

April 11, 2025

Texas Commission on Environmental Quality (TCEQ)
Air Permits Initial Review Team (APIRT)
Mail Code 161
P.O. Box 13087
Austin, TX 78753-3087

Subject: Air Quality Permit by Rule
Abilene DC 1, LLC
Longhorn Data Center
Taylor County, Texas

On behalf of Abilene DC 1, LLC (Abilene DC) dba Crusoe Energy Systems, LLC (Crusoe), please find enclosed a modification application for a permit by rule (PBR) for the Longhorn Data Center in Abilene within Taylor County, Texas, pursuant to the terms and conditions of 30 Texas Administrative Code (TAC) §106.472 and 30 TAC §106.511. The current PBR certified registration is 177262. The following changes to the PBRs are proposed with this modification:

- Reduce the annual operational time from 300 to 150 hours per rolling 12-month period for each three Tier II Caterpillar C175 3 megawatt (MW) diesel generators, each six Tier IV Caterpillar 3516 2 MW diesel generators, and each three Tier II Caterpillar 3516 2.5 MW diesel generators;
- Revised the manufacturer specification emissions rates for the six Tier IV Caterpillar 3516 2 MW diesel generators;
- Add sixteen Tier IV Caterpillar 3516 3 MW diesel generators with an annual operational time of 150 hours per rolling 12-month period per generator;
- Add 28 Tier IV Baudouin 2.8 MW diesel generators with an annual operational time of 150 hours per rolling 12-month period per generator;
- Increase the count of diesel belly tanks from 18 to 62;
- Add a 40,000 barrel floating roof diesel tank.

The application is being submitted through STEERS, providing access to Region 3, and the fee will be paid online.

Should you have any questions or comments about the application, please contact Kaitlin Meszaros by email at meszaros@pinyon-env.com or by phone at 631-245-0308. Thank you for your assistance in this matter.

Sincerely,
PINYON ENVIRONMENTAL, INC.,



Kaitlin Meszaros
Air Quality & Noise Specialist

cc: Michael Duplantis, Crusoe Energy Systems, LLC

April 11, 2025

Modification Application – Permit by Rule

Project Name
Taylor County, Texas

Prepared for:
Abilene DC 1, LLC dba Crusoe Energy Systems, LLC
255 Fillmore Street
Denver, CO 80206

Pinyon Project No.:
1/19-1347-01



April 11, 2025

Modification Application – Permit by Rule

Project Name
Longhorn Data Center
Taylor County, Texas

Prepared for:
Abilene DC 1, LLC dba Crusoe Energy Systems, LLC
255 Fillmore Street
Denver, CO 80206

Pinyon Project No.:
1/19-1347-01

Prepared by:



Kaitlin Meszaros

Reviewed by:



Dustin Collins

TCEQ Application Forms



TCEQ Core Data Form

For detailed instructions on completing this form, please read the Core Data Form Instructions or call 512-239-5175.

SECTION I: General Information

1. Reason for Submission (If other is checked please describe in space provided.)		
☐ New Permit, Registration or Authorization (Core Data Form should be submitted with the program application.)		
☐ Renewal (Core Data Form should be submitted with the renewal form)	☒ Other Modification to Certified Emissions	
2. Customer Reference Number (if issued)	Follow this link to search for CN or RN numbers in Central Registry**	3. Regulated Entity Reference Number (if issued)
CN 606295137		RN 112029061

SECTION II: Customer Information

4. General Customer Information		5. Effective Date for Customer Information Updates (mm/dd/yyyy)		N/A	
☐ New Customer ☐ Update to Customer Information ☐ Change in Regulated Entity Ownership ☐ Change in Legal Name (Verifiable with the Texas Secretary of State or Texas Comptroller of Public Accounts)					
<i>The Customer Name submitted here may be updated automatically based on what is current and active with the Texas Secretary of State (SOS) or Texas Comptroller of Public Accounts (CPA).</i>					
6. Customer Legal Name (If an individual, print last name first: eg: Doe, John)				<i>If new Customer, enter previous Customer below:</i>	
Abilene DC 1, LLC					
7. TX SOS/CPA Filing Number		8. TX State Tax ID (11 digits)		9. Federal Tax ID (9 digits)	
0805587707		32095486604		99-3520463	
10. DUNS Number (if applicable)					
11. Type of Customer:		☒ Corporation		☐ Individual	
Government: ☐ City ☐ County ☐ Federal ☐ Local ☐ State ☐ Other		☐ Sole Proprietorship		Partnership: ☐ General ☐ Limited	
12. Number of Employees		13. Independently Owned and Operated?			
☒ 0-20 ☐ 21-100 ☐ 101-250 ☐ 251-500 ☐ 501 and higher		☒ Yes ☐ No			
14. Customer Role (Proposed or Actual) – as it relates to the Regulated Entity listed on this form. Please check one of the following					
☐ Owner ☐ Operator ☒ Owner & Operator ☐ Other: ☐ Occupational Licensee ☐ Responsible Party ☐ VCP/BSA Applicant					
15. Mailing Address:		255 Fillmore Street			
City		Denver		State	
CO		ZIP		80206	
ZIP + 4					
16. Country Mailing Information (if outside USA)			17. E-Mail Address (if applicable)		
			mduplantis@crusoe.ai		

18. Telephone Number	19. Extension or Code	20. Fax Number (if applicable)
(832) 754-3833		() -

SECTION III: Regulated Entity Information

21. General Regulated Entity Information (If 'New Regulated Entity' is selected, a new permit application is also required.)								
☐ New Regulated Entity ☐ Update to Regulated Entity Name ☐ Update to Regulated Entity Information								
<i>The Regulated Entity Name submitted may be updated, in order to meet TCEQ Core Data Standards (removal of organizational endings such as Inc, LP, or LLC).</i>								
22. Regulated Entity Name (Enter name of the site where the regulated action is taking place.)								
Longhorn Data Center								
23. Street Address of the Regulated Entity: (No PO Boxes)	N/A							
	City		State		ZIP		ZIP + 4	
24. County	Taylor							

If no Street Address is provided, fields 25-28 are required.

25. Description to Physical Location:	From Abilene, Texas, travel north on Treadway Boulevard and travel for 2.2 miles. Continue onto Pine Street and continue for 0.9 miles. Turn left onto I-20 Frontage Road and travel for 1 mile. Turn right onto Old Anson Road and continue for 2.2 miles. Turn left onto facility entrance road.							
26. Nearest City					State	Nearest ZIP Code		
Abilene					TX	79601		
<i>Latitude/Longitude are required and may be added/updated to meet TCEQ Core Data Standards. (Geocoding of the Physical Address may be used to supply coordinates where none have been provided or to gain accuracy).</i>								
27. Latitude (N) In Decimal:		32.50792			28. Longitude (W) In Decimal:		-99.77722	
Degrees	Minutes	Seconds	Degrees	Minutes	Seconds			
32	30	28.51	-99	46	37.99			
29. Primary SIC Code (4 digits)	30. Secondary SIC Code (4 digits)		31. Primary NAICS Code (5 or 6 digits)		32. Secondary NAICS Code (5 or 6 digits)			
7374	N/A		518210		N/A			
33. What is the Primary Business of this entity? (Do not repeat the SIC or NAICS description.)								
Electricity generation for data center								
34. Mailing Address:	255 Fillmore Street							
	City	Denver	State	CO	ZIP	80206	ZIP + 4	
35. E-Mail Address:	mduplantis@crusoe.ai							
36. Telephone Number	37. Extension or Code				38. Fax Number (if applicable)			
(832) 754-3833					() -			

39. TCEQ Programs and ID Numbers Check all Programs and write in the permits/registration numbers that will be affected by the updates submitted on this form. See the Core Data Form instructions for additional guidance.

☐ Dam Safety	☐ Districts	☐ Edwards Aquifer	☐ Emissions Inventory Air	☐ Industrial Hazardous Waste
☐ Municipal Solid Waste	☒ New Source Review Air	☐ OSSF	☐ Petroleum Storage Tank	☐ PWS
	177262			
☐ Sludge	☐ Storm Water	☐ Title V Air	☐ Tires	☐ Used Oil
☐ Voluntary Cleanup	☐ Wastewater	☐ Wastewater Agriculture	☐ Water Rights	☐ Other:

SECTION IV: Preparer Information

40. Name:	Kaitlin Meszaros	41. Title:	Air Quality & Noise Specialist
42. Telephone Number	43. Ext./Code	44. Fax Number	45. E-Mail Address
(631) 245-0308		() -	meszaros@pinyon-env.com

SECTION V: Authorized Signature

46. By my signature below, I certify, to the best of my knowledge, that the information provided in this form is true and complete, and that I have signature authority to submit this form on behalf of the entity specified in Section II, Field 6 and/or as required for the updates to the ID numbers identified in field 39.

Company:	Abilene DC 1, LLC dba Crusoe Energy Systems, LLC	Job Title:	Sr. EHS Director
Name (In Print):	Michael Duplantis	Phone:	(832) 754- 3833
Signature:		Date:	

Certification and Registration for Permits by Rule
Form PI-7-CERT
Page 1
Texas Commission on Environmental Quality

I. Registrant Information
A. Company or Other Legal Customer Name: Abilene DC 1, LLC dba Crusoe Energy Systems, LLC
Company Official Contact Information (☒ Mr. ☐ Mrs. ☐ Ms. ☐ Other _____)
Name: Michael Duplantis
Title: Sr EHS Director
Mailing Address: 255 Fillmore Street
City: Denver
State: Colorado
ZIP Code: 80206
Phone: 832-754-3833
Fax: N/A
Email Address: mduplantis@crusoe.ai
<i>All PBR registration responses will be sent via email.</i>
A. Technical Contact Information (☒ Mr. ☐ Mrs. ☐ Ms. ☐ Other _____)
Name: Michael Duplantis
Title: Sr EHS Director
Company Name: Crusoe Energy Systems, LLC
Mailing Address: 255 Fillmore Street
City: Denver
State: Colorado
ZIP Code: 80206
Phone Number: 832-754-3833
Fax Number: N/A
Email Address: mduplantis@crusoe.ai

Certification and Registration for Permits by Rule
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II. Facility and Site Information
A. Name and Type of Facility
Facility Name: Longhorn Data Center
Facility Type: ☒ Permanent ☐ Temporary
For portable units, please provide the serial number of the equipment being authorized below.
Serial No(s):
B. Facility Location Information
Street Address: N/A
If there is no street address, provide written driving directions to the site and provide the closest city or town, county, and ZIP code for the site (attach description if additional space is needed).
From Abilene, TX, travel north on Treadway Boulevard and travel for 2.2 miles. Continue onto Pine Street and
continue for 0.9 miles. Turn left onto I-20 Frontage Road and travel for 1 mile. Turn right onto Old Anson
Road for 2.2 miles. Turn left onto facility entrance road.
City: Abilene
County: Taylor
ZIP Code: 79601
C. TCEQ Core Data Form
Is the Core Data Form (TCEQ Form Number 10400) attached? ☒ YES ☐ NO
If "NO," provide customer reference number (CN) and regulated entity number (RN) below.
Customer Reference Number (CN): CN606295137
Regulated Entity Number (RN): RN112029061
D. TCEQ Account Identification Number (if known):
E. Type of Action
☐ Initial Application ☒ Change to Registration
For Change to Registration provide the Registration Number: 177262
F. PBR number(s) claimed under 30 TAC Chapter 106
(List all the individual rule number(s) that are being claimed.)
106.4
106.472
106.511
106.

Certification and Registration for Permits by Rule
Form PI-7-CERT
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Texas Commission on Environmental Quality

II. Facility and Site Information <i>(continued)</i>
G. Historical Standard Exemption or PBR
Are you claiming a historical standard exemption or PBR? ☐ YES ☒ NO
If "YES," enter rule number(s) and associated effective date in the spaces provided below.
Rule Number: Effective Date:
Rule Number: Effective Date:
H. Previous Standard Exemption or PBR Registration Number
Is this authorization for a change to an existing facility previously authorized under a standard exemption or PBR? ☐ YES ☒ NO
If "YES," enter previous standard exemption number(s) and PBR registration number(s) and associated effective dates in the spaces provided below.
Standard Exemption and PBR Registration Number:
Effective Date:
I. Other Facilities at this Site Authorized by Standard Exemption, PBR, or Standard Permit
Are there any other facilities at this site that are authorized by an Air Standard Exemption, PBR, or Standard Permit? ☒ YES ☐ NO
If "YES," enter standard exemption number(s), PBR registration number(s), and Standard Permit registration number(s), and associated effective date in the spaces provided below.
Standard Exemption, PBR Registration, and Standard Permit Registration Number(s): 6005
Effective Date: January 22, 2025
Standard Exemption, PBR Registration, and Standard Permit Registration Number(s):
Effective Date:
Standard Exemption, PBR Registration, and Standard Permit Registration Number(s):
Effective Date:
J. Other Air Preconstruction Permits
Are there any other air preconstruction permits at this site? ☐ YES ☒ NO
If "YES," enter permit number(s) in the spaces provided below.
K. Affected Air Preconstruction Permits
Does the PBR being claimed directly affect any permitted facility? ☐ YES ☒ NO

Certification and Registration for Permits by Rule
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II. Facility and Site Information <i>(continued)</i>
If "YES," enter the permit number(s) in the spaces provided below.
L. Federal Operating Permit (FOP) Requirements (30 TAC Chapter 122 Applicability)
1. Is this facility located at a site that is required to obtain an FOP pursuant to 30 TAC Chapter 122? ☒ YES ☐ NO ☐ To Be Determined
If the site currently has an existing FOP, enter the permit number:
Check the requirements of 30 TAC Chapter 122 that will be triggered if this certification is accepted. <i>(check all that apply)</i>
☐ Initial Application for a FOP ☐ Significant Revision for an SOP ☒ Minor Revision for an SOP
☐ Operational Flexibility/Off Permit Notification for an SOP ☐ Revision for a GOP
☐ To be Determined ☐ None
2. Identify the type(s) of FOP issued and/or FOP application(s) submitted/pending for the site. <i>(check all that apply)</i>
☐ SOP ☐ GOP ☐ GOP application/revision (submitted or under APD review)
☐ N/A ☒ SOP application/revision (submitted or under APD review)
III. Fee Information (See Section VII. for address to send fee or go to www.tceq.texas.gov/epay to pay online.)
A. Fee Requirements
Is a fee required per Title 30 TAC § 106.50? ☒ YES ☐ NO
If "NO," specify the exception. There are three exceptions to paying a PBR fee. <i>(check all that apply)</i>
1. Registration is solely to establish a federally enforceable emission limit. ☐
2. Registration is within six months of an initial PBR review, and it is addressing deficiencies, administrative changes, or other allowed changes. ☐
3. Registration is for a remediation project (30 TAC § 106.533). ☐
B. Fee Amount
1. A \$100 fee is required if <i>any</i> of the answers in III.B.1 are "YES."
This business has less than 100 employees. ☒ YES ☐ NO
This business has less than \$6 million dollars in annual gross receipts. ☐ YES ☒ NO
This registration is submitted by a governmental entity with a population of less than 10,000. ☐ YES ☒ NO
This registration is submitted by a non-profit organization. ☐ YES ☒ NO

Certification and Registration for Permits by Rule
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III. Fee Information (See Section VII. for address to send fee or go to www.tceq.texas.gov/epay to pay online.) (continued)	
2. A \$450 fee is required for all other registrations	
A. Payment Information	
Check/money order/transaction or voucher number:	
Individual or company name on check:	
Fee Amount: \$100	
Was the fee paid online? ☒ YES ☐ NO	
IV. Technical Information Including State and Federal Regulatory Requirements Check the appropriate box to indicate what is included in your submittal. NOTE: Any technical or essential information needed to confirm that facilities are meeting the requirements of the PBR must be provided. Not providing key information could result in a deficiency of the project.	
A. PBR requirements (Checklists are optional; however, your review will go faster if you provide applicable checklists.)	
Did you demonstrate that the general requirements in 30 TAC § 106.4 are met? ☒ YES ☐ NO	
Did you demonstrate that the individual requirements of the specific PBR are met? ☒ YES ☐ NO	
B. Confidential Information Included (If confidential information is submitted with this registration, all confidential pages must be properly marked "CONFIDENTIAL.") ☐ YES ☒ NO	
C. Process Flow Diagram: ☒ YES ☐ NO	
D. Process Description: ☒ YES ☐ NO	
E. Maximum Emissions Data and Calculations: ☒ YES ☐ NO	
Note: If the facilities listed in this registration are subject to the Mass Emissions Cap & Trade program under 30 TAC Chapter 101, Subchapter H, Division 3 , the owner/operator of these facilities must possess NO _x allowances equivalent to the actual NO _x emissions from these facilities.	
F. Is this certification being submitted to certify the emissions for the entire site? ☐ YES ☒ NO	
If "NO," include a summary of the specific facilities and emissions being certified. Emissions presented in Table 1a are requesting certification with this application	
G. Table 1(a) (Form 10153) Emission Point Summary: ☐ YES ☐ NO	
H. Distances from Property Line and Nearest Off-Property Structure	
Distance from this facility's emission release point to the nearest property line:	> 50 feet
Distance from this facility's emission release point to the nearest off-property structure:	> 500 feet

Certification and Registration for Permits by Rule
Form PI-7-CERT
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IV. Technical Information Including State and Federal Regulatory Requirements

Check the appropriate box to indicate what is included in your submittal.

NOTE: Any technical or essential information needed to confirm that facilities are meeting the requirements of the PBR must be provided. Not providing key information could result in a deficiency of the project.

I. Project Status

Has the company implemented the project or waiting on a response from TCEQ? ☐ Implemented ☒ Waiting

J. Projected Start of Construction and Projected Start of Operation Dates:

Projected Start of Construction (provide date): 05/01/2025

Projected Start of Operation (provide date): 07/01/2025

V. Delinquent Fees

This form **will not be processed** until all delinquent fees and/or penalties owed to the TCEQ or the Office of the Attorney General on behalf of the TCEQ is paid in accordance with the Delinquent Fee and Penalty Protocol. For more information regarding Delinquent Fees and Penalties, go to the TCEQ website at: www.tceq.texas.gov/agency/financial/fees/delin/index.html.

VI. Signature For Registration and Certification

The signature below confirms that I have knowledge of the facts included in this application and that these facts are true and correct to the best of my knowledge and belief. I further state that to the best of my knowledge and belief, the project for which this application is made will not in any way violate any provision of the Texas Water Code (TWC), Chapter 7; the Texas Health and Safety Code, Chapter 382, the Texas Clean Air Act (TCAA); the air quality rules of the Texas Commission on Environmental Quality; or any local governmental ordinance or resolution enacted pursuant to the TCAA. I further state that I understand my signature indicates that this application meets all applicable nonattainment, prevention of significant deterioration, or major source of hazardous air pollutant permitting requirements. The signature further signifies awareness that intentionally or knowingly making or causing to be made false material statements or representations in the application is a criminal offense subject to criminal penalties.

Name (printed): Michael Duplantis

Signature (original signature required)

Date:

**Exemption § 106.472 Checklist
(Previously Standard Exemption 51)
Organic Liquid Loading and Unloading
Texas Commission on Environmental Quality**

The following checklist is designed to help you confirm that you meet § 106.472, previously Standard Exemption 51 (STDX 51), requirements. **Any “no” answers indicate that the claim of registration may not meet all requirements for the use of Exemption § 106.472, previously Standard Exemption 51.** If you do not meet all the requirements, you may alter the project design/operation in such a way that all the requirements of the exemption are met or obtain a construction permit.

For additional assistance with your application, including resources to help calculate your emissions, please visit the Small Business and Local Government Assistance (SBLGA) webpage at the following link:

www.TexasEnviroHelp.org

Please Complete the Following:	
Have you included a description of how this exemption claim meets the general rule for the use of exemptions. (§ 106, Subchapter A checklist is available)?	☒ Yes ☐ No ☐ N/A
Are all the facilities claimed for exemption specifically named in the general section of § 106.472, previously STDX 51?	☒ Yes ☐ No ☐ N/A
Is the equipment designed to prevent visible emissions?	☒ Yes ☐ No ☐ N/A
Are all the chemicals to be loaded, unloaded, or stored described in §106.472 (previously STDX 51a-i)?	☒ Yes ☐ No ☐ N/A
Attach a list of the chemicals and identify the appropriate item of § 106.472, previously STDX 51 that applies.	☒ Yes ☐ No ☐ N/A
Include additional supporting data. For example, a § 106.472, previously STDX 51(i), claim should identify initial boiling points of all compounds to be covered.	☒ Yes ☐ No ☐ N/A
Will aqueous ammonia solutions, hydrochloric acid, or acetic acid be vented through a water scrubber?	☐ Yes ☐ No ☒ N/A
Are facilities loading, unloading, or storing butyric acid, isobutyric acid, methacrylic acid, mercaptans, croton oil, 2-methyl styrene, or any other compound with an initial boiling point of 300 degrees F or greater listed in 40 CFR 261, Appendix VIII, located at least 500 feet from any recreational area or residence or other structure not occupied or used solely by the owner or operator of the facility or the owner of the property upon which the facility is located?	☒ Yes ☐ No ☐ N/A
List these compounds and show their handling location on an attached scaled plot plan.	

Table 1(a) Emission Point Summary
Air Contaminant Data (Page 1)
Texas Commission on Environmental Quality

Date:	Permit No.:	Regulated Entity No.:	Area Name:	Customer Reference No.:
4/11/2025	177262	RN112029061	Longhorn Data Center	CN606295137

Review of application and issuance of permits will be expedited by supplying all necessary information requested on the Table.

eEPN	FIN	Name	Component or Air Contaminant Name	Air Contaminant Emission Rate lb/hr	Air Contaminant Emission Rate TPY
EGENS	EGENS	Combination of Cat C175 Tier II,	NO _x	593.0	42.67
		Cat 3516 Tier IV, Cat 3516 Tier II, and	CO	307.1	21.66
		Baudouin Tier IV Emergency	VOC	79.93	6.38
		Generator Engines	PM ₁₀ /PM _{2.5}	21.51	1.58
			SO ₂	2.36	0.19
			HAPs	2.13	0.17
FLOATTNK	FLOATTNK	40,000 barrel floating roof diesel tank	VOC	0.0033	0.015
DIESELTNKS	DIESELTNKS	Diesel tanks – up to 5,000 gallon belly tanks per generator	VOC	0.026	0.11

EPN = Emission Point

FIN = Facility Identification Number

**Table 1(a) Emission Point Summary
Air Contaminant Data (Page 2)
Texas Commission on Environmental Quality**

Date:	Permit No.:	Regulated Entity No.:	Area Name:	Customer Reference No.:
4/11/2025	177262	RN112029061	Longhorn Data Center	CN606295137

Review of application and issuance of permits will be expedited by supplying all necessary information requested on the Table.

EPN = Emission Point

FIN = Facility Identification Number

Texas Commission on Environmental Quality
Table 29 Reciprocating Engines

I. Engine Data											
Manufacturer: Baudouin		Model No. 2.8MW		Serial No. TBD		Manufacture Date:					
Rebuilds Date:		No. of Cylinders:		Compression Ratio:		EPN:					
Application: ☐ Gas Compression ☒ Electric Generation ☐ Refrigeration ☐ Emergency/Stand by ☒ 4 Stroke Cycle ☐ 2 Stroke Cycle ☐ Carbureted ☐ Spark Ignited ☐ Dual Fuel ☐ Fuel Injected ☒ Diesel ☐ Naturally Aspirated ☐ Blower /Pump Scavenged ☐ Turbo Charged and I.C. ☐ Turbo Charged ☐ Intercooled ☐ I.C. Water Temperature ☐ Lean Burn ☒ Rich Burn											
Ignition/Injection Timing:				Fixed:		Variable:					
Manufacture Horsepower Rating: 2.8 MW				Proposed Horsepower Rating: 2.8 MW							
Discharge Parameters											
Stack Height (Feet)		Stack Diameter (Feet)		Stack Temperature (°F)		Exit Velocity (FPS)					
>7 feet		1		891.9		9772 acfm					
II. Fuel Data											
Type of Fuel: ☐ Field Gas ☐ Landfill Gas ☐ LP Gas ☐ Natural Gas ☐ Digester Gas ☒ Diesel Fuel Consumption (BTU/bhp-hr): 0.42 lb/hphr Heating Value: 19300 Btu/lb Lower Heating Value: 19300 Btu/l Sulfur Content (grains/100 scf - weight %): 15 ppm											
III. Emission Factors (Before Control)											
NO _x		CO		SO ₂		VOC		Formaldehyde		PM ₁₀	
g/hp-hr	ppmv	g/hp-hr	ppmv	g/hp-hr	ppmv	g/hp-hr	ppmv	g/hp-hr	ppmv	g/hp-hr	ppmv
0.67 g/kV		0.39 g/kV				0.19 g/kW				0.03 g/kW	
Source of Emission Factors: ☐ Manufacturer Data ☐ AP-42 ☐ Other (specify):											
IV. Emission Factors (Post Control)											
NO _x		CO		SO ₂		VOC		Formaldehyde		PM ₁₀	
g/hp-hr	ppmv	g/hp-hr	ppmv	g/hp-hr	ppmv	g/hp-hr	ppmv	g/hp-hr	ppmv	g/hp-hr	ppmv
0.67 g/kV		0.39 g/kV				0.19 g/kV				0.03 g/kV	
Method of Emission Control: ☐ NSCR Catalyst ☐ Lean Operation ☐ Parameter Adjustment ☐ Stratified Charge ☐ JLCC Catalyst ☒ Other (Specify): Tier IV certification											
Note: Must submit a copy of any manufacturer control information that demonstrates control efficiency.											
Is Formaldehyde included in the VOCs?										☒ Yes ☐ No	
V. Federal and State Standards (Check all that apply)											
☐ NSPS JJJJ ☒ MACT ZZZZ ☒ NSPS IIII ☐ Title 30 Chapter 117 - List County: _____											
VI. Additional Information											
1. Submit a copy of the engine manufacturer's site rating or general rating specification data. 2. Submit a typical fuel gas analysis, including sulfur content and heating value. For gaseous fuels, provide mole percent of constituents. 3. Submit description of air/fuel ratio control system (manufacturer information is acceptable).											

