

**Attachment 1- Application Forms**



**Utah Division of Air Quality  
New Source Review Section**

Company: Navitus Sustainable Industries

Site/Source: South Valley Recycling &  
Renewable Power Facility

Date: March 2014

**Form 17  
Diesel Powered Standby Generator**

**Company Information**

1. Company Name and Address: Navitus Sustainable Industries  
2825 East Cottonwood Parkway, Suite 500  
Salt Lake City, Utah 84121

2. Company Contact: Heidi Thorn

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
Phone Number: 801-990-1246  
Fax Number: \_\_\_\_\_

3. Installation Address: South Valley Recycling & Renewable Power Facility

County where facility is located: Salt Lake

Latitude, Longitude and UTM Coordinates of Facility  
\_\_\_\_\_

Phone Number: \_\_\_\_\_

Fax Number: \_\_\_\_\_

**Standby Generator Information**

4. Engines:

Manufacturer	Model	Maximum Rated Horsepower or Kilowatts	Maximum Hours of Operation	Emission Rate Rate of NO <sub>x</sub> grams/BHP-HR	Date the engine was constructed or reconstructed

Attach Manufacturer-supplied information

5. Calculated emissions for this equipment:

PM <sub>10</sub> _____ Lbs/hr _____ Tons/yr	PM <sub>2.5</sub> _____ Lbs/hr _____ Tons/yr
NO <sub>x</sub> _____ Lbs/hr _____ Tons/yr	SO <sub>x</sub> _____ Lbs/hr _____ Tons/yr
CO _____ Lbs/hr _____ Tons/yr	VOC _____ Lbs/hr _____ Tons/yr
CO <sub>2</sub> _____ Tons/yr	CH <sub>4</sub> _____ Tons/yr
N <sub>2</sub> O _____ Tons/yr	
HAPs _____ Lbs/hr (speciate) _____ Tons/yr (speciate)	

Submit calculations as an appendix. If other pollutants are emitted, include the emissions in the appendix.





**Utah Division of Air Quality  
New Source Review Section**

Company Navitus Sustainable Industries  
 Site/Source South Valley Recycling & Renewable Power Facility  
 Date March 2014

**Form 11  
Internal Combustion Engines**

**Equipment Information**

1. Manufacturer: Caterpillar  
 Model no.: 3520C  
 The date the engine was constructed or reconstructed New Units

2. Operating time of Emission Source:  
 average \_\_\_\_\_ maximum \_\_\_\_\_  
24Hours/day                      24Hours/day  
7 Days/week                      7Days/week  
52Weeks/year                      52Weeks/year

3. Manufacturer's rated output at baseload, ISO \_\_\_\_\_ 2,233hp or Kw  
 Proposed site operating range \_\_\_\_\_ hp or Kw

**Gas Firing**

4. Are you operating site equipment on pipeline quality natural gas:  Yes  No

5. Are you on an interruptible gas supply:  
 Yes  No  
 If "yes", specify alternate fuel: \_\_\_\_\_

6. Annual consumption of fuel:  
517.68 \_\_\_\_\_ MMSCF/Year

7. Maximum firing rate: \_\_\_\_\_ BTU/hr

8. Average firing rate: \_\_\_\_\_ BTU/hr

**Oil Firing**

9. Type of oil:  
 Grade number  1  2  4  5  6 Other specify \_\_\_\_\_

10. Annual consumption: \_\_\_\_\_ gallons

11. Heat content: \_\_\_\_\_ BTU/lb or  
 \_\_\_\_\_ BTU/gal

12. Sulfur content: \_\_\_\_\_ % by weight

13. Ash content: \_\_\_\_\_ % by weight

14. Average firing rate: \_\_\_\_\_ gal/hr

15. Maximum firing rate: \_\_\_\_\_ gal/hr

16. Direction of firing:  horizontal  tangential  other: (specify)



## INSTRUCTIONS – Form 11 Internal Combustion Engine

NOTE: 1. **Submit this form in conjunction with Form 1 and Form 2.**

2. Call the Division of Air Quality (DAQ) at (801) 536-4000 if you have problems or questions in filling out this form. Ask to speak with a New Source Review engineer. We will be glad to help!
  
