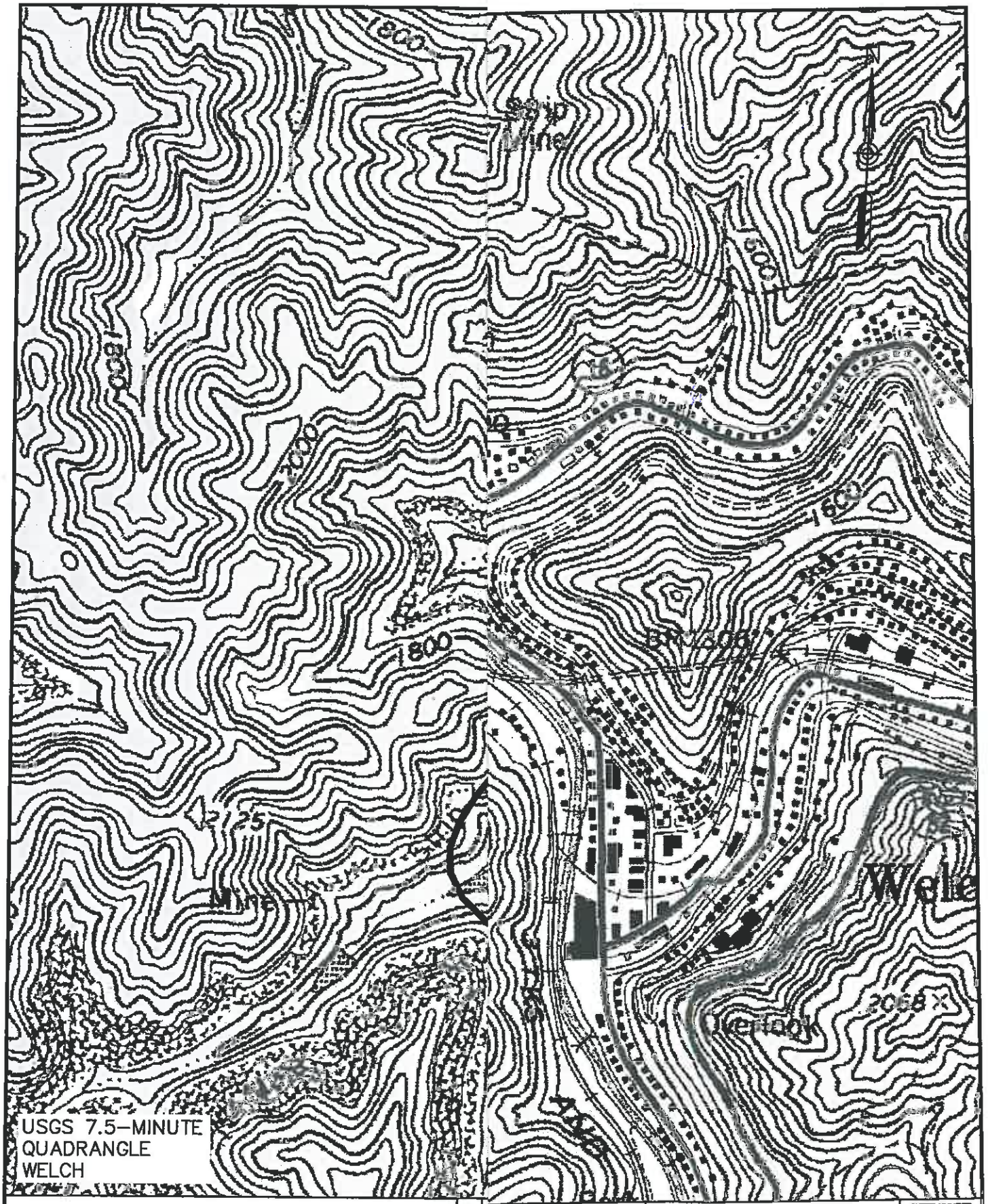
Phone & Fax 304-436-3113 304-436-2546
Phone Fax

Email reba@mcswv.net

ATTACHMENT A

The City of Welch, WV does not have and is not required to have a Business Registration Certificate.