Texas Commission on Environmental Quality
Table 29 Reciprocating Engines

I. Engine Data											
Manufacturer: Caterpillar		Model No. 3516C		Serial No. TBD		Manufacture Date:					
Rebuilds Date:		No. of Cylinders:		Compression Ratio:		EPN:					
Application: ☐ Gas Compression ☒ Electric Generation ☐ Refrigeration ☐ Emergency/Stand by ☒ 4 Stroke Cycle ☐ 2 Stroke Cycle ☐ Carbureted ☐ Spark Ignited ☐ Dual Fuel ☐ Fuel Injected ☒ Diesel ☐ Naturally Aspirated ☐ Blower /Pump Scavenged ☐ Turbo Charged and I.C. ☐ Turbo Charged ☐ Intercooled ☐ I.C. Water Temperature ☐ Lean Burn ☒ Rich Burn											
Ignition/Injection Timing:				Fixed:				Variable:			
Manufacture Horsepower Rating: 3,633						Proposed Horsepower Rating: 3,633					
Discharge Parameters											
Stack Height (Feet)		Stack Diameter (Feet)		Stack Temperature (°F)		Exit Velocity (FPS)					
>7 feet		1		916.8		5821 acfm					
II. Fuel Data											
Type of Fuel: ☐ Field Gas ☐ Landfill Gas ☐ LP Gas ☐ Natural Gas ☐ Digester Gas ☒ Diesel											
Fuel Consumption (BTU/bhp-hr): 0.34 lb/hphr				Heating Value: 19300 Btu/lb				Lower Heating Value: 19300 Btu/l			
Sulfur Content (grains/100 scf - weight %): 15 ppm											
III. Emission Factors (Before Control)											
NO _x		CO		SO ₂		VOC		Formaldehyde		PM ₁₀	
g/hp-hr	ppmv	g/hp-hr	ppmv	g/hp-hr	ppmv	g/hp-hr	ppmv	g/hp-hr	ppmv	g/hp-hr	ppmv
4.8		2.6				0.30				0.15	
Source of Emission Factors: ☐ Manufacturer Data ☐ AP-42 ☐ Other (specify):											
IV. Emission Factors (Post Control)											
NO _x		CO		SO ₂		VOC		Formaldehyde		PM ₁₀	
g/hp-hr	ppmv	g/hp-hr	ppmv	g/hp-hr	ppmv	g/hp-hr	ppmv	g/hp-hr	ppmv	g/hp-hr	ppmv
4.8		2.6				0.30				0.15	
Method of Emission Control: ☐ NSCR Catalyst ☐ Lean Operation ☐ Parameter Adjustment ☐ Stratified Charge ☐ JLCC Catalyst ☒ Other (Specify): <u>Tier II certification</u>											
Note: Must submit a copy of any manufacturer control information that demonstrates control efficiency.											
Is Formaldehyde included in the VOCs?										☒ Yes ☐ No	
V. Federal and State Standards (Check all that apply)											
☐ NSPS JJJJ ☒ MACT ZZZZ ☒ NSPS IIII ☐ Title 30 Chapter 117 - List County: _____											
VI. Additional Information											
1. Submit a copy of the engine manufacturer's site rating or general rating specification data. 2. Submit a typical fuel gas analysis, including sulfur content and heating value. For gaseous fuels, provide mole percent of constituents. 3. Submit description of air/fuel ratio control system (manufacturer information is acceptable).											

Reset Form

Print Form

Texas Commission on Environmental Quality
Table 29 Reciprocating Engines

I. Engine Data											
Manufacturer: Caterpillar		Model No. 3516C		Serial No. TBD		Manufacture Date:					
Rebuilds Date:		No. of Cylinders:		Compression Ratio:		EPN:					
Application: ☐ Gas Compression ☒ Electric Generation ☐ Refrigeration ☐ Emergency/Stand by ☒ 4 Stroke Cycle ☐ 2 Stroke Cycle ☐ Carbureted ☐ Spark Ignited ☐ Dual Fuel ☐ Fuel Injected ☒ Diesel ☐ Naturally Aspirated ☐ Blower /Pump Scavenged ☐ Turbo Charged and I.C. ☐ Turbo Charged ☐ Intercooled ☐ I.C. Water Temperature ☐ Lean Burn ☒ Rich Burn											
Ignition/Injection Timing:				Fixed:		Variable:					
Manufacture Horsepower Rating: 2,941				Proposed Horsepower Rating: 2,941							
Discharge Parameters											
Stack Height (Feet)		Stack Diameter (Feet)		Stack Temperature (°F)		Exit Velocity (FPS)					
>7 feet		1		916.8		5821 acfm					
II. Fuel Data											
Type of Fuel: ☐ Field Gas ☐ Landfill Gas ☐ LP Gas ☐ Natural Gas ☐ Digester Gas ☒ Diesel											
Fuel Consumption (BTU/bhp-hr): 0.33 lb/hphr				Heating Value: 19300 Btu/lb				Lower Heating Value: 19300 Btu/l			
Sulfur Content (grains/100 scf - weight %): 15 ppm											
III. Emission Factors (Before Control)											
NO _x		CO		SO ₂		VOC		Formaldehyde		PM ₁₀	
g/hp-hr	ppmv	g/hp-hr	ppmv	g/hp-hr	ppmv	g/hp-hr	ppmv	g/hp-hr	ppmv	g/hp-hr	ppmv
0.5		0.16				0.14				0.022	
Source of Emission Factors: ☐ Manufacturer Data ☐ AP-42 ☐ Other (specify):											
IV. Emission Factors (Post Control)											
NO _x		CO		SO ₂		VOC		Formaldehyde		PM ₁₀	
g/hp-hr	ppmv	g/hp-hr	ppmv	g/hp-hr	ppmv	g/hp-hr	ppmv	g/hp-hr	ppmv	g/hp-hr	ppmv
0.5		0.16				0.14				0.022	
Method of Emission Control: ☐ NSCR Catalyst ☐ Lean Operation ☐ Parameter Adjustment ☐ Stratified Charge ☐ JLCC Catalyst ☒ Other (Specify): <u>Tier IV certification</u>											
<i>Note: Must submit a copy of any manufacturer control information that demonstrates control efficiency.</i>											
Is Formaldehyde included in the VOCs?										☒ Yes ☐ No	
V. Federal and State Standards (Check all that apply)											
☐ NSPS JJJJ ☒ MACT ZZZZ ☒ NSPS IIII ☐ Title 30 Chapter 117 - List County: _____											
VI. Additional Information											
1. Submit a copy of the engine manufacturer's site rating or general rating specification data. 2. Submit a typical fuel gas analysis, including sulfur content and heating value. For gaseous fuels, provide mole percent of constituents. 3. Submit description of air/fuel ratio control system (manufacturer information is acceptable).											

Texas Commission on Environmental Quality
Table 29 Reciprocating Engines

I. Engine Data											
Manufacturer: Caterpillar		Model No. C175		Serial No. TBD		Manufacture Date:					
Rebuilds Date:		No. of Cylinders:		Compression Ratio:		EPN:					
Application: ☐ Gas Compression ☒ Electric Generation ☐ Refrigeration ☐ Emergency/Stand by											
☒ 4 Stroke Cycle ☐ 2 Stroke Cycle ☐ Carbureted ☐ Spark Ignited ☐ Dual Fuel ☐ Fuel Injected											
☒ Diesel ☐ Naturally Aspirated ☐ Blower /Pump Scavenged ☐ Turbo Charged and I.C. ☐ Turbo Charged											
☐ Intercooled ☐ I.C. Water Temperature ☐ Lean Burn ☒ Rich Burn											
Ignition/Injection Timing: Fixed: _____ Variable: _____											
Manufacture Horsepower Rating: 4,423						Proposed Horsepower Rating: 4,423					
Discharge Parameters											
Stack Height (Feet)		Stack Diameter (Feet)		Stack Temperature (°F)		Exit Velocity (FPS)					
>7 feet		1		891.9		9772 acfm					
II. Fuel Data											
Type of Fuel: ☐ Field Gas ☐ Landfill Gas ☐ LP Gas ☐ Natural Gas ☐ Digester Gas ☒ Diesel											
Fuel Consumption (BTU/bhp-hr): 0.34 lb/hphr				Heating Value: 19300 Btu/lb				Lower Heating Value: 19300 Btu/l			
Sulfur Content (grains/100 scf - weight %): 15 ppm											
III. Emission Factors (Before Control)											
NO _x		CO		SO ₂		VOC		Formaldehyde		PM ₁₀	
g/hp-hr	ppmv	g/hp-hr	ppmv	g/hp-hr	ppmv	g/hp-hr	ppmv	g/hp-hr	ppmv	g/hp-hr	ppmv
4.8		2.6				0.30				0.15	
Source of Emission Factors: ☐ Manufacturer Data ☐ AP-42 ☐ Other (specify): _____											
IV. Emission Factors (Post Control)											
NO _x		CO		SO ₂		VOC		Formaldehyde		PM ₁₀	
g/hp-hr	ppmv	g/hp-hr	ppmv	g/hp-hr	ppmv	g/hp-hr	ppmv	g/hp-hr	ppmv	g/hp-hr	ppmv
4.8		2.6				0.30				0.15	
Method of Emission Control: ☐ NSCR Catalyst ☐ Lean Operation ☐ Parameter Adjustment ☐ Stratified Charge ☐ JLCC Catalyst ☒ Other (Specify): <u>Tier II certification</u>											
<i>Note: Must submit a copy of any manufacturer control information that demonstrates control efficiency.</i>											
Is Formaldehyde included in the VOCs?										☒ Yes ☐ No	
V. Federal and State Standards (Check all that apply)											
☐ NSPS JJJJ ☒ MACT ZZZZ ☒ NSPS IIII ☐ Title 30 Chapter 117 - List County: _____											
VI. Additional Information											
1. Submit a copy of the engine manufacturer's site rating or general rating specification data. 2. Submit a typical fuel gas analysis, including sulfur content and heating value. For gaseous fuels, provide mole percent of constituents. 3. Submit description of air/fuel ratio control system (manufacturer information is acceptable).											

Process Description

Abilene DC 1, LLC (Abilene DC) plans to install and operate equipment at the Longhorn Data Center in Abilene within Taylor County, Texas. The purpose of the facility is to generate power for onsite use for data centers and computing. The emissions units proposing coverage under permit by rule 106.472 (Organic and Inorganic Liquid Loading and Unloading) and 106.511 (Portable and Emergency Engines and Turbines) and the changes from the original registration (177262) are detailed in the cover letter.

- ▶ A maximum of three (3) 3 MW Tier II Caterpillar C175 diesel generators expected to run no more than 150 hours per rolling 12-month period each
- ▶ A maximum of three (3) 3 MW Tier II Caterpillar C175 diesel generators expected to run no more than 100 hours per rolling 12-month period each
- ▶ A maximum of six (6) 2 MW Tier IV Caterpillar 3516 diesel generators expected to run no more than 150 hours per rolling 12-month period each
- ▶ A maximum of three (3) 2 MW Tier IV Caterpillar 3516 diesel generators expected to run no more than 100 hours per rolling 12-month period each
- ▶ A maximum of three (3) 2.5 MW Tier II Caterpillar 3516 diesel generators expected to run no more than 150 hours per rolling 12-month period each
- ▶ A maximum of sixteen (16) 3 MW Tier IV Caterpillar 3516 diesel generators expected to run no more than 150 hours per rolling 12-month period each
- ▶ A maximum of twenty-eight (28) 2.8 MW Tier IV Baudouin diesel generators expected to run no more than 150 hours per rolling 12-month period each
- ▶ One (1) 40,000 barrel floating roof diesel tank
- ▶ Sixty-two (62) diesel belly tanks; one in each diesel generator set unit

Sources of emissions include:

- ▶ Diesel Generators: NO_x, CO, SO₂, PM, VOC, HAPs, CO_{2e}
- ▶ Diesel Tanks: VOC

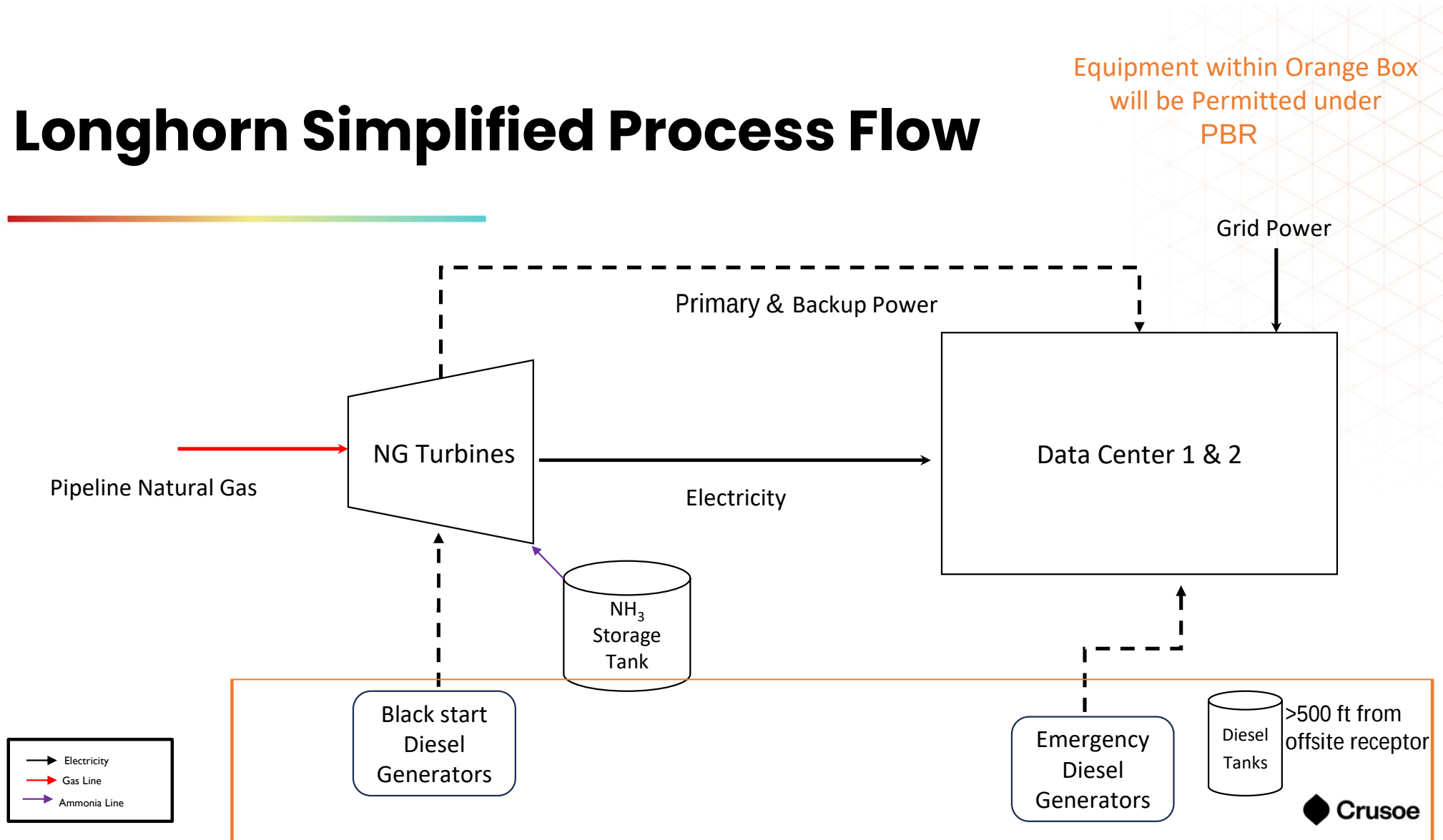
Diesel generator emissions were calculated using manufacturer and/or Tier emissions levels for NO_x, CO, VOC, and PM, AP-42 Section 3.4 for SO₂ and HAPs assuming ultra-low sulfur diesel (ULSD) specification of no more than 15 parts per million (ppm) sulfur, and 40 Code of Federal Regulations (CFR) Part 98 Subpart C Table C-1 and Table C-2 for distillate fuel oil #2 emissions factors with global warming potentials in Subpart A Table A-1 published in early 2024 to estimate CO_{2e} emissions. Diesel tank VOC emissions were calculated using AP-42 Section 7 methodologies and default values for diesel #2. The belly tank calculations followed AP-42 procedures for fixed roof tanks and the floating roof tank followed AP-42 procedures for internal floating roof tanks.

There will also be natural gas simple-cycle turbines at the location to be used for primary power. These emissions will be permitted under the Standard Permit for Electric Generating Units (30 TAC

116.610 through 116.615). Emissions calculations are provided for the emissions units covered under the Standard Permit for a complete review of facility-wide potential to emit.

Process Flow Diagram

Longhorn Simplified Process Flow



Area Map



CONANP, Esri, TomTom, Garmin, FAO, NOAA, USGS, EPA, USFWS,
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 Distribution Airbus DS, Esri Community Maps Contributors, City of
 Abilene, Taylor County, Texas Parks & Wildlife, © OpenStreetMap,



Legend

- 1/4 Mile Buffer
- Facility Boundary

0 500 1,000
 Feet

Pinyon
 Environmental, Inc.

SITE LOCATION

Crusoe Energy Systems, LLC
 Longhorn Data Center
 Abilene, Texas

Site Location: Taylor County, Texas

Pinyon Project Number: I/19-1347-01

Drawn By: AMS

Reviewed By: KM

Figure I

Date: 7/30/2024

Emissions Calculations

Facility-Wide Controlled Potential Annual Emissions

Permit by Rule Emissions Sources																	
	Emission Source Classification	Power (MW)	Count	Total Power	Engine Make/Model	Emission Levels	Rotational Hours	NOx	CO	VOC	PM	SO ₂	NH ₃	HCHO	HAPs	CO ₂ e	
	Emergency Backup Generator	3	3	9	Cat C175	Tier II	150	10.53	5.70	0.66	0.33	0.010	--	0.00051	0.0089	1,069	
	Emergency Backup Generator	3	3	9	Cat C175	Tier II	100	7.02	3.80	0.44	0.22	0.0066	--	0.00034	0.0059	713	
	Emergency Backup Generator	2	6	12	Cat 3516	Tier IV	150	1.46	0.46	0.41	0.06	0.013	--	0.00067	0.012	1,391	
	Emergency Backup Generator	2	3	6	Cat 3516	Tier IV	100	0.49	0.15	0.14	0.021	0.0043	--	0.00022	0.0039	464	
	Emergency Backup Generator	2.5	3	7.5	Cat 3516 Tier II	Tier II	150	8.65	4.69	0.54	0.27	0.008	--	0.00043	0.007	886	
	Emergency Backup Generator	3	16	48	Cat 3516	Tier IV	150	5.84	1.82	1.63	0.26	0.051	--	0.0027	0.046	5,564	
	Emergency Backup Generator	2.8	28	78.4	Baudouin Tier IV	Tier IV	150	8.69	5.04	2.43	0.42	0.10	--	0.0050	0.086	10,349	
	Floating Roof Diesel Tank	--	1	--	--	--	8760	--	--	0.015	--	--	--	--	--	--	
	Diesel Belly Tanks	--	62	--	--	--	8760	--	--	0.11	--	--	--	--	--	--	
								Totals	42.67	21.66	6.38	1.58	0.19	0.00	0.010	0.17	20,436

Standard Permit for EGU Emissions Sources																	
	Location	Power (MW)	Count	Total Power	Engine Make/Model	Emission Levels	Rotational Hours	NOx	CO	VOC	PM	SO ₂	NH ₃	HCHO	HAPs	CO ₂ e	
	Gas Only Turbines	38	5	190	Titan 350	SCR System	8760	74.90	91.12	114.8	46.66	24.04	116.0	5.02	7.26	827,967	
	Dual Fuel Turbines	34	5	170	GE LM2500	SCR System	8760	67.21	81.77	118.5	43.51	22.41	116.0	4.68	6.77	772,028	
								Totals	142.1	172.9	233.3	90.17	46.45	231.9	9.70	14.03	1,599,995

Fugitives																	
	Location	Power (MW)	Count	Total Power	Engine Make/Model	Emission Levels	Rotational Hours	NOx	CO	VOC	PM	SO ₂	NH ₃	HCHO	HAPs	CO ₂ e	
	Fugitive Leaks	--	--	--	--	--	8760	--	--	0.010	--	--	12.64	--	--	4.84	
								Facility-Wide Totals	184.8	194.6	239.7	91.74	46.64	244.5	9.71	14.20	1,620,436

Facility-Wide Controlled Potential Hourly Emissions

Permit by Rule Emissions Sources																
	Emission Source Classification	Power (MW)	Count	Total Power	Engine Make/Model	Emission Levels	Rotational Hours	NOx	CO	VOC	PM	SO ₂	NH ₃	HCHO	HAPs	CO ₂ e
	Emergency Backup Generator	3	3	9	Cat C175	Tier II	150	140.4	76.06	8.78	4.39	0.13	--	0.0069	0.12	14,251
	Emergency Backup Generator	3	3	9	Cat C175	Tier II	100	140.4	76.06	8.78	4.39	0.13	--	0.0069	0.12	14,251
	Emergency Backup Generator	2	6	12	Cat 3516	Tier IV	150	19.45	6.07	5.45	0.86	0.17	--	0.0089	0.15	18,548
	Emergency Backup Generator	2	3	6	Cat 3516	Tier IV	100	9.73	3.03	2.72	0.43	0.086	--	0.0045	0.077	9,274
	Emergency Backup Generator	2.5	3	7.5	Cat 3516 Tier II	Tier II	150	115.3	62.47	7.21	3.60	0.11	--	0.0057	0.098	11,818
	Emergency Backup Generator	3	16	48	Cat 3516	Tier IV	150	51.9	16.2	14.52	2.28	0.46	--	0.024	0.41	49,462
	Emergency Backup Generator	2.8	28	78.4	Baudouin Tier IV	Tier IV	150	115.8	67.22	32.45	5.56	1.28	--	0.067	1.15	137,983
	Floating Roof Diesel Tank	--	1	--	--	--	8760	--	--	0.0033	--	--	--	--	--	--
	Diesel Belly Tanks	--	62	--	--	--	8760	--	--	0.026	--	--	--	--	--	--
	Totals							593.0	307.1	79.93	21.51	2.36	0.00	0.12	2.13	255,588

Standard Permit for EGU Emissions Sources																
Location	Power (MW)	Count	Total Power	Engine Make/Model	Emission Levels	Rotational Hours	NOx	CO	VOC	PM	SO ₂	NH ₃	HCHO	HAPs	CO ₂ e	
Gas Only Turbines	38	5	190	Titan 350	SCR System	8760	17.10	20.80	26.21	10.65	5.49	26.47	1.15	1.66	189,033	
Dual Fuel Turbines	34	5	170	GE LM2500	SCR System	8760	15.35	18.67	27.05	9.93	5.12	26.47	1.07	1.55	176,262	
						Totals	32.45	39.47	53.27	20.59	10.60	52.95	2.21	3.20	365,296	

Fugitives																
	Location	Power (MW)	Count	Total Power	Engine Make/Model	Emission Levels	Rotational Hours	NOx	CO	VOC	PM	SO ₂	NH ₃	HCHO	HAPs	CO ₂ e
	Fugitive Leaks	--	--	--	--	--	8760	--	--	0.0022	--	--	2.89	--	--	1.11

Turbine Emissions

Source Information

Emission Unit ID:	TURBINE-1 through TURBINE-5	
Engine Make/Model	Titan 350 Turbine	
Service	Power Generation	
Controls - Y or N / Type	Y	SCR
Number of Operational Units	5	turbine
Nominal Power Rating ¹	38,000	kW
Fuel Consumption (BSFC) ¹	8,495	Btu/(kW-hr)
Heat Rating ²	322.8	MMBtu/hr
Fuel Consumption ²	2,772	MMscf/yr
Fuel Consumption ²	0.32	MMscf/hr
Fuel Heating Value ³	1,020	Btu/scf
Operating Hours	8,760	hrs/yr