1. Indicate the manufacturer, the model number and the date the engine was constructed or reconstructed.
2. Complete the fuel burning equipment's average and maximum operating schedule in hours per day, days per week, and weeks per year.
3. Specify the manufacturer's rated output and heat rate at baseload corresponding to International Standard Organization (ISO) conditions in megawatts (MW) or horsepower (hp). Also indicated what the proposed site operating range is in megawatts or horsepower.
4. Indicate the origin of the gas used in the engine.
5. Indicate if the gas supply can be interrupted and what the backup fuel is in case this happens.
6. Specify what the annual consumption of fuel is in million standard cubic feet (MMscf).
7. Supply the maximum firing rate in BTU/hr.
8. Supply the average firing rate in BTU/hr.
9. Indicate the grade of oil being used.
10. Supply the annual consumption calculated in gallons of oil.
11. Indicate the heat content of the oil in BTU/lb or BTU/gal.
12. Indicate the sulfur content of the oil in percent by weight.
13. Indicate the ash content of the oil.
14. Supply the average firing rate of oil.
15. Supply the maximum firing rate of oil.
16. Indicate what the firing direction is.
17. Indicate what the engine will be used for.
18. Indicate what type of cycle the engine will have.
19. Indicate the manufacturer's emissions rate in grams/hp-hr
20. Provide manufacturer's emission information for the engine. Also indicate what method of emission control to be used.
21. Provide details of the operation of emission controls and exhaust parameter information.



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**Form 10  
Fabric Filters (Baghouses)**

**Baghouse Description**

1. Briefly describe the process controlled by this baghouse: Indoor Particulate matter emissions collected by dust collection system and fed to dust collector. The dust collector does not vent outdoors.

**Gas Stream Characteristics**

2. Flow Rate (acfm): 26,650		3. Water Vapor Content of Effluent Stream (lb. water/lb. dry air) 10	4. Particulate Loading (grain/scf)	
Design	Max		Inlet	Outlet
	Average Expected			
5. Pressure Drop (inches H <sub>2</sub> O) High 10 _____ Low 5 _____		6. Gas Stream Temperature (°F): Ambient		7. Fan Requirements (hp) (ft <sup>3</sup> /min)

**Equipment Information and Filter Characteristics**

8. Manufacturer and Model Number:

9. Bag Material: <input type="checkbox"/> Nomex nylon <input checked="" type="checkbox"/> Polyester <input type="checkbox"/> Acrylics <input type="checkbox"/> Fiber glass <input type="checkbox"/> Cotton <input type="checkbox"/> Teflon <input type="checkbox"/> _____	10. Bag Diameter (in.)	11. Bag Length (ft.)	12. Number of Bags: 150	13. Stack Height _____ feet Stack Inside Diameter _____ inches
	14. Filtering Efficiency Rating: _____ 99%	15. Air to Cloth Ratio: 4: 1	16. Hours of Operation: Max 24 Per day Max Per year 8760	17. Cleaning Mechanism: <input checked="" type="checkbox"/> Reverse Air <input type="checkbox"/> Shaker <input type="checkbox"/> Pulse Jet <input type="checkbox"/> Other:

**Emissions Calculations (PTE)**

18. Calculated emissions for this device

PM <sub>10</sub> _____ Lbs/hr _____ Tons/yr	PM <sub>2.5</sub> _____ Lbs/hr _____ Tons/yr
NO <sub>x</sub> _____ Lbs/hr _____ Tons/yr	SO <sub>x</sub> _____ Lbs/hr _____ Tons/yr
CO _____ Lbs/hr _____ Tons/yr	VOC _____ Lbs/hr _____ Tons/yr
HAPs _____ Lbs/hr (speciate) _____ Tons/yr (speciate)	

Submit calculations as an appendix.



**Utah Division of Air Quality  
New Source Review Section**

**Form 4  
Flare Systems**

Company Navitus Sustainable Industries

Site/Source South Valley Recycling & Renewable Power Facility

Date March 2014

**Equipment Information**

1. Manufacturer:

Model no.:

(if available)

2. Design and operation shall be in accordance with 40CFR63.11. In addition to the information listed in this form, provide the following: an assembly drawing with dimensions, interior dimensions and features, flare's maximum capacity in BTU/hr.

