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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:

- | | |
|--|---|
| <input type="checkbox"/> G10-D – Coal Preparation and Handling | <input type="checkbox"/> G40-C – Nonmetallic Minerals Processing |
| <input type="checkbox"/> G20-B – Hot Mix Asphalt | <input type="checkbox"/> G50-B – Concrete Batch |
| <input type="checkbox"/> G30-D – Natural Gas Compressor Stations | <input checked="" type="checkbox"/> G60-C – Class II Emergency Generator |
| <input type="checkbox"/> G33-A – Spark Ignition Internal Combustion Engines | <input type="checkbox"/> G65-C – Class I Emergency Generator |
| <input type="checkbox"/> G35-A – Natural Gas Compressor Stations (Flare/Glycol Dehydration Unit) | <input type="checkbox"/> 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.S. Customs and Border Protection		2. Federal Employer ID No. (FEIN):	
3. Applicant's mailing address: 440 Koonce Road Harpers Ferry, WV 25425		4. Applicant's physical address: 440 Koonce Road Harpers Ferry, WV 25425	
5. If applicant is a subsidiary corporation, please provide the name of parent corporation: U.S. Department of Homeland Security			
6. WV BUSINESS REGISTRATION. Is the applicant a resident of the State of West Virginia? <input type="checkbox"/> YES <input checked="" 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.): Law Enforcement Training	8a. Standard Industrial Classification (SIC) code: 9221	AND	8b. North American Industry System (NAICS) code: 922120
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): _____ _____		



A: PRIMARY OPERATING SITE INFORMATION

<p>11A. Facility name of primary operating site: CBP Advanced Training Center</p> <hr/> <hr/>	<p>12A. Address of primary operating site: 440 Koonce Road 440 Koonce Road</p> <p>Mailing: _____ Physical: _____ Harpers Ferry, WV 25425 Harpers Ferry, WV 25425</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</p> <p>– IF YES, please explain: <u>Federally owned facility.</u></p> <hr/> <p>– IF NO, YOU ARE NOT ELIGIBLE FOR A PERMIT FOR THIS SOURCE.</p>		
<p>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;</p> <p>– 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.</p> <p>U.S. Route 340 South, W of Harpers Ferry, WV > Turn LEFT onto Koonce Road > Facility entrance is on the LEFT</p> <hr/> <p>U.S. Route 340 North, W of Harpers Ferry, WV > Turn RIGHT onto Koonce Road > Facility entrance is on the RIGHT</p> <hr/>		
<p>15A. Nearest city or town: Harpers Ferry</p>	<p>16A. County: Jefferson</p>	<p>17A. UTM Coordinates: Northing (KM): <u>4355118.73</u> Easting (KM): <u>259772.91</u> Zone: <u>18S</u></p>
<p>18A. Briefly describe the proposed new operation or change (s) to the facility: Facility occupied in 2005, however this is the initial permit application.</p>		<p>19A. Latitude & Longitude Coordinates (NAD83, Decimal Degrees to 5 digits): Latitude: <u>39.312144</u> Longitude: <u>-77.786315</u></p>

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

<p>11B. Name of 1st alternate operating site:</p> <hr/> <hr/>	<p>12B. Address of 1st alternate operating site:</p> <p>Mailing: _____ Physical: _____</p> <hr/>
<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</p> <p>– IF YES, please explain: _____</p> <hr/> <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.**

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 2 nd alternate operating site: _____ _____	12C. Address of 2 nd alternate operating site: Mailing: _____ Physical: _____	
13C. 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: _____		
— 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: _____

<p>20. Provide the date of anticipated installation or change:</p> <p style="text-align: center;">____/____/____</p> <p><input type="checkbox"/> If this is an After-The-Fact permit application, provide the date upon which the proposed change did happen: :</p> <p style="text-align: center;">____/____/____</p>	<p>21. Date of anticipated Start-up if registration is granted:</p> <p style="text-align: center;">____/____/____</p>
<p>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).</p> <p>Hours per day _____ Days per week _____ Weeks per year _____ Percentage of operation _____</p>	

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) Michael J. Tepedino 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 Michael J. Tepedino
(please use blue ink) Responsible Official

2/11/16
Date

Name & Title Michael Tepedino, Facility Manager
(please print or type)

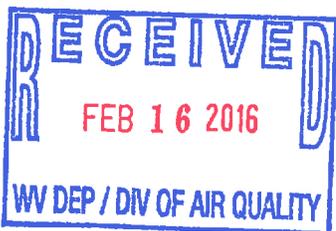
Signature _____
(please use blue ink) Authorized Representative (if applicable)

Date

Applicant's Name U.S. Customs and Border Protection

Phone & Fax 304-724-5910
Phone Fax

Email HarpersFerryFacilities@cbp.dhs.gov



General Permit G60-C Registration Section Applicability Form

General Permit G60-C was developed to allow qualified registrants to seek registration for emergency generator(s).

General Permit G60-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.

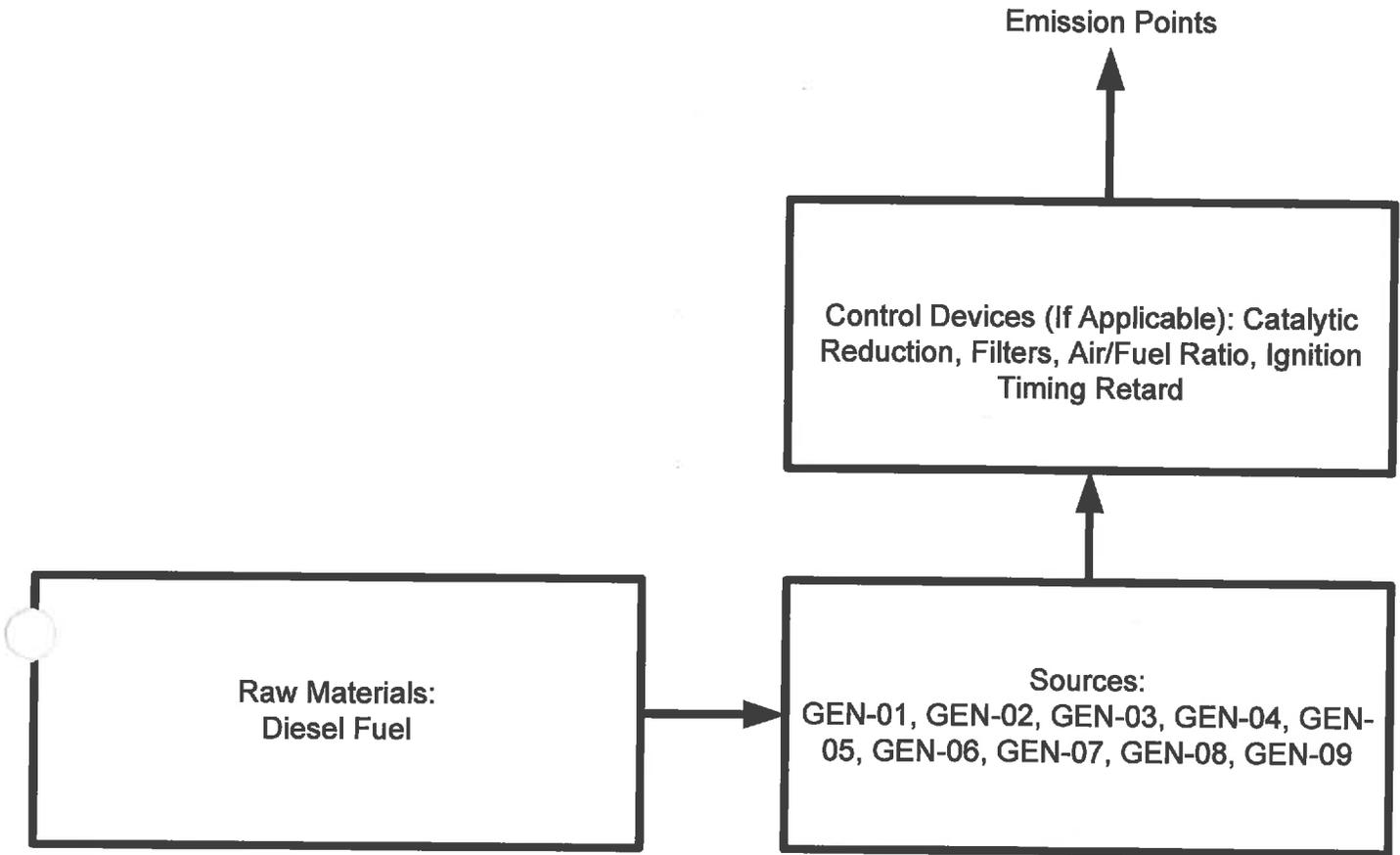
- | | | |
|-----------|---|-------------------------------------|
| Section 5 | Reciprocating Internal Combustion Engines (R.I.C.E.)* | <input type="checkbox"/> |
| Section 6 | Tanks | <input type="checkbox"/> |
| Section 7 | Standards of Performance for Stationary Compression Ignition Internal Combustion Engines (40CFR60 Subpart IIII) | <input checked="" type="checkbox"/> |
| Section 8 | Standards of Performance for Stationary Spark Ignition Internal Combustion Engines (40CFR60 Subpart JJJJ) | <input type="checkbox"/> |

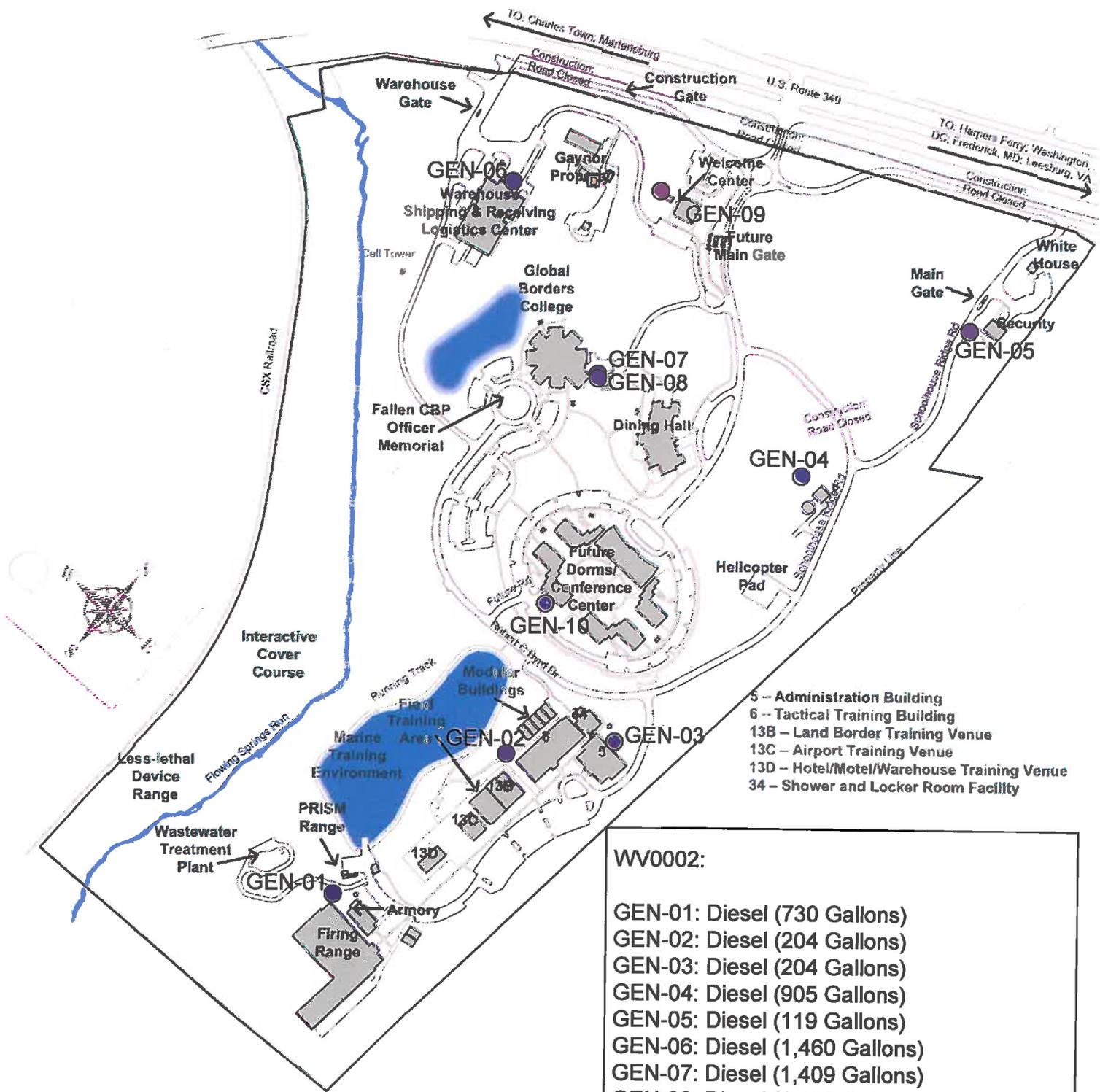
* Affected facilities that are subject to Section 5 may also be subject to Sections 7 or 8. Therefore, if the applicant is seeking registration under both sections, please select both.