ATTACHMENT F


1800
1600
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1800

ATTACHMENT G

EMERGENCY GENERATOR ENGINE DATA SHEET

Source Identification Number[1]		EG-1	
Engine Manufacturer and Model		Caterpillar 3406C	
Manufacturer's Rated bhp/rpm		469/1800	
Source Status[2]		ES	
Date Installed/Modified/Removed[3]		1/1/2000	
Engine Manufactured/Reconstruction Date[4]		1/1/2000	
Is this a Certified Stationary Spark Ignition Engine according to 40CFR60 Subpart IIII? (Yes or No)[5]		No	
Is this a Certified Stationary Spark Ignition Engine according to 40CFR60 Subpart JJJJ? (Yes or No)[6]		No	
Engine, Fuel and Combustion Data	Engine Type[7]	LB4s	
	APCD Type[8]	N/A	
	Fuel Type[9]	2FO	
	H_2S (gr/100 scf)		
	Operating bhp/rpm	469/1800	
	BSFC (Btu/bhp-hr)	.33	
	Fuel throughput (ft^3/hr)	3.9	
	Fuel throughput ($MMft^3$/yr)	.256	
	Operation (hrs/yr)	Less than 500 hr/year	
Reference[10]	Potential Emissions[11]	lbs/hr	tons/yr
MD	NO_X	5.595	1.40
MD	CO	1.651	0.41
MD	VOC		
MD	SO_2		
MD	PM_{10}	0.222	0.06
MD	Formaldehyde		
MD	HC (unburned hydrocarbons)	0.038	0.01

1. Enter the appropriate Source Identification Number for each emergency generator. Generator engines should be designated EG-1.

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

General Permit G65-C Registration
Section Applicability Form

General Permit G65-C was developed to allow qualified registrants to seek registration for emergency generator(s).

General Permit G65-C 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	Tanks	☐
Section 7	Standards of Performance for Stationary Compression Ignition Internal Combustion Engines (40CFR60 Subpart IIII)	☐
Section 8	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 Sections 7 or 8. Therefore, if the applicant is seeking registration under both sections, please select both.**

ATTACHMENT I

Emission Calculations
Treatment Plant Generator

City of Welch, WV
Water Treatment Plant

3/6/2015

	0.00204622618	grams/lb
EG-1	469.0	bhp
	2000	lb/ton
	500	hr/yr

	EG-1		
	grams/hp.hr	lbs/hr	tons/yr
NOx	5.83	5.595	1.40
CO	1.72	1.651	0.41
VOC		0	0.00
So2		0	0.00
PM	0.231	0.222	0.06
Formeldahyde		0	0.00
Smoke		0	0.00
HC	0.04	0.038	0.01

Note: All emission calcualtions were performed with the following methodology:

1. Information was obtained from manufacturer emisson data sheets.
2. Values obtained were converted from grams/hp.hr to lbs/hr. by multplying by the factor 0.00204622618 grams/lb. and then multplying the resulting value by the bhp value obtained from manufacturer data sheets.
3. Nultiply the previously obtained value by 500 hr/yr.
4. Divide the previous total by 2,000 lb/ton to get the total tons per year of emissions.

ATTACHMENT L

THE PERMIT APPLICATION FEE IS ATTACHED TO THE SUBMITTAL

ATTACHMENT O

EMERGENCY GENERATOR EMISSION SUMMARY SHEET FOR CRITERIA POLLUTANTS

Emergency Generator Location: Welch Water Treatment Plant

Registration Number (Agency Use) G65-C

	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}**
EG-1	5.95	1.651	-	-	0.222	1.40	0.41	-	-	0.06
Total	5.595	1.651	-	-	0.222	1.40	0.41	-	-	0.06

OTHER SUPPPORTING DOCUMENTATION

DIESEL GENERATOR SET

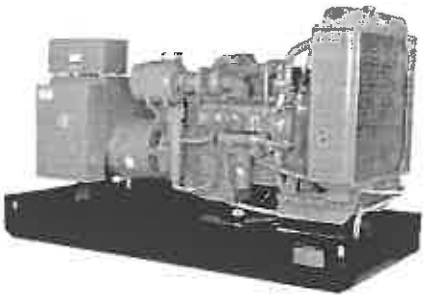

Image shown may not reflect actual package.

