

# Air Permit to Construct - Modification

version 1.1

Digitally signed by:  
CERIS-ND  
Date: 2026.03.23 09:56:00 -05:00  
Reason: Submission Data  
Location: State of North Dakota

(Submission #: HQJ-KYMM-NMQ5R, version 3)

## Details

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**Submission ID** HQJ-KYMM-NMQ5R

## Form Input

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### Form Instructions

Use this form to propose a modification to an existing Permit to Construct (PTC), ONLY if the modification is to the same PROJECT as the original PTC (e.g. design changes, extension requests for starting construction).

#### **General Process for all Pre-Construction Permitting**

NOTE: At the very minimum, an application should include the following items:

1. A written description of the proposed project and the facility including site diagrams (if a physical change is proposed) and applicable process descriptions and technical specifications.
2. A summary of Hazardous Air Pollutant emissions and compliance with the Air Toxics Policy.
3. A written section addressing Title V and PSD applicability.
4. A summary of state and federal rule applicability including a listing of any New Source Performance Standards (NSPS, see 40 CFR 60) and National Emission Standards for Hazardous Air Pollutants (NESHAP, see 40 CFR 63) subparts that apply.
5. A statement addressing any dispersion modeling requirements for Criteria Pollutants or Air Toxics and the inclusion of any required modeling analysis with a complete method description in accordance with the State Air Quality Analysis Guide or Department guidance.
6. All Applicable Air Quality Permit Application forms.
7. The \$325 Permit to Construct filing fee payment per NDAC 33.1-15-23-02.

[Additional Pre-Construction Permitting Information](#)

### Section A - Permit Information

**Permit Number**

ACP-18228

**Permit Issue Date**

07/22/2024

## Applicant

**First Name**      **Last Name**

Laura                  Pritchard

**Title**

NONE PROVIDED

**Phone Type**    **Number**            **Extension**

Business            9707498615

**Email**

laura.pritchard@nydig.com

## Section B - Source Information

### Permit Application for Air Contaminant Sources

Follow link to complete form SFN 8516 and upload below.

[Link to SFN 8516 - Permit Application for Air Contaminant Sources](#)

### Upload form SFN 8516

[8516\\_2026-03-20.pdf - 03/20/2026 04:46 PM](#)

**Comment**

NONE PROVIDED

## Section C - Source Location

**Facility Name**

NYDIG - Hulk CDP Facility

Click the link below to use Google Maps to find the lat/long for a given address

[Google Maps](#)

**Facility Location:**

48.52778,-103.47409

## Section D - File Upload

### File Upload

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Select and upload applicable SFN permit forms, from the list below, to detail information provided in Section D of SFN 8516.

DO NOT ADD CONFIDENTIAL INFORMATION to this form. If you have Confidential Information see NDAC 33.1-15-14-01-16.

[NDAC 33.1-15-14-01-16](#)

**Please also remember to upload all additional documents necessary to meet Steps 1-5 of the Form Instructions Section.**

**Additional Forms**

SFN8891 - Internal Combustion Engines and Turbines

SFN8329 - Hazardous Air Pollutant (HAP) Sources

SFN8532 - Air Pollution Control Equipment

[Link to SFN8532 - Air Pollution Control Equipment](#)

[Link to SFN8329 - Hazardous Air Pollutant \(HAP\) Sources](#)

[Link to SFN8891 - Internal Combustion Engines and Turbines](#)

**Attachments**

[NYDIGHulkCDP APA Mod 2026-03-20.pdf - 03/20/2026 04:52 PM](#)

**Comment**

NONE PROVIDED

**Revisions**

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<b>Revision</b>	<b>Revision Date</b>	<b>Revision By</b>
Revision 1	1/14/2026 11:15 PM	Kaitlin Meszaros
Revision 2	2/17/2026 1:11 PM	Laura Pritchard
Revision 3	3/20/2026 4:42 PM	Kaitlin Meszaros

March 20, 2026

North Dakota Department of Environmental Quality  
Division of Air Quality  
4201 Normandy Street  
Bismarck, ND 58503-1324

Subject: NYDIG DFM LLC Hulk CDP – Permit to Construct Modification Application, Williams County, North Dakota

On behalf of NYDIG DFM LLC (NYDIG), please find enclosed a modification to the Permit to Construct (PTC) Application for the Hulk Central Point (CDP), hereafter referred to as “Facility”, currently permitted under ACP-18228 v1.0 dated July 22, 2024. [The items in blue below are additional requested modifications to the February 2026 application that are included in the correction dated above.](#)

Currently installed and operating equipment under existing permit ACP-18228 v1.0:

- ▶ Two (2) 530 horsepower (hp) Waukesha VGF H24SE compressor engines each with a non-selective catalytic reduction (NSCR) device,
- ▶ One (1) 2,500 hp Waukesha 9394GSI generator engine fitted with an NSCR device, and
- ▶ One (1) 13.3 Megawatt (MW) Solar Titan 130 gas-fired turbine with SoLoNOx technology.

The Facility requests to modify the permit to replace one of the existing, permitted 2,491 hp Caterpillar 3516 EPA-certified emergency diesel generators with a 1,099 kilowatt (kW) Caterpillar C32 EPA-certified emergency diesel generator. The replacement unit will operate no more than 100 hours per year, consistent with emergency operation limitations.

[The Facility also requests to modify the volatile organic compound \(VOC\) emissions factor for the compressor engines from 0.019 grams per horsepower-hour to 0.03 grams per horsepower-hour for operational flexibility with fluctuating gas compositions.](#)

The other permitted equipment bulleted below is no longer intended for the facility, and therefore is requested to be removed from the permit:

- ▶ Nine (9) 2,500 hp Waukesha 9394GSI generator engines each fitted with an NSCR device, and
- ▶ One (1) 2,491 hp Caterpillar 3516 EPA certified emergency diesel generator.

The removal of equipment [and modifications described above](#) will result in a decrease in permitted emissions, resulting in the source to be a minor source. Therefore, we are requesting to cancel the Title V application submitted in September 2025. It is also requested that a Permit to Operate be issued concurrent with this PTC.

Should you have any questions or comments about the application, please contact Kaitlin Meszaros by email at [meszaros@pinyon-env.com](mailto: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: Laura Pritchard, NYDIG DFM LLC

February 13, 2026

## Permit to Construct Modification Application

NYDIG DFM LLC  
Hulk Central Delivery Point (CDP)  
Williams County, North Dakota

**Prepared for:**  
NYDIG DFM LLC  
One Vanderbilt Avenue, 65th Floor  
New York, NY 10017

**Pinyon Project No.:**  
1/25-1737-01



February 13, 2026

## Permit to Construct Modification Application

NYDIG DFM LLC  
Hulk Central Delivery Point (CDP)  
Williams County, North Dakota

**Prepared for:**  
NYDIG DFM LLC  
One Vanderbilt Avenue, 65th Floor  
New York, NY 10017

**Pinyon Project No.:**  
1/25-1737-01

**Prepared by:**



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Vincent Rehkopf  
Air Quality Specialist

**Reviewed by:**



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Kaitlin Meszaros  
Air Quality & Noise Specialist

## **Table of Contents**

Project Overview

North Dakota Permit Forms

Site Location Map

Emissions Calculations

Regulatory Discussion

State Regulations

Supporting Documentation

## 1. Project Overview

NYDIG DFM LLC (NYDIG) is proposing to modify combustion equipment at the Hulk Central Delivery Point (CDP). The Facility location is 48° 31' 40.00" North, 103° 28' 26.72" West in Section 9, Township 158 North, and Range 99W within Williams County, North Dakota.

The Facility requests a modification to like-kind replace one of the existing, permitted 2,491 horsepower (hp) Caterpillar 3516 EPA-certified emergency diesel generators with a 1,099 kilowatt (kW) Caterpillar C32 EPA-certified emergency diesel generator. The replacement unit will operate no more than 100 hours per year, consistent with emergency operation limitations. Also, NYDIG proposes to modify the VOC emissions factor for the compressor engines from 0.019 g/hp-hr to 0.03 g/hp-hr.

The enclosed application is to remove the following equipment from existing permit ACP-18228 v1.0:

- ▶ Nine (9) 2,500 hp Waukesha 9394GSI generator engines each fitted with an NSCR device, and
- ▶ One (1) 2,491 hp Caterpillar 3516 EPA certified emergency diesel generator.

Currently installed and operating equipment under existing permit ACP-18228 v1.0:

- ▶ Two (2) 530 hp Waukesha VGF H24SE compressor engines each with a non-selective catalytic reduction (NSCR) device,
- ▶ One (1) 2,500 hp Waukesha 9394GSI generator engine fitted with an NSCR device, and
- ▶ One (1) 13.3 Megawatt (MW) Solar Titan 130 gas-fired turbine with SoLoNOx technology.

The Hulk CDP is located at the Kraken Operating, LLC Hulk Facility. The purpose of the engines is to purchase gas from the Kraken Facility that would otherwise be flared to use as fuel in order to power a set of data centers. Based on correspondence with North Dakota Department of Environmental Quality (NDDEQ), the sources under ownership and operatorship of NYDIG shall not be aggregated with the production facility sources on the same site location as they will be owned and operated by a separate company. NYDIG will not have environmental control over the other company's emissions sources, and the other company will not have environmental control over NYDIG's emissions sources.

## 2. North Dakota Permit Forms



**PERMIT APPLICATION FOR AIR CONTAMINANT SOURCES**

NORTH DAKOTA DEPARTMENT OF ENVIRONMENTAL QUALITY

DIVISION OF AIR QUALITY

SFN 8516 (9-2021)

**SECTION A - FACILITY INFORMATION**

Name of Firm or Organization NYDIG DFM LLC				
Applicant's Name Laura Pritchard				
Title Environmental Specialist		Telephone Number (970) 749-8615	E-mail Address laura.pritchard@nydig.com	
Contact Person for Air Pollution Matters Laura Pritchard				
Title Environmental Specialist		Telephone Number (970) 749-8615	E-mail Address laura.pritchard@nydig.com	
Mailing Address (Street & No.) One Vanderbilt Avenue, 65th Floor				
City New York		State NY	ZIP Code 10017	
Facility Name Hulk Central Delivery Point (CPD)				
Facility Address (Street & No.)				
City		State	ZIP Code	
County <b>Williams</b>	Coordinates NAD 83 in Decimal Degrees (to fourth decimal degree)			
	Latitude 48.52778000		Longitude -103.47409000	
Legal Description of Facility Site				
Quarter SE	Quarter NE	Section 9	Township 158N	Range 99W
Land Area at Facility Site 10 Acres (or) _____ Sq. Ft.		MSL Elevation at Facility 2,144 feet		

**SECTION B – GENERAL NATURE OF BUSINESS**

Describe Nature of Business	North American Industry Classification System Number	Standard Industrial Classification Number (SIC)
<b>Data Computing</b>	<b>541519</b>	<b>7379</b>

**SECTION C – GENERAL PERMIT INFORMATION**

Type of Permit? <input checked="" type="checkbox"/> Permit to Construct (PTC) <input checked="" type="checkbox"/> Permit to Operate (PTO)	
If application is for a Permit to Construct, please provide the following data:	
Planned Start Construction Date 09/2024	Planned End Construction Date 09/2024

**SECTION D – SOURCE IDENTIFICATION AND CATEGORY OF EACH SOURCE INCLUDED ON THIS PERMIT APPLICATION**

Your Source ID Number	Source or Unit (Equipment, Machines, Devices, Boilers, Processes, Incinerators, Etc.)	Permit to Construct				Minor Source Permit to Operate						
		New Source	Existing Source Modification	Existing Source Expansion	Existing Source Change of Location	New Source	Existing Source Initial Application	Existing Source After Modification	Existing Source After Expansion	Existing Source After Change of Location	Existing Source After Change of Ownership	Other
EU1-EU2	Compressor Engines X 2	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>EU3</b>	Generator Engine x 1	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
EU4-EU-12	Generator Engine x 9	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
<b>E13</b>	Combustion Turbine x 1	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>EU14</b>	Emergency Generator X 1	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>EU15</b>	Emergency Generato X 1	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

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Like-Kind Replacement

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Add additional pages if necessary

**SECTION D2 – APPLICABLE REGULATIONS**

Source ID No.	Applicable Regulations (NSPS/MACT/NESHAP/etc.)
Facility-wide	
EU1-EU2	NSPS JJJJ, MACT ZZZZ
EU3	NSPS JJJJ, MACT ZZZZ
E13	NSPS KKKK
EU14	NSPS IIII, MACT ZZZZ

**SECTION E – TOTAL POTENTIAL EMISSIONS**

Pollutant	Amount (Tons Per Year)
NO <sub>x</sub>	62.97
CO	79.22
PM	4.24

Pollutant	Amount (Tons Per Year)
PM <sub>10</sub> (filterable and condensable)	4.24
PM <sub>2.5</sub> (filterable and condensable)	4.24
SO <sub>2</sub>	4.88
VOC	27.72
GHG (as CO <sub>2</sub> e)	85,324
Largest Single HAP	0.22
Total HAPS	1.95

\*If performance test results are available for the unit, submit a copy of test with this application. If manufacturer guarantee is used provide spec sheet.

**SECTION F1 – ADDITIONAL FORMS**

Indicate which of the following forms are attached and made part of the application	
<input checked="" type="checkbox"/> Air Pollution Control Equipment (SFN 8532) <input type="checkbox"/> Construct/Operate Incinerators (SFN 8522) <input type="checkbox"/> Natural Gas Processing Plants (SFN 11408) <input type="checkbox"/> Glycol Dehydration Units (SFN 58923) <input type="checkbox"/> Flares (SFN 59652) <input type="checkbox"/> Grain, Feed, and Fertilizer Operations (SFN 8524)	<input type="checkbox"/> Fuel Burning Equipment Used for Indirect Heating (SFN 8518) <input checked="" type="checkbox"/> Hazardous Air Pollutant (HAP) Sources (SFN 8329) <input type="checkbox"/> Manufacturing or Processing Equipment (SFN 8520) <input type="checkbox"/> Volatile Organic Compounds Storage Tank (SFN 8535) <input checked="" type="checkbox"/> Internal Combustion Engines and Turbines (SFN 8891) <input type="checkbox"/> Oil/Gas Production Facility Registration (SFN 14334)

**SECTION F2 – OTHER ATTACHMENTS INCLUDED AS PART OF THIS APPLICATION**

1. Project Overview	4. Regulatory Discussion
2. Site Map	5. Specification Sheets
3. Emissions Calculations	6.

I, the undersigned applicant, am fully aware that statements made in this application and the attached exhibits and statements constitute the application for Permit(s) to Construct and/or Operate Air Contaminant sources from the North Dakota Department of Environmental Quality and certify that the information in this application is true, correct and complete to the best of my knowledge and belief. Further, I agree to comply with the provisions of Chapter 23.1-06 of the North Dakota Century Code and all rules and regulations of the Department, or revisions thereof. I also understand the permit is nontransferable and, if granted a permit, I will promptly notify the Department upon sale or legal transfer of this permitted establishment.

Signature	Date
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## Compressor Engines



# PERMIT APPLICATION FOR INTERNAL COMBUSTION ENGINES AND TURBINES

NORTH DAKOTA DEPARTMENT OF ENVIRONMENTAL QUALITY  
DIVISION OF AIR QUALITY  
SFN 8891 (9-2021)

NOTE: READ INSTRUCTIONS BEFORE COMPLETING THIS FORM.

- Must include SFN 8516 or SFN 52858

## SECTION A – GENERAL INFORMATION

Name of Firm or Organization NYDIG DFM LLC	Facility Name Hulk Central Delivery Point (CDP)
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## SECTION B – FACILITY AND UNIT INFORMATION

Source ID Number (From form SFN 8516) EU1		
Type of Unit (check all that apply)	<input checked="" type="checkbox"/> Stationary Natural Gas-Fired Engine	<input type="checkbox"/> Emergency Use Only
	<input type="checkbox"/> Stationary Diesel and Dual Fuel Engine	<input checked="" type="checkbox"/> Non-Emergency Use
	<input type="checkbox"/> Stationary Gasoline Engine	<input type="checkbox"/> Peaking
	<input type="checkbox"/> Stationary Natural Gas-Fired Turbine	<input type="checkbox"/> Demand Response
	<input type="checkbox"/> Other – Specify:	

## SECTION C – MANUFACTURER DATA

Make Waukesha	Model VGF H24SE	Date of Manufacture 03/01/2021
Reciprocating Internal Combustion Engine		
<input checked="" type="checkbox"/> Spark Ignition	<input type="checkbox"/> Compression Ignition	<input type="checkbox"/> Lean Burn
<input checked="" type="checkbox"/> 4 Stroke	<input type="checkbox"/> 2 Stroke	<input checked="" type="checkbox"/> Rich Burn
Maximum Rating (BHP @ rpm) 530 BHP @ 1800 RMP	Operating Capacity (BHP @ rpm) 530 BHP @ 1800 RPM	
Engine Subject to:		
<input type="checkbox"/> 40 CFR 60, Subpart IIII		
<input checked="" type="checkbox"/> 40 CFR 60, Subpart JJJJ		
<input checked="" type="checkbox"/> 40 CFR 63, Subpart ZZZZ		
<input type="checkbox"/> 40 CFR 60, Subpart OOOO (for compressors)		
<input type="checkbox"/> 40 CFR 60, Subpart OOOOa (for compressors)		
Turbine		
Dry Low Emissions? <input type="checkbox"/> Yes <input type="checkbox"/> No		
Heat Input (MMBtu/hr)	Maximum Rating (HP)	75% Rating (HP)
		Efficiency
Turbine Subject to:		
<input type="checkbox"/> 40 CFR 60, Subpart GG <input type="checkbox"/> 40 CFR 60, Subpart KKKK		

## SECTION D – FUELS USED

Natural Gas (10 <sup>6</sup> cu ft/year) 32.16	Percent Sulfur 25 ppmv	Percent H <sub>2</sub> S 25 ppmv
Oil (gal/year)	Percent Sulfur	Grade No.
LP Gas (gal/year)	Other – Specify:	

## SECTION E – NORMAL OPERATING SCHEDULE

Hours Per Day 24	Days Per Week 7	Weeks Per Year 52	Hours Per Year 8,760	Peak Production Season (if any) N/A
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## SECTION F – STACK PARAMETERS

Emission Point ID Number EU1	Stack Height Above Ground Level (feet) 25		
Stack Diameter (feet at top) 1.08	Gas Discharged (SCFM) 2,871	Exit Temp (°F) 1,265	Gas Velocity (FPS) 51.4

**SECTION G – EMISSION CONTROL EQUIPMENT**

Is any emission control equipment installed on this unit?  
 No       Yes – Complete and attach form SFN 8532

**SECTION H – MAXIMUM AIR CONTAMINANTS EMITTED**

Pollutant	Maximum Pounds Per Hour	Amount (Tons Per Year)	Basis of Estimate*
NO <sub>x</sub>	0.18	0.77	Manufacturer Specifications
CO	0.35	1.54	Manufacturer Specifications
PM	0.01	0.05	Manufacturer Specifications
PM <sub>10</sub> (filterable and condensable)	0.01	0.05	Manufacturer Specifications
PM <sub>2.5</sub> (filterable and condensable)	0.01	0.05	Manufacturer Specifications
SO <sub>2</sub>	0.03	0.15	AP-42 Section 3.2-3
VOC	0.04	0.15	Manufacturer Specifications
GHG (as CO <sub>2e</sub> )	602.0	2,637	40 CFR Part 98 Subpart C
Largest Single HAP	0.01	0.06	AP-42 Section 3.2-3
Total HAPS	0.05	0.23	AP-42 Section 3.2-3 & Manufacturer Specifications

\* If performance test results are available for the unit, submit a copy of test with this application, if manufacture data used, submit manufacturers specification sheets.

IS THIS UNIT IN COMPLIANCE WITH ALL APPLICABLE AIR POLLUTION RULES AND REGULATIONS?  
 YES       NO

If "NO" a Compliance Schedule (SFN 61008) must be completed and attached.

Attach and label separate sheet(s) if you need more space to explain any system or answers or to provide complete listings of Emissions, Contaminants, or other items.

**SEND COMPLETED APPLICATION AND ALL ATTACHMENTS TO:**

North Dakota Department of Environmental Quality  
 Division of Air Quality  
 4201 Normandy Street, 2<sup>nd</sup> Floor  
 Bismarck, ND 58503-1324  
 (701) 328-5188



# PERMIT APPLICATION FOR INTERNAL COMBUSTION ENGINES AND TURBINES

NORTH DAKOTA DEPARTMENT OF ENVIRONMENTAL QUALITY  
DIVISION OF AIR QUALITY  
SFN 8891 (9-2021)

NOTE: READ INSTRUCTIONS BEFORE COMPLETING THIS FORM.

- Must include SFN 8516 or SFN 52858

## SECTION A – GENERAL INFORMATION

Name of Firm or Organization NYDIG DFM LLC	Facility Name Hulk Central Delivery Point (CDP)
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## SECTION B – FACILITY AND UNIT INFORMATION

Source ID Number (From form SFN 8516) EU2		
Type of Unit (check all that apply)	<input checked="" type="checkbox"/> Stationary Natural Gas-Fired Engine	<input type="checkbox"/> Emergency Use Only
	<input type="checkbox"/> Stationary Diesel and Dual Fuel Engine	<input checked="" type="checkbox"/> Non-Emergency Use
	<input type="checkbox"/> Stationary Gasoline Engine	<input type="checkbox"/> Peaking
	<input type="checkbox"/> Stationary Natural Gas-Fired Turbine	<input type="checkbox"/> Demand Response
	<input type="checkbox"/> Other – Specify:	

## SECTION C – MANUFACTURER DATA

Make Waukesha	Model VGF H24SE	Date of Manufacture TBD	
Reciprocating Internal Combustion Engine			
<input checked="" type="checkbox"/> Spark Ignition	<input type="checkbox"/> Compression Ignition	<input type="checkbox"/> Lean Burn	
<input checked="" type="checkbox"/> 4 Stroke	<input type="checkbox"/> 2 Stroke	<input checked="" type="checkbox"/> Rich Burn	
Maximum Rating (BHP @ rpm) 530 BHP @ 1800 RMP		Operating Capacity (BHP @ rpm) 530 BHP @ 1800 RPM	
Engine Subject to:			
<input type="checkbox"/> 40 CFR 60, Subpart IIII			
<input checked="" type="checkbox"/> 40 CFR 60, Subpart JJJJ			
<input checked="" type="checkbox"/> 40 CFR 63, Subpart ZZZZ			
<input type="checkbox"/> 40 CFR 60, Subpart OOOO (for compressors)			
<input type="checkbox"/> 40 CFR 60, Subpart OOOOa (for compressors)			
Turbine			
Dry Low Emissions? <input type="checkbox"/> Yes <input type="checkbox"/> No			
Heat Input (MMBtu/hr)	Maximum Rating (HP)	75% Rating (HP)	Efficiency
Turbine Subject to:			
<input type="checkbox"/> 40 CFR 60, Subpart GG <input type="checkbox"/> 40 CFR 60, Subpart KKKK			

## SECTION D – FUELS USED

Natural Gas (10 <sup>6</sup> cu ft/year) 32.16	Percent Sulfur 25 ppmv	Percent H <sub>2</sub> S 25 ppmv
Oil (gal/year)	Percent Sulfur	Grade No.
LP Gas (gal/year)	Other – Specify:	

## SECTION E – NORMAL OPERATING SCHEDULE

Hours Per Day 24	Days Per Week 7	Weeks Per Year 52	Hours Per Year 8,760	Peak Production Season (if any) N/A
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## SECTION F – STACK PARAMETERS

Emission Point ID Number EU2		Stack Height Above Ground Level (feet) 25		
Stack Diameter (feet at top) 1.08	Gas Discharged (SCFM) 2,871	Exit Temp (°F) 1,265	Gas Velocity (FPS) 51.4	

**SECTION G – EMISSION CONTROL EQUIPMENT**

Is any emission control equipment installed on this unit?  
 No       Yes – Complete and attach form SFN 8532

**SECTION H – MAXIMUM AIR CONTAMINANTS EMITTED**

Pollutant	Maximum Pounds Per Hour	Amount (Tons Per Year)	Basis of Estimate*
NO <sub>x</sub>	0.18	0.77	Manufacturer Specifications
CO	0.35	1.54	Manufacturer Specifications
PM	0.01	0.05	Manufacturer Specifications
PM <sub>10</sub> (filterable and condensable)	0.01	0.05	Manufacturer Specifications
PM <sub>2.5</sub> (filterable and condensable)	0.01	0.05	Manufacturer Specifications
SO <sub>2</sub>	0.03	0.15	AP-42 Section 3.2-3
VOC	0.04	0.15	Manufacturer Specifications
GHG (as CO <sub>2</sub> e)	602.0	2,637	40 CFR Part 98 Subpart C
Largest Single HAP	0.01	0.06	AP-42 Section 3.2-3
Total HAPS	0.05	0.23	AP-42 Section 3.2-3 & Manufacturer Specifications

\* If performance test results are available for the unit, submit a copy of test with this application, if manufacture data used, submit manufacturers specification sheets.