**3.Characteristics of Waste Gas Stream Input**

Components	Min. Value Expected (scfm @ 68°F, 14.7 psia)	Ave. Value Expected (scfm @ 68°F, 14.7 psia)	Design Max. (scfm @ 68°F, 14.7 psia)
a. Pyrolysis Gas	300	300	500
b. Methane Gas	300	300	500
c.			
d.			
e.			
f.			
g.			
h.			
4. Percent of time this condition occurs			

5. Flow rate:	Minimum Expected	Design Maximum	Temp °F	Pressure (psig)
Waste Gas Stream	<u>300</u>			
Fuel Added to Gas Stream	<u>15</u>			
Heat content of the gas to be flared	<u>500</u>			<u>BTU/ft<sup>3</sup></u>

6. Number of pilots 1

7. Type of fuel  
Natural gas

8. Fuel Flow Rate (scfm @ 68°F & 14.7 psia) per pilot  
0.83

**Flare Systems  
Form 4  
(Continued)**

**Steam Injection**

9. Steam pressure (psig) Minimum Expected _____ Design Maximum _____	10. Total steam flow Rate (lb/hr)
11. Temperature (°F)	12. Velocity (ft/sec)
13. Number of jet streams	14. Diameter of steam jets (inches)
15. Design basis for steam injected (lb steam/lb hydrocarbon)	

**Water Injection**

16. Water pressure (psig) Minimum Expected _____ Design Maximum _____	17. Total Water Flow Rate (gpm) Minimum Expected _____ Design Maximum _____
18. Number of water jets	19. Diameter of Water jets (inches)
20. Flare height (ft)	21. Flare tip inside diameter (ft)

**Emissions Calculations (PTE)**

22. Calculated emissions for this device

PM <sub>10</sub> _____ Lbs/hr _____ Tons/yr	PM <sub>2.5</sub> _____ Lbs/hr _____ Tons/yr
NO <sub>x</sub> _____ Lbs/hr _____ Tons/yr	SO <sub>x</sub> _____ Lbs/hr _____ Tons/yr
CO _____ Lbs/hr _____ Tons/yr	VOC _____ Lbs/hr _____ Tons/yr
CO <sub>2</sub> _____ Tons/yr	CH <sub>4</sub> _____ Tons/yr
N <sub>2</sub> O _____ Tons/yr	
HAPs _____ Lbs/hr (speciate) _____ Tons/yr (speciate)	

Submit calculations as an appendix. If other pollutants are emitted, include the emissions in the appendix.



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**Form 2  
Process Information**

Process Data		
1. Name of process: <u>Waste Conversion</u>	2. End product of this process: <u>Methane Gas</u>	
3. Primary process equipment: Reactor _____ Manufacturer: <u>Tucker Engineering Associates (TEA)</u> Make or model: _____ Identification #: <u>TCR1 through TCR7</u> Capacity of equipment (lbs/hr): _____ Year installed: _____ Rated 1.5 _____ Max. 1.5 _____ (Add additional sheets as needed)		
4. Method of exhaust ventilation: <input checked="" type="checkbox"/> Stack <input type="checkbox"/> Window fan <input type="checkbox"/> Roof vent <input type="checkbox"/> Other, describe _____  Are there multiple exhausts: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No		
Operating Data		
5. Maximum operating schedule: <u>24</u> hrs/day _____ days/week <u>52</u> weeks/year	6. Percent annual production by quarter: Winter _____ Spring _____ Summer _____ Fall _____	
7. Hourly production rates (lbs.): <u>N/A</u> Average _____ Maximum _____	8. Maximum annual production (indicate units): Projected percent annual increase in production: _____	
9. Type of operation: <input checked="" type="checkbox"/> Continuous <input type="checkbox"/> Batch <input type="checkbox"/> Intermittent	10. If batch, indicate minutes per cycle _____ Minutes between cycles _____	
11. Materials used in process		
Raw Materials	Principal Use	Amounts (Specify Units)
<u>Municipal Solid Waste</u>	<u>Waste Conversion Feedstock</u>	<u>350 tons per day</u>

**Process  
Form 2 (Continued)**

12. Control equipment (attach additional pages if necessary) See Attached Forms		
Item	Primary Collector	Secondary Collector
a. Type		
b. Manufacturer		
c. Model		
d. Year installed		
e. Serial or ID#		
f. Pollutant controlled		
g. Controlled pollutant emission rate (if known)		
h. Pressure drop across control device		
i. Design efficiency		
j. Operating efficiency		