STANDBY
400 ekW 500 kVA
60 Hz 1800 rpm 480 Volts

Caterpillar is leading the power generation marketplace with Power Solutions engineered to deliver unmatched flexibility, expandability, reliability, and cost-effectiveness.

FEATURES

FUEL/EMISSIONS STRATEGY
- Low Fuel consumption

UL 2200
- UL 2200 listed packages available. Certain restrictions may apply. Consult with your Cat® Dealer.

FULL RANGE OF ATTACHMENTS
- Wide range of bolt-on system expansion attachments, factory designed and tested
- Flexible packaging options for easy and cost effective installation

COMPLETE, READY-TO-RUN SYSTEM
- Fully configured generator set
- Full range of attachments and options available

ENCLOSURES (optional)
- Weather protective and sound attenuated

SINGLE-SOURCE SUPPLIER
- Fully prototype tested with certified torsional vibration analysis available

WORLDWIDE PRODUCT SUPPORT
- Cat dealers provide extensive post sale support including maintenance and repair agreements
- Cat dealers have over 1,800 dealer branch stores operating in 200 countries
- The Cat® S•O•S℠ program cost effectively detects internal engine component condition, even the presence of unwanted fluids and combustion by-products

CAT® 3406C TA DIESEL ENGINE
- High efficiency, four-stroke-cycle engine designed for thousands of trouble-free hours of operation
- Field-proven in thousands of applications

CAT GENERATOR
- Matched to the performance and output characteristics of Cat engines
- Load adjustment module provides engine relief upon load impact and improves load acceptance and recovery time
- UL 1446 Recognized Class H insulation

CAT EMCP 4 CONTROL PANELS
- Simple user friendly interface and navigation
- Scalable system to meet a wide range of customer needs
- Integrated Control System and Communications Gateway•

STANDBY 400 ekW 500 kVA

60 Hz 1800 rpm 480 Volts

FACTORY INSTALLED STANDARD & OPTIONAL EQUIPMENT

System	Standard	Optional
Air Inlet	• Light duty air cleaner	[ ] Regular duty canister style, single stage with service indicator [ ] Dual element [ ] Heavy-duty and Muffler [ ] Air Inlet Shut-off
Cooling	• Coolant drain line with valve • Fan and belt guards • Radiator with guard • Coolant drain line with valve • Fan and belt guards. • Cat® Extended Life Coolant* • Coolant level sight gauge	[ ] Low coolant level shutdown [ ] Duct flange
Exhaust	• Stainless steel exhaust flex • ANSI style outlet flange, gasket, bolts and mating weld flange; shipped loose	[ ] 10 DBA Industrial muffler [ ] 25 DBA Residential muffler [ ] Critical muffler [ ] Flexible fitting [ ] Elbow kit [ ] Throughwall Installation kit [ ] Manifold and Turbo Guard
Fuel	• Fuel priming pump • Fuel pressure gauge • Primary and secondary fuel filters • Flexible fuel lines	[ ] Water separator [ ] Fuel level switch [ ] Flexible fuel lines [ ] Manual or auto fuel pumps [ ] Single wall tank bases
Generator	• Three phase sensing • Class H insulation • VR6 3-phase sensing voltage regulator with load adjustment module • IP23 Protection • Circuit Breaker IEC, 3-pole • Segregated L.V. (AC/DC) wiring panel	[ ] Anti-condensation heater [ ] Permanent Magnet excitation [ ] RFI Filter [ ] Coastal Protection [ ] Terminal strip connection [ ] Oversize generator [ ] Circuit breaker, UL and IEC Listed, 3 & 4-pole with shunt trip [ ] Multiple breaker capability [ ] Digital Voltage Regulator
Governor	• Hydra-mechanical (3% speed regulation)	[ ] Electronic isochronous governor [ ] Load sharing module
Control Panels	• EMCP 4.1 • User Interface panel (UIP) - rear mount (standard) • Emergency Stop Pushbutton	[ ] EMCP 4.2 [ ] Local & remote annunciator modules [ ] Load share module [ ] Discrete I/O module [ ] Generator temperature monitoring & protection
Lube	• Lubricating oil and filter • Oil drain line with valve piped to edge of base • Fumes disposal piped to front of radiator	[ ] Manual sump pump [ ] Oil temperature sensor
Mounting	• Narrow integral fuel tank base (950L) • Linear vibration isolators between base and engine-generator	[ ] Narrow base [ ] Wide Base [ ] Lifting arch [ ] Oil field skid base
Starting/Charging	• 45 amp charging alternator • 24 volt starting motor • Batteries with rack and cables • Safety shutoff protection	[ ] Battery chargers (5 or 10 amp) [ ] Oversize batteries [ ] Battery disconnect switch [ ] Ether starting aid [ ] Jacket water heater
General		[ ] Enclosures - sound attenuated, weather protective [ ] EU Certificate of Conformance (CE)