Pollutant	Emission Factor		Annual Emissions per Turbine		Source of Emissions Factors
	lb/MMBtu	g/hp-hr	lb/hr	ton/yr	
NOx	-	0.030	3.42	14.98	Controlled manufacturer rate
CO	-	0.037	4.16	18.22	Controlled manufacturer rate
VOC	-	0.047	5.24	22.96	Controlled manufacturer rate
NH ₃	-	-	5.29	23.19	10 ppmvd limit ⁴
SO ₂	3.40E-03	-	1.10	4.81	AP-42, Chapter 3.1, Table 3.1-2a; footnote h
PM ₁₀	6.60E-03	-	2.13	9.33	AP-42, Chapter 3.1, Table 3.1-2a
PM _{2.5}	6.60E-03	-	2.13	9.33	AP-42, Chapter 3.1, Table 3.1-2a
1,3-Butadiene	4.30E-07	-	1.39E-04	6.08E-04	AP-42, Chapter 3.1, Table 3.1-3
Acetaldehyde	4.00E-05	-	1.29E-02	5.66E-02	AP-42, Chapter 3.1, Table 3.1-3
Acrolein	6.40E-06	-	2.07E-03	9.05E-03	AP-42, Chapter 3.1, Table 3.1-3
Benzene	1.20E-05	-	3.87E-03	1.70E-02	AP-42, Chapter 3.1, Table 3.1-3
Ethylbenzene	3.20E-05	-	1.03E-02	4.52E-02	AP-42, Chapter 3.1, Table 3.1-3
Formaldehyde	7.10E-04	-	2.29E-01	1.00E+00	AP-42, Chapter 3.1, Table 3.1-3
Naphthalene	1.30E-06	-	4.20E-04	1.84E-03	AP-42, Chapter 3.1, Table 3.1-3
PAH	2.20E-06	-	7.10E-04	3.11E-03	AP-42, Chapter 3.1, Table 3.1-3
Propylene Oxide	2.90E-05	-	9.36E-03	4.10E-02	AP-42, Chapter 3.1, Table 3.1-3
Toluene	1.30E-04	-	4.20E-02	1.84E-01	AP-42, Chapter 3.1, Table 3.1-3
Xylenes	6.40E-05	-	2.07E-02	9.05E-02	AP-42, Chapter 3.1, Table 3.1-3
Total HAPS	1.03E-03		0.33	1.45	
Pollutant	Emission Factor		Annual Emissions per Turbine		Source of Emissions Factors
	kg/MMBtu	g/hp-hr	lb/hr	ton/yr	
CO ₂	53.06	-	37,768	165,423	40 CFR Part 98 Subpart C Table C-1
CH ₄	0.001	-	0.71	3.12	40 CFR Part 98 Subpart C Table C-2
N ₂ O	0.0001	-	0.071	0.31	40 CFR Part 98 Subpart C Table C-2
CO ₂ e	-	-	37,807	165,593	Global warming potentials of 40 CFR Part 98 Table A-1

Notes:

1. Manufacturer specifications,
2. Calculated values.
3. Pipeline quality natural gas heating value estimate (AP-42)
4. Hourly emissions = 10 parts/1,000,000 * 250,000 ft³/min * 60 min/hr / 379.5 ft³/lbmol * 17 lb NH₃/lbmol

Turbine Emissions

Source Information

Emission Unit ID:	TURBINE-6 through TURBINE-10	
Engine Make/Model	GE LM 2500	
Service	Power Generation	
Controls - Y or N / Type	Y	SCF
Number of Operational Units	5	turbine
Nominal Power Rating ¹	34,100	kW
Fuel Consumption (BSFC) ¹	8,827	Btu/(kW-hr)
Heat Rating ²	301.0	MMBtu/hr
Fuel Consumption ²	2,585	MMscf/yr
Fuel Consumption ²	0.30	MMscf/hr
Fuel Heating Value ³	1,020	Btu/scf
Operating Hours	8,760	hrs/yr

Pollutant	Emission Factor		Annual Emissions per Turbine		Source of Emissions Factors
	lb/MMBtu	g/hp-hr	lb/hr	ton/yr	
NOx	-	0.030	3.07	13.44	Controlled manufacturer rate
CO	-	0.037	3.73	16.35	Controlled manufacturer rate
VOC	-	0.054	5.41	23.70	Controlled manufacturer rate
NH ₃	-	-	5.29	23.19	10 ppmvd limit ⁴
SO ₂	3.40E-03	-	1.02	4.48	AP-42, Chapter 3.1, Table 3.1-2a; footnote h
PM ₁₀	6.60E-03	-	1.99	8.70	AP-42, Chapter 3.1, Table 3.1-2a
PM _{2.5}	6.60E-03	-	1.99	8.70	AP-42, Chapter 3.1, Table 3.1-2a
1,3-Butadiene	4.30E-07	-	1.29E-04	5.67E-04	AP-42, Chapter 3.1, Table 3.1-3
Acetaldehyde	4.00E-05	-	1.20E-02	5.27E-02	AP-42, Chapter 3.1, Table 3.1-3
Acrolein	6.40E-06	-	1.93E-03	8.44E-03	AP-42, Chapter 3.1, Table 3.1-3
Benzene	1.20E-05	-	3.61E-03	1.58E-02	AP-42, Chapter 3.1, Table 3.1-3
Ethylbenzene	3.20E-05	-	9.63E-03	4.22E-02	AP-42, Chapter 3.1, Table 3.1-3
Formaldehyde	7.10E-04	-	2.14E-01	9.36E-01	AP-42, Chapter 3.1, Table 3.1-3
Naphthalene	1.30E-06	-	3.91E-04	1.71E-03	AP-42, Chapter 3.1, Table 3.1-3
PAH	2.20E-06	-	6.62E-04	2.90E-03	AP-42, Chapter 3.1, Table 3.1-3
Propylene Oxide	2.90E-05	-	8.73E-03	3.82E-02	AP-42, Chapter 3.1, Table 3.1-3
Toluene	1.30E-04	-	3.91E-02	1.71E-01	AP-42, Chapter 3.1, Table 3.1-3
Xylenes	6.40E-05	-	1.93E-02	8.44E-02	AP-42, Chapter 3.1, Table 3.1-3
Total HAPS	1.03E-03		0.31	1.35	
Pollutant	Emission Factor		Annual Emissions per Turbine		Source of Emissions Factors
	kg/MMBtu	g/hp-hr	lb/hr	ton/yr	
CO ₂	53.06	-	35,216	154,247	40 CFR Part 98 Subpart C Table C-1
CH ₄	0.001	-	0.66	2.91	40 CFR Part 98 Subpart C Table C-2
N ₂ O	0.0001	-	0.07	0.29	40 CFR Part 98 Subpart C Table C-2
CO ₂ e	-	-	35,252	154,406	Global warming potentials of 40 CFR Part 98 Table A-1

Notes:

1. Manufacturer specifications,
2. Calculated values.
3. Pipeline quality natural gas heating value estimate (AP-42)
4. Hourly emissions = 10 parts/1,000,000 * 250,000 ft³/min * 60 min/hr / 379.5 ft³/lbmol * 17 lb NH₃/lbmol

Diesel Generator Emission Calculations

Source Information

Engine Make/Model	Cat C175	
Horsepower at Rated kW	4,423	bhp
Fuel Consumption ¹	211.4	gal/hr
Heating Value ¹	28.97	MMBtu/hr
Density of Fuel	7.10	lb/gal
Fuel Heating Value	19,300	Btu/lb
Operating Hours ²	150	hrs/yr

Pollutant	Emission Factor		Annual Emissions per Generator		Source of Emissions Factors
	lb/MMBtu	g/bhp-hr	lb/hr	ton/yr	
NOx	---	4.80	46.81	3.51	Tier 2 emissions standard
CO	---	2.60	25.35	1.90	Tier 2 emissions standard
VOC	---	0.30	2.93	0.22	Manufacturer specifications
SO ₂	1.52E-03	---	0.044	0.0033	AP-42, Chapter 3.4, Table 3.4-1; 15 ppm sulfur
PM ₁₀	---	0.15	1.46	0.11	Tier 2 emissions standard
PM _{2.5}	---	0.15	1.46	0.11	Tier 2 emissions standard
Acetaldehyde	2.52E-05	---	7.30E-04	5.47E-05	AP-42, Chapter 3.4, Table 3.4-3
Acrolein	7.88E-06	---	2.28E-04	1.71E-05	AP-42, Chapter 3.4, Table 3.4-3
Benzene	7.76E-04	---	2.25E-02	1.69E-03	AP-42, Chapter 3.4, Table 3.4-3
Formaldehyde	7.89E-05	---	2.29E-03	1.71E-04	AP-42, Chapter 3.4, Table 3.4-3
Toluene	2.81E-04	---	8.14E-03	6.11E-04	AP-42, Chapter 3.4, Table 3.4-3
Xylenes	1.93E-04	---	5.59E-03	4.19E-04	AP-42, Chapter 3.4, Table 3.4-3
Total HAPS			0.039	0.0030	
Pollutant	Emission Factor		Annual Emissions per Generator		Source of Emissions Factors
	kg/MMBtu	g/bhp-hr	lb/hr	ton/yr	
CO ₂	73.96	---	4,735	355.1	40 CFR Part 98, Subpart C, Table C-1
CH ₄	0.003	---	0.19	0.014	40 CFR Part 98, Subpart C, Table C-2
N ₂ O	0.0006	---	0.038	0.0029	40 CFR Part 98, Subpart C, Table C-2
CO ₂ e	---		4,750	356.3	Global warming potentials of 40 CFR Part 98 Table A-1

Notes:

1. Calculated

Diesel Generator Emission Calculations

Source Information

Engine Make/Model	CAT 3516	
Horsepower at Rated kW	2,941	bhp
Fuel Consumption ¹	137.6	gal/hr
Heating Value ¹	18.85	MMBtu/hr
Density of Fuel	7.10	lb/gal
Fuel Heating Value	19,300	Btu/lb
Operating Hours ²	150	hrs/yr

Pollutant	Emission Factor		Annual Emissions per Generator		Source of Emissions Factors
	lb/MMBtu	g/bhp-hr	lb/hr	ton/yr	
NOx	---	0.50	3.24	0.24	Tier IV emissions standard
CO	---	0.16	1.01	0.08	Manufacturer specifications with safety factor
VOC	---	0.14	0.91	0.068	Tier IV emissions standard
SO ₂	1.52E-03	---	0.029	0.0021	AP-42, Chapter 3.4, Table 3.4-1; 15 ppm sulfur
PM ₁₀	---	0.022	0.14	0.0107	Tier IV emissions standard
PM _{2.5}	---	0.022	0.14	0.0107	Tier IV emissions standard
Acetaldehyde	2.52E-05	---	4.75E-04	3.56E-05	AP-42, Chapter 3.4, Table 3.4-3
Acrolein	7.88E-06	---	1.49E-04	1.11E-05	AP-42, Chapter 3.4, Table 3.4-3
Benzene	7.76E-04	---	1.46E-02	1.10E-03	AP-42, Chapter 3.4, Table 3.4-3
Formaldehyde	7.89E-05	---	1.49E-03	1.12E-04	AP-42, Chapter 3.4, Table 3.4-3
Toluene	2.81E-04	---	5.30E-03	3.97E-04	AP-42, Chapter 3.4, Table 3.4-3
Xylenes	1.93E-04	---	3.64E-03	2.73E-04	AP-42, Chapter 3.4, Table 3.4-3
Total HAPS			0.026	0.0019	
Pollutant	Emission Factor		Annual Emissions per Generator		Source of Emissions Factors
	kg/MMBtu	g/bhp-hr	lb/hr	ton/yr	
CO ₂	73.96	---	3,081	231.1	40 CFR Part 98, Subpart C, Table C-1
CH ₄	0.003	---	0.12	0.0094	40 CFR Part 98, Subpart C, Table C-2
N ₂ O	0.0006	---	0.025	0.0019	40 CFR Part 98, Subpart C, Table C-2
CO ₂ e	---		3,091	231.9	Global warming potentials of 40 CFR Part 98 Table A-1

Notes:

1. Calculated

Diesel Generator Emission Calculations

Source Information

Engine Make/Model	Cat 3516 Tier II	
Horsepower at Rated kW	3,633	bhp
Fuel Consumption ¹	175.3	gal/hr
Heating Value ¹	24.02	MMBtu/hr
Density of Fuel	7.10	lb/gal
Fuel Heating Value	19,300	Btu/lb
Operating Hours ²	150	hrs/yr

Pollutant	Emission Factor		Annual Emissions per Generator		Source of Emissions Factors
	lb/MMBtu	g/bhp-hr	lb/hr	ton/yr	
NOx	---	4.80	38.45	2.88	Tier 2 emissions standard
CO	---	2.60	20.82	1.56	Tier 2 emissions standard
VOC	---	0.30	2.40	0.18	Manufacturer specifications
SO ₂	1.52E-03	---	0.036	0.0027	AP-42, Chapter 3.4, Table 3.4-1; 15 ppm sulfur
PM ₁₀	---	0.15	1.20	0.09	Tier 2 emissions standard
PM _{2.5}	---	0.15	1.20	0.09	Tier 2 emissions standard
Acetaldehyde	2.52E-05	---	6.05E-04	4.54E-05	AP-42, Chapter 3.4, Table 3.4-3
Acrolein	7.88E-06	---	1.89E-04	1.42E-05	AP-42, Chapter 3.4, Table 3.4-3
Benzene	7.76E-04	---	1.86E-02	1.40E-03	AP-42, Chapter 3.4, Table 3.4-3
Formaldehyde	7.89E-05	---	1.90E-03	1.42E-04	AP-42, Chapter 3.4, Table 3.4-3
Toluene	2.81E-04	---	6.75E-03	5.06E-04	AP-42, Chapter 3.4, Table 3.4-3
Xylenes	1.93E-04	---	4.64E-03	3.48E-04	AP-42, Chapter 3.4, Table 3.4-3
Total HAPS			0.033	0.0025	
Pollutant	Emission Factor		Annual Emissions per Generator		Source of Emissions Factors
	kg/MMBtu	g/bhp-hr	lb/hr	ton/yr	
CO ₂	73.96	---	3,926	294.5	40 CFR Part 98, Subpart C, Table C-1
CH ₄	0.003	---	0.16	0.012	40 CFR Part 98, Subpart C, Table C-2
N ₂ O	0.0006	---	0.032	0.0024	40 CFR Part 98, Subpart C, Table C-2
CO ₂ e	---		3,939	295.4	40 CFR Part 98, Subpart A, Table A-1

Notes:

1. Calculated

Diesel Generator Emission Calculations

Source Information

Engine Make/Model	Baudouin Tier IV - 2,250 kW	
Power Rating	2,800	kW
Fuel Consumption ¹	219.8	gal/hr (estimate)
Heating Value ¹	30.12	MMBtu/hr
Density of Fuel	7.10	lb/gal
Fuel Heating Value	19,300	Btu/lb
Operating Hours ²	150	hrs/yr

Pollutant	Emission Factor		Annual Emissions per Generator		Source of Emissions Factors
	lb/MMBtu	g/kW-hr	lb/hr	ton/yr	
NOx	---	0.67	4.14	0.31	Manufacturer specifications
CO	---	0.39	2.40	0.18	Manufacturer specifications
VOC	---	0.19	1.16	0.09	Manufacturer specifications
SO ₂	1.52E-03	---	0.046	0.0034	AP-42, Chapter 3.4, Table 3.4-1; 15 ppm sulfur
PM ₁₀	---	0.03	0.20	0.015	Manufacturer specifications
PM _{2.5}	---	0.03	0.20	0.015	Manufacturer specifications
Acetaldehyde	2.52E-05	---	7.59E-04	5.69E-05	AP-42, Chapter 3.4, Table 3.4-3
Acrolein	7.88E-06	---	2.37E-04	1.78E-05	AP-42, Chapter 3.4, Table 3.4-3
Benzene	7.76E-04	---	2.34E-02	1.75E-03	AP-42, Chapter 3.4, Table 3.4-3
Formaldehyde	7.89E-05	---	2.38E-03	1.78E-04	AP-42, Chapter 3.4, Table 3.4-3
Toluene	2.81E-04	---	8.46E-03	6.35E-04	AP-42, Chapter 3.4, Table 3.4-3
Xylenes	1.93E-04	---	5.81E-03	4.36E-04	AP-42, Chapter 3.4, Table 3.4-3
Total HAPS			0.041	0.0031	
Pollutant	Emission Factor		Annual Emissions per Generator		Source of Emissions Factors
	kg/MMBtu	g/kW-hr	lb/hr	ton/yr	
CO ₂	73.96	---	4,912	368.4	40 CFR Part 98, Subpart C, Table C-1
CH ₄	0.003	---	0.20	0.015	40 CFR Part 98, Subpart C, Table C-2
N ₂ O	0.0006	---	0.040	0.0030	40 CFR Part 98, Subpart C, Table C-2
CO ₂ e	---		4,928	369.6	Global warming potentials of 40 CFR Part 98 Table A-1

Notes:

1. Calculated

Diesel Storage Tanks Emissions

Source Information

Fuel Type	Diesel	
Roof Type	Cone	
Annual Throughput	40,000	gal/yr-tank
Operating Hours	8,760	hrs/yr

Uncontrolled		
VOC Emissions - Per Tank	0.0018	ton/yr

Physical Properties - Per Tank

Shell Height	H _S	12.50	ft
Shell Diameter	D	8.50	ft
Shell Radius	R _S	4.25	ft
Maximum Liquid Height	H _{LX}	11.50	ft
Average Liquid Height	H _L	6.25	ft
Working Volume		5,000	gallons
Turnovers Per Year	N	8.0	dimensionless
Shell Color/Shade		Black	
Shell Condition		Good	
Paint Solar Absorptance	α	0.97	dimensionless
Roof Height	H _R	0.03	ft
Dome Roof Radius	R _R	--	ft
Vacuum Setting	P _{BV}	-0.03	psig
Pressure Setting	P _{BP}	0.03	psig

Meteorological Information

Nearest Major City		Abilene, TX		
Average Annual Maximum Temperature	T _{AX}	75.60	°F	AP-42, Chapter 7: Table 7.1-7
Average Annual Minimum Temperature	T _{AN}	53.60	°F	AP-42, Chapter 7: Table 7.1-7
Atmospheric Pressure	P _A	13.79	psia	AP-42, Chapter 7: Table 7.1-7
Solar Insolation	I	1,603	Btu/scfd	AP-42, Chapter 7: Table 7.1-7

Calculation Methodology - Per Tank

Total losses (VOC Emissions)	L _T	4	lb/yr	AP-42, Chapter 7: Eq. 1-1
Standing Storage Losses	L _S	2.4	lb/yr	AP-42, Chapter 7: Eq. 1-2
Working Losses	L _W	1	lb/yr	AP-42, Chapter 7: Eq. 1-35, 1-39
Annual Net Throughput	Q	952	bbl/yr	
Working Loss Turnover Factor	K _N	1.00	dimensionless	
Stock Vapor Density	W _V	0.000	lb/ft ³	AP-42, Chapter 7: Eq. 1-22
Vapor Molecular Weight at 60 °F	M _V	130.00	lb/lb-mole	AP-42, Chapter 7: Table 7.1-2
Vapor Pressure at 60 °F	P _{VA}	0.01	psia	AP-42, Chapter 7: Eq. 1-25
Vapor Space Volume	V _V	355	ft ³	AP-42, Chapter 7: Equation 1-3
Vapor Space Roof Outage	H _{RO}	0.01	ft	AP-42, Chapter 7: Equation 1-19
Vapor Space Tank Outage	H _{VO}	6.26	ft	AP-42, Chapter 7: Equation 1-16
Vapor Space Expansion Factor	K _E	0.08		AP-42, Chapter 7: Equation 1-5
Vented Vapor Saturation Factor	K _S	1.00	dimensionless	AP-42, Chapter 7: Equation 1-21
Working Loss Product Factor	K _P	1.00	dimensionless	
Ideal Gas Constant	R	10.73	psia*scf/lb-mole*°R	AP-42, Chapter 7: Equation 1-22
Average Vapor Temperature	T _V	539.7	°R	AP-42, Chapter 7: Equation 1-33
Daily Average Liquid Surface Temperature	T _{LA}	534.9	°R	AP-42, Chapter 7: Equation 1-28
Daily Vapor Temperature Range	ΔT _V	46.50	°R	AP-42, Chapter 7: Equation 1-7
Daily Ambient Temperature Range	ΔT _A	22.00	°R	AP-42, Chapter 7: Equation 1-11
Daily Maximum Ambient Temperature	T _{AX}	535.3	°R	AP-42, Chapter 7: Table 7.1-7
Daily Minimum Ambient Temperature	T _{AN}	513.3	°R	AP-42, Chapter 7: Table 7.1-7
Daily Average Ambient Temperature	T _{AA}	524.3	°R	AP-42, Chapter 7: Equation 1-30
Liquid Bulk Temperature	T _B	529.0	°R	AP-42, Chapter 7: Equation 1-31
Daily Vapor Pressure Range	ΔP _V	0.01	psia	AP-42, Chapter 7: Equation 1-9
Breather Vent Pressure Setting Range	ΔP _B	0.060	psi	AP-42, Chapter 7: Equation 1-10
Vapor Pressure Equation Constant	A	12.10	dimensionless	AP-42, Chapter 7: Table 7.1-2
Vapor Pressure Equation Constant	B	8,933	°R	AP-42, Chapter 7: Table 7.1-2
Vapor Pressure at T _{LX}	P _{VX}	0.01	psia	AP-42, Chapter 7: Equation 1-25
Vapor Pressure at T _{LN}	P _{VN}	0.01	psia	AP-42, Chapter 7: Equation 1-25
Maximum T _{LA}	T _{LX}	546.5	°R	AP-42, Chapter 7: Figure 7.1-17
Minimum T _{LA}	T _{LN}	523.2	°R	AP-42, Chapter 7: Figure 7.1-17

Diesel Storage Tanks Emissions

Source Information

Fuel Type	Diesel	
Roof Type	Floating	
Annual Throughput	3,360,000	gal/yr-tank
Operating Hours	8,760	hrs/yr

	Uncontrolled	
VOC Emissions - Per Tank	0.015	ton/yr

Physical Properties - Per Tank

Shell Height	H _S	19.58	ft
Shell Diameter	D	42.00	ft
Shell Radius	R _S	21.00	ft
Maximum Liquid Height	H _{LX}	18.58	ft
Average Liquid Height	H _L	9.79	ft
Working Volume		1,596,000	gallons
Turnovers Per Year	N	2.1	dimensionless
Shell Color/Shade		Black	
Shell Condition		Good	
Paint Solar Absorptance	α	0.97	dimensionless
Roof Height	H _R	--	ft
Dome Roof Radius	R _R	--	ft
Vacuum Setting	P _{BV}	-0.03	psig
Pressure Setting	P _{BP}	0.03	psig

Meteorological Information

Nearest Major City		Abilene, TX		
Average Annual Maximum Temperature	T _{AM}	75.60	°F	AP-42, Chapter 7: Table 7.1-7
Average Annual Minimum Temperature	T _{AN}	53.60	°F	AP-42, Chapter 7: Table 7.1-7
Atmospheric Pressure	P _A	13.79	psia	AP-42, Chapter 7: Table 7.1-7
Solar Insolation	I	1,603	Btu/scfd	AP-42, Chapter 7: Table 7.1-7

Calculation Methodology - Per Tank

Total Losses (VOC Emissions)	L _T	29	lb/yr	AP-42, Chapter 7: Eq. 2-1
Standing Losses	L _S	9.6	lb/yr	AP-42, Chapter 7: Eq. 2-2
Working Losses	L _W	19.6	lb/yr	AP-42, Chapter 7: Eq. 2-19
Net Throughput	Q	80,000	bbbl/yr	AP-42, Chapter 7: Eq. 2-20
Rim Seal Losses	L _R	8.13	lb/yr	AP-42, Chapter 7: Eq. 2-3
Zero Wind Speed Rim Seal Loss Factor	K _{RS}	6.70	lb-mole/ft*yr	AP-42, Chapter 7: Table 7.1-8; internal floating roof tank default
Wind Speed Dependent Rim Seal Loss Factor	K _{RB}	0.20	lb-mole/mph*ft*yr	AP-42, Chapter 7: Table 7.1-8; internal floating roof tank default
Average Ambient Wind Speed	v	0	mph	AP-42, Chapter 7: Eq. 2-3 Note 1 for internal floating roof tank
Seal-Related Wind Speed Exponent	n	3	dimensionless	AP-42, Chapter 7: Table 7.1-8; internal floating roof tank default
Vapor Pressure Function	P	0.00022	dimensionless	AP-42, Chapter 7: Eq. 2-4
Vapor Molecular Weight at 60 °F	M _V	130	lb/lb-mole	AP-42, Chapter 7: Table 7.1-2
Product Factor	K _C	1	dimensionless	Organic liquid factor other than crude oils
Deck Fitting Losses	L _F	1.47	lb/yr	AP-42, Chapter 7: Eq. 2-13
Total Deck Fitting Loss Factor	F _F	51.00	lb-mole/yr	AP-42, Chapter 7: Eq. 2-14 & Eq. 2-16
Number of Deck Fittings	N _C	1	dimensionless	AP-42, Chapter 7: Table 7.1-11
Zero Wind Speed Deck Fitting Loss Factor	K _{FB}	51.00	lb-mole/yr	AP-42, Chapter 7: Table 7.1-12; internal floating roof tank default
Deck Seam Losses	L _D	0.00	lb/yr	AP-42, Chapter 7: Eq. 2-18; welded construction
Shell Clingage Factor	C _C	0.0015	bbbl/1000 ft ²	AP-42, Chapter 7: Table 7.1-10; default light rust
Average Liquid Density	W _L	7.10	lb/gal	AP-42, Chapter 7: Table 7.1-2; fuel oil no.2 (diesel)
Effective Column Diameter	F _C	1	ft	AP-42, Chapter 7: Eq. 2-19 Note 4
Daily Average Liquid Surface Temperature	T _{LA}	533.8	°R	AP-42 Chapter 7: Eq. 2-6
Daily Vapor Temperature Range	ΔT _V	46.50	°R	AP-42, Chapter 7: Equation 1-7
Daily Ambient Temperature Range	ΔT _A	22.00	°R	AP-42, Chapter 7: Equation 1-11
Daily Maximum Ambient Temperature	T _{AX}	535.3	°R	AP-42, Chapter 7: Table 7-1-7
Daily Minimum Ambient Temperature	T _{AN}	513.3	°R	AP-42, Chapter 7: Table 7-1-7
Daily Average Ambient Temperature	T _{AA}	524.3	°R	AP-42, Chapter 7: Equation 1-30
Liquid Bulk Temperature	T _B	529.0	°R	AP-42, Chapter 7: Equation 1-31
Daily Vapor Pressure Range	ΔP _V	0.01	psia	AP-42, Chapter 7: Equation 1-9
Breather Vent Pressure Setting Range	ΔP _B	0.060	psi	AP-42, Chapter 7: Equation 1-10
Vapor Pressure Equation Constant	A	12.10	dimensionless	AP-42, Chapter 7: Table 7.1-2
Vapor Pressure Equation Constant	B	8,907	°R	AP-42, Chapter 7: Table 7.1-2
Vapor Pressure at T _{LX}	P _{VX}	0.01	psia	AP-42, Chapter 7: Equation 1-25
Vapor Pressure at T _{LN}	P _{VN}	0.01	psia	AP-42, Chapter 7: Equation 1-25
Maximum T _{LA}	T _{LX}	545.4	°R	AP-42, Chapter 7: Figure 7.1-17
Minimum T _{LA}	T _{LN}	522.2	°R	AP-42, Chapter 7: Figure 7.1-17