IS THIS UNIT IN COMPLIANCE WITH ALL APPLICABLE AIR POLLUTION RULES AND REGULATIONS?  
 YES       NO

If "NO" a Compliance Schedule (SFN 61008) must be completed and attached.

Attach and label separate sheet(s) if you need more space to explain any system or answers or to provide complete listings of Emissions, Contaminants, or other items.

**SEND COMPLETED APPLICATION AND ALL ATTACHMENTS TO:**

North Dakota Department of Environmental Quality  
 Division of Air Quality  
 4201 Normandy Street, 2<sup>nd</sup> Floor  
 Bismarck, ND 58503-1324  
 (701) 328-5188



# PERMIT APPLICATION FOR AIR POLLUTION CONTROL EQUIPMENT

NORTH DAKOTA DEPARTMENT OF ENVIRONMENTAL QUALITY  
 DIVISION OF AIR QUALITY  
 SFN 8532 (9-2021)

NOTE: READ INSTRUCTIONS BEFORE COMPLETING THIS FORM.

- Must also include forms SFN 8516 or SFN 52858

## SECTION A – GENERAL INFORMATION

Name of Firm or Organization NYDIG DFM LLC	Facility Name Hulk Central Delivery Point (CDP)
Source ID No. of Equipment being Controlled EU1	

## SECTION B – EQUIPMENT

Type:	<input type="checkbox"/> Cyclone	<input type="checkbox"/> Multiclone	<input type="checkbox"/> Baghouse	<input type="checkbox"/> Electrostatic Precipitator
	<input type="checkbox"/> Wet Scrubber	<input type="checkbox"/> Spray Dryer	<input type="checkbox"/> Flare/Combustor	
	<input checked="" type="checkbox"/> Other – Specify: Non-selective catalytic reduction device and AFR			
Name of Manufacturer Waukesha	Model Number	Date to Be Installed 09/25/2024		
Application:	<input type="checkbox"/> Boiler	<input type="checkbox"/> Kiln	<input checked="" type="checkbox"/> Engine	<input type="checkbox"/> Other – Specify:
Pollutants Removed	<b>NOx</b>	CO	VOC	HCHO
Design Efficiency (%)	<b>98.93%</b>	96.74%	85%	98%
Operating Efficiency (%)	<b>100%</b>	100%	100%	100%
Describe method used to determine operating efficiency: Manufacturer specifications and assuming all emissions will go through catalyst elements. Total efficiency - design efficiency x operation efficiency.				

## SECTION CD – GAS CONDITIONS

Gas Conditions		Inlet	Outlet	
Gas Volume (SCFM; 68°F; 14.7 psia)		2,871	2,871	
Gas Temperature (°F)		1,265	1,265	
Gas Pressure (in. H <sub>2</sub> O)		2	2	
Gas Velocity (ft/sec)		51.4	51.4	
Pollutant Concentration (Specify Pollutant and Unit of Concentration)	Pollutant	Unit of Concentration		
	NOx	g/bhp-hr	14.05	0.15
	CO	g/bhp-hr	9.20	0.30
	VOC	g/bhp-hr	0.20	0.03
	HCHO	g/bhp-hr	0.05	0.001
Pressure Drop Through Gas Cleaning Device (in. H <sub>2</sub> O) The pressure drop is a delta of 2 inches of water from baseline per NSPS JJJJ.				



# PERMIT APPLICATION FOR AIR POLLUTION CONTROL EQUIPMENT

NORTH DAKOTA DEPARTMENT OF ENVIRONMENTAL QUALITY  
 DIVISION OF AIR QUALITY  
 SFN 8532 (9-2021)

NOTE: READ INSTRUCTIONS BEFORE COMPLETING THIS FORM.

- Must also include forms SFN 8516 or SFN 52858

## SECTION A – GENERAL INFORMATION

Name of Firm or Organization NYDIG DFM LLC	Facility Name Hulk Central Delivery Point (CDP)
Source ID No. of Equipment being Controlled EU2	

## SECTION B – EQUIPMENT

Type:	<input type="checkbox"/> Cyclone	<input type="checkbox"/> Multiclone	<input type="checkbox"/> Baghouse	<input type="checkbox"/> Electrostatic Precipitator
	<input type="checkbox"/> Wet Scrubber	<input type="checkbox"/> Spray Dryer	<input type="checkbox"/> Flare/Combustor	
	<input checked="" type="checkbox"/> Other – Specify: Non-selective catalytic reduction device and AFR			
Name of Manufacturer Waukesha	Model Number	Date to Be Installed 12/07/2024		
Application:	<input type="checkbox"/> Boiler	<input type="checkbox"/> Kiln	<input checked="" type="checkbox"/> Engine	<input type="checkbox"/> Other – Specify:
Pollutants Removed	<b>NOx</b>	CO	VOC	HCHO
Design Efficiency (%)	<b>98.93%</b>	96.74%	85%	98%
Operating Efficiency (%)	<b>100%</b>	100%	100%	100%
Describe method used to determine operating efficiency: Manufacturer specifications and assuming all emissions will go through catalyst elements. Total efficiency - design efficiency x operation efficiency.				

## SECTION CD – GAS CONDITIONS

Gas Conditions		Inlet	Outlet	
Gas Volume (SCFM; 68°F; 14.7 psia)		2,871	2,871	
Gas Temperature (°F)		1,265	1,265	
Gas Pressure (in. H <sub>2</sub> O)		2	2	
Gas Velocity (ft/sec)		51.4	51.4	
Pollutant Concentration (Specify Pollutant and Unit of Concentration)	Pollutant	Unit of Concentration		
	NOx	g/bhp-hr	14.05	0.15
	CO	g/bhp-hr	9.20	0.30
	VOC	g/bhp-hr	0.20	0.03
	HCHO	g/bhp-hr	0.05	0.001
Pressure Drop Through Gas Cleaning Device (in. H <sub>2</sub> O) The pressure drop is a delta of 2 inches of water from baseline per NSPS JJJJ.				



# PERMIT APPLICATION FOR HAZARDOUS AIR POLLUTANT (HAP) SOURCES

NORTH DAKOTA DEPARTMENT OF ENVIRONMENTAL QUALITY  
DIVISION OF AIR QUALITY  
SFN 8329 (9-2021)

## SECTION A1 - APPLICANT INFORMATION

Name of Firm or Organization NYDIG DFM LLC		
Applicant's Name Laura Pritchard		
Title Environmental Specialist	Telephone Number (970) 749-8615	E-mail Address laura.pritchard@nydig.com
Mailing Address (Street & No.) One Vanderbilt Avenue, 65th Floor		
City New York	State New York	ZIP Code 10017

## SECTION A2 - FACILITY INFORMATION

Contact Person for Air Pollution Matters Laura Pritchard		
Title Environmental Specialist	Telephone Number (970) 749-8615	E-mail Address laura.pritchard@nydig.com
Facility Address (Street & No. or Lat/Long to Nearest Second)		
City	State	ZIP Code
County Williams	Number of Employees at Location 0	
Land Area at Plant Site 10 Acres (or)	Sq. Ft.	MSL Elevation at Plant 2,144

Describe Nature of Business/Process Facility to take stranded gas from the oil field to run small data centers
---

## SECTION B – STACK DATA

Inside Diameter (ft) 1.08	Height Above Grade (ft) 25	
Gas Temperature at Exit (°F) 1,265	Gas Velocity at Exit (ft/sec) 51.4	Gas Volume (scfm) 2,871
Basis of any Estimates (attach separate sheet if necessary) Manufacturer specifications and AP-42 Section 3.2-3		
Are Emission Control Devices in Place? If YES – Complete SFN 8532 <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No		
Nearest Residences or Building	Distance (ft) 7,340	Direction East
Nearest Property Line	Distance (ft) 80	Direction West

**SECTION C – EMISSION STREAM DATA**

Source ID Number SFN 8516 EU1 and EU2	Mean Particle Diameter (um) NA
Flow Rate (scfm) 2,871	Drift Velocity (ft/sec) 51.4
Stream Temperature (°F) 1,265	Particulate Concentration (gr/dscf) NA
Moisture Content (%) NA	Halogens or Metals Present? NA
Pressure (in. Hg) NA	Organic Content (ppmv) NA
Heat Content (Btu/scfm) NA	O <sub>2</sub> Content (%) NA

**SECTION D – POLLUTANT SPECIFIC DATA**

**(Complete One Box for Each Pollutant in Emission Stream)**

Pollutant Emitted 1.3-Butadiene	Chemical Abstract Services (CAS) Number 106-99-0
Proposed Emission Rate (lb/hr) 5.79E-3	Emission Source (describe) Internal combustion engine
Source Classification (process point, process fugitive, area fugitive) Point	Pollutant Class and Form (organic/inorganic - particulate/vapor) Organic-vapor
Concentration in Emission Stream (ppmv) NA	Vapor Pressure (in. Hg @ °F) NA
Solubility NA	Molecular Weight (lb/lb-mole) 54.09
Absorptive Properties NA	

Pollutant Emitted Acetaldehyde	Chemical Abstract Services (CAS) Number 75-07-0
Proposed Emission Rate (lb/hr) 2.44E-2	Emission Source (describe) Internal combustion engine
Source Classification (process point, process fugitive, area fugitive) Point	Pollutant Class and Form (organic/inorganic - particulate/vapor) Organic-vapor
Concentration in Emission Stream (ppmv) NA	Vapor Pressure (in. Hg @ °F) NA
Solubility NA	Molecular Weight (lb/lb-mole) 44.05
Absorptive Properties NA	

(Add additional pages if necessary)

Signature of Applicant	Date
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**SEND COMPLETED APPLICATION AND ALL ATTACHMENTS TO:**

North Dakota Department of Environmental Quality  
 Division of Air Quality  
 4201 Normandy Street, 2nd Floor  
 Bismarck, ND 58503-1324  
 (701) 328-5188

**SECTION C – EMISSION STREAM DATA**

Source ID Number SFN 8516 EU1 and EU2	Mean Particle Diameter (um) NA
Flow Rate (scfm) 2,871	Drift Velocity (ft/sec) 51.4
Stream Temperature (°F) 1,265	Particulate Concentration (gr/dscf) NA
Moisture Content (%) NA	Halogens or Metals Present? NA
Pressure (in. Hg) NA	Organic Content (ppmv) NA
Heat Content (Btu/scfm) NA	O <sub>2</sub> Content (%) NA

**SECTION D – POLLUTANT SPECIFIC DATA**  
**(Complete One Box for Each Pollutant in Emission Stream)**

Pollutant Emitted Acrolein	Chemical Abstract Services (CAS) Number 107-02-8
Proposed Emission Rate (lb/hr) 2.30E-2	Emission Source (describe) Internal combustion engine
Source Classification (process point, process fugitive, area fugitive) Point	Pollutant Class and Form (organic/inorganic - particulate/vapor) Organic - vapor
Concentration in Emission Stream (ppmv) NA	Vapor Pressure (in. Hg @ °F) NA
Solubility NA	Molecular Weight (lb/lb-mole) 56.06
Absorptive Properties NA	

Pollutant Emitted Benzene	Chemical Abstract Services (CAS) Number 71-43-2
Proposed Emission Rate (lb/hr) 1.38E-2	Emission Source (describe) Internal combustion engine
Source Classification (process point, process fugitive, area fugitive) Point	Pollutant Class and Form (organic/inorganic - particulate/vapor) Organic - vapor
Concentration in Emission Stream (ppmv) NA	Vapor Pressure (in. Hg @ °F) NA
Solubility NA	Molecular Weight (lb/lb-mole) 78.11
Absorptive Properties NA	

(Add additional pages if necessary)

Signature of Applicant	Date
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 4201 Normandy Street, 2nd Floor  
 Bismarck, ND 58503-1324  
 (701) 328-5188

**SECTION C – EMISSION STREAM DATA**

Source ID Number SFN 8516 EU1 and EU2	Mean Particle Diameter (um) NA
Flow Rate (scfm) 2,871	Drift Velocity (ft/sec) 51.4
Stream Temperature (°F) 1,265	Particulate Concentration (gr/dscf) NA
Moisture Content (%) NA	Halogens or Metals Present? NA
Pressure (in. Hg) NA	Organic Content (ppmv) NA
Heat Content (Btu/scfm) NA	O <sub>2</sub> Content (%) NA

**SECTION D – POLLUTANT SPECIFIC DATA**  
**(Complete One Box for Each Pollutant in Emission Stream)**

Pollutant Emitted Ethylbenzene	Chemical Abstract Services (CAS) Number 100-41-4
Proposed Emission Rate (lb/hr) 2.17E-4	Emission Source (describe) Internal combustion engine
Source Classification (process point, process fugitive, area fugitive) Point	Pollutant Class and Form (organic/inorganic - particulate/vapor) Organic - vapor
Concentration in Emission Stream (ppmv) NA	Vapor Pressure (in. Hg @ °F) NA
Solubility NA	Molecular Weight (lb/lb-mole) 106.17
Absorptive Properties NA	

Pollutant Emitted Formaldehyde	Chemical Abstract Services (CAS) Number 50-00-0
Proposed Emission Rate (lb/hr) 2.34E-3	Emission Source (describe) Internal combustion engine
Source Classification (process point, process fugitive, area fugitive) Point	Pollutant Class and Form (organic/inorganic - particulate/vapor) Organic - vapor
Concentration in Emission Stream (ppmv) NA	Vapor Pressure (in. Hg @ °F) NA
Solubility NA	Molecular Weight (lb/lb-mole) 30.03
Absorptive Properties NA	

(Add additional pages if necessary)

Signature of Applicant	Date
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North Dakota Department of Environmental Quality  
 Division of Air Quality  
 4201 Normandy Street, 2nd Floor  
 Bismarck, ND 58503-1324  
 (701) 328-5188

**SECTION C – EMISSION STREAM DATA**

Source ID Number SFN 8516 EU1 and EU2	Mean Particle Diameter (um) NA
Flow Rate (scfm) 2,871	Drift Velocity (ft/sec) 51.4
Stream Temperature (°F) 1,265	Particulate Concentration (gr/dscf) NA
Moisture Content (%) NA	Halogens or Metals Present? NA
Pressure (in. Hg) NA	Organic Content (ppmv) NA
Heat Content (Btu/scfm) NA	O <sub>2</sub> Content (%) NA

**SECTION D – POLLUTANT SPECIFIC DATA**  
**(Complete One Box for Each Pollutant in Emission Stream)**

Pollutant Emitted Methanol	Chemical Abstract Services (CAS) Number 67-56-1
Proposed Emission Rate (lb/hr) 2.67E-2	Emission Source (describe) Internal combustion engine
Source Classification (process point, process fugitive, area fugitive) Point	Pollutant Class and Form (organic/inorganic - particulate/vapor) Organic - vapor
Concentration in Emission Stream (ppmv) NA	Vapor Pressure (in. Hg @ °F) NA
Solubility NA	Molecular Weight (lb/lb-mole) 32.04
Absorptive Properties NA	

Pollutant Emitted PAH	Chemical Abstract Services (CAS) Number NA
Proposed Emission Rate (lb/hr) 1.45E-3	Emission Source (describe) Internal combustion engine
Source Classification (process point, process fugitive, area fugitive) Point	Pollutant Class and Form (organic/inorganic - particulate/vapor) Organic - vapor
Concentration in Emission Stream (ppmv) NA	Vapor Pressure (in. Hg @ °F) NA
Solubility NA	Molecular Weight (lb/lb-mole) NA
Absorptive Properties NA	

(Add additional pages if necessary)

Signature of Applicant	Date
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**SEND COMPLETED APPLICATION AND ALL ATTACHMENTS TO:**

North Dakota Department of Environmental Quality  
 Division of Air Quality  
 4201 Normandy Street, 2nd Floor  
 Bismarck, ND 58503-1324  
 (701) 328-5188

**SECTION C – EMISSION STREAM DATA**

Source ID Number SFN 8516 EU1 and EU2	Mean Particle Diameter (um) NA
Flow Rate (scfm) 2,871	Drift Velocity (ft/sec) 51.4
Stream Temperature (°F) 1,265	Particulate Concentration (gr/dscf) NA
Moisture Content (%) NA	Halogens or Metals Present? NA
Pressure (in. Hg) NA	Organic Content (ppmv) NA
Heat Content (Btu/scfm) NA	O <sub>2</sub> Content (%) NA

**SECTION D – POLLUTANT SPECIFIC DATA**  
**(Complete One Box for Each Pollutant in Emission Stream)**

Pollutant Emitted Toluene	Chemical Abstract Services (CAS) Number 108-88-3
Proposed Emission Rate (lb/hr) 4.88E-3	Emission Source (describe) Internal combustion engine
Source Classification (process point, process fugitive, area fugitive) Point	Pollutant Class and Form (organic/inorganic - particulate/vapor) Organic - vapor
Concentration in Emission Stream (ppmv) NA	Vapor Pressure (in. Hg @ °F) NA
Solubility NA	Molecular Weight (lb/lb-mole) 92.14
Absorptive Properties NA	

Pollutant Emitted Xylenes	Chemical Abstract Services (CAS) Number 1330-20-7
Proposed Emission Rate (lb/hr) 1.70E-3	Emission Source (describe) Internal combustion engine
Source Classification (process point, process fugitive, area fugitive) Point	Pollutant Class and Form (organic/inorganic - particulate/vapor) Organic - vapor
Concentration in Emission Stream (ppmv) NA	Vapor Pressure (in. Hg @ °F) NA
Solubility NA	Molecular Weight (lb/lb-mole) 106.17
Absorptive Properties NA	

(Add additional pages if necessary)

Signature of Applicant	Date
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**SEND COMPLETED APPLICATION AND ALL ATTACHMENTS TO:**

North Dakota Department of Environmental Quality  
 Division of Air Quality  
 4201 Normandy Street, 2nd Floor  
 Bismarck, ND 58503-1324  
 (701) 328-5188

## Generator Engine



# PERMIT APPLICATION FOR INTERNAL COMBUSTION ENGINES AND TURBINES

NORTH DAKOTA DEPARTMENT OF ENVIRONMENTAL QUALITY  
DIVISION OF AIR QUALITY  
SFN 8891 (9-2021)

NOTE: READ INSTRUCTIONS BEFORE COMPLETING THIS FORM.

- Must include SFN 8516 or SFN 52858

## SECTION A – GENERAL INFORMATION

Name of Firm or Organization NYDIG DFM LLC	Facility Name Hulk Central Delivery Point (CDP)
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## SECTION B – FACILITY AND UNIT INFORMATION

Source ID Number (From form SFN 8516) EU3		
Type of Unit (check all that apply)	<input checked="" type="checkbox"/> Stationary Natural Gas-Fired Engine	<input type="checkbox"/> Emergency Use Only
	<input type="checkbox"/> Stationary Diesel and Dual Fuel Engine	<input checked="" type="checkbox"/> Non-Emergency Use
	<input type="checkbox"/> Stationary Gasoline Engine	<input type="checkbox"/> Peaking
	<input type="checkbox"/> Stationary Natural Gas-Fired Turbine	<input type="checkbox"/> Demand Response
	<input type="checkbox"/> Other – Specify:	

## SECTION C – MANUFACTURER DATA

Make Waukesha	Model 9394GSI	Date of Manufacture TBD	
Reciprocating Internal Combustion Engine			
<input checked="" type="checkbox"/> Spark Ignition	<input type="checkbox"/> Compression Ignition	<input type="checkbox"/> Lean Burn	
<input checked="" type="checkbox"/> 4 Stroke	<input type="checkbox"/> 2 Stroke	<input checked="" type="checkbox"/> Rich Burn	
Maximum Rating (BHP @ rpm) 2500 BHP @ 1200 RPM		Operating Capacity (BHP @ rpm) 2500 BHP @ 1200 RPM	
Engine Subject to:			
<input type="checkbox"/> 40 CFR 60, Subpart IIII			
<input checked="" type="checkbox"/> 40 CFR 60, Subpart JJJJ			
<input checked="" type="checkbox"/> 40 CFR 63, Subpart ZZZZ			
<input type="checkbox"/> 40 CFR 60, Subpart OOOO (for compressors)			
<input type="checkbox"/> 40 CFR 60, Subpart OOOOa (for compressors)			
Turbine			
Dry Low Emissions? <input type="checkbox"/> Yes <input type="checkbox"/> No			
Heat Input (MMBtu/hr)	Maximum Rating (HP)	75% Rating (HP)	Efficiency
Turbine Subject to:			
<input type="checkbox"/> 40 CFR 60, Subpart GG <input type="checkbox"/> 40 CFR 60, Subpart KKKK			

## SECTION D – FUELS USED

Natural Gas (10 <sup>6</sup> cu ft/year) 133.1	Percent Sulfur 25 ppmv	Percent H <sub>2</sub> S 25 ppmv
Oil (gal/year)	Percent Sulfur	Grade No.
LP Gas (gal/year)	Other – Specify:	

## SECTION E – NORMAL OPERATING SCHEDULE

Hours Per Day 24	Days Per Week 7	Weeks Per Year 52	Hours Per Year 8,760	Peak Production Season (if any) N/A
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## SECTION F – STACK PARAMETERS

Emission Point ID Number EU3		Stack Height Above Ground Level (feet) 25		
Stack Diameter (feet at top) 1.08	Gas Discharged (SCFM) 10,544	Exit Temp (°F) 1,084	Gas Velocity (FPS) 191	

**SECTION G – EMISSION CONTROL EQUIPMENT**

Is any emission control equipment installed on this unit?  
 No       Yes – Complete and attach form SFN 8532

**SECTION H – MAXIMUM AIR CONTAMINANTS EMITTED**

Pollutant	Maximum Pounds Per Hour	Amount (Tons Per Year)	Basis of Estimate*
NO <sub>x</sub>	0.83	3.62	Manufacturer Specifications
CO	1.65	7.24	Manufacturer Specifications
PM	0.06	0.24	Manufacturer Specifications
PM <sub>10</sub> (filterable and condensable)	0.06	0.24	Manufacturer Specifications
PM <sub>2.5</sub> (filterable and condensable)	0.06	0.24	Manufacturer Specifications
SO <sub>2</sub>	0.14	0.62	AP-42 Section 3.2-3
VOC	0.17	0.72	Manufacturer Specifications
GHG (as CO <sub>2</sub> e)	2,491	10,911	40 CFR Part 98 Subpart C
Largest Single HAP	0.05	0.22	AP-42 Section 3.2-3
Total HAPS	0.20	0.87	AP-42 Section 3.2-3 & Manufacturer Specifications

\* If performance test results are available for the unit, submit a copy of test with this application, if manufacture data used, submit manufacturers specification sheets.

<p>IS THIS UNIT IN COMPLIANCE WITH ALL APPLICABLE AIR POLLUTION RULES AND REGULATIONS?</p> <p><input checked="" type="checkbox"/> YES      <input type="checkbox"/> NO</p>	<p>If "NO" a Compliance Schedule (SFN 61008) must be completed and attached.</p>
--	--

Attach and label separate sheet(s) if you need more space to explain any system or answers or to provide complete listings of Emissions, Contaminants, or other items.

**SEND COMPLETED APPLICATION AND ALL ATTACHMENTS TO:**

North Dakota Department of Environmental Quality  
 Division of Air Quality  
 4201 Normandy Street, 2<sup>nd</sup> Floor  
 Bismarck, ND 58503-1324  
 (701) 328-5188



**PERMIT APPLICATION FOR AIR POLLUTION CONTROL EQUIPMENT**

NORTH DAKOTA DEPARTMENT OF ENVIRONMENTAL QUALITY  
 DIVISION OF AIR QUALITY  
 SFN 8532 (9-2021)

NOTE: READ INSTRUCTIONS BEFORE COMPLETING THIS FORM.

- **Must also include forms SFN 8516 or SFN 52858**

**SECTION A – GENERAL INFORMATION**

Name of Firm or Organization NYDIG DFM LLC	Facility Name Hulk Central Delivery Point (CDP)
Source ID No. of Equipment being Controlled EU3	

**SECTION B – EQUIPMENT**

Type:	<input type="checkbox"/> Cyclone	<input type="checkbox"/> Multiclone	<input type="checkbox"/> Baghouse	<input type="checkbox"/> Electrostatic Precipitator
	<input type="checkbox"/> Wet Scrubber	<input type="checkbox"/> Spray Dryer	<input type="checkbox"/> Flare/Combustor	
	<input checked="" type="checkbox"/> Other – Specify: Non-selective catalytic reduction device and AFR			
Name of Manufacturer Waukesha	Model Number	Date to Be Installed 09/25/2024		
Application:	<input type="checkbox"/> Boiler	<input type="checkbox"/> Kiln	<input checked="" type="checkbox"/> Engine	<input type="checkbox"/> Other – Specify:
Pollutants Removed	<b>NOx</b>	CO	VOC	HCHO
Design Efficiency (%)	<b>98.79%</b>	94.89%	75.81%	98%
Operating Efficiency (%)	<b>100%</b>	100%	100%	100%
Describe method used to determine operating efficiency: Manufacturer specifications and assuming all emissions will go through catalyst elements. Total efficiency - design efficiency x operation efficiency.				