ATTACHMENT B – PROCESS DESCRIPTION

A generator is a device that converts mechanical energy to electrical energy for use in an external circuit. The CBP Advanced Training Facility maintains and operates several standby emergency generators. A standby generator is a back-up electrical system that operates automatically. Within seconds of a utility outage an automatic transfer switch senses the power loss, commands the generator to start and then transfers the electrical load to the generator. The standby generator begins supplying power to the facility circuits. After utility power returns, the automatic transfer switch transfers the electrical load back to the utility and signals the standby generator to shut off. It then returns to standby mode where it awaits the next outage. To ensure a proper response to an outage, standby generators run brief weekly self-tests. All generators at the CBP Advanced Training Facility are diesel compression-ignition engines designed to run on fuel oil. Each is assigned to provide emergency electricity to a particular building. The diesel fuel is combusted to generate electricity, with the exhaust containing regulated emissions after passing through any control devices.

ATTACHMENT D: PROCESS FLOW DIAGRAM





- 5 - Administration Building
- 6 - Tactical Training Building
- 13B - Land Border Training Venue
- 13C - Airport Training Venue
- 13D - Hotel/Motel/Warehouse Training Venue
- 34 - Shower and Locker Room Facility

WV0002:

GEN-01:	Diesel (730 Gallons)
GEN-02:	Diesel (204 Gallons)
GEN-03:	Diesel (204 Gallons)
GEN-04:	Diesel (905 Gallons)
GEN-05:	Diesel (119 Gallons)
GEN-06:	Diesel (1,460 Gallons)
GEN-07:	Diesel (1,409 Gallons)
GEN-08:	Diesel (1,409 Gallons)
GEN-09:	Diesel (300 Gallons)
GEN-10:	Diesel (1530 Gallons)

ATTACHMENT J – CLASS I LEGAL ADVERTISEMENT

AIR QUALITY PERMIT NOTICE Notice of Application

Notice is given that U.S. Customs and Border Protection (CBP) has applied to the West Virginia Department of Environmental Protection, Division of Air Quality, for a General Permit Registration for the Advanced Training Center located on 440 Koonce Road, near Harpers Ferry in Jefferson County, West Virginia. The facility was occupied by CBP in 2005. This is the initial permit application.

CBP estimates the maximum potential to discharge the following Criteria Air Pollutants will be:

Particulate Matter (PM) - 0.96 tons per year
Nitrous Oxides (NO_x) – 17.42 tons per year
Carbon Monoxide (CO) - 4.87 tons per year
Volatile Organic Compounds (VOC) - 2.37 tons per year
Sulfur Dioxide (SO₂) - 8.42 tons per year

It is anticipated that actual emissions will be far lower for all pollutants. 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 1227, during normal business hours.

Dated this the (Day) day of (Month), 2016.

By: **U.S. Customs and Border Protection**
Michael J. Tepedino
Facility Manager
440 Koonce Road,
Harpers Ferry, WV 25425

ATTACHMENT M – SITING CRITERIA WAIVER

Siting Criteria Waiver

Division of Air Quality 300' Waiver

I Michael J. Tepedino Print Name hereby
acknowledge and agree that U.S. Customs and Border Protection General Permit Applicant's Name will
construct an emergency generator that will be located within 300' of my dwelling or business.

I hereby offer this waiver of siting criteria to the West Virginia Department of Environmental Protection
Division of Air Quality as permission to construct, install and operate in such location.

Signed:

Michael J. Tepedino 2/11/2016
Signature Date

Signature Date

Taken, subscribed and sworn before me this 11th day of

February, 2016.

My commission expires: February 11, 2023

SEAL Jordan M. Sager



EMERGENCY GENERATOR ENGINE DATA SHEET

Source Identification Number ¹		GEN-01		GEN-02		GEN-03	
Engine Manufacturer and Model		Detroit Diesel 6063HK35		John Deere 6068TF250		John Deere 6068TF250	
Manufacturer's Rated bhp/rpm		635 bhp / 1800 rpm		190 bhp / 1800 rpm		190 bhp / 1800 rpm	
Source Status ²		ES		ES		ES	
Date Installed/Modified/Removed ³		11/14/2006		1/11/2005		6/13/2005	
Engine Manufactured/Reconstruction Date ⁴		2004		2004		2004	
Is this a Certified Stationary Spark Ignition Engine according to 40CFR60 Subpart IIII? (Yes or No) ⁵		No		No		No	
Is this a Certified Stationary Spark Ignition Engine according to 40CFR60 Subpart JJJJ? (Yes or No) ⁶		No		No		No	
Engine, Fuel and Combustion Data	Engine Type ⁷	LB4S		LB4S		LB4S	
	APCD Type ⁸	A/F, LEC		A/F, LEC		A/F, LEC	
	Fuel Type ⁹	2FO		2FO		2FO	
	H ₂ S (gr/100 scf)						
	Operating bhp/rpm	635 bhp / 1800 rpm		190 bhp / 1800 rpm		190 bhp / 1800 rpm	
	BSFC (Btu/bhp-hr)	6924		6513		6513	
	Fuel throughput (ft ³ /hr)	4.01		1.00		1.00	
	Fuel throughput (MMft ³ /yr)	0.002		0.0005		0.0005	
	Operation (hrs/yr)	500		500		500	
Reference ¹⁰	Potential Emissions ¹¹	lbs/hr	tons/yr	lbs/hr	tons/yr	lbs/hr	tons/yr
AP/AP/AP	NO _x	8.26	2.06	5.89	1.47	5.89	1.47
AP/AP/AP	CO	3.49	0.87	1.27	0.32	1.27	0.32
AP/AP/AP	VOC	0.45	0.11	0.47	0.12	0.47	0.12
AP/AP/AP	SO ₂	5.14	1.28	0.39	0.10	0.39	0.10
AP/AP/AP	PM ₁₀	0.44	0.11	0.42	0.10	0.42	0.10
AP/AP/AP	Formaldehyde	0.05	0.01	0.22	0.06	0.22	0.06

EMERGENCY GENERATOR ENGINE DATA SHEET

Source Identification Number ¹		GEN-04		GEN-05		GEN-06	
Engine Manufacturer and Model		Detroit Diesel 10V1600G80S		John Deere 4045TF150		John Deere 6090HF484	
Manufacturer's Rated bhp/rpm		765 bhp / 1800 rpm		99 bhp / 1800 rpm		345 bhp / 1800 rpm	
Source Status ²		ES		ES		ES	
Date Installed/Modified/Removed ³		11/14/2006		1/11/2005		7/15/2010	
Engine Manufactured/Reconstruction Date ⁴		2004		2004		2009	
Is this a Certified Stationary Spark Ignition Engine according to 40CFR60 Subpart III? (Yes or No) ⁵		No		No		No	
Is this a Certified Stationary Spark Ignition Engine according to 40CFR60 Subpart JJJ? (Yes or No) ⁶		No		No		No	
Engine, Fuel and Combustion Data	Engine Type ⁷	LB4S		LB4S		LB4S	
	APCD Type ⁸	A/F, LEC		A/F, LEC		A/F, LEC	
	Fuel Type ⁹	2FO		2FO		2FO	
	H ₂ S (gr/100 scf)						
	Operating bhp/rpm	765 bhp / 1800 rpm		99 bhp / 1800 rpm		345 bhp / 1800 rpm	
	BSFC (Btu/bhp-hr)	6340		8366		6611	
	Fuel throughput (ft ³ /hr)	4.43		0.724		2.35	
	Fuel throughput (MMft ³ /yr)	0.0022		0.00036		0.0012	
Operation (hrs/yr)	500		500		500		
Reference ¹⁰	Potential Emissions ¹¹	lbs/hr	tons/yr	lbs/hr	tons/yr	lbs/hr	tons/yr
AP/AP/AP	NO _x	9.95	2.49	3.07	2.49	10.70	2.67
AP/AP/AP	CO	4.21	1.05	0.66	1.05	2.30	0.58
AP/AP/AP	VOC	0.54	0.13	0.24	0.13	0.85	0.21
AP/AP/AP	SO ₂	6.19	1.55	0.20	1.55	0.71	0.18
AP/AP/AP	PM ₁₀	0.54	0.13	0.22	0.13	0.76	0.19
AP/AP/AP	Formaldehyde	0.06	0.02	0.12	0.03	0.41	0.10

EMERGENCY GENERATOR ENGINE DATA SHEET

Source Identification Number ¹		GEN-07		GEN-08		GEN-09	
Engine Manufacturer and Model		MTU Onsite Energy 12V2000G85TB		MTU Onsite Energy 12V2000G85TB		John Deere 6068HF285	
Manufacturer's Rated bhp/rpm		1193 bhp / 1800 rpm		1193 bhp / 1800 rpm		237 bhp / 1800 rpm	
Source Status ²		ES		ES		ES	
Date Installed/Modified/Removed ³		7/20/2011		7/20/2011		11/15/2012	
Engine Manufactured/Reconstruction Date ⁴		2010		2010		2012	
Is this a Certified Stationary Spark Ignition Engine according to 40CFR60 Subpart IIII? (Yes or No) ⁵		No		No		No	
Is this a Certified Stationary Spark Ignition Engine according to 40CFR60 Subpart JJJJ? (Yes or No) ⁶		No		No		No	
Engine, Fuel and Combustion Data	Engine Type ⁷	LB4S		LB4S		LB4S	
	APCD Type ⁸	A/F, LEC, SCR		A/F, LEC, SCR		A/F, LEC	
	Fuel Type ⁹	2FO		2FO		2FO	
	H ₂ S (gr/100 scf)						
	Operating bhp/rpm	1193 bhp / 1800 rpm		1193 bhp / 1800 rpm		237 bhp / 1800 rpm	
	BSFC (Btu/bhp-hr)	7375		7375		7230	
	Fuel throughput (ft ³ /hr)	7.72		7.72		1.56	
	Fuel throughput (MMft ³ /yr)	0.00386		0.00386		0.0008	
	Operation (hrs/yr)	500		500		500	
Reference ¹⁰	Potential Emissions ¹¹	lbs/hr	tons/yr	lbs/hr	tons/yr	lbs/hr	tons/yr
MD/MD/AP	NO _x	8.05	2.01	8.05	2.01	7.35	1.84
MD/MD/AP	CO	2.13	0.53	2.13	0.53	1.58	0.40
MD/MD/AP	VOC	2.54	0.64	2.54	0.64	0.59	0.15
AP/AP/AP	SO ₂	9.65	2.41	9.65	2.41	0.49	0.12
MD/MD/AP	PM ₁₀	0.24	0.06	0.24	0.06	0.52	0.13
AP/AP/AP	Formaldehyde	0.09	0.02	0.09	0.02	0.28	0.07

EMERGENCY GENERATOR ENGINE DATA SHEET

Source Identification Number ¹		GEN-10			
Engine Manufacturer and Model		MTU Onsite Energy 6R1600G70S			
Manufacturer's Rated bhp/rpm		418 bhp / 1800 rpm			
Source Status ²		NS			
Date Installed/Modified/Removed ³		2016			
Engine Manufactured/Reconstruction Date ⁴		2014			
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	A/F, LEC			
	Fuel Type ⁹	2FO			
	H ₂ S (gr/100 scf)				
	Operating bhp/rpm	418 bhp / 1800 rpm			
	BSFC (Btu/bhp-hr)	7288			
	Fuel throughput (ft ³ /hr)	2.34			
	Fuel throughput (MMft ³ /yr)	0.00117			
	Operation (hrs/yr)	500			
Reference ¹⁰	Potential Emissions ¹¹	lbs/hr	tons/yr		
MD	NO _x	2.48	0.62		
MD	CO	0.41	0.10		
MD	VOC	0.78	0.20		
AP	SO ₂	0.86	0.21		
MD	PM ₁₀	0.04	0.01		
AP	Formaldehyde	0.49	0.12		

1. Enter the appropriate Source Identification Number for each emergency generator. Generator engines should be designated EG-1, EG-2, EG-3 etc. If more than three (3) engines exist, please use additional sheets.
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.
5. Is the engine a certified stationary spark ignition internal combustion engine according to 40CFR60 Subpart IIII. If so, the engine and control device must be operated and maintained in accordance with the manufacturer's emission-related written instructions. You must keep records of conducted maintenance to demonstrate compliance, but no performance testing is required. If the certified engine is not operated and maintained in accordance with the manufacturer's emission-related written instructions, the engine will be considered a non-certified engine and you must demonstrate compliance according to 40CFR§60.4210 as appropriate.