Component Fugitive Emissions

VOC Fugitive Emissions							
Unit Type	Service	Number of Units ¹	Hours of Operation hr/yr	THC Emission Factor ^{2a,2b} kg/hr-unit	VOC Weight Fraction ³	THC Emissions tons/yr	VOC Emissions tons/yr
Flanges	Gas	1,000	8,760	5.70E-06	0.05	0.055	0.0028
Valves	Gas	500	8,760	2.50E-05	0.05	0.12	0.0060
Connectors	Gas	20	8,760	1.00E-05	0.05	0.0019	0.00010
Open-Ended Lines	Gas	20	8,760	1.50E-05	0.05	0.0029	0.00014
Other	Gas	10	8,760	1.20E-04	0.05	0.012	0.00058
Total Emissions (tons/yr)						0.19	0.010

Ammonia Fugitive Emissions							
Unit Type	Service	Number of Units ¹	Hours of Operation hr/yr	SOCMI Emission Factor ^{2a,2b} kg/hr-unit	Ammonia Weight Fraction ³	THC Emissions tons/yr	VOC Emissions tons/yr
Flanges	Gas	500	8,760	1.50E-03	1.00	7.243	7.24
Valves	Gas	250	8,760	1.31E-04	1.00	0.316	0.32
Connectors	Gas	50	8,760	8.10E-05	1.00	0.039	0.039
Open-Ended Lines	Gas	50	8,760	1.50E-03	1.00	0.724	0.72
Other	Gas	10	8,760	4.47E-02	1.00	4.317	4.32
Total Emissions (tons/yr)						12.64	12.64

GHG Fugitive Emissions							
Unit Type	Service	Number of Units ¹	Hours of Operation hr/yr	THC Emission Factor ^{2a,2b} kg/hr-unit	Methane Weight Fraction ³	THC Emissions tons/yr	CO ₂ e Emissions tons/yr ⁴
Flanges	Gas	1,000	8,760	5.70E-06	0.90	0.050	1.39
Valves	Gas	500	8,760	2.50E-05	0.90	0.11	3.04
Connectors	Gas	20	8,760	1.00E-05	0.90	0.0017	0.049
Open-Ended Lines	Gas	20	8,760	1.50E-05	0.90	0.0026	0.073
Other	Gas	10	8,760	1.20E-04	0.90	0.010	0.29
Total Emissions (tons/yr)						0.17	4.84

1. Estimated component counts

2a. Emissions factors retrieved from EPA's Equipment Leaks Protocol Table 2-8 with a leak rate less than 10,000 ppmv.

2b. Emissions factors retrieved from EPA's Equipment Leaks Protocol Table 2-5 with a leak rate less than 10,000 ppmv. Flanges use the open-ended lines EF and Other use the PRV EF.

3. Gas weight fractions based on expected pipeline quality natural gas specification and ammonia slip concentration.

4. CO₂e emissions calculated using the Global Warming Potential of methane as published in Table A-1 of 40 CFR Part 98.

Regulatory Discussion

State Regulations

30 TAC §106.4 – Requirements for Permitting by Rule

- (a) To qualify for a permit by rule, the following general requirements must be met.
 - (1) Total actual emissions authorized under permit by rule from the facility shall not exceed the following limits, as applicable:
 - (A) 250 tons per year (tpy) of carbon monoxide (CO) or nitrogen oxides (NO_x);
 - (B) 25 tpy of volatile organic compounds (VOC), sulfur dioxide (SO₂), or inhalable particulate matter (PM);
 - (C) 15 tpy of particulate matter with diameters of 10 microns or less (PM₁₀);
 - (D) 10 tpy of particulate matter with diameters of 2.5 microns or less (PM_{2.5}); or
 - (E) 25 tpy of any other air contaminant except: (i) water, nitrogen, ethane, hydrogen, and oxygen; and
 - (ii) notwithstanding any provision in any specific permit by rule to the contrary, greenhouse gases as defined in §101.1 of this title (relating to Definitions)..

The emissions units requesting coverage under permit by rule are below the emissions limits above. Permit by Rule emissions estimates are detailed in the Emissions Calculations section of this application.

- (2) Any facility or group of facilities, which constitutes a new major stationary source, as defined in §116.12 of this title (relating to Nonattainment and Prevention of Significant Deterioration Review Definitions), or any modification which constitutes a major modification, as defined in §116.12 of this title, under the new source review requirements of the Federal Clean Air Act (FCAA), Part D (Nonattainment) as amended by the FCAA Amendments of 1990, and regulations promulgated thereunder, must meet the permitting requirements of Chapter 116, Subchapter B of this title (relating to New Source Review Permits) and cannot qualify for a permit by rule under this chapter. Persons claiming a permit by rule under this chapter should see the requirements of §116.150 of this title (relating to New Major Source or Major Modification in Ozone Nonattainment Areas) to ensure that any applicable netting requirements have been satisfied.

The Facility is not a new major stationary source or major modification as defined in the above regulations.

- (3) Any facility or group of facilities, which constitutes a new major stationary source, as defined in 40 Code of Federal Regulations (CFR) §52.21, or any change which constitutes a

major modification, as defined in 40 CFR §52.21, under the new source review requirements of the FCAA, Part C (Prevention of Significant Deterioration) as amended by the FCAA Amendments of 1990, and regulations promulgated thereunder because of emissions of air contaminants other than greenhouse gases, must meet the permitting requirements of Chapter 116, Subchapter B of this title and cannot qualify for a permit by rule under this chapter. Notwithstanding any provision in any specific permit by rule to the contrary, a new major stationary source or major modification which is subject to Chapter 116, Subchapter B, Division 6 of this title due solely to emissions of greenhouse gases may use a permit by rule under this chapter for air contaminants that are not greenhouse gases. However, facilities or projects which require a prevention of significant deterioration permit due to emissions of greenhouse gases may not commence construction or operation until the prevention of significant deterioration permit is issued.

The Facility is not a new major stationary source or major modification as defined in the above regulations.

(4) Unless at least one facility at an account has been subject to public notification and comment as required in Chapter 116, Subchapter B or Subchapter D of this title (relating to New Source Review Permits or Permit Renewals), total actual emissions from all facilities permitted by rule at an account shall not exceed 250 tpy of CO or NO_x ; or 25 tpy of VOC or SO₂ or PM; or 15 tpy of PM₁₀ ; or 10 tpy of PM_{2.5} ; or 25 tpy of any other air contaminant except water, nitrogen, ethane, hydrogen, oxygen, and GHGs (as specified in §106.2 of this title (relating to Applicability)).

The emissions units requesting coverage under permit by rule are below the emissions limits above. Permit by Rule emissions estimates are detailed in the Emissions Calculations section of this application.

(5) Construction or modification of a facility commenced on or after the effective date of a revision of this section or the effective date of a revision to a specific permit by rule in this chapter must meet the revised requirements to qualify for a permit by rule.

No revisions are currently proposed for the permits by rule for which coverage is requested.

(6) A facility shall comply with all applicable provisions of the FCAA, §111 (Federal New Source Performance Standards) and §112 (Hazardous Air Pollutants), and the new source review requirements of the FCAA, Part C and Part D and regulations promulgated thereunder.

The diesel engines proposed for the facility will be subject to NSPS Subpart IIII (Standards of Performance for Stationary Compression Ignition Internal Combustion Engines). The storage tanks are not subject to any federal regulations. The Federal Regulations discussion in this section details applicable compliance measures that will be taken by Abilene DC.

(7) There are no permits under the same commission account number that contain a condition or conditions precluding the use of a permit by rule under this chapter.

The Standard Permit for Electric Generating Units does not preclude the use of a permit by rule.

(8) The proposed facility or group of facilities shall obtain allowances for NO_x if they are subject to Chapter 101, Subchapter H, Division 3 of this title (relating to Mass Emissions Cap and Trade Program).

The Facility is not located in the Houston-Galveston-Brazoria ozone nonattainment area. Therefore, this is not applicable.

(b) No person shall circumvent by artificial limitations the requirements of §116.110 of this title (relating to Applicability).

Abilene DC will not circumvent the requirements of §116.110.

(c) The emissions from the facility shall comply with all rules and regulations of the commission and with the intent of the Texas Clean Air Act (TCAA), including protection of health and property of the public, and all emissions control equipment shall be maintained in good condition and operated properly during operation of the facility.

Abilene DC will comply with the TCAA rules and maintain emissions control equipment covered under the permit by rule in good condition and proper operation.

(c) Facilities permitted by rule under this chapter are not exempted from any permits or registrations required by local air pollution control agencies. Any such requirements must be in accordance with Texas Health and Safety Code, §382.113 and any other applicable law.

The City of Abilene/Taylor County do not have additional air quality permitting or registration requirements.

30 TAC §106.6 – Registration of Emissions

Abilene DC is certifying emissions under Permit by Rule. Maximum emissions rates represented in this application are requested to be federally enforceable.

30 TAC §106.8 – Recordkeeping

Abilene DC will maintain the applicable records required for registration under the Permit By Rule.

30 TAC §106.472– Organic and Inorganic Liquid Loading and Unloading

Liquid loading or unloading equipment for railcars, tank trucks, or drums; storage containers, reservoirs, tanks; and change of service of material loaded, unloaded, or stored is permitted by rule, provided that no visible emissions result and the chemicals loaded, unloaded, or stored are limited to:

(1) the following list: asphalt, resins, soaps, lube oils, fuel oils, waxes, polymers, detergents, lube oil additives, kerosene, wax emulsions, vegetable oils, greases, animal fats, and diesel fuels;

(2) water or wastewater;

- (3) aqueous salt solutions;
- (4) aqueous caustic solutions, except ammonia solutions;
- (5) inorganic acids except oleum, hydrofluoric, and hydrochloric acids;
- (6) aqueous ammonia solutions if vented through a water scrubber;
- (7) hydrochloric acid if vented through a water scrubber;
- (8) acetic acid if vented through a water scrubber;
- (9) organic liquids having an initial boiling point of 300 degrees Fahrenheit or greater. Facilities loading, unloading, or storing butyric acid, isobutyric acid, methacrylic acid, mercaptans, croton oil, 2- methyl styrene, or any other compound with an initial boiling point of 300 degrees Fahrenheit or greater listed in 40 Code of Federal Regulations 261, Appendix VIII shall be located at least 500 feet from any recreational area or residence or other structure not occupied or used solely by the owner of the facility or the owner of the property upon which the facility is located.

The storage tanks will hold diesel fuel oil. The minimum initial boiling point of diesel is 300 degrees Fahrenheit. Therefore, the tanks and loading points will be located at least 500 feet from the nearest residence.

30 TAC §106.472– Organic and Inorganic Liquid Loading and Unloading

Internal combustion engine and gas turbine driven compressors, electric generator sets, and water pumps, used only for portable, emergency, and/or standby services are permitted by rule, provided that the maximum annual operating hours shall not exceed 10% of the normal annual operating schedule of the primary equipment; and all electric motors. For purposes of this section, "standby" means to be used as a "substitute for" and not "in addition to" other equipment.

The diesel engines requesting coverage under Permit by Rule are expected to run no more than 150 or 100 hours per year per engine which is less than 10% of the normal annual operating runtime of the primary equipment.

Federal Regulations

40 CFR Part 60 - Standards of Performance for New Stationary Sources

Subpart K - Standards of Performance for Storage Vessels for Petroleum Liquids for Which Construction, Reconstruction, or Modification Commenced After June 11, 1973, and Prior to May 19, 1978

Subpart K applies to each storage vessel for petroleum liquids which has a storage capacity greater than 151,412 liters (40,000 gallons) constructed after June 11, 1973, and before May 19, 1978. The Facility will be constructed after May 19, 1978. Therefore, Subpart K will not apply.

Modification Application – Permit by Rule

Subpart Ka - Standards of Performance for Storage Vessels for Petroleum Liquids for Which Construction, Reconstruction, or Modification Commenced After May 18, 1978, and Prior to July 23, 1984

Subpart Ka applies to each storage vessel for petroleum liquids which has a storage capacity greater than 151,412 liters (40,000 gallons) constructed after May 18, 1978, and before July 23, 1984. The Facility will be constructed after July 23, 1984. Therefore, Subpart Ka will not apply.

Subpart Kb - Standards of Performance for Storage Vessels for Petroleum Liquids for Which Construction, Reconstruction, or Modification Commenced After July 23, 1984, and Prior to October 4, 2023

Subpart Kb applies to each storage vessel for petroleum liquids which has a storage capacity greater than 151,412 liters (40,000 gallons) constructed after July 23, 1984, and before October 4, 2023. The Facility will be constructed after October 4, 2023. Therefore, Subpart Kb will not apply.

Subpart Kc - Standards of Performance for Volatile Organic Liquid Storage Vessels (Including Petroleum Liquid Storage Vessels) for Which Construction, Reconstruction, or Modification Commenced After October 4, 2023

Subpart Kc applies to volatile organic liquid storage tanks with a capacity greater than or equal to 75 m³ (§60.110c(a)). The diesel belly tanks each have a design capacity less than 75 m³. There is an exemption for storage tanks that store volatile organic liquids with a true vapor pressure is less than 0.25 psia. The 40,000 barrel diesel tank stores a volatile organic liquid with a true vapor pressure less than 0.25 psia. Therefore, Subpart Kc will not apply.

Subpart IIII - Standards of Performance for Stationary Compression Ignition Internal Combustion Engines

Subpart IIII applies to stationary compression ignition (CI) internal combustion engines (ICE) as specified in paragraphs (a)(1) through (4). The diesel generators meet the applicability criteria and are either certified to Tier 2 (Caterpillar C175 and Caterpillar 3516) or Tier 4 (Baudouin and Caterpillar 3516) emissions standards. Abilene DC will operate these engines as emergency units. Abilene DC will maintain these units per manufacturer specifications, will use ULSD, monitor runtime hours with a non-resettable hour meter, and follow applicable recordkeeping and reporting requirements. Subpart IIII will apply to the diesel-fired generator engines.

40 CFR Part 63 – National Emission Standards for Hazardous Air Pollutants for Source Categories

Subpart ZZZZ - National Emission Standards for Hazardous Air Pollutants for Stationary Reciprocating Internal Combustion Engines

Subpart ZZZZ applies to stationary reciprocating internal combustion engines (RICE) at a major or area source of HAP emissions (§63.6585). There will be stationary RICE located at the Facility and will meet these requirements through 40 CFR Part 60 Subpart IIII as the Facility is an area source of hazardous air pollutants (HAPs). Therefore, Subpart ZZZZ will apply.

Supporting Documentation

	Model : 16M55G4D2/6	Date : 30/11/22
	PowerKit Engine Datasheet	Page : 1 / 4

Ratings

RPM	Gross Engine Output				Net Engine Output			
	PRP		ESP		PRP		ESP	
	kWm	BHP	kWm	BHP	kWm	BHP	kWm	BHP
1800	2870 *	3849 *	3150	4224	\ *	\ *	\	\

1 kWm = 1,34102 BHP

When the engine is used with a cooling system using an electrically driven fan, net engine output data may change and quoted figures should be used for reference only

Basic data

Engine model	16M55G4D2/6
N° of Cylinders / Valves	16 / 64
Cylinders arrangement	At Vee
Bore x Stroke (mm)	180 x 215
Displacement (L)	87.5
Thermodynamic Cycle	Diesel 4 stroke
Firing Order	A1-B1-A3-B3-A2-B2-A5-B5-A8-B8-A6-B6-A7-B7-A4-B4
Mean Piston Speed (m/s)	12.9
BMEP @ ESP (Bar)	24
Cooling System	Liquid (water + 50% antifreeze)
Injection System	Direct
Fuel System	High Pressure Common Rail
Aspiration	Turbocharged and Aftercooled
Compression ratio	16.5 : 1
Flywheel housing	SAE 00
Flywheel	21"
Rotation Viewed from Flywheel...	Counterclockwise
Allowed static bending moment of the flywheel housing....	/
N° of teeth on flywheel ring gear	202
Inertia of flywheel (kg•m ²)	20.78
Inertia of crankshaft (kg•m ²)	17.1
Emission standard	EPA Tier2
Overall Dimensions without radiator (Length x Width x Height) (mm)	4161×1953×2468
Engine dry weight without radiator and without radiator pipes (kg)	11500
Engine dry weight with radiator and radiator pipes (kg)	N/A
Engine wet weight with radiator (includes oil, coolant) (kg)	N/A

* The indicated PRP Power is for reference only. This engine is designed for emergency standby power (ESP) applications only.

DPK-TDS-EN-16M55-9006-22-11-30 Moteurs Baudouin reserve the right to modify these specifications, without notice. Document not contractual.

	Model : 16M55G4D2/6	Date : 30/11/22
	PowerKit Engine Datasheet	Page : 2 / 4

Air intake system

Air intake temperature rise (°C)	≤ 5
Air intake restriction clean filter (mBar)	≤ 35
Air intake restriction dirty filter (mBar)	≤ 70
Recommended air flow @ PRP (m³/min)	239.2
Recommended air flow @ ESP (m³/min)	245.8
Min. diameter of intake pipe (mm)	140

Aftercooling system

Aftercooler system type	Air to Water
Max. intake temperature @ 25°C ambient temperature (°C)	55
Max. difference between intake temperature and ambient temperature (°C)	30
Max. intake pressure drop of aftercooler (mBar)	60

Lubrication system

Oil capacity Low / High (L)	405 / 500
Oil pressure in normal condition idle speed (Bar)	≥ 1.8
Oil pressure in normal condition at 1800 Rpm @ PRP (Bar)	4 - 6.5
Lowest oil pressure alarm (shutdown) (Bar)	1.8
High Oil Pressure Warning	6.5
Max. oil temperature (°C)	105
Oil flow at 1800 Rpm (L/min)	1460
Oil fuel consumption ratio based on engine fuel consumption data	≤ 0.4g/kW·h
Total system capacity (including filters) (L)	582

Heat balance test data (with ambient temperature 25 °C)

Total heat dissipation @ ESP (kJ/s)	4917
- Heat Rejection to Jacket Water @ ESP (kJ/s)	1198
- Heat Rejection to Low temperature circuit @ ESP (kJ/s)	802
- Radiated Heat to Ambient @ ESP (kJ/s)	268
- Heat Rejected to Exhaust @ ESP (kJ/s)	2649

Exhaust system

Max. exhaust back pressure (mBar)	150
Max. exhaust temperature before turbocharger (°C)	740
Max. exhaust temperature after turbocharger (°C)	550
Exhaust flow @ PRP (m³/min)	756.2
Exhaust flow @ ESP (m³/min)	793.5
Min. diameter of exhaust pipe (mm)	280
Max. bending moment of exhaust gas exit flange (Nm)	10

	Model : 16M55G4D2/6	Date : 30/11/22
	PowerKit Engine Datasheet	Page : 3 / 4

Cooling system without radiator

System designed for ambient temperature up to (°C) ¹	 \
Radiator type	 \
Fan type	 \
Min. inside diameter of coolant outlet pipe (mm)	 LT 76 / HT 96
Coolant capacity of radiator and pipes (L)	 \
Coolant alarm (shutdown) temperature (°C)	 112
Thermostat opening temperature / full open temperature (°C)	 82 / 92
Max. additional restriction for external cooling circuit (Bar)	 HT 0.6 / LT 0.4
Coolant capacity of the engine (L)	 350.5
Cooling fan airflow (m³/min)*	 \
Fan absorbed power (kW)	 \
Additional restriction (for reference) - Duct allowance (Pa)	 150

* Air flow figure assumes the presence of the standard radiator provided, taking into consideration the backpressure caused

Fuel system

Governor	 ECU
Governor steady state speed stability at constant load (ISO 8528-5 Class G3) ²	 ≤ +/- 0.5 %
Max. restriction at fuel inlet (Bar)	 0.1
Max. pressure at fuel inlet (Bar)	 0.5
Max. fuel return restriction (Bar)	 0.2
Max. fuel inlet temperature (°C)	 70
Fuel supply flow (L/hr)	 3400
Min. internal diameter of inlet pipe (mm)	 19
Min. internal diameter of return pipe (mm)	 19

Electrical system

Electrical system voltage (negative to ground) (Vdc)	 24
Starter power (kW)	 2 x 10
Battery charger current (A)	 55
Battery charger absorbed power (kW)	 1.6
Max. electric resistance of starting circuit (Ω)	 0.008
Min. sectional area of wire (mm²)	 2 x 95
Min. cold start temperature without auxiliary starting device (°C) ³	 -10
Min. cold start temperature with auxiliary starting device (°C) ³	 TBA

¹ The indicated value is based on the AOT value of 1°C for an engine tested at 100% of the ESP Power, reflecting temperature in an open condition, without an enclosure or container, without any airflow obstruction in the front of the radiator, without air recirculation, with free exhaust gas exit and with the engine thermostatic valve in its full open condition, without a closing plate present. The reference air restriction is equal to 50Pa. For the equivalent ATB (Air-to-Boil) performance in a customer or project basis, please consult Baudouin Application Engineering.

² This refers only to the frequency response of the engine and should not be confused with the performance class of the Generator Set, which is subject to additional contributing factors such as alternator selection and control settings.

³ Engines used in emergency standby application or applications that require immediate start under load, they must be equipped with coolant heaters. Baudouin recommend heaters installation to be executed by providing constant coolant circulation across all the engine components. Two heaters are required for V-type engines, one per each side.

	Model : 16M55G4D2/6	Date : 30/11/22
	PowerKit Engine Datasheet	Page : 4 / 4

Noise

Diesel engine noise (Acoustic power level) (dB(A))	126.9
Noise - upper side (dB(A))	109.8
Noise - right side (view from flywheel) (dB(A))	107.6
Noise - left side (view from flywheel) (dB(A))	110.3
Noise – front (radiator) side (dB(A))	105.2
Noise – rear (flywheel) side (dB(A))	105.4

Notes :

- Noise test made at 100% of the ESP power, at 1 mt. distance, on engine without radiator, without cooling fan and without silencer.
- Noise test refers to ISO 6798 norm : "Reciprocating internal combustion engines. Measurement of emitted airborne noise. Engineering method and survey method".

Fuel consumption

Rating	gr/kWh	L/hr
100% ESP	211.3	792.4
100% PRP	213.5	729.3
75% PRP	218.8	560.7
50% PRP	235.4	402.1
25% PRP	264.3	225.7
Fuel consumption tolerance +/- 5%		

Notes:

This engine is designed for ESP (Emergency Standby) applications only, the values shown above at PRP levels refer to the Referenced Power (2870 kWm).

Ratings definitions

Emergency Standby Power (ESP)

Emergency Standby Power is the maximum power available for a varying load for the duration of a main power network failure. The average load factor over 24 hours of operation should not exceed 70% of the engine's ESP power rating. Typical operational hours of the engine is 200 hours per year, with a maximum usage of 500 hours per year. This includes an annual maximum of 25 hours per year at the ESP power rating. No overload capability is allowed. The engine is not to be used for sustained utility paralleling applications.

Prime Power (PRP)

Prime Power is the maximum power available for unlimited hours of usage in a variable load application. The average load factor should not exceed 70% of the engine's PRP power rating during any 24 hour period. An overload capability of 10% is available, however, this is limited to 1 hour within every 12 hour period.

- All ratings are based on operating conditions under ISO 8528-1, ISO 3046, DIN6271. Performance tolerance of $\pm 5\%$.
- Test conditions : 100 kPa, 25°C air inlet temperature, relative humidity of 30%, with fuel density 0.84 kg/L. Derating may be required for conditions outside these; please contact the factory for details.
- Power output curves are based on the engine operating with fuel system, water pump and lubricating oil pump; not included are battery charging alternator, fan and optional equipment.