**SECTION CD – GAS CONDITIONS**

Gas Conditions		Inlet	Outlet
Gas Volume (SCFM; 68°F; 14.7 psia)		10,544	10,544
Gas Temperature (°F)		1,084	1,084
Gas Pressure (in. H <sub>2</sub> O)		2	2
Gas Velocity (ft/sec)		191	191
Pollutant Concentration (Specify Pollutant and Unit of Concentration)	Pollutant	Unit of Concentration	
	NOx	g/bhp-hr	12.42 / 0.15
	CO	g/bhp-hr	5.87 / 0.30
	VOC	g/bhp-hr	0.12 / 0.03
	HCHO	g/bhp-hr	0.05 / 0.001
Pressure Drop Through Gas Cleaning Device (in. H <sub>2</sub> O) The pressure drop is a delta of 2 inches of water per NSPS JJJJ.			



# PERMIT APPLICATION FOR HAZARDOUS AIR POLLUTANT (HAP) SOURCES

NORTH DAKOTA DEPARTMENT OF ENVIRONMENTAL QUALITY  
 DIVISION OF AIR QUALITY  
 SFN 8329 (9-2021)

## SECTION A1 - APPLICANT INFORMATION

Name of Firm or Organization NYDIG DFM LLC		
Applicant's Name Laura Pritchard		
Title Environmental Specialist	Telephone Number (970) 749-8615	E-mail Address laura.pritchard@nydig.com
Mailing Address (Street & No.) One Vanderbilt Avenue, 65th Floor		
City New York	State New York	ZIP Code 10017

## SECTION A2 - FACILITY INFORMATION

Contact Person for Air Pollution Matters Laura Pritchard		
Title Environmental Specialist	Telephone Number (970) 749-8615	E-mail Address laura.pritchard@nydig.com
Facility Address (Street & No. or Lat/Long to Nearest Second)		
City	State	ZIP Code
County Williams	Number of Employees at Location 0	
Land Area at Plant Site 10 Acres (or)	Sq. Ft.	MSL Elevation at Plant 2,144

Describe Nature of Business/Process Facility to take stranded gas from the oil field to run small data centers
---

## SECTION B – STACK DATA

Inside Diameter (ft) 1.08	Height Above Grade (ft) 25	
Gas Temperature at Exit (°F) 1,084	Gas Velocity at Exit (ft/sec) 191	Gas Volume (scfm) 10,544
Basis of any Estimates (attach separate sheet if necessary) Manufacturer specifications and AP-42 Section 3.2-3		
Are Emission Control Devices in Place? If YES – Complete SFN 8532 <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No		
Nearest Residences or Building	Distance (ft) 7,340	Direction East
Nearest Property Line	Distance (ft) 80	Direction West

**SECTION C – EMISSION STREAM DATA**

Source ID Number SFN 8516 EU3	Mean Particle Diameter (um) NA
Flow Rate (scfm) 10,544	Drift Velocity (ft/sec) 191
Stream Temperature (°F) 1,084	Particulate Concentration (gr/dscf) NA
Moisture Content (%) NA	Halogens or Metals Present? NA
Pressure (in. Hg) NA	Organic Content (ppmv) NA
Heat Content (Btu/scfm) NA	O <sub>2</sub> Content (%) NA

**SECTION D – POLLUTANT SPECIFIC DATA**  
**(Complete One Box for Each Pollutant in Emission Stream)**

Pollutant Emitted 1.3-Butadiene	Chemical Abstract Services (CAS) Number 106-99-0
Proposed Emission Rate (lb/hr) 1.07E-2	Emission Source (describe) Internal combustion engine
Source Classification (process point, process fugitive, area fugitive) Point	Pollutant Class and Form (organic/inorganic - particulate/vapor) Organic-vapor
Concentration in Emission Stream (ppmv) NA	Vapor Pressure (in. Hg @ °F) NA
Solubility NA	Molecular Weight (lb/lb-mole) 54.09
Absorptive Properties NA	

Pollutant Emitted Acetaldehyde	Chemical Abstract Services (CAS) Number 75-07-0
Proposed Emission Rate (lb/hr) 4.50E-2	Emission Source (describe) Internal combustion engine
Source Classification (process point, process fugitive, area fugitive) Point	Pollutant Class and Form (organic/inorganic - particulate/vapor) Organic-vapor
Concentration in Emission Stream (ppmv) NA	Vapor Pressure (in. Hg @ °F) NA
Solubility NA	Molecular Weight (lb/lb-mole) 44.05
Absorptive Properties NA	

(Add additional pages if necessary)

Signature of Applicant	Date
------------------------	------

**SEND COMPLETED APPLICATION AND ALL ATTACHMENTS TO:**

North Dakota Department of Environmental Quality  
 Division of Air Quality  
 4201 Normandy Street, 2nd Floor  
 Bismarck, ND 58503-1324  
 (701) 328-5188

**SECTION C – EMISSION STREAM DATA**

Source ID Number SFN 8516 EU3	Mean Particle Diameter (um) NA
Flow Rate (scfm) 10,544	Drift Velocity (ft/sec) 191
Stream Temperature (°F) 1,084	Particulate Concentration (gr/dscf) NA
Moisture Content (%) NA	Halogens or Metals Present? NA
Pressure (in. Hg) NA	Organic Content (ppmv) NA
Heat Content (Btu/scfm) NA	O <sub>2</sub> Content (%) NA

**SECTION D – POLLUTANT SPECIFIC DATA**

**(Complete One Box for Each Pollutant in Emission Stream)**

Pollutant Emitted Acrolein	Chemical Abstract Services (CAS) Number 107-02-8
Proposed Emission Rate (lb/hr) 4.24E-2	Emission Source (describe) Internal combustion engine
Source Classification (process point, process fugitive, area fugitive) Point	Pollutant Class and Form (organic/inorganic - particulate/vapor) Organic - vapor
Concentration in Emission Stream (ppmv) NA	Vapor Pressure (in. Hg @ °F) NA
Solubility NA	Molecular Weight (lb/lb-mole) 56.06
Absorptive Properties NA	

Pollutant Emitted Benzene	Chemical Abstract Services (CAS) Number 71-43-2
Proposed Emission Rate (lb/hr) 2.55E-2	Emission Source (describe) Internal combustion engine
Source Classification (process point, process fugitive, area fugitive) Point	Pollutant Class and Form (organic/inorganic - particulate/vapor) Organic - vapor
Concentration in Emission Stream (ppmv) NA	Vapor Pressure (in. Hg @ °F) NA
Solubility NA	Molecular Weight (lb/lb-mole) 78.11
Absorptive Properties NA	

(Add additional pages if necessary)

Signature of Applicant	Date
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**SEND COMPLETED APPLICATION AND ALL ATTACHMENTS TO:**

North Dakota Department of Environmental Quality  
 Division of Air Quality  
 4201 Normandy Street, 2nd Floor  
 Bismarck, ND 58503-1324  
 (701) 328-5188

**SECTION C – EMISSION STREAM DATA**

Source ID Number SFN 8516 EU3	Mean Particle Diameter (um) NA
Flow Rate (scfm) 10,544	Drift Velocity (ft/sec) 191
Stream Temperature (°F) 1,084	Particulate Concentration (gr/dscf) NA
Moisture Content (%) NA	Halogens or Metals Present? NA
Pressure (in. Hg) NA	Organic Content (ppmv) NA
Heat Content (Btu/scfm) NA	O <sub>2</sub> Content (%) NA

**SECTION D – POLLUTANT SPECIFIC DATA**

**(Complete One Box for Each Pollutant in Emission Stream)**

Pollutant Emitted Ethylbenzene	Chemical Abstract Services (CAS) Number 100-41-4
Proposed Emission Rate (lb/hr) 4.00E-4	Emission Source (describe) Internal combustion engine
Source Classification (process point, process fugitive, area fugitive) Point	Pollutant Class and Form (organic/inorganic - particulate/vapor) Organic - vapor
Concentration in Emission Stream (ppmv) NA	Vapor Pressure (in. Hg @ °F) NA
Solubility NA	Molecular Weight (lb/lb-mole) 106.17
Absorptive Properties NA	

Pollutant Emitted Formaldehyde	Chemical Abstract Services (CAS) Number 50-00-0
Proposed Emission Rate (lb/hr) 5.51E-3	Emission Source (describe) Internal combustion engine
Source Classification (process point, process fugitive, area fugitive) Point	Pollutant Class and Form (organic/inorganic - particulate/vapor) Organic - vapor
Concentration in Emission Stream (ppmv) NA	Vapor Pressure (in. Hg @ °F) NA
Solubility NA	Molecular Weight (lb/lb-mole) 30.03
Absorptive Properties NA	

(Add additional pages if necessary)

Signature of Applicant	Date
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**SEND COMPLETED APPLICATION AND ALL ATTACHMENTS TO:**

North Dakota Department of Environmental Quality  
 Division of Air Quality  
 4201 Normandy Street, 2nd Floor  
 Bismarck, ND 58503-1324  
 (701) 328-5188

**SECTION C – EMISSION STREAM DATA**

Source ID Number SFN 8516 EU3	Mean Particle Diameter (um) NA
Flow Rate (scfm) 10,544	Drift Velocity (ft/sec) 191
Stream Temperature (°F) 1,084	Particulate Concentration (gr/dscf) NA
Moisture Content (%) NA	Halogens or Metals Present? NA
Pressure (in. Hg) NA	Organic Content (ppmv) NA
Heat Content (Btu/scfm) NA	O <sub>2</sub> Content (%) NA

**SECTION D – POLLUTANT SPECIFIC DATA****(Complete One Box for Each Pollutant in Emission Stream)**

Pollutant Emitted Methanol	Chemical Abstract Services (CAS) Number 67-56-1
Proposed Emission Rate (lb/hr) 4.93E-2	Emission Source (describe) Internal combustion engine
Source Classification (process point, process fugitive, area fugitive) Point	Pollutant Class and Form (organic/inorganic - particulate/vapor) Organic - vapor
Concentration in Emission Stream (ppmv) NA	Vapor Pressure (in. Hg @ °F) NA
Solubility NA	Molecular Weight (lb/lb-mole) 32.04
Absorptive Properties NA	

Pollutant Emitted PAH	Chemical Abstract Services (CAS) Number NA
Proposed Emission Rate (lb/hr) 3.00E-3	Emission Source (describe) Internal combustion engine
Source Classification (process point, process fugitive, area fugitive) Point	Pollutant Class and Form (organic/inorganic - particulate/vapor) Organic - vapor
Concentration in Emission Stream (ppmv) NA	Vapor Pressure (in. Hg @ °F) NA
Solubility NA	Molecular Weight (lb/lb-mole) NA
Absorptive Properties NA	

(Add additional pages if necessary)

Signature of Applicant	Date
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**SEND COMPLETED APPLICATION AND ALL ATTACHMENTS TO:**

North Dakota Department of Environmental Quality  
 Division of Air Quality  
 4201 Normandy Street, 2nd Floor  
 Bismarck, ND 58503-1324  
 (701) 328-5188

**SECTION C – EMISSION STREAM DATA**

Source ID Number SFN 8516 EU3	Mean Particle Diameter (um) NA
Flow Rate (scfm) 10,544	Drift Velocity (ft/sec) 191
Stream Temperature (°F) 1,084	Particulate Concentration (gr/dscf) NA
Moisture Content (%) NA	Halogens or Metals Present? NA
Pressure (in. Hg) NA	Organic Content (ppmv) NA
Heat Content (Btu/scfm) NA	O <sub>2</sub> Content (%) NA

**SECTION D – POLLUTANT SPECIFIC DATA**  
**(Complete One Box for Each Pollutant in Emission Stream)**

Pollutant Emitted Toluene	Chemical Abstract Services (CAS) Number 108-88-3
Proposed Emission Rate (lb/hr) 9.00E-3	Emission Source (describe) Internal combustion engine
Source Classification (process point, process fugitive, area fugitive) Point	Pollutant Class and Form (organic/inorganic - particulate/vapor) Organic - vapor
Concentration in Emission Stream (ppmv) NA	Vapor Pressure (in. Hg @ °F) NA
Solubility NA	Molecular Weight (lb/lb-mole) 92.14
Absorptive Properties NA	

Pollutant Emitted Xylenes	Chemical Abstract Services (CAS) Number 1330-20-7
Proposed Emission Rate (lb/hr) 3.14E-3	Emission Source (describe) Internal combustion engine
Source Classification (process point, process fugitive, area fugitive) Point	Pollutant Class and Form (organic/inorganic - particulate/vapor) Organic - vapor
Concentration in Emission Stream (ppmv) NA	Vapor Pressure (in. Hg @ °F) NA
Solubility NA	Molecular Weight (lb/lb-mole) 106.17
Absorptive Properties NA	

(Add additional pages if necessary)

Signature of Applicant	Date
------------------------	------

**SEND COMPLETED APPLICATION AND ALL ATTACHMENTS TO:**

North Dakota Department of Environmental Quality  
 Division of Air Quality  
 4201 Normandy Street, 2nd Floor  
 Bismarck, ND 58503-1324  
 (701) 328-5188

## Turbine



# PERMIT APPLICATION FOR INTERNAL COMBUSTION ENGINES AND TURBINES

NORTH DAKOTA DEPARTMENT OF ENVIRONMENTAL QUALITY  
DIVISION OF AIR QUALITY  
SFN 8891 (9-2021)

NOTE: READ INSTRUCTIONS BEFORE COMPLETING THIS FORM.

- Must include SFN 8516 or SFN 52858

## SECTION A – GENERAL INFORMATION

Name of Firm or Organization NYDIG DFM LLC	Facility Name Hulk Central Delivery Point (CDP)
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## SECTION B – FACILITY AND UNIT INFORMATION

Source ID Number (From form SFN 8516) EU13		
Type of Unit (check all that apply)	<input type="checkbox"/> Stationary Natural Gas-Fired Engine	<input type="checkbox"/> Emergency Use Only
	<input type="checkbox"/> Stationary Diesel and Dual Fuel Engine	<input checked="" type="checkbox"/> Non-Emergency Use
	<input type="checkbox"/> Stationary Gasoline Engine	<input type="checkbox"/> Peaking
	<input checked="" type="checkbox"/> Stationary Natural Gas-Fired Turbine	<input type="checkbox"/> Demand Response
	<input type="checkbox"/> Other – Specify:	

## SECTION C – MANUFACTURER DATA

Make Titan	Model 130	Date of Manufacture 01/01/2021	
Reciprocating Internal Combustion Engine			
<input type="checkbox"/> Spark Ignition	<input type="checkbox"/> Compression Ignition	<input type="checkbox"/> Lean Burn	
<input type="checkbox"/> 4 Stroke	<input type="checkbox"/> 2 Stroke	<input type="checkbox"/> Rich Burn	
Maximum Rating (BHP @ rpm)		Operating Capacity (BHP @ rpm)	
Engine Subject to:			
<input type="checkbox"/> 40 CFR 60, Subpart III			
<input type="checkbox"/> 40 CFR 60, Subpart JJJJ			
<input type="checkbox"/> 40 CFR 63, Subpart ZZZZ			
<input type="checkbox"/> 40 CFR 60, Subpart OOOO (for compressors)			
<input type="checkbox"/> 40 CFR 60, Subpart OOOOa (for compressors)			
Turbine			
Dry Low Emissions? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No			
Heat Input (MMBtu/hr) 134.6	Maximum Rating (HP) 17,833	75% Rating (HP) 13,374	Efficiency TBD
Turbine Subject to:			
<input type="checkbox"/> 40 CFR 60, Subpart GG <input checked="" type="checkbox"/> 40 CFR 60, Subpart KKKK			

## SECTION D – FUELS USED

Natural Gas (10 <sup>6</sup> cu ft/year) 842.4	Percent Sulfur 25 ppmv	Percent H <sub>2</sub> S 25 ppmv
Oil (gal/year)	Percent Sulfur	Grade No.
LP Gas (gal/year)	Other – Specify:	

## SECTION E – NORMAL OPERATING SCHEDULE

Hours Per Day 24	Days Per Week 7	Weeks Per Year 52	Hours Per Year 8760	Peak Production Season (if any) N/A
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## SECTION F – STACK PARAMETERS

Emission Point ID Number EU13		Stack Height Above Ground Level (feet) 40		
Stack Diameter (feet at top) 6	Gas Discharged (SCFM) 268,030	Exit Temp (°F) 910	Gas Velocity (FPS) 158	

**SECTION G – EMISSION CONTROL EQUIPMENT**

Is any emission control equipment installed on this unit?  
 No       Yes – Complete and attach form SFN 8532

**SECTION H – MAXIMUM AIR CONTAMINANTS EMITTED**

Pollutant	Maximum Pounds Per Hour	Amount (Tons Per Year)	Basis of Estimate*
NO <sub>x</sub>	12.97	56.83	Manufacturer Specifications
CO	15.73	68.88	Manufacturer Specifications
PM	0.89	3.89	AP-42 Section 3.1-2a
PM <sub>10</sub> (filterable and condensable)	0.89	3.89	AP-42 Section 3.1-2a
PM <sub>2.5</sub> (filterable and condensable)	0.89	3.89	AP-42 Section 3.1-2a
SO <sub>2</sub>	0.90	3.95	AP-42 Section 3.1-2
VOC	6.09	26.69	Manufacturer Specifications
GHG (as CO <sub>2</sub> e)	15,767	69,062	40 CFR Part 98 Subpart C
Largest Single HAP	0.10	0.42	AP-42 Section 3.1-3
Total HAPS	0.14	0.61	AP-42 Section 3.1-3

\* If performance test results are available for the unit, submit a copy of test with this application, if manufacture data used, submit manufacturers specification sheets.

IS THIS UNIT IN COMPLIANCE WITH ALL APPLICABLE AIR POLLUTION RULES AND REGULATIONS?  
 YES       NO

If "NO" a Compliance Schedule (SFN 61008) must be completed and attached.

Attach and label separate sheet(s) if you need more space to explain any system or answers or to provide complete listings of Emissions, Contaminants, or other items.

**SEND COMPLETED APPLICATION AND ALL ATTACHMENTS TO:**

North Dakota Department of Environmental Quality  
 Division of Air Quality  
 4201 Normandy Street, 2<sup>nd</sup> Floor  
 Bismarck, ND 58503-1324  
 (701) 328-5188



# PERMIT APPLICATION FOR HAZARDOUS AIR POLLUTANT (HAP) SOURCES

NORTH DAKOTA DEPARTMENT OF ENVIRONMENTAL QUALITY  
 DIVISION OF AIR QUALITY  
 SFN 8329 (9-2021)

## SECTION A1 - APPLICANT INFORMATION

Name of Firm or Organization NYDIG DFM LLC		
Applicant's Name Laura Pritchard		
Title Environmental Specialist	Telephone Number (970) 749-8615	E-mail Address laura.pritchard@nydig.com
Mailing Address (Street & No.) One Vanderbilt Avenue, 65th Floor		
City New York	State New York	ZIP Code 10017

## SECTION A2 - FACILITY INFORMATION

Contact Person for Air Pollution Matters Laura Pritchard		
Title Environmental Specialist	Telephone Number (970) 749-8615	E-mail Address laura.pritchard@nydig.com
Facility Address (Street & No. or Lat/Long to Nearest Second)		
City	State	ZIP Code
County Williams	Number of Employees at Location 0	
Land Area at Plant Site 10 Acres (or)	Sq. Ft.	MSL Elevation at Plant 2,144

Describe Nature of Business/Process Facility to take stranded gas from the oil field to run small data centers
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## SECTION B – STACK DATA

Inside Diameter (ft) 72	Height Above Grade (ft) 40	
Gas Temperature at Exit (°F) 910	Gas Velocity at Exit (ft/sec) 158	Gas Volume (scfm) 268,030
Basis of any Estimates (attach separate sheet if necessary) Manufacturer specifications and AP-42 Sections 3.1-2 and 3.1-3		
Are Emission Control Devices in Place? If YES – Complete SFN 8532 <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No		
Nearest Residences or Building	Distance (ft) 7,340	Direction East
Nearest Property Line	Distance (ft) 80	Direction West

**SECTION C – EMISSION STREAM DATA**

Source ID Number SFN 8516 EU13	Mean Particle Diameter (um) NA
Flow Rate (scfm) 268,030	Drift Velocity (ft/sec) 158
Stream Temperature (°F) 910	Particulate Concentration (gr/dscf) NA
Moisture Content (%) NA	Halogens or Metals Present? NA
Pressure (in. Hg) NA	Organic Content (ppmv) NA
Heat Content (Btu/scfm) NA	O <sub>2</sub> Content (%) NA

**SECTION D – POLLUTANT SPECIFIC DATA**

**(Complete One Box for Each Pollutant in Emission Stream)**

Pollutant Emitted 1.3-Butadiene	Chemical Abstract Services (CAS) Number 106-99-0
Proposed Emission Rate (lb/hr) 5.79E-5	Emission Source (describe) Combustion turbine
Source Classification (process point, process fugitive, area fugitive) Point	Pollutant Class and Form (organic/inorganic - particulate/vapor) Organic-vapor
Concentration in Emission Stream (ppmv) NA	Vapor Pressure (in. Hg @ °F) NA
Solubility NA	Molecular Weight (lb/lb-mole) 54.09
Absorptive Properties NA	

Pollutant Emitted Acetaldehyde	Chemical Abstract Services (CAS) Number 75-07-0
Proposed Emission Rate (lb/hr) 5.39E-3	Emission Source (describe) Combustion turbine
Source Classification (process point, process fugitive, area fugitive) Point	Pollutant Class and Form (organic/inorganic - particulate/vapor) Organic-vapor
Concentration in Emission Stream (ppmv) NA	Vapor Pressure (in. Hg @ °F) NA
Solubility NA	Molecular Weight (lb/lb-mole) 44.05
Absorptive Properties NA	

(Add additional pages if necessary)

Signature of Applicant	Date
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**SEND COMPLETED APPLICATION AND ALL ATTACHMENTS TO:**

North Dakota Department of Environmental Quality  
 Division of Air Quality  
 4201 Normandy Street, 2nd Floor  
 Bismarck, ND 58503-1324  
 (701) 328-5188

**SECTION C – EMISSION STREAM DATA**

Source ID Number SFN 8516 EU13	Mean Particle Diameter (um) NA
Flow Rate (scfm) 268,030	Drift Velocity (ft/sec) 158
Stream Temperature (°F) 910	Particulate Concentration (gr/dscf) NA
Moisture Content (%) NA	Halogens or Metals Present? NA
Pressure (in. Hg) NA	Organic Content (ppmv) NA
Heat Content (Btu/scfm) NA	O <sub>2</sub> Content (%) NA

**SECTION D – POLLUTANT SPECIFIC DATA**

**(Complete One Box for Each Pollutant in Emission Stream)**

Pollutant Emitted Acrolein	Chemical Abstract Services (CAS) Number 107-02-8
Proposed Emission Rate (lb/hr) 8.62E-4	Emission Source (describe) Combustion turbine
Source Classification (process point, process fugitive, area fugitive) Point	Pollutant Class and Form (organic/inorganic - particulate/vapor) Organic - vapor
Concentration in Emission Stream (ppmv) NA	Vapor Pressure (in. Hg @ °F) NA
Solubility NA	Molecular Weight (lb/lb-mole) 56.06
Absorptive Properties NA	

Pollutant Emitted Benzene	Chemical Abstract Services (CAS) Number 71-43-2
Proposed Emission Rate (lb/hr) 1.62E-3	Emission Source (describe) Combustion turbine
Source Classification (process point, process fugitive, area fugitive) Point	Pollutant Class and Form (organic/inorganic - particulate/vapor) Organic - vapor
Concentration in Emission Stream (ppmv) NA	Vapor Pressure (in. Hg @ °F) NA
Solubility NA	Molecular Weight (lb/lb-mole) 78.11
Absorptive Properties NA	

(Add additional pages if necessary)

Signature of Applicant	Date
------------------------	------

**SEND COMPLETED APPLICATION AND ALL ATTACHMENTS TO:**

North Dakota Department of Environmental Quality  
 Division of Air Quality  
 4201 Normandy Street, 2nd Floor  
 Bismarck, ND 58503-1324  
 (701) 328-5188

**SECTION C – EMISSION STREAM DATA**

Source ID Number SFN 8516 EU13	Mean Particle Diameter (um) NA
Flow Rate (scfm) 268,030	Drift Velocity (ft/sec) 158
Stream Temperature (°F) 910	Particulate Concentration (gr/dscf) NA
Moisture Content (%) NA	Halogens or Metals Present? NA
Pressure (in. Hg) NA	Organic Content (ppmv) NA
Heat Content (Btu/scfm) NA	O <sub>2</sub> Content (%) NA

**SECTION D – POLLUTANT SPECIFIC DATA**

**(Complete One Box for Each Pollutant in Emission Stream)**

Pollutant Emitted Ethylbenzene	Chemical Abstract Services (CAS) Number 100-41-4
Proposed Emission Rate (lb/hr) 4.31E-3	Emission Source (describe) Combustion turbine
Source Classification (process point, process fugitive, area fugitive) Point	Pollutant Class and Form (organic/inorganic - particulate/vapor) Organic - vapor
Concentration in Emission Stream (ppmv) NA	Vapor Pressure (in. Hg @ °F) NA
Solubility NA	Molecular Weight (lb/lb-mole) 106.17
Absorptive Properties NA	