STANDBY 400 ekW 500 kVA

60 Hz 1800 rpm 480 Volts

TECHNICAL DATA

Open Generator Set - - 1800 rpm/60 Hz/480 Volts	DM2275	
Low Fuel Consumption		
Generator Set Package Performance		
Genset Power rating @ 0.8 pf	500 kVA	
Genset Power rating with fan	400 ekW	
Fuel Consumption		
100% load with fan	110.6 L/hr	29.2 Gal/hr
75% load with fan	79.3 L/hr	20.9 Gal/hr
50% load with fan	54.6 L/hr	14.4 Gal/hr
Cooling System[1]		
Air flow restriction (system)	0.12 kPa	0.48 in. water
Air flow (max @ rated speed for radiator arrangement)	684 m³/min	24155 cfm
Engine Coolant capacity with radiator/exp. tank	57.8 L	15.3 gal
Engine coolant capacity	20.8 L	5.5 gal
Radiator coolant capacity	37.0 L	9.8 gal
Inlet Air		
Combustion air inlet flow rate	32.1 m³/min	1133.6 cfm
Exhaust System		
Exhaust stack gas temperature	572.8 ° C	1063.0 ° F
Exhaust gas flow rate	96.4 m³/min	3404.3 cfm
Heat rejection to aftercooler	58 kW	3298 Btu/min
Exhaust flange size (internal diameter)	152.4 mm	6.0 in
Exhaust system backpressure (maximum allowable)	6.7 kPa	26.9 in. water
Heat rejection		
Heat rejection to coolant (total)	251 kW	14274 Btu/min
Heat rejection to exhaust (total)	396 kW	22520 Btu/min
Heat rejection to atmosphere from engine	99 kW	5630 Btu/min
Heat rejection to atmosphere from generator	25.1 kW	1427.4 Btu/min
Alternator[2]		
Motor starting capability @ 30% voltage dip	1089 skVA	
Frame	LC6114D	
Temperature Rise	105 ° C	189 ° F
Lube System		
Sump refill with filter	38.0 L	10.0 gal
Emissions[3]		
NOx g/hp-hr	5.83 g/hp-hr	
CO g/hp-hr	1.72 g/hp-hr	
HC g/hp-hr	.04 g/hp-hr	
PM g/hp-hr	.231 g/hp-hr	

[1] For ambient and altitude capabilities consult your Cat dealer. Air flow restriction (system) is added to existing restriction from factory.
[2] UL 2200 Listed packages may have oversized generators with a different temperature rise and motor starting characteristics. Generator temperature rise is based on a 40°C ambient per NEMA MG1-32.
[3] Emissions data measurement procedures are consistent with those described in EPA CFR 40 Part 89, Subpart D & E and ISO8178-1 for measuring HC, CO, PM, NOx. Data shown is based on steady state operating conditions of 77°F, 28.42 in HG and number 2 diesel fuel with 35° API and LHV of 18,390 btu/lb. The nominal emissions data shown is subject to instrumentation, measurement, facility and engine to engine variations. Emissions data is based on 100% load and thus cannot be used to compare to EPA regulations which use values based on a weighted cycle.