DOC/SCR/DPF Base System Content

	QTY
DOC/SCR/DPF Housing – M3-100-90-36PF-J-R4	10
<i>MIRACUBE, Passive DPF/SCR/Oxidation Combination Housing, Optionally Installed Insulation (3" THK Mineral Wool Factory-Installed Insulation with Aluminum Sheathing)</i>	
SCR Control System – ACIS-3	10
<i>NOx Control, Wire Labeling, Temperature Monitoring, Pressure Monitoring</i>	
DOC/SCR/DPF Base System	10

Optional Content

	QTY
Spare Parts – ACIS-3 Recommended Spare Parts	1
SCR Reactant Tank – SW550	1
<i>Single-Wall Reactant Tank with 500 US Gallons Nominal Capacity</i>	
Reactant Tank Level Indicator – TLI	1
<i>Ultra-Sonic Level Indication System for Reactant Tank</i>	
Insulation Blanket Adder – FACINS-M3-100-90	10

Technical Service

Service Contract	Available upon request.
Post Commissioning System Training Factory	Available upon request.
Witness Test	Available upon request.

Payment Terms

100% due immediately to release project for production

Shipment

All equipment is Ex Works Tulsa, OK

Delivery

The following lead times specify the time from receipt of order by MIRATECH to product ready to ship. Lead times shown are for quantities of 1 or 2 unless otherwise specified. **For quantities in excess of 2, please obtain a commitment from MIRATECH.**

System Ready To Ship: Contact MIRATECH

Terms & Conditions

This offer is in strict adherence to the General Terms and Conditions of Sale, located on our website: <https://www.miratechcorp.com/terms-conditions>

- Quotes are subject to upward adjustment for increases in steel pricing in accordance with the most recent American Metals Market (www.amm.com) index for Hot Rolled steel or applicable successor index.
- All pricing will be confirmed at time of order, effective for product shipments within 60 days of order date. All shipments scheduled by customer later than 60 days from order entry may be subject to price adjustment.
- Due to the current volatility of stainless steel costs, Pricing in Effect at the time of order (if released for production) or at release for production will be applied. Current pricing will be provided at time of order entry or release for production.
- Products are manufactured specifically for your order, as such we are unable to accept returns for reasons other than warranty purposes.

Application & Performance Warranty Data

Project Information

Site Location:	Mexico
Project Name:	16M55 3.5MW T4
Application:	Standby Power
Number Of Engines:	10
Operating Hours per Year:	50

Engine Specifications

Engine Manufacturer:	Baudouin
Model Number:	16M55G8D2/6
Rated Speed:	1800 RPM
Type of Fuel:	Ultra-Low Sulfur Diesel (ULSD)
Type of Lube Oil:	1 wt% sulfated ash or less
Lube Oil Consumption:	0.3 % Fuel Consumption
Number of Exhaust Manifolds:	1

Engine Cycle Data

Load	Speed	Power	Exhaust Flow	Exhaust Temp.	Fuel Cons.	NO _x	CO	NMHC	NMNEHC	PM ₁₀	O ₂	H ₂ O
%		kW	m ³ /min	° C	L/hr	mg/Nm3 @ 5% O ₂	mg/Nm3 @ 5% O ₂	g/bhp-hr	mg/Nm3 @ 5% O ₂	g/kW-hr	%	%
100	Rated	3,600	861	525	888	2,122	117	0.2	26	0.08	10	12

Emission Data (100% Load)

Emission	Raw Engine Emissions						Target Outlet Emissions						Calculated Reduction
	g/bhp-hr	tons/yr	ppmvd @ 15% O ₂	ppmvd	g/kW-hr	lb/MW-hr	g/bhp-hr	tons/yr	ppmvd @ 15% O ₂	ppmvd	g/kW-hr	lb/MW-hr	
NO _x *	4.7	1.25	385	711	6.308	13.91	0.5	0.13	41	76	0.671	1.48	89.4%
CO	0.29	0.08	39	73	0.394	0.87	2.6	0.69	349	645	3.487	7.69	
NMHC**	0.2	0.05	47	87	0.268	0.59	0.14	0.04	33	61	0.188	0.41	30%
PM ₁₀	0.06	0.02	19	35	0.08	0.18	0.02	0.01	7	13	0.03	0.07	63.3%

* MW referenced as NO₂

** MW referenced as CH₄. Propane in the exhaust shall not exceed 15% by volume of the NMHC compounds in the exhaust, excluding aldehydes. The 15% (vol.) shall be established on a wet basis, reported on a methane molecular weight basis. The measurement of exhaust NMHC composition shall be based upon EPA method 320 (FTIR), and shall exclude formaldehyde.

Performance Number: DM8448

Change Level: 17

SALES MODEL:	C175-16	COMBUSTION:	DIRECT INJECTION
BRAND:	CAT	ENGINE SPEED (RPM):	1,800
MACHINE SALES MODEL:		HERTZ:	60
ENGINE POWER (BHP):	4,423	FAN POWER (HP):	187.7
GEN POWER WITH FAN (EKW):	3,000.0	ASPIRATION:	TA
COMPRESSION RATIO:	15.3	AFTERCOOLER TYPE:	SCAC
RATING LEVEL:	STANDBY	AFTERCOOLER CIRCUIT TYPE:	JW+OC+1AC, 2AC
PUMP QUANTITY:	2	AFTERCOOLER TEMP (F):	115
FUEL TYPE:	DIESEL	JACKET WATER TEMP (F):	210.2
MANIFOLD TYPE:	DRY	TURBO CONFIGURATION:	PARALLEL
GOVERNOR TYPE:	ADEM4	TURBO QUANTITY:	4
ELECTRONICS TYPE:	ADEM4	TURBOCHARGER MODEL:	GTB6251BN-48T-1,38
CAMSHAFT TYPE:	STANDARD	CERTIFICATION YEAR:	2014
IGNITION TYPE:	CI	CRANKCASE BLOWBY RATE (FT3/HR):	2,436.4
INJECTOR TYPE:	CR	FUEL RATE (RATED RPM) NO LOAD (GAL/HR):	22.9
FUEL INJECTOR:	4439455	PISTON SPD @ RATED ENG SPD (FT/MIN):	2,598.4
REF EXH STACK DIAMETER (IN):	14		

INDUSTRY	SUBINDUSTRY	APPLICATION
ELECTRIC POWER	STANDARD	PACKAGED GENSET
OIL AND GAS	LAND PRODUCTION	PACKAGED GENSET

General Performance Data

GENSET POWER WITH FAN	PERCENT LOAD	ENGINE POWER	BRAKE MEAN EFF PRES (BMEP)	BRAKE SPEC FUEL CONSUMPTN (BSFC)	ISO BRAKE SPEC FUEL CONSUMPTN (BSFC)	VOL FUEL CONSUMPTN (VFC)	ISO VOL FUEL CONSUMPTN (VFC)	ELEC SPEC FUEL CONSUMPTN (ESFC)	ISO ELEC SPEC FUEL CONSUMPTN (ESFC)
EKW	%	BHP	PSI	LB/BHP-HR	LB/BHP-HR	GAL/HR	GAL/HR	LB/EKW-HR	LB/EKW-HR
3,000.0	100	4,423	377	0.339	0.333	211.4	207.3	0.500	0.490
2,700.0	90	3,999	341	0.338	0.331	190.4	186.8	0.500	0.491
2,400.0	80	3,576	305	0.340	0.334	171.6	168.3	0.507	0.498
2,250.0	75	3,364	286	0.344	0.338	163.2	160.1	0.514	0.505
2,100.0	70	3,152	268	0.351	0.345	156.1	153.1	0.527	0.517
1,800.0	60	2,729	232	0.371	0.364	142.6	139.9	0.562	0.551
1,500.0	50	2,305	196	0.396	0.388	128.7	126.2	0.609	0.597
1,200.0	40	1,882	160	0.417	0.409	110.7	108.6	0.654	0.642
900.0	30	1,458	124	0.440	0.431	90.4	88.7	0.713	0.699
750.0	25	1,246	106	0.453	0.444	79.5	78.0	0.752	0.738
600.0	20	1,035	88	0.467	0.458	68.2	66.9	0.806	0.791
300.0	10	611	52	0.514	0.504	44.3	43.5	1.048	1.028

GENSET POWER WITH FAN	PERCENT LOAD	ENGINE POWER	INLET MFLD PRES	INLET MFLD TEMP	EXH MFLD TEMP	EXH MFLD PRES	ENGINE OUTLET TEMP	COMPRESSOR OUTLET PRES	COMPRESSOR OUTLET TEMP
EKW	%	BHP	IN-HG	DEG F	DEG F	IN-HG	DEG F	IN-HG	DEG F
3,000.0	100	4,423	91.5	131.3	1,229.8	64.3	891.9	92	451.5
2,700.0	90	3,999	81.4	129.6	1,193.4	56.5	879.2	82	414.6
2,400.0	80	3,576	73.0	128.3	1,163.0	50.0	869.4	74	384.7
2,250.0	75	3,364	69.5	127.8	1,150.7	47.5	865.8	70	373.0
2,100.0	70	3,152	67.1	127.6	1,142.6	45.8	864.2	68	366.1
1,800.0	60	2,729	62.7	127.3	1,127.7	42.8	861.6	65	354.0
1,500.0	50	2,305	57.5	126.9	1,109.9	39.5	858.0	60	339.0
1,200.0	40	1,882	46.4	125.8	1,083.9	32.9	848.4	50	308.0
900.0	30	1,458	34.8	124.5	1,041.6	25.3	834.7	39	267.2
750.0	25	1,246	29.0	123.8	1,014.2	21.3	826.5	33	243.5
600.0	20	1,035	23.2	123.2	961.6	17.6	797.3	27	217.8
300.0	10	611	11.7	122.1	752.4	10.6	649.3	14	160.9

General Performance Data (Continued)

GENSET POWER WITH FAN	PERCENT LOAD	ENGINE POWER	WET INLET AIR VOL FLOW RATE	ENGINE OUTLET WET EXH GAS VOL FLOW RATE	WET INLET AIR MASS FLOW RATE	WET EXH GAS MASS FLOW RATE	WET EXH VOL FLOW RATE (32 DEG F AND 29.98 IN HG)	DRY EXH VOL FLOW RATE (32 DEG F AND 29.98 IN HG)
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PERFORMANCE DATA[DM8448]

October 10, 2022

EKW	%	BHP	CFM	CFM	LB/HR	LB/HR	FT3/MIN	FT3/MIN
3,000.0	100	4,423	9,772.2	25,620.0	42,761.1	44,259.6	9,320.0	8,667.2
2,700.0	90	3,999	8,943.0	23,086.1	38,888.2	40,238.8	8,477.9	7,889.0
2,400.0	80	3,576	8,243.6	20,980.8	35,642.2	36,860.0	7,761.6	7,230.7
2,250.0	75	3,364	7,953.8	20,121.0	34,304.6	35,462.7	7,463.6	6,958.6
2,100.0	70	3,152	7,753.3	19,531.3	33,379.1	34,486.9	7,254.0	6,770.2
1,800.0	60	2,729	7,382.3	18,480.5	31,695.8	32,707.6	6,876.9	6,433.3
1,500.0	50	2,305	6,952.0	17,314.7	29,788.0	30,700.3	6,460.8	6,059.1
1,200.0	40	1,882	6,076.8	15,264.4	25,920.8	26,704.4	5,737.4	5,392.5
900.0	30	1,458	5,160.3	12,786.8	21,909.9	22,550.1	4,857.0	4,574.5
750.0	25	1,246	4,701.8	11,409.7	19,919.4	20,483.0	4,361.8	4,112.2
600.0	20	1,035	4,243.2	9,964.4	17,938.9	18,422.6	3,897.7	3,682.5
300.0	10	611	3,325.6	6,901.7	14,007.7	14,322.1	3,060.0	2,917.8

Heat Rejection Data

PUMP POWER IS INCLUDED IN HEAT REJECTION BALANCE, BUT IS NOT SHOWN.

GENSET POWER WITH FAN	PERCENT LOAD	ENGINE POWER	REJECTION TO JACKET WATER	REJECTION TO ATMOSPHERE	REJECTION TO EXH	EXHAUST RECOVERY TO 350F	FROM OIL COOLER	FROM 2ND STAGE AFTERCOOLER	WORK ENERGY	LOW HEAT VALUE ENERGY	HIGH HEAT VALUE ENERGY
EKW	%	BHP	BTU/MIN	BTU/MIN	BTU/MIN	BTU/MIN	BTU/MIN	BTU/MIN	BTU/MIN	BTU/MIN	BTU/MIN
3,000.0	100	4,423	78,059	8,307	178,226	101,475	24,373	27,992	187,548	457,607	487,466
2,700.0	90	3,999	69,753	7,694	159,943	89,988	21,844	22,735	169,590	410,123	436,884
2,400.0	80	3,576	62,814	7,204	144,872	80,799	19,611	18,646	151,631	368,192	392,217
2,250.0	75	3,364	59,856	7,005	138,541	77,146	18,605	17,040	142,651	349,309	372,102
2,100.0	70	3,152	57,690	6,871	134,338	74,726	17,781	16,060	133,672	333,838	355,621
1,800.0	60	2,729	54,063	6,651	127,402	70,419	16,278	14,739	115,714	305,626	325,568
1,500.0	50	2,305	50,535	6,481	119,941	65,533	14,768	13,646	97,755	277,263	295,355
1,200.0	40	1,882	45,772	6,336	107,141	55,828	12,870	11,188	79,796	241,627	257,393
900.0	30	1,458	39,631	6,219	90,342	45,754	10,669	8,349	61,838	200,308	213,378
750.0	25	1,246	36,078	6,172	80,662	40,805	9,471	7,028	52,858	177,821	189,424
600.0	20	1,035	31,984	6,027	70,162	34,336	8,207	5,910	43,879	154,087	164,142
300.0	10	611	21,611	5,163	46,779	17,588	5,475	4,318	25,920	102,790	109,497

Sound Data

SOUND DATA REPRESENTATIVE OF NOISE PRODUCED BY THE "ENGINE ONLY"

EXHAUST:SOUND POWER(1/3 Octave Frequencies)

GENSET POWER WITH FAN	PERCENT LOAD	ENGINE POWER	OVERALL SOUND	100 HZ	125 HZ	160 HZ	200 HZ	250 HZ	315 HZ	400 HZ	500 HZ	630 HZ	800 HZ
EKW	%	BHP	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)
3,000.0	100	4,423	134.5	109.7	115.8	113.7	115.5	116.0	119.0	119.9	121.5	120.4	121.2
2,700.0	90	3,999	133.2	110.2	116.1	112.6	114.3	114.5	117.3	118.4	120.1	118.3	119.5
2,400.0	80	3,576	132.0	111.6	116.6	111.0	112.7	113.0	115.6	116.9	118.4	116.5	117.7
2,250.0	75	3,364	131.4	112.4	116.8	110.2	111.9	112.3	114.8	116.2	117.6	115.6	116.8
2,100.0	70	3,152	130.7	113.2	117.1	109.3	111.1	111.6	114.0	115.5	116.8	114.7	115.9
1,800.0	60	2,729	129.5	114.8	117.6	107.5	109.4	110.2	112.3	114.1	115.1	113.0	114.0
1,500.0	50	2,305	128.2	116.3	118.1	105.8	107.8	108.7	110.6	112.6	113.4	111.2	112.2
1,200.0	40	1,882	127.0	117.9	118.6	104.1	106.1	107.3	108.9	111.2	111.8	109.5	110.3
900.0	30	1,458	125.7	119.5	119.1	102.3	104.4	105.9	107.3	109.8	110.1	107.7	108.5
750.0	25	1,246	125.1	120.2	119.3	101.4	103.6	105.2	106.4	109.1	109.3	106.8	107.6
600.0	20	1,035	124.4	121.0	119.6	100.6	102.8	104.5	105.6	108.4	108.4	105.9	106.7
300.0	10	611	123.2	122.6	120.0	98.8	101.1	103.0	103.9	106.9	106.8	104.2	104.8

EXHAUST:SOUND POWER(1/3 Octave Frequencies)

GENSET POWER WITH FAN	PERCENT LOAD	ENGINE POWER	1000 HZ	1250 HZ	1600 HZ	2000 HZ	2500 HZ	3150 HZ	4000 HZ	5000 HZ	6300 HZ	8000 HZ	10000 HZ
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PERFORMANCE DATA[DM8448]

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EKW	%	BHP	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)
3,000.0	100	4,423	122.2	122.6	123.5	124.9	124.7	123.1	122.4	121.6	120.1	119.0	123.4
2,700.0	90	3,999	120.7	121.0	122.2	123.5	123.2	121.5	120.8	120.0	118.7	117.8	123.8
2,400.0	80	3,576	119.4	119.7	120.8	122.5	121.9	120.4	119.8	119.0	117.7	117.1	123.5
2,250.0	75	3,364	118.8	119.1	120.1	122.0	121.3	119.9	119.4	118.6	117.2	116.8	123.3
2,100.0	70	3,152	118.1	118.5	119.4	121.5	120.6	119.3	119.0	118.2	116.7	116.5	123.1
1,800.0	60	2,729	116.9	117.3	118.0	120.4	119.4	118.3	118.1	117.3	115.6	115.9	122.6
1,500.0	50	2,305	115.6	116.2	116.6	119.4	118.1	117.3	117.2	116.4	114.6	115.3	122.1
1,200.0	40	1,882	114.3	115.0	115.1	118.4	116.8	116.3	116.4	115.6	113.6	114.7	121.6
900.0	30	1,458	113.1	113.8	113.7	117.4	115.6	115.3	115.5	114.7	112.6	114.1	121.1
750.0	25	1,246	112.4	113.2	113.0	116.9	114.9	114.8	115.1	114.3	112.1	113.8	120.9
600.0	20	1,035	111.8	112.6	112.3	116.4	114.3	114.2	114.7	113.9	111.6	113.5	120.7
300.0	10	611	110.5	111.4	110.9	115.4	113.0	113.2	113.8	113.0	110.6	112.9	120.2

MECHANICAL:SOUND POWER(1/3 Octave Frequencies)

GENSET POWER WITH FAN	PERCENT LOAD	ENGINE POWER	OVERALL SOUND	100 HZ	125 HZ	160 HZ	200 HZ	250 HZ	315 HZ	400 HZ	500 HZ	630 HZ	800 HZ
EKW	%	BHP	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)
3,000.0	100	4,423	125.9	89.8	105.6	98.4	100.6	104.5	108.3	111.6	113.3	112.5	114.1
2,700.0	90	3,999	125.8	89.4	105.5	97.9	100.9	103.3	108.7	111.1	112.7	112.2	113.8
2,400.0	80	3,576	126.0	89.0	105.0	97.8	99.8	102.4	108.0	111.0	111.8	111.9	113.0
2,250.0	75	3,364	126.1	88.8	104.7	97.8	99.1	102.1	107.5	111.0	111.3	111.7	112.6
2,100.0	70	3,152	126.2	88.5	104.3	97.8	98.4	101.7	107.0	111.0	110.8	111.6	112.2
1,800.0	60	2,729	126.5	88.1	103.7	97.8	96.9	100.9	106.0	111.0	109.8	111.2	111.4
1,500.0	50	2,305	126.7	87.7	103.0	97.8	95.4	100.2	105.1	111.0	108.8	110.9	110.5
1,200.0	40	1,882	127.0	87.3	102.4	97.7	94.0	99.4	104.1	110.9	107.8	110.6	109.7
900.0	30	1,458	127.2	86.9	101.7	97.7	92.5	98.6	103.1	110.9	106.8	110.2	108.9
750.0	25	1,246	127.3	86.7	101.4	97.7	91.8	98.2	102.6	110.9	106.3	110.1	108.5
600.0	20	1,035	127.4	86.4	101.0	97.7	91.0	97.9	102.1	110.9	105.8	109.9	108.1
300.0	10	611	127.7	86.0	100.4	97.7	89.6	97.1	101.2	110.9	104.8	109.6	107.2

MECHANICAL:SOUND POWER(1/3 Octave Frequencies)

GENSET POWER WITH FAN	PERCENT LOAD	ENGINE POWER	1000 HZ	1250 HZ	1600 HZ	2000 HZ	2500 HZ	3150 HZ	4000 HZ	5000 HZ	6300 HZ	8000 HZ	10000 HZ
EKW	%	BHP	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)
3,000.0	100	4,423	112.7	113.9	114.6	115.3	115.0	112.7	110.9	111.9	114.3	113.4	117.8
2,700.0	90	3,999	112.5	113.7	114.5	115.0	114.5	112.3	110.4	111.1	113.6	112.9	119.2
2,400.0	80	3,576	112.2	113.2	113.8	114.4	114.2	111.9	110.0	110.7	113.2	112.6	121.4
2,250.0	75	3,364	112.0	112.9	113.4	114.0	114.2	111.7	109.8	110.5	112.9	112.6	122.6
2,100.0	70	3,152	111.8	112.6	113.0	113.7	114.1	111.4	109.6	110.3	112.7	112.5	123.8
1,800.0	60	2,729	111.3	112.1	112.2	113.1	113.9	111.0	109.3	110.0	112.3	112.3	126.2
1,500.0	50	2,305	110.9	111.5	111.4	112.4	113.7	110.6	109.0	109.6	111.9	112.1	128.6
1,200.0	40	1,882	110.5	110.9	110.5	111.7	113.5	110.2	108.6	109.3	111.5	111.9	131.0
900.0	30	1,458	110.1	110.3	109.7	111.1	113.4	109.8	108.3	109.0	111.0	111.8	133.4
750.0	25	1,246	109.9	110.0	109.3	110.7	113.3	109.6	108.1	108.8	110.8	111.7	134.6
600.0	20	1,035	109.7	109.7	108.9	110.4	113.2	109.3	107.9	108.6	110.6	111.6	135.8
300.0	10	611	109.3	109.2	108.1	109.7	113.0	108.9	107.6	108.3	110.2	111.4	138.2

Emissions Data

DIESEL

RATED SPEED NOMINAL DATA: 1800 RPM

GENSET POWER WITH FAN	EKW	3,000.0	2,700.0	2,250.0	1,500.0	750.0	300.0
PERCENT LOAD	%	100	90	75	50	25	10
ENGINE POWER	BHP	4,423	3,999	3,364	2,305	1,246	611
TOTAL NOX (AS NO2)	G/HR	26,766	23,378	17,949	7,858	3,175	2,792
TOTAL CO	G/HR	1,477	1,812	1,917	994	1,008	1,017
TOTAL HC	G/HR	184	146	139	269	289	261
TOTAL CO2	KG/HR	2,236	1,976	1,651	1,287	779	428

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PART MATTER	G/HR	115.0	122.3	121.5	87.6	96.1	92.4
TOTAL NOX (AS NO2)	(CORR 5% O2) MG/NM3	3,103.2	3,082.7	2,787.9	1,561.9	1,050.9	1,867.9
TOTAL CO	(CORR 5% O2) MG/NM3	149.2	215.1	257.1	167.9	279.0	557.1
TOTAL HC	(CORR 5% O2) MG/NM3	15.7	13.1	16.2	40.1	72.0	121.7
PART MATTER	(CORR 5% O2) MG/NM3	10.0	12.2	14.2	13.1	24.2	45.9
TOTAL NOX (AS NO2)	(CORR 15% O2) MG/NM3	1,151.5	1,143.9	1,034.5	579.6	390.0	693.1
TOTAL CO	(CORR 15% O2) MG/NM3	55.4	79.8	95.4	62.3	103.5	206.7
TOTAL HC	(CORR 15% O2) MG/NM3	5.8	4.9	6.0	14.9	26.7	45.1
PART MATTER	(CORR 15% O2) MG/NM3	3.7	4.5	5.3	4.9	9.0	17.0
TOTAL NOX (AS NO2)	(CORR 5% O2) PPM	1,512	1,502	1,358	761	512	910
TOTAL CO	(CORR 5% O2) PPM	119	172	206	134	223	446
TOTAL HC	(CORR 5% O2) PPM	29	24	30	75	134	227
TOTAL NOX (AS NO2)	(CORR 15% O2) PPM	561	557	504	282	190	338
TOTAL CO	(CORR 15% O2) PPM	44	64	76	50	83	165
TOTAL HC	(CORR 15% O2) PPM	11	9	11	28	50	84
TOTAL NOX (AS NO2)	G/HP-HR	6.07	5.86	5.35	3.41	2.55	4.56
TOTAL CO	G/HP-HR	0.34	0.45	0.57	0.43	0.81	1.66
TOTAL HC	G/HP-HR	0.04	0.04	0.04	0.12	0.23	0.43
PART MATTER	G/HP-HR	0.03	0.03	0.04	0.04	0.08	0.15
TOTAL NOX (AS NO2)	G/KW-HR	8.25	7.97	7.27	4.64	3.46	6.20
TOTAL CO	G/KW-HR	0.46	0.62	0.78	0.59	1.10	2.26
TOTAL HC	G/KW-HR	0.06	0.05	0.06	0.16	0.32	0.58
PART MATTER	G/KW-HR	0.04	0.04	0.05	0.05	0.10	0.21
TOTAL NOX (AS NO2)	LB/HR	59.01	51.54	39.57	17.32	7.00	6.16
TOTAL CO	LB/HR	3.26	3.99	4.23	2.19	2.22	2.24
TOTAL HC	LB/HR	0.41	0.32	0.31	0.59	0.64	0.57
TOTAL CO2	LB/HR	4,930	4,357	3,639	2,836	1,717	943
PART MATTER	LB/HR	0.25	0.27	0.27	0.19	0.21	0.20
OXYGEN IN EXH	%	9.6	9.8	10.2	11.6	12.7	14.5
DRY SMOKE OPACITY	%	0.3	0.6	0.8	0.0	0.5	1.9
BOSCH SMOKE NUMBER		0.70	0.73	0.74	0.64	0.71	0.85