Pollutant Emitted Formaldehyde	Chemical Abstract Services (CAS) Number 50-00-0
Proposed Emission Rate (lb/hr) 9.56E-2	Emission Source (describe) Combustion turbine
Source Classification (process point, process fugitive, area fugitive) Point	Pollutant Class and Form (organic/inorganic - particulate/vapor) Organic - vapor
Concentration in Emission Stream (ppmv) NA	Vapor Pressure (in. Hg @ °F) NA
Solubility NA	Molecular Weight (lb/lb-mole) 30.03
Absorptive Properties NA	

(Add additional pages if necessary)

Signature of Applicant	Date
------------------------	------

**SEND COMPLETED APPLICATION AND ALL ATTACHMENTS TO:**

North Dakota Department of Environmental Quality  
 Division of Air Quality  
 4201 Normandy Street, 2nd Floor  
 Bismarck, ND 58503-1324  
 (701) 328-5188

**SECTION C – EMISSION STREAM DATA**

Source ID Number SFN 8516 EU13	Mean Particle Diameter (um) NA
Flow Rate (scfm) 268,030	Drift Velocity (ft/sec) 158
Stream Temperature (°F) 910	Particulate Concentration (gr/dscf) NA
Moisture Content (%) NA	Halogens or Metals Present? NA
Pressure (in. Hg) NA	Organic Content (ppmv) NA
Heat Content (Btu/scfm) NA	O <sub>2</sub> Content (%) NA

**SECTION D – POLLUTANT SPECIFIC DATA**

**(Complete One Box for Each Pollutant in Emission Stream)**

Pollutant Emitted Naphthalene	Chemical Abstract Services (CAS) Number 91-20-3
Proposed Emission Rate (lb/hr) 1.75E-4	Emission Source (describe) Combustion turbine
Source Classification (process point, process fugitive, area fugitive) Point	Pollutant Class and Form (organic/inorganic - particulate/vapor) Organic - vapor
Concentration in Emission Stream (ppmv) NA	Vapor Pressure (in. Hg @ °F) NA
Solubility NA	Molecular Weight (lb/lb-mole) 128.2
Absorptive Properties NA	

Pollutant Emitted PAH	Chemical Abstract Services (CAS) Number NA
Proposed Emission Rate (lb/hr) 2.96E-4	Emission Source (describe) Combustion turbine
Source Classification (process point, process fugitive, area fugitive) Point	Pollutant Class and Form (organic/inorganic - particulate/vapor) Organic - vapor
Concentration in Emission Stream (ppmv) NA	Vapor Pressure (in. Hg @ °F) NA
Solubility NA	Molecular Weight (lb/lb-mole) NA
Absorptive Properties NA	

(Add additional pages if necessary)

Signature of Applicant	Date
------------------------	------

**SEND COMPLETED APPLICATION AND ALL ATTACHMENTS TO:**

North Dakota Department of Environmental Quality  
 Division of Air Quality  
 4201 Normandy Street, 2nd Floor  
 Bismarck, ND 58503-1324  
 (701) 328-5188

**SECTION C – EMISSION STREAM DATA**

Source ID Number SFN 8516 EU13	Mean Particle Diameter (um) NA
Flow Rate (scfm) 268,030	Drift Velocity (ft/sec) 158
Stream Temperature (°F) 910	Particulate Concentration (gr/dscf) NA
Moisture Content (%) NA	Halogens or Metals Present? NA
Pressure (in. Hg) NA	Organic Content (ppmv) NA
Heat Content (Btu/scfm) NA	O <sub>2</sub> Content (%) NA

**SECTION D – POLLUTANT SPECIFIC DATA**

**(Complete One Box for Each Pollutant in Emission Stream)**

Pollutant Emitted Toluene	Chemical Abstract Services (CAS) Number 108-88-3
Proposed Emission Rate (lb/hr) 1.75E-2	Emission Source (describe) Combustion turbine
Source Classification (process point, process fugitive, area fugitive) Point	Pollutant Class and Form (organic/inorganic - particulate/vapor) Organic - vapor
Concentration in Emission Stream (ppmv) NA	Vapor Pressure (in. Hg @ °F) NA
Solubility NA	Molecular Weight (lb/lb-mole) 92.14
Absorptive Properties NA	

Pollutant Emitted Xylenes	Chemical Abstract Services (CAS) Number 1330-20-7
Proposed Emission Rate (lb/hr) 8.62E-3	Emission Source (describe) Combustion turbine
Source Classification (process point, process fugitive, area fugitive) Point	Pollutant Class and Form (organic/inorganic - particulate/vapor) Organic - vapor
Concentration in Emission Stream (ppmv) NA	Vapor Pressure (in. Hg @ °F) NA
Solubility NA	Molecular Weight (lb/lb-mole) 106.17
Absorptive Properties NA	

(Add additional pages if necessary)

Signature of Applicant	Date
------------------------	------

**SEND COMPLETED APPLICATION AND ALL ATTACHMENTS TO:**

North Dakota Department of Environmental Quality  
 Division of Air Quality  
 4201 Normandy Street, 2nd Floor  
 Bismarck, ND 58503-1324  
 (701) 328-5188

## Emergency Generator



# PERMIT APPLICATION FOR INTERNAL COMBUSTION ENGINES AND TURBINES

NORTH DAKOTA DEPARTMENT OF ENVIRONMENTAL QUALITY  
DIVISION OF AIR QUALITY  
SFN 8891 (9-2021)

NOTE: READ INSTRUCTIONS BEFORE COMPLETING THIS FORM.

- Must include SFN 8516 or SFN 52858

## SECTION A – GENERAL INFORMATION

Name of Firm or Organization NYDIG DFM LLC	Facility Name Hulk Central Delivery Point (CDP)
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## SECTION B – FACILITY AND UNIT INFORMATION

Source ID Number (From form SFN 8516) EU14		
Type of Unit (check all that apply)	<input type="checkbox"/> Stationary Natural Gas-Fired Engine	<input checked="" type="checkbox"/> Emergency Use Only
	<input checked="" type="checkbox"/> Stationary Diesel and Dual Fuel Engine	<input type="checkbox"/> Non-Emergency Use
	<input type="checkbox"/> Stationary Gasoline Engine	<input type="checkbox"/> Peaking
	<input type="checkbox"/> Stationary Natural Gas-Fired Turbine	<input type="checkbox"/> Demand Response
	<input type="checkbox"/> Other – Specify:	

## SECTION C – MANUFACTURER DATA

Make Caterpillar	Model C32	Date of Manufacture TBD	
Reciprocating Internal Combustion Engine			
<input type="checkbox"/> Spark Ignition	<input checked="" type="checkbox"/> Compression Ignition	<input checked="" type="checkbox"/> Lean Burn	
<input checked="" type="checkbox"/> 4 Stroke	<input type="checkbox"/> 2 Stroke	<input type="checkbox"/> Rich Burn	
Maximum Rating (BHP @ rpm) 1474 BHP @ 1800 RPM		Operating Capacity (BHP @ rpm) 1,474 BHP @ 1800 RPM	
Engine Subject to:			
<input checked="" type="checkbox"/> 40 CFR 60, Subpart III			
<input type="checkbox"/> 40 CFR 60, Subpart JJJJ			
<input checked="" type="checkbox"/> 40 CFR 63, Subpart ZZZZ			
<input type="checkbox"/> 40 CFR 60, Subpart OOOO (for compressors)			
<input type="checkbox"/> 40 CFR 60, Subpart OOOOa (for compressors)			
Turbine			
Dry Low Emissions? <input type="checkbox"/> Yes <input type="checkbox"/> No			
Heat Input (MMBtu/hr)	Maximum Rating (HP)	75% Rating (HP)	Efficiency
Turbine Subject to:			
<input type="checkbox"/> 40 CFR 60, Subpart GG <input type="checkbox"/> 40 CFR 60, Subpart KKKK			

## SECTION D – FUELS USED

Natural Gas (10 <sup>6</sup> cu ft/year)	Percent Sulfur	Percent H <sub>2</sub> S
Oil (gal/year) 6,940	Percent Sulfur 15 ppmv	Grade No.
LP Gas (gal/year)	Other – Specify: Diesel #2 (<15 ppm sulfur)	

## SECTION E – NORMAL OPERATING SCHEDULE

Hours Per Day TBD	Days Per Week TBD	Weeks Per Year TBD	Hours Per Year 100	Peak Production Season (if any) N/A
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## SECTION F – STACK PARAMETERS

Emission Point ID Number EU14		Stack Height Above Ground Level (feet) 18		
Stack Diameter (feet at top) 0.83	Gas Discharged (SCFM) 7,582.2	Exit Temp (°F) 884.2	Gas Velocity (FPS) 233.6	

**SECTION G – EMISSION CONTROL EQUIPMENT**

Is any emission control equipment installed on this unit?  
 No       Yes – Complete and attach form SFN 8532

**SECTION H – MAXIMUM AIR CONTAMINANTS EMITTED**

Pollutant	Maximum Pounds Per Hour	Amount (Tons Per Year)	Basis of Estimate*
NO <sub>x</sub>	19.79	0.99	Manufacturer Specifications - Nominal EF
CO	0.58	0.029	Manufacturer Specifications - Nominal EF
PM	0.07	0.003	Manufacturer Specifications - Nominal EF
PM <sub>10</sub> (filterable and condensable)	0.07	0.003	Manufacturer Specifications - Nominal EF
PM <sub>2.5</sub> (filterable and condensable)	0.07	0.003	Manufacturer Specifications - Nominal EF
SO <sub>2</sub>	0.01	0.0007	AP-42 Section 3.4
VOC	0.032	0.002	Manufacturer Specifications - Nominal EF
GHG (as CO <sub>2</sub> e)	1,556	77.81	40 CFR Part 98 Subpart C
Largest Single HAP	0.007	0.0004	AP-42 Section 3.4-3
Total HAPS	0.01	0.0007	AP-42 Section 3.4-3

\* If performance test results are available for the unit, submit a copy of test with this application, if manufacture data used, submit manufacturers specification sheets.

IS THIS UNIT IN COMPLIANCE WITH ALL APPLICABLE AIR POLLUTION RULES AND REGULATIONS?  
 YES       NO

If "NO" a Compliance Schedule (SFN 61008) must be completed and attached.

Attach and label separate sheet(s) if you need more space to explain any system or answers or to provide complete listings of Emissions, Contaminants, or other items.

**SEND COMPLETED APPLICATION AND ALL ATTACHMENTS TO:**

North Dakota Department of Environmental Quality  
 Division of Air Quality  
 4201 Normandy Street, 2<sup>nd</sup> Floor  
 Bismarck, ND 58503-1324  
 (701) 328-5188



# PERMIT APPLICATION FOR HAZARDOUS AIR POLLUTANT (HAP) SOURCES

NORTH DAKOTA DEPARTMENT OF ENVIRONMENTAL QUALITY  
DIVISION OF AIR QUALITY  
SFN 8329 (9-2021)

## SECTION A1 - APPLICANT INFORMATION

Name of Firm or Organization NYDIG DFM LLC		
Applicant's Name Laura Pritchard		
Title Environmental Specialist	Telephone Number (970) 749-8615	E-mail Address laura.pritchard@nydig.com
Mailing Address (Street & No.) One Vanderbilt Avenue, 65th Floor		
City New York	State New York	ZIP Code 10017

## SECTION A2 - FACILITY INFORMATION

Contact Person for Air Pollution Matters Laura Pritchard		
Title Environmental Specialist	Telephone Number (970) 749-8615	E-mail Address laura.pritchard@nydig.com
Facility Address (Street & No. or Lat/Long to Nearest Second)		
City	State	ZIP Code
County Williams	Number of Employees at Location 0	
Land Area at Plant Site 10 Acres (or)	Sq. Ft.	MSL Elevation at Plant 2,144

Describe Nature of Business/Process Facility to take stranded gas from the oil field to run small data centers
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## SECTION B - STACK DATA

Inside Diameter (ft) 0.83	Height Above Grade (ft) 18	
Gas Temperature at Exit (°F) 884.2	Gas Velocity at Exit (ft/sec) 233.6	Gas Volume (scfm) 7,582.2
Basis of any Estimates (attach separate sheet if necessary) Manufacturer specifications and AP-42 Section 3.4-3		
Are Emission Control Devices in Place? If YES – Complete SFN 8532 <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No		
Nearest Residences or Building	Distance (ft) 7,340	Direction East
Nearest Property Line	Distance (ft) 80	Direction West

**SECTION C – EMISSION STREAM DATA**

Source ID Number SFN 8516 EU14	Mean Particle Diameter (um) NA
Flow Rate (scfm) 7,582	Drift Velocity (ft/sec) 233.6
Stream Temperature (°F) 884.2	Particulate Concentration (gr/dscf) NA
Moisture Content (%) NA	Halogens or Metals Present? NA
Pressure (in. Hg) NA	Organic Content (ppmv) NA
Heat Content (Btu/scfm) NA	O <sub>2</sub> Content (%) NA

**SECTION D – POLLUTANT SPECIFIC DATA**

**(Complete One Box for Each Pollutant in Emission Stream)**

Pollutant Emitted Acetaldehyde	Chemical Abstract Services (CAS) Number 75-07-0
Proposed Emission Rate (lb/hr) 2.4E-4	Emission Source (describe) Internal combustion engine
Source Classification (process point, process fugitive, area fugitive) Point	Pollutant Class and Form (organic/inorganic - particulate/vapor) Organic-vapor
Concentration in Emission Stream (ppmv) NA	Vapor Pressure (in. Hg @ °F) NA
Solubility NA	Molecular Weight (lb/lb-mole) 44.05
Absorptive Properties NA	

Pollutant Emitted Acrolein	Chemical Abstract Services (CAS) Number 107-02-8
Proposed Emission Rate (lb/hr) 7.49E-5	Emission Source (describe) Internal combustion engine
Source Classification (process point, process fugitive, area fugitive) Point	Pollutant Class and Form (organic/inorganic - particulate/vapor) Organic-vapor
Concentration in Emission Stream (ppmv) NA	Vapor Pressure (in. Hg @ °F) NA
Solubility NA	Molecular Weight (lb/lb-mole) 56.06
Absorptive Properties NA	

(Add additional pages if necessary)

Signature of Applicant	Date
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**SEND COMPLETED APPLICATION AND ALL ATTACHMENTS TO:**

North Dakota Department of Environmental Quality  
 Division of Air Quality  
 4201 Normandy Street, 2nd Floor  
 Bismarck, ND 58503-1324  
 (701) 328-5188

**SECTION C – EMISSION STREAM DATA**

Source ID Number SFN 8516 EU14	Mean Particle Diameter (um) NA
Flow Rate (scfm) 7,582	Drift Velocity (ft/sec) 233.6
Stream Temperature (°F) 884.2	Particulate Concentration (gr/dscf) NA
Moisture Content (%) NA	Halogens or Metals Present? NA
Pressure (in. Hg) NA	Organic Content (ppmv) NA
Heat Content (Btu/scfm) NA	O <sub>2</sub> Content (%) NA

**SECTION D – POLLUTANT SPECIFIC DATA**

**(Complete One Box for Each Pollutant in Emission Stream)**

Pollutant Emitted Benzene	Chemical Abstract Services (CAS) Number 71-43-2
Proposed Emission Rate (lb/hr) 7.38E-3	Emission Source (describe) Internal combustion engine
Source Classification (process point, process fugitive, area fugitive) Point	Pollutant Class and Form (organic/inorganic - particulate/vapor) Organic - vapor
Concentration in Emission Stream (ppmv) NA	Vapor Pressure (in. Hg @ °F) NA
Solubility NA	Molecular Weight (lb/lb-mole) 78.11
Absorptive Properties NA	

Pollutant Emitted Formaldehyde	Chemical Abstract Services (CAS) Number 50-00-0
Proposed Emission Rate (lb/hr) 7.50E-04	Emission Source (describe) Internal combustion engine
Source Classification (process point, process fugitive, area fugitive) Point	Pollutant Class and Form (organic/inorganic - particulate/vapor) Organic - vapor
Concentration in Emission Stream (ppmv) NA	Vapor Pressure (in. Hg @ °F) NA
Solubility NA	Molecular Weight (lb/lb-mole) 30.03
Absorptive Properties NA	

(Add additional pages if necessary)

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**SECTION C – EMISSION STREAM DATA**

Source ID Number SFN 8516 EU14	Mean Particle Diameter (um) NA
Flow Rate (scfm) 7,582	Drift Velocity (ft/sec) 233.6
Stream Temperature (°F) 884.2	Particulate Concentration (gr/dscf) NA
Moisture Content (%) NA	Halogens or Metals Present? NA
Pressure (in. Hg) NA	Organic Content (ppmv) NA
Heat Content (Btu/scfm) NA	O <sub>2</sub> Content (%) NA

**SECTION D – POLLUTANT SPECIFIC DATA**  
**(Complete One Box for Each Pollutant in Emission Stream)**

Pollutant Emitted Toluene	Chemical Abstract Services (CAS) Number 108-88-3
Proposed Emission Rate (lb/hr) 2.67E-3	Emission Source (describe) Internal combustion engine
Source Classification (process point, process fugitive, area fugitive) Point	Pollutant Class and Form (organic/inorganic - particulate/vapor) Organic - vapor
Concentration in Emission Stream (ppmv) NA	Vapor Pressure (in. Hg @ °F) NA
Solubility NA	Molecular Weight (lb/lb-mole) 92.14
Absorptive Properties NA	

Pollutant Emitted Xylenes	Chemical Abstract Services (CAS) Number 1330-20-7
Proposed Emission Rate (lb/hr) 1.84E-3	Emission Source (describe) Internal combustion engine
Source Classification (process point, process fugitive, area fugitive) Point	Pollutant Class and Form (organic/inorganic - particulate/vapor) Organic - vapor
Concentration in Emission Stream (ppmv) NA	Vapor Pressure (in. Hg @ °F) NA
Solubility NA	Molecular Weight (lb/lb-mole) 106.17
Absorptive Properties NA	

(Add additional pages if necessary)

Signature of Applicant	Date
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### 3. Site Location Map



## 4. Emissions Calculations

## Uncontrolled Emissions Summary

Source	NOx ton/yr	CO ton/yr	VOC ton/yr	SO <sub>2</sub> ton/yr	PM/PM <sub>10</sub> /PM <sub>2.5</sub> ton/yr	HAPs ton/yr	CO <sub>2</sub> e ton/yr
<b><i>Engines</i></b>							
2 x Waukesha VGF H24SE	143.8	94.17	2.05	0.30	0.10	1.05	5,273
1 x Waukesha 9394GSI	299.8	141.7	2.99	0.62	0.24	2.32	10,911
1 x Caterpillar C32	0.99	0.029	0.0016	0.00072	0.0032	0.00065	77.81
<b><i>Turbine</i></b>							
1 x Titan 130	56.83	68.88	26.69	3.95	3.89	0.61	69,062
<b>Total Facility PTE =</b>	<b>501.5</b>	<b>304.8</b>	<b>31.73</b>	<b>4.88</b>	<b>4.24</b>	<b>3.97</b>	<b>85,324</b>

## Controlled Emissions Summary

Source	NOx ton/yr	CO ton/yr	VOC ton/yr	SO <sub>2</sub> ton/yr	PM/PM <sub>10</sub> /PM <sub>2.5</sub> ton/yr	HAPs ton/yr	CO <sub>2</sub> e ton/yr
<b><i>Engines</i></b>							
2 x Waukesha VGF H24SE	1.54	3.07	0.31	0.30	0.10	0.47	5,273
1 x Waukesha 9394GSI	3.62	7.24	0.72	0.62	0.24	0.87	10,911
1 x Caterpillar C32	0.99	0.029	0.0016	0.00072	0.0032	0.00065	77.81
<b><i>Turbine</i></b>							
1 x Titan 130	56.83	68.88	26.69	3.95	3.89	0.61	69,062
<b>Total Facility PTE =</b>	<b>62.97</b>	<b>79.22</b>	<b>27.72</b>	<b>4.88</b>	<b>4.24</b>	<b>1.95</b>	<b>85,324</b>
<b>Permitted Emissions Rates (ACP-18228) =</b>	<b>95.80</b>	<b>144.70</b>	<b>34.16</b>	<b>10.51</b>	<b>6.44</b>	<b>9.85</b>	<b>184,986</b>
<b>Difference =</b>	<b>-32.83</b>	<b>-65.47</b>	<b>-6.44</b>	<b>-5.63</b>	<b>-2.20</b>	<b>-7.90</b>	<b>-99,662</b>

## Compressor Engine Emissions

### Source Information

Emission Unit ID:	EU1 - EU2	
Engine Make/Model	Waukesha VGF H24SE	
Service	Fuel Gas Booster Compression	
Controls - Y or N / Type	Y	NSRC/AFRC
Number of Operational Units	2	engine
Individual Engine Horsepower <sup>1</sup>	530	horsepower
Horsepower Rating <sup>2</sup>	1,060	horsepower
Fuel Consumption (BSFC) <sup>1</sup>	9,698	Btu/(hp-hr)
Heat Rating <sup>2</sup>	10.28	MMBtu/hr
Fuel Consumption <sup>2</sup>	64.32	MMscf/yr
Fuel Consumption <sup>2</sup>	7,343	scf/hr
Fuel Heating Value <sup>3</sup>	1,400	Btu/scf
Operating Hours	8,760	hrs/yr

Pollutant	Emission Factor		Uncontrolled Emissions		Emission Factor		Controlled Emissions		Source of Emissions Factors
	lb/MMBtu	g/hp-hr	lb/hr	ton/yr	lb/MMBtu	g/hp-hr	lb/hr	ton/yr	
NOx	-	14.05	32.83	143.8	-	0.15	0.35	1.54	Manufacturer Specifications
CO	-	9.20	21.50	94.17	-	0.30	0.70	3.07	Manufacturer Specifications
VOC	-	0.20	0.47	2.05	-	0.030	0.070	0.31	Manufacturer Specifications
SO <sub>2</sub>	6.70E-03	-	0.069	0.30	6.70E-03	-	0.069	0.30	Converted for a gas with maximum H <sub>2</sub> S of 50 ppmv
PM <sub>10</sub>	-	0.01	0.02	0.10	-	0.01	0.02	0.10	AP-42, Chapter 3.2, Table 3.2-3
PM <sub>2.5</sub>	-	0.01	0.02	0.10	-	0.01	0.02	0.10	AP-42, Chapter 3.2, Table 3.2-3
1,1,2,2-Tetrachloroethane	2.53E-05	-	2.60E-04	1.14E-03	2.15E-05	-	2.21E-04	9.68E-04	AP-42, Chapter 3.2, Table 3.2-3; reduced by same percentage as VOC
1,3-Butadiene	6.63E-04	-	6.82E-03	2.99E-02	5.64E-04	-	5.79E-03	2.54E-02	AP-42, Chapter 3.2, Table 3.2-3; reduced by same percentage as VOC
Acetaldehyde	2.79E-03	-	2.87E-02	1.26E-01	2.37E-03	-	2.44E-02	1.07E-01	AP-42, Chapter 3.2, Table 3.2-3; reduced by same percentage as VOC
Acrolein	2.63E-03	-	2.70E-02	1.18E-01	2.24E-03	-	2.30E-02	1.01E-01	AP-42, Chapter 3.2, Table 3.2-3; reduced by same percentage as VOC
Benzene	1.58E-03	-	1.62E-02	7.11E-02	1.34E-03	-	1.38E-02	6.05E-02	AP-42, Chapter 3.2, Table 3.2-3; reduced by same percentage as VOC
Ethylbenzene	2.48E-05	-	2.55E-04	1.12E-03	2.11E-05	-	2.17E-04	9.49E-04	AP-42, Chapter 3.2, Table 3.2-3; reduced by same percentage as VOC
Formaldehyde	-	0.050	1.17E-01	5.12E-01	-	0.001	2.34E-03	1.02E-02	Manufacturer Specifications; same reduction % as 9394GSI
Methanol	3.06E-03	-	3.15E-02	1.38E-01	2.60E-03	-	2.67E-02	1.17E-01	AP-42, Chapter 3.2, Table 3.2-3; reduced by same percentage as VOC
Methylene Chloride	4.12E-05	-	4.24E-04	1.86E-03	3.50E-05	-	3.60E-04	1.58E-03	AP-42, Chapter 3.2, Table 3.2-3; reduced by same percentage as VOC
PAH	1.41E-04	-	1.45E-03	6.35E-03	1.41E-04	-	1.45E-03	6.35E-03	AP-42, Chapter 3.2, Table 3.2-3
Toluene	5.58E-04	-	5.74E-03	2.51E-02	4.74E-04	-	4.88E-03	2.14E-02	AP-42, Chapter 3.2, Table 3.2-3; reduced by same percentage as VOC
Xylenes	1.95E-04	-	2.00E-03	8.78E-03	1.66E-04	-	1.70E-03	7.46E-03	AP-42, Chapter 3.2, Table 3.2-3; reduced by same percentage as VOC
Other HAPs <sup>4</sup>	2.10E-04	-	2.16E-03	9.45E-03	2.10E-04	-	2.16E-03	9.45E-03	AP-42, Chapter 3.2, Table 3.2-3
<b>Total HAPs</b>	<b>1.19E-02</b>		<b>0.24</b>	<b>1.05</b>	<b>1.02E-02</b>		<b>0.11</b>	<b>0.47</b>	
Pollutant	Emission Factor		Uncontrolled Emissions		Emission Factor		Controlled Emissions		Source of Emissions Factors
	lb/MMBtu	g/hp-hr	lb/hr	ton/yr	lb/MMBtu	g/hp-hr	lb/hr	ton/yr	
CO <sub>2</sub>	53.06	-	1,203	5,268	53.06	-	1,203	5,268	40 CFR Part 98 Subpart C Table C-1
CH <sub>4</sub>	0.001	-	0.023	0.099	0.001	-	0.023	0.099	40 CFR Part 98 Subpart C Table C-2
N <sub>2</sub> O	0.0001	-	0.0023	0.0099	0.0001	-	0.0023	0.0099	40 CFR Part 98 Subpart C Table C-2
CO <sub>2</sub> e	-	-	1,204	5,273	-	-	1,204	5,273	Global warming potentials of 40 CFR Part 98 Table A-1

### Notes:

1. Manufacturer specifications.
2. Calculated values.
3. Estimated heating value of the fuel gas.
4. Other HAPs include those HAPs listed in AP-42 below the detection thresholds.