STANDBY 400 ekW 500 kVA

60 Hz 1800 rpm 480 Volts

SPECIFICATIONS

CAT GENERATOR

Frame size..... LC6114D
Excitation..... Self Excitation
Pitch..... 0.6667
Number of poles..... 4
Number of bearings..... Single bearing
Number of Leads..... 012
Insulation..... UL 1446 Recognized Class H with tropicalization and antiabrasion
- Consult your Caterpillar dealer for available voltages

IP Rating..... IP23
Alignment..... Pilot Shaft
Overspeed capability..... 125
Wave form Deviation (Line to Line)..... 002.00
Voltage regulator..... Three phase sensing
Voltage regulation..... Less than +/- 1/2% (steady state)
Less than +/- 1% (no load to full load)
Telephone influence factor..... Less than 50
Harmonic Distortion..... Less than 5%

CAT DIESEL ENGINE

3406C TA, I-6, 4-Stroke Water-cooled Diesel
Bore..... 137.20 mm (5.4 in)
Stroke..... 165.10 mm (6.5 in)
Displacement..... 14.64 L (893.39 in³)
Compression Ratio..... 14.6:1
Aspiration..... TA
Governor Type..... Hydra-mechanical

CAT EMCP 4 SERIES CONTROLS

EMCP 4 controls including:
- Run / Auto / Stop Control
- Speed and Voltage Adjust
- Engine Cycle Crank
- 24-volt DC operation
- Environmental sealed front face
- Text alarm/event descriptions

Digital indication for:
- RPM
- DC volts
- Operating hours
- Oil pressure (psi, kPa or bar)
- Coolant temperature
- Volts (L-L & L-N), frequency (Hz)
- Amps (per phase & average)
- ekW, kVA, kVAR, kW-hr, %kW, PF (4.2 only)

Warning/shutdown with common LED indication of:
- Low oil pressure
- High coolant temperature
- Overspeed
- Emergency stop
- Failure to start (overcrank)
- Low coolant temperature
- Low coolant level

Programmable protective relaying functions:
- Generator phase sequence
- Over/Under voltage (27/59)
- Over/Under Frequency (81 o/u)
- Reverse Power (kW) (32) (4.2 only)
- Reverse reactive power (kVAr) (32RV)
- Overcurrent (50/51)

Communications:
- Four digital inputs (4.1)
- Six digital inputs (4.2 only)
- Four relay outputs (Form A)
- Two relay outputs (Form C)
- Two digital outputs
- Customer data link (Modbus RTU) (4.2 only)
- Accessory module data link (4.2 only)
- Serial annunciator module data link (4.2 only)
- Emergency stop pushbutton

Compatible with the following:
- Digital I/O module
- Local Annunciator
- Remote CAN annunciator
- Remote serial annunciator

STANDBY 400 ekW 500 kVA

60 Hz 1800 rpm 480 Volts

RATING DEFINITIONS AND CONDITIONS

Meets or Exceeds International Specifications: AS1359, CSA, IEC60034-1, ISO3046, ISO8528, NEMA MG 1-22, NEMA MG 1-33, UL508A, 72/23/EEC, 98/37/EC, 2004/108/EC

Standby - Output available with varying load for the duration of the interruption of the normal source power. Average power output is 70% of the standby power rating. Typical operation is 200 hours per year, with maximum expected usage of 500 hours per year. Standby power in accordance with ISO8528. Fuel stop power in accordance with ISO3046. Standby ambients shown indicate ambient temperature at 100% load which results in a coolant top tank temperature just below the shutdown temperature.

Ratings are based on SAE J1349 standard conditions. These ratings also apply at ISO3046 standard conditions. Fuel rates are based on fuel oil of 35° API [16° C (60° F)] gravity having an LHV of 42 780 kJ/kg (18,390 Btu/lb) when used at 29° C (85° F) and weighing 838.9 g/liter (7.001 lbs/U.S. gal.). Additional ratings may be available for specific customer requirements, contact your Cat representative for details. For information regarding Low Sulfur fuel and Biodiesel capability, please consult your Cat dealer.