Provide a manufacturer's data sheet for all engines being registered.

6. Is the engine a certified stationary spark ignition internal combustion engine according to 40CFR60 Subpart JJJJ. If so, the engine and control device must be operated and maintained in accordance with the manufacturer's emission-related written instructions. You must keep records of conducted maintenance to demonstrate compliance, but no performance testing is required. If the certified engine is not operated and maintained in accordance with the manufacturer's emission-related written instructions, the engine will be considered a non-certified engine and you must demonstrate compliance according to 40CFR§60.4243a(2)(i) through (iii), as appropriate.

Provide a manufacturer's data sheet for all engines being registered.

7. Enter the Engine Type designation(s) using the following codes:

LB2S	Lean Burn Two Stroke	RB4S	Rich Burn Four Stroke
LB4S	Lean Burn Four Stroke		

8. Enter the Air Pollution Control Device (APCD) type designation(s) using the following codes:

A/F	Air/Fuel Ratio	IR	Ignition Retard
HEIS	High Energy Ignition System	SIPC	Screw-in Precombustion Chambers
PSC	Prestratified Charge	LEC	Low Emission Combustion
NSCR	Rich Burn & Non-Selective Catalytic Reduction	SCR	Lean Burn & Selective Catalytic Reduction

9. Enter the Fuel Type using the following codes:

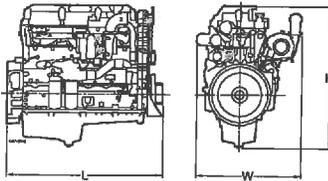
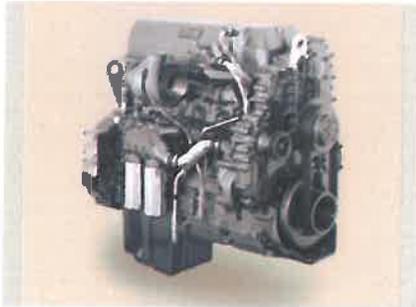
PQ	Pipeline Quality Natural Gas	RG	Raw Natural Gas
2FO	#2 Fuel Oil	LPG	Liquid Propane Gas

10. Enter the Potential Emissions Data Reference designation using the following codes. Attach all referenced data to this *Compressor/Generator Data Sheet(s)*.

MD	Manufacturer's Data	AP	AP-42	
GR	GRI-HAPCalc™	OT	Other _____	(please list)

11. Enter each engine's Potential to Emit (PTE) for the listed regulated pollutants in pounds per hour and tons per year. PTE shall be calculated at manufacturer's rated brake horsepower and may reflect reduction efficiencies of listed Air Pollution Control Devices. Emergency generator engines may use 500 hours of operation when calculating PTE. PTE data from this data sheet shall be incorporated in the *Emissions Summary Sheet*.

Series 60 - 14.0 lit. for PowerGen Applications



Dimensions and Masses

Engine	Dimensions LxWxH mm (in)	Mass, dry kg (lbs)
14.0 lit.	1455x1000x1280 (57x39x50)	1220 (2690)

All dimensions are approximate, for complete information refer to the installation drawing.

Engine Model		
Bore/stroke	mm (in)	133/168 (5.2/6.6)
Cylinder configuration		6 cyl.-In-line
Displacement/cylinder	l (cu in)	2.33 (142)
Displacement, total	l (cu in)	14.0 (854)
Fuel specification		EN 590, Grade No.1-D/2-D

Application	Power definition	
3A	Continuous operation w/ 100% load	Load factor: ≤ 100 %, Operating hours: unrestricted, Overload: 10% capability (ICXN)
3B	Continuous operation w/ variable load	Load factor: < 75 %, Operating hours: unrestricted, Overload: 10% capability (ICXN)
3D	Short-time operation w/ variable load	Load factor: < 85 %, Operating hours: max. 500 p/y, Overload: Fuel stop power (ICFN)

Power output within 5% tolerance at standard conditions. Power definition according to ISO 3046 (ratings also correspond to SAE J 1995 and SAE J 1349 standard conditions) Consult your MTU Detroit Diesel or MTU distributor/dealer for the rating that will apply to your specific application.

Engine type	Reference No. Model-06N04M	Continuous Power 3A	Prime Power 3B	Standby Power 3D
Optimization		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Application		Rated power kW (bHP) at 1500 rpm (50 Hz)		
S60 (14.0 l)	6063HK35-7058	280 (375)	358 (480)	411 (511)
	6063HK35-7835	298 (400) ⊕	411 (511) ⊕	-
	6063HK35-7834	-	362 (485) ⊕	-
	6063HK35-8070	-	411 (511)	455 (610)

Optimization: ⊕ Exhaust emission TA-Luft, Edition 1986 Fuel consumption



Power. Passion. Partnership.

Engine type	Reference No. Model-06N04M	Continuous Power 3A	Prime Power 3B	Standby Power 3D
Optimization		③	③	③
Application		Rated power kW (bHP) at 1800 rpm (60 Hz)		
S60 (14.0 l)	6063HK35-7497	280 (375)	356 (477)	410 (550)
	6063HK35-7833	354 (475)	410 (550)	-
	6063HK35-8069	-	465 (624)	511 (685)
	6063HK35-8154	-	-	474 (635)
Optimization		⑦	⑦	⑦
S60 (14.0 l)	6063HV35-8142	268 (359)	-	309 (414)
	6063HV35-8143	292 (392)	-	339 (455)
	6063HV35-8144	316 (424)	-	365 (489)
	6063HV35-8145	354 (475)	-	410 (550)
	6063HV35-8146	354 (475)	410 (550)	474 (635)
	6063HV35-8147	354 (475)	465 (624)	511 (685)

Optimization: ③ Exhaust emission EPA 40 CFR 89/Tier 2 ⑦ Exhaust emission EPA 40 CFR 89/Tier 3

Standard Equipment	
Starting System	Electric starter 24 V, Alternator 28VDC/70 amp., belt driven
Fuel Oil System	Fuel main filter and pre-filter, Electronic unit injection system
Lube Oil System	Lube oil filter
Combustion Air System	Dry-type air filter with contamination indicator and mounting parts
Exhaust Gas System	Turbocharger outlet connection and mounting parts
Coolant System	Radiator-cooler with mechanically driven fan for engines with air charge air cooling, with connecting parts for engine coolant circuit designed for 100% engine power, cooling air pressure loss 200 Pa, 40° C/104° F ambient air temp.
Flywheel/Housing	Cast iron flywheel housing SAE 1
Electronics and Instrumentation	Integrated electronic engine control and monitoring system DDEC Lube oil filter
Optional Equipment	
Combustion Air System	Dry-type air filter for heavy duty use with pre-separator, contamination indicator, rain cap and mounting parts
Engine Mounting	Set of engine mounting brackets for resilient mounting, Resilient engine mounts (Rubber Elements)
Electronics and Instrumentation	Monitoring Displays and Control Panels

Reference conditions:

> Intake-air temperature: 25°C (77°F) > Ambient air pressure: 1000 mbar > Altitude above sea level: 100 m (328 ft)
 > Rated power available up to 40°C (104°F) and 400 m (1312 ft)

Subject to change without notice. Customization possible. Engines illustrated in this document may feature options not fitted as standard to standard engine.

PowerTech™

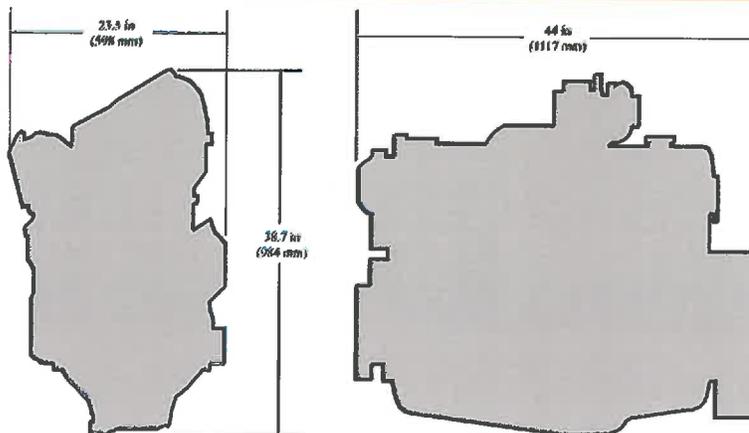
6068TF250 Diesel Engine

Generator Drive Engine Specifications



6068TF250 shown

Dimensions



Certifications

CARB
EPA Tier 1

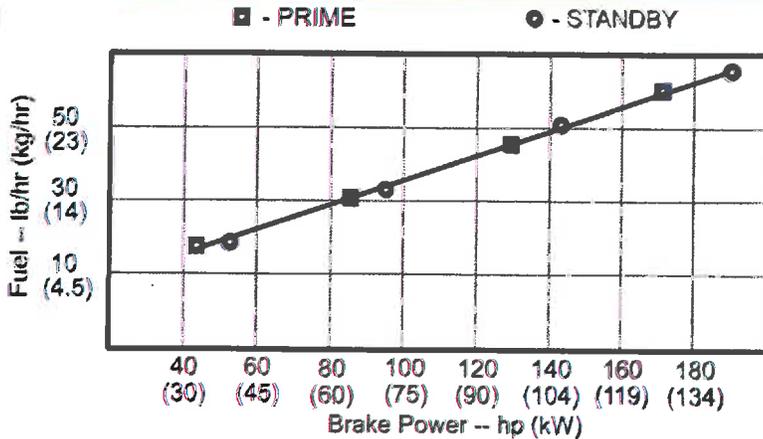
General data

Model	6068TF250	Length - mm (in) to rear of block	1117 (44.0)
Number of cylinders	6	Width - mm (in)	598 (23.5)
Displacement - L (cu in)	6.8 (415)	Height-- mm (in)	984 (38.7)
Bore and Stroke-- mm (in)	106 x 127 (4.17 x 5.00)	Weight, dry-- kg (lb)	533 (1175)
Compression Ratio	17.0:1		
Engine Type	In-line, 4-Cycle		
Aspiration	Turbocharged		

Performance data

Prime power at 60 Hz (1800 rpm)	128 kW (172 hp)
Standby power at 60 Hz (1800 rpm)	142 kW (190 hp)

Performance curve



Performance data

Hz (rpm)	Generator efficiency %	Rated fan power		Power factor	Calculated generator set output			
		kW	hp		Prime		Standby	
					kWe	kVA	kWe	kVA
60 (1800)	88-92	7	9	0.8	106-111	132-139	118-124	148-155

Features and benefits

Dynamically Balanced Crankshaft

- Induction-hardened journals for long hours of reliable service
- Robust design to drive machinery from the front of the crankshaft
- Supported by five main bearings

Forged-steel Connecting Rods

- 45-degree connecting rod/cap-joint design allows the use of large connecting rod bearings for increased durability

Replaceable Wet-type Cylinder Liners

- Provide excellent heat dissipation
- Precision machined for long life
- Rebuild to original specifications

Easy to Apply, Easy to Install

- Front and rear engine mounting pads on the side of the block facilitates installation
- Auxiliary drive rated to 50 HP (37 kW) intermittent for powering ancillary equipment
- Either side service for filters and service points facilitates packaging
- All connection points in common locations make it easy to install or package

Compact Size

- High mount or low mount turbocharger position to meet packaging requirements

World-class Performance

- Excellent fuel economy and low oil consumption

Fuel System Controls

- Proven and Reliable Mechanical Governor
- 3-5% Droop Governing
- 12V or 24V Electric Shutoff

Emissions

- CARB & EPA Certified

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Phone: 33.2.38.82.61.19
Fax: 33.2.38.82.60.00

All values at rated speed and power with standard options unless otherwise noted. Specifications and design subject to change without notice.