RATED SPEED POTENTIAL SITE VARIATION: 1800 RPM

GENSET POWER WITH FAN	EKW	3,000.0	2,700.0	2,250.0	1,500.0	750.0	300.0
PERCENT LOAD	%	100	90	75	50	25	10
ENGINE POWER	BHP	4,423	3,999	3,364	2,305	1,246	611
TOTAL NOX (AS NO2)	G/HR	32,120	28,053	21,539	9,430	3,810	3,351
TOTAL CO	G/HR	2,658	3,261	3,451	1,789	1,814	1,830
TOTAL HC	G/HR	245	194	185	358	385	347
PART MATTER	G/HR	160.9	171.2	170.2	122.6	134.5	129.4
TOTAL NOX (AS NO2)	(CORR 5% O2) MG/NM3	3,723.8	3,699.3	3,345.5	1,874.3	1,261.1	2,241.5
TOTAL CO	(CORR 5% O2) MG/NM3	268.6	387.2	462.8	302.2	502.2	1,002.8
TOTAL HC	(CORR 5% O2) MG/NM3	20.9	17.4	21.5	53.3	95.7	161.8
PART MATTER	(CORR 5% O2) MG/NM3	14.0	17.1	19.8	18.4	33.9	64.3
TOTAL NOX (AS NO2)	(CORR 15% O2) MG/NM3	1,381.8	1,372.7	1,241.4	695.5	468.0	831.7
TOTAL CO	(CORR 15% O2) MG/NM3	99.7	143.7	171.7	112.1	186.3	372.1
TOTAL HC	(CORR 15% O2) MG/NM3	7.7	6.5	8.0	19.8	35.5	60.0
PART MATTER	(CORR 15% O2) MG/NM3	5.2	6.4	7.4	6.8	12.6	23.8
TOTAL NOX (AS NO2)	(CORR 5% O2) PPM	1,814	1,802	1,630	913	614	1,092
TOTAL CO	(CORR 5% O2) PPM	215	310	370	242	402	802
TOTAL HC	(CORR 5% O2) PPM	39	33	40	100	179	302
TOTAL NOX (AS NO2)	(CORR 15% O2) PPM	673	669	605	339	228	405
TOTAL CO	(CORR 15% O2) PPM	80	115	137	90	149	298
TOTAL HC	(CORR 15% O2) PPM	14	12	15	37	66	112
TOTAL NOX (AS NO2)	G/HP-HR	7.29	7.03	6.42	4.09	3.05	5.47
TOTAL CO	G/HP-HR	0.60	0.82	1.03	0.78	1.45	2.99
TOTAL HC	G/HP-HR	0.06	0.05	0.06	0.16	0.31	0.57
PART MATTER	G/HP-HR	0.04	0.04	0.05	0.05	0.11	0.21
TOTAL NOX (AS NO2)	G/KW-HR	9.91	9.56	8.73	5.57	4.15	7.44

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TOTAL CO	G/KW-HR	0.82	1.11	1.40	1.06	1.98	4.07
TOTAL HC	G/KW-HR	0.08	0.07	0.08	0.21	0.42	0.77
PART MATTER	G/KW-HR	0.05	0.06	0.07	0.07	0.15	0.29
TOTAL NOX (AS NO2)	LB/HR	70.81	61.85	47.49	20.79	8.40	7.39
TOTAL CO	LB/HR	5.86	7.19	7.61	3.94	4.00	4.03
TOTAL HC	LB/HR	0.54	0.43	0.41	0.79	0.85	0.76
PART MATTER	LB/HR	0.35	0.38	0.38	0.27	0.30	0.29

Regulatory Information

EPA TIER 2			2006 - 2010	
GASEOUS EMISSIONS DATA MEASUREMENTS PROVIDED TO THE EPA ARE CONSISTENT WITH THOSE DESCRIBED IN EPA 40 CFR PART 89 SUBPART D AND ISO 8178 FOR MEASURING HC, CO, PM, AND NOX. THE "MAX LIMITS" SHOWN BELOW ARE WEIGHTED CYCLE AVERAGES AND ARE IN COMPLIANCE WITH THE NON-ROAD REGULATIONS.				
Locality	Agency	Regulation	Tier/Stage	Max Limits - G/BKW - HR
U.S. (INCL CALIF)	EPA	NON-ROAD	TIER 2	CO: 3.5 NOx + HC: 6.4 PM: 0.20

EPA EMERGENCY STATIONARY			2011 - ---	
GASEOUS EMISSIONS DATA MEASUREMENTS PROVIDED TO THE EPA ARE CONSISTENT WITH THOSE DESCRIBED IN EPA 40 CFR PART 60 SUBPART IIII AND ISO 8178 FOR MEASURING HC, CO, PM, AND NOX. THE "MAX LIMITS" SHOWN BELOW ARE WEIGHTED CYCLE AVERAGES AND ARE IN COMPLIANCE WITH THE EMERGENCY STATIONARY REGULATIONS.				
Locality	Agency	Regulation	Tier/Stage	Max Limits - G/BKW - HR
U.S. (INCL CALIF)	EPA	STATIONARY	EMERGENCY STATIONARY	CO: 3.5 NOx + HC: 6.4 PM: 0.20

Altitude Derate Data

ALTITUDE DERATE DATA IS BASED ON THE ASSUMPTION OF A 20 DEGREES CELSIUS(36 DEGREES FAHRENHEIT) DIFFERENCE BETWEEN AMBIENT OPERATING TEMPERATURE AND ENGINE INLET SCAC TEMPERATURE. AMBIENT OPERATING TEMPERATURE IS DEFINED AS THE AIR TEMPERATURE MEASURED AT THE TURBOCHARGER COMPRESSOR INLET.

STANDARD

ALTITUDE CORRECTED POWER CAPABILITY (BHP)

AMBIENT OPERATING TEMP (F)	30	40	50	60	70	80	90	100	110	120	130	140	NORMAL
ALTITUDE (FT)													
0	4,423	4,423	4,423	4,423	4,423	4,423	4,423	4,423	4,423	4,423	4,423	4,423	4,423
1,000	4,423	4,423	4,423	4,423	4,423	4,423	4,423	4,423	4,423	4,423	4,423	4,405	4,423
2,000	4,423	4,423	4,423	4,423	4,423	4,423	4,423	4,423	4,423	4,423	4,423	4,355	4,423
3,000	4,423	4,423	4,423	4,423	4,423	4,423	4,423	4,423	4,423	4,376	4,309	4,216	4,423
4,000	4,345	4,345	4,345	4,345	4,345	4,345	4,344	4,344	4,343	4,280	4,190	4,100	4,345
5,000	4,174	4,174	4,174	4,174	4,174	4,174	4,173	4,172	4,170	4,130	4,073	4,017	4,174
6,000	4,015	4,015	4,015	4,015	4,015	4,015	4,013	4,011	4,008	3,988	3,960	3,933	4,015
7,000	3,868	3,868	3,868	3,868	3,868	3,868	3,866	3,863	3,859	3,853	3,847	3,840	3,868
8,000	3,751	3,751	3,751	3,751	3,751	3,751	3,749	3,745	3,742	3,736	3,729	3,723	3,751
9,000	3,634	3,634	3,634	3,634	3,634	3,634	3,633	3,628	3,624	3,618	3,612	3,606	3,634
10,000	3,523	3,523	3,523	3,523	3,523	3,523	3,521	3,517	3,512	3,506	3,500	3,495	3,523
11,000	3,417	3,417	3,417	3,417	3,417	3,417	3,415	3,411	3,406	3,400	3,394	3,388	3,417
12,000	3,312	3,312	3,312	3,312	3,312	3,312	3,310	3,304	3,299	3,294	3,288	3,282	3,312
13,000	3,206	3,206	3,206	3,206	3,206	3,206	3,204	3,198	3,193	3,188	3,182	3,176	3,206
14,000	3,100	3,100	3,100	3,100	3,100	3,100	3,098	3,093	3,088	3,083	3,079	3,074	3,100
15,000	2,993	2,993	2,993	2,993	2,993	2,993	2,991	2,988	2,984	2,981	2,977	2,974	2,993

Cross Reference

Test Spec	Setting	Engine Arrangement	Engineering Model	Engineering Model Version	Start Effective Serial Number	End Effective Serial Number
0K8532	LL6018	3079788	GS265	-	WYB01883	
0K8532	LL6018	5683569	PG323	-	TB800177	
0K8532	LL6018	5717349	PG323	-	TB800100	

Perf No: DM9368

Change Level: 04

General

Heat Rejection

Sound

Emissions

Regulatory

Altitude Derate

Cross Reference

Supplementary Data

Perf Param Ref

View PDF

SALES MODEL:	3516C	COMBUSTION:	DIRECT INJECTION
BRAND:	CAT	ENGINE SPEED (RPM):	1,800
MACHINE SALES MODEL:		HERTZ:	60
ENGINE POWER (BHP):	2,944	FAN POWER (HP):	130.1
GEN POWER WITH FAN (EKW):	2,000.0	ASPIRATION:	TA
COMPRESSION RATIO:	14	AFTERCOOLER TYPE:	ATAAC
RATING LEVEL:	STANDBY	AFTERCOOLER CIRCUIT TYPE:	JW+OC, ATAAC
PUMP QUANTITY:	1	INLET MANIFOLD AIR TEMP (F):	113
FUEL TYPE:	DIESEL	JACKET WATER TEMP (F):	210.2
MANIFOLD TYPE:	DRY	TURBO CONFIGURATION:	PARALLEL
GOVERNOR TYPE:	ADEM4	TURBO QUANTITY:	4
ELECTRONICS TYPE:	ADEM4	TURBOCHARGER MODEL:	GTB6041BN-48T-1.04
CAMSHAFT TYPE:	STANDARD	CERTIFICATION YEAR:	2011
IGNITION TYPE:	CI	FUEL RATE (RATED RPM) NO LOAD (GAL/HR):	16.1
INJECTOR TYPE:	EUI	PISTON SPD @ RATED ENG SPD (FT/MIN):	2,539.4
REF EXH STACK DIAMETER (IN):	12		
MAX OPERATING ALTITUDE (FT):	9,022		

INDUSTRY	SUB INDUSTRY	APPLICATION
ELECTRIC POWER	STANDARD	PACKAGED GENSET
OIL AND GAS	LAND PRODUCTION	PACKAGED GENSET

General Performance Data [Top](#)

Note(s)

THE INLET MANIFOLD AIR TEMP LISTED IN THE HEADER, AND IN THE GENERAL PERFORMANCE DATA, IS THE AVERAGE INLET MANIFOLD TEMP FRONT TO REAR ON THE ENGINE.

GENSET POWER WITH FAN	PERCENT LOAD	ENGINE POWER	BRAKE MEAN EFF PRES (BMEP)	BRAKE SPEC FUEL CONSUMPTN (BSFC)	ISO BRAKE SPEC FUEL CONSUMPTN (BSFC)	VOL FUEL CONSUMPTN (VFC)	ISO VOL FUEL CONSUMPTN (VFC)	ELEC SPEC FUEL CONSUMPTN (ESFC)	ISO ELEC SPEC FUEL CONSUMPTN (ESFC)
EKW	%	BHP	PSI	LB/BHP-HR	LB/BHP-HR	GAL/HR	GAL/HR	LB/EKW-HR	LB/EKW-HR
2,000.0	100	2,941	272	0.332	0.325	137.6	135.0	0.488	0.479
1,800.0	90	2,660	246	0.333	0.326	124.8	122.4	0.492	0.482
1,600.0	80	2,382	220	0.335	0.329	112.5	110.3	0.499	0.489
1,500.0	75	2,243	207	0.337	0.331	106.6	104.6	0.504	0.495
1,400.0	70	2,104	194	0.341	0.334	101.1	99.2	0.512	0.502
1,200.0	60	1,828	169	0.350	0.343	90.1	88.4	0.532	0.522
1,000.0	50	1,552	143	0.354	0.347	77.5	76.0	0.550	0.539
800.0	40	1,282	118	0.361	0.354	65.3	64.0	0.579	0.568
600.0	30	1,010	93	0.375	0.368	53.4	52.4	0.631	0.619
500.0	25	872	81	0.384	0.376	47.1	46.2	0.669	0.656
400.0	20	731	67	0.392	0.384	40.4	39.6	0.716	0.702
200.0	10	438	40	0.445	0.437	27.5	26.9	0.974	0.956

GENSET POWER WITH FAN	PERCENT LOAD	ENGINE POWER	INLET MFLD PRES	INLET MFLD TEMP	EXH MFLD TEMP	EXH MFLD PRES	ENGINE OUTLET TEMP	COMPRESSOR OUTLET PRES	COMPRESSOR OUTLET TEMP
EKW	%	BHP	IN-HG	DEG F	DEG F	IN-HG	DEG F	IN-HG	DEG F
2,000.0	100	2,941	58.4	111.5	1,204.7	49.7	916.8	63	370.0
1,800.0	90	2,660	51.5	108.3	1,175.1	44.3	910.4	56	346.3
1,600.0	80	2,382	45.0	105.5	1,144.6	39.3	898.3	49	322.3
1,500.0	75	2,243	42.0	104.3	1,129.6	37.0	891.6	46	310.4
1,400.0	70	2,104	39.4	103.4	1,114.9	34.9	884.8	43	299.9
1,200.0	60	1,828	34.3	102.1	1,086.2	31.1	869.9	38	278.9
1,000.0	50	1,552	27.6	99.2	1,039.8	26.3	841.7	31	249.0
800.0	40	1,282	21.5	98.6	981.3	21.9	807.4	24	220.0
600.0	30	1,010	16.1	97.7	904.6	18.2	760.3	18	191.9
500.0	25	872	13.4	96.3	850.1	16.2	717.9	16	176.6
400.0	20	731	10.3	94.7	778.0	13.9	657.1	12	158.5
200.0	10	438	5.6	92.5	616.7	10.5	529.7	7	131.6

GENSET POWER WITH FAN	PERCENT LOAD	ENGINE POWER	WET INLET AIR VOL FLOW RATE	ENGINE OUTLET WET EXH GAS VOL FLOW RATE	WET INLET AIR MASS FLOW RATE	WET EXH GAS MASS FLOW RATE	WET EXH VOL FLOW RATE (32 DEG F AND 29.98 IN HG)	DRY EXH VOL FLOW RATE (32 DEG F AND 29.98 IN HG)
EKW	%	BHP	CFM	CFM	LB/HR	LB/HR	FT3/MIN	FT3/MIN
2,000.0	100	2,941	6,117.8	16,296.7	26,679.4	27,655.5	5,821.1	5,313.4
1,800.0	90	2,660	5,649.7	14,919.1	24,540.7	25,426.4	5,353.9	4,890.6
1,600.0	80	2,382	5,233.5	13,623.3	22,636.4	23,434.5	4,932.6	4,514.1
1,500.0	75	2,243	5,044.5	13,036.8	21,779.2	22,536.4	4,743.5	4,345.6
1,400.0	70	2,104	4,872.6	12,509.4	21,010.6	21,728.4	4,574.6	4,195.7
1,200.0	60	1,828	4,529.8	11,461.7	19,497.9	20,136.8	4,238.6	3,897.3
1,000.0	50	1,552	4,081.8	10,058.8	17,503.2	18,052.8	3,800.4	3,505.0
800.0	40	1,282	3,648.3	8,709.5	15,591.9	16,054.7	3,379.6	3,128.5
600.0	30	1,010	3,264.0	7,477.9	13,930.3	14,309.0	3,013.6	2,804.2
500.0	25	872	3,074.2	6,792.8	13,112.0	13,446.6	2,836.3	2,648.4
400.0	20	731	2,849.6	5,937.6	12,132.8	12,419.2	2,614.1	2,450.9
200.0	10	438	2,527.3	4,684.4	10,754.6	10,949.4	2,327.8	2,206.2

Heat Rejection Data [Top](#)

Note(s)
HEAT REJECTION TO ATMOSPHERE SHOWN HERE IS ENGINE ONLY. CEM HEAT REJECTION TO ATMOSPHERE SHOWN IN THE SUPPLEMENTARY DATA IS THE ADDITIONAL HEAT REJECTED TO ATMOSPHERE FROM THE CEM. THIS ADDITIONAL HEAT IS INCLUDED IN THE TOTAL HEAT REJECTION TO ATMOSPHERE.

GENSET POWER WITH FAN	PERCENT LOAD	ENGINE POWER	REJECTION TO JACKET WATER	REJECTION TO ATMOSPHERE	REJECTION TO EXH	EXHAUST RECOVERY TO 350F	FROM OIL COOLER	FROM AFTERCOOLER	WORK ENERGY	LOW HEAT VALUE ENERGY	HIGH HEAT VALUE ENERGY
EKW	%	BHP	BTU/MIN	BTU/MIN	BTU/MIN	BTU/MIN	BTU/MIN	BTU/MIN	BTU/MIN	BTU/MIN	BTU/MIN
2,000.0	100	2,941	40,137	8,595	117,592	66,550	15,934	27,755	124,739	299,165	318,686
1,800.0	90	2,660	37,265	8,230	107,071	60,439	14,452	23,576	112,812	271,341	289,046
1,600.0	80	2,382	34,765	7,921	96,968	54,405	13,027	19,880	100,998	244,583	260,543
1,500.0	75	2,243	33,626	7,807	92,267	51,635	12,352	18,062	95,121	231,910	247,042
1,400.0	70	2,104	32,494	7,660	88,043	49,106	11,709	16,552	89,226	219,828	234,172
1,200.0	60	1,828	30,269	7,310	79,707	44,130	10,432	13,963	77,505	195,863	208,643
1,000.0	50	1,552	27,435	6,926	68,593	37,291	8,972	10,585	65,823	168,453	179,445
800.0	40	1,282	24,601	6,521	58,060	30,727	7,559	7,637	54,383	141,923	151,184
600.0	30	1,010	21,553	6,025	47,781	24,426	6,182	5,286	42,840	116,063	123,636
500.0	25	872	20,101	5,692	42,164	20,481	5,460	4,213	36,971	102,516	109,205
400.0	20	731	18,971	5,327	35,071	15,693	4,675	3,089	30,983	87,777	93,505
200.0	10	438	14,511	4,702	24,157	7,981	3,182	1,703	18,564	59,734	63,631

Sound Data [Top](#)

Note(s)
SOUND DATA REPRESENTATIVE OF NOISE PRODUCED BY THE "ENGINE AND CEM" AS A UNIT WITHOUT A MUFFLER INSTALLED

EXHAUST:SOUND POWER(1/3 Octave Frequencies)

GENSET POWER WITH FAN	PERCENT LOAD	ENGINE POWER	OVERALL SOUND	100 HZ	125 HZ	160 HZ	200 HZ	250 HZ	315 HZ	400 HZ	500 HZ	630 HZ	800 HZ
EKW	%	BHP	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)
2,000.0	100	2,941	97.8	68.7	75.2	74.3	82.8	87.5	87.1	84.5	88.6	88.2	91.2
1,800.0	90	2,660	95.8	67.9	74.7	72.8	80.9	85.7	85.4	83.1	86.6	86.1	88.8
1,600.0	80	2,382	94.0	67.4	74.6	71.3	79.2	84.1	84.0	82.4	85.0	84.3	86.7
1,500.0	75	2,243	93.2	67.2	74.7	70.6	78.4	83.4	83.5	82.1	84.2	83.4	85.6
1,400.0	70	2,104	92.3	67.0	74.7	69.8	77.5	82.7	82.8	81.8	83.4	82.5	84.6
1,200.0	60	1,828	90.7	66.6	74.9	68.3	75.7	81.2	81.5	81.3	81.8	80.8	82.6
1,000.0	50	1,552	89.4	64.9	75.8	67.5	74.6	79.5	79.8	80.5	80.4	79.6	81.1
800.0	40	1,282	88.0	65.1	75.5	65.7	72.7	78.2	78.9	80.2	78.9	77.6	78.8
600.0	30	1,010	86.6	64.6	75.5	64.9	70.8	76.6	77.4	79.4	77.3	75.9	76.8
500.0	25	872	86.2	62.8	76.3	65.9	70.4	75.4	75.9	78.6	76.4	75.6	76.5
400.0	20	731	85.9	60.9	77.1	67.0	70.1	74.4	74.5	77.8	75.5	75.5	76.4
200.0	10	438	85.8	60.5	77.3	67.2	70.0	74.2	74.2	77.6	75.3	75.5	76.3

EXHAUST:SOUND POWER(1/3 Octave Frequencies)

GENSET POWER WITH FAN	PERCENT LOAD	ENGINE POWER	1000 HZ	1250 HZ	1600 HZ	2000 HZ	2500 HZ	3150 HZ	4000 HZ	5000 HZ	6300 HZ	8000 HZ	10000 HZ
EKW	%	BHP	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)
2,000.0	100	2,941	90.3	85.2	82.8	79.8	77.1	73.8	69.3	63.6	63.3	55.1	61.1
1,800.0	90	2,660	87.9	82.9	80.7	77.9	75.4	72.0	67.7	62.3	62.1	55.2	61.1
1,600.0	80	2,382	85.5	80.4	78.5	76.3	74.0	70.6	66.5	61.7	61.7	55.6	58.4
1,500.0	75	2,243	84.3	79.1	77.4	75.6	73.3	70.0	66.0	61.5	61.6	56.0	56.6
1,400.0	70	2,104	83.1	77.9	76.3	74.9	72.6	69.3	65.5	61.3	61.5	56.3	54.9
1,200.0	60	1,828	80.7	75.5	74.1	73.5	71.2	67.9	64.5	60.9	61.3	57.0	51.4
1,000.0	50	1,552	79.5	74.8	73.0	73.1	70.8	67.4	63.5	60.8	61.4	55.0	49.7
800.0	40	1,282	76.6	71.5	70.3	71.3	69.0	65.7	62.5	60.2	61.1	56.8	45.4
600.0	30	1,010	74.2	69.3	68.4	69.9	67.7	64.5	61.7	59.8	60.8	57.3	42.4
500.0	25	872	74.5	70.6	69.2	70.2	68.2	65.0	61.6	59.9	60.9	54.2	43.5
400.0	20	731	75.0	72.2	70.2	70.8	68.9	65.6	61.5	60.1	61.0	51.2	45.0
200.0	10	438	75.1	72.5	70.4	70.9	69.0	65.7	61.5	60.1	61.0	50.5	45.2

MECHANICAL:SOUND POWER(1/3 Octave Frequencies)

GENSET POWER WITH FAN	PERCENT LOAD	ENGINE POWER	OVERALL SOUND	100 HZ	125 HZ	160 HZ	200 HZ	250 HZ	315 HZ	400 HZ	500 HZ	630 HZ	800 HZ
EKW	%	BHP	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)
2,000.0	100	2,941	123.0	89.3	107.2	96.2	99.4	100.3	102.8	101.0	105.5	106.8	108.7
1,800.0	90	2,660	122.2	88.6	106.6	95.4	98.5	99.4	102.5	100.9	105.4	106.5	108.6
1,600.0	80	2,382	121.4	88.1	106.0	94.6	97.5	98.5	102.0	100.9	104.7	106.1	108.6
1,500.0	75	2,243	121.1	88.0	105.7	94.1	97.0	98.1	101.8	100.8	104.2	106.0	108.6
1,400.0	70	2,104	120.8	87.8	105.4	93.5	96.3	97.5	101.4	100.5	103.8	105.9	108.4
1,200.0	60	1,828	120.3	87.7	104.7	92.0	94.5	96.2	100.4	99.7	103.4	106.1	107.7
1,000.0	50	1,552	119.9	87.8	104.3	91.0	93.7	95.8	99.7	101.4	103.4	106.2	107.3
800.0	40	1,282	119.5	87.9	103.9	90.9	93.3	95.6	98.5	101.6	103.9	106.0	107.7
600.0	30	1,010	119.3	87.6	103.4	90.9	93.6	95.3	97.8	100.6	105.1	106.1	108.3
500.0	25	872	119.1	87.1	103.3	90.5	94.3	95.2	98.2	100.3	105.9	106.6	108.6
400.0	20	731	119.0	86.5	103.1	90.2	94.9	95.0	98.8	100.2	106.6	107.1	109.0
200.0	10	438	119.0	85.8	102.4	90.0	94.7	95.5	99.2	101.4	106.4	107.7	109.7

MECHANICAL:SOUND POWER(1/3 Octave Frequencies)

GENSET POWER WITH FAN	PERCENT LOAD	ENGINE POWER	1000 HZ	1250 HZ	1600 HZ	2000 HZ	2500 HZ	3150 HZ	4000 HZ	5000 HZ	6300 HZ	8000 HZ	10000 HZ
EKW	%	BHP	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)
2,000.0	100	2,941	112.2	113.0	111.8	111.5	110.6	110.0	109.1	108.6	107.3	106.4	117.7
1,800.0	90	2,660	112.1	112.5	111.3	111.2	110.3	109.7	108.8	108.3	106.8	106.2	115.9
1,600.0	80	2,382	111.8	111.9	110.9	110.7	109.8	109.2	108.2	107.8	106.2	106.4	113.6
1,500.0	75	2,243	111.6	111.6	110.7	110.3	109.6	109.0	107.9	107.5	105.9	106.8	112.4
1,400.0	70	2,104	111.4	111.3	110.5	109.9	109.4	108.7	107.5	107.2	105.7	108.0	110.7
1,200.0	60	1,828	111.1	110.8	110.3	109.5	109.0	108.2	106.9	106.6	105.4	111.2	106.5
1,000.0	50	1,552	110.9	110.7	110.0	109.4	108.8	108.1	106.5	106.2	105.2	109.7	102.5
800.0	40	1,282	110.9	110.6	109.5	109.1	108.7	107.7	106.0	105.9	107.0	105.7	100.0
600.0	30	1,010	110.8	110.2	108.8	108.8	108.4	107.3	105.4	105.6	107.7	101.8	98.3
500.0	25	872	110.7	109.9	108.6	108.7	108.3	107.0	105.1	105.7	106.0	100.6	97.5
400.0	20	731	110.7	109.7	108.4	108.6	108.2	106.8	104.8	105.7	104.0	99.7	96.6
200.0	10	438	110.3	109.8	108.1	108.4	108.1	106.8	105.7	104.9	102.0	98.7	95.0

Note(s)

EMISSIONS VALUES ARE TAILPIPE OUT WITH AFTERTREATMENT. VALUES SHOWN AS ZERO MAY BE GREATER THAN ZERO BUT WERE BELOW THE DETECTION LEVEL OF THE EQUIPMENT USED AT TIME OF MEASUREMENT.