## Generator Engine Emissions

### Source Information

Emission Unit ID:	EU3	
Engine Make/Model	Waukesha 9394GSI	
Service	Power Generation	
Controls - Y or N / Type	Y	NSRC/AFRC
Number of Operational Units	1	engine
Individual Engine Horsepower <sup>1</sup>	2,500	horsepower
Horsepower Rating <sup>2</sup>	2,500	horsepower
Fuel Consumption (BSFC) <sup>1</sup>	8,508	Btu/(hp-hr)
Heat Rating <sup>2</sup>	21.27	MMBtu/hr
Fuel Consumption <sup>2</sup>	133.1	MMscf/yr
Fuel Consumption <sup>2</sup>	15,193	scf/hr
Fuel Heating Value <sup>3</sup>	1,400	Btu/scf
Operating Hours	8,760	hrs/yr

Pollutant	Emission Factor		Uncontrolled Emissions		Emission Factor		Controlled Emissions		Source of Emissions Factors
	lb/MMBtu	g/hp-hr	lb/hr	ton/yr	lb/MMBtu	g/hp-hr	lb/hr	ton/yr	
NOx	-	12.42	68.45	299.8	-	0.15	0.83	3.62	Manufacturer Specifications
CO	-	5.87	32.35	141.7	-	0.30	1.65	7.24	Manufacturer Specifications
VOC	-	0.12	0.68	2.99	-	0.030	0.17	0.72	Manufacturer Specifications
SO <sub>2</sub>	6.70E-03	-	0.14	0.62	6.70E-03	-	0.14	0.62	Converted for a gas with maximum H <sub>2</sub> S of 50 ppmv
PM <sub>10</sub>	-	0.01	0.055	0.24	-	0.010	0.055	0.24	Manufacturer Specifications
PM <sub>2.5</sub>	-	0.01	0.055	0.24	-	0.010	0.055	0.24	Manufacturer Specifications
1,1,2,2-Tetrachloroethane	2.53E-05	-	5.38E-04	2.36E-03	1.92E-05	-	4.08E-04	1.79E-03	AP-42, Chapter 3.2, Table 3.2-3; reduced by same percentage as VOC
1,3-Butadiene	6.63E-04	-	1.41E-02	6.18E-02	5.03E-04	-	1.07E-02	4.68E-02	AP-42, Chapter 3.2, Table 3.2-3; reduced by same percentage as VOC
Acetaldehyde	2.79E-03	-	5.93E-02	2.60E-01	2.12E-03	-	4.50E-02	1.97E-01	AP-42, Chapter 3.2, Table 3.2-3; reduced by same percentage as VOC
Acrolein	2.63E-03	-	5.59E-02	2.45E-01	1.99E-03	-	4.24E-02	1.86E-01	AP-42, Chapter 3.2, Table 3.2-3; reduced by same percentage as VOC
Benzene	1.58E-03	-	3.36E-02	1.47E-01	1.20E-03	-	2.55E-02	1.12E-01	AP-42, Chapter 3.2, Table 3.2-3; reduced by same percentage as VOC
Ethylbenzene	2.48E-05	-	5.27E-04	2.31E-03	1.88E-05	-	4.00E-04	1.75E-03	AP-42, Chapter 3.2, Table 3.2-3; reduced by same percentage as VOC
Formaldehyde	-	0.050	2.76E-01	1.21E+00	-	0.001	5.51E-03	2.41E-02	Manufacturer Specifications
Methanol	3.06E-03	-	6.51E-02	2.85E-01	2.32E-03	-	4.93E-02	2.16E-01	AP-42, Chapter 3.2, Table 3.2-3; reduced by same percentage as VOC
Methylene Chloride	4.12E-05	-	8.76E-04	3.84E-03	3.12E-05	-	6.64E-04	2.91E-03	AP-42, Chapter 3.2, Table 3.2-3; reduced by same percentage as VOC
PAH	1.41E-04	-	3.00E-03	1.31E-02	1.41E-04	-	3.00E-03	1.31E-02	AP-42, Chapter 3.2, Table 3.2-3
Toluene	5.58E-04	-	1.19E-02	5.20E-02	4.23E-04	-	9.00E-03	3.94E-02	AP-42, Chapter 3.2, Table 3.2-3; reduced by same percentage as VOC
Xylenes	1.95E-04	-	4.15E-03	1.82E-02	1.48E-04	-	3.14E-03	1.38E-02	AP-42, Chapter 3.2, Table 3.2-3; reduced by same percentage as VOC
Other HAPs <sup>4</sup>	2.10E-04	-	4.46E-03	1.95E-02	2.10E-04	-	4.46E-03	1.95E-02	AP-42, Chapter 3.2, Table 3.2-3
<b>Total HAPs</b>	<b>1.19E-02</b>		<b>0.53</b>	<b>2.32</b>	<b>9.12E-03</b>		<b>0.20</b>	<b>0.87</b>	
Pollutant	Emission Factor		Uncontrolled Emissions		Emission Factor		Controlled Emissions		Source of Emissions Factors
	lb/MMBtu	g/hp-hr	lb/hr	ton/yr	lb/MMBtu	g/hp-hr	lb/hr	ton/yr	
CO <sub>2</sub>	53.06	-	2,488	10,900	53.06	-	2,488	10,900	40 CFR Part 98 Subpart C Table C-1
CH <sub>4</sub>	0.001	-	0.047	0.21	0.001	-	0.047	0.21	40 CFR Part 98 Subpart C Table C-2
N <sub>2</sub> O	0.0001	-	0.0047	0.021	0.0001	-	0.0047	0.021	40 CFR Part 98 Subpart C Table C-2
CO <sub>2</sub> e	-	-	2,491	10,911	-	-	2,491	10,911	Global warming potentials of 40 CFR Part 98 Table A-1

### Notes:

1. Manufacturer specifications.
2. Calculated values.
3. Estimated heating value of the fuel gas.
4. Other HAPs include those HAPs listed in AP-42 below the detection thresholds.

## Turbine Emissions

### Source Information

Emission Unit ID:	EU13	
Engine Make/Model	Titan 130 Turbine	
Service	Power Generation	
Controls - Y or N / Type	Y	SoLoNox
Number of Operational Units	1	turbine
Power Rating <sup>1</sup>	13,298	kW
Fuel Consumption (BSFC) <sup>1</sup>	10,124	Btu/(kW-hr)
Heat Rating <sup>2</sup>	134.6	MMBtu/hr
Fuel Consumption <sup>2</sup>	842.4	MMscf/yr
Fuel Consumption <sup>2</sup>	96,164	scf/hr
Fuel Heating Value <sup>3</sup>	1,400	Btu/scf
Operating Hours	8,760	hrs/yr

Pollutant	Emission Factor		Annual Emissions		Source of Emissions Factors
	lb/MMBtu	g/hp-hr	lb/hr	ton/yr	
NOx	-	0.33	12.97	56.83	Manufacturer Specifications
CO	-	0.40	15.73	68.88	Manufacturer Specifications
VOC	-	0.16	6.09	26.69	Manufacturer Specifications - VOC is conservatively assumed to be 50% of HC
SO <sub>2</sub>	6.70E-03	-	0.90	3.95	Converted for a gas with maximum H <sub>2</sub> S of 50 ppmv
PM <sub>10</sub>	6.60E-03	-	0.89	3.89	AP-42, Chapter 3.1, Table 3.1-2a
PM <sub>2.5</sub>	6.60E-03	-	0.89	3.89	AP-42, Chapter 3.1, Table 3.1-2a
1,3-Butadiene	4.30E-07	-	5.79E-05	2.54E-04	AP-42, Chapter 3.1, Table 3.1-3
Acetaldehyde	4.00E-05	-	5.39E-03	2.36E-02	AP-42, Chapter 3.1, Table 3.1-3
Acrolein	6.40E-06	-	8.62E-04	3.77E-03	AP-42, Chapter 3.1, Table 3.1-3
Benzene	1.20E-05	-	1.62E-03	7.08E-03	AP-42, Chapter 3.1, Table 3.1-3
Ethylbenzene	3.20E-05	-	4.31E-03	1.89E-02	AP-42, Chapter 3.1, Table 3.1-3
Formaldehyde	7.10E-04	-	9.56E-02	4.19E-01	AP-42, Chapter 3.1, Table 3.1-3
Naphthalene	1.30E-06	-	1.75E-04	7.67E-04	AP-42, Chapter 3.1, Table 3.1-3
PAH	2.20E-06	-	2.96E-04	1.30E-03	AP-42, Chapter 3.1, Table 3.1-3
Propylene Oxide	2.90E-05	-	3.90E-03	1.71E-02	AP-42, Chapter 3.1, Table 3.1-3
Toluene	1.30E-04	-	1.75E-02	7.67E-02	AP-42, Chapter 3.1, Table 3.1-3
Xylenes	6.40E-05	-	8.62E-03	3.77E-02	AP-42, Chapter 3.1, Table 3.1-3
<b>Total HAPS</b>	1.03E-03	-	0.14	0.61	
Pollutant	Emission Factor		Annual Emissions		Source of Emissions Factors
	kg/MMBtu	g/hp-hr	lb/hr	ton/yr	
CO <sub>2</sub>	53.06	-	15,751	68,990	40 CFR Part 98 Subpart C Table C-1
CH <sub>4</sub>	0.001	-	0.30	1.30	40 CFR Part 98 Subpart C Table C-2
N <sub>2</sub> O	0.0001	-	0.030	0.13	40 CFR Part 98 Subpart C Table C-2
CO <sub>2</sub> e	-	-	15,767	69,062	Global warming potentials of 40 CFR Part 98 Table A-1

### Notes:

1. Manufacturer specifications,
2. Calculated values.
3. Estimated heating value of the fuel gas.

## Emergency Generator Emissions

### Source Information

Emission Unit ID:	EU14	
Engine Make/Model	Caterpillar C32	
Service	Emergency Power Generator	
Controls - Y or N / Type	Y	EPA-Certified
Number of Operational Units	1	engine
Engine Horsepower <sup>1</sup>	1,099	kilowatt
Individual Engine Horsepower <sup>2</sup>	1,474	horsepower
Horsepower Rating <sup>2</sup>	1,474	horsepower
Fuel Consumption (BSFC) <sup>1</sup>	69.40	gal/hr
Heat Rating <sup>2</sup>	9.51	MMBtu/hr
Fuel Consumption <sup>2</sup>	6,940	gal/yr
Fuel Density <sup>3</sup>	7.10	lb/gal
Fuel Heating Value <sup>3</sup>	19,300	Btu/lb
Operating Hours <sup>4</sup>	100	hrs/yr

Pollutant	Emission Factor		Annual Emissions		Source of Emissions Factors
	lb/MMBtu	g/hp-hr	lb/hr	ton/yr	
NOx	-	6.09	19.79	0.99	Manufacturer Specifications - Nominal EF
CO	-	0.18	0.58	0.029	Manufacturer Specifications - Nominal EF
VOC	-	0.01	0.032	0.0016	Manufacturer Specifications - Nominal EF
SO <sub>2</sub>	1.52E-03	-	0.014	0.00072	AP-42, Chapter 3.4; maximum 15 ppm H <sub>2</sub> S
PM <sub>10</sub>	-	0.02	0.065	0.0032	Manufacturer Specifications - Nominal EF
PM <sub>2.5</sub>	-	0.02	0.065	0.0032	Manufacturer Specifications - Nominal EF
Acetaldehyde	2.52E-05	-	2.40E-04	1.20E-05	AP-42, Chapter 3.4, Table 3.4-3
Acrolein	7.88E-06	-	7.49E-05	3.75E-06	AP-42, Chapter 3.4, Table 3.4-3
Benzene	7.76E-04	-	7.38E-03	3.69E-04	AP-42, Chapter 3.4, Table 3.4-3
Formaldehyde	7.89E-05	-	7.50E-04	3.75E-05	AP-42, Chapter 3.4, Table 3.4-3
Toluene	2.81E-04	-	2.67E-03	1.34E-04	AP-42, Chapter 3.4, Table 3.4-3
Xylenes	1.93E-04	-	1.84E-03	9.18E-05	AP-42, Chapter 3.4, Table 3.4-3
<b>Total HAPS</b>	1.36E-03		0.013	0.00065	
Pollutant	Emission Factor		Annual Emissions		Source of Emissions Factors
	kg/MMBtu	g/hp-hr	lb/hr	ton/yr	
CO <sub>2</sub>	73.96	-	1,551	77.54	40 CFR Part 98 Subpart C Table C-1
CH <sub>4</sub>	0.003	-	0.063	0.0031	40 CFR Part 98 Subpart C Table C-2
N <sub>2</sub> O	0.0006	-	0.013	0.00063	40 CFR Part 98 Subpart C Table C-2
CO <sub>2</sub> e	-	-	1,556	77.81	Global warming potentials of 40 CFR Part 98 Table A-1

#### Notes:

1. Manufacture specifications.
2. Calculated values.
3. AP-42 Section 3.4 Table 3.4-1 footnote a.
4. Unit meets Tier II EPA certification for emergency use.

## Facility Wet Gas Analysis

Component	MOL %	MW	Component Weight	Wt. Fraction
Methane	74.76	16.04	11.99	0.53
Ethane	12.48	30.07	3.75	0.17
Propane	6.33	44.10	2.79	0.12
i-Butane	0.92	58.12	0.53	0.024
n-Butane	2.33	58.12	1.35	0.060
i-Pentane	0.59	72.15	0.43	0.019
n-Pentane	0.93	72.15	0.67	0.030
Hexanes	0.53	86.18	0.46	0.020
Heptanes	0.11	100.2	0.11	0.0047
Octanes	0.029	114.2	0.033	0.0015
Nonanes	0.0017	128.3	0.0022	0.000097
Decanes	0.00	142.3	0.00	0.00
n-Hexane	0.00	86.18	0.00	0.00
Benzene	0.00	78.11	0.00	0.00
Toluene	0.00	92.14	0.00	0.00
Ethylbenzene	0.00	106.2	0.00	0.00
Xylenes	0.00	106.2	0.00	0.00
Nitrogen	0.15	28.01	0.042	0.0018
Carbon Dioxide	0.86	44.01	0.38	0.017
Oxygen	0.00	32.01	0.00	0.00
Hydrogen Sulfide	0.00	34.08	0.00	0.00
<b>Totals</b>	<b>100.0</b>		<b>22.53</b>	<b>1.00</b>

Heating Value (Btu/scf)	1,400
Molecular weight	22.53
VOC weight fraction	0.28
CH <sub>4</sub> weight fraction	0.53
HAP weight fraction	0.00
THC weight fraction	0.98
VOC of THC wt fraction	0.29
HAP of THC wt fraction	0.00
CH <sub>4</sub> of THC wt fraction	0.54

**Notes:**

1. Wet gas analysis is representative.

## 5. Regulatory Discussion

### 5.1 Federal Regulations

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

#### 5.1.1 Subpart A – General Provision

Applicability: Subpart A applies to all equipment or facilities subject to an NSPS Subpart. Thus, Subpart A applies to the Hulk CDP as the facility is considered an “affected facility” subject to the general provisions of NSPS as described in Subpart A.

#### 5.1.2 Subpart IIII – Standard of Performance for Stationary Compression Ignition Internal Combustion Engines

Applicability: Subpart IIII applies to engines that were commence construction after July 11, 2005, and manufactured April 1, 2006, with displacement of less than 30 liters per cylinder (§60.4200(a)(2)). Thus, Subpart IIII does not apply to the Hulk CDP, as the emergency generator engine qualifies as an emergency stationary CI ICE limited to 100 hours per year operation.

#### 5.1.3 Subpart JJJJ – Standard of Performance of Stationary Spark Ignition Internal Combustion Engines

Applicability: Subpart JJJJ applies to engines that were ordered after June 12, 2006, and manufactured on or after July 1, 2007, for engines with maximum power greater than or equal to 500 hp (§60.4230(a)(4)(i)). Thus, Subpart JJJJ applies to the Hulk CDP as the compressor engines and generator engine were ordered after June 12, 2006, and manufactured after July 1, 2007.

#### 5.1.4 Subpart KKKK – Standards of Performance for Stationary Combustion Turbines

Applicability: Subpart KKKK applies to stationary combustion turbines greater than 10 million British thermal units per hour (MMBtu/hr) based on the higher heating value of the fuel (§60.4305(a)). Thus, Subpart KKKK applies to the Hulk CDP as the turbine has a heat input rating greater than 10 MMBtu/hr.

#### 5.1.5 Subpart TTTT – Standards of Performance for Greenhouse Gas Emissions for Electric Generating Units

Applicability: Subpart TTTT applies to steam generating, integrated gasification combined cycle (IGCC), or stationary combustion turbines that commenced construction after January 8, 2014, that has a base load greater than 250 MMBtu/hr of fossil fuel and serves a generator or generators capable of selling greater than 25 megawatts of electricity to a utility power distribution system. The stationary combustion turbine has a maximum base load of 133.3 MMBtu/hr and the Hulk CDP facility will not sell power to a utility power distribution system. Therefore, TTTT does not apply to the Hulk CDP.

## 5.2 Federal Regulations

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

### 5.2.1 Subpart A – General Provision

Applicability: Subpart A applies to equipment or facilities subject to a MACT Subpart. Thus, Subpart A applies to the Hulk CDP as the facility is considered an “affected facility” subject to the general provisions of MACT as described in Subpart A.

### 5.2.2 Subpart YYYY – National Emission Standards for Hazardous Air Pollutants for Stationary Combustion Turbines

Applicability: Subpart YYYY applies to stationary combustion turbines located at major sources of HAP emissions (§63.6085(a)). A major source determination is made by the potential HAP emissions of all stationary combustion units. Because the Hulk CDP is not a major source of HAP emissions, as defined by the Rule, this Subpart is not applicable.

### 5.2.3 Subpart ZZZZ – National Emission Standards for Hazardous Air Pollutants for Stationary Reciprocating Internal Combustion Engines

Applicability: Subpart ZZZZ applies to stationary RICE at a major or area source of HAP emissions (§63.6585). A major source determination under Subpart ZZZZ for production field facilities (namely those before a gas processing plant) aggregate HAP emissions from dehydration units, storage vessels, combustion turbines, and reciprocating internal combustion engines. Since the XCL Facility is a production field facility only the HAP emissions from the onsite turbines and engines are aggregated resulting in total HAP emissions less than 25 tons per year. Subpart ZZZZ applies to the Hulk CDP as the compressor engines, generator, and emergency generator are new RICE. The compressor engines and generator engine will meet Subpart ZZZZ by meeting 40 CFR Part 60, Subpart JJJJ, and the emergency generator engine will meet Subpart IIII, as the Hulk CDP is an area source of HAP emissions (§63.6590(c)(1)).

## 6. State Regulations

### 6.1.1 33.1-15-01: General Provision

Applicability: General provisions will apply to Hulk CDP. These include, but are not limited to, right of entry, testing methods, addressing malfunctions and emergencies, and enforcement and compliance certifications.

### 6.1.2 33.1-15-02: Ambient Air Standards

Applicability: Ambient air standards apply to Hulk CDP. Demonstration of compliance with the ambient air standards has been demonstrated through the refined dispersion modeling analysis completed for this operating facility.

### 6.1.3 33.1-15-03: Restriction of Emission of Visible Air Contaminants

Applicability: Opacity requirements apply to Hulk CDP as there is combustion equipment.

### 6.1.4 33.1-15-05: Emissions of Particulate Matter Restricted

Applicability: Particulate matter standards apply to Hulk CDP as there is combustion equipment.

### 6.1.5 33.1-15-08: Control of Air Pollution from Vehicles and Other Internal Combustion Engines

Applicability: Control of emissions from internal combustion engines apply to Hulk CDP. This regulation requires no unreasonable or excessive smoke, obnoxious or noxious gases, fumes, or vapor.

### 6.1.6 33.1-15-12: Standards of Performance for New Stationary Sources

Applicability: 40 Code of Federal Regulation Part 60 Subparts IIII, JJJJ and KKKK are incorporated by reference in this regulation. As discussed above, Hulk CDP is subject to the applicable requirements of these regulations.

### 6.1.7 33.1-15-14: Designated Air Contaminant Sources, Permit to Construct, Minor Source Permit to Operate, Title V Permit to Operate

Applicability: The Hulk CDP requires a Permit to Construct prior to modification of the Facility by replacing one of the existing, permitted 2,494 hp Caterpillar G3516 EPA-certified emergency diesel generators with a proposed one 1,099 kW Caterpillar C32 EPA-certified emergency diesel generator. The facility consists of two existing compressor engines, one generator, and one turbine. The facility qualifies as a synthetic minor source with potential to emit below Title V thresholds, and only a Synthetic Minor Source Permit to Operate is applicable.

#### **6.1.8 33.1-15-18: Stack Heights**

Applicability: Stack height compliance for the existing stacks has been evaluated and demonstrated through the facility's dispersion modeling analysis conducted on March 29, 2024. This analysis is not being revised with this submittal.

#### **6.1.9 33.1-15-19: Visibility Protection**

Applicability: The Hulk CDP is not subject to visibility projection requirements. These provisions apply solely to major stationary sources or major modification that may affect federal Class I areas. The Hulk CDP operates as a synthetic minor source below major thresholds, with no new construction or modifications subject to review.

#### **6.1.10 33.1-15-22: Emission Standards for Hazardous Air Pollutants for Source Categories**

Applicability: 40 Code of Federal Regulation Part 63 Subpart ZZZZ is incorporated by reference in this regulation. As discussed above, the Hulk CDP is subject to the applicable requirements of this regulation.

#### **6.1.11 33.1-15-23: Fees**

Applicability: Hulk CDP is subject to application and processing fees for the Permit to Operate application. Since the facility no longer qualifies as a major source due to no additional engines installed or operating beyond the existing two compressor engines, one generator, and one turbine, remaining below Title V thresholds. Only synthetic minor source annual fees apply based on actual emissions reported for the calendar year.