DIESEL GENERATOR SET

MTU 10V1600 DS500

500 kWe / 60 Hz / Standby
208 - 600V

Reference MTU 10V1600 DS500 (450 kWe) for Prime Rating Technical Data



SYSTEM RATINGS

Standby

Voltage (L-L)	208V*	240V*	380V	440V	480V*	600V*
Phase	3	3	3	3	3	3
PF	0.8	0.8	0.8	0.8	0.8	0.8
Hz	60	60	60	60	60	60
kW	500	500	500	500	500	500
kVA	625	625	625	625	625	625
Amps	1735	1504	950	820	752	601
skVA@30%						
Voltage Dip	1040	1040	980	1040	1290	1040
Generator Model	572RSL4029	572RSL4029	573RSL4033	572RSL4027	572RSL4027	572RSS4270
Temp Rise	130 °C/40 °C	130 °C/40 °C	130 °C/40 °C	130 °C/40 °C	130 °C/40 °C	130 °C/40 °C
Connection	12 LEAD WYE	12 LEAD DELTA	12 LEAD WYE	12 LEAD WYE	12 LEAD WYE	4 LEAD WYE

* UL 2200 Offered

CERTIFICATIONS AND STANDARDS

- // **Emissions** – EPA Tier 2 Certified
- // **Generator set is designed and manufactured in facilities certified to standards ISO 9001:2008 and ISO 14001:2004**
- // **Seismic Certification – Optional**
 - IBC Certification
 - OSHPD Pre-Approval
- // **UL 2200 / CSA – Optional**
 - UL 2200 Listed
 - CSA Certified
- // **Performance Assurance Certification (PAC)**
 - Generator Set Tested to ISO 8528-5 for Transient Response
 - Verified product design, quality and performance integrity
 - All engine systems are prototype and factory tested
- // **Power Rating**
 - Accepts Rated Load in One Step Per NFPA 110
 - Permissible average power output during 24 hours of operation is approved up to 85%.

STANDARD FEATURES*

- // MTU Onsite Energy is a single source supplier
- // Global Product Support
- // 2 Year Standard Warranty
- // 10V1600 Diesel Engine
 - 17.5 Liter Displacement
 - Common Rail Fuel Injection
 - 4-Cycle
- // Engine-generator resilient mounted
- // Complete Range of Accessories

- // Generator
 - Brushless, Rotating Field Generator
 - 2/3 Pitch Windings
 - PMG (Permanent Magnet Generator) supply to regulator
 - 300% Short Circuit Capability
- // Digital Control Panel(s)
 - UL Recognized, CSA Certified, NFPA 110
 - Complete System Metering
 - LCD Display
- // Cooling System
 - Integral Set-Mounted
 - Engine-Driven Fan

STANDARD EQUIPMENT*

// Engine

Air Cleaners
 Oil Pump
 Oil Drain Extension and S/O Valve
 Full Flow Oil Filters
 Closed Crankcase Ventilation
 Jacket Water Pump
 Thermostats
 Blower Fan and Fan Drive
 Radiator - Unit Mounted
 Electric Starting Motor - 24V
 Governor - Electronic Isochronous
 Base - Formed Steel
 SAE Flywheel and Bell Housing
 Charging Alternator - 24V
 Battery Box and Cables
 Flexible Fuel Connectors
 Flexible Exhaust Connection
 EPA Certified Engine

// Generator

NEMA MG1, IEEE and ANSI standards compliance for temperature rise and motor starting
 Sustained short circuit current of up to 300% of the rated current for up to 10 seconds
 Self-Ventilated
 Superior Voltage Waveform
 Digital, Solid State, Volts-per-Hertz Regulator
 No Load to Full Load Regulation

Brushless Alternator with Brushless Pilot Exciter
 4 Pole, Rotating Field
 130 °C Max. Standby Temperature Rise
 1 Bearing, Sealed
 Flexible Coupling
 Full Amortisseur Windings
 ±25% Rotor Balancing
 3-Phase Voltage Sensing
 ±0.25% Voltage Regulation
 100% of Rated Load - One Step
 5% Max. Total Harmonic Distortion

// Digital Control Panel(s)

Digital Metering
 Engine Parameters
 Generator Protection Functions
 Engine Protection
 CANBus ECU Communications
 Windows®-Based Software
 Multilingual Capability
 Remote Communications to RDP-110 Remote Annunciator
 Programmable Input and Output Contacts
 UL Recognized, CSA Certified, CE Approved
 Event Recording
 IP 54 Front Panel Rating with Integrated Gasket
 NFPA110 Compatible

* Represents standard product only. Consult Factory/MTU Onsite Energy Distributor for additional configurations.

APPLICATION DATA

// Engine

Manufacturer	MTU
Model	10V1600G80S
Type	4-Cycle
Arrangement	10-V
Displacement: L (Cu In)	17.5 (1,068)
Bore: cm (in)	12.2 (4.8)
Stroke: cm (in)	15 (5.91)
Compression Ratio	17.5:1
Rated RPM	1,800
Engine Governor	Electronic Isochronous (ADEC)
Max. Power: kW (bhp)	561 (752)
Speed Regulation	±0.25%
Air Cleaner	Dry

// Liquid Capacity (Lubrication)

Total Oil System: L (gal)	61 (16)
Engine Jacket Water Capacity: L (gal)	60 (15.9)
System Coolant Capacity: L (gal)	99.3 (26.2)

// Electrical

Electric Volts DC	24
Cold Cranking Amps Under -17.8 °C (0 °F)	1,050

// Fuel System

Fuel Supply Connection Size	-10 JIC 37° Female M20 x 1.5 Male Adapter Provided
Fuel Return Connection Size	-6 JIC 37° Female M14 x 1.5 Male Adapter Provided
Max. Fuel Lift: m (ft)	5 (16)
Recommended Fuel	Diesel #2
Total Fuel Flow: L/hr (gal/hr)	401.3 (106)

// Fuel Consumption

At 100% of Power Rating: L/hr (gal/hr)	125 (33.1)
At 75% of Power Rating: L/hr (gal/hr)	97 (25.6)
At 50% of Power Rating: L/hr (gal/hr)	74 (19.5)

// Cooling - Radiator System

Ambient Capacity of Radiator: °C (°F)	50 (122)
Max. Restriction of Cooling Air: Intake and Discharge Side of Rad.: kPa (in. H ₂ O)	0.2 (0.8)
Water Pump Capacity: L/min (gpm)	466 (123)
Heat Rejection to Coolant: kW (BTUM)	235 (13,364)
Heat Rejection to After Cooler: kW (BTUM)	118 (6,710)
Heat Radiated to Ambient: kW (BTUM)	58.6 (3,332)
Fan Power: kW (hp)	17.9 (24)

// Air Requirements

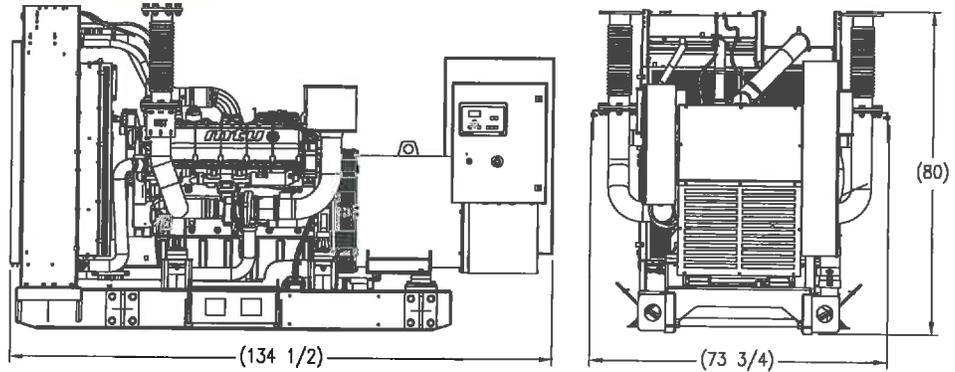
Aspirating: *m ³ /min (SCFM)	35 (1,250)
Air Flow Required for Rad. Cooled Unit: *m ³ /min (SCFM)	642 (22,672)
Remote Cooled Applications; Air Flow Required for Dissipation of Radiated Generator Set Heat for a Max. of 25 °F Rise: *m ³ /min (SCFM)	213 (7,516)

* Air density = 1.184 kg/m³ (0.0739 lbm/ft³)

// Exhaust System

Gas Temp. (Stack): °C (°F)	461 (862)
Gas Volume at Stack Temp: m ³ /min (CFM)	103 (3,623)
Max. Allowable Back Pressure: kPa (in. H ₂ O)	15 (60.2)

WEIGHTS AND DIMENSIONS



Drawing above for illustration purposes only, based on standard open power 480 volt generator set. Lengths may vary with other voltages. Do not use for installation design. See website for unit specific template drawings.

System	Dimensions (L x W x H)	Weight (dry/less tank)
Open Power Unit (OPU)	3,416 x 1,873 x 2,032 mm (134.5 x 73.75 x 80 in)	4,552 kg (10,035 lb)

Weights and dimensions are based on open power units and are estimates only. Consult the factory for accurate weights and dimensions for your specific generator set.

SOUND DATA

Unit Type	Standby Full Load
Level 0: Open Power Unit dB(A)	93.5

Sound data is provided at 7 m (23 ft). Generator set tested in accordance with ISO 8528-10 and with infinite exhaust.

EMISSIONS DATA

NO_x + NMHC	CO	PM
6.9	0.45	0.03

All units are in g/hp-hr and shown at 100% load (not comparable to EPA weighted cycle values).

Emission levels of the engine may vary with ambient temperature, barometric pressure, humidity, fuel type and quality, installation parameters, measuring instrumentation, etc. The data was obtained in compliance with US EPA regulations. The weighted cycle value (not shown) from each engine is guaranteed to be within the US EPA Standards.

RATING DEFINITIONS AND CONDITIONS

// Standby ratings apply to installations served by a reliable utility source. The standby rating is applicable to varying loads for the duration of a power outage. No overload capability for this rating. Ratings are in accordance with ISO 8528-1, ISO-3046-1, BS 5514, and AS 2789. Average load factor: ≤ 85%.

// Deration Factor:

Altitude: Consult your local MTU Onsite Energy Power Generation Distributor for altitude derations.

Temperature: Consult your local MTU Onsite Energy Power Generation Distributor for temperature derations.

C/F = Consult Factory/MTU Onsite Energy Distributor
N/A = Not Available

MTU Onsite Energy
A Rolls-Royce Power Systems Brand

www.mtuonsiteenergy.com

PowerTech™

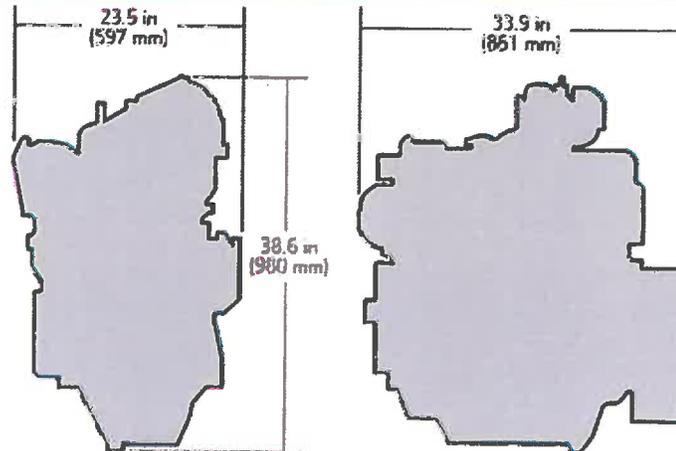
4045TF150 Diesel Engine

Generator Drive Engine Specifications



4045TF150 shown

Engine dimensions



Dimensions may vary according to options selected. Call your distributor for more information.