**Stack Data**  
(attach additional pages if necessary)

13. Stack identification: N/A	14. Height: Above roof _____ ft Above ground _____ ft
15. Are other sources vented to this stack: <input type="checkbox"/> Yes <input type="checkbox"/> No  If yes, identify sources:	16. <input type="checkbox"/> Round, top inside diameter dimension _____ <input type="checkbox"/> Rectangular, top inside dimensions length _____ x width _____
17. Exit gas: Temperature _____ °F    Volume _____ acfm    Velocity _____ ft/min	
18. Continuous monitoring equipment: <input type="checkbox"/> yes <input checked="" type="checkbox"/> no If yes, indicate: Type _____ Manufacturer _____ Make or Model _____ Pollutant(s) monitored _____	

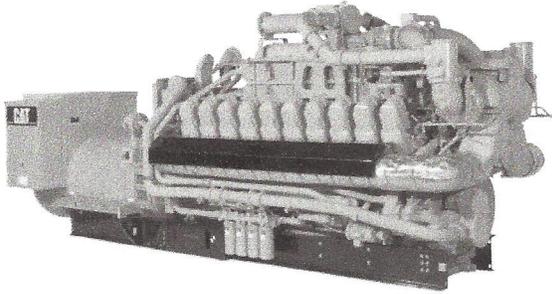
**Emissions Calculations (PTE)**

19. Calculated emissions for this device N/A

PM <sub>10</sub> _____ Lbs/hr _____ Tons/yr	PM <sub>2.5</sub> _____ Lbs/hr _____ Tons/yr
NO <sub>x</sub> _____ Lbs/hr _____ Tons/yr	SO <sub>x</sub> _____ Lbs/hr _____ Tons/yr
CO _____ Lbs/hr _____ Tons/yr	VOC _____ Lbs/hr _____ Tons/yr
CO <sub>2</sub> _____ Tons/yr	CH <sub>4</sub> _____ Tons/yr
N <sub>2</sub> O _____ Tons/yr	
HAPs _____ Lb s/hr (speciate) _____ Tons/yr (speciate)	

Submit calculations as an appendix. If other pollutants are emitted, include the emissions in the appendix.

## **Attachment 2- Caterpillar 3520C Engine Specifications**



**CONTINUOUS  
1600 ekW @  
1200 RPM  
60 Hz (Low Energy Fuel)**

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

**BENEFITS**



**EMISSIONS**

- Meets most worldwide emissions requirements down to 0.5 g/bhp-hr NOx level without aftertreatment

**FULL RANGE OF ATTACHMENTS**

- Wide range of bolt-on system expansion attachments, factory designed and tested

**SINGLE-SOURCE SUPPLIER**

- **Fully Prototype Tested** with certified torsional vibration analysis available

**WORLDWIDE PRODUCT SUPPORT**

- With over 1,800 dealer branch stores operating in 166 countries, you're never far from the Caterpillar part you need.
- 99.5% of parts orders filled within 48 hours. The best product support record in the industry.
- Caterpillar dealer service technicians are trained to service every aspect of your electric power generation system.
- Customer Support Agreements offer back-to-back services from scheduled inspections and preventive maintenance to before-failure overhauls and Total Cost-Per-Hour Guarantees.



**CAT® G3520C GAS ENGINE**

- Robust high speed diesel block design provides prolonged life and lower owning and operating costs.
- Designed for maximum performance on low pressure pipeline natural gas.
- Simple open chamber combustion system for reliability and fuel flexibility.
- Leading edge technology in ignition system and air/fuel ratio control for lower emissions and higher engine efficiency.
- One electronic control module handles all engine functions: ignition, governing, air fuel ratio control, and engine protection.
- Factory-designed systems built at Caterpillar ISO9001:2000 certified facilities.



**CAT SR4B GENERATOR**

- Designed to match performance and output characteristics of Caterpillar engines.
- Optimum winding pitch for minimum total harmonic distortion and maximum efficiency.
- Segregated low voltage (AC/DC) accessory box provides single point access to accessory connections.



**CAT CONTROL MODULE**

- Designed to meet individual customer needs: Gas Engine Control Module provides full-featured, engine management and control functions, purge cycle, staged shutdown logic, plus programmable protective relaying functions.
- Remote control and monitor capability options