## 7. Supporting Documentation

# VGf - H24SE

Crusoe Energy Dave Baesl

Gas Compression

ENGINE SPEED (rpm):	1800	NOx SELECTION (g/bhp-hr):	Customer Catalyst
DISPLACEMENT (in3):	1462	COOLING SYSTEM:	JW, IC + OC
COMPRESSION RATIO:	8.6:1	INTERCOOLER WATER INLET (°F):	130
IGNITION SYSTEM:	ESM	JACKET WATER OUTLET (°F):	200
EXHAUST MANIFOLD:	Water Cooled	JACKET WATER CAPACITY (gal):	20
COMBUSTION:	Rich Burn, Turbocharged	AUXILIARY WATER CAPACITY (gal):	6
ENGINE DRY WEIGHT (lbs):	8220	LUBE OIL CAPACITY (gal):	56
AIR/FUEL RATIO SETTING:	ESM	MAX. EXHAUST BACKPRESSURE (in. H2O):	15
ENGINE SOUND LEVEL (dBA)	100	MAX. AIR INLET RESTRICTION (in. H2O):	15
		EXHAUST SOUND LEVEL (dBA)	113

### SITE CONDITIONS:

FUEL:	Natural Gas	ALTITUDE (ft):	5250
FUEL PRESSURE RANGE (psig):	1.5 - 5	MAXIMUM INLET AIR TEMPERATURE (°F):	100
FUEL HHV (BTU/ft3):	1,345.8	FUEL WKI:	56.2
FUEL LHV (BTU/ft3):	1,216.6		

### SITE SPECIFIC TECHNICAL DATA

POWER RATING	UNITS	102% OVERLOAD SITE DATA (See note 18)	MAX RATING AT 100 °F AIR TEMP	SITE RATING AT MAXIMUM INLET AIR TEMPERATURE OF 100 °F		
				100%	75%	50%
CONTINUOUS ENGINE POWER	BHP	543	530	530	398	266
OVERLOAD	% 2/24 hr	Note 18	2	2	-	-
MECHANICAL EFFICIENCY (LHV)	%	29.1	29.0	29.0	27.7	24.9
CONTINUOUS POWER AT FLYWHEEL	BHP	543	530	530	398	266

*based on no auxiliary engine driven equipment*

AVAILABLE TURNDOWN SPEED RANGE	RPM	1400 - 1800
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### FUEL CONSUMPTION

		102%	MAX RATING	100%	75%	50%
FUEL CONSUMPTION (LHV)	BTU/BHP-hr	8743	8767	8767	9180	10210
FUEL CONSUMPTION (HHV)	BTU/BHP-hr	9672	9698	9698	10155	11294
FUEL FLOW	SCFM	65	64	64	50	37

*based on fuel analysis LHV*

### HEAT REJECTION

		102%	MAX RATING	100%	75%	50%
JACKET WATER (JW)	BTU/hr x 1000	1493	1467	1467	1204	951
LUBE OIL (OC)	BTU/hr x 1000	177	176	176	166	155
INTERCOOLER (IC)	BTU/hr x 1000	208	198	198	108	42
EXHAUST	BTU/hr x 1000	1384	1353	1353	1042	759
RADIATION	BTU/hr x 1000	194	194	194	190	182

### EMISSIONS (ENGINE OUT):

		102%	MAX RATING	100%	75%	50%
NOx (NO + NO2)	g/bhp-hr	13.92	14.05	14.05	14.51	13.23
CO	g/bhp-hr	9.42	9.20	9.20	8.18	9.57
THC	g/bhp-hr	0.69	0.69	0.69	0.61	0.72
NMHC	g/bhp-hr	0.326	0.318	0.318	0.277	0.330
NM,NEHC (VOC)	g/bhp-hr	0.205	0.200	0.200	0.174	0.207
CO2	g/bhp-hr	567	569	569	596	662
CO2e (Methane GWP: 25)	g/bhp-hr	577	578	578	604	672
CH2O	g/bhp-hr	0.05	0.050	0.050	0.050	0.050
CH4	g/bhp-hr	0.39	0.38	0.38	0.33	0.39

### AIR INTAKE / EXHAUST GAS

		102%	MAX RATING	100%	75%	50%
INDUCTION AIR FLOW	SCFM	923	904	904	710	528
EXHAUST GAS MASS FLOW	lb/hr	4043	3959	3959	3109	2312
EXHAUST GAS FLOW	ACFM	3055	2871	2871	2326	1693
EXHAUST TEMPERATURE	°F	1240	1265	1265	1223	1188

*at exhaust temp, 14.5 psia*

### HEAT EXCHANGER SIZING<sup>12</sup>

		102%	MAX RATING
TOTAL JACKET WATER CIRCUIT (JW)	BTU/hr x 1000	1693	1664
TOTAL AUXILIARY WATER CIRCUIT (IC + OC)	BTU/hr x 1000	436	424

### COOLING SYSTEM WITH ENGINE MOUNTED WATER PUMPS

		102%
JACKET WATER PUMP MIN. DESIGN FLOW	GPM	130
JACKET WATER PUMP MAX. EXTERNAL RESTRICTION	psig	20
AUX WATER PUMP MIN. DESIGN FLOW	GPM	35
AUX WATER PUMP MAX. EXTERNAL RESTRICTION	psig	12

**FUEL COMPOSITION**

<u>HYDROCARBONS:</u>		<u>Mole or Volume %</u>	FUEL:	Natural Gas
Methane	CH4	74.76	FUEL PRESSURE RANGE (psig):	1.5 - 5
Ethane	C2H6	12.48	FUEL WKI:	56.2
Propane	C3H8	6.33	FUEL SLHV (BTU/ft3):	1195.39
Iso-Butane	I-C4H10	0.92	FUEL SLHV (MJ/Nm3):	47.01
Normal Butane	N-C4H10	2.33	FUEL LHV (BTU/ft3):	1216.56
Iso-Pentane	I-C5H12	0.59	FUEL LHV (MJ/Nm3):	47.84
Normal Pentane	N-C5H12	0.93	FUEL HHV (BTU/ft3):	1345.75
Hexane	C6H14	0.53	FUEL HHV (MJ/Nm3):	52.92
Heptane	C7H16	0.11	FUEL DENSITY (SG):	0.78
Ethene	C2H4	0		
Propene	C3H6	0		
	SUM HYDROCARBONS	98.98		
<u>NON-HYDROCARBONS:</u>			Standard Conditions per ASTM D3588-91 [60°F and 14.696psia] and ISO 6976:1996-02-01[25, V(0;101.325)].	
Nitrogen	N2	0.15	Based on the fuel composition, supply pressure and temperature, liquid hydrocarbons may be present in the fuel. No liquid hydrocarbons are allowed in the fuel. The fuel must not contain any liquid water. Waukesha recommends both of the following:	
Oxygen	O2	0	1) Dew point of the fuel gas to be at least 20°F (11°C) below the measured temperature of the gas at the inlet of the engine fuel regulator.	
Helium	He	0	2) A fuel filter separator to be used on all fuels except commercial quality natural gas.	
Carbon Dioxide	CO2	0.86	Refer to the 'Fuel and Lubrication' section of 'Technical Data' or contact the Waukesha Application Engineering Department for additional information on fuels, or LHV and WKI* calculations.	
Carbon Monoxide	CO	0	* Trademark of INNIO Waukesha Gas Engines Inc.	
Hydrogen	H2	0		
Water Vapor	H2O	0		
	TOTAL FUEL	99.99		

**FUEL CONTAMINANTS**

Total Sulfur Compounds	0 % volume	Total Sulfur Compounds	0 µg/BTU
Total Halogen as Chloride	0 % volume	Total Halogen as Chloric	0 µg/BTU
Total Ammonia	0 % volume	Total Ammonia	0 µg/BTU
<u>Siloxanes</u>		Total Siloxanes (as Si)	0 µg/BTU
Tetramethyl silane	0 % volume		
Trimethyl silanol	0 % volume		
Hexamethyldisiloxane (L2)	0 % volume		
Hexamethylcyclotrisiloxane (D3)	0 % volume		
Octamethyltrisiloxane (L3)	0 % volume		
Octamethylcyclotetrasiloxane (D4)	0 % volume		
Decamethyltetrasiloxane (L4)	0 % volume		
Decamethylcyclopentasiloxane (D5)	0 % volume		
Dodecamethylpentasiloxane (L5)	0 % volume		
Dodecamethylcyclohexasiloxane (D6)	0 % volume		
Others	0 % volume		

*Calculated fuel contaminant analysis will depend on the entered fuel composition and selected engine model.*

No water or hydrocarbon condensates are allowed in the engine. Requires liquids removal.

**NOTES**

1. All data is based on engines with standard configurations unless noted otherwise.
2. Power rating is adjusted for fuel, site altitude, and site air inlet temperature, in accordance with ISO 3046/1 with tolerance of  $\pm 3\%$ .
3. Fuel consumption is presented in accordance with ISO 3046/1 with a tolerance of  $-0 / +5\%$  at maximum rating. Fuel flow calculation based on fuel LHV and fuel consumption with a tolerance of  $-0/+5\%$ . For sizing piping and fuel equipment, it is recommended to include the 5% tolerance.
4. Heat rejection tolerances are  $\pm 30\%$  for radiation, and  $\pm 8\%$  for jacket water, lube oil, intercooler, and exhaust energy.
5. Emission levels for engines with Waukesha supplied 3-way catalyst are given at catalyst outlet flange. For all other engine models, emission levels are given at engine exhaust outlet flange prior to any after treatment. Values are based on a new engine operating at indicated site conditions, and adjusted to the specified timing and air/fuel ratio at rated load. Catalyst out emission levels represent emission levels the catalyst is sized to achieve. Manual adjustment may be necessary to achieve compliance as catalyst/engine age. Catalyst-out emission levels are valid for the duration of the engine warranty. Emissions are at an absolute humidity of 75 grains H<sub>2</sub>O/lb (10.71 g H<sub>2</sub>O/kg) of dry air. Emission levels may vary subject to instrumentation, measurement, ambient conditions, fuel quality, and engine variation. Engine may require adjustment on-site to meet emission values, which may affect engine performance and heat output. NO<sub>x</sub>, CO, THC, and NMHC emission levels are listed as a not to exceed limit, all other emission levels are estimated. CO<sub>2</sub> emissions based on EPA Federal Register/Vol. 74, No. 209/Friday, October 30, 2009 Rules and Regulations 56398, 56399 (3) Tier 3 Calculation Methodology, Equation C-5.
6. Air flow is based on undried air with a tolerance of  $\pm 7\%$ .
7. Exhaust temperature given at engine exhaust outlet flange with a tolerance of  $\pm 50^{\circ}\text{F}$  ( $28^{\circ}\text{C}$ ).
8. Exhaust gas mass flow value is based on a "wet basis" with a tolerance of  $\pm 7\%$ .
9. Inlet air restrictions based on full rated engine load. Exhaust backpressure based on 160 PSI BMEP and 1800 RPM. Refer to the engine specification section of Waukesha's standard technical data for more information.
10. Cooling circuit capacity, lube oil capacity, and engine dry weight values are typical.
11. Fuel must conform to Waukesha's "Gaseous Fuel Specification" S7884-7 or most current version. Fuel may require treatment to meet current fuel specification.
12. Heat exchanger sizing values given as the maximum heat rejection of the circuit, with applied tolerances and an additional 5% reserve factor.
13. Fuel volume flow calculation in english units is based on 100% relative humidity of the fuel gas at standard conditions of 60°F and 14.696 psia (29.92 inches of mercury; 101.325 kPa).
14. Fuel volume flow calculation in metric units is based on 100% relative humidity of the fuel gas at a combustion temperature of 25°C and metering conditions of 0°C and 101.325 kPa (14.696 psia; 29.92 inches of mercury). This is expressed as [25, V(0;101.325)].
15. Engine sound data taken with the microphone at 1 m (3.3 ft) from the side of the engine at the approximate front-to-back centerline. Microphone height was at intake manifold level. Engine sound pressure data may be different at front, back and opposite side locations. Exhaust sound data taken with microphone 1 meter (3.3 ft) away and 1 meter (3.3 ft) to the side of the exhaust outlet.
16. Due to variation between test conditions and final site conditions, such as exhaust configuration and background sound level, sound pressure levels under site conditions may be different than those tabulated above.
17. Cooling system design flow is based on minimum allowable cooling system flow. Cooling system maximum external restriction is defined as the allowable restriction at the minimum cooling system flow.
18. Continuous Power Rating: The highest load and speed that can be applied 24 hours per day, seven days per week, 365 days per year except for normal maintenance at indicated ambient reference conditions and fuel. It is permissible to operate the engine at the indicated overload power, for two hours in every 24 hour period.
19. emPact emission compliance available for entire range of operable fuels; however, fuel system and/or O<sub>2</sub> set point may need to be adjusted in order to maintain compliance.
20. In cold ambient temperatures, heating of the engine jacket water, lube oil and combustion air may be required. See Waukesha Technical Data.
21. Available Turndown Speed Range refers to the constant torque speed range available. Reduced power may be available at speeds outside of this range. Contact application engineering.

**SPECIAL REQUIREMENTS**

## 2003-079 Crusoe Energy - ND Fuel Gas Booster - ND

## VGf - H24SE

Compass Energy Systems Barclay S

Gas Compression

ENGINE SPEED (rpm):	1800	NOx SELECTION (g/bhp-hr):	0.15
DISPLACEMENT (in3):	1462	COOLING SYSTEM:	JW, IC + OC
COMPRESSION RATIO:	8.6:1	INTERCOOLER WATER INLET (°F):	130
IGNITION SYSTEM:	ESM	JACKET WATER OUTLET (°F):	200
EXHAUST MANIFOLD:	Water Cooled	JACKET WATER CAPACITY (gal):	20
COMBUSTION:	Rich Burn, Turbocharged	AUXILIARY WATER CAPACITY (gal):	6
ENGINE DRY WEIGHT (lbs):	8220	LUBE OIL CAPACITY (gal):	56
AIR/FUEL RATIO SETTING:	ESM	MAX. EXHAUST BACKPRESSURE (in. H2O):	15
ENGINE SOUND LEVEL (dBA)	100	MAX. AIR INLET RESTRICTION (in. H2O):	15
		EXHAUST SOUND LEVEL (dBA)	113

### SITE CONDITIONS:

FUEL:	Natural Gas	ALTITUDE (ft):	4000
FUEL PRESSURE RANGE (psig):	1.5 - 5	MAXIMUM INLET AIR TEMPERATURE (°F):	100
FUEL HHV (BTU/ft3):	1,705.6	FUEL WKI:	43.3
FUEL LHV (BTU/ft3):	1,541.8		

### SITE SPECIFIC TECHNICAL DATA

POWER RATING	UNITS	MAX RATING AT 100 °F AIR TEMP	SITE RATING AT MAXIMUM INLET AIR TEMPERATURE OF 100 °F		
			100%	75%	55%
CONTINUOUS ENGINE POWER	BHP	534	530	398	292
OVERLOAD	% 2/24 hr	0	0	-	-
MECHANICAL EFFICIENCY (LHV)	%	26.2	26.2	24.2	21.4
CONTINUOUS POWER AT FLYWHEEL	BHP	454	454	333	236

*based on 30 HP cooling fan*

AVAILABLE TURNDOWN SPEED RANGE	RPM	1400 - 1800
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FUEL CONSUMPTION				100%	75%	55%
FUEL CONSUMPTION (LHV)	BTU/BHP-hr		9110	9110	9641	10545
FUEL CONSUMPTION (HHV)	BTU/BHP-hr		9698	9698	10665	11665
FUEL FLOW	SCFM	<i>based on fuel analysis LHV</i>	48	48	38	30

HEAT REJECTION				100%	75%	55%
JACKET WATER (JW)	BTU/hr x 1000		1402	1402	1161	972
LUBE OIL (OC)	BTU/hr x 1000		173	173	165	159
INTERCOOLER (IC)	BTU/hr x 1000		158	158	83	38
EXHAUST	BTU/hr x 1000		1326	1326	1035	819
RADIATION	BTU/hr x 1000		204	204	199	194

EMISSIONS (CATALYST OUT):				100%	75%	55%
NOx (NO + NO2)	g/bhp-hr		0.15	0.15	0.15	0.15
CO	g/bhp-hr		0.30	0.30	0.30	0.30
THC	g/bhp-hr		0.58	0.51	0.51	0.56
NMHC	g/bhp-hr		0.129	0.113	0.113	0.123
NM,NEHC (VOC)	g/bhp-hr		0.019	0.017	0.017	0.018
CO2	g/bhp-hr		622	658	658	720
CO2e	g/bhp-hr		633	668	668	731
CH2O	g/bhp-hr		0.001	0.001	0.001	0.001
CH4	g/bhp-hr		0.45	0.40	0.40	0.43

AIR INTAKE / EXHAUST GAS				100%	75%	55%
INDUCTION AIR FLOW	SCFM		855	855	678	543
EXHAUST GAS MASS FLOW	lb/hr		3745	3745	2973	2381
EXHAUST GAS FLOW	ACFM	<i>at exhaust temp, 14.5 psia</i>	2871	2871	2250	1771
EXHAUST TEMPERATURE	°F		1265	1265	1243	1214

HEAT EXCHANGER SIZING <sup>12</sup>			
TOTAL JACKET WATER CIRCUIT (JW)	BTU/hr x 1000		1590
TOTAL AUXILIARY WATER CIRCUIT (IC + OC)	BTU/hr x 1000		376

COOLING SYSTEM WITH ENGINE MOUNTED WATER PUMPS			
JACKET WATER PUMP MIN. DESIGN FLOW	GPM		130
JACKET WATER PUMP MAX. EXTERNAL RESTRICTION	psig		20
AUX WATER PUMP MIN. DESIGN FLOW	GPM		35
AUX WATER PUMP MAX. EXTERNAL RESTRICTION	psig		12



# VHP - P9394GSI S5

Crusoe Energy Dave Baesl

Power Generation

ENGINE SPEED (rpm):	1200	NOx SELECTION (g/bhp-hr):	Customer Catalyst
DISPLACEMENT (in3):	9388	COOLING SYSTEM:	JW, IC + OC
COMPRESSION RATIO:	9.7:1	INTERCOOLER WATER INLET (°F):	130
IGNITION SYSTEM:	ESM2	JACKET WATER OUTLET (°F):	180
EXHAUST MANIFOLD:	Water Cooled	JACKET WATER CAPACITY (gal):	148
COMBUSTION:	Rich Burn, Turbocharged	AUXILIARY WATER CAPACITY (gal):	16
ENGINE DRY WEIGHT (lbs):	33900	LUBE OIL CAPACITY (gal):	259
AIR/FUEL RATIO SETTING:	ESM2	MAX. EXHAUST BACKPRESSURE (in. H2O):	20
ENGINE SOUND LEVEL (dBA)	105	MAX. AIR INLET RESTRICTION (in. H2O):	15
IGNITION TIMING:	ESM2 Controlled	EXHAUST SOUND LEVEL (dBA)	108
FREQUENCY (Hz):	60	PHASE:	3
GENERATOR TYPE:	Synchronous	PHASE ROTATION:	T1-T2-T3

### SITE CONDITIONS:

FUEL:	Natural Gas	ALTITUDE (ft):	5250
FUEL PRESSURE RANGE (psig):	43 - 60	MAXIMUM INLET AIR TEMPERATURE (°F):	100
FUEL HHV (BTU/ft3):	1,345.8	FUEL WKI:	56.2
FUEL LHV (BTU/ft3):	1,216.6		

### SITE SPECIFIC TECHNICAL DATA

POWER RATING	UNITS	MAX RATING AT 100 °F AIR TEMP	SITE RATING AT MAXIMUM INLET AIR TEMPERATURE OF 100 °F		
			100%	75%	54%
CONTINUOUS ENGINE POWER	BHP	2500	2500	1875	1350
OVERLOAD	% 2/24 hr	0	0	-	-
ELECTRICAL EFFICIENCY (LHV)	%	33.1	33.1	33.0	31.6
GENERATOR OUTPUT	kWe	1660	1660	1245	894
GENERATOR kVA	kVA	2075	2075	1556	1118
<i>based on 95.9% generator efficiency at 0.8 PF, no auxiliary engine driven equipment</i>					

### FUEL CONSUMPTION

FUEL CONSUMPTION (LHV)	BTU/kWe-hr	10314	10314	10357	10798
FUEL CONSUMPTION (HHV)	BTU/kWe-hr	11409	11409	11457	11945
FUEL FLOW	SCFM	235	235	177	132
<i>based on fuel analysis LHV</i>					

### HEAT REJECTION

JACKET WATER (JW)	BTU/hr x 1000	5026	5026	3900	3035
LUBE OIL (OC)	BTU/hr x 1000	677	677	639	602
INTERCOOLER (IC)	BTU/hr x 1000	859	859	455	204
EXHAUST	BTU/hr x 1000	4428	4428	3200	2326
RADIATION	BTU/hr x 1000	558	558	519	493

### EMISSIONS (ENGINE OUT):

NOx (NO + NO2)	g/bhp-hr	12.42	12.42	13.68	14.11
CO	g/bhp-hr	5.87	5.87	5.31	4.83
THC	g/bhp-hr	0.43	0.43	0.60	0.77
NMHC	g/bhp-hr	0.197	0.197	0.273	0.354
NM,NEHC (VOC)	g/bhp-hr	0.124	0.124	0.172	0.223
CO2	g/bhp-hr	479	479	480	501
CO2e (Methane GWP: 25)	g/bhp-hr	484	484	489	512
CH2O	g/bhp-hr	0.050	0.050	0.050	0.050
CH4	g/bhp-hr	0.23	0.23	0.32	0.42

### AIR INTAKE / EXHAUST GAS

INDUCTION AIR FLOW	SCFM	3205	3205	2413	1807
EXHAUST GAS MASS FLOW	lb/hr	14899	14899	11218	8401
EXHAUST GAS FLOW	ACFM	10544	10544	7534	5541
EXHAUST TEMPERATURE	°F	1084	1084	1051	1024
<i>at exhaust temp, 14.5 psia</i>					

### HEAT EXCHANGER SIZING<sup>12</sup>

TOTAL JACKET WATER CIRCUIT (JW)	BTU/hr x 1000	5699
TOTAL AUXILIARY WATER CIRCUIT (IC + OC)	BTU/hr x 1000	1742

### COOLING SYSTEM WITH ENGINE MOUNTED WATER PUMPS

JACKET WATER PUMP MIN. DESIGN FLOW	GPM	850
JACKET WATER PUMP MAX. EXTERNAL RESTRICTION	psig	18
AUX WATER PUMP MIN. DESIGN FLOW	GPM	101
AUX WATER PUMP MAX. EXTERNAL RESTRICTION	psig	40

**FUEL COMPOSITION**

<u>HYDROCARBONS:</u>		<u>Mole or Volume %</u>	FUEL:	Natural Gas
Methane	CH4	74.76	FUEL PRESSURE RANGE (psig):	43 - 60
Ethane	C2H6	12.48	FUEL WKI:	56.2
Propane	C3H8	6.33		
Iso-Butane	I-C4H10	0.92	FUEL SLHV (BTU/ft3):	1195.39
Normal Butane	N-C4H10	2.33	FUEL SLHV (MJ/Nm3):	47.01
Iso-Pentane	I-C5H12	0.59		
Normal Pentane	N-C5H12	0.93	FUEL LHV (BTU/ft3):	1216.56
Hexane	C6H14	0.53	FUEL LHV (MJ/Nm3):	47.84
Heptane	C7H16	0.11		
Ethene	C2H4	0	FUEL HHV (BTU/ft3):	1345.75
Propene	C3H6	0	FUEL HHV (MJ/Nm3):	52.92
	SUM HYDROCARBONS	98.98	FUEL DENSITY (SG):	0.78
<u>NON-HYDROCARBONS:</u>				
Nitrogen	N2	0.15		
Oxygen	O2	0		
Helium	He	0		
Carbon Dioxide	CO2	0.86		
Carbon Monoxide	CO	0		
Hydrogen	H2	0		
Water Vapor	H2O	0		
	TOTAL FUEL	99.99		

Standard Conditions per ASTM D3588-91 [60°F and 14.696psia] and ISO 6976:1996-02-01[25, V(0;101.325)].  
 Based on the fuel composition, supply pressure and temperature, liquid hydrocarbons may be present in the fuel. No liquid hydrocarbons are allowed in the fuel. The fuel must not contain any liquid water. Waukesha recommends both of the following:  
 1) Dew point of the fuel gas to be at least 20°F (11°C) below the measured temperature of the gas at the inlet of the engine fuel regulator.  
 2) A fuel filter separator to be used on all fuels except commercial quality natural gas.  
 Refer to the 'Fuel and Lubrication' section of 'Technical Data' or contact the Waukesha Application Engineering Department for additional information on fuels, or LHV and WKI\* calculations.  
 \* Trademark of INNIO Waukesha Gas Engines Inc.

**FUEL CONTAMINANTS**

Total Sulfur Compounds	0 % volume	Total Sulfur Compounds	0 µg/BTU
Total Halogen as Chloride	0 % volume	Total Halogen as Chloric	0 µg/BTU
Total Ammonia	0 % volume	Total Ammonia	0 µg/BTU
<u>Siloxanes</u>		Total Siloxanes (as Si)	0 µg/BTU
Tetramethyl silane	0 % volume		
Trimethyl silanol	0 % volume		
Hexamethyldisiloxane (L2)	0 % volume		
Hexamethylcyclotrisiloxane (D3)	0 % volume		
Octamethyltrisiloxane (L3)	0 % volume		
Octamethylcyclotetrasiloxane (D4)	0 % volume		
Decamethyltetrasiloxane (L4)	0 % volume		
Decamethylcyclopentasiloxane (D5)	0 % volume		
Dodecamethylpentasiloxane (L5)	0 % volume		
Dodecamethylcyclohexasiloxane (D6)	0 % volume		
Others	0 % volume		

*Calculated fuel contaminant analysis will depend on the entered fuel composition and selected engine model.*

No water or hydrocarbon condensates are allowed in the engine. Requires liquids removal.