Certifications

CARB
EPA Tier 1

General data

Model	4045TF150	Length - mm (in) to rear of block	861 (33.9)
Number of cylinders	4	Width - mm (in)	597 (23.5)
Displacement - L (cu in)	4.5 (275)	Height-- mm (in)	980 (38.6)
Bore and Stroke-- mm (in)	106 x 127 (4.17 x 5.00)	Weight, dry-- kg (lb)	396 (873)
Compression Ratio	17.0:1		
Engine Type	In-line, 4-Cycle		
Aspiration	Turbocharged		

Performance data range

Rated speed Hz(rpm)	Engine power				Generator efficiency %	Rated fan power		Power factor	Calculated generator set output			
	Prime		Standby			kW	hp		Prime		Standby	
	kW	hp	kW	hp					kWe*	kVA	kWe	kVA
60(1800)	67-74	90-99	74-82	99-110	88-92	3.7-4.1	5-5	0.8	56-64	70-80	62-72	78-90

Prime power is the nominal power an engine is capable of delivering with a variable load for an unlimited number of hours per year. This rating conforms to ISO3046 and SAE J1995.

Standby power is the maximum engine power available at varying load factors for up to 200 hours per year when applied to conform with ISO 8528-1. This rating conforms to ISO 3046 and SAE J1995. Calculated generator set rating range for standby applications is based on minimum engine power (nominal -5 percent) to provide 100 percent meet-or-exceed performance for assembled standby generator sets.

*Electrical power is calculated from the typical generator efficiency and fan power percentages shown. Applications may vary.

Features and benefits

Dynamically Balanced Crankshaft

- Induction-hardened journals for long hours of reliable service
- Robust design to drive machinery from the front of the crankshaft
- Supported by five main bearings

Forged-steel Connecting Rods

- 45-degree connecting rod/cap-joint design allows the use of large connecting rod bearings for increased durability

Replaceable Wet-type Cylinder Liners

- Provide excellent heat dissipation
- Precision machined for long life
- Rebuild to original specifications

Smooth Operation

- Smooth vibration with full length engine balancers

Easy to Apply, Easy to Install

- Front and rear engine mounting pads on the side of the block facilitates installation
- Either side service for filters and service points
- All connection points in common locations make it easy to install or package

Compact Size

- Short length is ideal for both skid and packaged installations
- High mount or low mount turbocharger position to meet packaging requirements

World-class performance

- Excellent fuel economy and low oil consumption

Fuel System Controls

- Proven and Reliable Mechanical Governor
- 3-5% Droop Governing
- 12V or 24V Electric Shutoff

Emissions

- CARB & EPA Certified

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Fax: 33.2.38.82.60.00

*All values at rated speed and power with standard options unless otherwise noted.
Specifications and design subject to change without notice.*

Model: **250REOZJE**

KOHLER POWER SYSTEMS

208-600 V

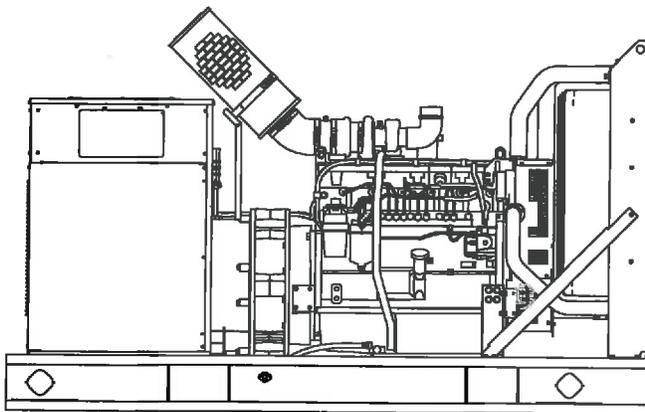
Diesel



Tier 3 EPA-Certified for Stationary Emergency Applications

Ratings Range

		60 Hz	
Standby:	kW	250-255	
	kVA	313-319	
Prime:	kW	225-230	
	kVA	281-288	



Standard Features

- Kohler Co. provides one-source responsibility for the generating system and accessories.
- The generator set and its components are prototype-tested, factory-built, and production-tested.
- The 60 Hz generator set offers a UL 2200 listing.
- The generator set accepts rated load in one step.
- The 60 Hz generator set meets NFPA 110, Level 1, when equipped with the necessary accessories and installed per NFPA standards.
- A one-year limited warranty covers all systems and components. Two- and five-year extended warranties are also available.
- Alternator features:
 - The unique Fast-Response™ II excitation system delivers excellent voltage response and short-circuit capability using a permanent magnet (PM)-excited alternator.
 - The brushless, rotating-field alternator has broadrange reconnectability.
- Other features:
 - Kohler designed controllers for guaranteed system integration and remote communication. See Controllers on page 3.
 - The low coolant level shutdown prevents overheating (standard on radiator models only).
 - Integral vibration isolation eliminates the need for under-unit vibration spring isolators.
 - Multiple circuit breaker configurations.

Generator Set Ratings

Alternator	Voltage	Ph	Hz	130°C Rise Standby Rating		105°C Rise Prime Rating	
				kW/kVA	Amps	kW/kVA	Amps
4UA10	120/208	3	60	250/313	867	225/281	781
	127/220	3	60	250/313	820	225/281	738
	120/240	3	60	250/313	752	225/281	677
	139/240	3	60	250/313	752	225/281	677
	220/380	3	60	250/313	475	225/281	427
	240/416	3	60	250/313	434	225/281	390
	277/480	3	60	250/313	376	225/281	338
	347/600	3	60	250/313	301	225/281	271
4UA13	120/208	3	60	255/319	885	230/288	798
	127/220	3	60	255/319	837	230/288	754
	120/240	3	60	255/319	767	230/288	692
	139/240	3	60	255/319	767	230/288	692
	220/380	3	60	255/319	484	230/288	437
	240/416	3	60	255/319	442	230/288	399
	277/480	3	60	255/319	383	230/288	346
	347/600	3	60	255/319	307	230/288	277

RATINGS: All three-phase units are rated at 0.8 power factor. All single-phase units are rated at 1.0 power factor. *Standby Ratings:* The standby rating is applicable to varying loads for the duration of a power outage. There is no overload capability for this rating. *Prime Power Ratings:* At varying load, the number of generator set operating hours is unlimited. A 10% overload capacity is available for one hour in twelve. Ratings are in accordance with ISO-8528-1 and ISO-3046-1. For limited running time and continuous ratings, consult the factory. Obtain technical information bulletin (TIB-101) for ratings guidelines, complete ratings definitions, and site condition derates. The generator set manufacturer reserves the right to change the design or specifications without notice and without any obligation or liability whatsoever.

Alternator Specifications

Specifications	Alternator
Manufacturer	Kohler
Type	4-Pole, Rotating-Field
Exciter type	Brushless, Permanent-Magnet
Leads: quantity, type	12, Reconnectable
Voltage regulator	Solid State, Volts/Hz
Insulation:	NEMA MG1
Material	Class H
Temperature rise	130°C, Standby
Bearing: quantity, type	1, Sealed
Coupling	Flexible Disc
Amortisseur windings	Full
Voltage regulation, no-load to full-load	Controller Dependent
One-step load acceptance	100% of Rating
Unbalanced load capability	100% of Rated Standby Current
Peak motor starting kVA:	(35% dip for voltages below)
480 V 4UA10 (12 lead)	785
480 V 4UA13 (12 lead)	980

- NEMA MG1, IEEE, and ANSI standards compliance for temperature rise and motor starting.
- Sustained short-circuit current of up to 300% of the rated current for up to 10 seconds.
- Sustained short-circuit current enabling downstream circuit breakers to trip without collapsing the alternator field.
- Self-ventilated and dripproof construction.
- Vacuum-impregnated windings with fungus-resistant epoxy varnish for dependability and long life.
- Superior voltage waveform from a two-thirds pitch stator and skewed rotor.
- Fast-Response™ II brushless alternator with brushless exciter for excellent load response.

Application Data

Engine

Engine Specifications	
Manufacturer	John Deere
Engine model	6090HF484
Engine type	4-Cycle, Turbocharged, Charge Air-Cooled
Cylinder arrangement	6 Inline
Displacement, L (cu. in.)	9.0 (548)
Bore and stroke, mm (in.)	118.4 x 136 (4.66 x 5.35)
Compression ratio	16.0:1
Piston speed, m/min. (ft./min.)	457 (1500)
Main bearings: quantity, type	7, Replaceable Insert
Rated rpm	1800
Max. power at rated rpm, kWm (BHP)	287 (385)
Cylinder head material	Cast Iron
Crankshaft material	Forged Steel
Valve material:	
Intake	Chromium-Silicon Steel
Exhaust	Stainless Steel
Governor: type, make/model	JDEC Electronic L14 Denso HP4
Frequency regulation, no-load to full-load	Isochronous
Frequency regulation, steady state	±0.25%
Frequency	Fixed
Air cleaner type, all models	Dry

Exhaust

Exhaust System	
Exhaust manifold type	Dry
Exhaust flow at rated kW, m ³ /min. (cfm)	54.1 (1911)
Exhaust temperature at rated kW, dry exhaust, °C (°F)	625 (1157)
Maximum allowable back pressure, kPa (in. Hg)	Min. 0 (0) Max. 7.5 (2.2)
Engine exhaust outlet size, mm (in.)	98 (3.86)

Engine Electrical

Engine Electrical System	
Battery charging alternator:	24 Volt
Ground (negative/positive)	Negative
Volts (DC)	24
Ampere rating	60
Starter motor rated voltage (DC)	24
Battery, recommended cold cranking amps (CCA):	
Quantity, CCA rating each	Two, 950
Battery voltage (DC)	12

Fuel

Fuel System	
Fuel supply line, min. ID, mm (in.)	11.0 (0.44)
Fuel return line, min. ID, mm (in.)	6.0 (0.25)
Max. lift, fuel pump: type, m (ft.)	Electronic, 3 (10)
Max. fuel flow, Lph (gph)	240.0 (63.4)
Max. return line restriction, kPa (in. Hg)	20 (5.9)
Fuel prime pump	Electronic
Fuel filter	
Secondary	2 Microns @ 98% Efficiency
Primary	10 Microns
Water Separator	Yes
Recommended fuel	#2 Diesel

Lubrication

Lubricating System	
Type	Full Pressure
Oil pan capacity, L (qt.)	32.5 (34.4)
Oil pan capacity with filter, L (qt.)	33.4 (35.3)
Oil filter: quantity, type	1, Cartridge
Oil cooler	Water-Cooled

Application Data

Cooling

Radiator System	
Ambient temperature, °C (°F) *	50 (122)
Engine jacket water capacity, L (gal.)	16 (4.25)
Radiator system capacity, including engine, L (gal.)	36 (9.5)
Engine jacket water flow, Lpm (gpm)	265 (70)
Heat rejected to cooling water at rated kW, dry exhaust, kW (Btu/min.)	97 (5521)
Heat rejected to air charge cooler at rated kW, dry exhaust, kW (Btu/min.)	70.5 (4013)
Water pump type	Centrifugal
Fan diameter, including blades, mm (in.)	863.6 (34.0)
Fan, kWm (HP)	9.0 (12.1)
Max. restriction of cooling air, intake and discharge side of radiator, kPa (in. H ₂ O)	0.125 (0.5)

* Enclosure with enclosed silencer reduces ambient temperature capability by 5°C (9°F).

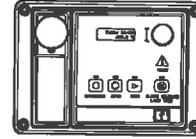
Operation Requirements

Air Requirements	
Radiator-cooled cooling air, m ³ /min. (scfm)‡	368.1 (13000)
Combustion air, m ³ /min. (cfm)	21.8 (770)
Heat rejected to ambient air:	
Engine, kW (Btu/min.)	53.8 (3060)
Alternator, kW (Btu/min.)	20.6 (1170)

‡ Air density = 1.20 kg/m³ (0.075 lbm/ft³)

Fuel Consumption		
Diesel, Lph (gph) at % load	Standby Rating	
100%	66.5	(17.6)
75%	50.4	(13.3)
50%	35.0	(9.2)
25%	20.5	(5.4)
Diesel, Lph (gph) at % load	Prime Rating	
100%	59.1	(15.6)
75%	45.3	(12.0)
50%	31.6	(8.3)
25%	18.4	(4.9)

Controllers

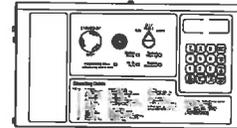


Decision-Maker® 3000 Controller

Provides advanced control, system monitoring, and system diagnostics for optimum performance and compatibility.

- Digital display and menu control provide easy local data access
- Measurements are selectable in metric or English units
- Remote communication thru a PC via network or serial configuration
- Controller supports Modbus® protocol
- Integrated hybrid voltage regulator with ±0.5% regulation
- Built-in alternator thermal overload protection
- NFPA 110 Level 1 capability

Refer to G6-100 for additional controller features and accessories.