STANDBY 400 ekW 500 kVA

60 Hz 1800 rpm 480 Volts

DIMENSIONS

Package Dimensions		
Length	4264.3 mm	167.89 in
Width	1110.0 mm	43.7 in
Height	2150.0 mm	84.65 in
Weight	3454 kg	7,615 lb

NOTE: For reference only - do not use for installation design. Please contact your local dealer for exact weight and dimensions. (General Dimension Drawing #3202728).

Performance No.: DM2275

Feature Code: 406DER8

Gen. Arr. Number: 2351207

Source: U.S. Sourced

June 10 2011

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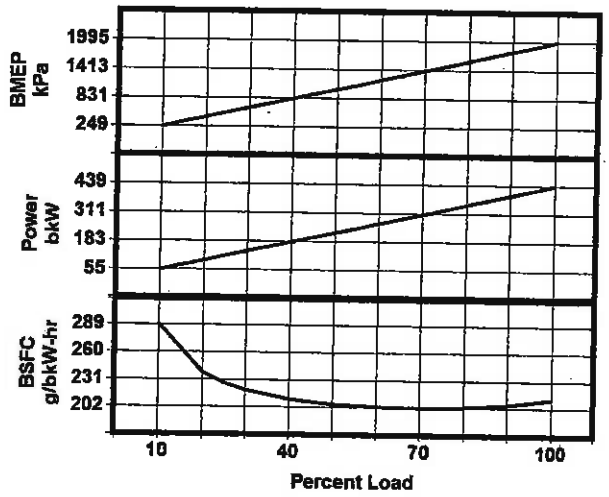
ELECTRIC POWER - Performance Data Sheet
STANDARD

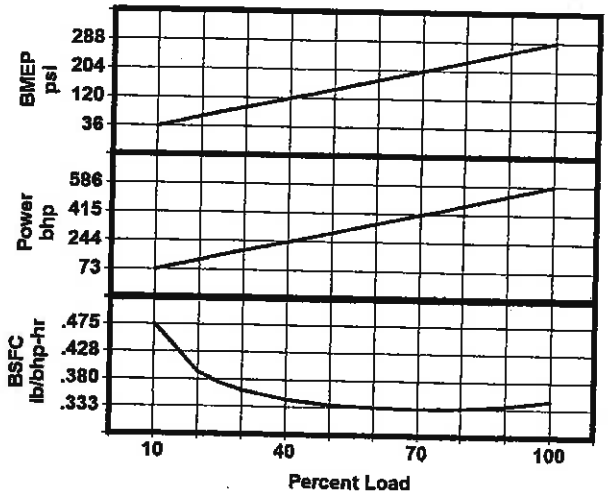
3408C DITA
400 ekW/60 Hz/1800 rpm/0.8 Power Factor

Rating Type: STANDBY

Fuel Strategy: LOW FUEL CONSUMPTION

Performance Number: DM2275-03





Metric

Gen Power ekW	Percent Load	Engine Power bkW	Engine BMEP kPa	BSFC g/bkW-hr	Fuel Rate L/hr
400	100	437.9	1994	211.8	110.5
360	90	393.4	1792	206.0	96.6
320	80	349.8	1593	203.4	84.8
300	75	328.3	1495	202.7	79.3
280	70	306.9	1398	202.4	74.0
240	60	264.5	1205	203.2	64.1
200	50	222.6	1014	205.6	54.6
160	40	181.3	826	210.7	45.5
120	30	139.8	637	220.2	36.7
100	25	119.0	542	227.8	32.3
80	20	97.9	446	239.0	27.9
40	10	54.8	249	289.2	18.9

English

Gen Power kVA	Percent Load	Engine Power bhp	Engine BMEP psi	BSFC lb/bhp-hr	Fuel Rate gph
500	100	587	289	.348	29.2
450	90	528	260	.339	25.5
400	80	469	231	.334	22.4
375	75	440	217	.333	21.0
350	70	412	203	.333	19.6
300	60	355	175	.334	16.9
250	50	298	147	.338	14.4
200	40	243	120	.346	12.0
150	30	188	92	.362	9.7
125	25	160	79	.375	8.5
100	20	131	65	.393	7.4
50	10	73	36	.475	5.0