CATERPILLAR EMISSIONS CERTIFIED ENGINES TESTED WITHIN EPA SPECIFIED TEST CONDITIONS, AND USING TITLE 40 CFR PART 1065 TEST PROTOCOL, MEET THE NEW SOURCE PERFORMANCE STANDARDS. POTENTIAL SITE VARIATION DATA ACCOUNT

DIESEL

RATED SPEED NOMINAL DATA: 1800 RPM

GENSET POWER WITH FAN ENGINE POWER PERCENT LOAD		EKW BHP %	2,000.0 2,941 100	1,500.0 2,243 75	1,000.0 1,552 50	500.0 872 25	200.0 438 10
METHANOL	(CORR 15% O2)	PPM	0.001	0.0019063154	0.001	0.0017393932	0.010328611
TOTAL NOX (AS NO2)		G/HR	1,117	775	462	274	336
TOTAL CO		G/HR	72	49	32	20	16
TOTAL HC		G/HR	21	24	23	18	22
TOTAL CO2		KG/HR	1,445	1,110	805	489	287
PART MATTER		G/HR	26.7	26.2	23.6	21.3	9.3
TOTAL NOX (AS NO2)	(CORR 5% O2)	MG/NM3	168.4	151.9	125.6	123.1	268.6
TOTAL CO	(CORR 5% O2)	MG/NM3	11.4	10.1	9.1	9.3	12.8
TOTAL HC	(CORR 5% O2)	MG/NM3	2.9	4.3	5.6	7.3	15.2
PART MATTER	(CORR 5% O2)	MG/NM3	3.5	4.5	5.7	8.6	6.9
TOTAL NOX (AS NO2)	(CORR 15% O2)	MG/NM3	62.5	56.4	46.6	45.7	99.7
TOTAL CO	(CORR 15% O2)	MG/NM3	4.2	3.8	3.4	3.4	4.8
TOTAL HC	(CORR 15% O2)	MG/NM3	1.1	1.6	2.1	2.7	5.7
PART MATTER	(CORR 15% O2)	MG/NM3	1.3	1.7	2.1	3.2	2.5
TOTAL NOX (AS NO2)	(CORR 5% O2)	PPM	82	74	61	60	131
TOTAL CO	(CORR 5% O2)	PPM	9	8	7	7	10
TOTAL HC	(CORR 5% O2)	PPM	5	8	10	14	28
FORMALDEHYDE	(CORR 5% O2)	PPM	0.05	0.05	0.05	0.11	0.37
ACROLEIN	(CORR 5% O2)	PPM	0.01	0.00	0.00	0.00	0.01
ACETALDEHYDE	(CORR 5% O2)	PPM	0.01	0.01	0.01	0.01	0.02
METHANOL	(CORR 5% O2)	PPM	0.00	0.01	0.00	0.00	0.03
TOTAL NOX (AS NO2)	(CORR 15% O2)	PPM	30	27	23	22	49
TOTAL CO	(CORR 15% O2)	PPM	3	3	3	3	4
TOTAL HC	(CORR 15% O2)	PPM	2	3	4	5	11
TOTAL NOX (AS NO2)		G/HP-HR	0.38	0.35	0.30	0.32	0.77
TOTAL CO		G/HP-HR	0.02	0.02	0.02	0.02	0.04
TOTAL HC		G/HP-HR	0.01	0.01	0.01	0.02	0.05
PART MATTER		G/HP-HR	0.01	0.01	0.02	0.02	0.02
TOTAL NOX (AS NO2)		G/KW-HR	0.52	0.47	0.41	0.43	1.05
TOTAL CO		G/KW-HR	0.03	0.03	0.03	0.03	0.05
TOTAL HC		G/KW-HR	0.01	0.01	0.02	0.03	0.07
PART MATTER		G/KW-HR	0.01	0.02	0.02	0.03	0.03
TOTAL NOX (AS NO2)		LB/HR	2.46	1.71	1.02	0.60	0.74
TOTAL CO		LB/HR	0.16	0.11	0.07	0.04	0.03
TOTAL HC		LB/HR	0.05	0.05	0.05	0.04	0.05
TOTAL CO2		LB/HR	3,185	2,447	1,776	1,077	632
PART MATTER		LB/HR	0.06	0.06	0.05	0.05	0.02
OXYGEN IN EXH		%	9.6	10.3	11.4	13.2	15.5
DRY SMOKE OPACITY		%	0.0	0.0	0.5	1.4	0.6
BOSCH SMOKE NUMBER			0.66	0.67	0.73	0.80	0.73

RATED SPEED POTENTIAL SITE VARIATION: 1800 RPM

GENSET POWER WITH FAN ENGINE POWER PERCENT LOAD		EKW BHP %	2,000.0 2,941 100	1,500.0 2,243 75	1,000.0 1,552 50	500.0 872 25	200.0 438 10
TOTAL NOX (AS NO2)		G/HR	1,788	1,240	740	438	537
TOTAL CO		G/HR	367	251	165	102	81
TOTAL HC		G/HR	95	108	102	81	99
PART MATTER		G/HR	69.3	68.2	61.4	55.3	24.3
TOTAL NOX (AS NO2)	(CORR 5% O2)	MG/NM3	269.4	243.1	200.9	196.9	429.7
TOTAL CO	(CORR 5% O2)	MG/NM3	58.0	51.6	46.6	47.3	65.3
TOTAL HC	(CORR 5% O2)	MG/NM3	12.9	19.3	25.0	32.6	68.5
PART MATTER	(CORR 5% O2)	MG/NM3	9.1	11.8	14.8	22.4	17.8
TOTAL NOX (AS NO2)	(CORR 15% O2)	MG/NM3	100.0	90.2	74.5	73.1	159.5
TOTAL CO	(CORR 15% O2)	MG/NM3	21.5	19.2	17.3	17.5	24.2
TOTAL HC	(CORR 15% O2)	MG/NM3	4.8	7.1	9.3	12.1	25.4
PART MATTER	(CORR 15% O2)	MG/NM3	3.4	4.4	5.5	8.3	6.6
TOTAL NOX (AS NO2)	(CORR 5% O2)	PPM	131	118	98	96	209
TOTAL CO	(CORR 5% O2)	PPM	46	41	37	38	52
TOTAL HC	(CORR 5% O2)	PPM	24	36	47	61	128
TOTAL NOX (AS NO2)	(CORR 15% O2)	PPM	49	44	36	36	78
TOTAL CO	(CORR 15% O2)	PPM	17	15	14	14	19
TOTAL HC	(CORR 15% O2)	PPM	9	13	17	23	47
TOTAL NOX (AS NO2)		G/HP-HR	0.61	0.56	0.48	0.50	1.23
TOTAL CO		G/HP-HR	0.13	0.11	0.11	0.12	0.19
TOTAL HC		G/HP-HR	0.03	0.05	0.07	0.09	0.23
PART MATTER		G/HP-HR	0.02	0.03	0.04	0.06	0.06
TOTAL NOX (AS NO2)		G/KW-HR	0.83	0.76	0.65	0.69	1.68
TOTAL CO		G/KW-HR	0.17	0.15	0.15	0.16	0.25
TOTAL HC		G/KW-HR	0.04	0.07	0.09	0.13	0.31
PART MATTER		G/KW-HR	0.03	0.04	0.05	0.09	0.08
TOTAL NOX (AS NO2)		LB/HR	3.94	2.73	1.63	0.96	1.18
TOTAL CO		LB/HR	0.81	0.55	0.36	0.22	0.18
TOTAL HC		LB/HR	0.21	0.24	0.22	0.18	0.22
PART MATTER		LB/HR	0.15	0.15	0.14	0.12	0.05

Regulatory Information [Top](#)

EPA TIER 4 FINAL		2015 - ----		
GASEOUS EMISSIONS DATA MEASUREMENTS PROVIDED TO THE EPA ARE CONSISTENT WITH THOSE DESCRIBED IN EPA 40 CFR PART 1039 SUBPART F AND ISO 8178 FOR MEASURING HC, CO, PM, AND NOX. THE "MAX LIMITS" SHOWN BELOW ARE WEIGHTED CYCLE AVERAGES AND ARE IN COMPLIANCE WITH THE NON-ROAD REGULATIONS BY PARTICIPATING IN THE AVERAGE, BANKING, AND TRADING PROGRAM.				
Locality U.S. (INCL CALIF)	Agency EPA	Regulation NON-ROAD GENSET	Tier/Stage TIER 4 FINAL	Max Limits - G/BKW - HR CO: 3.5 NOx: 0.67 HC: 0.19 PM: 0.03

EPA TIER 4 INTERIM		2011 - 2014		
GASEOUS EMISSIONS DATA MEASUREMENTS PROVIDED TO THE EPA ARE CONSISTENT WITH THOSE DESCRIBED IN EPA 40 CFR PART 1039 SUBPART F AND ISO 8178 FOR MEASURING HC, CO, PM, AND NOX. THE "MAX LIMITS" SHOWN BELOW ARE WEIGHTED CYCLE AVERAGES AND ARE IN COMPLIANCE WITH THE NON-ROAD REGULATIONS.				
Locality U.S. (INCL CALIF)	Agency EPA	Regulation NON-ROAD GENSET	Tier/Stage TIER 4 INTERIM	Max Limits - G/BKW - HR CO: 3.5 NOx: 0.67 HC: 0.4 PM: 0.10

EPA NON-EMERGENCY STATIONARY GENSET		2015 - ----		
GASEOUS EMISSIONS DATA MEASUREMENTS PROVIDED TO THE EPA ARE CONSISTENT WITH THOSE DESCRIBED IN EPA 40 CFR PART 60 SUBPART IIII AND ISO 8178 FOR MEASURING HC, CO, PM, AND NOX. THE "MAX LIMITS" SHOWN BELOW ARE WEIGHTED CYCLE AVERAGES AND ARE IN COMPLIANCE WITH THE NON-EMERGENCY STATIONARY REGULATIONS BY PARTICIPATING IN THE AVERAGE, BANKING, AND TRADING PROGRAM.				
Locality U.S. (INCL CALIF)	Agency EPA	Regulation STATIONARY	Tier/Stage NON-EMERGENCY STATIONARY GENSET	Max Limits - G/BKW - HR CO: 3.5 NOx: 0.67 HC: 0.19 PM: 0.03

STANDARD

ALTITUDE CORRECTED POWER CAPABILITY (BHP)													
AMBIENT OPERATING TEMP (F)	30	40	50	60	70	80	90	100	110	120	130	140	NORMAL
ALTITUDE (FT)													
0	2,944	2,944	2,944	2,944	2,944	2,944	2,944	2,944	2,944	2,944	2,944	2,944	2,944
1,000	2,944	2,944	2,944	2,944	2,944	2,944	2,944	2,944	2,944	2,944	2,944	2,944	2,944
2,000	2,944	2,944	2,944	2,944	2,944	2,944	2,944	2,944	2,944	2,944	2,944	2,944	2,944
3,000	2,944	2,944	2,944	2,944	2,944	2,944	2,944	2,944	2,944	2,944	2,944	2,944	2,944
4,000	2,944	2,944	2,944	2,944	2,944	2,944	2,944	2,944	2,944	2,944	2,944	2,944	2,944
5,000	2,944	2,944	2,944	2,944	2,944	2,944	2,944	2,944	2,944	2,944	2,944	2,944	2,944
6,000	2,944	2,944	2,944	2,944	2,944	2,944	2,944	2,944	2,944	2,935	2,885	2,837	2,944
7,000	2,944	2,944	2,944	2,944	2,944	2,944	2,944	2,926	2,874	2,825	2,777	2,730	2,944
8,000	2,944	2,944	2,944	2,944	2,944	2,919	2,866	2,815	2,766	2,718	2,672	2,627	2,944
9,000	2,944	2,944	2,944	2,916	2,861	2,808	2,757	2,708	2,660	2,614	2,570	2,527	2,944
10,000	2,944	2,916	2,859	2,804	2,751	2,700	2,651	2,604	2,558	2,514	2,471	2,430	2,853
11,000	2,861	2,804	2,749	2,696	2,645	2,596	2,549	2,503	2,459	2,417	2,376	2,336	2,762
12,000	2,750	2,695	2,642	2,591	2,542	2,495	2,449	2,406	2,363	2,323	2,283	2,245	2,673
13,000	2,642	2,589	2,539	2,490	2,443	2,397	2,354	2,312	2,271	2,232	2,194	2,157	2,587
14,000	2,539	2,488	2,439	2,392	2,347	2,303	2,262	2,221	2,182	2,144	2,108	2,073	2,504
15,000	2,439	2,390	2,343	2,298	2,255	2,213	2,173	2,134	2,096	2,060	2,025	1,991	2,423

Cross Reference [Top](#)

Test Spec	Setting	Engine Arrangement	Engineering Model	Engineering Model Version	Start Effective Serial Number	End Effective Serial Number
3704798	LL6338	3709874	GS538	-	SCJ00001	SCJ00114
3704981	GG0624	3994250	GS718	-	DD700001	
3704981	GG0624	5075758	GS538	-	SCJ01000	
4581574	LL6763	5157722	PG238	-	LY600001	
4581574	LL8887	5157722	PG238	-	LY600001	

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Type	Classification	Performance Number
AFTERTREATMENT	SCR	DM8842

Performance Parameter Reference [Top](#)

Parameters Reference: DM9600 - 15 PERFORMANCE DEFINITIONS PERFORMANCE DEFINITIONS DM9600 APPLICATION: Engine performance tolerance values below are representative of a typical production engine tested in a calibrated dynamometer test cell at SAE J1995 standard reference conditions. Caterpillar maintains ISO9001:2000 certified quality management systems for engine test Facilities to assure accurate calibration of test equipment. Engine test data is corrected in accordance with SAE J1995. Additional reference material SAE J1228, J1349, ISO 8665, 3046-1:2002E, 3046-3:1989, 1585, 2534, 2288, and 9249 may apply in part or are similar to SAE J1995. Special engine rating request (SERR) test data shall be noted. PERFORMANCE PARAMETER TOLERANCE FACTORS: Power +/- 3% Torque +/- 3% Exhaust stack temperature +/- 8% Inlet airflow +/- 5% Intake manifold pressure-gage +/- 10% Exhaust flow +/- 6% Specific fuel consumption +/- 3% Specific fuel consumption (C7-C18) +/- 4% Fuel rate +/- 5% Specific DEF consumption +/- 3% DEF rate +/- 5% Heat rejection +/- 5% Heat rejection exhaust only +/- 10% Heat rejection CEM only +/- 10% Heat Rejection values based on using treated water. Torque is included for truck and industrial applications, do not use for Gen Set or steady state applications. On C7 - C18 engines, at speeds of 1100 RPM and under these values are provided for reference only, and may not meet the tolerance listed. On 3500 and C175 engines, at speeds below Peak Torque these values are provided for reference only, and may not meet the tolerance listed. These values do not apply to C280/3600. For these models, see the tolerances listed below. C280/3600 HEAT REJECTION TOLERANCE FACTORS: Heat rejection +/- 10% Heat rejection to Atmosphere +/- 50% Heat rejection to Lube Oil +/- 20% Heat rejection to Aftercooler +/- 5% TEST CELL TRANSDUCER TOLERANCE FACTORS: Torque +/- 0.5% Speed +/- 0.2% Fuel flow +/- 1.0% Temperature +/- 2.0 C degrees Intake manifold pressure +/- 0.1 kPa OBSERVED ENGINE PERFORMANCE IS CORRECTED TO SAE J1995 REFERENCE AIR AND FUEL CONDITIONS. REFERENCE ATMOSPHERIC INLET AIR FOR 3500 ENGINES AND SMALLER SAE J1228 AUG2002 for marine engines, and J1995 JAN2014 for other engines, reference atmospheric pressure is 100 KPA (29.61 in hg), and standard temperature is 25deg C (77 deg F) at 30% relative humidity at the stated aftercooler water temp, or inlet manifold temp. FOR 3600 ENGINES Engine rating obtained and presented in accordance with ISO 3046/1 and SAE J1995 JANJAN2014 reference atmospheric pressure is 100 KPA (29.61 in hg), and standard temperature is 25deg C (77 deg F) at 30% relative humidity and 150M altitude at the stated aftercooler water temperature. MEASUREMENT LOCATION FOR INLET AIR TEMPERATURE Location for air temperature measurement air cleaner inlet at stabilized operating conditions. REFERENCE EXHAUST STACK DIAMETER The Reference Exhaust Stack Diameter published with this dataset is only used for the calculation of Smoke Opacity values displayed in this dataset. This value does not necessarily represent the actual stack diameter of the engine due to the variety of exhaust stack adapter options available. Consult the price list, engine order or general dimension drawings for the actual stack diameter size ordered or options available. REFERENCE FUEL DIESEL Reference fuel is #2 distillate diesel with a 35API gravity; A lower heating value is 42,780 KJ/KG (18,390 BTU/LB) when used at 15 deg C (59 deg F), where the density is 850 G/Liter (7.0936 Lbs/Gal). GAS Reference natural gas fuel has a lower heating value of 33.74 KJ/L (905 BTU/CU Ft). Low BTU ratings are based on 18.64 KJ/L (500 BTU/CU FT) lower heating value gas. Propane ratings are based on 87.56 KJ/L (2350 BTU/CU FT) lower heating value gas. ENGINE POWER (NET) IS THE CORRECTED FLYWHEEL POWER (GROSS) LESS EXTERNAL AUXILIARY LOAD Engine corrected gross output includes the power required to drive standard equipment; lube oil, scavenge lube oil, fuel transfer, common rail fuel, separate circuit aftercooler and jacket water pumps. Engine net power available for the external (flywheel) load is calculated by subtracting the sum of auxiliary load from the corrected gross flywheel out put power. Typical auxiliary loads are radiator cooling fans, hydraulic pumps, air compressors and battery charging alternators. For Tier 4 ratings additional Parasitic losses would also include Intake, and Exhaust Restrictions. ALTITUDE CAPABILITY Altitude capability is the maximum altitude above sea level at standard temperature and standard pressure at which the engine could develop full rated output power on the current performance data set. Standard temperature values versus altitude could be seen on TM2001. When viewing the altitude capability chart the ambient temperature is the inlet air temp at the compressor inlet. Engines with ADEM MEUI and HEUI fuel systems operating at conditions above the defined altitude capability derate for atmospheric pressure and temperature conditions outside the values defined, see TM2001. Mechanical governor controlled unit injector engines require a setting change for operation at conditions above the altitude defined on the engine performance sheet. See your Caterpillar technical representative for non standard ratings. REGULATIONS AND PRODUCT COMPLIANCE TMI Emissions information is presented at 'nominal' and 'Potential Site Variation' values for standard ratings. No tolerances are applied to the emissions data. These values are subject to change at any time. The controlling federal and local emission requirements need to be verified by your Caterpillar technical representative. Customer's may have special emission site requirements that need to be verified by the Caterpillar Product Group engineer. EMISSION CYCLE LIMITS: Cycle emissions Max Limits apply to cycle-weighted averages only. Emissions at individual load points may exceed the cycle-weighted limit. WET & DRY EXHAUST/EMISSIONS DESCRIPTION: Wet - Total exhaust flow or concentration of total exhaust flow Dry - Total exhaust flow minus water vapor or concentration of exhaust flow with water vapor excluded EMISSIONS DEFINITIONS: Emissions : DM1176
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Performance Number: DM8448

Change Level: 17

SALES MODEL:	C175-16	COMBUSTION:	DIRECT INJECTION
BRAND:	CAT	ENGINE SPEED (RPM):	1,800
MACHINE SALES MODEL:		HERTZ:	60
ENGINE POWER (BHP):	4,423	FAN POWER (HP):	187.7
GEN POWER WITH FAN (EKW):	3,000.0	ASPIRATION:	TA
COMPRESSION RATIO:	15.3	AFTERCOOLER TYPE:	SCAC
RATING LEVEL:	STANDBY	AFTERCOOLER CIRCUIT TYPE:	JW+OC+1AC, 2AC
PUMP QUANTITY:	2	AFTERCOOLER TEMP (F):	115
FUEL TYPE:	DIESEL	JACKET WATER TEMP (F):	210.2
MANIFOLD TYPE:	DRY	TURBO CONFIGURATION:	PARALLEL
GOVERNOR TYPE:	ADEM4	TURBO QUANTITY:	4
ELECTRONICS TYPE:	ADEM4	TURBOCHARGER MODEL:	GTB6251BN-48T-1,38
CAMSHAFT TYPE:	STANDARD	CERTIFICATION YEAR:	2014
IGNITION TYPE:	CI	CRANKCASE BLOWBY RATE (FT3/HR):	2,436.4
INJECTOR TYPE:	CR	FUEL RATE (RATED RPM) NO LOAD (GAL/HR):	22.9
FUEL INJECTOR:	4439455	PISTON SPD @ RATED ENG SPD (FT/MIN):	2,598.4
REF EXH STACK DIAMETER (IN):	14		

INDUSTRY	SUBINDUSTRY	APPLICATION
ELECTRIC POWER	STANDARD	PACKAGED GENSET
OIL AND GAS	LAND PRODUCTION	PACKAGED GENSET

General Performance Data

GENSET POWER WITH FAN	PERCENT LOAD	ENGINE POWER	BRAKE MEAN EFF PRES (BMEP)	BRAKE SPEC FUEL CONSUMPTN (BSFC)	ISO BRAKE SPEC FUEL CONSUMPTN (BSFC)	VOL FUEL CONSUMPTN (VFC)	ISO VOL FUEL CONSUMPTN (VFC)	ELEC SPEC FUEL CONSUMPTN (ESFC)	ISO ELEC SPEC FUEL CONSUMPTN (ESFC)
EKW	%	BHP	PSI	LB/BHP-HR	LB/BHP-HR	GAL/HR	GAL/HR	LB/EKW-HR	LB/EKW-HR
3,000.0	100	4,423	377	0.339	0.333	211.4	207.3	0.500	0.490
2,700.0	90	3,999	341	0.338	0.331	190.4	186.8	0.500	0.491
2,400.0	80	3,576	305	0.340	0.334	171.6	168.3	0.507	0.498
2,250.0	75	3,364	286	0.344	0.338	163.2	160.1	0.514	0.505
2,100.0	70	3,152	268	0.351	0.345	156.1	153.1	0.527	0.517
1,800.0	60	2,729	232	0.371	0.364	142.6	139.9	0.562	0.551
1,500.0	50	2,305	196	0.396	0.388	128.7	126.2	0.609	0.597
1,200.0	40	1,882	160	0.417	0.409	110.7	108.6	0.654	0.642
900.0	30	1,458	124	0.440	0.431	90.4	88.7	0.713	0.699
750.0	25	1,246	106	0.453	0.444	79.5	78.0	0.752	0.738
600.0	20	1,035	88	0.467	0.458	68.2	66.9	0.806	0.791
300.0	10	611	52	0.514	0.504	44.3	43.5	1.048	1.028

GENSET POWER WITH FAN	PERCENT LOAD	ENGINE POWER	INLET MFLD PRES	INLET MFLD TEMP	EXH MFLD TEMP	EXH MFLD PRES	ENGINE OUTLET TEMP	COMPRESSOR OUTLET PRES	COMPRESSOR OUTLET TEMP
EKW	%	BHP	IN-HG	DEG F	DEG F	IN-HG	DEG F	IN-HG	DEG F
3,000.0	100	4,423	91.5	131.3	1,229.8	64.3	891.9	92	451.5
2,700.0	90	3,999	81.4	129.6	1,193.4	56.5	879.2	82	414.6
2,400.0	80	3,576	73.0	128.3	1,163.0	50.0	869.4	74	384.7
2,250.0	75	3,364	69.5	127.8	1,150.7	47.5	865.8	70	373.0
2,100.0	70	3,152	67.1	127.6	1,142.6	45.8	864.2	68	366.1
1,800.0	60	2,729	62.7	127.3	1,127.7	42.8	861.6	65	354.0
1,500.0	50	2,305	57.5	126.9	1,109.9	39.5	858.0	60	339.0
1,200.0	40	1,882	46.4	125.8	1,083.9	32.9	848.4	50	308.0
900.0	30	1,458	34.8	124.5	1,041.6	25.3	834.7	39	267.2
750.0	25	1,246	29.0	123.8	1,014.2	21.3	826.5	33	243.5
600.0	20	1,035	23.2	123.2	961.6	17.6	797.3	27	217.8
300.0	10	611	11.7	122.1	752.4	10.6	649.3	14	160.9

General Performance Data (Continued)

GENSET POWER WITH FAN	PERCENT LOAD	ENGINE POWER	WET INLET AIR VOL FLOW RATE	ENGINE OUTLET WET EXH GAS VOL FLOW RATE	WET INLET AIR MASS FLOW RATE	WET EXH GAS MASS FLOW RATE	WET EXH VOL FLOW RATE (32 DEG F AND 29.98 IN HG)	DRY EXH VOL FLOW RATE (32 DEG F AND 29.98 IN HG)
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PERFORMANCE DATA[DM8448]

October 10, 2022

EKW	%	BHP	CFM	CFM	LB/HR	LB/HR	FT3/MIN	FT3/MIN
3,000.0	100	4,423	9,772.2	25,620.0	42,761.1	44,259.6	9,320.0	8,667.2
2,700.0	90	3,999	8,943.0	23,086.1	38,888.2	40,238.8	8,477.9	7,889.0
2,400.0	80	3,576	8,243.6	20,980.8	35,642.2	36,860.0	7,761.6	7,230.7
2,250.0	75	3,364	7,953.8	20,121.0	34,304.6	35,462.7	7,463.6	6,958.6
2,100.0	70	3,152	7,753.3	19,531.3	33,379.1	34,486.9	7,254.0	6,770.2
1,800.0	60	2,729	7,382.3	18,480.5	31,695.8	32,707.6	6,876.9	6,433.3
1,500.0	50	2,305	6,952.0	17,314.7	29,788.0	30,700.3	6,460.8	6,059.1
1,200.0	40	1,882	6,076.8	15,264.4	25,920.8	26,704.4	5,737.4	5,392.5
900.0	30	1,458	5,160.3	12,786.8	21,909.9	22,550.1	4,857.0	4,574.5
750.0	25	1,246	4,701.8	11,409.7	19,919.4	20,483.0	4,361.8	4,112.2
600.0	20	1,035	4,243.2	9,964.4	17,938.9	18,422.6	3,897.7	3,682.5
300.0	10	611	3,325.6	6,901.7	14,007.7	14,322.1	3,060.0	2,917.8

Heat Rejection Data

PUMP POWER IS INCLUDED IN HEAT REJECTION BALANCE, BUT IS NOT SHOWN.