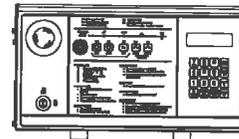


Decision-Maker® 550 Controller

Provides advanced control, system monitoring, and system diagnostics with remote monitoring capabilities.

- Digital display and keypad provide easy local data access
- Measurements are selectable in metric or English units
- Remote communication thru a PC via network or modem configuration
- Controller supports Modbus® protocol
- Integrated voltage regulator with ±0.25% regulation
- Built-in alternator thermal overload protection
- NFPA 110 Level 1 capability

Refer to G6-46 for additional controller features and accessories.



Decision-Maker® 6000 Paralleling Controller

Provides advanced control, system monitoring, and system diagnostics with remote monitoring capabilities for paralleling multiple generator sets.

- Paralleling capability with first-on logic, synchronizer, kW and kVAR load sharing, and protective relays
- Digital display and keypad provide easy local data access
- Measurements are selectable in metric or English units
- Remote communication thru a PC via network or modem configuration
- Controller supports Modbus® protocol
- Integrated voltage regulator with ±0.25% regulation
- Built-in alternator thermal overload protection
- NFPA 110 Level 1 capability

Refer to G6-107 for additional controller features and accessories.

Standard Features

- Alternator Protection
- Battery Rack and Cables
- Customer Connection
(standard with Decision-Maker® 6000 controller only)
- Local Emergency Stop Switch
- Oil Drain Extension
- Operation and Installation Literature

Available Options

Approvals and Listings

- California OSHPD Approval
- CSA Approval
- IBC Seismic Certification
- UL 2200 Listing

Enclosed Unit

- Sound Enclosure and Subbase Fuel Tank Packages
- Weather Enclosure and Subbase Fuel Tank Packages

Open Unit

- Exhaust Silencer, Critical (kit: PA-354809)
- Flexible Exhaust Connector, Stainless Steel

Fuel System

- Flexible Fuel Lines
- Fuel Pressure Gauge
- Subbase Fuel Tanks

Controller

- Common Failure Relay
- Communication Products and PC Software
(Decision-Maker® 550 and 6000 controllers only)
- Customer Connection (Decision-Maker® 550 controller only)
- Decision-Maker® Paralleling System (DPS)
(Decision-Maker® 6000 controller only)
- Dry Contact (isolated alarm)
(Decision-Maker® 550 and 6000 controllers only)
- Input/Output Module (Decision-Maker® 3000 controller only)
- Remote Audiovisual Alarm Panel
(Decision-Maker® 550 controller only)
- Remote Emergency Stop
- Remote Serial Annunciator Panel
- Run Relay

Cooling System

- Block Heater, 2500 W, 90-120 V
- Block Heater, 2500 W, 190-208 V
- Block Heater, 2500 W, 208-240 V
- Block Heater, 2500 W, 380-480 V
(recommended for ambient temperatures below 0°C [32°F])
- Radiator Duct Flange

Electrical System

- Alternator Strip Heater
- Battery
- Battery Charger, Equalize/Float Type
- Battery Heater
- Line Circuit Breaker (NEMA type 1 enclosure)
- Line Circuit Breaker with Shunt Trip (NEMA type 1 enclosure)

Paralleling System

- Manual Speed Adjust
- Voltage Sensing

Miscellaneous

- Air Cleaner, Heavy Duty
- Air Cleaner Restriction Indicator
- Crankcase Emissions Canister
- Engine Fluids (oil and coolant) Added
- Rated Power Factor Testing
- Rodent Guards

Literature

- General Maintenance
- NFPA 110
- Overhaul
- Production

Warranty

- 2-Year Basic
- 5-Year Basic
- 5-Year Comprehensive

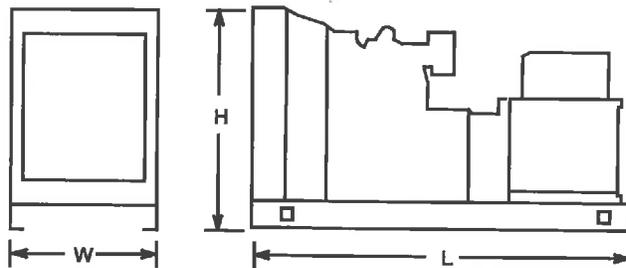
Other Options

- _____
- _____
- _____
- _____
- _____

Dimensions and Weights

Overall Size, L x W x H, mm (In.): 3000 x 1300 x 1891
 (118.1 x 51.2 x 74.4)

Weight (radiator model), wet, kg (lb.): 2313-2449 (5100-5400)



NOTE: This drawing is provided for reference only and should not be used for planning installation. Contact your local distributor for more detailed information.

DISTRIBUTED BY:

DIESEL GENERATOR SET

DS230D6S

230 kWe / 60 Hz / Standby
208 - 600V

(Reference DP210D6S for Prime Rating Technical Data)



SYSTEM RATINGS

Standby	DS230D6SPA	DS230D6SJA	DS230D6SVA	DS230D6SWA	DS230D6SRA	DS230D6SNA
Voltage (L-L)	208V**	240V**	380V	440V	480V**	600V**
Phase	3	3	3	3	3	3
PF	0.8	0.8	0.8	0.8	0.8	0.8
Hz	60	60	60	60	60	60
kW	230	230	230	230	230	230
kVA	287	287	287	287	287	287
Amps	798	692	437	377	346	277
skVA@30%						
Voltage Dip	608	608	430	580	809	510
Generator Model	432CSL6210	432CSL6210	432CSL6210	432CSL6210	432CSL6210	431PSL6243
Temp Rise	130 °C/40 °C	130 °C/40 °C	130 °C/40 °C	130 °C/40 °C	130 °C/40 °C	130 °C/40 °C
Connection	12 LEAD LOW WYE	12 LEAD HI DELTA	12 LEAD HI WYE	12 LEAD HI WYE	12 LEAD HI WYE	4 LEAD WYE

** UL 2200 Offered

CERTIFICATIONS AND STANDARDS

// Emissions – EPA Tier 3 Certified

// Generator set is designed and manufactured in facilities certified to standards ISO 9001:2008 and ISO 14001:2004

// UL 2200 / CSA – Optional

- UL 2200 Listed
- CSA Certified

// Performance Assurance Certification (PAC)

- Generator Set Tested to ISO 8528-5 for Transient Response
- Verified product design, quality and performance integrity
- All engine systems are prototype and factory tested

// Power Rating

- Accepts Rated Load in One Step Per NFPA 110
- Permissible average power output during 24 hours of operation is approved up to 85%.

STANDARD FEATURES*

- // MTU Onsite Energy is a single source supplier
- // Global Product Support
- // 2 Year Standard Warranty
- // 6R 1600 Diesel Engine
 - 10.5 Liter Displacement
 - Common Rail Fuel Injection
 - 4-Cycle
- // Engine-generator resilient mounted
- // Complete Range of Accessories
- // Generator
 - Brushless, Rotating Field Generator
 - 2/3 Pitch Windings
 - 300% Short Circuit Capability with Optional PMG
- // Digital Control Panel(s)
 - UL Recognized, CSA Certified, NFPA 110
 - Complete System Metering
 - LCD Display
- // Cooling System
 - Integral Set-Mounted
 - Engine Driven Fan

STANDARD EQUIPMENT*

// Engine

Air Cleaner
 Oil Pump
 Oil Drain Extension & S/O Valve
 Full Flow Oil Filters
 Closed Crankcase Ventilation
 Jacket Water Pump
 Thermostats
 Blower Fan & Fan Drive
 Radiator - Unit Mounted
 Electric Starting Motor - 24V
 Governor - Electronic Isochronous
 Base - Formed Steel
 SAE Flywheel & Bell Housing
 Charging Alternator - 24V
 Battery Box & Cables
 Flexible Fuel Connectors
 Flexible Exhaust Connection
 EPA Certified Engine

// Generator

NEMA MG1, IEEE and ANSI standards compliance for temperature rise and motor starting
 Sustained short circuit current of up to 300% of the rated current for up to 10 seconds
 Self-Ventilated and Drip-Proof
 Superior Voltage Waveform
 Digital, Solid State, Volts-per-Hertz Regulator
 No Load to Full Load Regulation

Brushless Alternator with Brushless Pilot Exciter
 4 Pole, Rotating Field
 130 °C Maximum Standby Temperature Rise
 1 Bearing, Sealed
 Flexible Coupling
 Full Amortisseur Windings
 125% Rotor Balancing
 3-Phase Voltage Sensing
 ±1% Voltage Regulation
 100% of Rated Load - One Step
 5% Maximum Total Harmonic Distortion

// Digital Control Panel(s)

Digital Metering
 Engine Parameters
 Generator Protection Functions
 Engine Protection
 CAN Bus ECU Communications
 Windows®-Based Software
 Multilingual Capability
 Remote Communications to RDP-110 Remote Annunciator
 16 Programmable Contact Inputs
 Up to 11 Contact Outputs
 UL Recognized, CSA Certified, CE Approved
 Event Recording
 IP 54 Front Panel Rating with Integrated Gasket
 NFPA 110 Compatible

* Represents standard product only. Consult Factory/MTU Onsite Energy Distributor for additional configurations.

APPLICATION DATA

// Engine

Manufacturer	MTU
Model	6R 1600 G70S
Type	4-Cycle
Arrangement	6-Inline
Displacement: L (Cu In)	10.5 (641)
Bore: cm (in)	12.2 (4.8)
Stroke: cm (in)	15 (5.91)
Compression Ratio	17.5:1
Rated RPM	1,800
Engine Governor	ECU 8
Max Power: kWm (bhp)	312 (418)
Speed Regulation	±0.25%
Air Cleaner	Dry

// Liquid Capacity (Lubrication)

Total Oil System: L (gal)	46 (12.2)
Engine Jacket Water Capacity: L (gal)	45 (11.9)
System Coolant Capacity: L (gal)	82 (21.7)

// Electrical

Electric Volts DC	24
Cold Cranking Amps Under -17.8 °C (0 °F)	950

// Fuel System

Fuel Supply Connection Size	#10 JIC 37° Female M20 x 1.5 Male Adapter Provided
Fuel Return Connection Size	#6 JIC 37° Female M14 x 1.5 Male Adapter Provided
Maximum Fuel Lift: m (ft)	5 (16)
Recommended Fuel	Diesel #2
Total Fuel Flow: L/hr (gal/hr)	198 (60.4)

// Fuel Consumption

	STANDBY
At 100% of Power Rating: L/hr (gal/hr)	66 (17.5)
At 75% of Power Rating: L/hr (gal/hr)	54 (14.2)
At 50% of Power Rating: L/hr (gal/hr)	39 (10.2)

// Cooling - Radiator System

	STANDBY
Ambient Capacity of Radiator: °C (°F)	50 (122)
Max. Restriction of Cooling Air, Intake, and Discharge Side of Rad.: kPa (in. H ₂ O)	0.2 (0.8)
Water Pump Capacity: L/min (gpm)	277 (73.1)
Heat Rejection to Coolant: kW (BTUM)	143 (8,132)
Heat Rejection to After Cooler: kW (BTUM)	84 (4,777)
Heat Radiated to Ambient: kW (BTUM)	27.5 (1,564)
Fan Power: kW (hp)	14.9 (20)

// Air Requirements

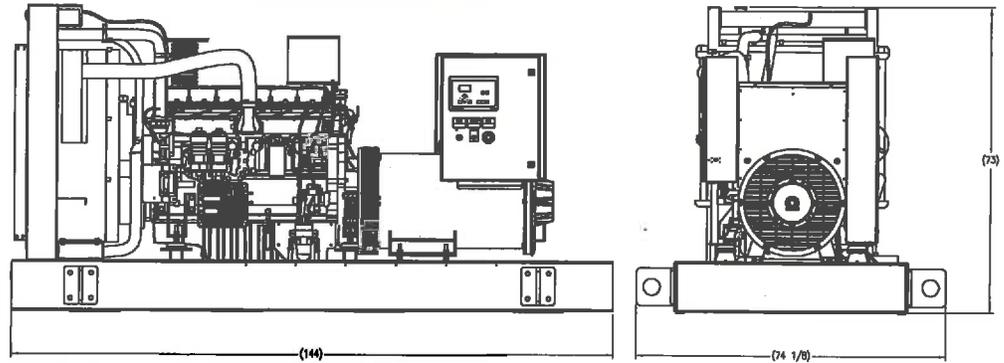
	STANDBY
Aspirating: *m ³ /min (SCFM)	30 (1,059)
Air Flow Required for Rad.	
Cooled Unit: *m ³ /min (SCFM)	396 (13,985)
Remote Cooled Applications; Air Flow Required for Dissipation of Radiated Gen-set Heat for a Max of 25 °F Rise: *m ³ /min (SCFM)	99.9 (3,527)

* Air density = 1.184 kg/m³ (0.0739 lbm/ft³)

// Exhaust System

	STANDBY
Gas Temp. (Stack): °C (°F)	430 (806)
Gas Volume at Stack Temp: m ³ /min (CFM)	72 (2,542)
Maximum Allowable Back Pressure: kPa (in. H ₂ O)	15 (60.2)

WEIGHTS AND DIMENSIONS



Drawing above for illustration purposes only, based on standard open power 480 volt generator set. Lengths may vary with other voltages. Do not use for installation design. See website for unit specific template drawings.