**NOTES**

1. All data is based on engines with standard configurations unless noted otherwise.
2. Power rating is adjusted for fuel, site altitude, and site air inlet temperature, in accordance with ISO 3046/1 with tolerance of  $\pm 3\%$ .
3. Fuel consumption is presented in accordance with ISO 3046/1 with a tolerance of  $-0 / +5\%$  at maximum rating. Fuel flow calculation based on fuel LHV and fuel consumption with a tolerance of  $-0/+5\%$ . For sizing piping and fuel equipment, it is recommended to include the 5% tolerance.
4. Heat rejection tolerances are  $\pm 30\%$  for radiation, and  $\pm 8\%$  for jacket water, lube oil, intercooler, and exhaust energy.
5. Emission levels for engines with Waukesha supplied 3-way catalyst are given at catalyst outlet flange. For all other engine models, emission levels are given at engine exhaust outlet flange prior to any after treatment. Values are based on a new engine operating at indicated site conditions, and adjusted to the specified timing and air/fuel ratio at rated load. Catalyst out emission levels represent emission levels the catalyst is sized to achieve. Manual adjustment may be necessary to achieve compliance as catalyst/engine age. Catalyst-out emission levels are valid for the duration of the engine warranty. Emissions are at an absolute humidity of 75 grains H<sub>2</sub>O/lb (10.71 g H<sub>2</sub>O/kg) of dry air. Emission levels may vary subject to instrumentation, measurement, ambient conditions, fuel quality, and engine variation. Engine may require adjustment on-site to meet emission values, which may affect engine performance and heat output. NO<sub>x</sub>, CO, THC, and NMHC emission levels are listed as a not to exceed limit, all other emission levels are estimated. CO<sub>2</sub> emissions based on EPA Federal Register/Vol. 74, No. 209/Friday, October 30, 2009 Rules and Regulations 56398, 56399 (3) Tier 3 Calculation Methodology, Equation C-5.
6. Air flow is based on undried air with a tolerance of  $\pm 7\%$ .
7. Exhaust temperature given at engine exhaust outlet flange with a tolerance of  $\pm 50^{\circ}\text{F}$  ( $28^{\circ}\text{C}$ ).
8. Exhaust gas mass flow value is based on a "wet basis" with a tolerance of  $\pm 7\%$ .
9. Inlet air restrictions based on full rated engine load. Exhaust backpressure based on 175.76 PSI BMEP and 1200 RPM. Refer to the engine specification section of Waukesha's standard technical data for more information.
10. Cooling circuit capacity, lube oil capacity, and engine dry weight values are typical.
11. Fuel must conform to Waukesha's "Gaseous Fuel Specification" S7884-7 or most current version. Fuel may require treatment to meet current fuel specification.
12. Heat exchanger sizing values given as the maximum heat rejection of the circuit, with applied tolerances and an additional 5% reserve factor.
13. Fuel volume flow calculation in english units is based on 100% relative humidity of the fuel gas at standard conditions of 60°F and 14.696 psia (29.92 inches of mercury; 101.325 kPa).
14. Fuel volume flow calculation in metric units is based on 100% relative humidity of the fuel gas at a combustion temperature of 25°C and metering conditions of 0°C and 101.325 kPa (14.696 psia; 29.92 inches of mercury). This is expressed as [25, V(0;101.325)].
15. Engine sound data taken with the microphone at 1 m (3.3 ft) from the side of the engine at the approximate front-to-back centerline. Microphone height was at intake manifold level. Engine sound pressure data may be different at front, back and opposite side locations. Exhaust sound data taken with microphone 1 meter (3.3 ft) away and 1 meter (3.3 ft) to the side of the exhaust outlet.
16. Due to variation between test conditions and final site conditions, such as exhaust configuration and background sound level, sound pressure levels under site conditions may be different than those tabulated above.
17. Cooling system design flow is based on minimum allowable cooling system flow. Cooling system maximum external restriction is defined as the allowable restriction at the minimum cooling system flow.
18. Continuous Power Rating: The highest load and speed that can be applied 24 hours per day, seven days per week, 365 days per year except for normal maintenance at indicated ambient reference conditions and fuel. No engine overload power rating is available.
19. emPact emission compliance available for entire range of operable fuels; however, fuel system and/or O<sub>2</sub> set point may need to be adjusted in order to maintain compliance.
20. In cold ambient temperatures, heating of the engine jacket water, lube oil and combustion air may be required. See Waukesha Technical Data.
21. Available Turndown Speed Range refers to the constant torque speed range available. Reduced power may be available at speeds outside of this range. Contact application engineering.

**SPECIAL REQUIREMENTS**

Site conditions over 100 °F or 1500 ft may require a special generator or radiator. Contact Application Engineering.

## Gas Engine Exhaust Emission Levels

Waukesha’s Engine Division approach to exhaust emission levels is to offer various stages of emission control technology. This approach allows the customer to select the exhaust emission level required for a particular installation.

The following tables indicate emission levels that are valid for new engines for the duration of the standard warranty period and are attainable by an engine in good operating condition running on commercial quality natural gas of 900 BTU/ft<sup>3</sup> (35.38 MJ/m<sup>3</sup> [25, V(0; 101.325)]) SLHV, Waukesha’s Knock Index™ of 91 or higher, 93% methane content by volume, and at ISO standard conditions. Emissions are based on standard engine timing at 91 WKITM with an absolute humidity of 42 grains/lb. Refer to engine specific WKITM Power & Timing curves for standard timing. Unless otherwise noted, these emission levels can be achieved across the continuous duty speed range and from 75% to 110% of the ISO Standard Power (continuous duty) rating.

Contact the local Waukesha representative or Waukesha’s Application Engineering Department for emission values which can be obtained on a case-by-case basis for specific ratings, fuels, and site conditions. The tabulated emission levels for GL models are achieved at the standard engine settings. Trade off adjustments can be made to reduce emissions or fuel consumption, but not both. Contact the local Waukesha representative or Waukesha’s Application Engineering Department for more information. As an aid in evaluating emission requirements, tables of approximate unit conversion factors for exhaust emission levels are included in this document. Waukesha emission control systems are designed for long life and consistent engine emission levels as listed in the following tables. It must be recognized, however, that engine condition and the quality of engine maintenance have a direct bearing on emission control. **A control system cannot compensate for engine or maintenance deficiencies.**

Reference the latest version of Waukesha Gas Engines Special Tools Catalog (form 398) for product offerings related to emission testing.



<p>Gas Engine Exhaust and Emission Levels</p>	<p>EN: E2003677 DATE: 3/21</p>	<p>Ref. <u>S</u> 8483-6</p>
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VHP\* emPact Catalyst Out Emissions

MODEL	Catalyst	GRAMS/BHP-HR				
		NOx <sup>1</sup>	CO	THC	NMHC	PM 2.5 <sup>2</sup>
L5794GSI	Option Code 1004/1004S	0.5	1.0	1.3	0.15	Not to exceed 0.010
	Option Code 1005/1004S	0.15	0.3			
L7042GSI S4	Option Code 1004/1004S	0.5	1.0	1.6	0.20	
	Option Code 1005/1004S	0.15	0.3			
L7042GSI S5	Option Code 1005/1005S	0.15	0.3	0.2	0.03	
L7044GSI	Option Code 1004/1004S	0.5	1.0	1.7	0.20	
	Option Code 1005/1004S	0.15	0.3			
L7044GSI S5	Option Code 1005/1005S	0.15	0.3	0.2	0.03	
P9394GSI	Option Code 1004/1004S	0.5	1.0	0.4	0.10	
	Option Code 1005/1004S	0.15	0.3			
P9394GSI S5	Option Code 1004/1004S	0.15	0.3	0.2	0.03	

<sup>1</sup> Emission levels are based on 900 -1200 rpm operation at 75-100% load and require GE-supplied (NSCR) catalyst.

<sup>2</sup> Particulates measured as filterable + condensable PM2.5 per EPA methods 201A/202.

VHP Engine Out Emission Levels (Rated Load & Speed)

MODEL	CARBURETOR SETTING	GRAMS/BHP-HR				% OBSERVED DRY		MASS AFR <sup>2</sup>	VOLUME AFR <sup>2</sup>	EXCESS AIR RATIO
		NOx <sup>1</sup>	CO	NMHC <sup>4</sup>	THC	CO	O <sub>2</sub>			
G, GSI	Lowest Manifold (Best Power)	8.5	32.0	0.35	2.3	1.15	0.30	15.5:1	9.3:1	0.97
	Equal NOx & CO	12.0	12.0	0.35	2.3	0.45	0.30	15.9:1	9.6:1	0.99
	Catalytic Conv. Input (3-way <sup>3</sup> )	13.0	9.0	0.30	2.0	0.38	0.30	15.95:1	9.6:1	0.99
	Standard (Best Economy)	22.0	1.5	0.25	1.5	0.02	1.35	17.0:1	10.2:1	1.06
F3524G F3514GSI F3524GSI	Catalytic Conv. Input (3-way <sup>3</sup> )	16.0	13.0	0.20	1.0	0.38	0.30	15.95:1	9.6:1	0.995
L5794GSI#	Catalytic Conv. Input (3-way <sup>3</sup> )	14.0	9.0	0.30	2.0	0.38	0.30	15.95:1	9.6:1	0.995
L7044G L7044GSI# L7042GSI S4#	Catalytic Conv. Input (3-way <sup>3</sup> )	14.0	11.0	0.40	2.5	0.38	0.30	15.95:1	9.6:1	0.995
L7042GSI S5 L7044GSI S5	Catalytic Conv. Input (3-way <sup>3</sup> )	13.0	10.0	0.30	0.9	0.38	0.30	15.95:1	9.6:1	0.999
GL	Standard	1.5	2.65	1.00	5.5	0.06	9.8	28.0:1	16.8:1	1.74
L5774LT	Standard	2.6	2.0	0.60	4.0	0.04	8.0	24.7:1	14.8:1	1.54
L5794LT	Standard	2.6	2.0	0.60	4.0	0.04	7.8	24.5:1	14.7:1	1.52
P9394GSI	Catalytic Conv. Input (3-way <sup>3</sup> )	11.6	10.8	0.2	0.7	0.38	0.30	15.95:1	9.6:1	0.999
P9394GSI S5	Catalytic Conv. Input (3-way <sup>3</sup> )	12.1	6.4	0.18	0.5	0.38	0.30	15.95:1	9.6:1	0.999

# Models without Waukesha-supplied catalyst included as part of the emPact Emission Control System.



Gas Engine Exhaust and Emission Levels	EN: E2003677 DATE: 3/21	Ref. S 8483-6
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- Air/fuel ratio values are based on a natural gas fuel with a stoichiometric mass air/fuel ratio of 16.05:1 and a H/C ratio of 3.85. Refer to S7884-7, or latest revision, for the complete gaseous fuel specification for Waukesha gas engines.
- Consult with individual catalyst manufacturers for their preferred air/fuel ratio set point and specific post-catalyst emission values.
- Non-Methane Hydrocarbons (NMHC) includes all hydrocarbon gasses in the exhaust except for methane (CH<sub>4</sub>). This value can be used for Reactive Organic Gasses (ROG), Reactive Organic Compounds (ROC), and Volatile Organic Compounds (VOC).

### Formaldehyde Emission Levels

The following table provides formaldehyde (CH<sub>2</sub>O) levels that are valid for new engines for the duration of the standard warranty period and are attainable by an engine in good operating condition running on commercial quality natural gas of 900 BTU/ft<sup>3</sup> (35.38 MJ/m<sup>3</sup> [25, V(0; 101.325)]) SLHV, Waukesha Knock Index of 91 or higher, 93% methane content by volume, and at ISO standard conditions. Values are based on standard engine timing at 91 WKI with an absolute humidity of 42 grains/lb. Refer to engine specific WKI Power & Timing curves for standard timing. Unless otherwise noted, these emission levels can be achieved across the continuous duty speed range at the load levels tabulated. **Contact the local Waukesha gas engine representative or Waukesha's Application Engineering Department for emission values which can be obtained on a case-by-case basis for specific ratings, fuels, and site conditions.**

MODEL	LOCATION	CARB. SETTING	CH <sub>2</sub> O GRAMS/BHP-HR		% OBSERVED DRY		MASS AFR <sup>2</sup>	VOLUME AFR <sup>2</sup>	EXCESS AIR RATIO
			PERCENT LOAD		CO	O <sub>2</sub>			
			100%	75%					
AT25GL	Engine Out	Lean Burn	0.18	0.20	0.06	9.8	28.0:1	16.8:1	1.74
275GL/AT27GL	Engine Out	Lean Burn	0.18	0.20	0.06	9.8	28.0:1	16.8:1	1.74
		Ultra Lean	0.18	0.20	0.05	11.2	32.0:1	19.2:1	2.00
275GL+	Engine Out	Lean Burn	0.28	0.31	0.04	11.6	34.0:1	20.4:1	2.10
12V275GL+ w/ESM2 Fuel Flex	Engine Out	Lean Burn	0.41	0.41	0.04	11.5	32.8:1	19.7:1	2.05
16V275GL+ w/ESM2 Fuel Flex	Engine Out	Lean Burn	0.30	0.30	0.05	11.5	32.8:1	19.7:1	2.05
12V220GL/ APG 2000 18V220GL/ APG 3000	Engine Out	Ultra Lean	0.23	0.29	0.09-0.15	12.3-13.4	32.1-35.3	19.3-21.2	2.03 - 2.20
16V150LTD/ APG 1000	Engine Out	Lean Burn	0.14	0.15	0.07	9.5-9.6	26.9-27.2	16.2-16.4	1.68-1.7
VHP G, GSI	Engine Out	Rich Burn	0.05	0.05	0.02 – 1.15	0.30 – 1.35	15.5:1 – 17.0:1	9.3:1 – 10.2:1	0.97 – 1.06
VHP Series 4 GSI	Engine Out	Rich Burn	0.05	0.05	0.02 – 0.45	0.30 – 1.35	15.85:1 – 17.0:1	9.5:1 – 10.2:1	0.99 – 1.06
VHP Series 4 GSI**	Catalyst Out	Rich Burn	0.001	0.001	n/a	n/a	n/a	n/a	n/a
L7042GSI S5 L7044GSI S5 P9394GSI S5	Engine Out	Lean Burn	0.05	0.07	0.02 – 0.45	0.30 – 1.35	15.85:1 – 17.0:1	9.5:1 – 10.2:1	0.99 – 1.06
L7042GSI S5** L7044GSI S5** P9394GSI S5	Catalyst Out	Lean Burn	0.001	0.001	n/a	n/a	n/a	n/a	n/a
L5774LT L5794LT	Engine Out	Lean Burn	0.22	0.25	0.04	7.8 – 8.0	24.5:1 – 24.7:1	14.7:1 – 14.8:1	1.52 – 1.54
VHP GL	Engine Out	Lean Burn	0.29	0.34	0.06	9.8	28.0:1	16.8:1	1.74
VGf G, GSID, SE	Engine Out	Rich Burn	0.05	0.05	0.20 – 1.1	0.18 – 2.4	15.5:1 – 18.0:1	9.3:1 – 10.8:1	0.97 – 1.12
VGf-SE**	Catalyst Out	Rich Burn	0.001	0.001	n/a	n/a	n/a	n/a	n/a
VGf GL, GLD, GLD/2	Engine Out	Lean Burn	0.19	0.22	0.03 – 0.04	7.8 – 9.0	21.5:1 – 25.4:1	13.9:1 – 15.2:1	1.53 – 1.65

\*\* Models with Waukesha-supplied catalyst included as part of the emPact Emission Control System.



<b>Gas Engine Exhaust and Emission Levels</b>	EN: E2003677 DATE: 3/21	Ref. <u>S</u> 8483-6
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# Solar<sup>®</sup> Turbines

A Caterpillar Company


## Certified Test Report

**Date of Test** : 9-Jun-14  
**Model Number** : TITAN 130  
**Version** : 19501SAN AXI

	<u>Gas Producer</u>	<u>Reduction Gearbox</u>
<b>Serial Number</b> :	OHE14-L8944	T079
<b>Solar Part Number</b> :	EL051S-A0G00PR0	206850-302
<b>Purpose of Test</b> :	OVERHAUL	FACILITY
<b>Test Specification</b> :	ES2215	ES2215

### Approvals

**Test Data Verification** :  
Test Engineer

  
Zamudio, Julio  
Date

Jun-10-2014  
Date

**Product Acceptance** :  
Product Engineer

  
Holmes, Edward

Jun-10-2014  
Date

# Solar Turbines

A Caterpillar Company

Solar Turbines Incorporated  
DeSoto, Texas  
COMBUSTION and LIFE LIMITED COMPONENTS

## GAS PRODUCER

Gas Producer Serial Number: OHE14-L8944  
Gas Producer Part Number: EL051S-A0G00PRO

### Combustion Components

#### Combustor Liner

Serial Number: APR14-80849  
Part Number: 206530-200

#### Fuel Injectors

Part Number: 206640-1201

### Life Limited Components

#### First Stage Turbine Disk

Serial Number: DAI02-L0291  
Part Number: E204202-402  
Remaining Service Life: 41,000 Hours

#### Second Stage Turbine Disk

Serial Number: DAE14-94846  
Part Number: 206203-803  
Remaining Service Life: 30,000 Hours

#### Third Stage Turbine Disk

Serial Number: DAG08-40210  
Part Number: E206393-300  
Remaining Service Life: 98,000 Hours

**CORRECTED PERFORMANCE  
TEST SUMMARY  
GAS FUEL**

**Solar Turbines - Desoto, Texas**  
**One-Shaft Gas Turbine Certified Test Report**  
**Corrected to Sea Level, No Duct Losses, 60% Rel. Humidity and Standard Temp.**

**Equipment Summary**

Date	9-Jun-14	Time	15:13:06	Version	19501SAN AXI
GP S/N	OHE14-L8944	GP P.O.	DPR871019	CS Curve	PT30300A
RGB S/N	T079	RGB P.O.	DPR871019	Test Spec	ES2215
Std Temp.	80	FuelType	Gas	Data Pt.	25

**Corrected Performance Summary**

<u>Parameter Name</u>	<u>Units</u>	<u>Results</u>	<u>Min</u>	<u>Max</u>
Corrected NGP	%	100.0	99.9	100.1
Corrected KW	KW	13106	12718	
Corrected SFC	Btu/kW-hr	10169		10342
Corrected TRIT	deg F	2114.4	2097	2103
Thermal Efficiency	%	33.554	32.99	
Final IGV Angle	deg	5.0	0.0	10.0

**Engine Parameters**

<u>Parameter Name</u>	<u>Units</u>	<u>Results</u>	<u>Min</u>	<u>Max</u>
Air Inlet Temp	Deg F	76.3		
T2 Spread	Deg F	7.7		10
Corrected T5	Deg F	1341		
Base T5	Deg F	1336		
T5/T3	Deg F	0.6995	0.6870	0.7030
T5 Delta	Deg F	53.1		90
Corrected T7	Deg F	938		
T7 Delta	Deg F	10.9		20.0
Corr Mass Flow	pps	102.6		
PCD	psi	209.9		
P2/P1	ratio	16.4		
PTC	psi	57.2	46.7	62.5
P_BUFFER	psi	77.0	56.7	82.9

**Lube Oil System Parameters @ Full Load**

<u>Location</u>	<u>Pressure</u>	<u>Flow</u>	<u>Data Pt.</u>	<u>27</u>	<u>Min</u>	<u>Max</u>
RGB & BRG 1	36.5 psig	173.1 gpm			148.5	184.7
BRG 2 & 3	33.7 psig	20.9 gpm			18.5	23.2
LUBE OIL PRESS.		44.0 psig			28.0	45.0
LUBE OIL TEMP		135 °F			130.0	140.0
BRG 2 & 3 OIL DRAIN RISE		69.0 °F				95.0
GP THRUST BRG TEMP		171.5 °F				235.0
DIFF BETWEEN GP THRUST BRG1 & 2		2.5 °F				30.0
TANK VENT PRESSURE		0.4 in. H2O				1.5

**Solar Turbines - Desoto, Texas**  
**One-Shaft Gas Turbine Certified Test Report**  
**Corrected to Sea Level, No Duct Losses, 60% Rel. Humidity**

**Equipment Summary**

Date	9-Jun-14	Time	15:13:06	Version	19501SAN AXI
GP S/N	OHE14-L8944	GP P.O.	DPR871019	CS Curve	PT30300A
RGB S/N	T079	RGB P.O.	DPR871019	Test Spec	ES2215
		FuelType	Gas		

**SOLONOX SUMMARY**

Parameter Name	Units	Full Load	Part Load
Datapoint #		27	33
Date		6/9/14	6/9/14
Time		15:42:27	16:35:06
Corrected NGP	%	100.0	100.0
Corrected KW	Kw	13298	6476
Corrected SFC	Btu/Kw-Hr	10124	13441
Corrected TRIT	Deg F	2114.8	2059.9
Corr Mass Flow	Pps	103.6	63.2
T5/T3	Ratio	0.6990	0.7044
PCD	Psi	211.6	125.8
T1 Average	Deg F	77.2	76.4
T5 Average	Deg F	1339.2	1314.5
T5 Delta	Deg F	52.6	48.8
T7 Average	Deg F	946.6	1090.9
T7 Delta	Deg F	12.1	12.9
T7 Package	Deg F	946.3	1091.0
PCT Pilot	%	5.97	6.01

**Emission Summary**

				Max.
NOX	ppmv, 15% O2 Corr.	17.2	12.7	25
CO	ppmv, 15% O2 Corr.	1.6	0.7	50
HC	ppmv, 15% O2 Corr.	0.5	0.1	25
O2	%	15.3	14.9	
CO2	%	3.2	3.5	

**T5 SoLoNOx Constants**

<b>Gas FUEL:</b>	
T5_VGVSP	1315.0 DEG F
Rated KW	12916 KW

**Solar Turbines - Desoto, Texas**  
**One-Shaft Gas Turbine Certified Test Report**  
**Corrected to Sea Level, No Duct Losses, 60% Rel. Humidity**

**Equipment Summary**

Date	9-Jun-14	Time	15:13:06	Version	19501SAN AXI
GP S/N	OHE14-L8944	GP P.O.	DPR871019	CS Curve	PT30300A
RGB S/N	T079	RGB P.O.	DPR871019	Test Spec	ES2215
		FuelType	Gas		

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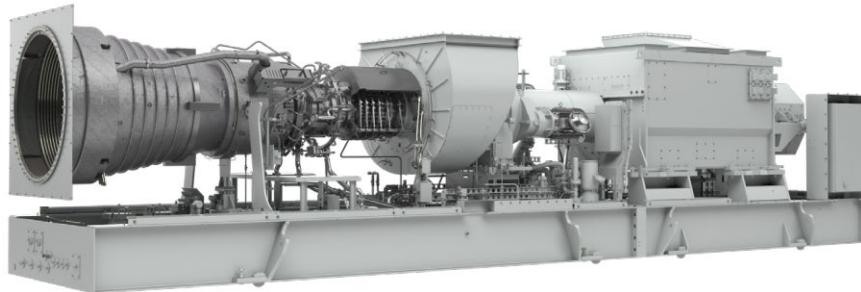
**FULL LOAD BEARING GAP VOLTAGES**

Parameter Name	Units	X	Y
BRG 1	VDC	-8.9	-9.1
BRG 2	VDC	-7.9	-7.8
BRG 3	VDC	-8.6	-8.7
		<b>AXI 1</b>	<b>AXI 2</b>
GP Axial	VDC	-10.4	-10.3

**19501SAN AXI**  
**DATA TAG INFORMATION**

Model No.	TITAN 130	
Version:	19501SAN AXI	
I.D. No:	EL051S-A0G00PRO	
Serial No:	OHE14-L8944	
Power (G/L)	14264 / NA	kWe ISO Dry
Turbine RPM:	11170 60 HZ / 11197 50 HZ	
T5 Base (G/L) UnComp	1336 F / NA	
T5 Setpoint (G/L)	1400 F / NA	
IGV Setting:	5.0	Deg
EMISS SP (G/L)	1315 F / NA	
% Pilot Full Load (G/L)	6.0 / NA	%
% Pilot Part Load (G/L)	6.0 / NA	%

**Engineer's Note:** - Corrected Trit above limit is due to engine being derated from model 20501SAN to 19501ANS, this condition is accepted by Engineering.