# GAS GENERATOR SET CONTINUOUS POWER 1600 e kW @ 1200 RPM - 60 Hz (LOW ENERGY FUEL)



## FACTORY INSTALLED STANDARD & OPTIONAL EQUIPMENT

System	Standard	Optional
Air Inlet	2 element, single stage air cleaner with enclosure, service indicator, horizontal mount (shipped loose)	2 elements with enclosure vertical mount (shipped loose). Stand to mount horizontal or optional vertical air cleaner. Heavy duty air cleaner w/precleaner, horizontal mount (shipped loose)
Cooling	Engine driven water pumps for jacket water and aftercooler circuit, jacket water and SCAC thermostats ANSI/DN customer flange connections for JW inlet and outlet (ANSI 6 in/DN 150), SCAC system has Cat flanges	Remote radiator for JW and SCAC circuits, water level switch included but not wired, 480V electric driven fans with guard, motor control and disconnect switch
Engine Control Module	Fuel/air ratio control transient richening and turbo bypass control Start/stop logic: gas purge cycle, staged shutdown Engine Protection Systems: detonation sensitive timing, high jacket water temperature, low oil pressure, failure to start overcrank, overspeed, high oil temperature, emergency stop	
Exhaust	Dry exhaust manifolds, Cat® flanged outlet Individual exhaust port and turbocharger outlet wired to integrated Temperature Sensing Module with Gas ECM providing alarms and shutdowns	15 dBA, 18 dBA, 25 dBA attenuation mufflers with ANSI style flanges, weld flanges, elbows, expanders, and flexible fittings
Fuel	Electronic air fuel ratio control (Engine Control Module) ADEM™ III based, electronic fuel control valve, throttle plate; throttle, electronically actuated and electronically controlled by ECM, low pressure pipeline natural gas fuel supply (105-350 mbar). Sized for 10.8 to 25.6 MJ/N-m <sup>3</sup> (275 to 650 Btu/cu ft) dry pipeline natural gas.	Fuel filter (non-coalescent)
Ignition	ECM provides electronic ignition, individual cylinder timing and individual cylinder detonation control (through the use of one detonation sensor per 2 cylinders)	
Integrated Thermo Sensing Module (ITSM)	24 thermocouples to input individual exhaust port temperatures and inlet and outlet temperatures of both turbochargers	CCM transfers Cat® DataLink information through RS232 to customer terminal
Generator	Permanent magnet excitation, two bearing, six lead, 3-phase sensing, platinum stator RTDs, Class H Insulation, 105° C rise, Caterpillar® Digital Voltage Regulator with adjustable 1:1 or 2:1 volt/Hz and PF control, bus bar termination, extension box, segregated low voltage wiring panel, winding temperature detectors, anti-condensation space heaters	Oversize and premium generators Bearing temperature detector Low voltage cable extension box
Governor	Electronic (ADEM™ III), ProAct actuator	Electronic load sharing
Control Panels	EMCP II+	Local alarm and remote annunciator modules Synchronizing module
Lube	Lubricating oil and filter, oil drain valve, crankcase breathers, gear type lube oil pump, integral lube oil cooler, filler/dipstick	Closed Crankcase ventilation system, prelube pump
Mounting	330 mm structural steel rails (for low and medium voltage units), anti-vibration mounts (shipped loose)	
Starting/Charging	24 volt starting motor, batteries with rack and cables, batteries disconnect switch	Battery charger, 24V charging alternator, air starting system, jacket water coolant heaters, 9 kW (480V/3 phases with 240V/1 phase pump, include isolation valves) oversize batteries
General	Damper	Manual barring device, certifications, crankcase explosion relief valve

## SPECIFICATIONS



### CAT SR4B GENERATOR

Frame size	868
Excitation	Permanent magnet
Pitch	0.75
Number of poles	6
Number of bearings	2
Number of leads	6
Insulation	UL 1446 Recognized Class H Insulation
IP rating	Drip proof IP22
Alignment	Pilot shaft
Overspeed capability	125%
Wave form	Less than 5% deviation
Paralleling kit droop transformer	Standard
Voltage regulator	3-phase sensing with adjustable 1:1 or 2:1 Volts/Hz, UL 508A Listed
TIF	Less than 50
THD	Less than 3%

Consult your Caterpillar dealer for available voltages.

LEHE4168-01



### CAT ENGINE

G3520C SCAC, 4-stroke-cycle watercooled Gas	
Bore — mm (in)	170 (6.7)
Stroke — mm (in)	190 (7.5)
Displacement — L (cu in)	86 (5248)
Compression ratio	11.3:1
Aspiration	Turbocharged Separate Circuit Aftercooled
Fuel system	Low Pressure
Governor type	Electronic (ADEM™ III)



### CAT CONTROL PANEL

24 Volt DC Control
NEMA 1, IP22 enclosure
Electrically dead front
Lockable hinged door
Generator instruments meet ANSI C-39-1
Terminal box mounted
Single location customer connector point
EC compliant — segregated AC/DC connections and wiring