System	Dimensions (LxWxH)	Weight (dry/less tank)
Open Power Unit (OPU)	3,658 x 1,883 x 1,855 mm (144 x 74.13 x 73 in)	3,078 kg (6,785 lb)

Weights and dimensions are based on open power units and are estimates only. Consult the factory for accurate weights and dimensions for your specific generator set.

SOUND DATA

Unit Type	Standby Full Load
Level 0: Open Power Unit dB(A)	86.3

Sound data is provided at 7 m (23 ft). Generator set tested in accordance with ISO 8528-10 and with infinite exhaust.

EMISSIONS DATA

NO _x + NMHC	CO	PM
3.54	0.45	0.04

All units are in g/hp-hr and shown at 100% load (not comparable to EPA weighted cycle values). Emission levels of the engine may vary with ambient temperature, barometric pressure, humidity, fuel type and quality, installation parameters, measuring instrumentation, etc. The data was obtained in compliance with US EPA regulations. The weighted cycle value (not shown) from each engine is guaranteed to be within the US EPA Standards.

RATING DEFINITIONS AND CONDITIONS

- // Standby ratings apply to installations served by a reliable utility source. The standby rating is applicable to varying loads for the duration of a power outage. No overload capability for this rating. Ratings are in accordance with ISO 8528-1, ISO 3046-1, BS 5514, AS 2789, and DIN 6271.
- // Deration Factor:
 - Altitude:** Consult your local MTU Onsite Energy Power Generation Distributor for altitude derations.
 - Temperature:** Consult your local MTU Onsite Energy Power Generation Distributor for temperature derations.

Materials and specifications subject to change without notice.

C/F = Consult Factory/MTU Onsite Energy Distributor

MTU Onsite Energy
A Rolls-Royce Power Systems Brand

www.mtuonsiteenergy.com

Engine data

	Genset	Marine	O & G	Rail	C & I
Application	x				
Engine model	6R1600G708				
Emission Stage	EPA3				
Optimisation					
Application group	3D				
Date	21.10.2011				
fuel sulphur content [ppm]	357				
mg/m ³ values base on residual oxygen value of [%]	measured				

Engine raw emissions*

Cycle point	[-]	n1	n2	n3	n4	n5	n6	n7	n8
Power (P/PN)	[-]	1	0.75	0.5	0.25	0.1			
Power	[kW]	312	234	156	78	31			
Speed (n/nN)	[-]	1	1	1	1	1			
Speed	[rpm]	1800	1800	1800	1800	1800			
Exhaust temperature after turbine	[°C]	415	372	343	304	239			
Exhaust massflow	[kg/h]	2068	1892	1722	1062	784			
Exhaust back pressure	[mbar]	83	64	51	21	12			
NOx	[g/kWh]	4,6	3,5	2,5	2,6	3,5			
	[mg/m ³]	996	626	324	271	195			
CO*	[g/kWh]	0,6	0,5	0,9	1,5	4,1			
	[mg/m ³]	129	86	115	153	217			
HC	[g/kWh]	0,15	0,20	0,40	0,77	2,17			
	[mg/m ³]	31	35	49	77	116			
O2	[%]	10,8	12,2	13,7	14,7	16,4			
Particulate measured	[g/kWh]	0,06	0,07	0,10	0,36	0,64			
	[mg/m ³]	12	12	13	36	34			
Particulate calculated	[g/kWh]	-	-	-	-	-			
	[mg/m ³]	-	-	-	-	-			
Dust (only TA-Luft)	[mg/m ³]	-	-	-	-	-			
SZ	[-]	0,5	0,5	0,5	1,3	1,2			
NO/NO2**	[-]	-	-	-	-	-			
CO2	[g/kWh]	671,6	698,4	797,3	847,0	1144,5			
	[mg/m ³]	141701	119739	99111	84942	61326			
SO2	[g/kWh]	0,152	0,158	0,181	0,192	0,262			
	[mg/m ³]	32,1	27,1	22,5	19,3	14,0			

- * Emission data measurement procedures are consistent with the respective emission evaluation process. Noncertified engines are measured to sales data (TVU/TEN) standard conditions. These boundary conditions might not be representative for detailed dimensioning of exhaust gas aftertreatment, in this case it is recommended to contact the responsible department for more information. Measurements are subject to variation. The nominal emission data shown is subject to instrumentation, measurement, facility, and engine-to-engine variations. All data applies to an engine in new condition. Over extended operating time deterioration may occur which might have an impact on emission. Exhaust temperature depends on engine ambient conditions.

** No standard test. To be measured on demand

						Benennung/Title	
				MTU Friedrichshafen GmbH		Emissionsdatenblatt Emission Data Sheet	
				Bearbeiter/Drawn by	Datum/Date	Name/Name	Zeichnungs-Nr./Drawing No.
				Gepflegt/Checked	30.06.2012	Kammerhofer	EDS 1600 0029
Buchstabe/ Revision	Änderung Modifikation		Datum Date	Name Name	Org.-Einheit/Dept.	TKK	

Vers.1.0

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**CUSTOMS AND BORDER PROTECTION
Training Facility
Harpers Ferry, WV**

**ATTACHMENT I
EMERGENCY DIESEL GENERATOR EMISSIONS
POTENTIAL EMISSIONS**

**Generator ID: GEN-01
Generator Output: 635 HP "Large"
Year Manufactured: 2004**

Maximum Engine Rating

415.00 KW

Industrial Engines	Air Pollutant	Maximum Operation Time	Emission Factor	Potential to Emit		
				lbs/hr	lbs/yr	tons/yr
		<i>hr/year</i>	<i>lb/HP-hr</i>			
Detroit Diesel	PM	500	0.000700	0.44	222.3	0.11
6063HK35	NOx	500	0.013000	8.26	4,127.5	2.06
	CO	500	0.005500	3.49	1,746.3	0.87
	VOC	500	0.000705	0.45	223.8	0.11
	SO2	500	0.008090	5.14	2,568.6	1.28
	Benzene	500	0.000776	0.49	246.4	0.12
	Toluene	500	0.000281	0.18	89.2	0.04
	Xylenes	500	0.000193	0.12	61.3	0.03
	Formaldehyde	500	0.000079	0.05	25.1	0.01

Notes:

1. Emission factors are based on USEPA AP42 Chapter 3, Section 4, assuming ultra low sulfur diesel fuel (<=15 ppm sulfur by weight) and ignition timing retard for large stationary diesel engines.
2. Maximum hours of operation (500 hrs/yr) for emergency generators is suggested by USEPA under guidance issued on September 6, 1995.

CUSTOMS AND BORDER PROTECTION

Training Facility
Harpers Ferry, WV

**ATTACHMENT I
EMERGENCY DIESEL GENERATOR EMISSIONS
POTENTIAL EMISSIONS**

Generator ID: GEN-02 and GEN-03
Generator Output: 190 HP "Small"
Year Manufactured: 2004

Maximum Engine Rating

110.00 KW

Industrial Engines	Air Pollutant	Maximum Operation Time <i>hr/year</i>	Emission Factor <i>lb/HP-hr</i>	Potential to Emit		
				lbs/hr	lbs/yr	tons/yr
John Deere Power Tech 6.8	PM	500	0.002200	0.42	209.0	0.10
6068TF250	NOx	500	0.031000	5.89	2,945.0	1.47
	CO	500	0.006680	1.27	634.6	0.32
	VOC	500	0.002470	0.47	234.7	0.12
	SO2	500	0.002050	0.39	194.8	0.10
	Benzene	500	0.000933	0.18	88.6	0.04
	Toluene	500	0.000409	0.08	38.9	0.02
	Xylenes	500	0.000285	0.05	27.1	0.01
	Formaldehyde	500	0.001180	0.22	112.1	0.06

Notes:

1. Emission factors are based on USEPA AP42 Chapter 3, Section 3, assuming ultra low sulfur diesel fuel (<=15 ppm sulfur by weight) for uncontrolled small stationary diesel engines.
2. Maximum hours of operation (500 hrs/yr) for emergency generators is suggested by USEPA under guidance issued on September 6, 1995.

**CUSTOMS AND BORDER PROTECTION
Training Facility
Harpers Ferry, WV**

**ATTACHMENT I
EMERGENCY DIESEL GENERATOR EMISSIONS
POTENTIAL EMISSIONS**

**Generator ID: GEN-04
Generator Output: 765 HP "Large"
Year Manufactured: 2004**

Maximum Engine Rating

500.00 KW

Industrial Engines	Air Pollutant	Maximum Operation Time	Emission Factor	Potential to Emit		
				lbs/hr	lbs/yr	tons/yr
		<i>hr/year</i>	<i>lb/HP-hr</i>			
Detroit Diesel	PM	500	0.000700	0.54	267.8	0.13
10V1600G80S	NOx	500	0.013000	9.95	4,972.5	2.49
	CO	500	0.005500	4.21	2,103.8	1.05
	VOC	500	0.000705	0.54	269.7	0.13
	SO2	500	0.008090	6.19	3,094.4	1.55
	Benzene	500	0.000776	0.59	296.8	0.15
	Toluene	500	0.000281	0.21	107.5	0.05
	Xylenes	500	0.000193	0.15	73.8	0.04
	Formaldehyde	500	0.000079	0.06	30.2	0.02

Notes:

1. Emission factors are based on USEPA AP42 Chapter 3, Section 4, assuming ultra low sulfur diesel fuel (<=15 ppm sulfur by weight) and ignition timing retard for large stationary diesel engines.
2. Maximum hours of operation (500 hrs/yr) for emergency generators is suggested by USEPA under guidance issued on September 6, 1995.

**CUSTOMS AND BORDER PROTECTION
Training Facility
Harpers Ferry, WV**

**ATTACHMENT I
EMERGENCY DIESEL GENERATOR EMISSIONS
POTENTIAL EMISSIONS**

Generator ID: GEN-05
Generator Output: 99 HP "Small"
Year Manufactured: 2004

Maximum Engine Rating

62.00 KW

Industrial Engines	Air Pollutant	Maximum Operation Time	Emission Factor	Potential to Emit		
				lbs/hr	lbs/yr	tons/yr
		<i>hr/year</i>	<i>lb/HP-hr</i>			
John Deere	PM	500	0.002200	0.22	108.9	0.05
4045TF150	NOx	500	0.031000	3.07	1,534.5	0.77
	CO	500	0.006680	0.66	330.7	0.17
	VOC	500	0.002470	0.24	122.3	0.06
	SO2	500	0.002050	0.20	101.5	0.05
	Benzene	500	0.000933	0.09	46.2	0.02
	Toluene	500	0.000409	0.04	20.2	0.01
	Xylenes	500	0.000285	0.03	14.1	0.01
	Formaldehyde	500	0.001180	0.12	58.4	0.03

Notes:

1. Emission factors are based on USEPA AP42 Chapter 3, Section 3, assuming ultra low sulfur diesel fuel (≤ 15 ppm sulfur by weight) for uncontrolled small stationary diesel engines.
2. Maximum hours of operation (500 hrs/yr) for emergency generators is suggested by USEPA under guidance issued on September 6, 1995.