GENSET POWER WITH FAN	PERCENT LOAD	ENGINE POWER	REJECTION TO JACKET WATER	REJECTION TO ATMOSPHERE	REJECTION TO EXH	EXHAUST RECOVERY TO 350F	FROM OIL COOLER	FROM 2ND STAGE AFTERCOOLER	WORK ENERGY	LOW HEAT VALUE ENERGY	HIGH HEAT VALUE ENERGY
EKW	%	BHP	BTU/MIN	BTU/MIN	BTU/MIN	BTU/MIN	BTU/MIN	BTU/MIN	BTU/MIN	BTU/MIN	BTU/MIN
3,000.0	100	4,423	78,059	8,307	178,226	101,475	24,373	27,992	187,548	457,607	487,466
2,700.0	90	3,999	69,753	7,694	159,943	89,988	21,844	22,735	169,590	410,123	436,884
2,400.0	80	3,576	62,814	7,204	144,872	80,799	19,611	18,646	151,631	368,192	392,217
2,250.0	75	3,364	59,856	7,005	138,541	77,146	18,605	17,040	142,651	349,309	372,102
2,100.0	70	3,152	57,690	6,871	134,338	74,726	17,781	16,060	133,672	333,838	355,621
1,800.0	60	2,729	54,063	6,651	127,402	70,419	16,278	14,739	115,714	305,626	325,568
1,500.0	50	2,305	50,535	6,481	119,941	65,533	14,768	13,646	97,755	277,263	295,355
1,200.0	40	1,882	45,772	6,336	107,141	55,828	12,870	11,188	79,796	241,627	257,393
900.0	30	1,458	39,631	6,219	90,342	45,754	10,669	8,349	61,838	200,308	213,378
750.0	25	1,246	36,078	6,172	80,662	40,805	9,471	7,028	52,858	177,821	189,424
600.0	20	1,035	31,984	6,027	70,162	34,336	8,207	5,910	43,879	154,087	164,142
300.0	10	611	21,611	5,163	46,779	17,588	5,475	4,318	25,920	102,790	109,497

Sound Data

SOUND DATA REPRESENTATIVE OF NOISE PRODUCED BY THE "ENGINE ONLY"

EXHAUST:SOUND POWER(1/3 Octave Frequencies)

GENSET POWER WITH FAN	PERCENT LOAD	ENGINE POWER	OVERALL SOUND	100 HZ	125 HZ	160 HZ	200 HZ	250 HZ	315 HZ	400 HZ	500 HZ	630 HZ	800 HZ
EKW	%	BHP	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)
3,000.0	100	4,423	134.5	109.7	115.8	113.7	115.5	116.0	119.0	119.9	121.5	120.4	121.2
2,700.0	90	3,999	133.2	110.2	116.1	112.6	114.3	114.5	117.3	118.4	120.1	118.3	119.5
2,400.0	80	3,576	132.0	111.6	116.6	111.0	112.7	113.0	115.6	116.9	118.4	116.5	117.7
2,250.0	75	3,364	131.4	112.4	116.8	110.2	111.9	112.3	114.8	116.2	117.6	115.6	116.8
2,100.0	70	3,152	130.7	113.2	117.1	109.3	111.1	111.6	114.0	115.5	116.8	114.7	115.9
1,800.0	60	2,729	129.5	114.8	117.6	107.5	109.4	110.2	112.3	114.1	115.1	113.0	114.0
1,500.0	50	2,305	128.2	116.3	118.1	105.8	107.8	108.7	110.6	112.6	113.4	111.2	112.2
1,200.0	40	1,882	127.0	117.9	118.6	104.1	106.1	107.3	108.9	111.2	111.8	109.5	110.3
900.0	30	1,458	125.7	119.5	119.1	102.3	104.4	105.9	107.3	109.8	110.1	107.7	108.5
750.0	25	1,246	125.1	120.2	119.3	101.4	103.6	105.2	106.4	109.1	109.3	106.8	107.6
600.0	20	1,035	124.4	121.0	119.6	100.6	102.8	104.5	105.6	108.4	108.4	105.9	106.7
300.0	10	611	123.2	122.6	120.0	98.8	101.1	103.0	103.9	106.9	106.8	104.2	104.8

EXHAUST:SOUND POWER(1/3 Octave Frequencies)

GENSET POWER WITH FAN	PERCENT LOAD	ENGINE POWER	1000 HZ	1250 HZ	1600 HZ	2000 HZ	2500 HZ	3150 HZ	4000 HZ	5000 HZ	6300 HZ	8000 HZ	10000 HZ
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EKW	%	BHP	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)
3,000.0	100	4,423	122.2	122.6	123.5	124.9	124.7	123.1	122.4	121.6	120.1	119.0	123.4
2,700.0	90	3,999	120.7	121.0	122.2	123.5	123.2	121.5	120.8	120.0	118.7	117.8	123.8
2,400.0	80	3,576	119.4	119.7	120.8	122.5	121.9	120.4	119.8	119.0	117.7	117.1	123.5
2,250.0	75	3,364	118.8	119.1	120.1	122.0	121.3	119.9	119.4	118.6	117.2	116.8	123.3
2,100.0	70	3,152	118.1	118.5	119.4	121.5	120.6	119.3	119.0	118.2	116.7	116.5	123.1
1,800.0	60	2,729	116.9	117.3	118.0	120.4	119.4	118.3	118.1	117.3	115.6	115.9	122.6
1,500.0	50	2,305	115.6	116.2	116.6	119.4	118.1	117.3	117.2	116.4	114.6	115.3	122.1
1,200.0	40	1,882	114.3	115.0	115.1	118.4	116.8	116.3	116.4	115.6	113.6	114.7	121.6
900.0	30	1,458	113.1	113.8	113.7	117.4	115.6	115.3	115.5	114.7	112.6	114.1	121.1
750.0	25	1,246	112.4	113.2	113.0	116.9	114.9	114.8	115.1	114.3	112.1	113.8	120.9
600.0	20	1,035	111.8	112.6	112.3	116.4	114.3	114.2	114.7	113.9	111.6	113.5	120.7
300.0	10	611	110.5	111.4	110.9	115.4	113.0	113.2	113.8	113.0	110.6	112.9	120.2

MECHANICAL:SOUND POWER(1/3 Octave Frequencies)

GENSET POWER WITH FAN	PERCENT LOAD	ENGINE POWER	OVERALL SOUND	100 HZ	125 HZ	160 HZ	200 HZ	250 HZ	315 HZ	400 HZ	500 HZ	630 HZ	800 HZ
EKW	%	BHP	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)
3,000.0	100	4,423	125.9	89.8	105.6	98.4	100.6	104.5	108.3	111.6	113.3	112.5	114.1
2,700.0	90	3,999	125.8	89.4	105.5	97.9	100.9	103.3	108.7	111.1	112.7	112.2	113.8
2,400.0	80	3,576	126.0	89.0	105.0	97.8	99.8	102.4	108.0	111.0	111.8	111.9	113.0
2,250.0	75	3,364	126.1	88.8	104.7	97.8	99.1	102.1	107.5	111.0	111.3	111.7	112.6
2,100.0	70	3,152	126.2	88.5	104.3	97.8	98.4	101.7	107.0	111.0	110.8	111.6	112.2
1,800.0	60	2,729	126.5	88.1	103.7	97.8	96.9	100.9	106.0	111.0	109.8	111.2	111.4
1,500.0	50	2,305	126.7	87.7	103.0	97.8	95.4	100.2	105.1	111.0	108.8	110.9	110.5
1,200.0	40	1,882	127.0	87.3	102.4	97.7	94.0	99.4	104.1	110.9	107.8	110.6	109.7
900.0	30	1,458	127.2	86.9	101.7	97.7	92.5	98.6	103.1	110.9	106.8	110.2	108.9
750.0	25	1,246	127.3	86.7	101.4	97.7	91.8	98.2	102.6	110.9	106.3	110.1	108.5
600.0	20	1,035	127.4	86.4	101.0	97.7	91.0	97.9	102.1	110.9	105.8	109.9	108.1
300.0	10	611	127.7	86.0	100.4	97.7	89.6	97.1	101.2	110.9	104.8	109.6	107.2

MECHANICAL:SOUND POWER(1/3 Octave Frequencies)

GENSET POWER WITH FAN	PERCENT LOAD	ENGINE POWER	1000 HZ	1250 HZ	1600 HZ	2000 HZ	2500 HZ	3150 HZ	4000 HZ	5000 HZ	6300 HZ	8000 HZ	10000 HZ
EKW	%	BHP	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)
3,000.0	100	4,423	112.7	113.9	114.6	115.3	115.0	112.7	110.9	111.9	114.3	113.4	117.8
2,700.0	90	3,999	112.5	113.7	114.5	115.0	114.5	112.3	110.4	111.1	113.6	112.9	119.2
2,400.0	80	3,576	112.2	113.2	113.8	114.4	114.2	111.9	110.0	110.7	113.2	112.6	121.4
2,250.0	75	3,364	112.0	112.9	113.4	114.0	114.2	111.7	109.8	110.5	112.9	112.6	122.6
2,100.0	70	3,152	111.8	112.6	113.0	113.7	114.1	111.4	109.6	110.3	112.7	112.5	123.8
1,800.0	60	2,729	111.3	112.1	112.2	113.1	113.9	111.0	109.3	110.0	112.3	112.3	126.2
1,500.0	50	2,305	110.9	111.5	111.4	112.4	113.7	110.6	109.0	109.6	111.9	112.1	128.6
1,200.0	40	1,882	110.5	110.9	110.5	111.7	113.5	110.2	108.6	109.3	111.5	111.9	131.0
900.0	30	1,458	110.1	110.3	109.7	111.1	113.4	109.8	108.3	109.0	111.0	111.8	133.4
750.0	25	1,246	109.9	110.0	109.3	110.7	113.3	109.6	108.1	108.8	110.8	111.7	134.6
600.0	20	1,035	109.7	109.7	108.9	110.4	113.2	109.3	107.9	108.6	110.6	111.6	135.8
300.0	10	611	109.3	109.2	108.1	109.7	113.0	108.9	107.6	108.3	110.2	111.4	138.2

Emissions Data

DIESEL

RATED SPEED NOMINAL DATA: 1800 RPM

GENSET POWER WITH FAN	EKW	3,000.0	2,700.0	2,250.0	1,500.0	750.0	300.0
PERCENT LOAD	%	100	90	75	50	25	10
ENGINE POWER	BHP	4,423	3,999	3,364	2,305	1,246	611
TOTAL NOX (AS NO2)	G/HR	26,766	23,378	17,949	7,858	3,175	2,792
TOTAL CO	G/HR	1,477	1,812	1,917	994	1,008	1,017
TOTAL HC	G/HR	184	146	139	269	289	261
TOTAL CO2	KG/HR	2,236	1,976	1,651	1,287	779	428

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PART MATTER	G/HR	115.0	122.3	121.5	87.6	96.1	92.4
TOTAL NOX (AS NO2)	(CORR 5% O2) MG/NM3	3,103.2	3,082.7	2,787.9	1,561.9	1,050.9	1,867.9
TOTAL CO	(CORR 5% O2) MG/NM3	149.2	215.1	257.1	167.9	279.0	557.1
TOTAL HC	(CORR 5% O2) MG/NM3	15.7	13.1	16.2	40.1	72.0	121.7
PART MATTER	(CORR 5% O2) MG/NM3	10.0	12.2	14.2	13.1	24.2	45.9
TOTAL NOX (AS NO2)	(CORR 15% O2) MG/NM3	1,151.5	1,143.9	1,034.5	579.6	390.0	693.1
TOTAL CO	(CORR 15% O2) MG/NM3	55.4	79.8	95.4	62.3	103.5	206.7
TOTAL HC	(CORR 15% O2) MG/NM3	5.8	4.9	6.0	14.9	26.7	45.1
PART MATTER	(CORR 15% O2) MG/NM3	3.7	4.5	5.3	4.9	9.0	17.0
TOTAL NOX (AS NO2)	(CORR 5% O2) PPM	1,512	1,502	1,358	761	512	910
TOTAL CO	(CORR 5% O2) PPM	119	172	206	134	223	446
TOTAL HC	(CORR 5% O2) PPM	29	24	30	75	134	227
TOTAL NOX (AS NO2)	(CORR 15% O2) PPM	561	557	504	282	190	338
TOTAL CO	(CORR 15% O2) PPM	44	64	76	50	83	165
TOTAL HC	(CORR 15% O2) PPM	11	9	11	28	50	84
TOTAL NOX (AS NO2)	G/HP-HR	6.07	5.86	5.35	3.41	2.55	4.56
TOTAL CO	G/HP-HR	0.34	0.45	0.57	0.43	0.81	1.66
TOTAL HC	G/HP-HR	0.04	0.04	0.04	0.12	0.23	0.43
PART MATTER	G/HP-HR	0.03	0.03	0.04	0.04	0.08	0.15
TOTAL NOX (AS NO2)	G/KW-HR	8.25	7.97	7.27	4.64	3.46	6.20
TOTAL CO	G/KW-HR	0.46	0.62	0.78	0.59	1.10	2.26
TOTAL HC	G/KW-HR	0.06	0.05	0.06	0.16	0.32	0.58
PART MATTER	G/KW-HR	0.04	0.04	0.05	0.05	0.10	0.21
TOTAL NOX (AS NO2)	LB/HR	59.01	51.54	39.57	17.32	7.00	6.16
TOTAL CO	LB/HR	3.26	3.99	4.23	2.19	2.22	2.24
TOTAL HC	LB/HR	0.41	0.32	0.31	0.59	0.64	0.57
TOTAL CO2	LB/HR	4,930	4,357	3,639	2,836	1,717	943
PART MATTER	LB/HR	0.25	0.27	0.27	0.19	0.21	0.20
OXYGEN IN EXH	%	9.6	9.8	10.2	11.6	12.7	14.5
DRY SMOKE OPACITY	%	0.3	0.6	0.8	0.0	0.5	1.9
BOSCH SMOKE NUMBER		0.70	0.73	0.74	0.64	0.71	0.85

RATED SPEED POTENTIAL SITE VARIATION: 1800 RPM

GENSET POWER WITH FAN	EKW	3,000.0	2,700.0	2,250.0	1,500.0	750.0	300.0
PERCENT LOAD	%	100	90	75	50	25	10
ENGINE POWER	BHP	4,423	3,999	3,364	2,305	1,246	611
TOTAL NOX (AS NO2)	G/HR	32,120	28,053	21,539	9,430	3,810	3,351
TOTAL CO	G/HR	2,658	3,261	3,451	1,789	1,814	1,830
TOTAL HC	G/HR	245	194	185	358	385	347
PART MATTER	G/HR	160.9	171.2	170.2	122.6	134.5	129.4
TOTAL NOX (AS NO2)	(CORR 5% O2) MG/NM3	3,723.8	3,699.3	3,345.5	1,874.3	1,261.1	2,241.5
TOTAL CO	(CORR 5% O2) MG/NM3	268.6	387.2	462.8	302.2	502.2	1,002.8
TOTAL HC	(CORR 5% O2) MG/NM3	20.9	17.4	21.5	53.3	95.7	161.8
PART MATTER	(CORR 5% O2) MG/NM3	14.0	17.1	19.8	18.4	33.9	64.3
TOTAL NOX (AS NO2)	(CORR 15% O2) MG/NM3	1,381.8	1,372.7	1,241.4	695.5	468.0	831.7
TOTAL CO	(CORR 15% O2) MG/NM3	99.7	143.7	171.7	112.1	186.3	372.1
TOTAL HC	(CORR 15% O2) MG/NM3	7.7	6.5	8.0	19.8	35.5	60.0
PART MATTER	(CORR 15% O2) MG/NM3	5.2	6.4	7.4	6.8	12.6	23.8
TOTAL NOX (AS NO2)	(CORR 5% O2) PPM	1,814	1,802	1,630	913	614	1,092
TOTAL CO	(CORR 5% O2) PPM	215	310	370	242	402	802
TOTAL HC	(CORR 5% O2) PPM	39	33	40	100	179	302
TOTAL NOX (AS NO2)	(CORR 15% O2) PPM	673	669	605	339	228	405
TOTAL CO	(CORR 15% O2) PPM	80	115	137	90	149	298
TOTAL HC	(CORR 15% O2) PPM	14	12	15	37	66	112
TOTAL NOX (AS NO2)	G/HP-HR	7.29	7.03	6.42	4.09	3.05	5.47
TOTAL CO	G/HP-HR	0.60	0.82	1.03	0.78	1.45	2.99
TOTAL HC	G/HP-HR	0.06	0.05	0.06	0.16	0.31	0.57
PART MATTER	G/HP-HR	0.04	0.04	0.05	0.05	0.11	0.21
TOTAL NOX (AS NO2)	G/KW-HR	9.91	9.56	8.73	5.57	4.15	7.44

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TOTAL CO	G/KW-HR	0.82	1.11	1.40	1.06	1.98	4.07
TOTAL HC	G/KW-HR	0.08	0.07	0.08	0.21	0.42	0.77
PART MATTER	G/KW-HR	0.05	0.06	0.07	0.07	0.15	0.29
TOTAL NOX (AS NO2)	LB/HR	70.81	61.85	47.49	20.79	8.40	7.39
TOTAL CO	LB/HR	5.86	7.19	7.61	3.94	4.00	4.03
TOTAL HC	LB/HR	0.54	0.43	0.41	0.79	0.85	0.76
PART MATTER	LB/HR	0.35	0.38	0.38	0.27	0.30	0.29

Regulatory Information

EPA TIER 2			2006 - 2010	
GASEOUS EMISSIONS DATA MEASUREMENTS PROVIDED TO THE EPA ARE CONSISTENT WITH THOSE DESCRIBED IN EPA 40 CFR PART 89 SUBPART D AND ISO 8178 FOR MEASURING HC, CO, PM, AND NOX. THE "MAX LIMITS" SHOWN BELOW ARE WEIGHTED CYCLE AVERAGES AND ARE IN COMPLIANCE WITH THE NON-ROAD REGULATIONS.				
Locality	Agency	Regulation	Tier/Stage	Max Limits - G/BKW - HR
U.S. (INCL CALIF)	EPA	NON-ROAD	TIER 2	CO: 3.5 NOx + HC: 6.4 PM: 0.20

EPA EMERGENCY STATIONARY			2011 - ---	
GASEOUS EMISSIONS DATA MEASUREMENTS PROVIDED TO THE EPA ARE CONSISTENT WITH THOSE DESCRIBED IN EPA 40 CFR PART 60 SUBPART IIII AND ISO 8178 FOR MEASURING HC, CO, PM, AND NOX. THE "MAX LIMITS" SHOWN BELOW ARE WEIGHTED CYCLE AVERAGES AND ARE IN COMPLIANCE WITH THE EMERGENCY STATIONARY REGULATIONS.				
Locality	Agency	Regulation	Tier/Stage	Max Limits - G/BKW - HR
U.S. (INCL CALIF)	EPA	STATIONARY	EMERGENCY STATIONARY	CO: 3.5 NOx + HC: 6.4 PM: 0.20

Altitude Derate Data

ALTITUDE DERATE DATA IS BASED ON THE ASSUMPTION OF A 20 DEGREES CELSIUS(36 DEGREES FAHRENHEIT) DIFFERENCE BETWEEN AMBIENT OPERATING TEMPERATURE AND ENGINE INLET SCAC TEMPERATURE. AMBIENT OPERATING TEMPERATURE IS DEFINED AS THE AIR TEMPERATURE MEASURED AT THE TURBOCHARGER COMPRESSOR INLET.

STANDARD

ALTITUDE CORRECTED POWER CAPABILITY (BHP)

AMBIENT OPERATING TEMP (F)	30	40	50	60	70	80	90	100	110	120	130	140	NORMAL
ALTITUDE (FT)													
0	4,423	4,423	4,423	4,423	4,423	4,423	4,423	4,423	4,423	4,423	4,423	4,423	4,423
1,000	4,423	4,423	4,423	4,423	4,423	4,423	4,423	4,423	4,423	4,423	4,423	4,405	4,423
2,000	4,423	4,423	4,423	4,423	4,423	4,423	4,423	4,423	4,423	4,423	4,423	4,355	4,423
3,000	4,423	4,423	4,423	4,423	4,423	4,423	4,423	4,423	4,423	4,376	4,309	4,216	4,423
4,000	4,345	4,345	4,345	4,345	4,345	4,345	4,344	4,344	4,343	4,280	4,190	4,100	4,345
5,000	4,174	4,174	4,174	4,174	4,174	4,174	4,173	4,172	4,170	4,130	4,073	4,017	4,174
6,000	4,015	4,015	4,015	4,015	4,015	4,015	4,013	4,011	4,008	3,988	3,960	3,933	4,015
7,000	3,868	3,868	3,868	3,868	3,868	3,868	3,866	3,863	3,859	3,853	3,847	3,840	3,868
8,000	3,751	3,751	3,751	3,751	3,751	3,751	3,749	3,745	3,742	3,736	3,729	3,723	3,751
9,000	3,634	3,634	3,634	3,634	3,634	3,634	3,633	3,628	3,624	3,618	3,612	3,606	3,634
10,000	3,523	3,523	3,523	3,523	3,523	3,523	3,521	3,517	3,512	3,506	3,500	3,495	3,523
11,000	3,417	3,417	3,417	3,417	3,417	3,417	3,415	3,411	3,406	3,400	3,394	3,388	3,417
12,000	3,312	3,312	3,312	3,312	3,312	3,312	3,310	3,304	3,299	3,294	3,288	3,282	3,312
13,000	3,206	3,206	3,206	3,206	3,206	3,206	3,204	3,198	3,193	3,188	3,182	3,176	3,206
14,000	3,100	3,100	3,100	3,100	3,100	3,100	3,098	3,093	3,088	3,083	3,079	3,074	3,100
15,000	2,993	2,993	2,993	2,993	2,993	2,993	2,991	2,988	2,984	2,981	2,977	2,974	2,993

Cross Reference

Test Spec	Setting	Engine Arrangement	Engineering Model	Engineering Model Version	Start Effective Serial Number	End Effective Serial Number
0K8532	LL6018	3079788	GS265	-	WYB01883	
0K8532	LL6018	5683569	PG323	-	TB800177	
0K8532	LL6018	5717349	PG323	-	TB800100	