# GAS GENERATOR SET CONTINUOUS POWER 1600 e kW @ 1200 RPM - 60 Hz (LOW ENERGY FUEL)



## TECHNICAL DATA

Generator Set — 1200 rpm/60 Hz/480 Volts		DM5740		DM5739	
<b>G3520C Gas Generator Set (Low Energy Fuel)</b> Emission level (NOx) Aftercooler SCAC	g/bhp-hr Deg C    Deg F	0.5 54    130		1 54    130	
<b>Package Performance (1)</b> Electrical efficiency @ 1.0 pf (5) Power rating @ 1.0 pf Power rating @ 0.8 pf  Mechanical Power	ekW ekW kVA kW    hp	40.1% 1617 1600 2000		41.2% 1617 1600 2000	
<b>Fuel Consumption (2)</b> Low Heat Value (LHV) fuel input (ISO3046/1) 100% load without fan 75% load without fan 50% load without fan	kW    Btu/min N·m³/hr    scf/hr N·m³/hr    scf/hr N·m³/hr    scf/hr	4032    235,181 408    14,774 318    11,510 226    8364		3929    229,195 398    15,224 310    11,866 221    8438	
<b>Altitude Capability (3)</b> At 25° C/77° F ambient	m    ft	420    1378		880    2888	
<b>Cooling System</b> Ambient air temperature Jacket Water temperature (maximum outlet)	Deg C    Deg F Deg C    Deg F	25    77 110    230		25    77 110    230	
<b>Exhaust System</b> Combustion air inlet flow rate Exhaust gas stack temperature Exhaust gas flow rate Exhaust flange size (internal diameter)	N·m³/min    scfm Deg C    Deg F N·m³/min    cfm mm    in	113    4360 480    896 122    12,045 360    14.17		108    4157 490    914 117    11,657 360    14.17	
<b>Heat Rejection (4)</b> Heat rejection to Jacket Water and AC — Stage 1 Heat rejection to oil cooler and AC — Stage 2 Heat rejection to exhaust (LHV to 350° F) Heat rejection to atmosphere from engine Heat rejection to atmosphere from generator	kW    Btu/min kW    Btu/min kW    Btu/min kW    Btu/min kW    Btu/min	676    38,427 339    19,298 1158    55,468 127    7210 47.7		657    37,363 332    18,866 1141    54,952 127    7210 47.7	
<b>Generator</b> Motor starting capability @ 30% voltage dip* Frame Temperature rise	kVA  Deg C	3663 868 105		3663 868 105	
<b>Lube System</b> Refill volume with filter change for standard sump	L    Gal	541    141		541    141	
<b>Emissions **</b> NOx CO (nominal) (6) HC (total) HC (non-methane) Exhaust O <sub>2</sub> (dry)	g/bhp-hr g/bhp-hr g/bhp-hr g/bhp-hr %	0.5 2.5 5.34 0.81 8.5		1 2.5 4.27 0.65 8.1	

\*Assume synchronous driver.

\*\*Emissions data measurements 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 engine operating conditions of 25° C (77° F), 96.28 kPa (28.43 in Hg) and fuel having a LHV of 17.7 MJ/N·m³ (456 Btu/cu ft) at 101.60 kPa (30.00 in Hg) absolute and 0° C (32° F). Emission data shown is subject to instrumentation, measurement, facility, and engine fuel system adjustments.

## RATING DEFINITIONS AND CONDITIONS

(1) **Ratings** are based on low energy methane-based gas having a LHV of 17.7 MJ/N·m³ (456 Btu/cu ft) and 120 MN without fan. For values in excess of the altitude, temperature, inlet/exhaust restriction, or different from the conditions listed, contact your local Caterpillar dealer.

(2) **Ratings and fuel consumption** are based on ISO3046/1 standard reference conditions of 25° C or 77° F and 100 kPa (29.61 in Hg) with 0,+5% fuel tolerance.

(3) **Altitude capability** is based on 2.5 kPa inlet and 5.0 kPa exhaust restriction.

(4) **Heat Rejection** — values based on ISO3046/1 with fuel tolerance of ±3% and 2.5 kPa inlet and 5.0 kPa exhaust restriction.

(5) **Efficiency** of standard generator is used. For higher efficiency generators, contact your local Caterpillar dealer.

(6) **Nominal Value** — emissions from a new engine during first 100 hrs of operation. Contact local dealer for more information.