**CUSTOMS AND BORDER PROTECTION
Training Facility
Harpers Ferry, WV**

**ATTACHMENT I
EMERGENCY DIESEL GENERATOR EMISSIONS
POTENTIAL EMISSIONS**

**Generator ID: GEN-06
Generator Output: 345 HP "Small"
Year Manufactured: 2009**

Maximum Engine Rating

255.00 KW

Industrial Engines	Air Pollutant	Maximum Operation Time	Emission Factor	Potential to Emit		
				lbs/hr	lbs/yr	tons/yr
		<i>hr/year</i>	<i>lb/HP-hr</i>			
John Deere	PM	500	0.002200	0.76	379.5	0.19
6090HF484	NOx	500	0.031000	10.70	5,347.5	2.67
	CO	500	0.006680	2.30	1,152.3	0.58
	VOC	500	0.002470	0.85	426.1	0.21
	SO2	500	0.002050	0.71	353.6	0.18
	Benzene	500	0.000933	0.32	160.9	0.08
	Toluene	500	0.000409	0.14	70.6	0.04
	Xylenes	500	0.000285	0.10	49.2	0.02
	Formaldehyde	500	0.001180	0.41	203.6	0.10

Notes:

1. Emission factors are based on USEPA AP42 Chapter 3, Section 3, assuming ultra low sulfur diesel fuel (<=15 ppm sulfur by weight) for uncontrolled small stationary diesel engines.
2. Maximum hours of operation (500 hrs/yr) for emergency generators is suggested by USEPA under guidance issued on September 6, 1995.

**CUSTOMS AND BORDER PROTECTION
Training Facility
Harpers Ferry, WV**

**ATTACHMENT I
EMERGENCY DIESEL GENERATOR EMISSIONS
POTENTIAL EMISSIONS**

**Generator ID: GEN-07 and GEN-08
Generator Output: 1193 HP "Large"
Year Manufactured: 2010**

Maximum Engine Rating

750.00 KW

Industrial Engines	Air Pollutant	Maximum Operation Time	Emission Factor	Potential to Emit		
				lbs/hr	lbs/yr	tons/yr
		<i>hr/year</i>	<i>lb/HP-hr</i>			
MTU Onsite Energy	PM	500	0.000198	0.24	118.1	0.06
12V2000G85TB	NOx	500	0.006752	8.05	4,027.5	2.01
	CO	500	0.001786	2.13	1,065.3	0.53
	VOC	500	0.002132	2.54	1,271.8	0.64
	SO2	500	0.008090	9.65	4,825.7	2.41
	Benzene	500	0.000776	0.93	462.9	0.23
	Toluene	500	0.000281	0.34	167.6	0.08
	Xylenes	500	0.000193	0.23	115.1	0.06
	Formaldehyde	500	0.000079	0.09	47.1	0.02
	NMHC+NOx	500	0.008884	10.60	5,299.3	2.65

Notes:

1. Emission factors for SO2 and HAPs are based on USEPA AP42 Chapter 3, Section 4, assuming ultra low sulfur diesel fuel (<=15 ppm sulfur by weight) for large stationary diesel engines.
2. Emission factors for PM, NOx, CO, and VOC are based on manufacturer data sheets. Since the limit is for NOx + NMHC, the NOx and VOC limits shall be calculated using a ratio of 76.0% NOx to 24.0% VOC. This ratio is based upon the linear relationship of NOx to NMHC from Table 1 of Subpart III, Table 1 from 40 CFR 89.112, to Tables 4, 5, and 6 from 40 CFR 1039.102
3. Maximum hours of operation (500 hrs/yr) for emergency generators is suggested by USEPA under guidance issued on September 6, 1995.

**CUSTOMS AND BORDER PROTECTION
Training Facility
Harpers Ferry, WV**

**ATTACHMENT I
EMERGENCY DIESEL GENERATOR EMISSIONS
POTENTIAL EMISSIONS**

Generator ID: GEN-09
Generator Output: 237 HP "Small"
Year Manufactured: 2012

Maximum Engine Rating

155.00 KW

Industrial Engines	Air Pollutant	Maximum Operation Time	Emission Factor	Potential to Emit		
				lbs/hr	lbs/yr	tons/yr
		<i>hr/year</i>	<i>lb/HP-hr</i>			
John Deere	PM	500	0.002200	0.52	260.7	0.13
6068HF285	NOx	500	0.031000	7.35	3,673.5	1.84
	CO	500	0.006680	1.58	791.6	0.40
	VOC	500	0.002470	0.59	292.7	0.15
	SO2	500	0.002050	0.49	242.9	0.12
	Benzene	500	0.000933	0.22	110.6	0.06
	Toluene	500	0.000409	0.10	48.5	0.02
	Xylenes	500	0.000285	0.07	33.8	0.02
	Formaldehyde	500	0.001180	0.28	139.8	0.07

Notes:

1. Emission factors are based on USEPA AP42 Chapter 3, Section 3, assuming ultra low sulfur diesel fuel (≤ 15 ppm sulfur by weight) for uncontrolled small stationary diesel engines.
2. Maximum hours of operation (500 hrs/yr) for emergency generators is suggested by USEPA under guidance issued on September 6, 1995.

CUSTOMS AND BORDER PROTECTION
Training Facility
Harpers Ferry, WV

ATTACHMENT I
EMERGENCY DIESEL GENERATOR EMISSIONS
POTENTIAL EMISSIONS

Generator ID: **GEN-10**
Generator Output: **418 HP** "Small"
Year Manufactured: **2015**

Maximum Engine Rating

230.00 KW

Industrial Engines	Air Pollutant	Maximum Operation Time	Emission Factor	Potential to Emit		
				lbs/hr	lbs/yr	tons/yr
		<i>hr/year</i>	<i>lb/HP-hr</i>			
MTU Onsite Energy 6R1600G70S	PM	500	0.000088	0.04	18.4	0.01
	NOx	500	0.005931	2.48	1,239.6	0.62
	CO	500	0.000992	0.41	207.3	0.10
	VOC	500	0.001873	0.78	391.4	0.20
	SO2	500	0.002050	0.86	428.5	0.21
	Benzene	500	0.000933	0.39	195.0	0.10
	Toluene	500	0.000409	0.17	85.5	0.04
	Xylenes	500	0.000285	0.12	59.6	0.03
	Formaldehyde	500	0.001180	0.49	246.6	0.12
	NMHC+NOx	500	0.007804	3.26	1,631.0	0.82

Notes:

1. Emission factors for SO2 and HAPs are based on USEPA AP42 Chapter 3, Section 3, assuming ultra low sulfur diesel fuel (<=15 ppm sulfur by weight) for uncontrolled small stationary diesel engines.
2. Emission factors for PM, NOx, CO, and VOC are based on manufacturer data sheets. Since the limit is for NOx + NMHC, the NOx and VOC limits shall be calculated using a ratio of 76.0% NOx to 24.0% VOC. This ratio is based upon the linear relationship of NOx to NMHC from Table 1 of Subpart IIII, Table 1 from 40 CFR 89.112, to Tables 4, 5, and 6 from 40 CFR 1039.102
3. Maximum hours of operation (500 hrs/yr) for emergency generators is suggested by USEPA under guidance issued on September 6, 1995.

**CUSTOMS AND BORDER PROTECTION
Training Facility
Harpers Ferry, WV**

**ATTACHMENT I
EMERGENCY DIESEL GENERATOR EMISSIONS
POTENTIAL EMISSIONS**

Air Pollutant	Potential to Emit		
	lbs/hr	lbs/yr	tons/yr
PM	3.82	1,911.7	0.96
NOx	69.68	34,840.0	17.42
CO	19.46	9,731.8	4.87
VOC	9.48	4,739.0	2.37
SO2	33.66	16,830.3	8.42
Benzene	4.32	2,158.9	1.08
Toluene	1.67	834.4	0.42
Xylenes	1.15	576.1	0.29
Formaldehyde	2.04	1,022.2	0.51

EMERGENCY GENERATOR EMISSION SUMMARY SHEET FOR CRITERIA POLLUTANTS										
Emergency Generator Location: CBP Advanced Training Center						Registration Number (Agency Use) G60-C				
Source ID No.	Potential Emissions (lbs/hr)					Potential Emissions (tons/yr)				
	NO _x	CO	VOC	SO ₂	PM ₁₀	NO _x	CO	VOC	SO ₂	PM ₁₀
GEN-01	8.26	3.49	0.45	5.14	0.44	2.06	0.87	0.11	1.28	0.11
GEN-02	5.89	1.27	0.47	0.39	0.42	1.47	0.32	0.12	0.10	0.10
GEN-03	5.89	1.27	0.47	0.39	0.42	1.47	0.32	0.12	0.10	0.10
GEN-04	9.95	4.21	0.54	6.19	0.54	2.49	1.05	0.13	1.55	0.13
GEN-05	3.07	0.66	0.24	0.20	0.22	0.77	0.17	0.06	0.05	0.05
GEN-06	10.70	2.30	0.85	0.71	0.76	2.67	0.58	0.21	0.18	0.19
GEN-07	8.05	2.13	2.54	9.65	0.24	2.01	0.53	0.64	2.41	0.06
GEN-08	8.05	2.13	2.54	9.65	0.24	2.01	0.53	0.64	2.41	0.06
GEN-09	7.35	1.58	0.59	0.49	0.52	1.84	0.40	0.15	0.12	0.13
GEN-10	2.48	0.41	0.78	0.86	0.04	0.62	0.10	0.20	0.86	0.01
Total	67.20	19.05	8.70	32.80	3.79	16.80	4.76	2.17	8.20	0.95

EMERGENCY GENERATOR EMISSION SUMMARY SHEET FOR HAZARDOUS/TOXIC POLLUTANTS

Emergency Generator Location: CBP Advanced Training Center							Registration Number (Agency Use) <u>G60-C</u>					
Source ID No.	Potential Emissions (lbs/hr)						Potential Emissions (tons/yr)					
	Benzene	Ethylbenzene	Toluene	Xylenes	n-Hexane	Formaldehyde	Benzene	Ethylbenzene	Toluene	Xylenes	n-Hexane	Formaldehyde
GEN-01	0.49		0.18	0.12		0.05	0.12		0.04	0.03		0.01
GEN-02	0.18		0.08	0.05		0.22	0.04		0.02	0.01		0.06
GEN-03	0.18		0.08	0.05		0.22	0.04		0.02	0.01		0.06
GEN-04	0.59		0.21	0.15		0.06	0.15		0.05	0.04		0.02
GEN-05	0.09		0.04	0.03		0.12	0.02		0.01	0.01		0.03
GEN-06	0.32		0.14	0.10		0.41	0.08		0.04	0.02		0.41
GEN-07	0.93		0.34	0.23		0.09	0.23		0.08	0.06		0.02
GEN-08	0.93		0.34	0.23		0.09	0.23		0.08	0.06		0.02
GEN-09	0.22		0.10	0.07		0.28	0.06		0.02	0.02		0.07
GEN-10	0.39		0.17	0.12		0.49	0.10		0.04	0.03		0.12
Total	4.32		1.67	1.15		2.04	1.08		0.42	0.29		0.51

Note: There are no AP42 emissions factors for ethylbenzene and n-hexane.

CBP Advanced Training Center
440 Koonce Road, Harpers Ferry WV 25425
Operations - 304-724-580 FSOB - 304-724-5801

GPS COORDINATES: N39° 18.4867' W077 47.070'

Directions from Northern Virginia and Washington D.C.:

- Take Rt 267 West (Dulles toll road) toward Leesburg
- Merge onto Rt 7 West, Exit 1A on the LEFT toward Leesburg/Warrenton
- Take the Rt 9 West exit toward Hillsboro/Charles Town
- Turn RIGHT onto Rt 9 (Charles Town Pike)
- Turn RIGHT onto Rt 671 North (Harpers Ferry Road)
- At the light, turn LEFT onto Rt 340 (Jefferson Pike)

After the Shenandoah River bridge at Harpers Ferry, you will pass a Quality Inn on your left. One mile past the Quality Inn, turn LEFT onto Koonce Road. The ATC entrance is on the left.

Directions from I-81 and Martinsburg, WV:

- Take WV exit 12 off I-81
- Travel East on Rt 9 toward Charles Town
- At Charles Town, take right exit ramp onto Rt 340 North toward Harpers Ferry

After passing Halltown Road on your left, turn RIGHT onto Koonce Road (there are two opportunities to turn, in case you miss the first right).

Directions from Frederick, MD:

- Route 340 South to Harpers Ferry, WV
- Continue over the Potomac River bridge and straight at the stop light.

After the Shenandoah River bridge at Harpers Ferry, you will pass a Quality Inn on your left. One mile past the Quality Inn, turn LEFT onto Koonce Road.

The ATC entrance is on the left.