## General Specifications

### Titan™ 130 Gas Turbine

- Industrial, Single-Shaft
- 14 Stage Axial Compressor
  - Variable Inlet Guide Vanes and Stators
  - Pressure Ratio: 19.1:1
  - Inlet Airflow: 55.4 kg/sec (122 lb/sec)
  - Vertically Split Case
- Combustion Chamber, Annular-Type
  - 21 Conventional Fuel Injectors
  - 14 Lean-Premixed, Dry Low Emissions SoLoNOx™ Injectors
  - Single Torch Ignitor System
- Power Turbine
  - 3-Stage Reaction
  - Clockwise Rotation
- Bearings
  - 3 Radial Journal: Tilt-Pad
  - 1 Thrust, Active: Tilt-Pad
  - 1 Thrust, Inactive: Fixed Tapered Land
- Coatings
  - Compressor: Inorganic Aluminum
  - Turbine and Nozzle Blades: Platinum Aluminide (Stages 1 and 2)
- Vibration Transducer Type
  - Proximity Probes, 2 per Radial Bearing/ 2 per Thrust Bearing

### Main Reduction Drive

- Epicyclic Type
  - 1500 or 1800 rpm (50 or 60 Hz)
  - Vibration monitoring: Acceleration Transducer

### Generator

- 4 Pole, 3 Phase, 6 Wire, Wye Connected, Synchronous with Permanent Magnet Generator Exciter
- Available Construction Types:
  - Open Drip-Proof Construction
  - CACA/TEAAC (Closed Air, Cooling Air/ Totally Enclosed, Air to Air Cooling)\*
  - CACW/TEWAC (Closed Air, Cooling Water/Totally Enclosed, Water to Air Cooling)\*
- Sleeve Bearings
- Vibration Monitoring: Velocity Transducers
- Vibration Monitoring: Displacement Transducers\*

- NEMA Class F Insulation
- Class B Temperature Rise\*
- Continuous Duty Rating Voltages:
  - 3300, 6600, 11 000 (50Hz)
  - 4160, 6900, 12 470, 13 200, 13 800 (60Hz)

### Package

- Mechanical Construction
  - Steel Base Frame with Drip Pans
  - 316L Stainless Steel Piping
  - Compression Type Tube Fittings
- Start System
  - Direct Drive AC Motor with VFD Control
- Package Electrical Certification
  - NEC, CSA Class 1, Group D, Div.2
- Fuel System
  - Natural Gas
  - Diesel\*
  - Dual (Natural Gas and Diesel)\*
  - Low BTU Gas\*
- Integrated Lube Oil System
  - Turbine-Driven Lube Pump
  - AC Motor Driven Pre/Post Lube Pump
  - DC Motor Driven Backup Lube Pump
  - Air to Oil Cooler
  - Water to Oil Cooler\*
  - Integral Lube Oil Tank
  - Lube Oil Tank Heater
  - Lube Oil Filter
  - Duplex Lube Oil Filter\*
  - Oil Tank Vent Separator with Flame Arrestor
- Air Inlet and Exhaust Systems
  - Carbon Steel
  - Stainless Steel\*
  - Barrier Type Filters
  - Self-Cleaning Filters
  - Inlet and Exhaust Silencers
  - Inlet Evaporative Cooler\*
  - Inlet Chiller Coils\*
- Enclosure
  - Complete Package
  - Driver Only\*
  - Fire Detection and CO2 Suppression System
- Turbine Compressor Cleaning Systems

- On-Crank/On-Line
- Portable Cleaning Tank\*
- Package Power
  - 120VDC Battery/Charger System
- Turbotronic™ On-Skid Gas Turbine and Generator Control System Features
  - Combination Generator Control Module with Load Share, Auto Synchronization, Voltage Control
  - Standard Display with Discrete Event Log, Strip Chart, Historical Trend, Maintenance Screen
  - Vibration and Temperature Monitoring
  - English Display Text and Labels
  - Spanish, Portuguese, German, French or Simplified Chinese Display Text
  - Auxiliary and Remote Display/Control Terminals\*
  - Turbine Performance Map\*
  - KW Import Control\*
  - KVAR/Power Factor Control\*
  - ControlNet Redundant Media, Ethernet or Modbus RS232C/422/485 Supervisory Interface\*
  - Heat Recovery Application Interface\*
  - Multi-Unit Applications: Load Shed Control, Import/Export or kW/KVAR Control Panels\*
  - InSight System™ Equipment Health Management\*
  - Printer/Logger\*
- Electrical System Options
  - Neutral Grounding Resistor or Transformer\*
  - Switchgear and Generator Protective Relay\*
  - Motor Control Center with Automatic Transfer Switch\*
- Documentation
  - Drawings
  - Quality Control Data Book
  - Inspection and Test Plan
  - Test Reports
  - O&M Manuals
- Factory Testing of Turbine
- Factory Testing of Package Systems
  - Non-Dynamic
  - Dynamic

### Performance

Output Power	16 530 kWe
Heat Rate	10 160 kJ/kWe-hr (9630 Btu/kWe-hr)
Exhaust Flow	202 510 kg/hr (446,460 lbs/hr)
Exhaust Temperature	490°C (910°F)

### Application Performance

Steam (Unfired)	29.2 tonnes/hr (64,490 lb/hr)
Steam (Fired)	134.1 tonnes/hr (295,730 lb/hr)
1536°C (2800°F)	
Chilling (Absorp.)	25 240 kW (7170 refrigeration tons)

Nominal rating – per ISO  
At 15°C (59°F), sea level

No inlet/exhaust losses

Relative humidity 60%

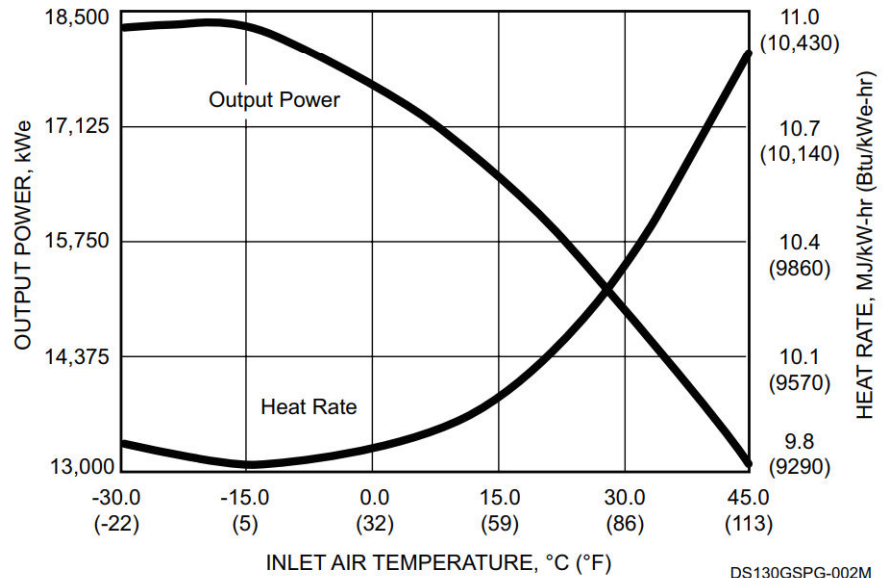
Natural gas fuel with  
LHV = 35 MJ/Nm<sup>3</sup> (940 Btu/scf)

No accessory losses

Engine efficiency: 35.4%

(measured at generator terminals)

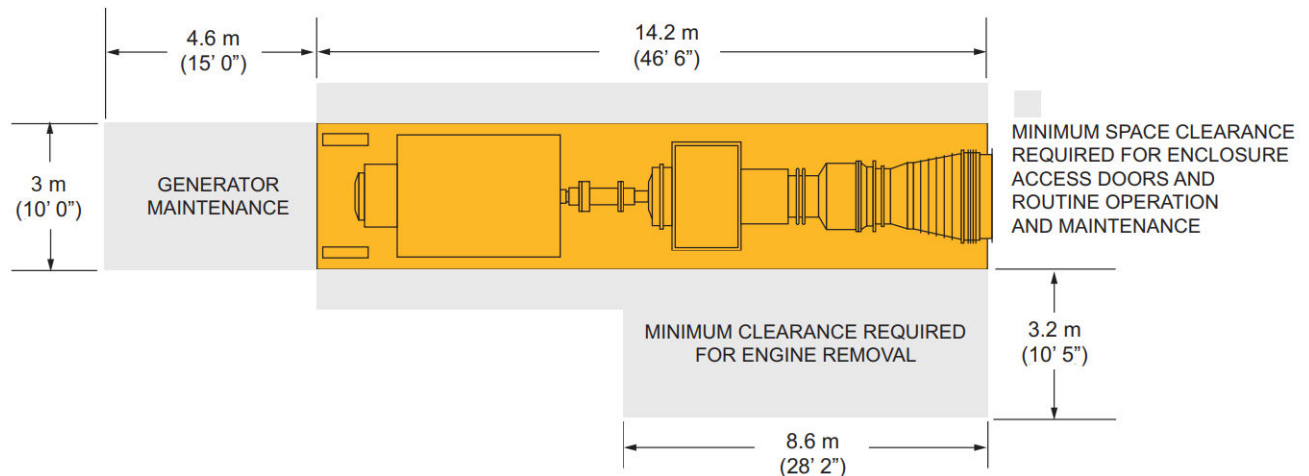
### Available Power\*



\* SoLoNOx

DS130GSPG-002M

### Enclosure Access and Maintenance Space



Package Height: 3.9 m (12' 9")

Package Weight: 87 510 kg (192,925 lb)

Dry weight, unenclosed height

DS130PG-003C

# Cat® C32

## Diesel Generator Sets



Image shown may not reflect actual configuration

Bore – mm (in)	145 (5.7)
Stroke – mm (in)	162 (6.4)
Displacement – L (in <sup>3</sup> )	32 (1952.76)
Compression Ratio	15.0:1
Aspiration	TA
Fuel System	EUI
Governor Type	ADEM™ A4

Standby 60 Hz ekW (kVA)	Mission Critical 60 Hz ekW (kVA)	Prime 60 Hz ekW (kVA)	Continuous 60 Hz ekW (kVA)	Emissions Performance
1000 (1250)	1000 (1250)	910 (1137)	830 (1038)	Low Fuel Consumption

### Standard Features

#### Cat® Diesel Engine

- Designed and optimized for low fuel consumption
- Reliable and consistent performance proven in thousands of applications worldwide

#### Generator Set Package

- Accepts 100% block load in one step and meets the NFPA 110 loading requirements
- Conforms to ISO 8528-5 G3 load acceptance requirements.
- Reliability is verified through prototype testing, which includes torsional vibration, fuel consumption, oil consumption, transient performance, and endurance testing

#### Alternators

- Superior motor starting capability minimizes the need for oversizing the generator
- Designed to match the performance and output characteristics of Cat diesel engines

#### Cooling System

- Cooling systems available to operate in ambient temperatures up to 50°C (122°F)
- Tested to ensure proper generator set cooling

#### EMCP 4 Control Panels

- User-friendly interface and navigation
- Scalable system to meet a wide range of installation requirements
- Expansion modules and site specific programming for specific customer requirements

#### Warranty

- 24 months/1000-hour warranty for standby and mission critical ratings
- 12 months/unlimited hour warranty for prime and continuous ratings
- Extended service protection is available to provide extended coverage options

#### Worldwide Product Support

- Cat dealers have over 1,800 dealer branch stores operating in 200 countries
- Your local Cat dealer provides extensive post-sale support, including maintenance and repair agreements

#### Financing

- Caterpillar offers an array of financial products to help you succeed through financial service excellence
- Options include loans, finance lease, operating lease, working capital, and revolving line of credit
- Contact your local Cat dealer for availability in your region

## Optional Equipment

### Engine

#### Air Cleaner

- Single element
- Dual element
- Heavy duty

#### Muffler

- Industrial grade (15 dB)

#### Starting

- Standard batteries
- Oversized batteries
- Standard electric starter
- Dual electric starter
- Jacket water heater

### Alternator

#### Output voltage

- 220V    400V
- 240V    480V
- 380V    600V

#### Temperature Rise (over 40°C ambient)

- 150°C
- 125°C/130°C
- 105°C
- 80°C

#### Winding type

- Random wound
- Form wound

#### Excitation

- Self excited
- Internal excitation (IE)
- Permanent magnet (PM)

#### Attachments

- Anti-condensation heater
- Stator and bearing temperature monitoring and protection

### Power Termination

#### Type

- Bus bar
- Circuit breaker
- 1600A    2000A
- 2500A    3200A
- 4000A    3-pole
- UL    IEC
- Manually operated
- Electrically operated

#### Trip Unit

- LSI    LSI-G
- LSIG-P

### Control System

#### Controller

- EMCP 4.2
- EMCP 4.3
- EMCP 4.4

#### Attachments

- Local annunciator module
- Remote annunciator module
- Remote monitoring software

### Charging

- Battery charger – 10A

### Vibration Isolators

- Rubber
- Spring

### Extended Service Options

#### Terms

- 2 year (prime)
- 3 year
- 5 year
- 10 year

#### Coverage

- Silver
- Gold
- Platinum
- Platinum Plus

### Ancillary Equipment

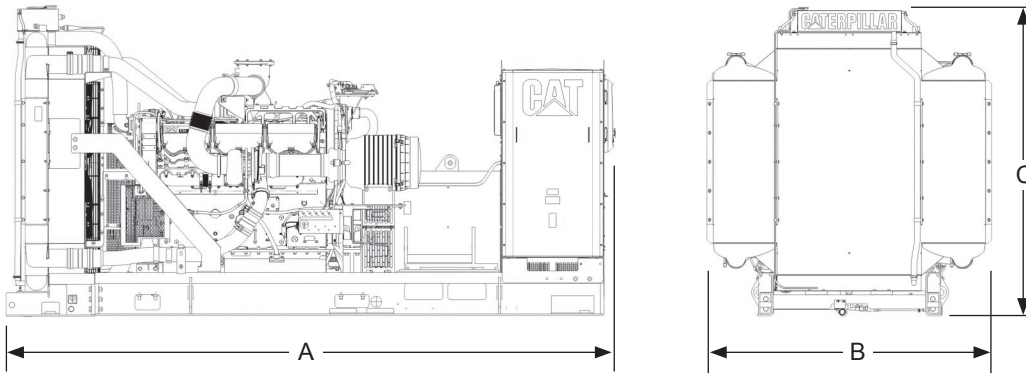
- Automatic transfer switch (ATS)
- Uninterruptible power supply (UPS)
- Paralleling switchgear
- Paralleling controls

**Note:** Some options may not be available on all models. Certifications may not be available with all model configurations. Consult factory for availability.

## Package Performance

Performance	Standby	Mission Critical	Prime	Continuous
Frequency	60 Hz	60 Hz	60 Hz	60 Hz
Gen set power rating with fan	1000 ekW	1000 ekW	910 ekW	830 ekW
Gen set power rating with fan @ 0.8 power factor	1250 kVA	1250 kVA	1138 kVA	1038 kVA
Fueling strategy	Low Fuel	Low Fuel	Low Fuel	Low Fuel
Performance number	DM9939-01	EM0450-00	DM9940-02	DM9941-01
<b>Fuel Consumption</b>				
100% load with fan – L/hr (gal/hr)	262.7 (69.4)	262.7 (69.4)	238.6 (63.0)	217.9 (57.6)
75% load with fan – L/hr (gal/hr)	195.9 (51.7)	195.9 (51.7)	179.2 (47.3)	164.8 (43.5)
50% load with fan – L/hr (gal/hr)	135.9 (35.9)	135.9 (35.9)	125.8 (33.2)	117.2 (31.0)
25% load with fan – L/hr (gal/hr)	80.8 (21.3)	80.8 (21.3)	75.9 (20.0)	71.4 (18.9)
<b>Cooling System</b>				
Radiator air flow restriction (system) – kPa (in. water)	0.12 (0.48)	0.12 (0.48)	0.12 (0.48)	0.12 (0.48)
Radiator air flow – m <sup>3</sup> /min (cfm)	987 (34855)	987 (34855)	987 (34855)	987 (34855)
Engine coolant capacity – L (gal)	55 (14.5)	55 (14.5)	55 (14.5)	55 (14.5)
Radiator coolant capacity – L (gal)	171 (45.0)	171 (45.0)	171 (45.0)	171 (45.0)
Total coolant capacity – L (gal)	226 (59.5)	226 (59.5)	226 (59.5)	226 (59.5)
<b>Inlet Air</b>				
Combustion air inlet flow rate – m <sup>3</sup> /min (cfm)	82.6 (2915.6)	82.6 (2915.6)	77.8 (2746.7)	71.2 (2515.8)
<b>Exhaust System</b>				
Exhaust stack gas temperature – °C (°F)	473.4 (884.2)	473.4 (884.2)	456.1 (853.0)	452.0 (845.6)
Exhaust gas flow rate – m <sup>3</sup> /min (cfm)	214.7 (7582.8)	214.7 (7582.8)	196.0 (6922.5)	179.6 (6341.2)
Exhaust system backpressure (maximum allowable) – kPa (in. water)	6.7 (27.0)	6.7 (27.0)	6.7 (27.0)	6.7 (27.0)
<b>Heat Rejection</b>				
Heat rejection to jacket water – kW (Btu/min)	359 (20395)	359 (20395)	324 (18431)	305 (17363)
Heat rejection to exhaust (total) – kW (Btu/min)	965 (54857)	965 (54857)	866 (49230)	790 (44907)
Heat rejection to aftercooler – kW (Btu/min)	249 (14173)	249 (14173)	213 (12110)	172 (9774)
Heat rejection to atmosphere from engine – kW (Btu/min)	118 (6709)	118 (6709)	128 (7274)	130 (7370)
Heat rejection from alternator – kW (Btu/min)	55 (3131)	55 (3131)	50 (2846)	45 (2561)
<b>Emissions (Nominal)</b>				
NOx mg/Nm <sup>3</sup> (g/hp-h)	3009.7 (6.09)	3009.7 (6.09)	3019.6 (6.09)	3099.7 (6.26)
CO mg/Nm <sup>3</sup> (g/hp-h)	89.8 (0.18)	89.8 (0.18)	101.9 (0.21)	118.3 (0.24)
HC mg/Nm <sup>3</sup> (g/hp-h)	5.1 (0.01)	5.1 (0.01)	5.3 (0.01)	8.2 (0.02)
PM mg/Nm <sup>3</sup> (g/hp-h)	8.3 (0.02)	8.3 (0.02)	7.6 (0.02)	8.3 (0.02)
<b>Emissions (Potential Site Variation)</b>				
NOx mg/Nm <sup>3</sup> (g/hp-h)	3641.8 (7.73)	3641.8 (7.73)	3653.7 (7.37)	3750.6 (7.57)
CO mg/Nm <sup>3</sup> (g/hp-h)	168.0 (0.33)	168.0 (0.33)	190.6 (0.38)	221.3 (0.44)
HC mg/Nm <sup>3</sup> (g/hp-h)	9.7 (0.02)	9.7 (0.02)	10.0 (0.02)	15.5 (0.04)
PM mg/Nm <sup>3</sup> (g/hp-h)	16.2 (0.04)	16.2 (0.04)	14.8 (0.04)	16.2 (0.04)

## Weights and Dimensions



Dim "A" mm (in)	Dim "B" mm (in)	Dim "C" mm (in)	Dry Weight kg (lb)
4270 (168.1)	2011 (79.2)	2174 (85.6)	6663 (14,690)

**Note:** For reference only. Do not use for installation design. Contact your local Cat dealer for precise weights and dimensions.

## Ratings Definitions

### Standby

Output available with varying load for the duration of the interruption of the normal source power. Average power output is 70% of the standby power rating. Typical operation is 200 hours per year, with maximum expected usage of 500 hours per year.

### Mission Critical

Output available with varying load for the duration of the interruption of the normal source power. Average power output is 85% of the mission critical power rating. Typical peak demand up to 100% of rated power for up to 5% of the operating time. Typical operation is 200 hours per year, with maximum expected usage of 500 hours per year.

### Prime

Output available with varying load for an unlimited time. Average power output is 70% of the prime power rating. Typical peak demand is 100% of prime rated kW with 10% overload capability for emergency use for a maximum of 1 hour in 12. Overload operation cannot exceed 25 hours per year.

### Continuous

Output available with non-varying load for an unlimited time. Average power output is 70-100% of the continuous power rating. Typical peak demand is 100% of continuous rated kW for 100% of the operating hours.

### Applicable Codes and Standards

AS1359, CSA C22.2 No100-04, UL142, UL489, UL869, UL2200, NFPA37, NFPA70, NFPA99, NFPA110, IBC, IEC60034-1, ISO3046, ISO8528, NEMA MG1-22, NEMA MG1-33, 2014/35/EU, 2006/42/EC, 2014/30/EU.

**Note:** Codes may not be available in all model configurations. Please consult your local Cat dealer for availability.

### Data Center Applications

Tier III/Tier IV compliant per Uptime Institute requirements. ANSI/TIA-942 compliant for Rated-1 through Rated-4 data centers.

### Fuel Rates

Fuel rates are based on fuel oil of 35° API [16°C (60°F)] gravity having an LHV of 42,780 kJ/kg (18,390 Btu/lb) when used at 29°C (85°F) and weighing 838.9 g/liter (7.001 lbs/U.S. gal.)

[www.cat.com/electricpower](http://www.cat.com/electricpower)

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 The International System of Units (SI) is used in this publication.

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**PERMIT APPLICATION FOR AIR CONTAMINANT SOURCES**  
 NORTH DAKOTA DEPARTMENT OF ENVIRONMENTAL QUALITY  
 DIVISION OF AIR QUALITY  
 SFN 8516 (9-2021)

**SECTION A - FACILITY INFORMATION**

Name of Firm or Organization NYDIG DFM LLC				
Applicant's Name Laura Pritchard				
Title Environmental Specialist		Telephone Number (970) 749-8615	E-mail Address laura.pritchard@nydig.com	
Contact Person for Air Pollution Matters Laura Pritchard				
Title Environmental Specialist		Telephone Number (970) 749-8615	E-mail Address laura.pritchard@nydig.com	
Mailing Address (Street & No.) One Vanderbilt Avenue, 65th Floor				
City New York		State NY	ZIP Code 10017	
Facility Name Hulk Central Delivery Point (CPD)				
Facility Address (Street & No.)				
City		State	ZIP Code	
County <b>Williams</b>	Coordinates NAD 83 in Decimal Degrees (to fourth decimal degree)			
	Latitude 48.52778000		Longitude -103.47409000	
Legal Description of Facility Site				
Quarter SE	Quarter NE	Section 9	Township 158N	Range 99W
Land Area at Facility Site 10 _____ Acres (or) _____ Sq. Ft.		MSL Elevation at Facility 2,144 feet		

**SECTION B – GENERAL NATURE OF BUSINESS**

Describe Nature of Business	North American Industry Classification System Number	Standard Industrial Classification Number (SIC)
<b>Data Computing</b>	<b>541519</b>	<b>7379</b>

**SECTION C – GENERAL PERMIT INFORMATION**

Type of Permit? <input checked="" type="checkbox"/> Permit to Construct (PTC) <input checked="" type="checkbox"/> Permit to Operate (PTO)	
If application is for a Permit to Construct, please provide the following data:	
Planned Start Construction Date 09/2024	Planned End Construction Date 09/2024

**SECTION D – SOURCE IDENTIFICATION AND CATEGORY OF EACH SOURCE INCLUDED ON THIS PERMIT APPLICATION**

Your Source ID Number	Source or Unit (Equipment, Machines, Devices, Boilers, Processes, Incinerators, Etc.)	Permit to Construct				Minor Source Permit to Operate						
		New Source	Existing Source Modification	Existing Source Expansion	Existing Source Change of Location	New Source	Existing Source Initial Application	Existing Source After Modification	Existing Source After Expansion	Existing Source After Change of Location	Existing Source After Change of Ownership	Other
EU1-EU2	Compressor Engines X 2	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>EU3</b>	Generator Engine x 1	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
EU4-EU-12	Generator Engine x 9	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
<b>E13</b>	Combustion Turbine x 1	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>EU14</b>	Emergency Generator X 1	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>EU15</b>	Emergency Generato X 1	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

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Like-Kind Replacement

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Add additional pages if necessary

**SECTION D2 – APPLICABLE REGULATIONS**

Source ID No.	Applicable Regulations (NSPS/MACT/NESHAP/etc.)
Facility-wide	
<b>EU1-EU2</b>	<b>NSPS JJJJ, MACT ZZZZ</b>
<b>EU3</b>	<b>NSPS JJJJ, MACT ZZZZ</b>
<b>E13</b>	NSPS KKKK
<b>EU14</b>	NSPS IIII, MACT ZZZZ

**SECTION E – TOTAL POTENTIAL EMISSIONS**

Pollutant	Amount (Tons Per Year)
NO <sub>x</sub>	<b>62.97</b>
CO	<b>79.22</b>
PM	<b>4.24</b>

Pollutant	Amount (Tons Per Year)
PM <sub>10</sub> (filterable and condensable)	4.24
PM <sub>2.5</sub> (filterable and condensable)	4.24
SO <sub>2</sub>	4.88
VOC	27.72
GHG (as CO <sub>2</sub> e)	85,324
Largest Single HAP	0.22
Total HAPS	1.95

\*If performance test results are available for the unit, submit a copy of test with this application. If manufacturer guarantee is used provide spec sheet.

**SECTION F1 – ADDITIONAL FORMS**

Indicate which of the following forms are attached and made part of the application	
<input checked="" type="checkbox"/> Air Pollution Control Equipment (SFN 8532) <input type="checkbox"/> Construct/Operate Incinerators (SFN 8522) <input type="checkbox"/> Natural Gas Processing Plants (SFN 11408) <input type="checkbox"/> Glycol Dehydration Units (SFN 58923) <input type="checkbox"/> Flares (SFN 59652) <input type="checkbox"/> Grain, Feed, and Fertilizer Operations (SFN 8524)	<input type="checkbox"/> Fuel Burning Equipment Used for Indirect Heating (SFN 8518) <input checked="" type="checkbox"/> Hazardous Air Pollutant (HAP) Sources (SFN 8329) <input type="checkbox"/> Manufacturing or Processing Equipment (SFN 8520) <input type="checkbox"/> Volatile Organic Compounds Storage Tank (SFN 8535) <input checked="" type="checkbox"/> Internal Combustion Engines and Turbines (SFN 8891) <input type="checkbox"/> Oil/Gas Production Facility Registration (SFN 14334)

**SECTION F2 – OTHER ATTACHMENTS INCLUDED AS PART OF THIS APPLICATION**

1. Project Overview	4. Regulatory Discussion
2. Site Map	5. Specification Sheets
3. Emissions Calculations	6.

I, the undersigned applicant, am fully aware that statements made in this application and the attached exhibits and statements constitute the application for Permit(s) to Construct and/or Operate Air Contaminant sources from the North Dakota Department of Environmental Quality and certify that the information in this application is true, correct and complete to the best of my knowledge and belief. Further, I agree to comply with the provisions of Chapter 23.1-06 of the North Dakota Century Code and all rules and regulations of the Department, or revisions thereof. I also understand the permit is nontransferable and, if granted a permit, I will promptly notify the Department upon sale or legal transfer of this permitted establishment.

Signature	Date
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