Gen Power ekW	Intake Manifold Temp °C	Intake Manifold Press kPa	Intake Air Flow m³/min	Exhaust Manifold Temp °C	Exhaust Stack Temp °C	Exhaust Gas Flow m³/min
400	96.3	207.3	32.1	740.7	572.7	96.4
360	92.4	182.0	29.8	689.6	536.8	85.4
320	89.0	154.5	27.2	655.5	518.9	75.9
300	87.4	140.9	25.9	638.9	510.2	71.4
280	86.0	127.3	24.6	622.5	501.4	67.1
240	83.6	102.3	22.0	590.2	483.1	58.7
200	81.7	79.5	19.6	558.3	462.8	50.8
160	80.2	58.9	17.4	521.9	437.2	43.4
120	79.1	40.6	15.4	478.1	403.9	36.5
100	78.6	32.3	14.5	451.7	383.1	33.2
80	78.2	24.9	13.6	421.3	359.0	30.0
40	77.7	13.3	12.3	340.7	296.7	24.2

Gen Power kVA	Intake Manifold Temp °F	Intake Manifold Press in Hg	Intake Air Flow cfm	Exhaust Manifold Temp °F	Exhaust Stack Temp °F	Exhaust Gas Flow cfm
500	205.3	61.4	1133.4	1365.3	1062.9	3403.5
450	198.3	53.9	1052.2	1273.2	998.2	3015.3
400	192.2	45.8	960.5	1211.9	966.0	2680.1
375	189.4	41.7	914.6	1182.0	950.3	2522.6
350	186.8	37.7	868.6	1152.4	934.5	2369.1
300	182.5	30.3	776.8	1094.4	901.6	2072.7
250	179.1	23.5	692.1	1036.9	865.0	1793.7
200	176.4	17.4	614.3	971.5	818.9	1532.4
150	174.4	12.0	543.4	892.6	758.9	1287.4
125	173.5	9.6	510.6	845.0	721.5	1171.4
100	172.8	7.4	480.4	790.4	678.2	1060.1
50	171.9	3.9	434.6	645.2	566.1	855.7

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3406C DITA
400 ekW/60 Hz/1800 rpm/0.8 Power Factor

Rating Type: STANDBY

Fuel Strategy: LOW FUEL CONSUMPTION

Performance Number: DM2275-03

Heat Rejection Data

Metric

Gen Power ekW	Percent Load	Rejection to Jacket Water kW	Rejection to Atmos kW	Rejection to Exhaust kW	From Oil Cooler kW
400	100	251.0	98.7	395.9	59.2
360	90	221.0	78.5	339.0	51.6
320	80	196.0	65.6	295.0	45.3
300	75	184.3	60.4	274.9	42.4
280	70	173.0	55.8	256.0	39.6
240	60	151.0	47.7	222.0	34.2
200	50	130.0	40.3	190.0	29.2
160	40	109.9	33.3	162.1	24.3
120	30	89.9	26.7	135.8	19.6
100	25	79.5	23.5	122.9	17.3
80	20	69.1	20.2	110.1	14.9
40	10	48.1	13.6	85.2	10.1

English

Gen Power kVA	Percent Load	Rejection to Jacket Water Btu/min	Rejection to Atmos Btu/min	Rejection to Exhaust Btu/min	From Oil Cooler Btu/min
500	100	14272.1	5611.5	22516.1	3366.1
450	90	12566.7	4463.4	19276.1	2934.1
400	80	11146.3	3730.6	16776.4	2576.2
375	75	10483.6	3436.6	15633.3	2411.4
350	70	9837.1	3172.8	14556.6	2251.7
300	60	8587.2	2712.7	12624.9	1944.9
250	50	7392.7	2291.7	10804.7	1660.5
200	40	6250.8	1895.2	9219.8	1384.0
150	30	5110.9	1516.1	7724.9	1113.0
125	25	4521.9	1333.9	6987.7	981.4
100	20	3928.2	1150.1	6260.7	848.3
50	10	2737.1	775.8	4842.5	576.1

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